DIGITISATION: ECONOMIC AND SOCIAL IMPACTS IN RURAL AREAS

NATIONAL POLICY ANALYSIS LATVIA

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Executive summary

Latvia is in a good position with respect to digital infrastructure and e-services, though digitalisation as a societal process does not appear to be high on the policy agenda and there are issues with funding and data management. The country performs well in rankings concerning digital public services and connectivity, but businesses do not make full use of recent advances in ICTs and digital services, meaning that Latvia's performance vis-a-vis technology integration in business processes is average. Similarly, the population has comparatively poor digital skills, with clear regional differences - skills are much better in urban centres. Likewise, despite overall broadband and 4G coverage being high, there are pronounced differences in internet accessibility between rural and urban areas, largely determined by low population density and business activity.

Latvia's digital agenda or strategy is outlined in the Digital Transformation Guidelines for 2021-2027. The document was prepared in 2020. However, while the guidelines do touch upon the digital gap between rural and urban areas, little attention is paid to it in the detailed descriptions of specific goals. Funding is expected to come from EU Structural funds, the national budget, as well as other financial instruments.

The main challenges to the rural digitalisation process in Latvia are the comparatively poor digital skills of the population and disparities between different socioeconomic groups (high/low education level, urban/rural population, different generations). Furthermore, rural digitalisation (in terms of infrastructure and skills) is not sufficiently addressed on a policy level or other programs/initiatives. However, some European and other projects address rural digitalisation: there are Digital Innovation Hubs, programs for modernisation of farms and education initiatives to boost the digital skills of young people. Yet, they reach a relatively small portion of the rural population and concrete large-scale initiatives are lacking.

1. Introduction

Making use of digital tools, data-driven analytics and ICT innovations is crucial for fostering development in urban and rural areas, and the digital transition is of key importance in the European Union. However, European countries have different policy frameworks guiding the digital transition. What is more, they are not in the same position with regard to data governance, digital infrastructure and overall level of digital skills, especially in rural areas, meaning that there is a considerable variety of obstacles to be tackled to ensure an equitable distribution of digital benefits.

This report provides an overview of the context for digitalisation in Latvia and the policy framework governing digitalisation and the digital transition, especially as it pertains to rural areas.

We commence by providing the context for digitalisation in Latvia, which is a mix of countervailing trends. While many actors are involved in the articulation of a digitalisation strategy, a unified approach across the public sector is lacking. We stress that Latvia performs well in terms of digital public services and connectivity. However, the integration of technological solutions in business processes is average. Moreover, the overall broadband and 4G coverage is high, but the population has relatively poor digital skills. Additionally, there are pronounced regional differences in internet accessibility, usage and skills between urban and rural areas.

We then describe national policies regarding rural digitalisation. While there are no policy documents on rural digital development per se, there are a number of general policies that address this topic. Latvia's *Digital Transformation Guidelines for 2021-2027* touch upon the skill and connectivity gap between rural and urban areas, but in general pay little attention to concrete steps that can be taken to tackle it.

The next part of the analysis is dedicated to digital public services and specific EU-funded programs for digitalisation. There are four Digital Innovation Centres operating in Latvia, along with other food and agriculture related organisations. We briefly describe Latvia's CAP strategic plan and Integrated Administration and Control System.

Finally, we list initiatives that address the digital literacy divide. Mainly, these are small projects that aim to improve the ICT skills for individuals and businesses. Specifically, most initiatives target young adults and small & medium businesses. We conclude by providing an overview of the EU programmes influencing the digitalisation of rural areas.

The final section of the report provides an overview of the main points raised in this report.

2. Context for (rural) digitalisation

2.1. Current context for digitalisation

Context summary: The government's approach to digitalisation is underpinned by a collaborative framework involving various line ministries and working groups. The overall strategy is driven a stated goal to harmonise digitalisation strategies with the objectives of various medium- and long-term planning documents vis-a-vis development and sustainability. Nonetheless, international experts contend that digitalisation is not particularly high on the policy agenda, there is some ambiguity regarding the funding that will allow the public sector to implement its digitalisation strategy, and better coordination mechanisms within the public sector are necessary. Furthermore, appropriate steps should be taken to enhance privacy and establish appropriate data governance procedures. Nonetheless, Latvia is currently in a good position with respect to digital infrastructure, and Latvia's digitalisation strategy is outlined in guidelines prepared by state institutions. The country performs well in rankings measuring digital public services and connectivity, but businesses do not make full use of recent advances in ICTs and digital services, meaning that Latvia's performance vis-a-vis technology integration in business processes is average. Similarly, the population has comparatively poor digital skills, with clear regional differences - skills are much better in urban centres. Likewise, despite overall broadband and 4G coverage being high, there are pronounced differences in internet accessibility between rural and urban areas, largely determined by low population density and low business activity.

Facts and assessment from OECD (2018):

- Latvia has one of the highest shares of fibre in its fixed networks (over 60%). This provides individuals and businesses access to high- speed, high-quality services that are essential to support data-driven innovation and production processes.
- Latvia ranks in the top 10 OECD countries with regard to mobile broadband penetration, but only 10% of Latvian firms engaged in sales via e-commerce in 2015 (OECD average - 22%).
- Latvia has a higher-than-average share of individuals and companies using online tools to interact with public authorities.
- Infrastructure, accessibility and equipment is not sufficient to harness the opportunities offered by digitalisation.
- Latvia is below the EU average in terms of ICT skills and education rankings both for children and adults.
- Latvia lacks a whole-of-government approach to digital transformation.
- Transversal policy issues (e.g. skills, digital government and data governance) require further consideration.

