ComCom

Activity Report 2023

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Content

Editorial

But do we really need it? This is a question I am often asked, and legitimately so – most recently by my mother over a game of cards at Christmas when we happened to mention an internet service provider offering speeds of 25 Gbps. In between playing hands, the need for a federal broadband strategy was also questioned and whether it really is the government's job to intervene when we clearly already have enough bandwidth – as demonstrated by this particular offer.

All around us we are used to seeing vendors and internet service providers advertising their latest upgrades in technology. In Switzerland, broadband plans with an impressive 10 Gbps and even 25 Gbps are already available at highly attractive prices. Computers are now equipped with 10 Gbps Ethernet ports as standard and, despite time-consuming hurdles, 5G mobile technology is being systematically rolled out in Switzerland. The media has already moved on to talking about 6G technology, with the fast millimetre wave range in particular arousing readers' interest. Global cloud providers are announcing breakthroughs with game-changing 800 Gbps transatlantic cables, while Starlink and other satellite providers are coming up with innovative offerings for internet from space. The list is goes on and on and could easily fill this page with fascinating headlines all pointing to the same thing: faster internet!

If, like my mother, you mainly use the internet to send WhatsApp messages to your grandchildren, write emails to your friends or watch some evening television with an IPTV service, you may well wonder why you would ever need more bandwidth. Does the federal government really need to get involved in expanding Switzerland's internet capacity? It's a reasonable concern, especially from the perspective of individual users. Yet, while current needs may be met, the question should also be asked with regard to future developments and opportunities for society.

Numerous studies, such as from the OECD, the WEF or IMD, have demonstrated the importance of high-speed broadband connections for a country's economic output, innovative capacity, educational opportunities, eGovernment services and attractiveness as a business location. But do we not already have enough bandwidth and do we really need more?

The fact is: the importance of bandwidth in the digital era cannot be overstated. Where there is sufficient bandwidth, new ideas and services will inevitably sprout up to make use of it. In turn, this drives new business models and strengthens innovation in the digital economy. A prime example here is the increasing relevance of artificial intelligence, or AI. Practically every Swiss company, regardless of size or market sector, will eventually be faced with the key decision of introducing this technology. And to make full and cost-efficient use of AI, cloud infrastructure will become essential, especially for the many small and medium-sized companies in Switzerland. Fast cloud access will therefore become even more crucial to successfully launching new AI services and driving innovation. Especially in augmented reality and 3D digital twins, who knows what new ideas and services will arise and what their bandwidth requirements might be. But of one thing I am sure: if enough bandwidth is available, Swiss companies will be among the forerunners in the digital environment.

In this era of rapid digital innovation, the importance of fast and robust networks is growing all the time. Technologies such as quantum computing, Web 3.0, virtual reality and self-driving cars are developing at

an amazing speed and some are already available in early business models. Their potential and possible uses are now being demonstrated on university campuses and corporate showrooms – but cannot yet be rolled out nationwide because there is simply not enough bandwidth.

To take full advantage of these latest opportunities and ensure that Swiss companies are at the forefront, fast access to high-performance networks is essential. As a society, we need to create an infrastructure that not only meets today's requirements but also lays the foundations for future technological advancements.

In this respect, the federal government's broadband strategy plays a decisive role. While high-bandwidth networks are already available at attractive prices in urban areas, the federal government has to ensure that rural regions do not fall behind technologically. Strategic intervention by the federal government will be crucial, especially where the expansion of fast networks may not be economically viable. In this way, even remote areas will benefit from the latest communication technologies. Basic services such as the provision of medical care via telemedicine are becoming increasingly important, particularly in these regions. Furthermore, innovative businesses in rural areas should also be able to take the lead in some of these technologies. This not only contributes to regional development but also prevents young talent from moving away to urban areas.

Overall, the federal government's broadband strategy is a key instrument for bridging the digital divide and ensuring that all citizens can benefit equally from the opportunities of the digital era.

Returning to that discussion we had over a game of cards: yes, I do believe we need to build even faster networks all over the country – it is essential for Switzerland's competitiveness and for promoting innovation in local companies. Once the bandwidth is there, I have no doubt it will be used to drive innovation and new ideas. This certainty goes beyond mere technological development: the right infrastructure will also form a breeding ground for creativity and progress. If Switzerland is to remain globally competitive in the future, the expansion of fast networks is not only an important factor in an increasingly digital world, but also a commitment to our potential as one of the most innovative countries in the world.

Christian Martin, President

March 2024

I. An overview of the telecoms market

The first section of this report provides a selection of data that give an overview of how the Swiss and international telecommunications markets are developing.

For its statistical data, ComCom relies primarily on the figures released by the major telecommunications providers, as well as on publications by the OECD, EU and professional bodies or specialised research institutes such as Gartner and IDC. It also uses various data sets and analyses from the Federal Office of Communications (OFCOM). [1] Further information on the latest developments in the Swiss fixed network and mobile telephony market is available on the ComCom website under the heading 'Facts and figures'.

1. Development of mobile networks

The saturated mobile telecoms market has remained more or less stable in recent years. With a mobile phone penetration rate of 123% at the end of 2023, the growth in the number of customers has slowed down (+1.5%).

Although the merger with UPC strengthened Sunrise's market position, this hardly changed its market share in mobile telephony. Sunrise gained 0.3% market share in 2023, as did Salt. Swisscom continues to remain well ahead of its two main competitors.

The operators have invested heavily in 5G expansion and in improving the quality and coverage of their mobile networks, but because the differences between operators are minimal, customers see little reason to switch.

Operators find it difficult to acquire new customers and have only limited leverage to do so. Their main priority is therefore on retaining existing customers. The approach here is two-fold: focusing on the growing attractiveness of their low-cost secondary brands, and increasing the convergence of fixed and mobile networks by offering bundled products and converting prepaid contracts into contracts.

At the end of 2023 Swisscom had 6,202,000 mobile telephony customers in Switzerland, which is 0.5% or a total of 29,000 more than in 2022. It gained 129,000 contract customers (postpaid plans) but lost 100,000 prepaid customers. Sunrise recorded growth of 2.5% over the same period. This operator had 2,836,000 mobile customers at the end of 2023. It gained 141,000 customers in the postpaid segment, while losing 71,000 in the prepaid segment. The number of Salt customers also increased, now standing at 1,977,000 (+5%). This operator added some 120,000 postpaid subscriptions during the year, and at the same time lost 26,000 customers in the prepaid segment. The data available to us indicates that Swisscom had a market share of around 56%, with Sunrise occupying 25.5% and Salt 18%. The market share of the cable network operators (CATV) remained low at less than 1% (cf. Fig. 1).

For over ten years now, the market dynamic has been driven largely by the contract segment. Users of prepaid offers have increasingly been switching to contracts, with the proportion of contract customers rising from 61% in 2013 to almost 85% in 2023. The proportion of contract customers has continued to rise at each of the three network operators in recent months, and now stands at 87% at Sunrise, 85.1% at Swisscom and 81.1% at Salt.

Together the operators gained more than 390,000 postpaid contract customers in total in 2023. In this segment, Swisscom held some 56% of the market, Sunrise 26%, Salt 17% and CATV operators 1%.

Development of the smartphone market

There were almost 8.5 billion mobile subscriptions worldwide at the end of 2023, according to the Ericsson Mobility Report published in November 2023. This is a year-on-year increase of almost 2%.

The number of smartphone subscriptions continues to rise and, according to the report, is believed to have reached around 7 billion at the end of 2023, corresponding to over 82% of all mobile subscriptions. The Ericsson report forecasts it to increase by 2% annually in the coming years to reach 8 billion smartphone subscriptions in 2029.

1 All sources used are detailed in the source list at the end of the report.

After global smartphone sales had declined for several years and the market recovery that started in 2021 came to an abrupt end in 2022 due to geopolitical tensions and economic instability, the green shoots of a modest upswing were apparent in the second half of 2023.

The renewed growth that was hoped for with the advent of 5G now seems to be finally happening. The operators are continuing to expand their networks and are extending 5G technology coverage, which was expected to be available to 45% of the world's population by the end of 2023. The number of 5G subscriptions is also increasing. According to Ericsson estimates, by the end of 2023, 5G accounted for one fifth of all mobile subscriptions worldwide. Accordingly, more 5G smartphones are being sold. These were expected to account for 62% of all smartphones sold in 2023.

According to figures published by the International Data Corporation (IDC) at the end of January 2024, worldwide sales of smartphones in 2023 contracted by 3.2% year-on-year to 1.17 billion units, the lowest level for ten years. However, with more than 326 million smartphones sold in the fourth quarter and 8.5% growth in the second half of the year, the foundation for the recovery expected in 2024 has been laid.

According to IDC estimates at the end of 2023, the upward trend will continue in 2024 with growth of 3.8%. However, the market is reaching maturity, with the result that only single-digit growth rates can be expected in the next few years. Nonetheless, the introduction of 5G can be viewed as a positive aspect in the global market: 5G shipments are expected to increase by around 11% in 2023 and as much as 20% in 2024. The percentage of 5G smartphones in worldwide smartphone sales is expected to increase from 61% to 83% between 2023 and 2027.

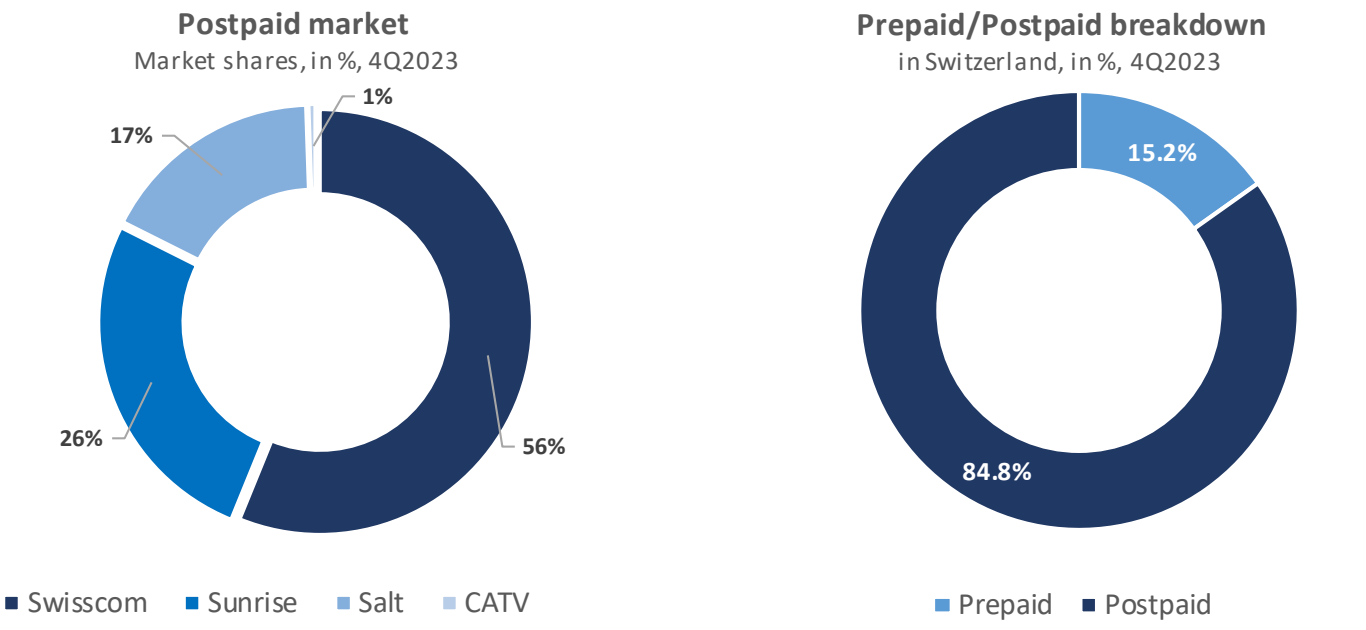
Gartner also predicts that the smartphone market will return to growth in 2024: in the last quarter of 2023, growth was finally achieved again for the first time after nine consecutive quarters of declining figures. In 2024, worldwide smartphone sales are expected to increase by 4.2% to 1.2 billion units. According to Gartner projections, 22% of future sales, i.e. 240 million units, will be generative AI (GenAI) smartphones, that is smartphones equipped with hardware and software to perform AI functions and applications.

