

A ICT Infrastructure

The **telecommunications and internet infrastructure** is the cornerstone of majority of information technologies and thus the information society as a whole, as well. Data on the state and trends in the infrastructure of electronic communications in Czechia and the Member States of the European Union in the chapter have been collected from the **telecommunication and internet services providers**, on the contrary to majority of other chapters.

The **Reference Period** is as at 31 December of the reference year, unless otherwise stated.

Information in the chapter applies to services provided in retail only, that means services provided to **end users**.

Definitions (sorted alphabetically)

- A **subscriber** (or customer) to publicly accessible services of electronic communications shall mean individual or legal entity, which has concluded a contract on the use of such services with a provider and has an access to the public switched telephone network or public mobile telephone network within the contracted services.
- **Domain (internet domain and/or domain name)** shall mean a definite identifier of a computer or a computer network connected to the internet. The domains shall be registered by domain name registrars, which are authorised to administer Top Level Domains.
- **Fixed wired access** to the internet includes connections over following technologies and networks: i) digital subscriber line xDSL (ADSL, VDSL, FTTC) using fixed telephone networks, ii) cable modem using coaxial cable television networks (CATV) and iii) optical fibre networks (FTTH/B).
- **Fixed wireless access (FWA)** to the internet is the description of fixed wireless access by means of a radio connection both in licensed (including fixed LTE) and non-licensed (fixed Wi-Fi) frequency bands. The end-point device is at a fixed place, located in a building, dwelling etc. Sometimes this alternative is also called Wireless Local Loop (WLL).
- **SIM cards** are **prepaid** ones, in which case the customer does not conclude any contract with the provider and buys a credit, which the provider deducts payments for services provided from; and **post-paid** ones in which case customers have a contract concluded with the provider and pay for contracted services by monthly invoice.
- The **number of fixed broadband subscriptions** is measured on the basis of so-called access points (**active connections**) at which services are provided in a fixed point via **fixed wired** or **wireless access**.
- The **number of mobile broadband subscriptions using cellular phone** is measured by the number of data SIM cards with activated voice and data services together, which are provided based on the contract allows the access to mobile broadband in cellular phone.
- The **number of subscriptions of voice services in a fixed telephone network** is measured as the number of the **public switched telephone network (PSTN) lines** and the number of **phone numbers** used for voice services by means of the **IP telephone** (VoIP technology).
- The **number of subscriptions of voice services in a mobile network** is measured by the number of **active SIM cards**, which were used at least once in the recent three months for voice services.

Data for the **Czechia** are taken from data sources of the Czech Telecommunication Office, except for the number of registered domains (source: cz.nic). Further information can be found at www.ctu.cz and www.nic.cz

International comparisons were worked out by the CZSO using public data from the International Telecommunication Union, European Commission and OECD.

Further information on this theme can be found at (in Czech language only): https://www.czso.cz/csu/czso/telekomunikacni_a_internetova_infrastruktura

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Tab. A1 Fixed telephone voice subscriptions in Czechia

	2010	2015	2019
Total	2 334	1 896	1 491
Subscriber type			
Household - residential subscriptions	1 289	831	577
Organization - business subscriptions	1 044	1 065	914
Network technology and subscriber type			
Switched network - analogue PSTN lines	1 871	994	602
Household - residential lines	989	523	275
Organization - business lines	882	471	327
Internet network - VoIP lines	462	902	888
Household - residential lines	300	309	302
Organization - business lines	162	594	587

Figure A1 Fixed telephone voice subscriptions (PSTN only)

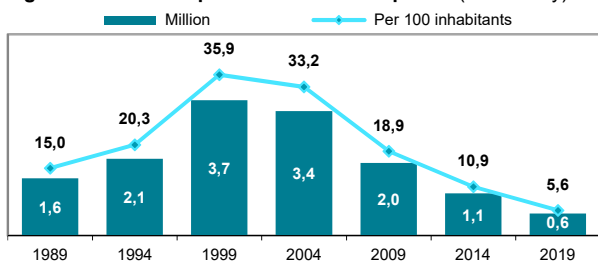


Figure A2 Analogue PSTN lines by subscriber type (million)

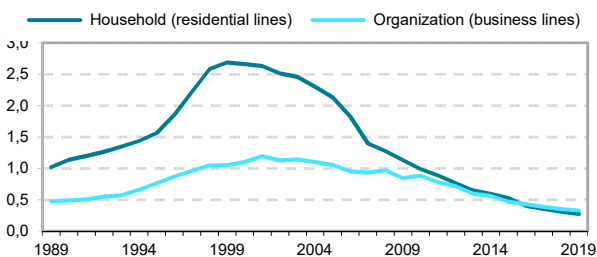
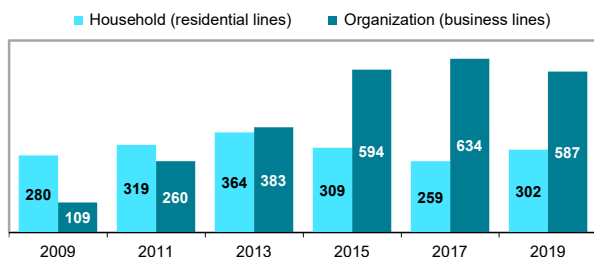


