



DIGITISATION: ECONOMIC AND SOCIAL IMPACTS IN RURAL AREAS

NATIONAL POLICY ANALYSIS

AUSTRIA



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Executive Summary

Both the infrastructure and the use of digital technologies have improved in rural Austria in recent years. Nevertheless, there is still need for improvement in comparison with the rest of Europe. Although this may also be due at least in part to the geographic conditions and population distribution in Austria, the deficits regarding digitalisation relate to the topics of policy level, broadband coverage, education and outreach and networking of competencies.

As of mid-2019, nearly 7 out of 10 (68.4%) rural Austrian households having access to high-speed broadband. Though, access to and distribution of very high-capacity networks is substantially lower than the EU average. This circumstance is reflected by the most recent DESI report, which states that Austria's use of internet services improved at a slower rate than the rest of the EU, placing Austria in 18th place, in the bottom third. Likewise, the Network Readiness Index (NRI) stipulates that Austria, compared to the top performers, has some catching up to do in terms of network readiness regarding GDP per capita. Austria's Broadband Strategy 2020, which was introduced in 2012, set the target of providing almost all unserved residences with fast broadband connections of at least 100 Mbit/s by the end of 2020. After the goal was not achieved, the Broadband Strategy 2030 was adopted in 2019.

Digitalisation holds great development potential for rural areas, especially for peripheral regions and border areas. However, the expansion of the digital infrastructure is not the only key factor here. Also relevant are the policy level and measures that bring digitalisation closer to the people living there and enable them to use digital infrastructures for their professional and private lives. In 2016, when a digital roadmap was first drafted on ministerial level in Austria, one of the 12 fields of action was "Environment, energy, Agriculture and climate protection". In the most recent national digital agenda, rural areas are not explicitly mentioned. Though, the Federal Ministry of Agriculture, Regions and Tourism (BMLRT) has defined a portfolio of topics which are affected by and can profit from digitalisation. These include agriculture, forestry, rural areas, water and tourism. The most prominent strategies and reports related to digitalisation in rural areas from that ministry are the following. The Rural Development Program (BMLRT, 2018), which promotes modern, efficient and sustainable agriculture, supports the regional economy and communities and sets social accents; the Master Plan for Rural Areas (BMLRT, 2017) which was created as part of a stakeholder and citizen participation process, with the aim of strengthening rural areas in Austria through a new way of thinking and thus creating equal opportunities for the population; also, the report from platform "Digitalisation in Agriculture" is a valuable addition to the analysis of digitalisation and provides concrete approaches that can support and increase the efficiency of agriculture.

Eventually, the ambition and drive to foster digitalisation in rural areas in Austria is apparent. Promising initiatives, which are currently underway, are the Regional.Digital.Innovative (FFG, 2020) initiative, which aims to support rural regions on their path to digitalisation and innovation. A strong message also comes from the formation of Digital Innovation Hubs (DIH), support Austrian SMEs in digitalisation with their expertise and infrastructure. With the second round of funding, Austria-wide coverage has been achieved. Out of the six hubs, DIH innov:ATE has a focus on agriculture and forestry.

1. Introduction

In Austria, about two thirds of the population live in rural areas. It can be described as an urban-rural continuum, characterised by the capital Vienna, some medium-sized and numerous small and micro towns and the more or less developed periphery of the inhabited rural area. This diverse settlement structure can be considered an asset from the point of view of the development of rural areas. The distribution of population over the whole territory of the country facilitates the integration of the rural part into the process of a modern national economy based on the division of labour.

From the perspective of broadband supply and digitalisation, the situation looks different. With regard to many key indicators of digitalisation, Austria lags behind the top performers. This is shown, among other things, by the low score for the European Union's Digitalisation Index (DESI). In an international comparison, Austria is only in the midfield for most indicators, and sometimes far behind. One example is the low level of expansion with ultrafast broadband, where Austria is currently still trapped in the technology of fast broadband connections. What regards connectivity, it can be said that almost all households in Austria have access to fixed-network broadband (DSL). In rural-peripheral areas, this proportion is still 95%. However, this only ensures basic broadband coverage (from 2 Mbit/s). There are high proportions of Next Generation Access (NGA) connections in this country. However, broadband connections (FTTH, optical fiber) with at least 100 Mbit/s are lagging. Wireless mobile communications (LTE) are generally very important in Austria. While broadband expansion in urban areas is carried out by private network operators on a market-driven basis, economically viable expansion in rural areas is often not guaranteed. The reasons for the precarious supply situation in rural areas lie both in the comparatively high connection costs of households by telecommunications companies (supply side) and in an insufficient willingness to pay for high-performance broadband Internet, i.e., the lack of a critical mass of potential consumers (demand side) (BAB, 2018). A second example is the far below-average use of cloud services. Nevertheless, the data do not show a general investment gap, but comparatively high investment in ICT. However, these are offset by a demand gap, which is primarily reflected in the lower private use of modern broadband services and applications in an international comparison (WIFO, 2019).

Many federal policy competences related to digitalisation have been centralised in the newly formed Ministry of Digital and Economic Affairs (BMWD), also known as the Digitalisation Agency (DIA). It was established in 2018 to coordinate the digital strategy process. This led to the "Digital Austria" initiative, which provides an attempt to streamline, harmonise and concentrate efforts in a fragmented policy landscape, in which different departments and layers of federal Austrian policy structure interact. Though, the topics of rural development, agriculture and forestry did not explicitly enter the agenda of the DIA. Instead, the policies, strategies and initiatives addressing digitalisation are dispersed.

This dispersion is extensively presented in Section 3, first reviewing the national digital agenda (Section 3.2.1), and then showcasing the many rural and agricultural initiatives and strategies addressing digitalisation (Section 3.2.2), the digital divide (Section 3.2.3) and innovation (Section 3.2.4). After the elaboration and discussion of topics such as broadband infrastructure (Section 3.3.1), digital public services (Section 3.3.2), RIS3 (Section 3.3.3) and Digital Innovation Centres (Section

3.3.4), the chapter closes with a focus on the CAP national plan (Section 3.4) and the topic of data management and open data (Section 3.5). The report concludes with a synthesis of challenges and opportunities (Section 4) and a conclusion (Section 5).

2. Context for (rural) digitalisation

2.1. Current context for digitalisation

According to the Broadband Coverage Study 2019 (IHS Markit et al., 2020), Austrian fixed broadband coverage, like in previous years, was greater than the European average both nationally and in rural regions. While total Next Generation Access (NGA) coverage did not increase significantly during the study period, availability of NGA broadband services in rural areas increased by 6.9%, with nearly 7 out of 10 (68.4%) rural Austrian households having access to high-speed broadband at the end of June 2019, well above the EU average of 59.3% (see Figure 2-1). On the other hand, on both a total and rural level, overall coverage by very high-capacity networks (DOCSIS 3.1 and FTTP) was substantially lower than the EU average. This is mostly because providers in Austria have yet to introduce DOCSIS 3.1, and FTTP penetration is still restricted.

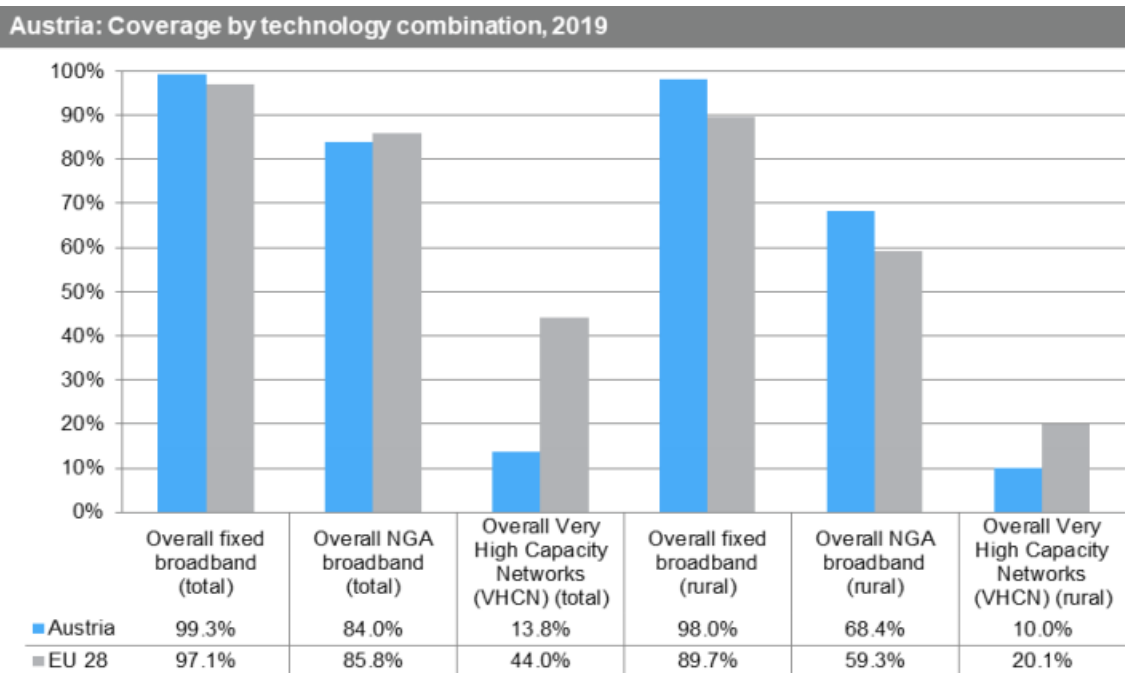


Figure 2-1. Austria: Coverage by technology combination, 2019 (IHS Markit et al., 2020)

Figure 2-2 shows the technology coverage in rural areas of Austria in 2019. DSL remained the most popular option, with 96.7 percent of rural houses having access to it. A total of 20.4 percent of rural households were served by cable DOCSIS 3.0 networks. This has remained consistent since 2018, yet it remains higher than the European average (10.8%). Fixed Wireless Access (FWA) networks have

reached 28.9% of Austrian households in rural areas. In terms of rural coverage of NGA technologies, rural FTTP deployments increased by 4.1 percentage points over the last year, with FTTP networks reaching 10.0 percent of rural residences in Austria by the end of June 2019. VDSL, on the other hand, remained the most popular NGA technology in rural regions, with 39.5 percent of rural households using it.

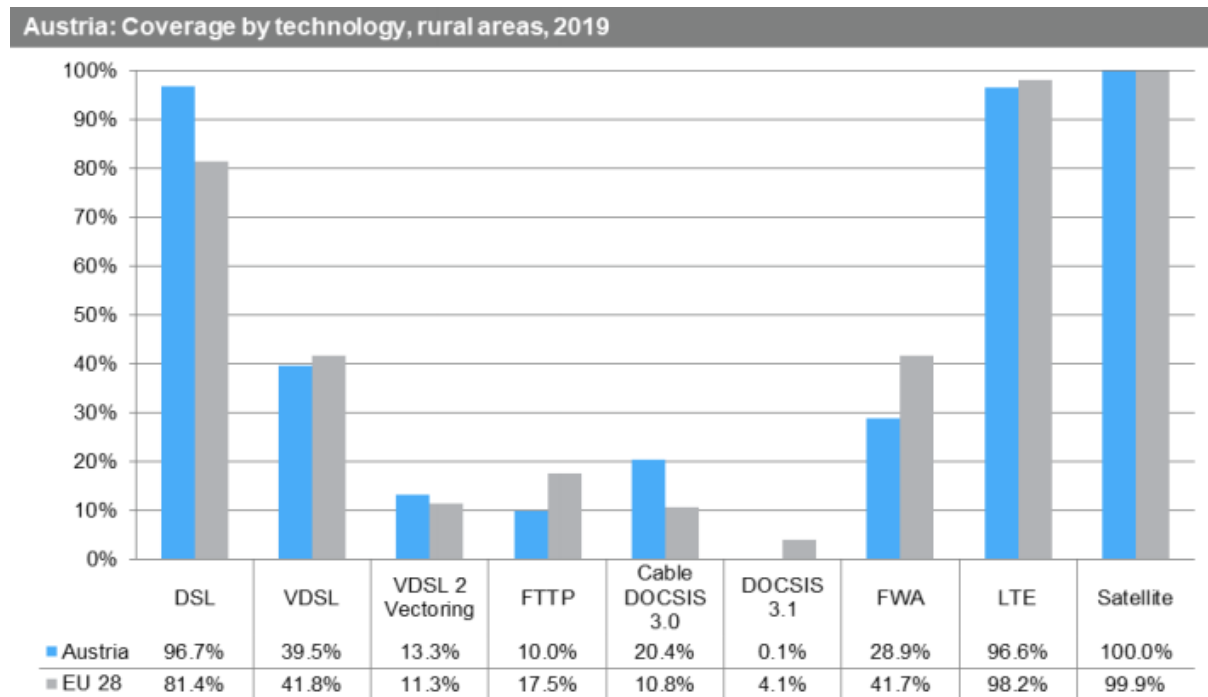


Figure 2-2. Austria: Coverage by technology, rural areas, 2019 (IHS Markit et al., 2020)

In the Network Readiness Index (NRI) 2020, Austria ranks 18th out of the 134 economies included (NRI, 2020). Figure 2-3 gives an overview of the four pillars and sub-pillars. In the group of high-income countries, in terms of pillar performance, Austria has a score higher than the income group average in each of the four pillars. Within Europe, Austria is ranked 11th. It outperforms its region in each of the four pillars. Looking at both NRI score and GDP per capita, Austria is above the trend line, which indicates that it has a greater network readiness than expected given its income level. Nevertheless, compared to the top performers, Austria has some catching up to do in terms of network readiness regarding GDP per capita.