Continued increase in smartphone recycling

In a generally tight market, reconditioned smartphones are enjoying faster growth than new units. The main driving force behind this development are the operators' trade-in offers.

Whether for financial or environmental reasons, reconditioned smartphones are proving increasingly popular among consumers worldwide. Most studies

Fig. 1: Market shares of mobile telephony providers in Switzerland, 2023



Sources: Operators

agree that the market for these devices will enjoy further growth over the coming years.

The latest IDC report from the end of January 2024 estimates global used smartphone sales at almost 310 million units in 2023, an increase of 9.5% compared to 2022. Growth is expected to continue, and sales of used smartphones will increase to 431 million units by 2027. An annual growth rate of 8.8% and a market value of approximately USD 110 billion is expected for the period from 2022 to 2027.

However, according to IDC, this market too is showing signs of a slowdown. Just like the market for new smartphones, the second-hand market is being affected by the global economic situation, inflation and lower consumer spending. Moreover, the stocks available in the second-hand market are subject to high demand pressure because new phones are no longer being replaced as quickly as they once were – in most of the developed markets, replacement is after 40 months or longer.

In Switzerland, too, more and more consumers clearly intend to use their mobile phones for longer.

Salvation could come from the younger generation, who use their smartphones for longer than adults, according to the latest JAMESfocus report, published at the end of November 2023 by the Zurich University of Applied Sciences (ZHAW) and Swisscom. According to this study, the useful life of smartphones has been extended by almost a whole year since the last survey in 2016. In 2022, young people in Switzerland replaced their smartphones every three years on average. According to ZHAW, the proportion of used phones among young people is also higher than among adults (18% compared to 7%). Technical features and price remain a priority, but young people also attach great importance to sustainability.

According to the latest Comparis smartphone study, which was published in early February 2024, more than half of consumers wanted to use their smartphones for at least four years in 2023 (51% compared to 44.3% a year earlier). In 2023, the proportion of those who had owned their smartphone for four or more years rose slightly from 11% to 13.1%.

The intention to postpone the purchase of a new phone and keep the current one for longer is primarily determined by economic factors (inflation, rising rents and health insurance premiums). As early as its 2022 report, Comparis wrote that sustainability is more of an ideal than a reality, and this was confirmed in the 2023 survey. The possibility of being able to repair a phone oneself is unimportant to 43% of respondents, and the willingness to spend a lot of money on buying a top-of-the-range phone is still increasing.

THE MARKET FOR RECYCLED SMARTPHONES IS GROWING FASTER THAN THE MARKET FOR NEW SMARTPHONES

Growth in mobile data traffic

Global data traffic over mobile networks has more than doubled every two years over the past ten years, as indicated by the Ericsson Mobility Report from November 2023.

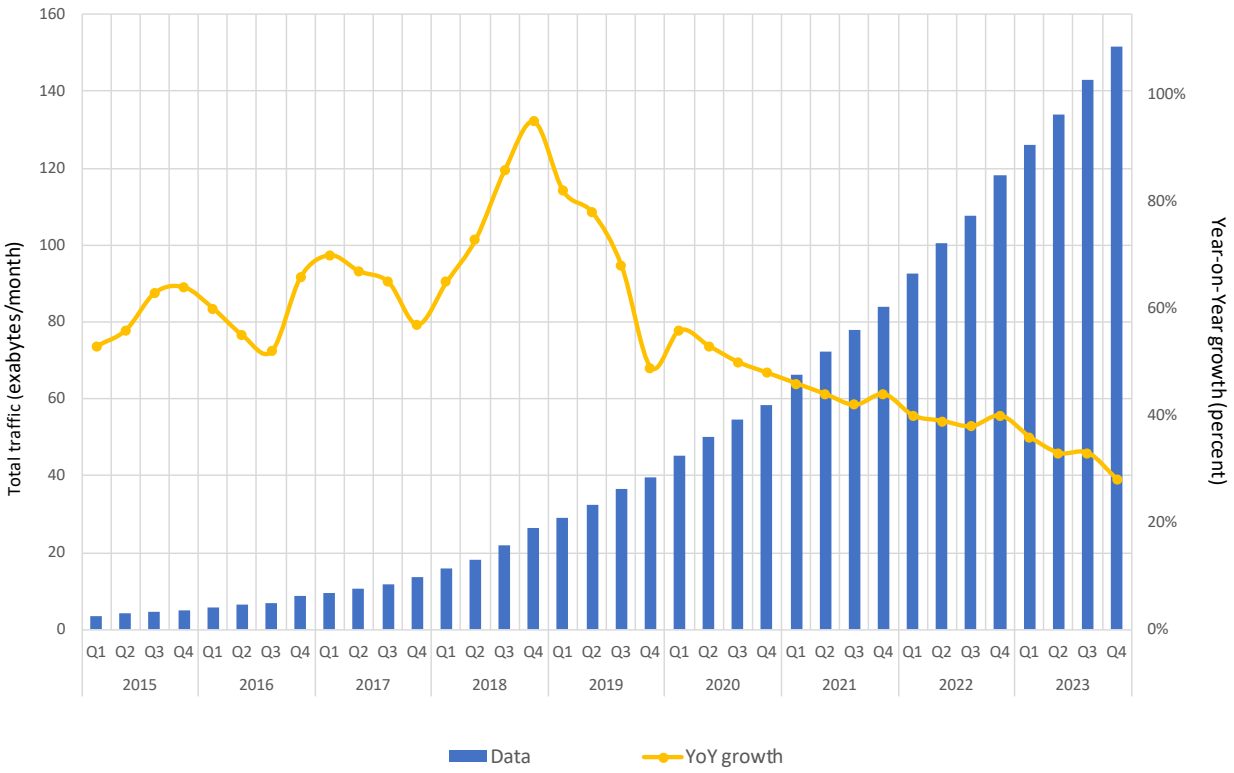
Excluding traffic generated by fixed wireless access (FWA), this figure stood at 130 exabytes (EB) per month (130 billion billion bytes) at the end of 2023. Global mobile data traffic is set to increase three-fold by 2029, reaching 403 EB per month. If traffic generated by FWA is included, total monthly data traffic reached 160 EB per month by the end of 2023 and could climb to 563 EB per month by 2029. In the fourth quarter of 2023, this volume was 151 EB, an increase of 28% over the previous quarter (cf. Fig. 2).

The report mentions that globally FWA is increasing in terms of the number of service providers, connections and traffic volumes. Around 80% of mobile operators also offer FWA products while half of them offer 5G-based FWA services. At the end of 2023, 19% of global mobile data traffic was transported over the total of 130 million FWA connections. By 2029, the volume of data carried via FWA is expected to triple with the number of connections reaching 330 million.

The reasons for the strong growth in mobile data traffic are the increasing number of smartphone mobile subscriptions and the increase in the amount of data included in the plans. This increase is mainly due to the growing consumption of video content. According to Ericsson, videos already accounted for 73% of total mobile traffic in 2023.

Average data traffic per smartphone continues to rise and is expected to grow from 21 GB to 56 GB per month between 2023 and 2029, representing compound annual growth of 18%.

Fig. 2: Mobile data traffic worldwide, 2015-2023



Source: Ericsson traffic measurements

While the bulk of mobile data traffic is still absorbed by the networks of the previous generations (3G and 4G), the share of 5G mobile data traffic is continually rising. It accounted for 25% at the end of 2023 (compared with 15% at the end of 2021) and is expected to make up as much as 76% of global mobile data traffic by 2029.

The number of 4G subscriptions reached a record level of 5.1 billion at the end of 2023 but is expected to drop to 3.2 billion by the end of 2029 as users gradually switch to 5G. According to the updated Ericsson Mobility Report at the end of February 2024, the number of 4G contracts, which still account for 61% of all mobile phone contracts worldwide, declined for the first time in the fourth quarter of 2023.

5G coverage continues to expand. At the end of 2023, over 45% of the world's population had access to 5G and by the end of 2029, it is expected to be 85%. Similarly, 5G subscriptions increased in 2023. According to Ericsson, around 610 million new 5G subscriptions were agreed in 2023, an increase of 63% compared to 2022. This brings the total number to 1.6 billion, or 18% of all subscriptions. By the end of 2029, this number is expected to increase by more than 330% to 5.3 billion, or 58% of all mobile subscriptions.

5G will become the dominant mobile technology by 2028.

Network coverage

Switzerland enjoys almost complete mobile coverage with state-of-the-art 4G and 5G technologies.

After Swisscom and Salt gradually switched off their 2G networks (GSM, GPRS and Edge) between 2019 and 2021, Sunrise also halted support from the start of January 2023.

Third generation (3G) networks are also being gradually abandoned by the operators because they have lower performance and poorer coverage and are being used less and less. This is a global trend. According to a report published in December 2023, the Global Mobile Suppliers Association (GSA) found that 177 operators in 59 countries and regions had already switched off their 2G and 3G networks by end-2023 or were in the process of implementing this step or

planned to do so; of these, 33 operators in 20 countries had already decommissioned their 3G network. In Switzerland, Swisscom announced that it would decommission the 3G network at the end of 2025, while Sunrise will no longer support the 3G standard from mid-2025.

The network capacity that this frees up can be used for the latest-generation 4G and 5G. ComCom awarded these mobile communications frequencies as technology-neutral. In other words, the licensee is free to decide which technologies to use with their frequencies.

At the end of 2023, over 99% of the population was covered by LTE (4G), which was launched in Switzerland already ten years ago now. All carriers also report high mobile coverage with LTE Advanced technology (4G+). At Swisscom, 96% are thought to have access to speeds of up to 300 Mbps, and as many as 72% enjoy maximum speeds of 600 Mbps. In 2023 Sunrise achieved almost 98% reach with its LTE-A network, offering data transfer rates of up to 900 Mbps. By contrast Salt's LTE-A network reach stood at 55%, but permitted data transfer rates of up to 1 Gbps.