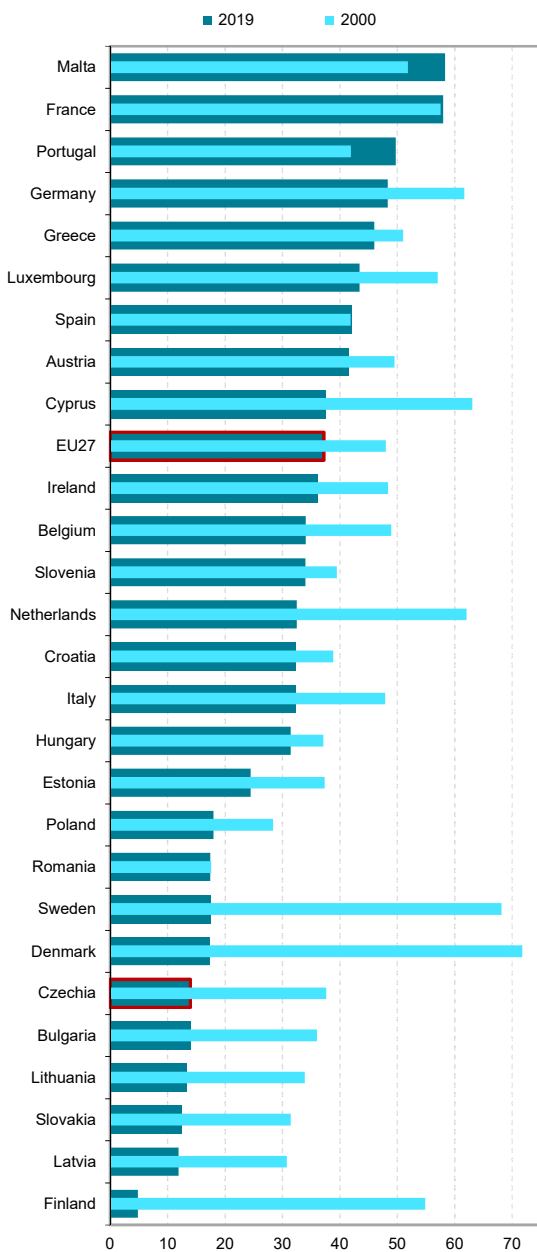
Figure A3 VoIP lines by subscriber type (thousand)



Source: CZSO calculations based on Czech Telecommunication Office data

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**Figure A4 Fixed telephone voice subscriptions
in EU countries (per 100 inhabitants)**



Source: International Telecommunication Union

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Table A2 Mobile telephone voice subscriptions in Czechia

	Thousand		
	2010	2015	2019
Total - active SIM cards used for voice services	13 113	14 017	14 712
Subscriber type			
Individual - residential subscriptions	.	9 222	9 045
Organization - business subscriptions	.	4 795	5 667
Subscription type			
Prepaid	5 538	4 893	4 362
Postpaid	7 575	9 124	10 349

Figure A5 Mobile telephone voice subscriptions

(active SIM cards used for voice services)

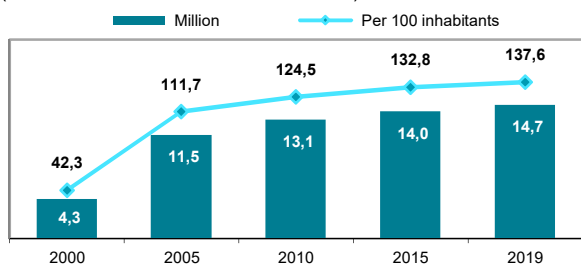


Figure A6 Active SIM cards by subscription type (million)

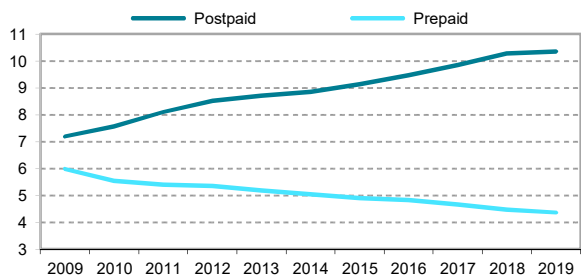
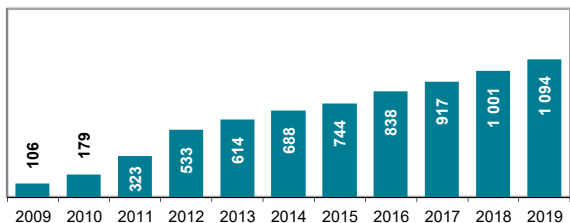


