



DIGITISATION: ECONOMIC AND SOCIAL IMPACTS IN RURAL AREAS

# NATIONAL POLICY ANALYSIS FRANCE

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## Executive Summary

The EU released its first Action Plan on “Europe’s way to the Information Society” in 1994 and marked the beginning of its reflections, debates, policies and actions to accelerate digitalisation for almost 30 years to this day. In the late 1990s, the French government began to emphasise on the potential benefits of the Internet and Information Society, and to accelerate ICT development with the hope to make France one of the leaders in Europe and the world. Several national digital plans were launched in different times. A minister has been nominated and public agencies have been created to ensure the steering and coordination of public policies in the digital field. Different from a technology-driven strategy, the EU’s and French digital policies quickly turned to “an Information Society for All” even in the beginning phase. Digital transition of rural society and integration of digital technology in agricultural and food sectors have made rural digitalisation one of the central issues in the EU and French digital policies. Digital and smart agriculture is also highlighted in the reform of common agricultural policy (CAP), for the target to foster a sustainable and competitive agricultural sector that can support the livelihoods of farmers, provide healthy and sustainable food for society, vibrant rural areas, and help to achieve the objectives of the European Green Deal. A final version of the French National Strategic Plan of the CAP 2023-2027 is to be delivered to the EU by the end of 2021.

This report aims to provide a global view of the French national policies influencing on rural digitalisation, and to reveal how the rural sector is being addressed by general digitalisation policies and how sectoral policies are boosting digital changes. We have also looked into the EU’s policies, which have important influences on the policy-making of its member countries. The report is organised around the following four points: 1) Context of digitalisation, i.e. current situation of digitalisation in France and specifically in its rural areas. 2) National policy framework for the digitalisation of agriculture, forestry and rural areas, including also a short section about the EU’s digital strategies and their influences to rural areas and to French national and regional policies. 3) Horizontal issues in the French digital policies including French strategies for the EU’s policies (e.g. CAP, Smart Specialisation, Smart Villages, and Digital Innovation Hubs...). Table A.1 in the Appendix provides a full list of the policies and instruments being analysed. 4) Barriers to rural digitalisation in France and problems in French digital policies, as well as some recommendations.

The main conclusions of this report are the following:

The statistics show that France has a medium digitalisation level while ranks relatively higher in gender equality in the EU and among the high-income countries in the world. Basically, France has almost achieved full coverage of high-speed Internet (at least 8Mb/s) in its territory at the end of 2020. Digital illiteracy affects 17% of the population. Comparing to the EU’s average, France performs better in the digitalisation of business and public services, while lags behind in the use of digital service for social life and by individuals. Digitalisation of public services has been well developed in France in order to achieve 100% paperless administrative services by 2022. 83% of the 250 most used public services are already online.

However, there is a quite remarkable urban-rural divide in the coverage of superfast broadband (at least 30Mb/s), and in public digital skills and use of the Internet. In rural areas, integration of digital technology in business is relatively more common in agriculture (including forestry and fisheries) compared with other sectors, and more common in big companies than in SMEs. The paperless procedure of administrative services helps to bring people in remote rural areas close to public services. 66% of rural population use online administrative procedures.

The objectives of the French national digital strategies can be concluded into fivefold: inclusive digitalisation (infrastructure, access to the Internet and digital technology, skills...), full development of digital business models and services, abundant e-contents and open data, cybersecurity, and digital leadership and innovation. Digital and ICT development is one of the key thematic objectives of the programmes in France financed by the European Structural and Investment Funds. Digitalisation is also at the heart of French recovery plan “France Relance (2020-2040)” within the framework of NextGenerationEU to surmount the impacts of the Covid-19 crisis.