Facts and assessment from the European Commission:

- The strategy for Latvia's digitalisation for the period 2014-2021 was outlined in *Information Society Guidelines* (VARAM, 2013). The main pillars of the strategy were ICT education and skills; widely available access to the internet; modern and efficient public administration; e-services and digital content for society; cross-border cooperation for the digital single market; ICT research and innovation; trust and security.
- Latvia has a higher-than-average connectivity compared to the EU.
- 83.3% of households in Latvia have access to broadband (CSB, 2019), and accessibility to broadband has continuously risen by several percentage points a year.
- Broadband connections are used slightly more in urban areas (85.5%), compared to rural areas (77.9%). The capital city Riga has the best accessibility to broadband internet connection (87.2%), whereas it is the lowest in Latgale – 76% of households (Ibid.).
- Compared to the rest of the European Union, the country performs well in digital public services and connectivity.
- The quality of e-government services continues to improve, and the number of users is rising.
- Latvia has very good broadband coverage with fast and very high capacity networks, and has already allocated a radio spectrum for 5G.
- Although fixed broadband take-up is generally low, 38% of households subscribe to at least 100 Mbps broadband, compared to the EU average of 26%.
- The business sector does not make use of the opportunities offered by digital technologies. The country ranks 23rd in the EU on the integration of technology by business. Only 8% of companies use big data, 19% have social media activities and 11% rely on cloud services. In addition, only 11% of SMEs sell online and only 5% of SME turnover is from e-commerce.
- Latvia scores below average in digital skills, with more than half of the population still lacking basic digital skills and ICT specialists representing only 1.7% of total employment (EU average: 3.9%) (European Commission, 2020).
- There are differences in Internet accessibility between rural and urban areas, despite Latvia having nearly complete coverage of fast broadband (NGA), as well as 4G. However, closing the connectivity gap between rural and urban areas remains a challenge. Scarcity of households and low business activity in rural regions are believed to be the causes of these differences.
- Women's digital skills are slightly higher than those of men. While 50% of women have at least basic digital skills, for men this figure is only 46%.
- Differences in digital skills also exist between employed and unemployed people. While 57% of employed people have basic digital skills or more, for the unemployed this figure is only 33 %.
- Education is also an important determining factor for digital skills. While 76% of highly educated people have at least basic digital skills (against 84 % at EU level), for those with only low or medium levels of education this figure is only 35 %.
- The number of ICT specialists is stable but well below the EU average. The proportion of STEM graduations has been decreasing in recent years (from 14.1 per 1000 in 2013 to 12.7 in 2016)." (European Commission, 2018).

Facts from the Central Statistical Bureau (2019):

- Internet usage in Latvia is increasing every year and 85.4% of the population used the Internet in 2019.
- In 14.3 % of households the Internet is not used. 62.6 % of these households indicated that they do not need Internet, though a lack of skills (36.2 %) and the high costs of devices (24.8 %) were also mentioned.
- Regular internet usage (at least once a week) is higher in urban areas (85.5%), and lower in rural regions (79.9%). People living in Riga are the most active internet users – 87% use it regularly, while only 76.5% do in Latgale.
- The most popular activities online are communicating by email and banking (83%), social media (~75%), shopping (54%) listening to music (~50%) (Central Statistical Bureau of Latvia, 2019).

Facts from other research:

- The level of digital skills is very different across Latvia. People in Rīga and the Pierīga region have the best digital skills, while Latgale and Zemgale have the worst. Public administrators could suggest different e-skill improvement possibilities and support education providers with regard to life-long education programs for e-skill improvement (Sloka & Čipāne, 2020).
- Digitalisation of rural businesses is hampered by a lack of qualified employees (Rivza et al., 2019).

3. Policy framework for (rural) digitalisation

3.1. National Policies

Table 1: National Policies

Ministry / Authority	Policy	Objective	Expected Impact
Ministry of Environmental Protection and Regional Development	Digital Transformation Guidelines for 2021-2027	(General) Development of society, economy and public administration that effectively utilise the digital technology tools and environment to improve the standard of living for the society and each of its members, to advance the competitiveness of the state and economy.	Positive and modern living, based on technology. Development of living standards and economy by utilising digital technology creatively.
	Digital Transformation Guidelines for 2021-2027	(Economy and business) 4.1.1 Development of basic and advanced digital skills of the population and entrepreneurs 4.1.2 Digital technologies in production and services	Society capable of utilising digital skills and tools in communication, public services and the professional environment. Increased competitiveness by employing advanced digital solutions (e.g. AI, data analytics, automation) in product and service design and production
	Digital Transformation Guidelines for 2021-2027	(Education) 4.1.1., 4.1.2 Opportunities for development of digital skills	Infrastructure for development of digital skills in formal and informal education. People have opportunities to gain the digital qualifications necessary for their work.
	Digital Transformation Guidelines for 2021-2027	(Governance) 4.1.3 Employees of public administration, municipalities and competence centres are skilful in adopting digital technologies	Technologies widely used in education and healthcare, increased productivity, increased efficiency in tackling climate challenges, reduced digital gap.
	Digital Transformation Guidelines for 2021-2027	(Rural development) 4.3.1.1 Provision of the necessary infrastructure for equal, fast high-quality digital communications	Regulation for autonomous drones and remotely controlled vehicles on public roads, high-quality 4G coverage on all national and municipal roads, access to internet connection (>100 Mb/s) for all