Looking at the sub-pillars and their indicators, the following facts are noteworthy: Two of the overall ten weakest indicators belong to the “Technology” pillar and the sub-pillar “Access”: “Fixed-broadband subscriptions” and “International Internet bandwidth”. Likewise, the following two indicators from the pillar “Impact”, belonging to the sub-pillar “SDG Contribution” also are amongst the ten weakest indicators: “SDG 7: Affordable and Clean Energy” and “SDG 5: Gender Equality”. The indicator “Government promotion of investment in emerging technologies” from the pillar “People” and the sub-pillar “Governments” has a rather low score of 53.85. The greatest overall scope for improvement for Austria concerns Governance; Austria’s rank here is 19th.

Network Readiness Index			Rank: 18 (out of 134)		Score: 72.92	
Pillar/sub-pillar	Rank	Score	Pillar/sub-pillar	Rank	Score	
A. Technology pillar	16	70.47	C. Governance pillar	19	80.04	
1st sub-pillar: Access	35	79.66	1st sub-pillar: Trust	23	71.58	
2nd sub-pillar: Content	15	71.13	2nd sub-pillar: Regulation	17	85.32	
3rd sub-pillar: Future Technologies	17	60.61	3rd sub-pillar: Inclusion	15	83.22	
B. People pillar	16	69.44	D. Impact pillar	15	71.74	
1st sub-pillar: Individuals	45	60.46	1st sub-pillar: Economy	23	47.84	
2nd sub-pillar: Businesses	13	71.79	2nd sub-pillar: Quality of Life	11	87.85	
3rd sub-pillar: Governments	13	76.07	3rd sub-pillar: SDG Contribution	23	79.54	

Figure 2-3. NRI 202, Austria (NRI, 2020)

In the Digital Economy and Society Index (DESI) 2020, Austria ranks 13th out of 28 EU Member States (EC, 2020). For Austria, the digitalisation picture is ambivalent: The country ranks 13th in the EU, behind the leading Scandinavian countries Denmark, Finland and Sweden, also behind the Netherlands, Malta or Estonia. Austria has improved its position in the DESI index by one place compared with 2019 and, with a total of 54.3 points (2019: 51.1), is just above the EU average of 52.6 (2019: 49.4).

Austria's rating stayed largely constant in comparison to previous year's DESI. While Austria stays somewhat above the EU average, the gap between the top performers has grown. In every measure of the DESI's Human Capital dimension (digital skills, software skills, ICT graduates and specialists), Austria exceeds the average. As in the previous year, Austria's use of internet services improved at a slower rate than the rest of the EU, placing Austria in 18th place, in the bottom third. It scores below average in terms of digital technology connectivity and integration. Austria gained two places to 17th place in the integration of digital technologies, up from 19th place last year. Although Austrian businesses are still not fully utilising digital technology such as cloud services or big data, there has been a significant growth in the percentage of businesses using social media and selling online.

Table 2-1 displays the evolution of the DESI ranking for Austria for the years 2018 to 2020, compared to the average score of the EU-member states.

	Austria		EU
	rank	score	score
DESI 2020	13	54.3	52.6
DESI 2019	14	51.1	49.4
DESI 2018	13	48.5	46.5

Table 2-1. DESI ranking for Austria for 2018 to 2020 (EC, 2020)

Figure 2-4 allows for a visual comparison of the DESI 2020 ranking of all EU-member states. Following, the five DESI pillars are elaborated further.

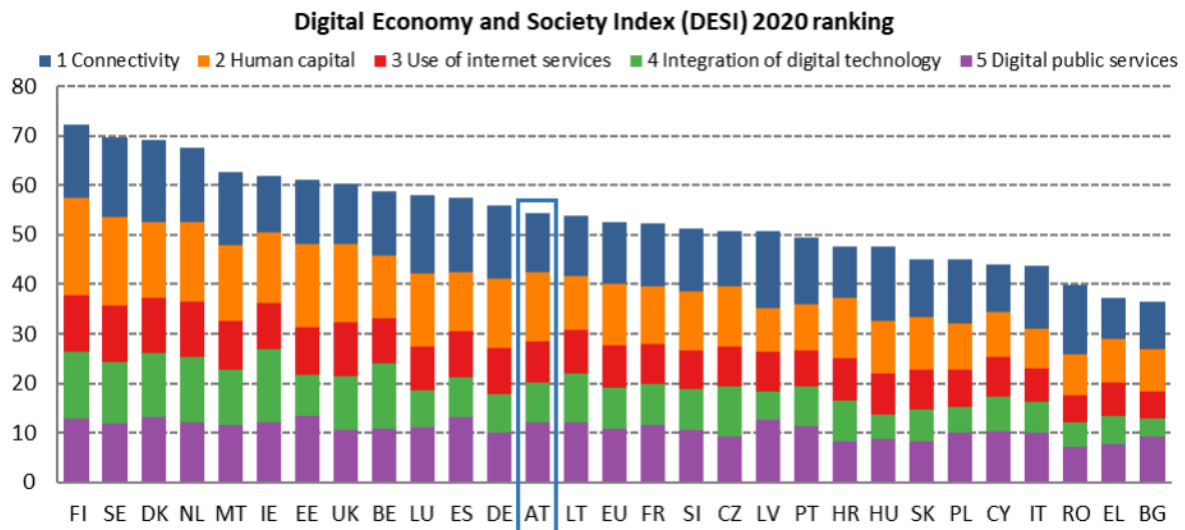


Figure 2-4. DESI 2020 ranking, highlighting Austria (EC, 2020)

Connectivity: 22nd place (2019: 18th place)

In terms of fixed-network and mobile broadband penetration, Austria currently ranks 22nd (previous year: 18th). Comprehensive coverage of all regions with broadband is just as necessary as a rapid 5G roll-out. Due to the topography, this is cost-intensive, but necessary if the entire population is to benefit from digital opportunities, because connectivity is the basis for modern business.

Human Capital: 9th place (2019: 8th place)

In the area of basic digital skills, software skills, ICT graduates and skilled workers, Austria is in a good ninth place, even though it has lost one place compared with the previous year. The issue of education has already been taken up by the government in Austria, with a wide variety of programs aimed at strengthening the digital skills of the population from young to old (see Section 3.2.3).

Use of Internet Services: 18th place (2019: 16th place)

Austria ranks 18th in the use of online content, communication and online transactions. According to the survey, 86% of the population use the Internet regularly, and the number who have never used it has dropped to 10%. Only 14% of domestic Internet users sell online, compared to an EU average of 23%. Therefore, broad awareness campaigns about the opportunities offered by a wide variety of online applications would be target-oriented.

Integration of Digital Technology: 17th place (2019: 19th place)

Although Austria has moved up two places to 17th in the category of digitalisation of the economy, the domestic economy, which is dominated by SMEs, is not yet using cloud services or big data to the same extent as is already the case in other countries. Only 6% of enterprises use big data, while the EU share is twice as high. Equally, the proportion of companies using cloud technologies is with 11% far below the EU average of 18%, placing Austria on the 23rd position. The proportion of SMEs selling online has increased by around 6 points compared to the previous year. However, online retail sales

increased by only two percent at 9%, indicating that digital investments have not yet generated the desired revenues.

Digital Public Services: 8th place (2019: 10th place)

In the area of digital public services, Austria ranks above the EU average on the 8th position. The country performs well in the pre-filled forms indicator and in online service completion. The open data is Austria’s weakest indicator but still in line with the EU average.

The connectivity dimension of the Digital Economy and Society Index (DESI) looks at both the demand and the supply side of fixed and mobile broadband, taking into account fixed and mobile broadband and their prices. Figure 2-5 highlights the performance of Austria in the forementioned dimension of DESI 2020.

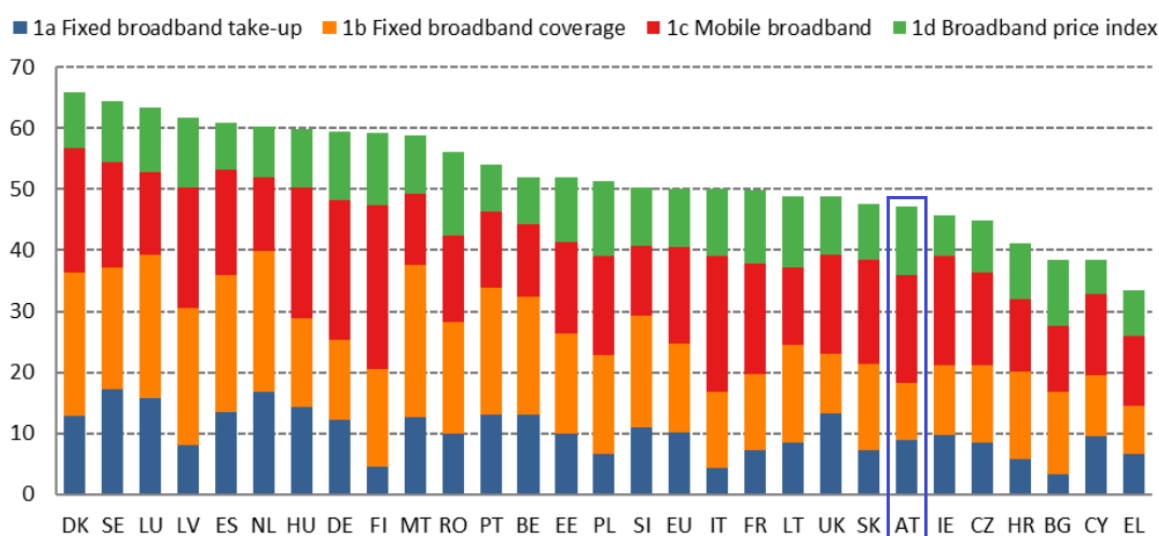


Figure 2-5. DESI 2020, Connectivity, highlighting Austria

Figure 2-6 allows to compare the percentage of rural NGA coverage (fast broadband with at least 30 Mbps) with the availability of NGA in Austria in total. The countrywide NGA coverage of Austria for 2020 was 84% of households, slightly below the EU average of 86%. In contrary, nearly 7 in 10 (68.4%) rural Austrian households had access to NGA broadband services at the end of June 2019, above the EU average of 59.3% (IHS Markit et al., 2020).