Rural areas, agriculture and forestry are highly concerned by existing digital policies for 4 reasons: inclusive digitalisation; integration of digital technology in “smart agriculture” and “precision agriculture”; agriculture and forestry as pioneer sectors for digital innovation and open data; smart agriculture being considered as a key sector in alleviating human impacts to environment, biodiversity and climate. Correspondingly, the following policies had bigger impacts on rural digitalisation: the e-inclusion policies, e.g. National Broadband Plan and initiatives about public services; and the policies promoting digital innovations and development of digital business models in agriculture (including forestry and fisheries) and food sectors. In addition, the policies for improving rural digital literacy (e.g. Digital Pass Tickets and Digital Advisors) and those supporting digitalisation for territorial cohesion (Section 3.3.3) are rather in the beginning phase, but will have important influences on rural areas. Digitalisation of rural areas and the agricultural sector will be an important part in the French national strategy of new CAP.

There are a variety of barriers to rural digitalisation in France. The pandemic COVID 19 has increased awareness of digital technology and stimulated the development of certain digital services, but has also retarded digital progress on all sides. The current French digital policies concerning rural areas have several problems, and the report recommends the following actions: to build a general digital agenda at the national level integrating all the specific digital plans or strategies; to strengthen the channel which groups and appropriates national initiatives and resources to serve local needs; apart from digital agriculture and e-inclusion, policy-makers need to make more efforts to stimulate the exploration of opportunities in rural areas offered by digital technology, and to encourage research and projects on the particularity of rural areas. The final recommendation suggests the priorities among the actions that should be carried out.

## 1. Introduction

Following the Delors White Paper published in 1993 and the Bangemann Report in 1994, the EU released its first Action Plan on “Europe’s way to the Information Society” in 1994. This marked the beginning of its reflection, debates, policy-making and actions to accelerate digitalisation for almost 30 years to this day. When the EU’s digital targets were becoming less vague in the late 1990s, the French government began to emphasise on the potential benefits of the Internet and on the development of Information and Communication Technology (ICT) with the hope to make France one of the leaders in Europe and the world. After the speech of the Prime minister Lionel Jospin at the University of Communication in Hourtin on 25 August 1997 “To prepare the entrance of France into the Information Society”, several national digital agenda or roadmaps were launched in different times. A minister has been nominated and public agencies have been created to ensure the steering and coordination of public policies in the digital field.

Different from a technology-driven strategy in certain countries, the EU’s and French digital policies quickly turned to “an Information Society for All” even in the beginning phase. Digital transition of rural society and integration of digital technology in agricultural and food sectors, e.g. smart agriculture, precision agriculture, AgTech and FoodTech, have made rural digitalisation one of the central issues in the EU’s and French digital policies.

This report aims to provide a global view of the French national policies influencing on rural digitalisation. Analyses have been made on policies boosting digitalisation and digital transition that affects agriculture, forestry and rural areas on the one hand, and rural and agricultural policies that foster digitalisation, on the other. The objective is to reveal how the rural sector is being addressed by general digitalisation policies and how sectoral policies are boosting digital changes. Besides the focus on existing policies at national level, we have also looked into the EU’s policies, which have important influences on policy-making of its member countries, e.g. France in this report. At the EU’s level, digital transition is a priority and several policies and initiatives have been launched to boost it.

The report is composed by the following points:

- 1) Context of digitalisation, i.e. the current situation of digitalisation in France and specifically in its rural areas. It is in this context that the national digital policies and strategies are made. The analysis was mainly based upon the EU’s Digital Economy and Society Index (DESI), the Network Readiness Index (NRI) developed by the World Economic Forum for a study of 134 economies in the world, and French national statistics and reports on infrastructure and connectivity, digital skills and use of the Internet, integration of digital technologies in business, digital public services, digital divide and gender differences, etc. The results show that France has a medium digitalisation level in the EU and among the high-income countries in the world, while ranks higher in gender equality. France has almost achieved full coverage of high-speed broadband (at least 8Mb/s) in its territory, but demonstrates a remarkable urban-rural divide not only in infrastructure, but also in digital skills and use of the Internet. Relatively, France performs better in the digitalisation of business and public services, and lags behind in the use of digital services for social life and by individuals. Integration of

digital technology in business is relatively more common in agriculture (including forestry and fisheries) compared with other sectors in rural areas, and more common in big companies than in SMEs.