		throughout the territory.	households, 50% coverage of 5G in the four largest towns and roads
All ministries, Cross-Sectoral Coordination Centre	National Development Plan of Latvia for 2021-2027	- Broadband electronic communications infrastructure is compliant with the EU connectivity objectives -Broadband electronic communications infrastructure is compliant with the EU connectivity objectives	- Establishing a broadband electronic communication network in line with the connectivity objectives European Union by dev "middle mile" and "last infrastructure and doing broadband mapping -Introduction of modern technologies and rational, resource-efficient, use oriented and open management in order to provide high-quality public services in accordance with the principle "digital by default", proactive "one-time" services, including in international service provision, optimisation and centralisation of public administration and local government ICT infrastructure and support processes
	National Development Plan of Latvia for 2021-2027	Rural development	-The digital transformation and widespread use of secure information technology ensure integrated development of the economy. Digital solutions have value both in social cohesion and economic diversification. Digitally skilled citizens with a strong communication infrastructure create efficient electronic data exchange, e-commerce and international online trading, replacing physical movement with digital remote cooperation.
Cabinet of Ministers	Concept for the Development of Next Generation Broadband Electronic Communications Networks 2013-2020	To draw up a State Aid Programme for the establishment of subscriber lines ("last mile") in order to ensure broadband access to internet with fast and ultra fast download speed for the subscribers in the territories of low economic interests;	-

Ministry of Environmental Protection and Regional Development	Development Plan for Services 2020-2023	Joint platform for services in the digital environment for entrepreneurs and the population Increased use of e-services Development of digital skills	Increased accessibility to services in rural regions.

3.1.1. Latvia's Digital Transformation Guidelines for 2021-2027

Summary: Latvia's digital agenda and strategy is outlined in the Digital Transformation Guidelines for 2021-2027 (hereafter – Guidelines). The document was prepared in 2020. While the Guidelines do touch upon the digital gap between rural and urban areas, little attention is paid to it in the detailed descriptions of specific goals. Funding will come from EU Structural funds, the national budget, as well as other financial instruments.

General overview of the Guidelines:

- The Digital Transformation Guidelines for 2021-2027 were adopted in 2020. This is an accompanying document to the National Development Plan, addressing digitalisation as a permeating theme in other spheres: innovation and science, education, healthcare, inclusive society and job market, infrastructure, regional development, defence, environment and energy. Specifically, the Guidelines have five main directions: digital skills and education, digital security, communications and computing, digital transformation of the economy, innovation and ICT industry.
- The Guidelines outline a unified and purposeful digital development of governance, economy and society. The document outlines a framework to provide the entire population with the necessary skills to benefit from the digital transformation.
- The document envisions a digital environment to promote the design of digital products and services.
- Regarding public administration, the goal is to move away from public institutions' digital solutions and towards the creation of an open ecosystem. The Guidelines aim to encourage collaboration among public and private entities to consolidate resources and knowledge for efficient development of digital services and solutions. The stated objective is a society capable of utilising digital tools for social, economic and public administration purposes, thus moving towards a unified public-private ecosystem.

The digital gap between **rural and urban areas** is addressed, but little attention is paid to it in the detailed descriptions of specific goals. The Guidelines do not generally address rural territories (or rural digitalisation) but include them as a part of the country as a whole. Specifically, the Guidelines focus on the development of digital skills and educational opportunities for the entire population. However, as the skill gap between rural and urban areas as well as different age groups is rather severe, it requires urgent and efficient solutions, and there is some discussion of rural digitalisation.

- The Guidelines point to the lack of passive infrastructure in rural areas (with relatively low purchasing power). While some areas were covered within the programme for building digital infrastructure "Next Generation Networks in Rural Territories" (funded by EU's European Regional Development Fund), the high costs and low population density prevent electronic communications companies from moving towards full coverage of high-speed connectivity. The Guidelines acknowledge this problem and identify a possible solution - utilising the existing infrastructure available in these territories (e.g., electricity lines).
- The Guidelines set a goal of extending 4G and 5G coverage in rural areas. The document briefly touches upon the possible use of drones for deliveries in remote areas.

Finally, to realise the Guidelines' objectives and tasks, it is stated that funding will be attracted from EU Structural funds, the national budget, as well as other financial instruments. The investment plan is in accordance with the National Development Plan 2021-2027, by adding detailed activities regarding the digital transformation. If the restructuring and optimisation plans for public administration are carried out, funds will be used more effectively in the long-term.

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

3.2.1. Broadband infrastructure

The Latvian State Radio and Television Centre obtained EU funding to bring broadband connectivity to rural areas in Latvia where there was no commercial interest in investing. A backbone network was built, bringing fibre access to a total of 150,000 properties. The project was 85% funded by the European Regional Development Fund (ERDF) and was a finalist in the 2018 European Broadband Awards (European Commission, 2018).

3.2.2. Digital public services

According to the Digital Economy and Society Index, Latvia is currently among the leaders when it comes to digital public services. The previous iteration of the government's Guidelines (2014-2020) posited a need to develop shared platforms and services for the provision of public services and e-services more generally. Considerable effort has been devoted to improving the quality e-services, driven in part by a need to increase spending efficiency in the public sector due to budget constraints. Consequently, Latvia has digitalised public services in many sectors in recent years and, in general, moved to a digital approach to communication and interaction with the government. This has been underpinned by the creation of a unified platform (www.latvija.lv), sector-specific platforms (e.g., health, https://www.eveseliba.gov.lv/), digital signatures and electronic IDs. OECD experts note that particular progress has been made in the digitalisation of health services. However, insufficient use is being made of the available data to improve the delivery of public services.