The exponential growth in data traffic, with volumes doubling roughly every two years, nonetheless means that fourth-generation mobile telecommunications networks are approaching their limits.

Having acquired additional frequencies in early 2019, operators quickly began to roll out their 5G networks. By the end of 2023 Swisscom reached 99% of the population with 5G and transfer rates of up to 1 Gbps, and 81% with 5G+ and transfer rates of up to 2 Gbps. Swisscom is aiming to reach 90% coverage with 5G+ by 2025. As at December 2022 Sunrise covered over 96% with 5G and transfer rates of up to 1 Gbps. It also already supplied more than 1,132 towns and localities with 'highspeed 5G' and transfer rates of up to 2 Gbps. Salt announced in early 2023 that it could reach 99.9% of the population and could provide an internet speed of up to 750 Mbps thanks to aggregation of the 3G, 4G and 5G signals.

In relation to the speeds indicated by the operators, it is important to bear in mind that mobile networks have a cellular structure and the transfer rates are shared by the users within a cell.

Sunrise will decommission the 3G network in mid-2025 and Swisscom at the end of 2025

Network quality

The 2024 edition of the independent test published by German trade magazine Connect at the end of November 2023 compared mobile networks in Germany, Austria and Switzerland. The test results confirm the excellent standard of all Swiss mobile communications networks.

The three network operators Swisscom, Sunrise and Salt received the rating 'Outstanding' and even managed to improve their performance compared to the previous year.

Swisscom won best-in-test for the sixth time in a row and achieved the highest score that Connect has ever measured for international tests. Sunrise is practically on a par with Swisscom in the 'Voice' and '5G in Cities' categories and is just behind the best-in-test winner in the other categories. Thanks to top performances in the 'Data' and 'Voice' categories, Salt was awarded an 'Outstanding' rating for the first time.

The operators achieved the most clear-cut improvements in the 'Data' category, where Connect spoke of "perfect or almost perfect success rates" in respect of performance and network availability. Very high download speeds are available in large towns and cities; for Swisscom and Sunrise, peak data rates of over 800 Mbps were measured in the 5G network. In smaller towns, the level of performance is only slightly below that in large urban areas.

Using voice over LTE (VoLTE) technology, the three operators provide very high-quality voice telephony services in terms of availability, call set-up time and call quality, in cities and large towns as well as in small localities.

The three operators also provide a very similar level of service on Swiss roads, where their performance is almost as good as in urban areas. The test results for the provision of telephony services on trains are also among the highest. While the performance level fall slightly when transferring data, Connect writes: "Customers in other countries can only dream of the quality of mobile telephony provision on Swiss trains."

Finally, the following crowdsourcing measurements, i.e. by the users themselves, confirm the test results

and prove the high quality of Swiss mobile networks in respect of coverage, quality of telephony and download speeds.

Data transfer rates

Mobile communications users in Switzerland enjoy high and ever-faster transfer rates. This is confirmed by several reports published by Opensignal in 2023. The reports and market analyses compare the performance of mobile operators' networks based on user experience, assessing aspects such as speed, availability, and the quality of video streaming or voice in the 4G and 5G networks.

The worldwide comparative analysis of the 5G experience published by Opensignal in June 2023 shows that 5G offers significant improvements over 4G, which is already referred to in this report as "older technology". In most markets, users find that the speed of 5G is three to six times higher than that of 4G. In Switzerland, the average download speed of 189.5 Mbps in the 5G network is 3.6 times higher than that of 4G. According to the report, the peak download speed of 5G is somewhat over 500 Mbps in most markets, while in Switzerland values of 605 Mbps were calculated. With an average upload rate of 36.6 Mbps in the 5G network, here too Switzerland is among the best in class.

As noted in the Mobile Network Experience Report for Switzerland from May 2023, the three network operators have further improved their performance since the last report. With an average download speed of 72.7 Mbps, Swisscom is clearly ahead of Salt (55.3 Mbps) and Sunrise (48.5 Mbps). Users of the three network operators are enjoying a significant increase in download speeds in the 5G network compared to other technologies. It is 3.5 times higher at Sunrise, 3 times higher at Swisscom and 2.5 times higher at Salt. According to the report, Swisscom achieved an impressive value of 218.6 Mbps, Sunrise and Salt 168.6 Mbps and 137.6 Mbps respectively.

The latest Mobile Network Experience Report for Switzerland, published in November 2023 – an update on the May 2023 report, including the latest data for the 90-day period between August and October 2023 – also mentions that the operators have managed to achieve a further increase in download speed: for Swisscom, the average download speed in the 5G network is 222.8 Mbps, for Sunrise it is 171.6 Mbps and for Salt it is 150.3 Mbps.

All three operators in Switzerland offer an excellent gaming, video and voice experience and are rated as 'Outstanding'. They also achieve excellent results in terms of consistency of quality.

According to the latest Speedtest Global Index on mobile connection speeds, published by Ookla in November 2023, Switzerland lies in 26th position by international comparison with an average connection speed of 83.10 Mbps. Ranked in top position is the United Arab Emirates, where users enjoy average download speeds of over 324 Mbps, whereas the global average stands at just under 49 Mbps. In the ranking of the major cities, Zurich is in 34th place with 87 Mbps and Geneva in 37th place with 83 Mbps. Dubai occupies the top spot with speeds of 387 Mbps. The top European cities are Oslo (8th position with 184 Mbps) and Copenhagen (9th position with 165 Mbps).

Prices of mobile communications

According to the National Consumer Price Index issued by the Federal Statistical Office (FSO), which measures price trends on the basis of a basket of the principal consumer goods and services purchased by Swiss households, the global index for telecommunications services fell by 2.4% between 2022 and 2023; this was with an average inflation rate of +2.1% in 2023. The index for mobile telephone communications rose slightly last year (+2.8%) (cf. Fig. 3). Prices for combined fixed network and mobile services, which are proving ever more popular with customers, have been falling for several years. Between 2022 and 2023, the decrease was 5.9%.

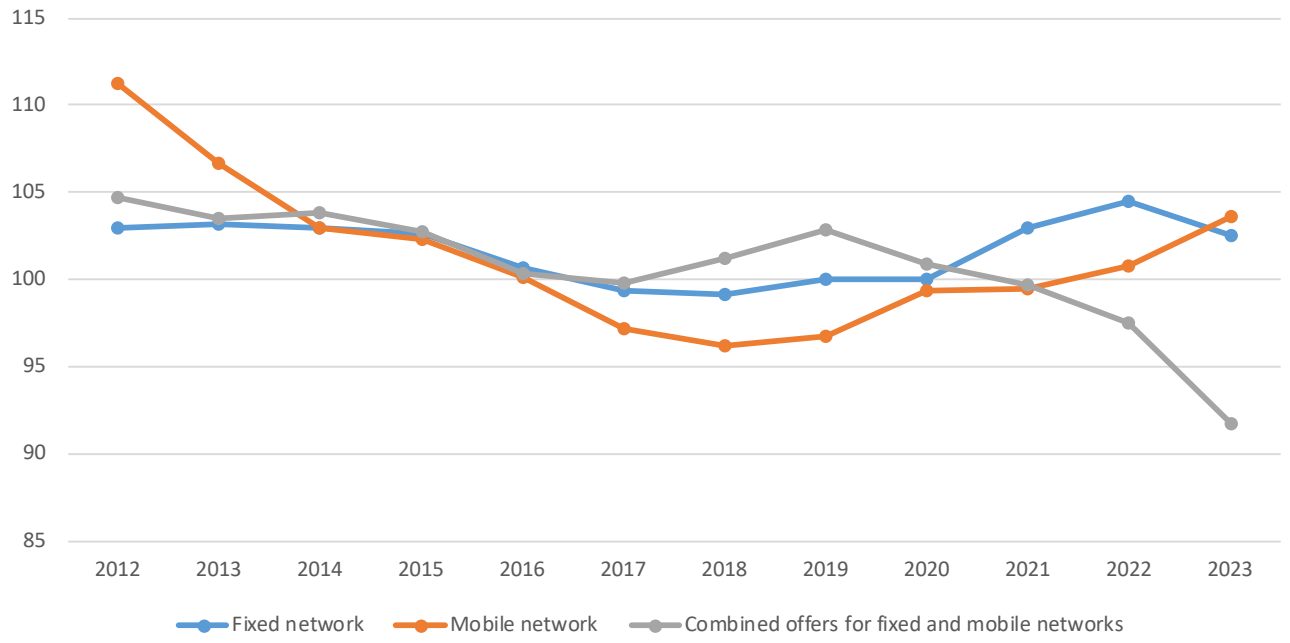
The mobile telephony prices covered by OFCOM's Statistical Observatory, which are based on the lowest rates offered by providers on the Swiss market, reveal considerable differences, however.

Regardless of the service basket under consideration, the cheapest offer can be more than two to three times less than the most expensive.

The best offer for light phone users in 2023 (30 telephone calls, 500 MB) was CHF 12 per month at M-Budget, which was about half the cost of the most expensive monthly offer, which was Swisscom at CHF 23. For medium usage consumers (100 calls and 2 GB of data), the most cost-effective M-Budget offer at CHF 14 is almost three times cheaper than the equivalent Swisscom offer for CHF 39.90. For customers with high usage requirements (unlimited calls and 20 GB data), there is a difference of more than CHF 31 between Yallo's cheapest offer of CHF 19.50 and Swisscom's offer of CHF 50.60 (2.5 times more expensive).

Mobile telephony prices in Switzerland are still among the highest internationally for the medium-usage basket. This is confirmed by the Teligen price baskets published by the market research company TechInsights, which are based on OECD methodology and take into account the most competitive products offered by the largest carriers

Fig. 3 : Consumer Price Index. Fixed and mobile networks communication



Source : Federal Statistical Office

in each country. The gap relative to the average value of the OECD countries has narrowed significantly due to the price decrease in the prepaid offers of Yallo and M-Budget during 2023. In the case of the small service basket, the situation deteriorated slightly as a result of slightly increasing prices, while in the case of large service baskets, the situation improved further due to a sharp fall in prices.

The baskets for Switzerland factor in the three network operators Salt, Sunrise and Swisscom, as well as the secondary and tertiary brands Yallo and M-Budget. These include products and service options from both the prepaid and contract segments. In August 2023, users in Switzerland paid almost CHF 1.10 more for an average basket of voice and data connections than the OECD-wide average (CHF 14 versus CHF 12.90). Measured in respect of the cheapest offer, Switzerland ranks 23rd and thus falls within the top half of the more expensive countries. Thirteen countries have even higher prices.

In respect of small usage requirements (30 calls and 500 MB of data), Switzerland ranks 28th, i.e. among the third most expensive OECD countries. In 2023, Swiss customers paid CHF 2.20 more than the OECD average.

Users in Switzerland paid almost CHF 6.60 less per month for a large service basket than the average of OECD countries (CHF 19.50 versus CHF 26.10). This places Switzerland, at 14th place in the ranking, among the mid-range of countries.