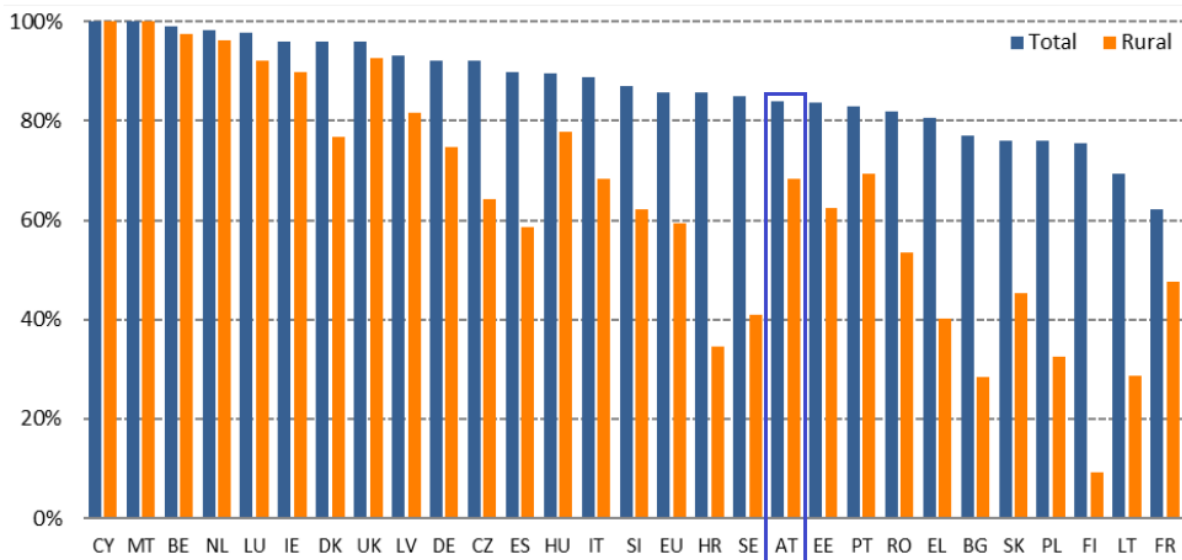


Figure 2-6. DESI 2020, Next Generation Access (NGA) broadband coverage in the EU (% of households), mid-2019, highlighting Austria (EC, 2020)

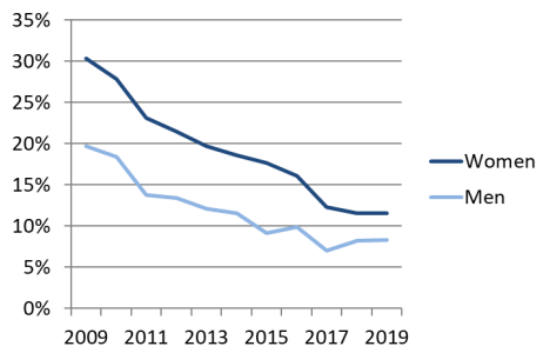
The Women in Digital Scoreboard 2020 (EC, 2020) monitors women’s participation in the digital economy. Austria ranks at the 11th position, with a score slightly above the average (Austria: 54.6, EU-average: 54.5). The score is calculated from the three categories “Use of internet”, “Internet user skills” and “Specialist skills and employment”. While the performance of women in Austria in the first category is slightly below the EU average, women in Austria are particularly skilled internet users, but score low concerning specialist skills and employment (see Figure 2-7, left).

Consequently, in the federal RTI Strategy 2030 (Federal Chancellery Republic of Austria, 2020) defines one goal to tackle this deficit:

- Increase the proportion of mathematics, information technology, natural sciences and technology (STEM) graduates by 20%, increase in the proportion of women in graduates in technical subjects by 5%

	Austria		EU	
	Women value	Men rank	Women value	Men value
1 Use of internet				
1.1 Internet users	83%	16	89%	84%
% individuals, 2019				86%
1.2 People who have never used the internet	12%	14	8%	10%
% individuals, 2019				9%
1.3 Online banking	69%	13	73%	65%
% internet users, 2019				67%
1.4 Doing an online course	8%	15	10%	11%
% internet users, 2019				11%
1.5 Online consultations or voting	10%	14	11%	12%
% internet users, 2019				12%
1.6 e-Government users	66%	15	74%	66%
% internet users submitting forms, 2019				68%
1 Use of internet	57	15	60	
Score (0-100)				
2 Internet user skills				
2.1 At least basic digital skills	61%	9	70%	56%
% individuals, 2019				60%
2.2 Above basic digital skills	37%	6	41%	31%
% individuals, 2019				36%
2.3 At least basic software skills	64%	8	73%	59%
% individuals, 2019				63%
2 Internet user skills	62	7	55	
Score (0-100)				
3 Specialist skills and employment				
3.1 STEM graduates	12.4	17	32.7	14.3
Per 1000 individuals aged 20-29, 2018				26.3
3.2 ICT specialists	1.9%	10	6.4%	1.6%
% total employment, 2019				6.2%
3.3 Unadjusted gender pay gap	22%	20	18%	
% difference in pay, 2018				
3 Specialist skills and employment	44	16	48	
Score (0-100)				
Women in Digital Index	54.6	11	54.5	
Score (0-100)				

People who never used the internet (% of individuals)



Above basic digital skills by age and gender (% of individuals)

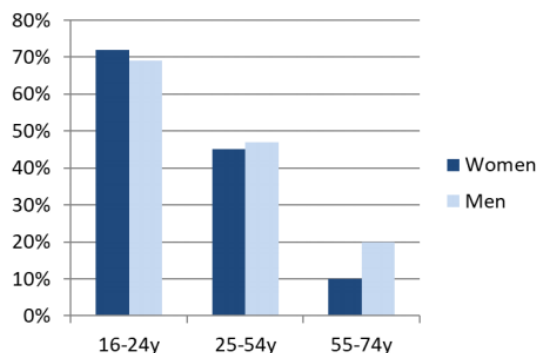


Figure 2-7. Women in Digital Scoreboard 2020, Austria

Figure 2-7 also gives information on the percent of individuals who never used the internet. While the gap between women and men decreased from 2009 onwards, the gap is still evident and stagnating since 2017. Another clear gap is evident in the percent of individuals with above basic digital skills between women and men in Austria. This gap concerns the age group of 55 – 74 years old individuals. In contrary, amongst 16 – 24 years old people in Austria, there is a higher percentage of women with above basic digital skills.

Based on a study, which shows where and how inequalities also arise in the development process and how technologies can be made more equal in terms of opportunity (FFG, 2020), the "Equal Opportunities and Digitalisation" network was initiated by the Austrian Research Foundation (FFG), which is aimed specifically at women who want to shape digitalisation. It enables the implementation of network-based, inter- and transdisciplinary research and innovation projects and is intended to increase the innovation output of Austrian companies (especially SMEs) by focusing on equal-

opportunity digitalisation and cooperation. Moreover, the network pursues to give greater weight to the topic of equal opportunities in current discussions on digitalisation, to open up new opportunities for exchange, and to support transdisciplinary development teams that want to think about diversity when designing a digital product (OEGUT, 2020).

3. Policy framework for (rural) digitalisation

This section aims to identify how general policies boosting digitalisation, not specific for rural areas influence these areas and also how rural and agricultural policies foster digital transition.

3.1. European Digital Policies

In the time of writing this report, no relevant information was retrievable online to evaluate the influence of European digital policies on rural areas in Austria.

3.2. National Policies boosting digitalisation

This section will gather the different existing at national policies promoted by different ministries and institutions.

3.2.1. National Digital Agenda or similar strategies

The two main responsible authorities concerning digitalisation in Austria are the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) and the Federal Ministry for Digital and Economic Affairs (BMWD). Moreover, the Broadband Bureau, which is part of the Federal Ministry of Agriculture, Regions and Tourism (BMLRT) promotes the deployment of broadband networks in Austria. The BMK is responsible for development of telecommunications policy and legislation, conducting a centralised policy on frequencies, developing state aid programs for broadband roll-out and awarding contracts for the provision of universal services. The BMWD, which exists since 2018 advances digitalisation and digital transformation in Austria; it is responsible for improving the framework conditions for digital transformation and for coordinating and implementing e-government solutions.

The focus of digitalisation in Austria lies on:

- Supporting the economy with digital services
- Creating a digitalisation-friendly environment to promote digital innovations
- Expanding digital services for citizens
- Coordinate digitalisation measures across the federal government

With the Digital Action Plan Austria, the Federal Ministry for Digitalisation and Industry Location created a strategic program of actions in 2019. The [Digital Action Plan](#), developed together with stakeholders and experts from society, administration and business, tries to exploit the opportunities offered by digitalisation and ensure benefit for Austria. In total, the Federal Ministry for Digitalisation and Industry Location has a total budget of around EUR 1.24 billion for its two subdivisions, Industry and Research, in 2021.

The principles, goals and measures of the plan are as follows:

Principles:

- Create growth, jobs and prosperity
- Increase the quality of life for people in all regions and age groups
- Provide secure, modern and accessible administrative services for businesses and citizens

Goals:

- Making Austria crisis-proof
- Expanding competitiveness
- Position Austria as a digital innovation region
- Making targeted use of data for innovations
- Shaping education, training and continuing education as a digital competitive advantage
- Promote cutting-edge digital research in a targeted manner
- Facilitate digital communication between the state and citizens

Developing measures in the key action areas:

- Economy: More growth and jobs through better use of data
- Government: More digital service and lower costs for businesses and citizens
- Education, research and innovation: More future through digital innovations for all of us
- Health and care: More health and quality of life for all generations
- Security and infrastructure: More data security and resilience for all of Austria

In 2016, a digital roadmap was first drafted for Austria. The roadmap is the first time that the activities of all ministries have been bundled in a joint strategy paper of the Austrian government. In this first dynamic paper, one of the 12 fields of action was “Environment, energy, Agriculture and climate protection”. There it is mentioned, how digitalisation can help to increase efficiency, conserve resources and reduce the burden on the environment, thus contributing to Austria's sustainable development.

Furthermore, measures are stated, covering the following areas:

- Broadband coverage and implementation of the Austrian Broadband Strategy

- Creating uniform data standards and ensuring data rights for owners of autonomous vehicles in agriculture
- Ensuring electronic access to environmental information while respecting data privacy
- Aggregation of existing environmental data
- Further develop the spatial data infrastructure in line with the INSPIRE directive and make greater use of it for agricultural, forestry and environmental policies
- Increasing security of supply and grid stability through flexible control of the energy system
- Smart meter rollout to deal more efficiently with electricity, save costs and at the same time contribute to security of supply and better integration of renewable energies

Digitalisation in agriculture is a cross-cutting issue that must be actively addressed in order to mobilize also the opportunities for small-scale Austrian agriculture. Due to the various challenges, but also the opportunities presented by digitalisation, a platform "Digitalisation in Agriculture" was established in spring 2017. The objectives of the platform were manifold: the state of knowledge is to be elaborated, the opportunities and risks of digitalisation are to be identified and a need for action is to be derived from this. It is important to network the players, disseminate information and raise awareness in all areas concerned. The platform published a report (BMLRT, 2018), which describes the current state of development in the various fields of action and provides concrete approaches that can support and increase the efficiency of agriculture through digitalisation. According to the report, a solution-oriented approach to the issue of digitisation in agriculture requires a wide range of different expertise and thus cooperation between several organisations that cover competencies in the areas of crop production, animal husbandry, agricultural and process engineering, information technology, business management, law and environmental impact. So far, there is no common and holistic view of the new developments in digital topics.

3.2.2. Other policies and strategies influencing (rural) digitalisation

The Federal Ministry of Agriculture, Regions and Tourism (BMLRT) has defined a portfolio of topics which are affected by and can profit from digitalisation. These include agriculture, forestry, rural areas, water and tourism.

Rural development is a central element of Austria's agricultural policy. Its importance goes far beyond agriculture. It is decisive for the vitality of rural areas and can be described as a motor for strengthening rural regions worth living in. The Rural Development Program (BMLRT, 2018) promotes modern, efficient and sustainable agriculture, supports the regional economy and communities and sets social accents. All six priorities of EU rural development policy defined at European level are addressed and implemented through the program. This implements a program that can be used to respond to the major challenges facing rural areas. It serves to actively shape rural areas in Austria as living, economic and recreational spaces and to strengthen their vitality in ecological, economic and social terms.