Table 2: Digital Public Services usage

		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			

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

Latvia's smart specialisation strategy (RIS3) was developed in 2014. According to the strategy, public R&D investments should concentrate on programmes that improve domestic capability and competitiveness. The strategy provides a support tool kit to strengthen the innovation capacity of the Latvian economy. By many accounts, Latvia is currently a modest innovator. The RIS3 strategy aims towards higher added value and more efficient use of resources.

Specifically, the strategy aims at restructuring export by inducing change and growth in:

1) Production and export structure in traditional sectors of economy;
2) Future growth of sectors in which exist or may be products and services with high added value;
3) Sectors with significant horizontal impact and contribution in transformation of the national economy.

(See Ministry of Education, 2020 for more)

However, **RIS3 in Latvia did not specifically address rural development**.

3.2.4. Digital Innovation Centres (DIH)

There are four operating DIH's in Latvia:

- RTU ITI Digital Innovation Hub with the main areas of specialisation such as enterprise integration including advanced enterprise applications and business process improvement, development of scalable cloud solutions for big data processing, data mining and machine learning including applications in cybersecurity, IoT, intelligent transportation systems and biotechnology, modelling and optimisation of complex systems, development of digital twins as well as digital transformation of organisation by using advanced information technologies. More information: https://iti.rtu.lv/en/dih
- Latvian IT Cluster - a DIH with such competences as communication networks, cyber physical systems, robotics, artificial intelligence, mobility & Location based technologies and more. The hub provides services like ecosystem building, scouting, brokerage, networking, Visioning and Strategy Development for Businesses, Digital Maturity Assessment, Market intelligence, Mentoring, Education and skills development and more. Information: https://dih.lv/lv
- Ventspils High Technology Park (VHTP) - a business support organisation that provides infrastructure and support for the development of high-technology businesses in the city of Ventspils and the outlying region. More information: https://www.vatp.lv/en/home
- EDI DIH - coordinated by Institute of Electronics and Computer Science, the hub holds such competences as Micro/nano electronics, Sensory systems, Cyber physical systems, Artificial intelligence and more. It provides Visioning and Strategy Development services for Businesses, Collaborative Research, Concept validation and prototyping, Testing and validation, Mentoring as well as Education and skills development and more: https://www.edi.lv/en/

A food related organisation is EIT FOOD RTU (https://www.eitfood.eu). EIT Food Hub Latvia has been operating since 2019 under the auspices of RTU Design Factory. In the meantime, a number of programs have been implemented - the Innovation Prize, the Government Executive Academy training and networking event for public employees, the RIS Fellowships internship programme and various events such as the Future of Food hackathon, etc.

On December 3, 2020, EIT Food Hub Latvia and EIT Food Hub Lithuania collaborated and hosted an online event - Neighbors chat: Innovation in Agriculture in Latvia & Lithuania. Entrepreneurs and farmers from both countries took part in the event with presentations on innovative solutions in agriculture: Gatis Bērziņš (AgroPlatforma), Robertas Kupstas (Pure Harvest Farms), Maira Dzelzkalēja-Burmistre (Farmers' Saeima), Robertas Katinas (Baltic Freya). A discussion took place at the end of the event. Around 100 participants took part in the December event online - about half, Lithuanians and Latvians. (https://www.facebook.com/events/1107913629648540)

Farmers Parliament Digital Innovation Hub (FP DIH) aims to become a digital innovation support platform that helps farmers, agronomists, companies, R&D institutions and other organisations in Latvia to create added value through digital technology, better business and production processes. Latvian Agriculture DIH platform will become the first one-stop-shop service to digitise businesses in Latvia, and it enables the participants of the digital ecosystem to find solutions for their challenges by focusing on businesses.

The main strategic objectives are to initiate and develop public sector, business and scientific cooperation in the field of digital innovation, using the most advanced means of communication and technologies. One of the practical examples related to the objectives of Latvian Agriculture DIH is Flagship Innovation Experiment (FIE) "Groundwater and Meteo Sensors" where necessary infrastructure for research and experimental development was obtained and installed, the development of new service for farmers and agronomists initiated, service prototyping, testing and validation of the software realised. Initially DIH will be supporting dissemination of the FIE results among farmers all over the country which are members of the Farmer's Parliament. (https://smartagro.lv/?page_id=248)

EDIH. EDIH candidates have been selected in the national pre-selection and are preparing a proposal for approval by the European Commission:

- Latvian Digital Innovation Centre, https://www.itbaltic.com/dih (approved in the field of specialisation of the regulations with the aim: To improve the productivity and competitiveness of companies by introducing innovative digitisation and e-commerce solutions available on the market);
- Latvian Digital Accelerator, http://www.digitallatvia.lv/par-mums/ (approved in the field of specialisation of the Regulations with the aim: Design, prototyping, testing and implementation of new digital platforms, products and services in production, use, implementation of innovative solutions for businesses and public sector).

A chance to get acquainted with the regulations of the national pre-selection and the informative report prepared by the MEPRD, here: https://www.varam.gov.lv/lv/eiropas-digitalie-inovaciju-centri

The European Commission has produced a handbook detailing the activities of the EDIH network and their specialisations: https://publications.jrc.ec.europa.eu/repository/handle/JRC121604

3.3. CAP National Strategic Plans

According to the European Commission, there is untapped potential in the Latvian agricultural knowledge and innovation system structure in Latvia for the creation and dissemination of knowledge. Latvia allocated only 2.8% (5 700 181.6 EUR (LAD, 2021a)) of its rural development funding for knowledge transfer and information activities, advisory services, farm management, farm relief services and cooperation-EIP, which is below the EU average of 3.6%. Furthermore, Latvian rural businesses have not taken full advantage of the opportunities offered by digital technologies (see European Commission, 2020c for more).