2. Development of fixed networks

2.1. Access Networks

For fixed network telephony, Switzerland has several backbone networks as well as high-quality access networks. Swisscom's access network is available nationwide.

The cable television (CATV) networks are well developed and also offer fixed network connections in

much of the country. Just over 80% of Swiss households have a CATV network connection.

Several market players have also been constructing optical fibre networks for over ten years. In addition to Swisscom and the CATV operators, these are also the public utility companies that use these networks for themselves or make them available to other providers so that they can market their own telecom services.

2.2 Fixed-line Telephony

At the beginning of 2020, Swisscom's last fixed network connections were switched to All-IP – a technology that uses Internet Protocol (IP). The replacement of traditional fixed network telephony with IP technology is a global trend. Today, practically all data, including voice communication, is transported via IP-based networks.

Given the continuing boom in mobile telephony, the downward trend in the number of fixed network telephone lines in Switzerland continues. The number and duration of calls over the fixed network have been declining for many years now. According to the figures in OFCOM's 2022 statistical data collection, the number of connections made has fallen by 74% in the last ten years, from 4 billion calls (2012) to less than 1.1 billion (2022). During the same period, the total connection time dropped by more than 64% from 14 billion minutes (2012) to 5 billion minutes (2022). After an increase of 10% in 2020 due to the COVID-19 crisis (lockdown, working from home, etc.), the total call duration renewed its decline again by 17% and 18% in 2021 and 2022, respectively.

Fixed network telephony via VoIP technology has been offered for many years by telecommunications service providers and CATV operators. More than 99% of fixed network subscribers now use a VoIP connection.

The number of customers who make calls via the fixed network using a telecommunications provider's VoIP connection (DSL, CATV, etc.) has tripled in the last ten years, reaching nearly 3 million connections at the end of 2022 (2,985,634). In line with the trend described above, between 2021 and 2022, the number of connections via VoIP has decreased by 14.2% while the total duration of VoIP connections has decreased by 17.9%.

2.3. Broadband on the fixed network

Switzerland has a very high-performance broadband infrastructure. The economy and the population benefit from competition between different infrastructure providers and services thanks to a wide range of products.

Switzerland continues to lead OECD countries in broadband Internet access

Penetration rates

Switzerland has a high number of broadband contracts for connections over the fixed network. By mid-2023, 49.1% of the Swiss population had a broadband internet connection, thereby consolidating the country's top-ranking position in an OECD-wide comparison. It remains ahead of France (46.9%), South Korea (46.2%) and Norway (46%). During the same period, the average across OECD countries was 35.6%, while that among EU countries was 37% in July 2022 (cf. Fig. 4).

In contrast, Switzerland, cannot claim to be the world leader in respect of direct fibre to the home connections (FTTH/B): According to OECD data, in mid-2023, only 13.3% of the Swiss population had a fibre-optics contract. This puts Switzerland in the middle of the ranking – slightly below the OECD average (14.6% of the population), but a long way below countries such as South Korea which has a fibre-optic penetration of 41% of the population, Sweden (33%) and Norway (32.5%).

Data transfer rates

The German trade journal Connect has examined the quality and performance of fixed networks in Switzerland for the fourth time. The latest assessment of broadband networks in Switzerland, which was published at the end of August 2023 and is based on crowdsourcing by benchmarking expert 'umlaut', indicates a very high level of performance. The CEO of umlaut states: "Swiss fixed network operators are in a league apart – four out of five achieve the very

rare 'outstanding' rating. Swisscom is ahead in the nationwide ranking, Salt in the regional. And the other candidates in Switzerland are also putting in a very convincing performance."

Connect divides the operators into two categories: nationwide, such as Swisscom and Sunrise, and regional, such as Salt, Quickline and Netplus.

The high scores and the 'outstanding' rating for the two nationwide operators confirm the extremely high overall performance level. Sunrise achieves average download rates of 225 Mbps and Swisscom 201 Mbps. Sunrise offers users a maximum speed of 494 Mbps and Swisscom 478 Mbps.

Among the regional operators, Salt and Quickline are rated as 'outstanding' and Netplus as 'very good'. Salt stands apart from the other two operators, who nevertheless offer a very high level of performance. The average download rates are: for Salt 259 Mbps, Netplus 145.5 Mbps and Quickline 131 Mbps. The corresponding maximum values are 574 Mbps, 310 Mbps and 280 Mbps, respectively.

Switzerland's performance in an international comparison is relatively good, varying according to the tool or method used. Going by data collected by Ookla in November 2023 based on user tests, Switzerland ranks 14th in the classification with data transfer rates of 195 Mbps. The average of the median transfer rates of 181 countries is 90 Mbps.

Among Switzerland's neighbouring countries, only France, in 11th place, performs somewhat better with average data transfer rates of 207 Mbps. With 90 Mbps, Germany is far behind in 52nd place, Austria in 59th place with 83 Mbps, and Italy in 71st place with 71 Mbps.

According to data published by 'Cable.co.uk' at the beginning of August 2023 from M-Lab, which measured the performance of users' internet connections in 220 countries and territories between June 2022 and June 2023, Switzerland, with average data transfer rates of just over 75 Mbps, is ranked 44th.

Prices for broadband services in Switzerland remain much higher than the OECD-wide average

In spite of the increase in the average data transfer rate by more than 19%, Switzerland has fallen by five places in the rankings in one year. With eight countries in the top ten for the fastest broadband internet, Western Europe remains clearly out in front. Jersey is the league leader with average data transfer rates of almost 264.5 Mbps, followed by Liechtenstein in second place (247 Mbps), Iceland (ranked 4 with 229 Mbps) and Gibraltar (ranked 5 with 206 Mbps). Only two non-European countries, Macao (ranked 3 with 231 Mbps) and Taiwan (ranked 8 with 153.5 Mbps), make it into the list of the ten fastest countries in the world.

Moreover, all Western European countries belong to the top half of the ranking and together achieve the highest average data transfer rate (119 Mbps) at regional level; the average speed worldwide is just less than 46 Mbps.

It is worth noting that the major providers in Switzerland have since September 2021 provided customers with a standardised instrument for measuring the quality of their own internet access. This is available at www.networktest.ch and in the app shops for mobile devices.

Pricing

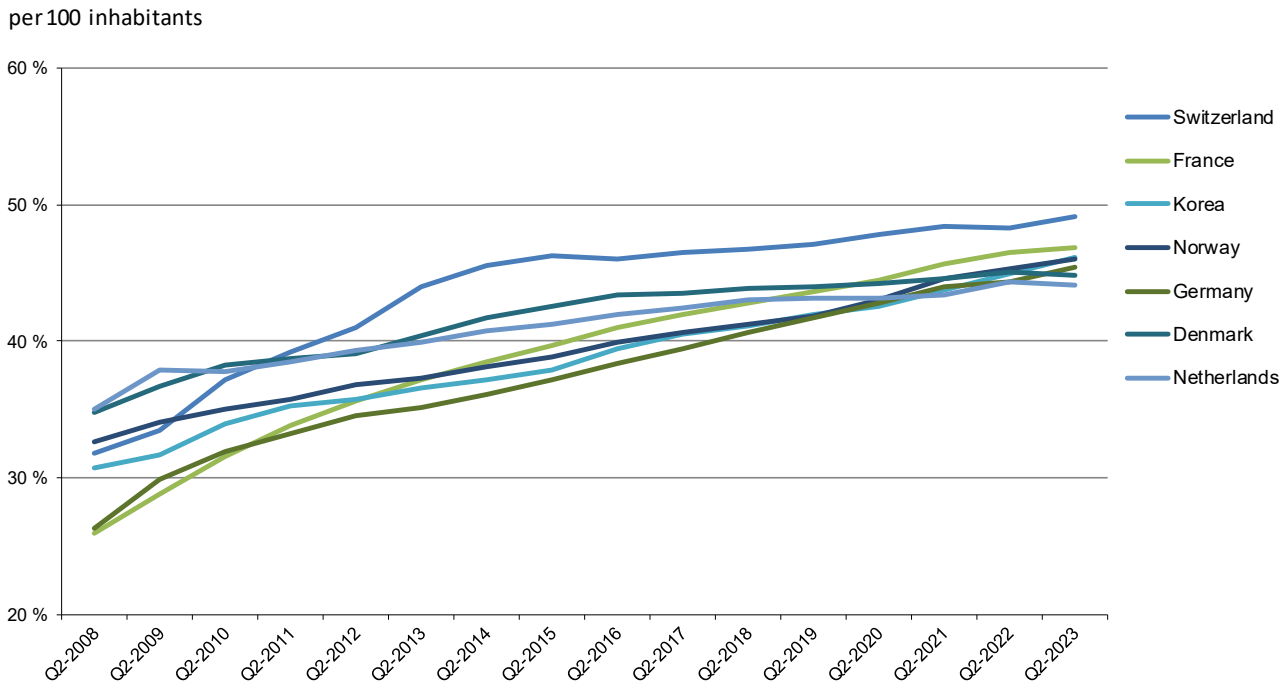
According to the National Consumer Price Index issued by the Federal Statistical Office (FSO), prices for fixed network communication services fell by 1.9% between 2022 and 2023.

In contrast, the prices of broadband services offered by the main service providers tended to increase – often with significant price differences between the highest and lowest service offerings. This is confirmed by tracking the communications prices that are covered by OFCOM's Statistical Observatory. These are based on the lowest rates offered by providers on the Swiss market.

For small and medium-sized service baskets, the cheapest offers come from Quickline (CHF 50.40 per month), while Swisscom's corresponding offers are almost 27% more expensive at CHF 64.10 in both cases. Salt offers the cheapest product for a large service basket at around CHF 52.70 per month, while the most expensive offer here is also from Swisscom, which costs 45% more at CHF 76.60.

OFCOM has since 2020 published the survey of prices of product bundles on fixed and mobile networks on its Statistical Observatory website. These products meet the needs of a growing number of consumers who want to purchase all telecommunications services from

Fig. 4: Broadband penetration in OECD countries, 2008-2023



Source: Broadband Portal - OECD

the same provider. Further information can be found on the OFCOM website.

Prices for broadband services in Switzerland remain much higher than the OECD-wide average, however. According to the Teligen price baskets published by TechInsights, which for Switzerland take into account only Swisscom, Sunrise, Salt and Quickline, the lowest-cost product for medium usage offers a transfer rate of at least 100 Mbps and 120 GB for around CHF 50.40 per month.

In September 2023, such a medium-usage basket cost almost CHF 21 per month more than the OECD-wide average (CHF 29.70). A small basket with 60 GB and a transfer rate of at least 25 Mbps cost Swiss consumers over CHF 23 more (CHF 50.40 vs. CHF 27.20). In respect of these two service baskets, Switzerland is one of the five most expensive countries.

Prices dropped the most for the basket with a data volume of 300 GB and a transfer rate of at least 1 Gbps: Although Switzerland is approaching the average cost for OECD countries, it is still ranked 24th; prices are higher in only ten countries. With an average price of CHF 52.70 for a large service basket, Swiss customers still paid CHF 7.60 more in 2023 than the OECD-wide average (CHF 45.10).