Figure A7 M2M subscriptions (thousand)**

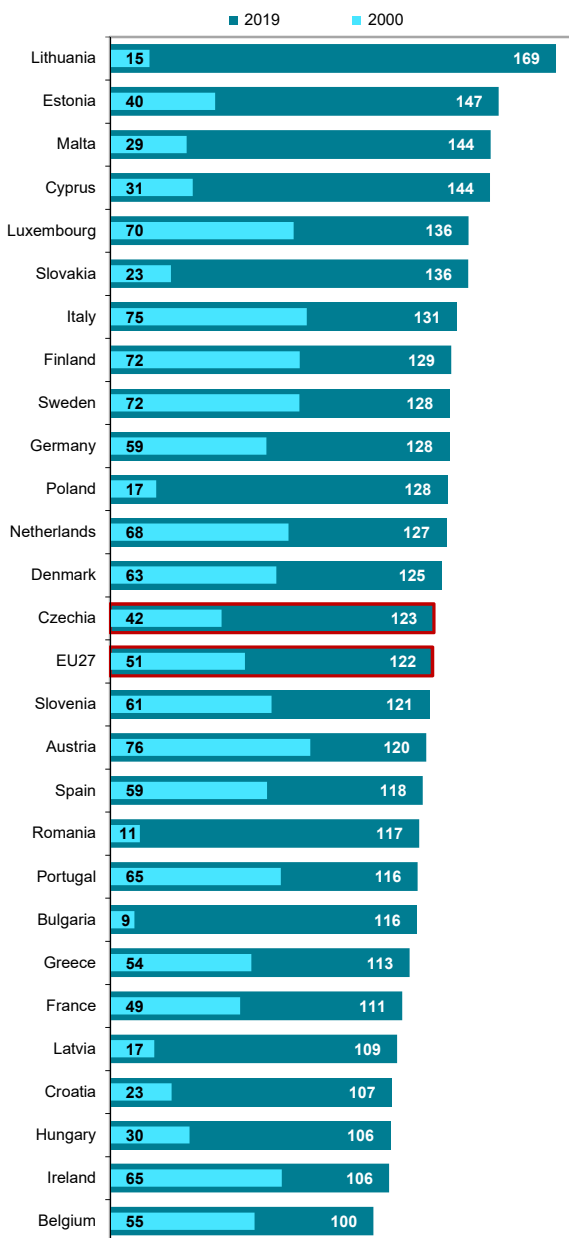


** Machine-to-Machine (M2M) includes SIM cards designed exclusively for wireless communication between machines, devices and systems without human intervention.

Source: CZSO calculations based on Czech Telecommunication Office data

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Figure A8 Mobile telephone voice subscriptions in EU countries (per 100 inhabitants)



Source: CZSO calculations based on ITU data

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Table A3 Fixed telephone traffic in Czechia

Outgoing calls from the fixed network in million minutes

	2010	2015	2019
Total	2 676	1 689	1 389
Subscriber type			
Household - calls made from residential lines	.	.	651
Organization - calls made from business lines	.	.	738
Technology			
Switched network - calls made from PSTN lines	2 185	1 041	835
Internet network - calls made from VoIP lines	490	648	554
Destination			
Domestic calls, total	2 310	1 422	1 262
Fixed-to-Fixed	1 898	1 007	595
Fixed-to-Mobile	412	415	666
International calls (fixed-to-international)	160	110	77

Figure A9 Domestic fixed telephone traffic (minutes)

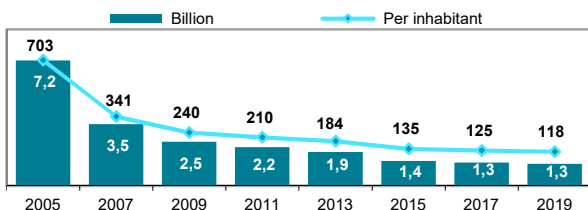


Figure A10 Fixed telephone traffic by technology
(outgoing calls in billion minutes)

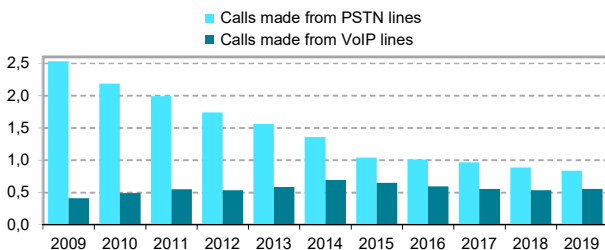
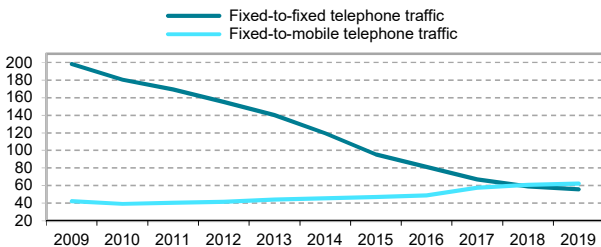


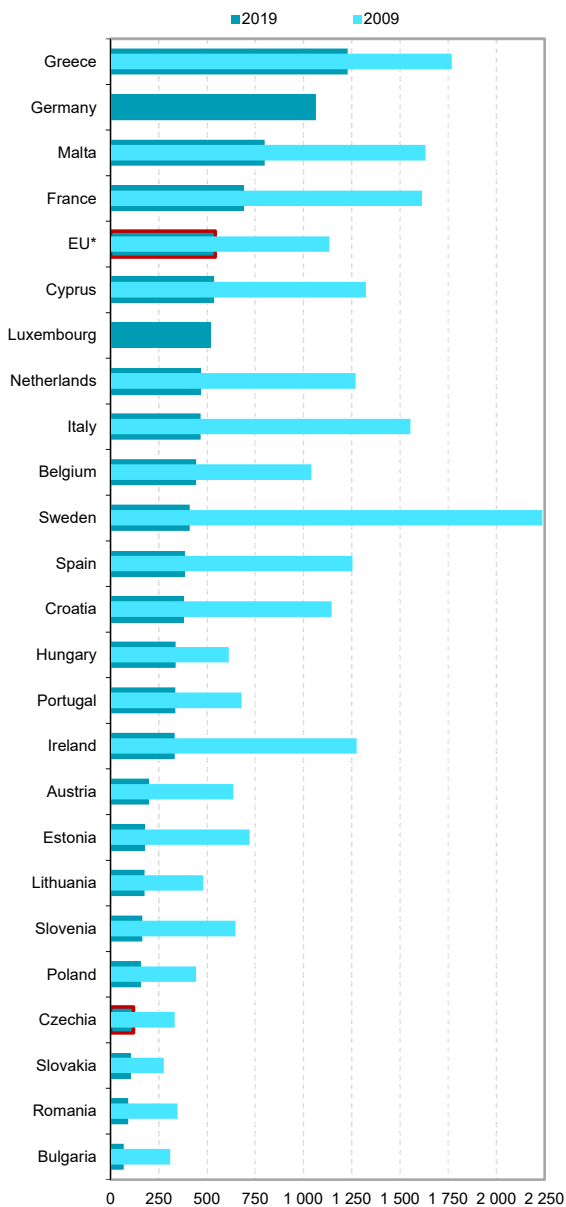
Figure A11 Domestic fixed telephone traffic by network
(outgoing called minutes per one inhabitant)