There is great potential in the forestry industry to optimize forestry contractors all the way to wood buyers with digital solutions. However, the implementation of digital projects is slowed down by too

much work in the core business, high costs for the introduction of new products, lack of contact persons for the initiation of digital projects and lack of knowledge transfer. Key topics include economic and ecological aspects, forest GIS, digital forest inventories, damage diagnostics and pest prevention, the diverse use of laser scanners for different purposes, data management along the "wood" value chain with stockyard management, digital methods of wood takeover, digitised quantification and qualification of wood, and the optimisation of business processes and marketing.

The Master Plan for Rural Areas (BMLRT, 2017) was created as part of a stakeholder and citizen participation process, from November 2016 to June 2017, with the aim of strengthening rural areas in Austria through a new way of thinking and thus creating equal opportunities for the population. It promotes the implementation of the SDGs (Sustainable Development Goals) in the areas of sustainable energy, sustainable settlements, sustainable production and consumption methods, and the protection of land ecosystems and climate. The master plan implementation process captures which SDGs are impacted by the measures. A comprehensive multi-stakeholder process, as in strategy development, is also used in implementation. Concrete proposals for measures show new perspectives for systematically improving economic and living conditions in rural areas. The focus of the "Digitalisation" priority is on comprehensive 5G coverage in all regions and digital Wi-Fi hotspots in communities. In addition to broadband expansion, the introduction of a "digital community certificate" is proposed as an option for action.

The networking, processing and provision of extensive data for the description of the water cycle and the water quality of surface waters and groundwater, as well as the integration into water management planning is a core aspect of the activities of the BMLRT regarding digitalisation in the field of water. The main goals of digitalisation in the field of water management include expanding digital administration and increasing transparency by providing networked information to citizens and companies, while ensuring data protection and full control over their own data.

The ongoing digitalisation poses major challenges for the tourism industry and is influencing the entire tourism service chain. Especially for a highly developed tourism location like Austria, digitalisation brings great opportunities to increase productivity and to target supply and demand. It enables innovations for the tourism product range, for services and business models, and for increasing the efficiency of processes within the value chain. In the Austrian tourism strategy Plan T - Master Plan for Tourism (BMLRT, 2017), digitalisation aspects were identified as one of the central topics and incorporated as a field of action.

In order for the opportunities of digitalisation in rural areas to develop their full potential, the appropriate infrastructure and corresponding measures are needed to accompany the regions, municipalities and, first and foremost, the people in this process. The Regional.Digital.Innovative (FFG, 2020) initiative aims to support rural regions on their path to digitalisation and innovation. It does this by supporting the digital connectivity of the regions and their stakeholders and by promoting discourse and knowledge about the opportunities offered by broadband technologies, e.g., by making them visible via various pilot projects at different levels.

Table 3-1. Additional policies and strategies addressing digitalisation in Austria

Ministry / Authority	Policy	Objective	Expected Impact
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Federal Ministry of Agriculture, Regions and Tourism (BMLRT)	Rural Development Program (BMLRT, 2018)	<ul style="list-style-type: none"> • Promoting knowledge transfer and innovation • Improving the viability of farms and competitiveness • Promotion of innovative agricultural techniques • Promoting an organisation of the food chain • Restoration, conservation and improvement of ecosystems • Promotion of resource efficiency • Promotion of social inclusion 	It serves to actively shape rural areas in Austria as living, economic and recreational spaces and to strengthen their vitality in ecological, economic and social terms.
	Digitalisation in agriculture (BMLRT, 2018)	The state of knowledge is to be elaborated, the opportunities and risks of digitalisation identified, and a need for action derived from this. It is important to network the players, disseminate information, and raise awareness in all affected areas.	Digitalisation in agriculture can be an essential component in strengthening consumer loyalty to primary production and transparently communicating the excellent quality of domestic products and the environmentally friendly production methods of our agriculture
	Digitalisation and forestry (BMLRT, 2020)	Key topics include economic and ecological aspects, forest GIS, digital forest inventories, pest diagnostics and prevention, the diverse use of laser scanners for different purposes, data management along the timber value chain with stockyard management, digital methods of timber takeover, digitised quantification and qualification of timber, and optimisation of business processes and marketing	Contribution to strengthening competitiveness in general, provision of important impulses for increasing energy and cost efficiency in connection with climate change-adapted forest management, as well as contribution to resource conservation
	Masterplan for Rural Areas (BMLRT, 2017)	Strengthen the broadband infrastructure, availability and usage and adaptation of vacant buildings for shared offices and telecommuting	Increase in attractiveness of municipalities as places to live and do business and create equal opportunities for the population
	Digitalisation and water (BMLRT, 2020)	The key objectives of digitalisation in the water management sector include expanding digital management and increasing transparency by providing citizens and companies	Description of the water cycle and the water quality of surface waters and groundwater. The connection, processing and provision of this treasure of

		with networked information, while ensuring data protection and full control over their own data	these data as well as its integration into water management planning is a core aspect of digitalisation in the field of water
	Digitalisation and tourism (BMLRT, 2017)	Especially for a highly developed tourism location like Austria, digitalisation brings opportunities to increase productivity and to target supply and demand. It enables innovations for the tourism product range, for services and business models, and for increasing the efficiency of processes within the value chain	Digitalisation can increase productivity and target supply to demand
	Regional. Digital. Innovative (FFG, 2020)	The aim is to achieve proactive networking with relevant actors from the Austrian innovation community, to promote cross-regional cooperation through cross-regional projects, and to strengthen business- and knowledge-related as well as creative jobs for women in regions.	Strengthening the innovative capacity of regions through innovative solutions for concrete current challenges in rural regions

3.2.3. Policies and strategies to boost digital literacy and tackle the digital divide

Although Austria was above the EU average of 58 percent in the 2020 Digital Economy and Society Index (DESI) survey, with a share of 66 percent having at least basic digital skills, digital literacy still has room for improvement. For this purpose, a digital competence model for Austria was created, which will be gradually implemented and offers citizens and companies the opportunity to classify digital competencies. Based on this, strengths and areas that shall be promoted can be identified.

The ambitions of initiatives and strategies in Austria to boost digital literacy and tackle the digital divide cover three domains, labour market, pupils and seniors.

With the "fit4internet" initiative, the Austrian government has been actively contributing to the realisation of the principle of "Leaving no one behind" in the context of the digital transformation of the economy and society since 2018. All people should be given the chance to develop their digital skills and benefit from digitalisation. "fit4internet" pools forces, sets standards for digital skills, coordinates players, offers skills checks and references training courses. The target groups are young people starting out on their careers, employees directly affected by the change in job profiles, and the 60+ generation. The effect of "fit4internet" is that digital fitness also combats poverty, promotes education and reduces inequalities.

The video series "Smartphone-ABC" is an initiative of the Federal Ministry for Digital and Economic Affairs in cooperation with fit4internet and addresses people of older generations. The series of videos

offers simplified background information as well as step-by-step instructions for digital beginners who want to understand the smartphone better and operate it more confidently.

As part of a study, the status quo on the topic of digital skills and competencies in Austrian small and medium-sized enterprises was surveyed. On the one hand, literature research was conducted and, on the other, surveys of Austrian SMEs were analysed. The quantitative survey of 300 Austrian SME employees, of which 14.67% (44 people) belonged to the agriculture and forestry sector, revealed that the need for skills in the use of digital technologies is higher in the agriculture and forestry sector than in other sectors. The result is a policy paper and proposals for measures and activities to increase basic digital skills. The last of the eight recommendations is: "Expansion of high-speed Internet infrastructure in rural areas".

The "eEducation Austria" initiative of the Federal Ministry of Education, Science and Research addresses pupils and aims to bring digital and IT skills into all classrooms in Austria, from elementary school to the school-leaving examination and diploma. Students acquire the necessary skills to use technologies consciously and productively for their own further development or to gain a foothold in corresponding promising professional fields.

There is an indirect effect on rural areas through the support of universities. The Federal Ministry of Education, Science and Research (BMBWF) is funding the €50 million program "Digital and Social Transformation. Selected Digitalisation Projects at Public Universities 2020 to 2024" to fund structurally changing, directional and forward-looking projects that have the potential to make the entire university and higher education system innovative and efficient for the digital age. One of the 35 funded projects is led by the Technical University Vienna, which researches digital agriculture and creates digital experimental farms.

The Rural Training Institute (LFI) is the educational institution of the Chamber of Agriculture and primarily offers farmers a diverse range of educational opportunities. The offer is particularly large in the area of business management, EDP, income combination, direct marketing and farm tourism. The educational campaign 'Digitalisation in Agriculture and Forestry' of LFI Austria, launched in 2017, prepares information around 'Agriculture 4.0', sets awareness-raising measures and integrates digital topics into the educational programs of the Rural Training Institutes in the long term.

The Master Plan for Rural Areas report (BMLRT, 2017) lists one of its 20 elaborated fields of action to highlight the strengths and achievements of rural areas as education. The aim is to make continuing education attractive and easily accessible in rural areas as well, to expand dual education in the tertiary sector, to create platforms for education providers and to improve online offerings.

The report drafted by the platform "Digitalisation in Agriculture" (BMLRT, 2018) also discusses the topic of digitalisation in context of education and training. From the point of view of education and training as well as consulting, it will be indispensable in the near future to create a broad overview and consolidation of existing uses as well as potentials and opportunities. It is central that all activities in the fields of education and extension are oriented towards the actual and practical needs of farmers.

The Rural Development Program (BMLRT, 2018) states, the transfer of knowledge through educational, advisory and information measures contributes significantly to strengthening agriculture, forestry and rural areas. Targeted measures promote general professionalisation and the improvement of entrepreneurial competence in agriculture and forestry. Through them, the action competencies of the farmers are expanded and new impulses are set in the farms. The acquisition of professional and personal competencies contributes to meeting the increasing professional demands, gaining new perspectives and successfully shaping change processes. Current topics such as climate change and sustainable use of resources in connection with innovations receive special attention.

Table 3-2. Programmes and initiatives addressing digital literacy and digital divide in Austria

Initiative	Objective	Key words	Period	Area of impact	Link	Public / Private	Scale of action *	Rural / General
fit4internet	All people should be given the chance to develop their digital skills and benefit from digitalisation. The target groups are young people starting out on their careers, employees directly affected by the change in job profiles, and the 60+ generation. The effect of "fit4internet" is that digital fitness also combats poverty, promotes education and reduces inequalities	digital skills, elderly, young people, digital fitness, education	since 2018	Austria	https://www.fit4internet.at	Public	National	G
eEducation	Prepare pupils for the challenges of digitalisation and support school administrators and teachers in the didactic use of digital technologies in the classroom and in the development of IT skills among students	didactics, schools, digital skills	-	Austria	https://eeducation.at	Public	National	G
Smartphone-ABC	Series of videos provide simplified background information as well as step-by-step instructions for digital beginners who want to understand the smartphone better and operate it more confidently	digital beginners, smartphones	-	Austria	https://www.digitalelebenswelten.at	Public	National	G
Digital Competences in Austrian SMEs	To derive measures to increase digital skills and competences for Austrian Small and Medium Enterprises (SMEs) based on an extensive literature research and several empirical studies	digital skills, SMEs, research, workforce	2020	Austria	https://www.bmdw.gv.at/Services/Publikationen/Studie-Digitale-Kompetenzen-in-%C3%B6sterreichischen-KMUs.html	Public	National	G
digitalesozialeTransformationHS	Funding of structure-changing, directional, and forward-looking projects that have the potential to make the entire university and higher education system innovative and efficient for the digital age	digital change, social change, research and development	2020 – 2024	Austria	https://www.bmbwf.gv.at/Ministerium/Presse/Digitale-soziale-Transformation-HS.html	Public	National	G
LFI - Ländliche Fortbildungsinstitut	The Rural Training Institute is the educational institution of the Chamber of Agriculture. It offers a comprehensive range of education and training opportunities in rural areas, amongst other, addressing information technology	agriculture, rural areas, digital skills, education	1972	Austria	https://lfi.at	Private	National	R