Structure of the broadband market

However, looking at broadband providers as a whole (CATV, DSL and FTTx), Swisscom remains far ahead of its closest competitors, with a market share of around 46.5%.

The market share of Sunrise was around 27.5%, that of the CATV operators around 13.5% (including Quickline at 4%), while the market share of other telecom operators was 7.5% and of Salt 5%.

The number of domestic fibre-optic contracts (FTTH/B) in Switzerland is gradually increasing, with the broadband market almost saturated at around 4.25 million connections. Growth of the fibre-optic segment is primarily the result of DSL and CATV subscribers migrating to fibre optic technology. At the end of 2023, the estimated number of fibre-optic connections amounted to around 27% of total broadband connections in Switzerland, or around 1.2 million.

In international comparison, the growth in fibre-optic contracts in Switzerland (+4.8% between June 2022 and June 2023) is below the corresponding OECD average (+16.8%) and well below that of its neighbours. Austria recorded growth of 75.1%, Italy 28.4%, Germany 27.8% and France 21.5%.

In an international comparison, Switzerland still lags behind in its use of fibre-optic connections, at 27%: In the OECD countries, fibre-optic penetration in broadband was over 41% in mid-2023. Although Switzerland is better positioned than most neighbouring countries, such as Italy (21.7%), Austria (10.4%) or Germany (10.1%), only France has a relatively high share of fibre-optic contracts (61.7%), making it one of the 15 OECD countries whose share exceeds 50% (cf. Fig. 5).

For OECD countries, it should be noted that fibre-optic connections (41.1% in mid-2023) have outperformed cable TV connections since 2022 (30.5%) and that fibre optics has become the most important technology for fixed broadband connections. Copper-based DSL technology, which is steadily losing importance, accounted for just 21.9% of broadband contracts in mid-2023. In Switzerland, too, the proportion of fibre-optic connections (27%) is greater than that of CATV (26%), but DSL still accounts for almost half of contracts (45.6%) and it remains the dominant technology.

THE NUMBER OF OPTICAL FIBRE CONNECTIONS REPRESENTED 27% OF ALL BROADBAND CONNECTIONS IN SWITZERLAND

Expansion of ultra-high-speed broadband networks

In contrast to its superior ranking in the provision of broadband services via hybrid fixed networks, Switzerland is still not a world leader when it comes to fibre to the home (FTTH).

Also in the years following the COVID-19 pandemic, in which the importance of a good telecom infrastructure became even more obvious, there is strong investment in improved access in Europe via FTTH; this applies in particular to large countries such as France, Germany and the UK. Overall, fibre-optic connections to households in European countries (EU27 + UK) increased by an impressive 6.8% between 2021 and 2022, and around 55.3% of households in the EU have an FTTH connection.

In most EU countries, there is a state-supported ultra-wideband strategy, so continued growth in the provision of fibre-optic infrastructure is set to continue. The EU itself has set itself the target of 2030 – the end of the 'digital decade' – as the date by which all households in Europe should have gigabit connectivity. In February 2023, the European Commission proposed the adoption of a Gigabit Infrastructure Act, which is intended to promote achievement of the target by reducing the development costs (e.g. through joint use of existing cable ducts).

For the last 15 years, various players in Switzerland have also been investing considerable sums of money in rolling out the use of fibre optics in the access network. Since 2008, over CHF 1 billion a year on average has been invested in the renewal of the fixed network infrastructure (cf. OFCOM's telecommunications statistics). Exact figures on the FTTH rollout are not yet available. In its 2023 Annual Report, Swisscom, for example, states that it invested CHF 466 million in fibre-optic rollout in 2023, which is slightly less than in the previous year (CHF 475 million).

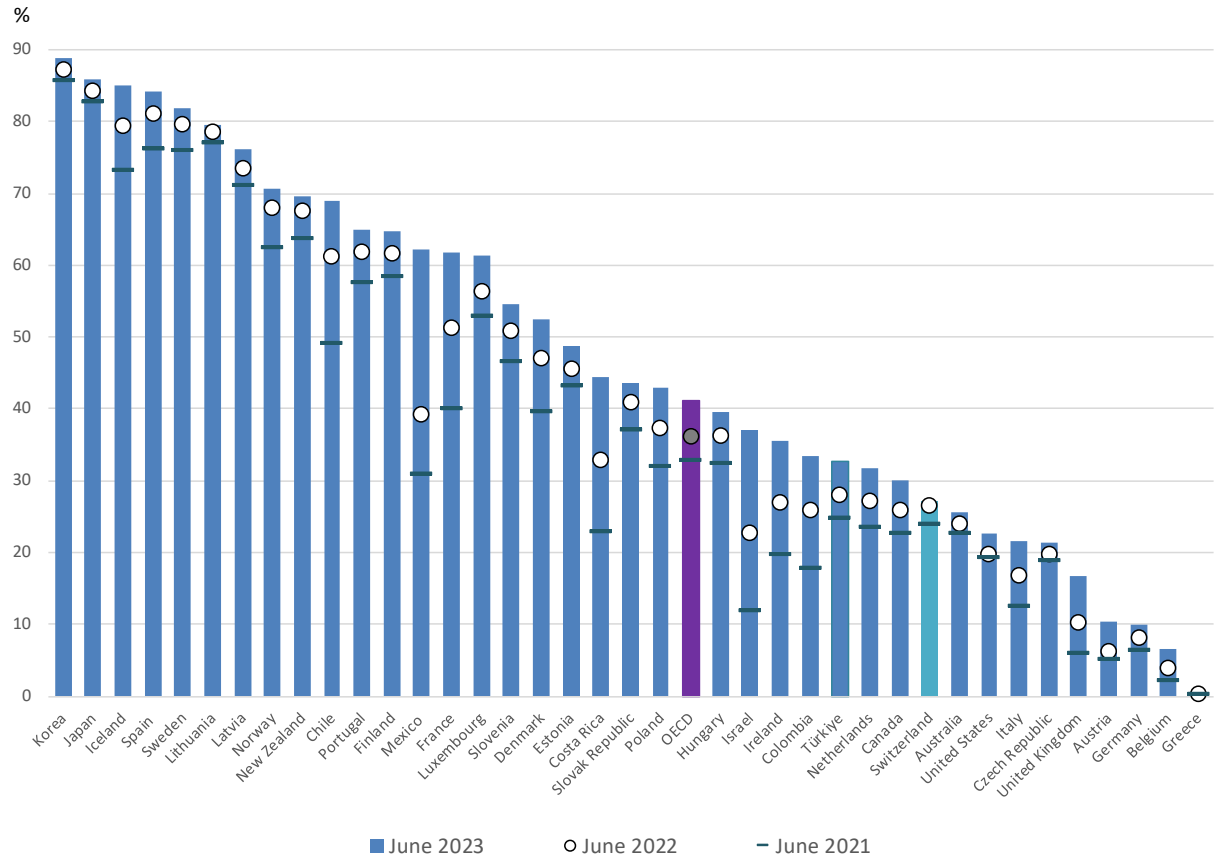
The infrastructure competition has also played an important role in fibre-optic expansion over the last 15 years, as cable TV network operators have also invested in the modernisation of their connections (DOCSIS 3.1). According to the Suissedigital association, very fast data transfer at up to 1 Gbps can be offered over around 90% of CATV connections. These hybrid fibre coax (HFC) networks thus achieve speeds that are only otherwise achieved using fibre optics in telecom networks.

Ultimately, all fixed network connections will become fibre optic, as has already been the case for many years in the backbone networks.

For more than 15 years, fibre-optic lines have been routed to homes in numerous cities and regions, by local energy supply companies (distribution network operators, DNOs) – often in cooperation with Swisscom (FTTH). In cooperative ventures, the partners build a local FTTH network together and then each has its own Point-to-Point (P2P) optical fibre into every household. Major players in the industry agreed on this 'multifibre model' at the FTTH roundtable organised by ComCom in 2008 and 2012 (cf. ComCom's 2021 Activity Report).

Some of the cooperative ventures started in 2008 have now been completed (e.g. Basel, Bellinzona, St Gallen, Yverdon or Zurich); others should be in their final phases. The connections in the larger cities as well as many smaller towns and communes were completed based on such cooperative ventures.

Fig. 5: Percentage of fibre connections in total fixed broadband, 2021-2023



Source: Broadband Portal - OECD

Insofar as is publicly known, there have been only a few new collaborations between Swisscom and a local DNO in recent years (such as in Kriens, Glarus or Steinhausen). At other locations, local DNOs create a fibre-optic network independently and then a cooperation with Swisscom and other providers of retail offers is agreed (e.g. in Lenzburg).

There are other market participants in Switzerland who are stimulating competition in the fibre-optic sector:

Swiss4net independently invests in local fibre-optic networks. It plans, builds and finances FTTH networks in P2P architectures in locations where it can share use of the necessary piping systems of the commune or the DNO over the long term (cf. www.swiss4net.ch). Swiss-4net now has at least eight local fibre-optic networks in all parts of the country. Various telecom providers deliver their services via the networks operated by Swiss4net.

In contrast, Swiss Fibre Net AG (SFN), is an association of energy suppliers who cooperate in marketing their local fibre-optic networks. It consists of five shareholders – the utility providers of the cities of Bern, Lucerne and St Gallen plus the network carriers Danet (Upper Valais) and Didico (Meilen-Herrliberg). The association now includes 55 network partners.

SFN offers service providers from all over Switzerland that do not have their own access networks (e.g. Init7, iWay.ch, GGA Maur, Salt, Sunrise and VTX) the opportunity to use a shared platform to source standardised FTTH products for resale. It also offers mobile operators fibre-optic connections for mobile communications antennas.

In many places, Swisscom is investing in the modernisation of its fixed network even without a collaborating partner. For a long time, it had primarily relied on a technology mix of copper cable and fibre (FTTC or FTTS), opting not to replace the old copper cable for the last few metres to the socket in the home. Copper-based complementary technologies, such as 'G.fast', enabled Swisscom to still provide relatively high bandwidths on this kind of hybrid access line (up to 500 Mbps).

Since about 2020, Swisscom has increasingly been routing fibre directly into households. It has done so using Point-to-Multipoint (P2MP) network architecture. In December 2020, however, the Swiss Competition Commission (COMCO) opened an investigation into whether this network architecture favoured by Swisscom was permissible under antitrust law. Through precautionary measures, COMCO has prohibited Swisscom "from denying competitors access to continuous lines when expanding the fibre-optic network" (COMCO press release dated 17.12.2020).

Due to the COMCO case, the connections already built using P2MP architecture could no longer be marketed. Just under two years after the start of the COMCO investigation, Swisscom announced its intention in October 2022 “to predominantly create new connections on the point-to-point architecture (P2P) and to convert some of the existing P2MP connections to P2P”. COMCO’s ruling on these cases is expected in 2024.

By the end of 2023, Swisscom had connected 46% of homes in Switzerland using fibre and was planning to increase coverage to around 57% by the end of 2025. Likewise according to its 2023 Annual Report, Swisscom plans to provide 75 to 80% of households and businesses with FTTH connections by 2030.