Source: CZSO calculations based on Czech Telecommunication Office data

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Figure A12 Domestic fixed telephone traffic in EU countries
(outgoing called minutes per one inhabitant)



* The EU average excludes Denmark, Finland and Latvia.

Source: CZSO calculations based on ITU data

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Table A4 Mobile telephone traffic in Czechia

Outgoing calls from the mobile network in million minutes

	2010	2015	2019
Total	15 104	20 634	22 284
Subscriber type			
Individual - calls from residential subscript.	.	11 550	12 293
Organization - calls from business subscript.	.	9 084	9 991
Destination			
Domestic outgoing calls, total	14 669	20 176	21 931
to same mobile network	9 389	11 660	11 595
to other mobile networks	4 501	7 694	9 501
to fixed networks	779	822	836
International calls (incl. outbound roaming)	435	760	1 622

Figure A13 Domestic mobile telephone traffic (minutes)

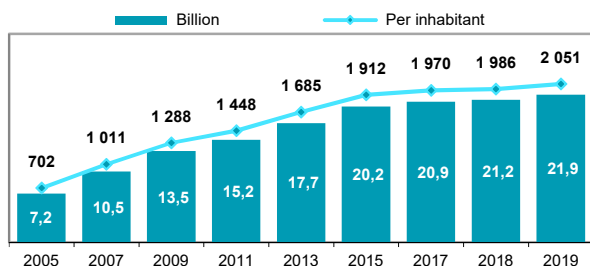


Figure A14 Domestic mobile telephone traffic by destination

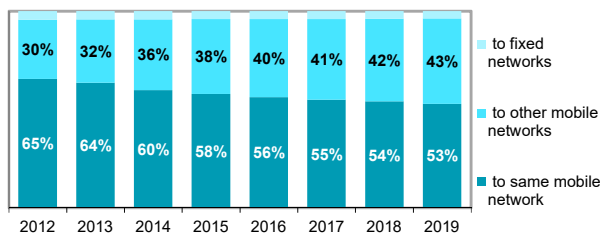
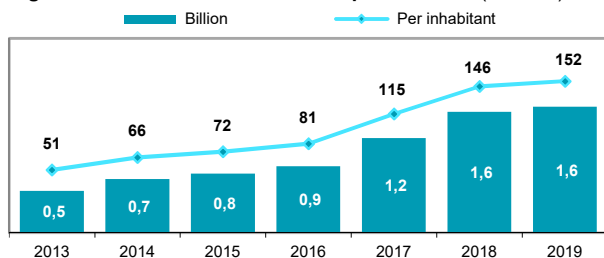


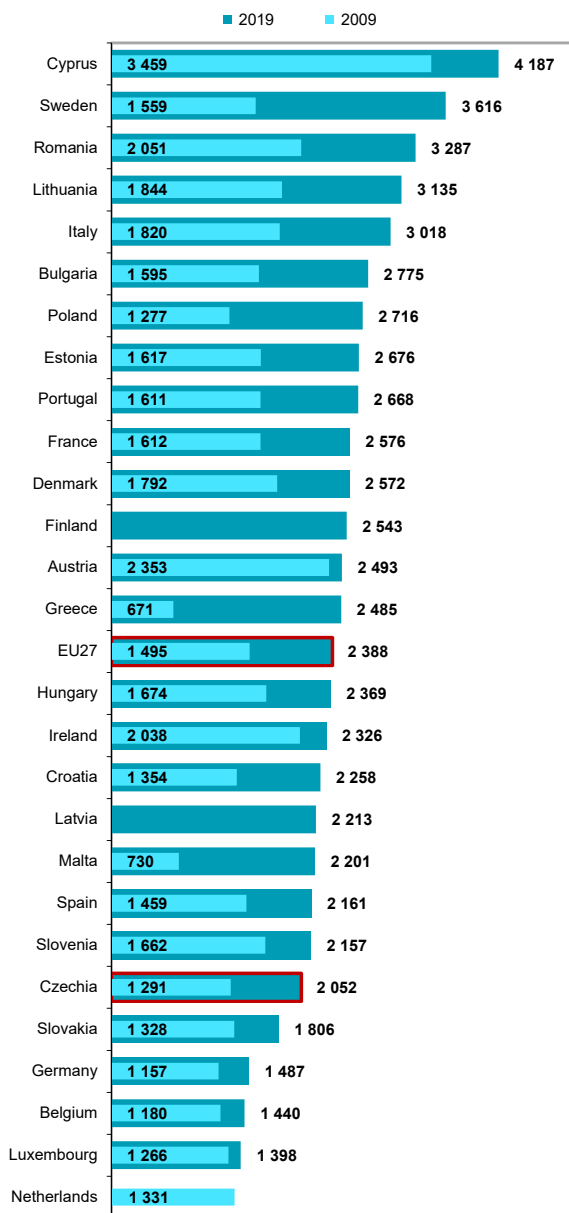
Figure A15 International mobile telephone traffic (minutes)