Based on currently ongoing discussions about CAP strategic plan of Latvia and CAP post 2023, the Ministry of Agriculture has decided to devote a large portion of investment aid under the second pillar of CAP to innovations such as precision farming tools - precision spreading/spraying of plant protection products, organic fertilizers, precision steering etc. Substantial resources will be devoted to European innovation partnership projects with the aim to promote local groups and foster innovation that fit local circumstances.

When it comes to practical farmers, it seems that in the Latvian strategic plan there will be a mandatory demand to use FAsT tools, which means that all the fertilisation (both organic and mineral), as well as all applications of plant protection products will have to be uploaded as real-time data online in order to ensure transparency and an effective control system for agricultural inputs. In this context, support for knowledge transfer and education will be ensured through the AKIS system in order to guarantee that the majority of farmers do not lack digital knowledge.

3.3.1. CAP Integrated Administration and Control System (IACS)

In order to ensure faster and more convenient application submission, in 2007 the Rural Support Service started work on the development of the Electronic Application System.

As the first e-service, the Area Payment Application was created in 2008. Almost 800 applications were received directly in the EPS system. In the 2016 season, there were more than 60,000. In 2009, the Latvian ICT Support Service awarded the Rural Support Service with the "Platinum Mouse" award for the introduction of the Electronic Application System and the Automated Application Scanning and Recognition System. In 2015, the RSS received the 2nd place in the United Nations (UN) competition "United Nations Public Service Award 2015" in the category "Promoting the availability of public services in the information age" for the Electronic Application System (EPS). ("Promoting Whole of Government Approaches in the Information Age"), but received a unique WSIS Prize 2017 for the RSS Electronic Application System (EPS), which was recognised as the best IT tool for farmers, during the 2017 World Summit on Information (WSIS forum) in the world. The system makes it easier for customers to complete and monitor applications. RSS EPS The application process has been simplified and supplemented with additional explanatory information, as well as additional information on the processing of submitted applications is available - various problems or support costs, as a result of which the RSS has become more accessible to customers. Currently, the RSS provides not only RSS e-services, but also several services of other institutions (LDC, VTUA and VAAD) (LAD 2021b).

3.4. Other policies and strategies influencing (rural) digitalisation

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

The Guidelines are currently the main document addressing digital literacy. It focuses on boosting digital skills and life-long education for everyday and professional usage.

Table 3: Policies and initiatives addressing digital literacy and digital divide. (*) International, National, Regional or Local

Initiative	Objective	Key words	Period	Area of impact	Link	Public / Private	Scale of action *	Rural / General
Digital Education Action Plan	1: Making better use of digital technology for teaching and learning 2.Developing relevant digital competences and skills for the digital transformation 3. Improving education through better data analysis and foresight.	employment, digital skills, data analysis	2018	European Union	https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2018:22:FIN	Private	Regional	G
Digital Innovation Capacity Building	Promote the use of ICT skills in small and medium enterprises	ICT skills, business	2021	Latvia	https://likta.lv/dinnocap/	Private	International	G
Digital Innovation Network	Promote digital solutions and tools to policymakers, industries and businesses to develop a single digital market	business, public sector, ICT tools	2017-2020	EU	https://likta.lv/diginno/	Public	International	G
Digital Competence Development System	A modular system for development of digital competences for low-skilled people.	ICT skills, education	2018-2020	Latvia, Belgium, Greece, Italy, Spain	https://likta.lv/digital-competence-development-system/	Public	Internationa	G
ICT training for professionals to boost innovation and industry development	Boosting qualifications of ICT professionals and applications of digital technology and ICT development and export.	professionals, ICT applications	2016-2019	Latvia	https://likta.lv/ikt-profesionalu-apmacibas/	Public	International	G

3.5. Projects and initiatives with influence in rural areas

There are several projects and initiatives that have an impact on rural digitalisation. Some are described below.

3.5.1.H2020 and other Central Baltic Sea Region, Interreg Baltic Sea region, ERASMUS and other EUR programmes

SmartAgriHubs (SmartAgriHubs –Connecting the dots to unleash the innovation potential for digital transformation of the European agri-food sector); Grant agreement ID: 818182, Horizon 2020, Topic: Digital innovations.

The project consolidates, activates, and expands the existing ecosystem by creating a network of Digital Innovation Hubs (DIHi), which will promote the use of digital solutions in the agricultural sector. This is being achieved through local one-stop shops, integrating technology and business support, involving all regions and all key players in Europe. The project centre consists of 28 main innovation experiments (FIE) that demonstrate digital innovations in agriculture, promoted by nine regional clusters DIHi from all EU Member States. ZSA operates as North East Europe Regional Cluster leader, DIH and FIE20 coordinator.

See: https://www.smartagrihubs.eu/

YouCooperATE (Youth Cooperation for Agricultural Renewal through Education) is a project with an aim to strengthen knowledge, understanding and competences for agricultural cooperatives (ACs) development of youth aged 15-19, engaged in agricultural Technical and Vocational Education and Training (T-VET) in Romania, Hungary, Bulgaria Latvia and Italy. The Project thus provides, through modern learning and e-learning techniques, an information and educational pathway for the development of the agricultural cooperative sector by the next generation of farmers in the respective countries.