2) National policy framework for the digitalisation of agriculture, forestry and rural areas. Before the presentation of the national policies, a sub-section is dedicated to the EU's Digital Agenda and general strategies (i.e. eEurope, i2010, Digital Agenda for Europe, and the current "A Europe fit for the Digital Age" and Digital Compass; Digital Single Market, reform of CAP, and the European Green Deal...). Rural areas are concerned mainly by e-inclusion policy within the EU's "Information Society for All" paradigm and smart agriculture initiatives for food security and environmental benefits. The EU's digital policy has important impacts on French national ones, especially through the Digital Single Market initiative, restrictions and guidance to national roadmaps and programmes, and national or regional digital projects co-funded by the European Structural and Investment Funds. Then, the investigation with a historical view of French national digital policy framework led to the conclusion of five main objectives of their digital strategies and a summary of four reasons why agriculture, forestry and rural areas are concerned.

3) Horizontal issues in French digital policies and strategies: national policies for digital inclusion (including broadband and infrastructure, digital literacy and digital divide, digitalisation for territorial cohesion); policies on digital public services; policies promoting digital innovation and development of business models (start-ups and SME, agricultural and food sectors, other sectors like health and transport); French strategies for the EU's policies (CAP, Smart Specialisation, Smart Villages...); and data management (open data, cybersecurity, and interoperability). Table A.1 in the Appendix provides a full list of the policies and instruments being analysed. The results show that the following policies have bigger impacts on rural digitalisation: the e-inclusion policies, e.g. National Broadband Plan and e-government initiatives; and the policies promoting digital innovation and development of digital business models in agricultural and food sectors. In addition, the policies for improving rural digital literacy (e.g. Digital Pass Tickets and Digital Advisors) and those supporting digitalisation for territorial cohesion (Section 3.3.3) are rather in the beginning phase, but will have important influences on rural areas.

4) At last, the report analysed the main barriers to rural digitalisation in France and the problems in French digital strategies and policies. Some recommendations are proposed by referring to the DESIRA RDF briefing on principles for sustainable digitalisation and guidelines to the analysis of different policies and initiatives.

## **2. Current situation of (rural) digitalisation in France**

### **2.1. France's digitalisation level among the EU and the high-income countries in the world**

The European Commission began to monitor annually Member States' digital progress using Digital Economy and Society Index (DESI) from 2014. The index includes five dimensions: Connectivity, Human Capital (digital skills of individuals and number of ICT specialists), Use of Internet Services,



Integration of Digital Technology (in the enterprises, especially the SME), and Digital Public Services. France ranks 15<sup>th</sup> out of 28 EU Member States in the 2020 DESI (Fig. 1) and keeps moving ahead since 2018. However, France remains far from the EU’s top performers, e.g. Finland, Sweden, Denmark and Netherlands, and behind most of its neighbors.

Regarding to different dimensions, as shown in Fig.1, France scores better than the EU average in Integration of Digital Technology (42% v.s. 41.4%, rank 11<sup>th</sup>) and Digital Public Services (76.7% v.s. 72.0%, rank 12<sup>th</sup>), and lags behind in Connectivity (49.8% v.s. 50.1%, rank 18<sup>th</sup>), Human Capital (47.4% v.s. 49.3%, rank 17<sup>th</sup>) and the Use of Internet Services (53.1% v.s. 58%, rank 21<sup>th</sup>). According to the DESI 2020 report for France<sup>1</sup>, the progress achieved in the country mainly comes from increasing number of companies using social media, big data and other technology, growing supply and users of e-government service, and rising trend to share information online both in business and public services. Despite of continuous improvement of broadband coverage, the position of France in the EU has worsened in terms of Connectivity, revealing that its progress is not fast enough comparing to its counterparts. France is lagging behind in Human Capital mainly due to low share of people with “above basic digital skills” and shortage of “ICT graduates”. Similarly, the Use of Internet Services in France increases at a slower pace than the EU average, but with a sharp contrast between two groups of sectors: banking, selling and shopping (remarkably above the EU average) vs. social networks, online news, music, video, video calls and courses (remarkably below the EU average).