Source: CZSO calculations based on Czech Telecommunication Office data

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Figure A16 Domestic mobile telephone traffic in EU countries
(outgoing called minutes per one inhabitant)



Source: CZSO calculations based on ITU data

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Table A5 Fixed broadband subscriptions in Czechia

	Thousand		
	2017	2018	2019
Total	3 361	3 570	3 726
Connection speed*			
< 30 Mbit/s	1 654	1 472	1 550
≥ 30 < 100 Mbit/s	736	916	1 101
≥ 100 Mbit/s	743	823	1 075
Subscriber type*			
Household - residential customers	2 649	2 727	3 094
Organization - business customers	485	485	632
Access and technology type			
Wired fixed access, total	2 035	2 107	2 188
DSL	876	888	918
Cable and Fibre	1 159	1 219	1 270
Wireless fixed access, total	1 326	1 463	1 538
Fixed WiFi	1 099	1 105	1 115
Fixed LTE	227	358	423

* excludes fixed LTE data for the years 2017 and 2018

Figure A17 Fixed broadband subscriptions

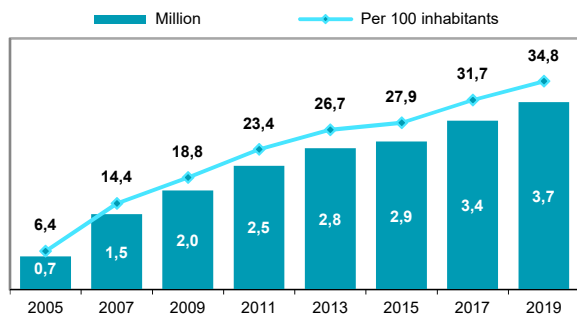
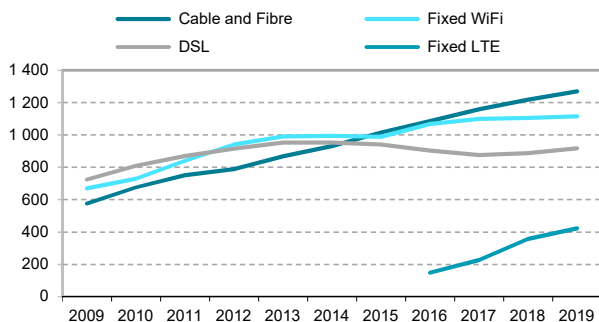


Figure A18 Fixed broadband subscriptions by technology (thousand)



Source: CZSO calculations based on Czech Telecommunication Office data

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Figure A19 Fixed broadband subscriptions in EU countries; 2019 (per 100 inhabitants)

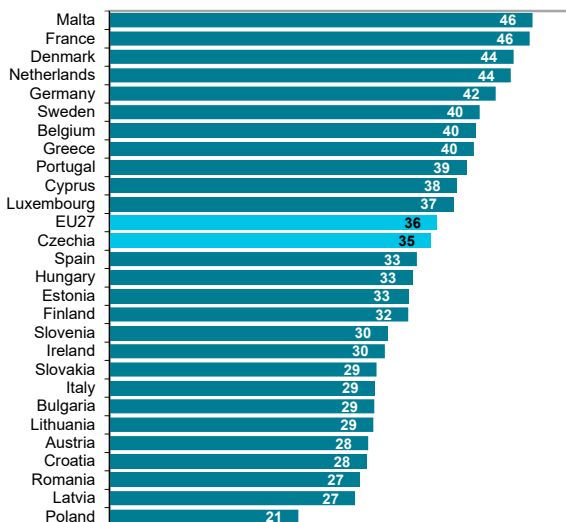
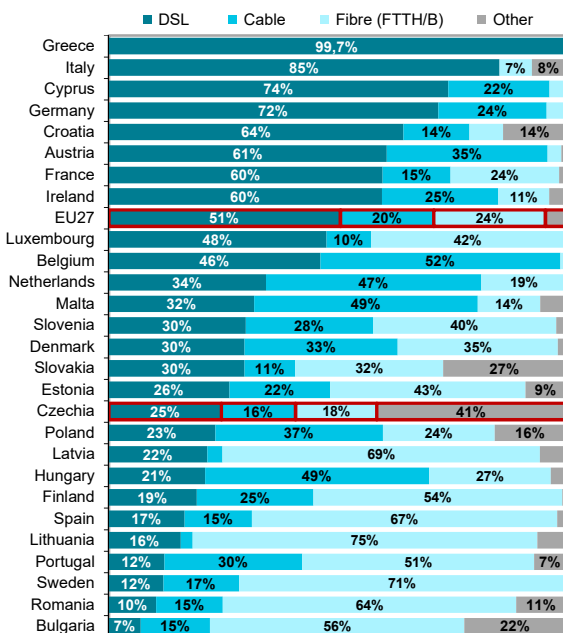


Figure A20 Fixed broadband subscriptions in EU countries by technology; 2019



Source: International Telecommunication Union

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Table A6 Wired fixed broadband subscriptions in Czechia

thousands

	2017	2018	2019
Total	2 035	2 107	2 188
Speed (advertised download speed)			
< 30 Mbit/s	879	772	662
≥ 30 < 100 Mbit/s	430	541	583
≥ 100 Mbit/s	726	794	943
Subscriber type			
Household - residential subscriptions	1 715	1 777	1 849
Organization - business subscriptions	319	330	340
Network and technology type			
Fixed telephone network, total	876	888	918
ADSL	257	172	100
VDSL	619	717	818
Optical network, total	570	622	664
FTTH	133	154	188
FTTB	437	469	476
Cable network (CATV)	589	597	606