See: https://youcooperate.eu/about-us/

3.5.2. Latvian Rural Development Programme projects

3.5.2.1. EIP projects:

EIP partnership project **„Research of effective heat production and supply solutions in covered areas"** deals with a topic of heat production. It aims to develop energy efficient technology suitable for Latvian climatic conditions with integrated heat pump (air-water) and solar energy collector and to perform experimental construction, heating of closed areas for heat energy production (air thermoregulation).

See: https://zemniekusaeima.lv/projects/efektivu-siltuma-ieguves-un-apgades-risinajumu-izpete-segtajas-platibas/

EIP project **Mednis** ("Development of an information gathering tool for the management of game populations"). Mobile application "Mednis" for animal-related data gathering – a data collection tool that is compatible with State Forest Register. The product for recording wild game, evidence of their presence, hunting and damage to promote optimal use, conservation and management of forestry resources, while reducing the risk of damage and loss in the forestry and agricultural sectors and reducing hunting administrative burden.

See: https://zemniekusaeima.lv/projects/medibu-lietotnes-projekts/

3.5.2.2. Modernisation of rural farms

Support measure No. 121 "Modernisation of agricultural holdings" aims to modernise agricultural enterprises in order to improve their economic performance and competitiveness.

Applicable beneficiary is a natural or legal person who produces unprocessed agricultural products (a year has been concluded and an annual income declaration or annual report has been submitted) listed in Annex I to the Treaty on the Functioning of the European Union, except fishery products, as well as domestic and breeding, which are not covered by the Law on Breeding and Animal Breeding.

Activities to be supported under the measure - construction of new manure storage facilities, reconstruction of existing manure storage facilities, purchase of necessary construction materials and stationary equipment (construction, purchase of equipment, modernisation). Supported sectors include crop production, livestock farming, dairy sector, cattle industry, pig industry, horse breeding industry, sheep breeding industry, goat breeding industry, beekeeping industry and other livestock sectors.

See: https://www.lad.gov.lv/lv/atbalsta-veidi/projekti-un-investicijas/atbalsta-pasakumi/121-lauku-saimniecibu-modernizacija-75

3.5.3. Digital skills Training programmes

Digital skills Training programmes are generally offered by private educational institutions as well as public organisations, such as Latvian Rural Advisory and Training Centre, a DHUB IT Cluster and others.

Table 4: Policies influencing digitalisation in rural areas

Areas being addressed / supported by the policies	Initiative	Brief Description	Objectives	Area of impact	Period of implementation	Budget (if any)	Public / Private	Are rural areas specifically mentioned or addressed?	Link
Digital divide	Women4IT "YOUNG-ICT WOMEN: Innovative Solutions to increase the numbers of EU vulnerable girls and young women into the digital agenda" (through the EEA and Norway Grants Fund for Youth Employment)[1]	The aim of the project is to increase the numbers of EU vulnerable girls and young women into the digital agenda. Initiative offers training for women in digital skills in order to prepare them for digital jobs.	To promote ICT skills of young women and increase their competitiveness in the job market	Latvia (also Spain. Greece, Malta, Lithuania, Ireland, Romania)	2018-2021	2.714.304 €	P	N	
Digital innovations	SmartAgriHubs (SmartAgriHubs – Connecting the dots to unleash the innovation potential for digital transformation of the European agri-food sector); Grant agreement ID: 818182, Horizon 2020[2]	The project consolidates, activates and expands the existing ecosystem by creating a network of Digital Innovation Hubs (DIHi), which will promote the use of digital solutions in the agricultural sector. This is being achieved through local one-stop shops, integrating technology and business support, involving all regions and all key players in Europe.	To accelerate the digital transformation of the European agri-food sector.	Austria, Belgium, Bulgaria, Czech Republic, Denmark, France, Greece, Italy, Ireland, Latvia, United Kingdom, Netherlands, Poland, Portugal, Romania, Serbia, Slovenia, Finland, Spain, Hungary, Germany, Sweden.	2018-2022	Budget for Latvia: 185,000 EUR Overall Budget for all the partners: 22,442,561. 25 EUR	P	Y	

[1] https://digitaljobs.women4it.eu/lv
[2] https://www.smartagrihubs.eu/

Other strategies influencing (rural) digitalisation	"Novada Garša" ("The Taste of the County")[3]	The Novada Garša brand is a sustainable local food system that ensures the traceability and quality of food products of Latvian origin. Initiative finds and in the long-term regional events in Vidzeme, Kurzeme, Zemgale, Latgale and the closing event in Riga, introduces the best local producers, home producers and cooks.	To ensure brand awareness; to create a catalog of Latvian food products with food producers and processors of local origin; to organise events with the brand "Novada Garša", promoting local food and its recognition in Latvia, the European Union and the world; advise on the certification system GLOBALG.A.P. In Latvia.	Latvia	2019+		P	Y	
Digital public services	E-services (portal Latvija.lv)	The portal offers access to various government services. Poertal offers: • guidance on requirements and administrative procedures in order to receive public and municipal services. • to start service electronically, if it's is offered online.	The aim of the portal is to ensure quick and convenient access to the services provided by Latvian State institutions and municipalities. it is maintained by the State Regional Development Agency.	Latvia	Implemented	State budget	P	N	
Digital public services	MEDNIS[4] EIP project Mednis ("Development of an information gathering tool	Mobile application "Mednis" for animal-related data gathering – a data collection	The product for recording wild game, evidence of their presence, hunting and	Latvia	Implemented	98,000 EUR	P	Y	

[3] https://www.novadagarsa.lv/novadagarsa

[4] https://zemniekusaeima.lv/projects/medibu-lietotnes-projekts/

	for the management of game populations")	tool that is compatible with State Forest Register.	damage to promote optimal use, conservation and management of forestry resources, while reducing the risk of damage and loss in the forestry and agricultural sectors and reducing hunting administrative burden.						