	France		EU
	rank	score	score
<b>DESI 2020</b>	<b>15</b>	<b>52.2</b>	<b>52.6</b>
DESI 2019	16	49.8	49.4
DESI 2018	17	45.7	46.5

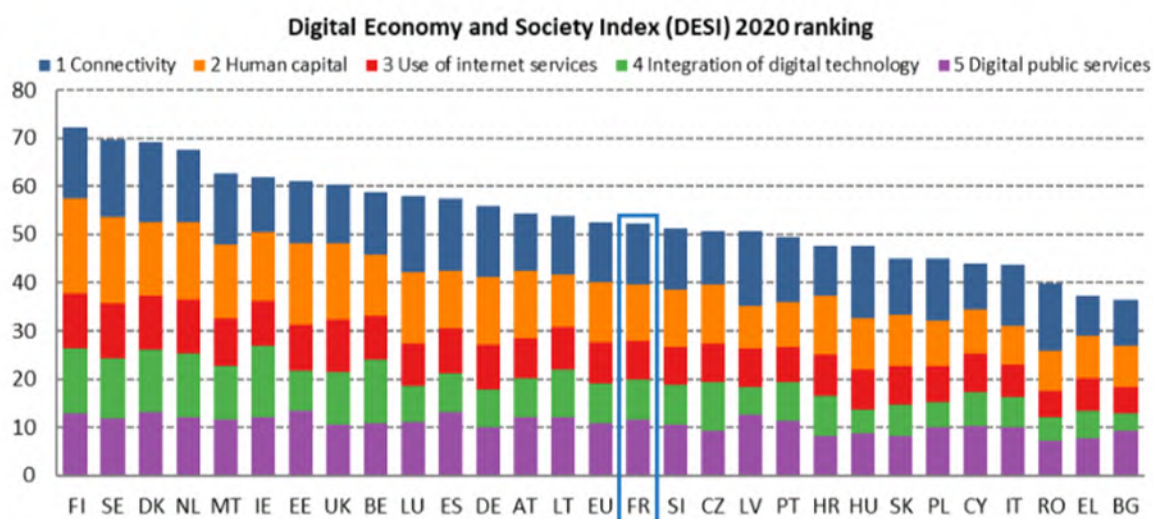
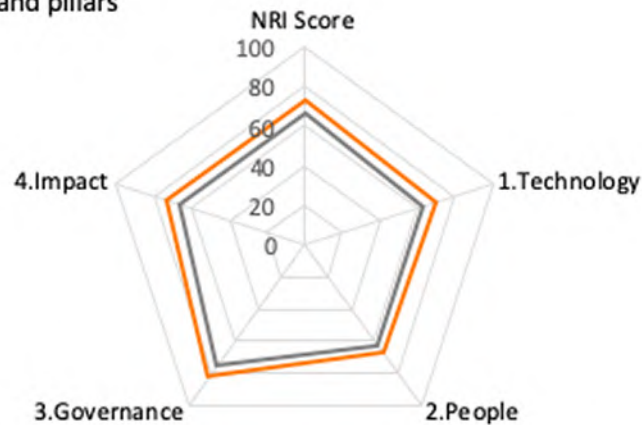
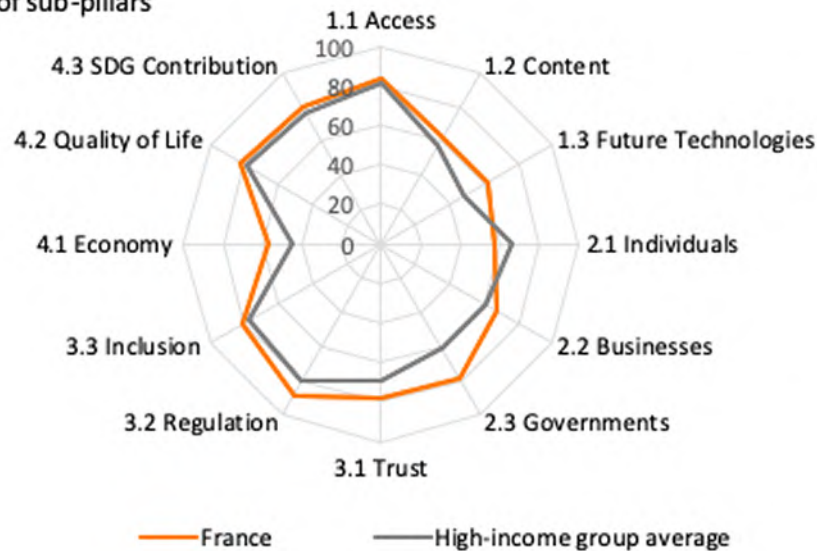