Figure A21 Wired fixed broadband subscriptions

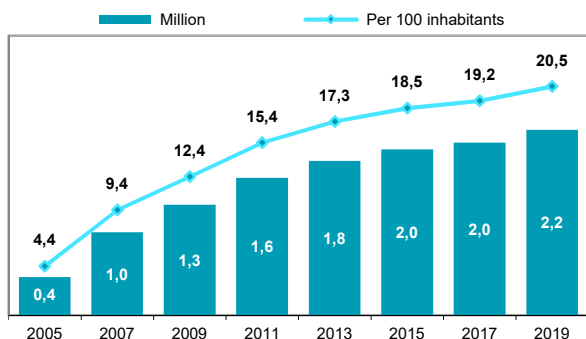
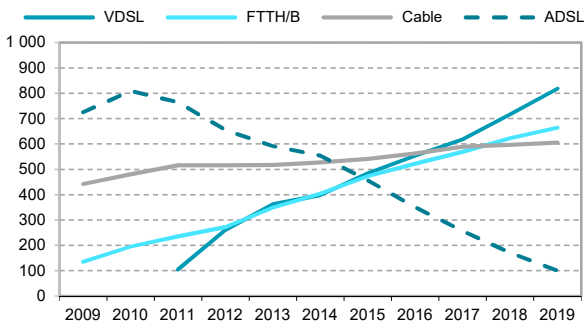


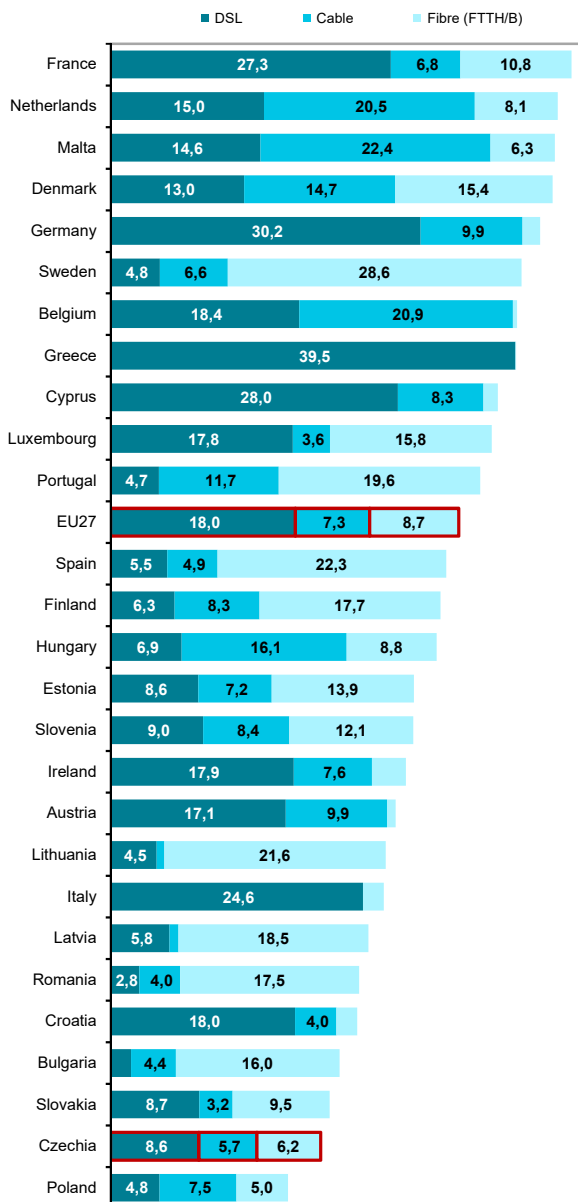
Figure A22 Wired fixed broadband subscriptions by technology (thousand)



Source: CZSO calculations based on Czech Telecommunication Office data

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Figure A23 Wired fixed broadband subscriptions in EU countries by technology; 2019 (per 100 inhabitants)



Source: International Telecommunication Union

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Table A7 Fixed broadband subscriptions in Czechia by advertised download connection speed; 2019

	Thousand		
	< 30 Mbit/s	30–99,9 Mbit/s	≥ 100 Mbit/s
Total	1 550	1 101	1 075
Wired fixed access, total	662	583	943
DSL	580	282	56
Cable (CATV)	17	52	537
Fibre (FTTH/B)	64	249	351
Wireless fixed access, total	888	518	132
Fixed WiFi	536	452	127
Fixed LTE	352	66	5

Figure A24 Fixed broadband subscriptions with advertised download connection speed equal to or above 30 Mbit/s