LK Digital	As part of the LFI education campaign "Digitalisation in agriculture and forestry", the knowledge platform provides an overview of digital developments and new technologies.	agriculture 4.0, forestry, digital skills, education	2017	Austria	https://www.lkdigital.at/	Private	National	R
Master Plan for Rural Areas	Digital skills must be part of school and vocational training. Older people and people with limited mobility should also be able to benefit from the digital world and digital services	pupils, schools, elderly, digital services, digital benefit	2017	Austria	https://info.bmlrt.gv.at/themen/regionen-raumentwicklung/raumentwicklung/masterplan-fuer-den-laendlichen-raum.html	Public	National	R
Digitalisation in Agriculture	To create a broad overview and consolidation of existing uses as well as potentials and opportunities. It is central that all activities in the fields of education and extension are oriented towards the actual and practical needs of farmers.	farmers, digital skills, holistic approach to education, needs assessment	2018	Austria	https://info.bmlrt.gv.at/service/publikationen/landwirtschaft/digitalisierung-in-der-landwirtschaft.html	Public	National	R
Rural Development Program	The acquisition of professional and personal competencies contributes to meeting the increasing professional demands, gaining new perspectives and successfully shaping change processes. Current topics such as climate change and sustainable use of resources in connection with innovations receive special attention.	rural development, innovation, climate change, sustainability, knowledge transfer	2014 – 2020	Austria	https://info.bmlrt.gv.at/themen/landwirtschaft/eu-agrarpolitik-foerderungen/laendl_entwicklung/le.html	Public	National	R

3.2.4. Policies and strategies that incentivise digital innovations

The first Austrian overall strategy for research, technology and innovation from 2011 expired at the end of 2020. The original goal of joining the group of "Innovation Leaders" in the European Innovation Scoreboard was not achieved. In 2020, Austria ranked eighth and is thus one of the "Strong Innovators". The RTI Strategy 2030 focuses on efficiency and increasing output in the system. The work on the RTI Strategy 2030 is largely based on the detailed analysis "OECD Reviews of Innovation Policy: Austria 2018". The European Commission's concept of Smart Specialisation was also used as a reference framework for the development of the RTI Strategy 2030. In addition, the cross-cutting themes of Sustainable Development Goals, digitalisation, strengthening gender equality in RTI, responsible science, open science and open innovation were used as a basis. The RTI strategy sets out the strategic direction for the next ten years in the form of overarching objectives in order to catch up with the international top field and strengthen Austria as an RTI location, focus on effectiveness and excellence, and to focus on knowledge, talent and skills.

The Research and Technology Report (FTB) is published annually on behalf of the ministries responsible for research and technology, namely the Federal Ministry of Education, Science and Research (BMBWF), the Federal Ministry for Climate Protection, Environment, Energy, Mobility, Innovation and Technology (BMK) and the Federal Ministry for Digitalisation and Industry Location (BMDW). Based on current data, it highlights developments in research, technology and innovation policy and Austria's position in selected areas.

The initiative introduced in 3.2.2, "Digital and social transformation in higher education", also serves as an example for the creation of a digital innovation ecosystem influencing rural areas and agriculture. With a budget of 50 million Euro for the period of 2020 to 2024, the Federal Ministry of Education, Science and Research (BMBWF) is funding 35 new and creative digitalisation projects at universities. One project lead by the Technical University Vienna, "Digital Farming - Digital Experimental Farm", deals with digital transformation and agriculture. Together with the University of Natural Resources and Life Sciences Vienna and the University of Veterinary Medicine Vienna, they are working on the use of digitalisation in agriculture (Agriculture 4.0, Digital Farming), focusing on the sustainable use of resources and the optimisation of production processes. The project "Digital Farming - Digital Experimental Farm" will set up a modern experimental farm using artificial intelligence to support agricultural processes. Particular emphasis is placed on interdisciplinarity, which is expressed, among other things, in an inter-university "PhD School".

The central component of the "Community creates Mobility" project is the so-called "Mobility Manifesto" because it requires the exchange of different perspectives as well as know-how, a common vision for the future of mobility and the impetus for more cooperation.

Under the leadership of the Federal Ministry for Climate Protection, Environment, Energy, Mobility, Innovation and Technology (BMK), a Research, Technology and Innovation (RTI) Strategy Mobility 2040 was developed for the first time from November 2019 to September 2020, with the aim of setting

the course for the future mission-oriented design of research and innovation policy measures in the field of mobility, especially to achieve the climate targets, and to support the successful Austrian positioning in mobility-relevant thematic fields of the future EU research framework program Horizon Europe. In addition, the RTI Mobility Strategy will serve as a bridge between the Mobility Master Plan 2030, mobility policy and the new Federal Research, Technology and Innovation Strategy 2030. The vision is to develop innovations in and from Austria for a climate-neutral mobility system in Europe by 2040 and to take research and innovation policy steps towards the realisation of a sustainable, climate-neutral and inclusive mobility system. The thematic areas "Cities: making urban mobility climate-neutral" and "Regions: mobilising and sustainably connecting rural areas" focus on the spatial dimension that shapes the need for and demand for mobility. The mission fields "Digitalisation: operating infrastructure, mobility and logistics services efficiently and in a climate-friendly manner" and "Technology: developing environmentally friendly transport technologies" focus on two key technology-based areas and address the potential of digitalisation and other technological developments for a climate-neutral mobility system.

Within the framework of the agricultural European Innovation Partnership (EIP-AGRI), the "Netzwerk Zukunftsraum Land" supports the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) since 2016 in linking interested farmers, associations, research organisations and other funding applicants for joint innovation projects. In May 2020, the event "Smart Villages: Innovation and Digitalisation as an Opportunity for Rural Areas" was held to get to know the "Smart Villages Concept" of the European Commission and for mutual exchange in the context of the participation process for the national GAP strategy plan preparation. In addition, the participants had the opportunity to exchange ideas directly with the implementers of best practice project examples.

Table 3-3. Policies and strategies influencing digitalisation in rural areas in Austria

Initiative	Brief Description	Objectives	Area of impact	Period of implementation	Budget (if any)	Public / Private	Are rural areas specifically mentioned or addressed? Y/N	Link
FTI-Strategie 2030 / RTI Strategy 2030	Strategy of the Federal Government for Research, Technology and Innovation	To catch up with the international leaders and strengthen Austria as an RTI location; focus on effectiveness and excellence; focus on knowledge, talents and skills.	National; RTI	2021 – 2023	3,86 MEUR	Public	N	https://www.bundeskanzleramt.gv.at/themen/forschungskoordination_fti.html
Digital Farming - Digital Experimental Farm	Future challenges of agriculture and forestry are addressed through sound, strategic research and teaching at the intersections of technical sciences, natural sciences, and veterinary medicine. Understanding the underlying rationale, models, complexities, threats, and consequences is a prerequisite to ensuring the resilience and sustainability of the sector for society in the future.	By setting up state-of-the-art experimental farms in two towns in Lower Austria as "digital twins", the project establishes a forward-looking experimental infrastructure for interdisciplinary research and teaching at an international level.	Lower Austria; agriculture	2020 – 2023	-	Public	Y	https://www.tuwien.at/en/tu-wien/organisation/central-divisions/digital-office/projects/digitalization-projects-bmbwf-tu-wien-2020
Community creates Mobility	In times of change, such as health and climate crises, society is facing major challenges. The demand for intelligent mobility solutions is growing all the time. For this to succeed, a strong common understanding, the drive for more collaboration, and a shared vision for the future of mobility are needed.	The goal is to achieve comprehensive public mobility through connectivity for all areas, i.e., to ensure the mobility chain. This requires different spatial concepts and functions - corresponding to the forms of living realities (diverse concepts) and human needs (life essentials, security, belonging, recognition, self-realisation).	National; mobility	-	-	Public	Y	https://www.zusammenbewegen.at/
Research, Technology and Innovation Strategy (RTI Strategy) Mobility 2040	The vision is to develop innovations in and from Austria for a climate-neutral mobility system in Europe by Europe by 2040 and to take research and innovation policy steps	Setting the course for the future mission-oriented design of research and innovation policy measures in the field of mobility, especially to achieve the climate targets, and to	National; mobility, research, automatisaion	2020 – 2040	~ 15 MEUR p.a.	Public	Y	https://mobilitaetderzukunft.at/de/

	towards the realisation of a sustainable, climate-neutral and inclusive mobility system.	support the successful Austrian positioning in mobility-relevant thematic fields of the future EU research framework program Horizon Europe						
Netzwerk Zukunftsraum Land	The central theme of the “Zukunftsraum Land” network is innovation. It fosters networking, communication and cooperation beyond the "usual" actors and supports progressive thinking, strategic partnerships and courage.	In order to promote innovative strength in rural areas, different, diverse measures are needed that promote and anchor innovation in a profound and long-term manner.	National; rural areas, agriculture, forestry	2016	-	Public	Y	https://www.zukunftsraumland.at/seiten/143

3.3. Contributions from the Structural and Investment Funds and the Cohesion Policy

Structural and Investment Funds and Cohesion Policy providing funding for different initiatives to boost digital transition are discussed in this chapter.

3.3.1. Broadband infrastructure

Austria's Broadband Strategy 2030 (BMLRT, 2019) was adopted in August 2019. It aims at full coverage of symmetric Gigabit connections throughout the country by 2030. In addition to the long-term objective, the 2030 strategy also includes five concrete interim goals:

- Phase 1: Full coverage of ultra-fast broadband connections (100 Mbps) by the end of 2020
- Phase 2: Market launch of 5G in all capital cities by the end of 2020
- Phase 3: Austria as 5G pilot country until the beginning of 2021
- Phase 4: 5G services on major traffic connections by the end of 2023
- Phase 5: Nationwide Gigabit connections, including nationwide coverage of 5G, by the end of 2025

Predecessor of the 2030 strategy was the Broadband Strategy 2020 (BMVIT, 2014). It was equipped with a budget of one billion Euro, for which the programme is also known as the “Breitbandmilliarde”, the “broadband billion”. The program accelerated expansion, especially in the first few years of implementation. However, the momentum seems to be slowing down, especially in rural areas where private network operators are reaching the limits of their profitability despite subsidies. The goal of the Broadband Strategy 2020 of providing almost all unserved residences with fast broadband connections of at least 100 Mbit/s by the end of 2020 was not achieved. Following the broadband billion, the national government announced in April 2021 a further EUR 1.4 billion for the expansion of faster Internet (BMLRT, 2021). This time, EUR 389 million will come from mobile spectrum auction proceeds. The government wants 891 million euros from the EU's Resilience Fund, a sum Austria has just applied for. A further 166 million euros are to come from funds already budgeted.

Figure 3-1 shows the rounded maximum values of the normally available broadband download speeds over Austria, with data from December 2020. The speeds are shown in shades of orange, dark shades indicating higher speeds, and range from ≥ 1 Gbit/s to < 10 Mbit/s.