3.6. Data management

According to the Guidelines, data management is generally the responsibility of each government agency. Policies have not been harmonised, and this issue has not been addressed in policy documents, though a policy of "open by default" has been practised. Nonetheless, the Guidelines also stress the importance of developing a unified approach that would strengthen transparency and interoperability, both locally and internationally.

3.6.1. Open Data

Latvia has an open data portal (https://data.gov.lv/eng).The Ministry of Environmental Protection and Regional Development (VARAM) is responsible for Latvia's open data policy, with support from the State Regional Development Agency, the State Chancellery and the Department of Public Administration Policy.

- An Open Data Strategy for 2019-2022 was prepared as part of an information document on the situation of open data in Latvia.
- The Development of Data Driven Nation (DDN) initiative was launched in 2016 with the goal of accelerating economic growth in Latvia.
- The Latvian Freedom of Information Law mandates public institutions to make information available in open data format together with metadata.
- A 2018 information report by VARAM indicates the priority data sets that need to be published on data.gov.lv. The datasets to be opened have been determined in cooperation with ICT non-governmental organisations - the Latvian Open Technology Association (https://www.lata.org.lv) and the Latvian Information and Communication Technology Association. These were chosen based on their relevance in enabling the information and communication technology sector to create new services and products (OECD, 2019).

4. Challenges and Opportunities

4.1. Barriers to digitalisation

Some of the major barriers to digitalisation are listed below. The influence of COVID-19 is difficult to assess and disentangle from pre-existing obstacles and barriers. While pre-existing inequalities and gaps were likely deepened, the problem has also become more visible, and it has become apparent that it needs to be addressed.

Table 5: Barriers to digitalisation

Barriers to digitalisation		Influence of COVID-19
Technical	Low incentive to build infrastructure in rural areas dues to scarce population	None
Training / Education	Lack of digital skills	Deepening inequality as digital tools become indispensable
Training / Education	Gap in ICT skills between rural and urban areas	Gap has become more visible.

4.2. Actions to boost sustainable digitalisation

Table 6: Actions to boost sustainable digitalisation

	Key rural development domains			
	Human capital	**Innovation**	**Investments**	**Governance**
Creating the basic conditions for digitalisation	Boosting ICT skills		Providing high-speed internet access across the entire country	Monitoring DESI indicators of progress
Anchoring digitalisation to sustainable development	Closing the digital literacy gap between urban and rural areas	Utilising innovative agricultural and forestry practices	Providing incentives for new business in rural areas	Improving full completion of public services digitally
Adapting digitalisation to different context	Context-adaptive strategies to boosting ICT skills	Encourage interactive innovation		Community based approaches to digitalisation strategies

Favouring digital inclusion	Support for vulnerable groups in the digital transformation, taking steps to ensure inclusive development	Encouraging peer-to-peer networking	Programmes for digital skills for vulnerable groups and small businesses (particularly in rural areas)	Monitoring DESI indicators of progress
Developing digital ecosystems				
Developing adaptative governance models				
Designing policy tools for sustainable digitalisation				

5. Conclusions

While the importance of the digital transformation is clearly recognised, digitalisation is not particularly high on the policy agenda in Latvia, and there is some ambiguity regarding the funding that will allow the public sector to implement its digitalisation strategy. Furthermore, appropriate steps should be taken to enhance privacy and establish appropriate data management procedures.

In general, digitalisation in Latvia can be viewed in two contrasting ways. On the one hand, Latvia's performance with regard to digital infrastructure and digital public services is above the EU average, and high-speed broadband coverage is high. The quality and usage of e-government services is continually improving, and Latvia compares favourably to the rest of the EU in this regard. On the other hand, there are significant differences in digitalisation between urban and rural areas. The regional disparities in infrastructure and connectivity are not sufficiently addressed in policy documents. Moreover, the most significant barriers to developing a comprehensive strategy for dealing with the digital transformation are poor digital skills and inadequate digital literacy. There are immense differences in ICT skills: the difference in basic digital skills between highly educated individuals and those that have received low or medium levels of education is considerable. Differences in ICT skills and usage of digital tools are significant between rural and urban areas as well. A side-effect is a lower level of digitalisation among rural businesses due to a lack of qualified employees, and the transition to digital public services as the main form of communication and interaction with state institutions is also hindered.

Latvia's Digital Transformation Guidelines for 2021-2027 is currently the main policy document concerning digitalisation. Specifically, it highlights innovation and science, education, healthcare, inclusive society and job market, infrastructure, regional development, defence, environment and energy. The Guidelines have five main directions: digital skills and education, digital security, communications and computing, digital transformation of the economy, innovation and ICT industry. It aims to purposefully develop a unified digital ecosystem for governance, economy and society. However, the gap between rural and urban areas (identified as a significant obstacle in this report) is not tackled with a detailed plan of action.

The main challenges to the rural digitalisation process in Latvia are the insufficient digital skills of the population and the disparities between groups (high/low education level, urban/rural population, different generations). Furthermore, rural digitalisation (in terms of infrastructure and skills) is not sufficiently addressed in policy documents, or other programs/initiatives. However, some European and other projects address rural digitalisation: there are Digital Innovation Hubs, programmes for modernisation of farms and education initiatives to boost the digital skills of young people. Yet, they reach a relatively small portion of the rural population and concrete large-scale initiatives are lacking.