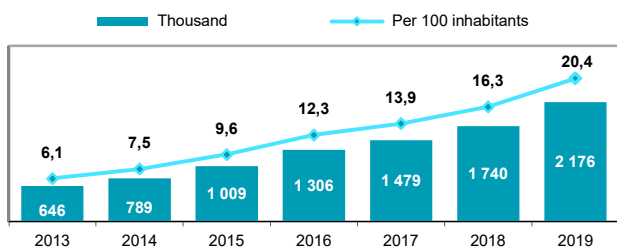


Figure A25 Fixed broadband subscriptions by advertised download connection speed

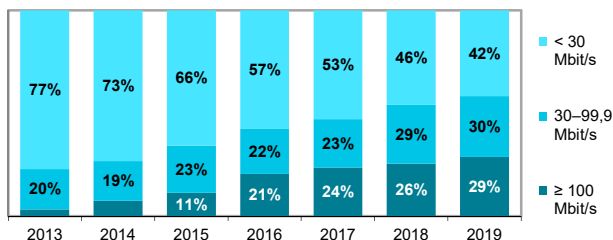
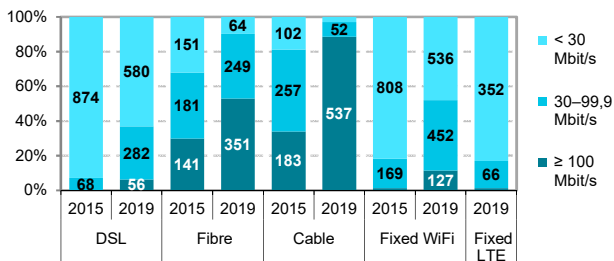


Figure A26 Fixed broadband subscriptions by technology and advertised download connection speed (thousands; %)



Source: CZSO calculations based on Czech Telecommunication Office data

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Figure A27 Fixed broadband subscriptions in EU countries with download speed 30 Mbit/s and more; June 2019
(per 100 inhabitants)

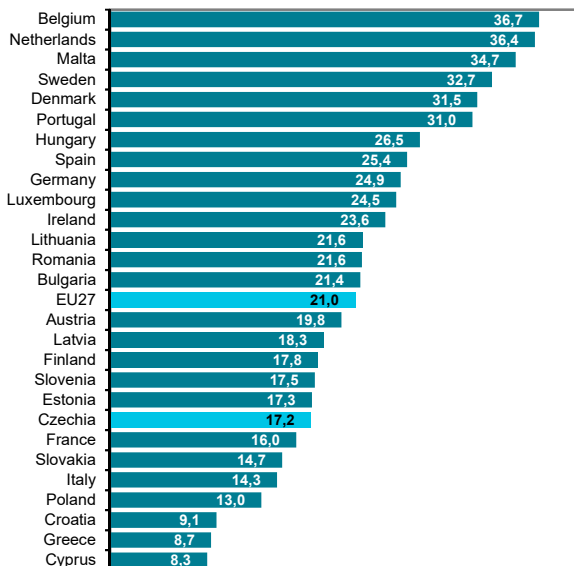
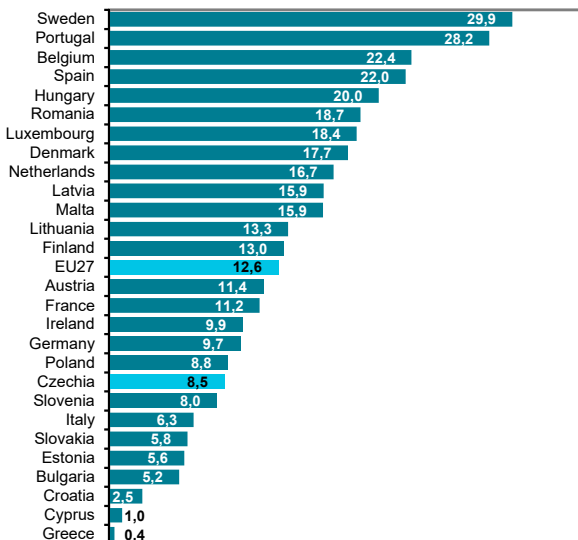


Figure A28 Fixed broadband subscriptions in EU countries with download speed 100 Mbit/s and more; June 2019
(per 100 inhabitants)



Source: CZSO calculations based on European Commission data

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Table A8 Mobile voice and data broadband subscriptions in Czechia

	Thousand		
	2017	2018	2019
Total - active SIM cards used for voice and data services*	7 748	8 333	9 372
Ad-hoc access (prepaid and pay-per use)	1 461	1 494	1 981
Permanent access (monthly plans/tariffs)	6 288	6 839	7 391

* Refers to subscriptions that allow access to the open Internet and in which data services are contracted together with voice services (mobile voice and data plans) or as an add-on package to a voice plan. These are typically smartphone-based subscriptions with voice & data services used in the same terminal.

Figure A29 Mobile voice and data broadband subscriptions

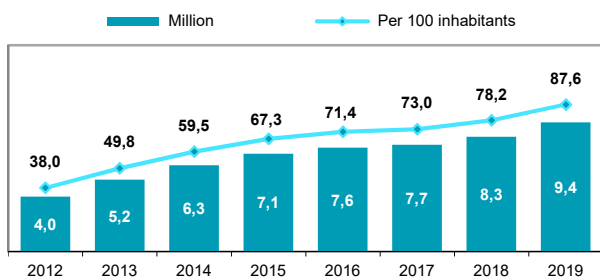


Figure A30 Mobile voice and data broadband subscriptions with permanent access (monthly plans/tariffs)