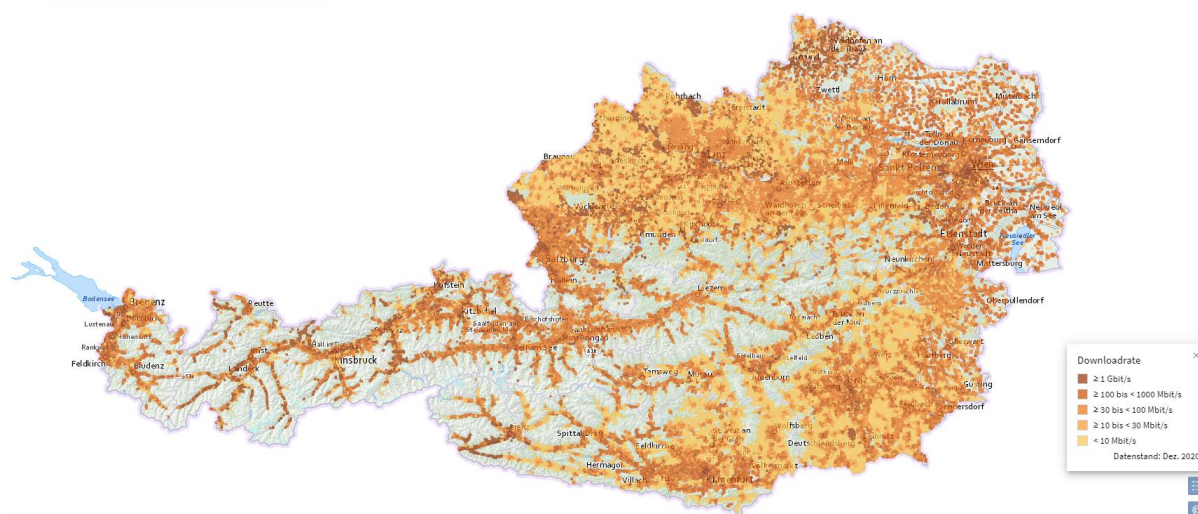


Figure 3-1. The federal government's Broadband Atlas (BMLRT, 2021)

3.3.2. Digital Public Services

According to the latest 2019 DESI Digital public services thematic report (EC, 2020), Austria's position in the EU on digital public services is the 8th, with a score well above the EU average of 72.2. Reviewing the report, Austria's strengths are visible in six out of the eight indicators, with scores above the EU-average:

- "Pre-filled forms", the extent to which data that is already known to the public administration is pre-filled in forms presented to the user;
- "Online service completion", the extent to which the various steps needed for dealing with the public administration can be done completely online;
- "Digital public services for businesses", the degree to which public services for businesses are interoperable and work cross-border;
- "User centricity", the online availability, usability and mobile friendliness of online services;
- "Key enablers", which includes the elements of Electronic Identification, eDocuments, Authentic sources and Digital post;
- "Cross-border mobility", the extent to which users of public services from another EU country can use the online services.

Need for improvement compared to other EU countries relates to Austria's commitment to open data and e-Government users, the general interaction with public administration through online means.

The eGovernment Act is the core piece of Austrian eGovernment law and the basis for a digital Austria. The law came into force on March 1st, 2004 and was last amended in 2018. Core elements of e-government in Austria are digital projects such as the [citizen card](#), which acts as an electronic ID on

the Internet and allows unique identification and authentication. It can be used to sign applications or contracts that would otherwise require a handwritten signature. Since the end of 2009, citizens in Austria have been able to use the cell phone signature option. Unlike the card-based citizen card, no software installations or additional hardware (card reader) are required. Instead, once the user has registered using an access code (cell phone number) and PIN, a TAN code is sent to the activated cell phone via SMS. Entering the TAN code triggers the qualified electronic signature. Since mid-2016, a mobile signature app is available as a way to use mobile signatures. In the course of 2021, the new [ID Austria](#) will replace the previous cell phone signature or citizen card. In the future, citizens will be able to use ID Austria to prove their identity to digital applications and services. ID Austria will become the key to secure digital services. ID Austria is a further development of the cell phone signature and citizen card. The ID Austria is currently being piloted. This will end in the fall of 2021, at which point ID Austria will be fully available to all citizens.

Digital services provided by public authorities are often offered via websites or apps. [oesterreich.gv.at](#) is Austria's online platform that enables citizens to complete official procedures at a single point of contact. For the business community, the business service portal [usp.gv.at](#) is the central entry point for handling information or transactions online. The e-government portal of the financial administration [FinanzOnline](#) is also available; tax returns and other applications can be completed here via the Internet. The identification option on the Internet using the citizen card makes electronic official services such as electronic payment, delivery or invoicing possible. Electronic payment in e-government is similar to shopping on the Internet. The authority receives the electronically signed feedback of the payment made during the processing of the procedure, which enables a quick completion of the procedure. Electronic delivery enables authorities to send documents electronically, including those that are to be delivered by proof (RSa, RSb). It is also possible to submit e-bills to the administration. After an initial check for formal errors, the electronic invoice is forwarded to the relevant department. A copy of the invoice in PDF format is automatically generated and sent back to the specified e-mail address as confirmation of the submission. The electronic transmission of invoices to the administration and the resulting automatic processing accelerate administrative processes and help to save costs.

Medical care is already difficult to ensure in some rural regions. Sparsely populated areas already have an undersupply of specialists. Added to this is the increasing aging of the population. As a result, it is becoming increasingly difficult to adequately provide the necessary preventive, rehabilitative and nursing services. In addition, the distances to doctors and nurses are longer in rural areas, and the social environment, the proximity to the family, is less and less given. Overall, efforts are needed to expand modern, efficient information technologies and in harnessing further innovative technology for the health sector. Access via telephone and the Web is necessary to create a network of competent contacts in rural areas as well. In 2017, the "Health Hotline" was launched as a pilot project in Vienna, Lower Austria and Vorarlberg, a telephone- and web-based initial contact and consultation service. New remote diagnostics and health monitoring options are designed to help doctors make diagnoses

and treatment decisions without having to be on site to do so. In addition to saving patients travel and time, the aim is also to achieve sustainable relief potential for the healthcare system.

Rural areas face the dilemma that, on the one hand, the labour force available in rural areas often has an insufficient level of formal qualification and, on the other hand, there are too few highly qualified jobs in the region. Digitisation could make it possible to reduce the rural exodus for educational purposes. However, this requires continuous broadband coverage in rural areas. Competent use of the Internet is a basic prerequisite for active participation in the digital society. Nevertheless, many Austrians, especially the older generation, are still unable to use the Internet adequately or at all (see also Figure 2-7).

Table 3-4. Digital Public Services usage, personal perception

		Extremely common	Very common	Fairly common	Not common for most of the population	It is not a possibility nowadays
e-Administration procedures	In general, in the country		X			
	In rural areas			X		
e-Health	In general, in the country			X		
	In rural areas				X	
e-Education	In general, in the country		X			
	In rural areas				X	
Digital identity	In general, in the country		X			
	In rural areas			X		
Digital signature	In general, in the country		X			
	In rural areas			X		
On-line banking (account management, payments)	In general, in the country		X			
	In rural areas			X		

Bills (council taxes, water, electricity)	In general, in the country		X			
	In rural areas			X		

3.3.3. Research and Innovation Strategies for Smart Specialisation (RIS3)

Activities around the concept of Smart Specialisation in Austria are divided into federal and state level; in addition to a nationwide strategy, there are also nine state strategies. Concerning the national strategy, please refer to the first paragraph of Section 3.2.4. Figure 3-2 gives an overview of the focal areas of the nine federal provinces and their relevance. The colours blue, light blue and grey indicate strong, medium and little to no relevance of the theme. The first row is defined as ICT. Based on the nine unique strategic documents, six out of nine countries give a high priority to the topic of ICT, whereas three countries give little or no relevance to it. Other focal areas are life sciences, material sciences, production technologies, sustainability, mobility, quality of life and demography, social sciences, creative industries and tourism.

There is no explicit focus on rural digitalisation evident from the strategies.

THEMEN	B	K	NÖ*	OÖ	S	St*	T	V	W
Informations- und Kommunikations-Technologien	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Lebenswissenschaften	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Materialwissenschaften	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Produktionstechnologien	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Nachhaltigkeit	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Energie, Klimawandel, Ressourcen	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Mobilität	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Lebensqualität und Demographie	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Geistes-, Sozial- und Kulturwissenschaften	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Kreativwirtschaft, DL-Innovationen	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Tourismus (als Teil der FTI Strategie)	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
Tourismus (eigene Tourismusstrategie)	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue

Figure 3-2. Country focal areas corresponding to the nationwide topics

3.3.4. Digital Innovation Centres (DIH)

The Federal Ministry for Digitalisation and Industry Location (BMDW) and the National Foundation for Research, Technology, Development support the establishment of national Digital Innovation Hubs (DIH) in Austria. Digital Innovation Hubs support Austrian SMEs in digitalisation with their expertise and infrastructure.

The first call of the program took place in 2018/2019 and was funded by the Federal Ministry for Digitalisation and Industry Location. The total budget was 3 MEUR. Three Digital Innovation Hubs started operations in 2019/2020:

- Digital Makers Hub (<https://www.digitalmakershub.at/>)
Digital Culture, Co-Ideation and Co-Creation
- DIH-OST (<https://dih-ost.at/>)
3D Printing, Blockchain, IT Security, Internet of Things, Sensors and Connectivity
- DIH-WEST (<https://dih-west.at/>)
Digital Transformation and Innovation, Industry 4.0, eServices, Artificial Intelligence, Security

The three existing Digital Innovation Hubs were expanded by three more in 2021:

- DIH innov:ATE (<https://www.dih-innovate.at/>)
Robotics, Automation, AI, Smart Industry & Infrastructure (Cybersecurity, Blockchain), Big Data, Forecasts & Simulation with a special focus on the agriculture, timber, forestry and energy industries
- DIH Süd (<https://www.dih-sued.at/>)
Production & Manufacturing Technologies, Security, Data Science Knowledge from Data, Digital Business Models & Processes, Logistics as well as the cross-cutting topic Human Resources & Young Talent
- DIH Arbeitswelt KMU (<https://dih.work/>)
Digital Transformation and Innovation, Industry 4.0, eServices, Artificial Intelligence, Security

With the second round, Austria-wide coverage has been achieved. A total of 4 MEUR was available for this call. A large proportion of domestic SMEs, the dedicated target group, thus have a regional connection to one of the digitalisation hubs. Digital Innovation Hubs support the SMEs in the digitalisation process with their expertise and infrastructure. They offer a wide range of services in the modules of information, continuing education and digital innovation for the benefit of the target group. The points of contact can be found in numerous institutions, universities, competence centres, companies and non-profit organisations.

Out of the six hubs, DIH innov:ATE has a focus on agriculture and forestry. The aim is to enable small and medium-sized enterprises in the agriculture, timber, forestry and energy industries to realize their full digital potential. This is achieved by developing innovation competence in key technologies and connecting science with business and the working world of today. The team is an interdisciplinary group of digitalisation, innovation and industry experts. A mix of theory and practice is offered. In workshops and digital potential analyses, the digital maturity level is determined and applications for digitalisation are found. Digital know-how is imparted in workshops or seminars and an exchange with experts is made possible. Support is provided for testing new technologies or developing an overall concept.

3.4. CAP National Strategic Plans

In December 2020, the European Commission published a Communication, along with targeted recommendations for each Member State, to help Member States prepare their CAP strategic plans for the period 2023-2027. The basis for the recommendations, which relate to the nine specific objectives of the CAP and cover environmental, social and economic challenges as well as a cross-cutting objective on knowledge and innovation, is an analysis of the agricultural sector and rural areas in each Member State.

For Austria, the European Commission has made 13 country-specific recommendations that can be categorised under the following four themes:

- Promoting a smart, resilient and diversified agricultural sector that ensures food security;
- Strengthening environmental and climate protection measures and contributing to the Union's environmental and climate-related goals;
- Strengthening the socio-economic fabric of rural areas and addressing societal concerns;
- Modernising the sector by promoting and sharing knowledge, innovation and digitalisation and encouraging their uptake.

As a basis for the Austrian CAP strategic plan, the Federal Ministry of Agriculture, Regions and Tourism (BMLRT) has carried out a review of the current situation of agriculture and rural areas in Austria. The result is available in the form of a comprehensive analysis of strengths, weaknesses, opportunities and threats (SWOT).

Within the SWOT-analysis (BMLRT, 2019), the first statement regarding digitalisation is the prerequisite for the use of digitalisation in agriculture is the expansion of the digital infrastructure. Rapid technological developments, especially digitalisation and framework conditions for agriculture, represent a major challenge for farm managers. Keeping up with this requires not only a sufficient level of education, but also a continuous willingness to learn and develop. A comprehensive range of consulting and training services is therefore of central importance in maintaining and developing the competitiveness of agricultural businesses.