5.1. Bibliography

Central Statistical Bureau of Latvia. (2019 November 1). *Internet usage at households continues to increase* [Press release]. https://www.csb.gov.lv/en/statistics/statistics-by-theme/science-ict/computers-internet/search-in-theme/2580-internet-usage-habits-latvian

European Commission (2020c). *Commission recommendations for Latvia's CAP strategic plan Accompanying, European Commission, SWD(2020) 386 final*. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020SC0386&from=EN

European Commission. (2018a). Digital Economy and Society Index (DESI) 2018 Country Report Latvia. https://ec.europa.eu/information_society/newsroom/image/document/2018-20/lv-desi_2018-_country-profile_eng_198F439E-C4CC-EB8B-9F0F9C5926DB70D8_52231.pdf

European Commission. (2018b). *EU funds broadband access for underserved households in rural Latvia*.

European Commission. (2019). *eGovernment factsheets: anniversary report*. https://ec.europa.eu/isa2/sites/isa/files/docs/news/10egov_anniv_report.pdf

European Commission. (2020a). Digital Economy and Society Index (DESI) Latvia. *Shaping Europe's Digital Future*, 12–12. https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=66931

European Commission, I. (2020b). Digital Economy and Society Index (DESI) 2020: Thematic chapters. *European Commission*, 1–177. https://ec.europa.eu/digital-single-market/en/desi

European Commission (2020c). *Commission recommendations for Latvia's CAP strategic plan Accompanying, European Commission, SWD(2020) 386 final*. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020SC0386&from=EN

LAD (2021a). Operatīvā informācija par apmaksātajiem ELFLA 2014-2020 projektiem (līdz 15.10.2021. veiktie maksājumi, ieskaitot Top-up un virssaistības), EUR. https://www.lad.gov.lv/files/elfla_15_10_2021.pdf

LAD (2021b). Elektroniskā pieteikšanās sistēma EPS. https://www.lad.gov.lv/lv/e-pieteiksanas-sistema-eps-1/e-pieteiksanas-sistema-eps/

Latvian Information and communications technology association. (2020). YOUNG-ICT WOMEN: Innovative Solutions to increase the numbers of EU vulnerable girls and young women into the digital agenda. https://digitaljobs.women4it.eu/lv

Lauku atbalsta dienests. (2010). *Lauku saimniecību modernizācija.* https://www.lad.gov.lv/lv/atbalsta-veidi/projekti-un-investicijas/atbalsta-pasakumi/121-lauku-saimniecibu-modernizacija-75

Ministry of Education. (2020). *Smart Specialisation Strategy (S3)*. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=2ahUKEwjIx9eEjePoAhVU8aYKHS9tBjgQFjACegQIBRAB&url=https%3A%2F%2Fclm.becore.it%2Fclm%2FFile%2FDownload%3FId%3D189_aggiornamento_s3dotpdf&usg=AOvVaw2En-PVCRvydH1ig2OL80IC

Ministry of Environmental Protection and Regional Development. (2020). *Digitālās transformācijas pamatnostādnes 2021.-2027. gadam*. https://www.varam.gov.lv/sites/varam/files/content/files/digitalas-transformacijas-pamatnostadnes-_2021-27.pdf

OECD. (2018). *Latvia Policy Brief*. https://www.oecd.org/policy-briefs/Latvia-labour-productivity.pdf

OECD. (2019). *OECD OURdata Index : 2019* (Issue October). https://eur-lex.europa.eu/legal-

content/EN/TXT/?uri=COM:2018:22:FIN%0Ahttps://ec.europa.eu/education/education-in-the-eu/digital-education-action-plan_en

Rivza, B., Vasilevska, D., & Rivza, P. (2019). *Impact of digital innovation on development of agriculture in Latvi*a. *Engineering for Rural Development*, *18*, 682–687. https://doi.org/10.22616/ERDev2019.18.N485

Sloka, B., & Čipāne, K. (2020). Digitalisation in Regions of Latvia. *Humanities and Social Sciences: Latvia*, *28*(1), 30–45. https://doi.org/https://doi.org/10.22364/hssl.28.1.02

SmartAgriHubs. (2018). *SmartAgriHubs: Connecting the Dots in the Agri-Tech Sector*. https://www.smartagrihubs.eu/about

Valsts Reģionālās attīstības aģentūra. (2017). *The Latvian Open data portal.* https://data.gov.lv/eng/about

Vides aizsardzības un reģionālās attīstības ministrija. (2013). *Informācijas sabiedrības attīstības pamatnostādnes.* https://www.varam.gov.lv/sites/varam/files/content/files/information_society_development_guidelines_2014_2020.docx

YOUcooperATE. (2021). *Youth Cooperation for Agricultural Renewal through Education.* https://youcooperate.eu/

Zemnieku Saeima. (2019). *Efektīvu siltuma ieguves un apgādes risinājumu izpēte segtajās platībās.* https://zemniekusaeima.lv/projects/efektivu-siltuma-ieguves-un-apgades-risinajumu-izpete-segtajas-platibas/

Zemnieku Saeima. (2020). *Informācijas ievākšanas rīka izstrāde medījamo dzīvnieku populāciju apsaimniekošanai.* https://zemniekusaeima.lv/projects/medibu-lietotnes-projekts