In conjunction with this project, Swisscom is planning to gradually close down the old copper-wire telephone network in the coming years. In the long term, the copper network is to be completely decommissioned (cf. Swisscom Annual Report 2023, p. 21).

High-speed broadband throughout Switzerland

This expansion target of Swisscom (75–80% of households by 2030) indicates that ultimately a certain percentage of households cannot be connected in an economically viable manner. If fibre or gigabit bandwidths are to be available everywhere, then political will is needed to support the roll-out of financially unviable connections.

To date, FTTH expansion has largely been market-driven and without financial support from the federal government. There are no politically defined provision targets and no financial support models in Switzerland. This is unlike EU countries, which have been promoting broadband development for some time under national strategies.

The market-driven development of optical fibre provision has led to impressive results in many areas, especially central and commercially attractive ones. But it is also becoming increasingly clear that there are many peripheral areas that are unlikely ever to be profitably developed by private companies using fibre optics.

In April 2021, the Commission for Transport and Telecommunications (KVF-N) adopted a postulate calling for the development of a high-bandwidth strategy of the federal government (Po. 21.3461 of 27 April 2021). The fact that this concern has been widely accepted by the National Council shows that politicians have recognised the need to promote fibre-optic expansion in peripheral areas.

By the end of 2024, the Federal Council will present a consultation proposal on the gigabit strategy

In June 2023, the Federal Council presented a report with proposals for a Swiss high-bandwidth strategy and subsequently announced its 'gigabit strategy' in December 2023. This aims to achieve nationwide coverage of at least 1 Gbps. From the point of view of ComCom, this is also an important target so that both businesses and the general public throughout Switzerland can benefit from digitalisation.

In December 2023, the Federal Council presented a rough outline for now of what this gigabit strategy should look like: companies will be encouraged to invest in unprofitable regions by a temporary subsidy programme in which the federal government finances the ‘profitability gap’. This funding support for network expansion is to be financed primarily with the income from the next two mobile frequency awards by ComCom. Nevertheless, ComCom decides independently about the organisation of the frequency award procedures. As the amount of these revenues cannot be precisely predicted, the Federal Council also envisages the participation of the telecoms industry and the cantons in the funding programme. By the end of 2024, the Federal Council wants to present a consultation proposal on the gigabit strategy.

2.4. Digital television in Switzerland

The digital television market is part of a rapidly changing media landscape.

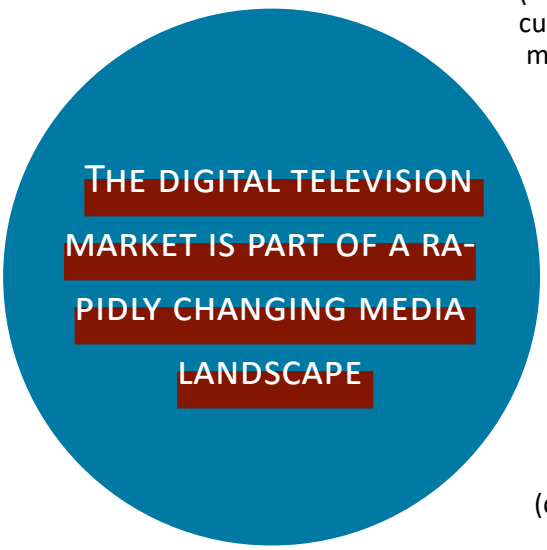
The telecommunications providers active in the digital TV market are facing growing competition because there are more and more players with combined broadband/phone/TV bundle offers and also more and more offers from streaming platforms. In addition to the most popular American giants Netflix, Disney+ and YouTube, since the end of 2022 Paramount+ (initially in partnership with Canal+) and since September 2023 with Swisscom has gained a foothold in the Swiss market. In 2023, TV streaming provider Zattoo and internet provider Init7 joined forces to launch Zattoo Home at the end of August. IPTV provider Teleboy also offers internet access in partnership with Swisscom.

According to the IGEM-Digimonitor study on media use in Switzerland, which was published at the end of August 2023, the market leaders in video streaming have all lost market share. YouTube (-370,000 viewers), however, is believed to still have 4.3 million users in Switzerland, i.e. 64% of the population, and Netflix (-300,000) 2.9 million (43% of the population).

Among the Swiss streaming providers, SRF/RTS/RSI websites and apps have a clear lead with 2.8 million viewers (42% of the population), followed by the SRG SSR streaming portal Play Suisse with 1.3 million viewers (19%). According to the study, Swisscom's Blue TV app has 1.2 million users (18.4%), and among the other internet TV providers, Zattoo has 680,000 users (10%) and the Sunrise TV app 620,000 users (9.2%).

In spite of the competition from these digital offerings, linear TV is still popular in Switzerland and is still watched by a large proportion of the population, namely 6.3 million people (93% of the population).

With 6.1 million users (90% of the population), the television remains the most important electronic device by a narrow margin, closely followed by the smartphone (6.0 million users, 88% of the population).



Consumption habits began to change dramatically during the COVID-19 crisis and are becoming increasingly diverse and changeable due to the influence of changing trends and economic factors (inflation, rising contract prices, etc.).

Against this particular background, the telecommunications providers have recorded a decline of around 1% per year in their TV customers over the past five years. Between 2022 and 2023, this decline was 32,000 customers (-0.8%).

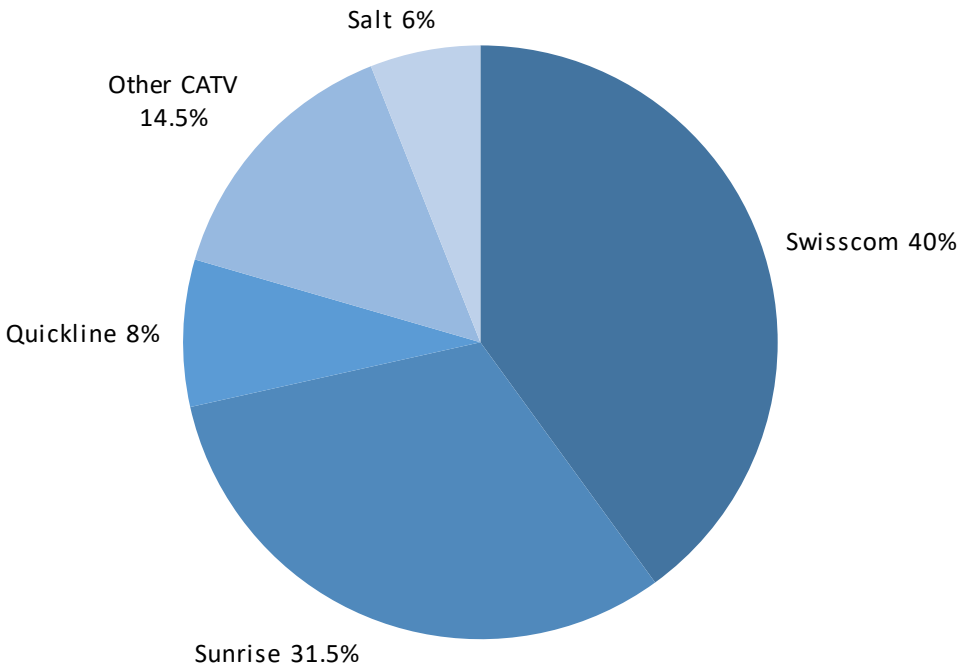
In addition, the Sunrise/UPC merger in 2021 significantly changed the balance of forces between the main players in this market segment although it has yet to have a significant impact on the market structure.

Swisscom has maintained its leading position, which it took from UPC in 2015, in spite of the difficult economic situation. Despite the loss of 34,000 customers in 2023 (-2.2%), Swisscom had 1.54 million digital TV subscribers; by the end of 2023, its market share had fallen slightly to 40%.

Over the same period Sunrise (incl. UPC) also lost around 17,000 customers (-1.4%), but was able to maintain its market share of 31.5%.

At Quickline, the association of a number of CATV operators, the number of TV customers decreased slightly (-2,600 or -0.9%). With almost 300,000 customers at the end of 2023, Quickline's market share remained consistent at around 8%. The market share of the other CATV operators reached about 14.5% and that of Salt 6% (cf. Fig. 6).

Fig. 6: Market shares of digital TV in Switzerland in 2023



Sources: Operators, SUISSEDIGITAL
excluding satellite/terrestrial

II. Commission and secretariat

1. Commission

ComCom is an independent, extra-parliamentary commission tasked with licensing and market regulation in the telecommunications sector.

Under the Swiss Telecommunications Act (TCA), ComCom's main tasks are:

- Granting licences for the use of radiocommunications frequencies (Art. 22a TCA)
- Awarding the universal service licence (Art. 14 TCA)
- Determining access prices and conditions when service providers fail to agree among themselves (Art. 11a TCA)
- Determining conditions of access to the building entry point and the joint use of installations within buildings in the event of disputes between telecommunications service providers (Art. 35b TCA)
- Imposing measures and sanctions in the event of violations of applicable law in connection with a licence granted by ComCom (Art. 58 TCA).

The Commission consists of seven independent experts appointed by the Federal Council.

In 2023 it was composed of the following members:

- **Adrienne Corboud Fumagalli**, President, Doctor of Economics and Social Sciences, independent non-executive director of several companies
- **Christian Martin**, Vice President, Electrical Engineer (School of Engineering), Managing Director and Owner of Martin Engineering AG
- **Matthias Grossglauser**, Doctor of Information Technology, Professor at the Swiss Federal Institute of Technology Lausanne (EPFL)
- **Patrick Krauskopf**, Doctor of Law and Lawyer, Professor and Head of the Center for Competition Law and Compliance at Zurich University of Applied Sciences (ZHAW)
- **Jean Christophe Schwaab**, Doctor of Law, Member of the Communal Council of Bourg-en-Lavaux
- **Stephanie Teufel**, PhD in Computer Science, independent scientific advisor, Professor emeritus of Information and Communication Technology Management at the Faculty of Economics and Social Sciences at the University of Fribourg, Lecturer at the International Institute of Management in Technology (iimt)
- **Flavia Verzasconi**, Lawyer and Notary, President of the Administrative Court of the Canton of Ticino

After reaching the maximum term of twelve years, three of which were as Commission President, Adrienne Corboud Fumagalli resigned at the end of 2023. ComCom would like to take this opportunity to thank her warmly for her impressive commitment and her important contributions to the Commission's business.

At its meeting on 22 November 2023, the Federal Council appointed Christian Martin as President of ComCom effective 1 January 2024 and thus as successor to Adrienne Corboud Fumagalli. Mr Martin has been a member of the Commission since 2018 and Vice-President since 2021. In addition, the Federal Council appointed Stephanie Teufel, member of the Commission since 2017, as Vice-President of ComCom.

On 22 November 2023, the Federal Council also held the general renewal elections of the non-parliamentary bodies for the period 2024–2027. All members of ComCom were re-elected. At the same time, the Federal Council appointed Christine Benesch, PhD in Economics (Media Economics), as a new member of the Commission effective 1 January 2024.