Closely linked to this is the transfer of knowledge, the feedback between research, development and practice. At the same time, the availability of the corresponding infrastructure is not only a prerequisite at the individual company, but also an overriding prerequisite for exploiting the opportunities offered by technical, digital progress.

The listed strengths, weaknesses, opportunities, and threats concerning digitalisation are listed as follows:

- Strengths:
Technology and digitalisation have found their way into Austrian agricultural practice. Technologies in the animal husbandry sector (milking robots) lead the ranking.

- Weaknesses:

One reason for deficits in farm management could be the low proportion of farm managers with specialised higher agricultural training and the low level of willingness to undertake further training compared with other countries.

The result is also a lower willingness to innovate, although this is also due to the lack of knowledge transfer and a general lack of interaction between science (if it deals with issues relevant to competition) and agricultural practice. The agricultural sector is also not one of the innovation drivers here, but follows the trends set by others.

The latest developments in technology and digitalisation are more likely to be applied to larger agricultural structures than are common in Austria. Just as lack of infrastructure, this puts smaller farms at a disadvantage in terms of development.

- Opportunities:

The experiences from EIP AGRI have shown how an increased exchange between science, teaching and practice can take place.

Digitalisation enables the dissemination of knowledge even without personal presence.

The change of generations is the interface for profound strategic reorientation of farms and can be a promoter for innovations. of farms and can be a promoter for innovations.

- Threats:

If there is not sufficient transfer in good time, but also a willingness to adopt innovations, a large gap can quickly open up, especially for those companies that are not the focus of technical development, a large gap can quickly open up.

The next processing step on the way to the Austrian CAP strategic plan is the identification and prioritisation of needs. Based on the results of the SWOT, a total of 45 needs were identified in the course of an analysis:

- 11 needs in the area of "Promoting a smart, crisis-resistant and diversified agricultural sector".
- 16 needs in the area of "Strengthening environmental and climate protection"
- 12 needs in the area of "Strengthening the socioeconomic fabric of rural areas"
- 6 needs of the cross-cutting objective "Modernisation of the sector".

Needs were identified along the nine specific CAP objectives and the cross-cutting objective and then prioritised according to their relevance to the CAP Strategic Plan. Each need could be assigned to only one specific objective or the cross-cutting objective.

Digitalisation is part of the following objectives and ancillary needs:

- Strengthening the focus on the market and Increasing competitiveness, also through a stronger focus on research Focus on research, technology and digitalisation

- Forcing innovation in agricultural production

The goal is to increase the willingness to innovate and adopt new technologies, including the use of opportunities offered by digitalisation, especially in a form adapted to small farm sizes. This also requires appropriate education and extension, alignment and feedback of the system for research and development and innovations in technical-productive and non-technical-productive areas to the actual needs of agricultural practice.

- Contribution to climate protection and adaptation to climate change and sustainable energy

- Increasing resilience and adaptation to climate change

The aim is to build on the experience already gained in the field of climate change adaptation and also to make the most of new opportunities offered by technological innovations and digital transformation, in the best possible way.

- Increase energy efficiency and material efficiency for Greenhouse gas reduction and sustainable use of resources

The aim is to increase energy efficiency in agriculture and forestry and in rural areas as a rural areas as a whole and to give greater priority to energy and material efficiency a higher priority. The nutrient cycles are to be closed and be kept as efficient as possible. The aim is to achieve high yields with at the same time minimal impact on the climate and the environment. The opportunities offered by technological innovations and digital transformation in this context should be exploited to the best possible effect.

- Promoting employment, growth, gender equality, social inclusion, and local development in rural development in rural areas, including bioeconomy and sustainable forestry

- Strengthening the cooperation and innovation capacities of SMEs in rural areas

The aim is to strengthen innovation capacity through more intensive networking of institutions and stakeholders in the regions.

Taking advantage of the start-up mood, the increase of business start-ups as well as the support of business handovers/takeovers is to be promoted. The aim is to promote the creation of new qualified employment opportunities, especially for women, and to increase value creation, including incomes, in rural regions.

- Improving broadband supply and social infrastructure in rural areas rural areas

The aim is to contribute to the broadest possible fixed and mobile rollout of the broadband infrastructure to gigabit-capable networks in areas affected by market failure. areas affected by market failure.

In addition to the nine objectives, the potential contribution of a need to the overarching objective of "modernising the sector" could be indicated. In more detail, the cross-cutting objective is formulated

as “modernisation of the sector by promoting and transfer of knowledge, innovation and digitalisation in agriculture, forestry agriculture, forestry and rural areas, and to promote their dissemination”. The following four ancillary needs deal with the topic of digitalisation.

- Provision of a nationwide range of continuing education and consulting services
- Improving the entrepreneurial skills of people working in agriculture and forestry
- Raising awareness and improving knowledge of digitalisation and innovation in agriculture and forestry and in SMEs in rural areas
- Stronger involvement of practice and consulting in research and practice-oriented processing of the results
- Improvement of knowledge and knowledge transfer on site-adapted resource use, biodiversity, climate protection and climate change adaptation

3.4.1. CAP Integrated Administration and Control System (IACS)

In the time of writing this report, research did not yield any result regarding pilot projects, systems or instruments to evaluate CAP funds in Austria.

3.5. Data management

With data.gv.at, a central catalogue for open data in Austria was launched in 2012 to enable users to find data via a single electronic point of contact. The platform includes Open Government Data (OGD), non-personal and non-infrastructure-critical datasets that are made freely available for use, dissemination and reuse without any restriction in the interest of the general public. In the interest of national visibility and transparency, data.gv.at, as the central catalogue for Austria, is intended to incorporate the metadata of the decentralised data catalogues of the administration in Austria and keep them accessible. A central theme of Open Data is the compatibility of data from different places in order to be able to link them. Only the combination of different data can create something fundamentally new. To ensure this combination, the portal uses existing standards; data.gv.at (Open Data Austria, 2021) is operated with a metadata catalogue based on OGD Metadata Austria, which guarantees interoperability. Furthermore, it is the single point of contact to the European Data Portal (see Figure 3-3). It offers filtering options on data sets and applications created from them, as well as visible links between data sets and the applications. Both the catalogue and the application list are searchable. Participating agencies can enter data themselves and store administrative data on the federal platform. In addition, with the [Open Data Portal Austria](https://open-data-portal.austria.gv.at), an infrastructure is available to also provide a central point of contact for data from the areas of business, culture (museums, libraries, galleries and archives), NGO/NPO, research and civil society. The data.gv.at portal currently (08/2021) includes around 32000 entries, from which 87 belong to the category of agriculture and forestry. The report Digitalisation in Agriculture (BMLRT, 2018) of the platform of the same name lists open data as

a driving force for innovation and gives the following recommendations: Numerous data on agriculture and forestry are available in various institutions in the country. Here, it is first necessary to conduct an inventory as well as a relevance check with regard to Agriculture 4.0 and to determine the feasibility of making data that is not yet freely accessible available to the public as well as the usability of already published data for Agriculture 4.0. It is of great importance that the data be made available in machine-readable form via a service-based data portal, e.g., data.gv.at for which uniform interfaces are required. In this way, an impetus for innovation and start-ups can be created, as open data gives companies the opportunity to develop innovative applications and services for the agricultural industry.

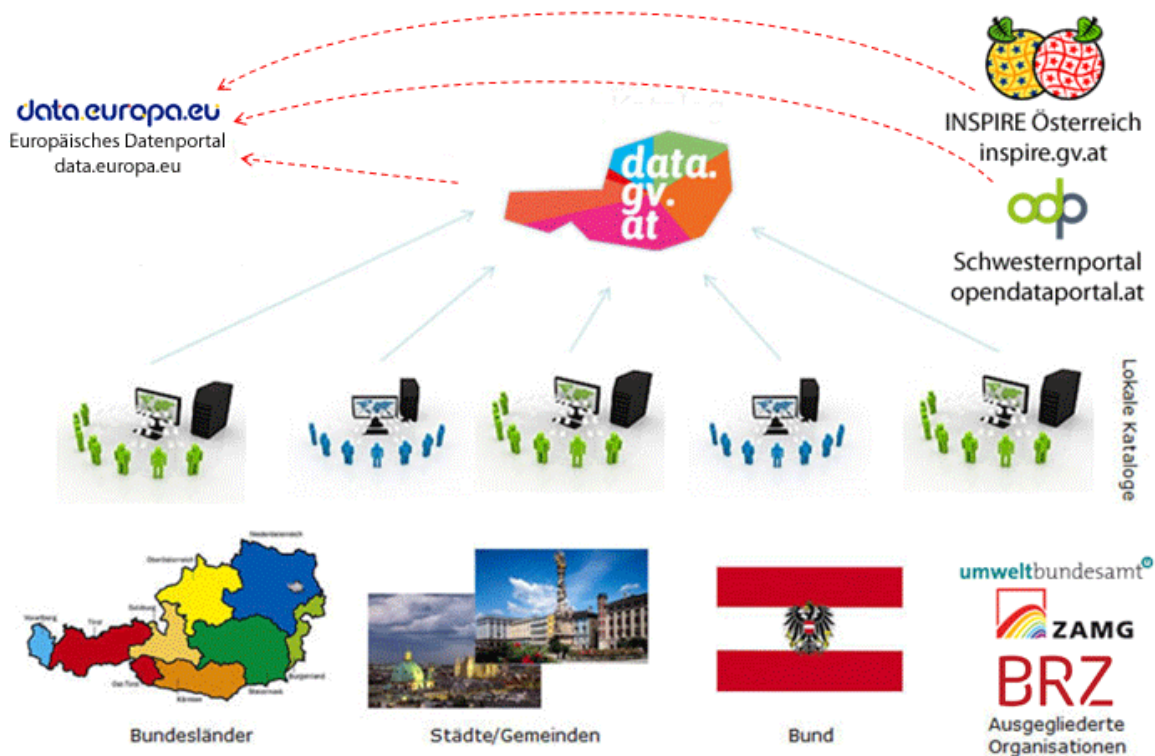


Figure 3-3. data.gv.at as the single point of contact to the European Data Portal

The strategic framework for national cybersecurity policy is provided by the Austrian Cyber Security Strategy (ÖSCS 2013), which is currently being revised (Federal Chancellery, 2021). Cybersecurity is a nationwide issue in Austria. The following ministries are primarily responsible: Federal Chancellery (BKA), Federal Ministry of the Interior (BMI), Federal Ministry for European and International Affairs (BMEIA) and Federal Ministry of Defence (BMLV). In this context, the Federal Chancellery coordinates national and international strategic cybersecurity issues and cooperates with national, European and international actors in various working bodies.

The Austrian Data Protection Authority is the Republic of Austria's national data protection supervisory authority and ensures compliance with data protection in Austria. The cornerstone of data privacy legislation in Austria is the General Data Protection Regulation (GDPR) (since 25 May 2018). The Austrian data protection act (Datenschutzgesetz, DSG) supplements the GDPR.

4. Challenges and Opportunities

A high-performance Internet connection is often cited as the technical backbone of development, because without it, new approaches to solutions are not possible. Though, the success of digitalisation does not depend exclusively on the availability of the technical infrastructure, but on a set of factors that must be worked on simultaneously. On the one hand, there is the mindset of (political) actors, since ideas are not pursued if there is a negative attitude toward change. Other factors can be influenced by political actors within the framework of their function and their position within the community, such as citizens' digital skills, basic attitudes toward new developments and citizens' commitment. Other success factors are the encouragement of digital solutions that the solutions are based on spatial challenges of the basic functions of existence and the needs of citizens. The solutions must provide users with visible added value and not simply be implemented because they are modern or because there is funding for them. The category "nice to have" is not sufficient for solutions.

In order for residents in rural regions to benefit from the digitalisation of the basic functions of existence, the process must be understood as a social process rather than a purely technical one. Involving citizens in the process is important to create acceptance for new solutions and to ensure that the projects meet the needs of future users and are accepted by the majority of people. Particularly in regions where the proportion of older people is rising steadily, initiatives are needed to strengthen digital skills so that people do not feel left out or excluded by digitalisation.