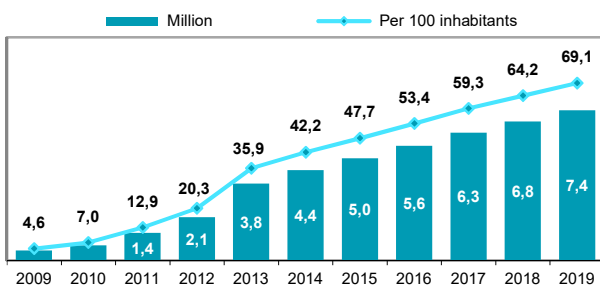
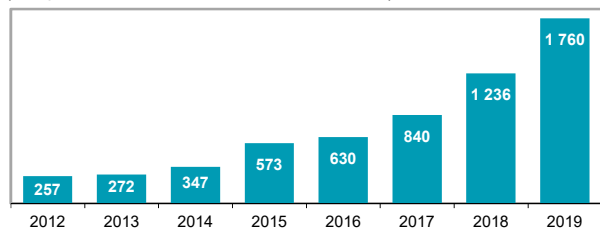


Figure A31 Average monthly mobile data consumption (MB per active SIM card with data services)



Source: CZSO calculations based on Czech Telecommunication Office data

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Figure A32 Mobile voice and data broadband subscriptions in EU countries; 2019 (per 100 inhabitants)

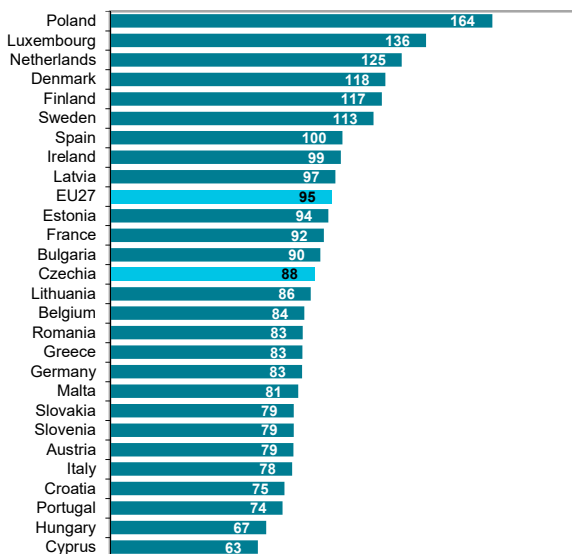
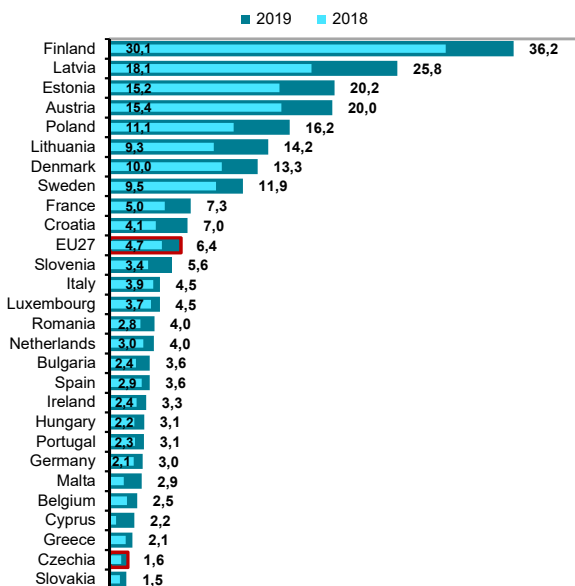


Figure A33 Monthly mobile broadband internet traffic in EU countries (GB per 1 inhabitant)



Source: International Telecommunication Union

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Table A9 Domains under Top Level Domain .CZ in Czechia

	Thousand		
	2018	2019	2020
Total	1 323	1 329	1 371
Domain type*			
domains protected by DNSSEC	723	787	829
domains using IPv6 or IPv6+IPv4 protocol	412	422	447
Registrant's country			
Czechia	1 227	1 234	1 273
Slovakia	22,7	23,5	24,4
Germany	15,8	16,0	14,9
United States of America	8,9	9,4	10,1
other countries	48,1	46,4	49,0

* Further information can be found at: www.dnssec.cz or www.nic.cz/ipv6.

Figure A34 Domains under Top Level Domain .CZ

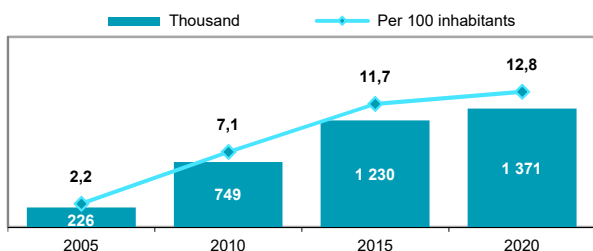


Figure A35 Registered and revoked .CZ domains (thousand)

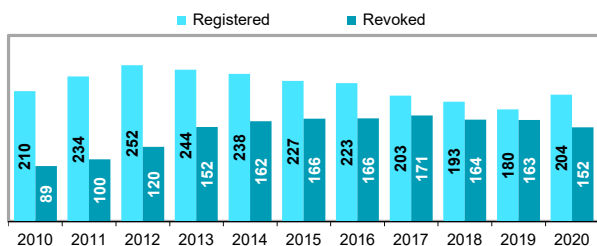
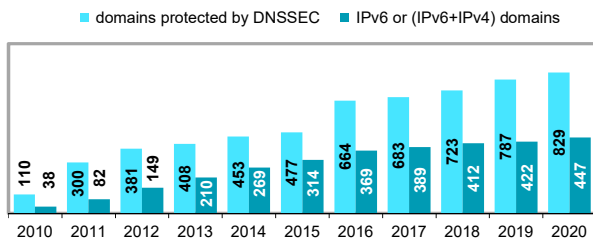


Figure A36 Domains .CZ protected by DNSSEC and using IPv6 protocol (thousand)



Source: CZSO calculations based on CZ.NIC data