The list of members of the non-parliamentary bodies for the 2024–2027 term of office is available under: https://www.admin.ch/gov/de/start/dokumentation/ausserparlamentarische-kommissionen/gesamterneuerungen.html (for ComCom see p. 210, only available in French).

The Commission generally meets once a month. Members also spend some time preparing for meetings and making statements distributed by circular letter.

In September 2023, ComCom travelled to Dijon in France, not far from the border with Switzerland, on a two-day study trip to discover more about expansion of the fibre-optic network. Thanks to the 'Plan France Très Haut Débit' (PFTHD) launched more than ten years ago, France has become one of the leading European countries in this field. The members of the Commission had the opportunity to speak with representatives of the French department Côte-d'Or, which implements the PFTHD and is responsible for developing the fibre-optic network in areas not developed by private companies. The Commission also met a specialist from ARCEP (French regulator for electronic communications and postal services), which plays a key role in the implementation and management of the high-bandwidth strategy, and representatives from Altitude Infra, one of the largest fibre-optic infrastructure operators in France (see also Section III.3).

2. Secretariat

The Commission is assisted by its own Secretariat, which is responsible for management and public relations. The Secretariat coordinates the Commission's activities with OFCOM, which prepares ComCom business and generally implements its decisions.

The Secretariat consists of a Commission secretary (90%), a scientific collaborator and webmaster (80%), and an administrative assistant (70%).

The **Members of the Secretariat** will be happy to provide you with any information you might require:

- Peter Baer, Secretary of the Commission

- Pierre Zinck, Scientific Collaborator and Webmaster

- Jacqueline Fischer Pulfer, Administrative Assistant

The 2024 Commission (from left to right): Flavia Verzasconi, Stephanie Teufel (Vice-President), Matthias Grossglauser, Christian Martin (President), Patrick Krauskopf, Christine Benesch and Jean Christophe Schwaab (*Photo: Sandra Stampfli)*

III. Activities of the Commission

The following sections provide an overview of ComCom's activities in 2023.

1. Access cases

In order to promote competition in the telecoms market, the Telecommunications Act (TCA) requires dominant companies (e.g. ex-monopolist Swisscom) to give other operators access to their existing infrastructure or services in four areas. Where this is the case, access must be offered in a non-discriminatory manner and at cost-oriented prices.

The areas in which a dominant provider must grant access to infrastructure are listed in full in Article 11 paragraph 1 TCA. Since the last revision of the Act, the following four forms of access have been referred to:

1. Full local loop unbundling (only applies to copper lines),
2. Interconnection
3. Leased lines
4. Access to cable ducts, provided these have sufficient capacity.

During the last TCA revision in 2019, Parliament dismissed the forms of access 'fast bitstream access' and 'charging for the fixed network connection' from the access regulations.

Furthermore, in that last revision of the TCA, lawmakers refrained from introducing technology-neutral network access regulation. However, the new Article 3a TCA requires the Federal Council to present an evaluation report on the development of the telecoms market every three years and submit proposals to promote effective competition where necessary. In March 2024, the Federal Council submitted the first such report to Parliament.

In Switzerland, local loop connections based on fibre optics or coaxial cables are not subject to regulation, neither in terms of network construction and architecture nor in terms of wholesale prices.

Another feature of Swiss telecommunications legislation is the primacy of negotiation. This means that alternative providers must first negotiate the conditions of infrastructure access with the dominant provider. Only if these negotiations do not result in an agreement can a request be made to ComCom to determine conditions and prices. This approach is called ex post regulation.

Pending access cases

The following is a brief description of the four access cases in which ComCom was involved in 2023.

1.1. Interconnection and other forms of access pursuant to Art. 11 TCA

In February 2019, ComCom had decided in partial rulings on disputed access prices in the following cases:

a. Sunrise vs. Swisscom concerning prices for interconnection, unbundling, leased lines and cable ducts for the years 2013–2016,
b. Salt vs. Swisscom concerning the prices for interconnections and leased lines for the years 2014–2016.

In two judgements of 16 July 2021 on the appeals of the parties, the Federal Administrative Court confirmed the approach taken by ComCom on many points, but it also referred a number of points of contention back to ComCom for reassessment (A-1286/2019 and A-1496/2019; cf. www.bvger.ch).

The points raised by the court were addressed in the instruction by OFCOM. The majority of them were concerned with further examination of certain aspects relevant to price calculations or with giving more detailed reasons for individual decisions.

In April 2023, ComCom once again ruled on the disputed access prices for the years 2013 to 2016. Since one party had again challenged these decisions, an exchange of documents relating to the appeal took place before the Federal Administrative Court in the summer of 2023.

The price calculations from 2017 onwards will resume once a final decision has been taken and thus a stable basis for the price calculations has been obtained.

1.2. Interconnect Peering

In the access case of the company Init7 against Swisscom regarding free peering, ComCom rejected the application of Init7 in July 2018. ComCom had assumed that peering was subject to functioning competition. From the point of view of ComCom, substitutes for IP connection with Swisscom were provided at all times and certain disciplinary effects were present (for more detailed information, cf. ComCom 2018 Activity Report).

Init7's appeal against this decision was upheld by the Federal Administrative Court on key points and referred back for a new decision to ComCom (judgement of the Federal Administrative Court of 22 April 2020, A-5235/2018). With regard to the period from 2013 to January 2016, the court judged Swisscom to be a dominant undertaking in the sense of Article 4 paragraph 2 Cartel Act. It determined that cost-oriented prices should therefore be set for the peering requested by the appellant during this period. The question of market dominance was to be clarified for the time thereafter.

As part of the OFCOM instruction, the Competition Commission (COMCO) was invited to draw up an expert opinion on the question of market dominance for the years from 2016 onwards. In its opinion of 25 October 2021, COMCO concluded that Swisscom's market dominance had to be affirmed under certain conditions (cf. COMCO's Law and Policy on Competition (LPC) publication series, 2022-2, p. 545).

OFCOM has continued with the instruction from the case and, for the first time, has pushed ahead with the complex clarification of access conditions for peering. The decision on the main issue is planned for summer 2024.

1.3. Access to the building entry point and installations within buildings

During the last revision of the Telecommunications Act, a new Article 35b was inserted into the TCA by the lawmakers.

This specifies: "Every telecommunications service provider shall have a right of access to the building entry point and of joint use of the installations within the building intended for telecommunications transmission provided this is technically justifiable and there is no other good cause for refusal" (Art. 35b para. 1 TCA). This provision has been in force since 1 January 2021.

In February 2023, a telecommunications service provider made a request for access to the building entry point and to the installations in the building built by a fibre-optic network operator. The latter considered that it was not subject to the provision of Art. 35b TCA because it is not a telecommunications services provider.

In the course of OFCOM's instruction, it became apparent that it is appropriate, for reasons of process economics, to first clarify the fundamental question of whether a liability to offer a service exists before any complex price calculation is carried out.

ComCom decided in a partial ruling in December 2023 that the applicant was liable to offer and had to grant access to the building entry point and to the installations in the building. This order has been challenged and the case is now pending before the Federal Administrative Court.

2. Licenses

Pursuant to the Telecommunications Act, ComCom grants radio communications licences for the provision of telecommunications services (Art. 22a TCA) and the universal service licence (Art. 14 TCA).

ComCom has permanently delegated to OFCOM the granting of those radio communications licences which are not in short supply, and which are therefore not the subject of a public tender procedure. These include licences for amateur radio operators or private companies' radio networks. Information concerning licences awarded by OFCOM can be found on the www.bakom.admin.ch website.

The following overview deals only with licences awarded by ComCom itself.

2.1. Universal service

The universal service comprises a basic range of telecoms services of a good standard which must be offered throughout the country at an affordable price to all sections of the population. These services are designed to allow all sections of the population to participate in social and economic life. The universal service also includes special services that ensure that people with disabilities have various communications options.

The provisions that are part of the universal service are periodically adjusted by the Federal Council

to meet social and economic needs as well as the state of the art. The services included in the universal service and the price ceilings were last respecified by the Federal Council in the Ordinance on Telecommunications Services at the end of 2022 (cf. Arts 15 and 22 OTS).

Since the beginning of 2024, the universal service licensee has had to offer the following telecom services throughout Switzerland (Art. 15 OTS):

- Services for people with disabilities:
  - For the hearing impaired, a round-the-clock transcription service, which also covers emergency calls, and a text relay service. Moreover, since 2018, there has been a daytime relay service for sign language users via video telephony.
  - For the visually impaired and people with reduced mobility, there is a round-the-clock directory enquiries and operator service which ensures access to the directory data of customers of all providers at all times, using the 1145 number.
- A telephone line with a telephone number (at the price of CHF 23.45 per month excl. VAT).
- A directory entry (each household can request a second entry free of charge).
- An internet connection in two variants:
  a) with 10 Mbps download and 1 Mbps upload speed (for CHF 45 per month excl. VAT),
  b) with 80 Mbps download and 8 Mbps upload speed (for CHF 60 per month excl. VAT).

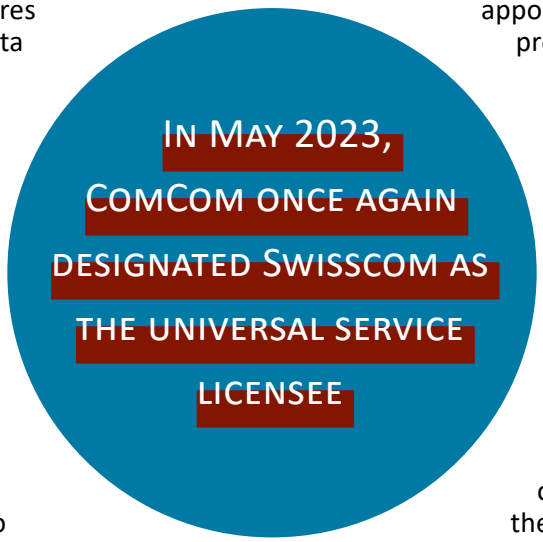
The new option for broadband internet access at 80 Mbps is unique in Europe. This is implemented on a technology-neutral basis, meaning that the universal service licensee can connect customers using either a physical line or, if necessary, mobile or satellite-based solutions. In addition, the licensee can claim a contribution towards costs exceeding CHF 12,700 in the case of particularly expensive infrastructure.

A subsidiarity principle also applies to the universal service: if the market already provides an equivalent alternative at a particular location, the universal service obligation is considered to be fulfilled in that location and the licensee does not have to provide a universal service offering. This protects investments already made and prevents duplication of coverage at unprofitable locations.

Awarding of the universal service licence

The universal service licence is granted by ComCom. It is awarded either by means of a call for tender and a competition based on criteria, if there are several interested parties, or by direct award to the licensee (Art. 12 OTS).

In May 2023, ComCom once again designated Swisscom as the universal service licensee. The licence was awarded without a call for tender as no other parties had registered their interest in providing the universal service. In such a case, the law (Art. 14 para. 4 TCA) provides that ComCom may appoint a telecommunications service provider to guarantee the universal service. The new universal service licence was granted for eight years from 1 January 2024 and will expire on 31 December 2031.