4.1. Barriers to digitalisation

Table 4-1 summarises the main identified barriers to digitalisation and the influence of the COVID-19 pandemic, whether it has exacerbated the issue, or, in contrary, had a reinforcing effect on digitalisation and the use of digital tools. The main barriers relate to policy and the population. Political activity and consolidation are needed to foster broadband availability and acceptance amongst the population. Moreover, educational activities are needed to raise awareness of opportunities and threats of digitalisation.

Table 4-1. Barriers to digitalisation

Barriers to digitalisation	Influence of COVID-19
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Technical	<ul style="list-style-type: none"> • Poor broadband infrastructure • Low connectivity in rural areas 	reinforcement
Legal	<ul style="list-style-type: none"> • Scattered political efforts regarding digitalisation of rural areas 	reinforcement
Training / Education	<ul style="list-style-type: none"> • Distance to training institutions • Low level of education (STEM) and digital knowledge • Lack of awareness and know-how concerning digital possibilities 	exacerbation
Economic	<ul style="list-style-type: none"> • High investment and reorganisation costs for SMEs • Public's willingness to pay for internet 	reinforcement
Others	<ul style="list-style-type: none"> • Geography of Austria 	-
	<ul style="list-style-type: none"> • Acceptance of digital solutions among the population • Lack of quantifiable targets • Lack of complementary services supporting digitalisation in rural areas • Migration, rural exodus 	reinforcement

4.2. Actions to boost sustainable digitalisation

Based on the principles identified by DESIRA (DESIRA, 2021), Table 4-2 summarizes suggestions of ideas of actions that could guide the new generation of rural policies to boost sustainable digitalisation of agriculture, forestry and rural areas in Austria.

Table 4-2. Actions to boost sustainable digitalisation

	Key rural development domains			
	Human capital	Innovation	Investments	Governance
Creating the basic conditions for digitalisation	Educational work & training	Establish Agriculture and Rural Knowledge and Innovation Systems (ARKIS)	PPP financing models	Publication and monitoring of quantifiable targets
Anchoring digitalisation to sustainable development	Introduce linkage of SGDs and digitalisation	ARKIS with Responsible Research Innovation (RRI)	Attach SDG conditions to financing	Include SDGs in the monitoring and evaluation
Adapting digitalisation to different context	Inclusion of various skills	Foster out-of-the-box thinking	Support to vulnerable groups	Holistic policy-approach to digitalisation

Favouring digital inclusion	Strengthening of vulnerable groups	Encouraging peer-to-peer networking	Financial support of vulnerable groups	Monitoring DESI indicators progress
Developing digital ecosystems	Support individuals and agencies that foster digital coordination	Foster pilot projects and innovative approaches	Prioritise support based on multi-actor projects	Support development of Smart Villages and Local Digital Innovation Hubs
Developing adaptative governance models	Support proactive, multi-actor and bottom-up governance models			
Designing policy tools for sustainable digitalisation	Develop fast and flexible supporting mechanism or policy instruments to support local/regional multi-actor cooperation processes for digitalisation			

5. Conclusions

Austria continues to rank in the middle of the European field in terms of overall progress in the digital transformation. The gap compared with the European leaders, the "innovation leader countries" Sweden, Finland, Denmark, Luxembourg and the Netherlands, is in some cases considerable, both in terms of the digital skills of the population and companies, but also in the area of infrastructure, demand for broadband Internet and the use of digital technologies in the public sector.

Digital skills, both of companies and of the workforce and public administration, are increasingly key to maintaining international competitiveness, but many domestic companies cannot keep up with international competitors in the area of digitalisation. In the course of the measures to contain the COVID-19 pandemic, basic digital skills suddenly gained in importance, even among the general population. They proved critical for participation in economic, social, and public (government) activities, which increasingly moved into the digital space. During the COVID-19 pandemic, people without such digital skills faced not only digital but also social exclusion due to a lack of access, which can (also permanently) exacerbate existing economic and social inequality.

In addition to digital skills, the availability of an adequate broadband infrastructure is a basic prerequisite for smooth access to the Internet and the use of current technologies in companies, public institutions, private households and schools. However, the goal of the [Broadband Strategy 2020](#) to provide nearly all Austrian residences with fast broadband connections by the end of 2020 has not been achieved, even though the "broadband billion" has accelerated the expansion of the network infrastructure. Austria's [Broadband Strategy 2030](#) (BMLRT, 2019) aims at full coverage of symmetric Gigabit connections throughout the country by 2030. The nationwide expansion is also intended to ensure that the existing digital divide (between urban and rural areas) can be balanced out in spatial terms or does not open up further. Whereas in cities with a higher population density, the telecommunications companies have their own commercial interest in expanding the networks in line with demand, this will not work in rural areas without the support of the public sector and the cooperation of all stakeholders.

Consequently, the following levers are suggested to accelerate digitalisation:

- Streamlining of competencies, prioritisation of ICT policy fields, setting of quantifiable targets

Digitalisation is a cross-cutting issue. The competencies of digitalisation policy have been streamlined in the past, for example with the establishment of the Federal Ministry for Digitalisation. These efforts by the public sector should be continued.

The National Digital Agenda (see 3.2.1) is subdivided into the fields of action economy; government; education, research and innovation; health and care; and security and infrastructure. Many objectives are currently being pursued, most of which have economic purpose. The ICT policy should explicitly prioritise policy fields, which is currently not apparent, moreover, an inclusion of the rural domain is

not explicitly recognizable. Instead, the topic of digitalisation concerning rural areas enters the policy level through various other policies and strategies (see 3.2.2).

Moreover, the publication of quantifiable targets should form the basis of an evidence-based ICT policy.

- Increasing the general availability of ICT qualifications

The availability of a qualified workforce and the quality of education ensure long-term competitiveness and promote a country's innovative strength. The increased demand for ICT qualifications also places massive demands on the education system. In addition, with advancing automation, which often goes hand in hand with digitalisation and is made possible by it, the pressure on the labour market from changing labour demand is expected to remain high.

- Pushing the expansion of the network

The third recommendation regards the desirable continuation of the broadband initiative. New funding should be prioritised in roll-out areas that do not yet have broadband coverage of over 100Mbps. 5G should achieve the fullest possible capability, so fiber-connectivity to all base stations should be an operational program goal.

6. Annex

6.1. Annex A

Table A.1: Policies influencing digitalisation in your country

Areas being addressed / supported by the policies	Policy	Brief Description	Objectives	Area of impact	Period of implementation	Budget (if any)	Public / Private	Address rural areas (Y/N) Specify how	Link
Rural access to technologies	Masterplan for Rural Areas 2017	The topics dealt with are broadly based and thus correspond to the diversity of rural areas, ranging from agriculture and forestry and the economy to infrastructure and mobility to the digital village	Based on this strategy, the economic and living conditions in rural areas are to be systematically improved in the future as well and sustainable development of rural areas is to be ensured	Austria	2018 – 2020	-	Public	Y	https://info.bmlrt.gv.at/themen/regionen-raumentwicklung/masterplan-fuer-den-laendlichen-raum.html
Broadband, connectivity, affordability	Broadband strategy 2030	The Broadband Strategy 2030 formulates the framework conditions for Austria's path to a gigabit-society, on the basis of which the private and public investments required to achieve the goal are to be enabled and coordinated	By 2030, Austria will have nationwide coverage with symmetrical gigabit-capable access networks. A tightly meshed fiber-optic network combined with universally available mobile coverage will enable every citizen, every company and all public institutions to take advantage of the opportunities and technical possibilities of digitalisation everywhere in the country on equal terms. This will put Austria at the forefront of digitalisation in Europe and secure and further expand its position in European and international competition	Austria	2020 – 2030	1.4 BnEUR	Public	N	https://info.bmlrt.gv.at/service/publikationen/telekommunikation/breitbandstrategie-2030.html
New digital business models in rural areas, agriculture, and forestry	Rural Development Program 2018	The rural development program promotes modern, efficient and sustainable agriculture, supports the regional economy and communities, and sets social accents.	Improve the viability of farms and the competitiveness of all types of agriculture in all regions and promote innovative agricultural techniques and sustainable forest management	Austria	2014 – 2020	3.94 BnEUR	Public	Y	https://info.bmlrt.gv.at/themen/landwirtschaft/eu-agrarpolitik-foerderungen/laendl-entwicklung/leprogramm.html
Creation of digital innovation ecosystems in or with influence in rural areas	Rural Development Program 2018	The rural development program promotes modern, efficient and sustainable agriculture, supports the regional economy and communities, and sets social accents.	Promote knowledge transfer and innovation in agriculture, forestry and rural areas. Improving the viability of farms and the competitiveness of all types of agriculture in all regions and promoting innovative agricultural techniques and sustainable forest management.	Austria	2014 – 2020	3.94 BnEUR	Public	Y	https://info.bmlrt.gv.at/themen/landwirtschaft/eu-agrarpolitik-foerderungen/laendl-entwicklung/leprogramm.html
Funding of digitalisation (access to technologies, digital education, broadband access,	Masterplan for Rural Areas 2017	The topics dealt with are broadly based and thus correspond to the diversity of rural areas, ranging from agriculture and forestry	Increase in attractiveness of municipalities as places to live and do	Austria	2018 – 2020	-	Public	Y	https://info.bmlrt.gv.at/themen/regionen-

etc.) in rural areas, agriculture, and forestry.		and the economy to infrastructure and mobility to the digital village	business and create equal opportunities for the population						raumentwicklung/raumentwicklung/masterplan-fuer-den-laendlichen-raum.html
National rural development networks' initiatives									
Digital Literacy and Digital Divide	Masterplan for Rural Areas 2017	The topics dealt with are broadly based and thus correspond to the diversity of rural areas, ranging from agriculture and forestry and the economy to infrastructure and mobility to the digital village	Digital skills must be part of school and vocational training. Older people and people with limited mobility should also be able to benefit from the digital world and digital services	Austria	2018 – 2020	-	Public	Y	https://info.bmlrt.gv.at/themen/regionen-raumentwicklung/raumentwicklung/masterplan-fuer-den-laendlichen-raum.html
	Rural Development Program 2018	The rural development program promotes modern, efficient and sustainable agriculture, supports the regional economy and communities, and sets social accents.	The acquisition of professional and personal competencies contributes to meeting the increasing professional requirements, gain new perspectives and successfully shape change processes. Current topics such as climate change and sustainable use of resources in connection with innovations receive special attention	Austria	2014 – 2020	3.94 BnEUR	Public	Y	https://info.bmlrt.gv.at/themen/landwirtschaft/eu-agrarpolitik-foerderungen/laendl-entwicklung/leprogramm.html
Open data, standardisation of data, data access, etc...	Framework for Open Government Data platforms	The disclosure of data management is discussed as a means to increase participation in a common value creation process of politics, administration, citizens and economy	The accompanying transparency of data and information increases the trust of all stakeholders in administrative processes, leads to new business models and strengthens in the medium to long term the existing democratic institutions	Austria	-	-	Public	N	https://neu.ref.wien.gv.at/at.gv.wien.ref-live/documents/20189/68315/Framework_fo_r_Open_Government_Data_Platforms_1.3_fin.pdf/0cfc7d99-feca-447b-8628-e6106ffc84ad
Cybersecurity	Austrian Cyber Security Strategy (ÖSCS 2013)	The Austrian Cyber Security Strategy (ÖSCS 2013) provides the strategic framework for national cyber security policy	Austria will continue to develop in the direction of a digital society, while ensuring compatibility with the fundamental values of an open society. The dynamic virtual space enables social prosperity as well as economic benefits in the context of e-government and e-commerce and is also the basis for information exchange as well as social and political participation	Austria	since 2013	-	Public	N	https://www.bundeskanzleramt.gv.at/dam/jcr:b5f4cc3a-423e-4660-96d6-42cbdef990c6/Strategie_fuer_CyberSicherheit_2013.pdf
Rural development networks' initiatives									

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