The Federal Council also sets quality criteria for services under the universal licence (Art. 21 OTS) that the licensee must meet. As the market supervisory authority, OFCOM verifies annually (on the basis of reports from Swisscom) that the licensee is providing the universal service to the required standard. Swisscom has to date always fulfilled these quality criteria.

Since 1 January 2024, Swisscom now also offers these new services to its customers on its website: https://www.swisscom.ch/en/residential/landline-subscription/basic-service-provision.html.

In principle, the licensee is entitled to financial compensation for the uncovered costs of the universal service. The TCA provides for the establishment of a fund for this purpose. However, as Swisscom has not claimed any uncovered costs so far, this fund has not yet been activated.

2.2. Mobile radiocommunications licenses

In 2012, all the mobile frequencies available at the time were re-awarded in an auction for CHF 996 million. Seven years later, newly available frequencies in the 700 MHz, 1400 MHz and 3500–3800 MHz bands were auctioned for mobile radio communications use for CHF 380 million (see the 2012 and 2019 activity reports for more information on these auctions).

ComCom awarded these frequencies on a technology-neutral basis. This means that operators can decide for themselves which internationally recognised technologies they want to use.

Today, all three mobile operators have a wide range of equipment with different frequencies that are necessary to operate an almost nationwide mobile network with different technologies and fast data transfer.

ComCom also notes that the three licensees continue to fulfil the supply obligations set out in the licences.

Preparations for the reallocation of mobile frequencies

The mobile phone licences awarded in 2012 expire at the end of 2028. As experience has shown that spectrum award procedures take several years, ComCom has begun initial preparations for the new allocation of the mobile frequencies auctioned in 2012.

These are the frequency ranges that have been used for over 20 years with GSM (2G) and UMTS (3G) as well as with newer technologies (such as 4G). Specifically, the frequency bands are 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz.

It has not yet been decided whether additional frequencies from the ranges 6 GHz, 26 GHz or 40 GHz are to be allocated in the same procedure. If so, this means – in addition to international frequency harmonisation – the industry will have to identify the relevant needs and the regulatory, environmental and technical framework conditions must be in place. Moreover, the Federal Council would first have to release these frequencies for use with mobile communications.

From December 2023 to 26 February 2024, ComCom conducted a public consultation to identify the needs of the mobile communications industry and other players in these frequency ranges. After OFCOM has evaluated the statements, ComCom will decide on the next steps.

3. Study trip on optical fibre expansion in France

The development of a gigabit strategy with the aim of also connecting poorly served regions with high-bandwidth internet is an important objective of the Federal Council. Many European countries, such as France, have already had such strategies in place for some time.

In September 2023, as part of a short study trip, ComCom visited “Côte-d'Or” in France – a largely rural "département" and the country's fifth largest – to learn about the projects under way there in fibre-optic expansion. ComCom met with representatives from departmental authorities, the network operator Altitude Infra and the French regulatory authority ARCEP.

Since 2013, the French state has sought to improve high-speed broadband provision nationwide with its 'Plan France Très Haut Débit' (PFTHD). The focus since 2020 has been on connecting 100% of households using fibre optics by the end of 2025. So far, 83% of the nearly 49 million connections now have FTTH.

Under the PFTHD plan, ARCEP divided the country into three zones:

- The "zones très denses" (densely populated areas) comprise 7.7 million households and businesses (about 18% of connections) in the most densely populated urban areas of France. Here, FTTH expansion is financed purely by the private sector.
- The "zones moins denses d’initiative privée" (less densely populated areas covered by private sector initiatives) are those areas for which network operators indicated in an industry survey they would develop on their own (about 37% of connections).
- The "réseaux d'initiative publique" (RIPs) (state sponsored networks): Here, the French departments are largely responsible for implementing the fibre-optic network, as an initial survey found that no operator had an interest in private development (about 45% of connections). In these areas, 76% of connections are now connected with FTTH. However, the RIPs are not solely government-funded; private companies are also involved.
  In a second industry survey (AMEL) in 2017, a number of private companies agreed to develop individual RIPs at their own expense (about 3% of connections).

The discussions brought to light a lot of interesting information and considerations, some of which could also be taken into account when designing the Swiss gigabit strategy. For example:

- It should be possible to use cable ducts from other infrastructures wherever feasible in order to avoid major excavation work.
- A very detailed survey of the operators' network expansion plans should be carried out at an early stage in order to define, among other things, the regions eligible for subsidies. In general, high-quality data collection is important.
- The architecture of fibre-optic networks is typically point-to-multipoint in RIPs, but there is also an option of leasing point-to-point lines.
- Network construction in the RIPs in Côte-d'Or roughly corresponds to the 'operator model' in the Federal Council's High Bandwidth Strategy report, i.e. a local authority largely finances the network expansion.
- Despite the PFTHD state development plan, it is also difficult in France to connect the last few per cent of households, even in densely populated areas. This is why France allows the most costly 3 to 5% of connections to be developed 'only on demand'.
- In a national strategy, regulatory bodies are important for monitoring and enforcing the implementation of expansion projects. According to the French regulatory authority ARCEP, the effort and expense of oversight duties should not be underestimated, even when the very numerous and varied networks are in operation.
- For political reasons, it is considered important in France that nationwide retail offerings be uniform, even if the networks are financed differently and have different cost structures.

4. International relations

The new Article 64 of the Telecommunications Act that entered into force in 2021 states that ComCom "shall carry out the tasks within the scope of its responsibilities at an international level and shall represent Switzerland in the related international organisations".

In May 2023, ComCom organised a technical seminar in Lausanne for the 'Réseau francophone de la régulation des télécommunications' (FRATEL) (network of French-speaking countries for regulation of telecommunications) with around 100 on-site participants from 25 countries. The title of the event was 'Pourquoi et comment associer l'utilisateur à la régulation ?' (cf. www.fratel.org). More than 80 people also took participated online in the event.

Unfortunately, ComCom and OFCOM have not been able to participate with observer status in the European Union's Body of European Regulators for Electronic Communications (BEREC) for several years now, but we are actively involved in individual expert groups.

However, ComCom is a founding member of the Independent Regulatory Group (IRG), which includes the independent regulatory authorities of all European countries and can participate in all events.

5. Outlook for 2024

The following activities will form the focus of ComCom's activities in 2024:

1. **Mobile frequency spectrum**: As mentioned above, ComCom began preparing in 2023 for the new allocation of the mobile frequencies last auctioned in 2012. In 2024, OFCOM will evaluate the public consultation it has conducted and ComCom' will decide on the next steps.
2. **Access cases**: The main focus here is on the instruction of pending cases and the exchange of documents in the event of appeals before the Federal Administrative Court.
3. **International relations**: ComCom and OFCOM will continue to contribute to the Independent Regulators Group (IRG) and to selected working groups under the aegis of the Body of European Regulators for Electronic Communications (BEREC). Together with OFCOM, ComCom also regularly exchanges experience and know-how with the regulatory authorities of the other German-speaking countries.

IV. Finances

Regulators from various infrastructure sectors report for administrative purposes to the Federal Department of the Environment, Transport, Energy and Communications (DETEC). Since 2012 ComCom has formed part of the Infrastructure Regulatory Authorities (RegInfra) administrative unit alongside the Federal Electricity Commission (ElCom), the Postal Services Commission (PostCom), the Rail Transport Commission (RailCom) and the Independent Complaints Authority for Radio and Television (ICA). DETEC's general secretariat provides services to RegInfra in various administrative areas. In particular, it supports ComCom with regard to budget and accounting. However, this does not compromise ComCom's abilities to conduct its activities independently.

ComCom collaborates very closely with OFCOM, which prepares most of ComCom's business and instructs on legal proceedings. Costs incurred by OFCOM for ComCom are also given below to permit an overview of the overall income and expenditure of the telecoms regulator.

OFCOM's costs in connection with its activities for ComCom totalled CHF 2.662 million in 2023. The additional expenditure relative to the previous year is due to the initial work to prepare the next spectrum allocation procedure. On the revenue side, OFCOM invoiced administrative fees in the amount of CHF 237,000 in 2023. Administrative fees connected with ongoing legal proceedings and invitations to tender can be billed only once the cases concerned are legally binding.

The expenditure of the Commission and its Secretariat amounted to CHF 1.1 million in 2023 (information on RegInfra is published in the budgets and state financial statements of the federal government; cf. www.efv.admin.ch).

Abbreviations

5G = Fifth generation mobile radio

ADSL = Asymmetric Digital Subscriber Line

BBCS = Broadband Connectivity Service (commercial wholesale offering from Swisscom)

BEREC = Body of European Regulators for Electronic Communications

FAC = Federal Administrative Court

CATV = Cable television

COMCO = Competition Commission

ComCom = Federal Communications Commission

DOCSIS = Data Over Cable Service Interface Specification (technology for high bandwidths on coaxial cable)

DSL = Digital Subscriber Line

EDGE = Enhanced Data rates for GSM Evolution (GSM technology)

ESC = Energy supply companies

FDD = Frequency Division Duplex (two radio channels are needed for one connection)

TSO = Telecommunications Services Ordinance (CC 784.101.1)

TCA = Telecommunications Act (CC 784.10)

FTTB = Fibre to the Building

FTTC = Fibre to the Cabinet

FTTH = Fibre to the Home

FTTS = Fibre to the Street

FWA = Fixed Wireless Access

G.fast = Gigabit fast access to subscriber terminals (technology for bandwidths up to 500 Mbps on copper cable)

GPRS = General Packet Radio Services (GSM technology)

GSM = Global System for Mobile Communications (standard for second-generation mobile radio networks)

HDTV = High-definition television

HFC = Hybrid Fibre Coaxial

HSDPA = High Speed Downlink Packet Access (UMTS technology)

IC = Interconnection

ICT = Information and communication technologies

IMD = Institute for Management Development

IP = Internet Protocol

IPTV = Internet Protocol Television

IRG = Independent Regulatory Group

ISP = Internet Service Provider

LRIC = Long Run Incremental Costs (model for calculation of interconnection prices)

LTE = Long Term Evolution (standard for fourth-generation mobile radio networks/3.9G standard)

LTE-A = LTE-Advanced (standard for fourth-generation mobile radio networks)

MEA = Modern Equivalent Asset

NFC = Near Field Communication

NGA = Next Generation Access Network

OECD = Organisation for Economic Co-operation and Development

OFCOM = Federal Office of Communications

SMS = Short Message System

SVOD = Subscription Video on Demand

TDD = Time Division Duplex (bidirectional communication on only one radio channel)

UMTS = Universal Mobile Telecommunications System (standard for third-generation mobile radio networks)

DETEC = Federal Department of the Environment, Transport, Energy and Communications

VDSL = Very-high-bit-rate DSL

VoD = Video on Demand

VoIP = Voice over IP

VoLTE = Voice over LTE

WEF = World Economic Forum Wifi = Wireless Fidelity (wireless local area networks, WLAN)

WLAN = Wireless Local Area Network

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