Fig. 1 Digital Economy and Society Index (DESI) 2020 ranking of the EU countries

Source: The European Commission<sup>1</sup>

<sup>1</sup> The European Commission. Digital Economy and Society Index (DESI) 2020 report, France. <https://digital-strategy.ec.europa.eu/en/library/digital-economy-and-society-index-desi-2020>

**a. Overall score and pillars**

**b. Scores of sub-pillars**

**Fig. 2 France's Network Readiness Index (NRI) 2020 score**

Source: World Economic Forum<sup>2</sup>

In another study of 134 economies in the world based upon the Network Readiness Index (NRI) developed by the World Economic Forum<sup>2</sup>, France ranks 17<sup>th</sup> among the 50 high-income economies in 2020. As shown in Fig. 2, France's performance in the four pillars of the index has a quite close structure to the high-income group average: a relatively balanced digitalisation pattern, but performing stronger in Governance and Impacts, and less strong in People and Technology. France ranks 15<sup>th</sup>, 12<sup>th</sup>, 20<sup>th</sup> and 18<sup>th</sup> in the above four pillars, respectively, therefore, its digitalisation performance is slightly more polarised and less balanced. Whereas, the best NRI performers usually have a larger advantage in Technology and People, apart from an overall better performance, e.g. Sweden, Denmark, the Netherlands, the USA, and the UK, etc.

<sup>2</sup> Dutta and Lanvin, 2020. The Network Readiness Index 2020: Accelerating Digital Transformation in a post-COVID Global Economy. Portulans Institute, <https://networkreadinessindex.org>

However, the contrast at the sub-pillar level should not be neglected. France primarily owes its high rank for Impact of ICTs to its innovative, high-tech Economy, while for Governance to its good levels of Trust and Inclusion, and excellent level of Regulation (rank 9<sup>th</sup>). In the Technology pillar where France is relatively less strong, it still shows a remarkably good level in the adoption of and investment in Future Technologies (16<sup>th</sup>), and access. As for its worst-performing pillar, i.e. People, there is a great contrast between the use of ICT by Government (8<sup>th</sup>), Business (18<sup>th</sup>) and Individuals (60<sup>th</sup>).

To sum up, France has a medium digitalisation level in the EU and among the high-income countries in the world. Its digitalisation process shows a relatively balanced pattern considering different dimensions such as infrastructure or connectivity, skills, technology, use of internet and digital service, etc. However, comparing to the EU's average, France performs better in the digitalisation of business and public services, while lags behind in the use of digital service for social life and by the individuals. More efforts are needed to improve the broadband connectivity, e-inclusion, digital society, digital education and training, etc.

## 2.2. Infrastructure and connectivity

First of all, about the fixed Internet. According to the report<sup>3</sup> of Arcep, the French Agency in charge of regulating telecommunications, 98% of French households are covered by fixed broadband of at least 8 Mbit/s (high-speed broadband, “Bon Haut Débit”) and 73% by that of at least 30 Mbit/s (Superfast Broadband, “Très Haut Débit”) at the end of 2020. The numbers of subscriptions for 8 Mb and 30Mb broadband are 30.6 million and 14.7 million, and the utilization rates are 80% and 51%, respectively<sup>4</sup>. Fig.3 presents the spatial pattern of the maximum download speed of available non-satellite broadband in metropolitan France. The Ile-de-France and Hauts-de-France regions in the north have better connectivity than the rest part of France. The big cities such as Paris, Lille, Lyon, Strasbourg, and their surrounding areas are served by hyper fast broadband of up to 1 Gbit/s and above. Urban areas are better equipped than rural areas. In the small cities and rural areas, only 44% of the households have access to 30 Mb broadband, comparing with 92% in the most densely populated cities and 81% in the middle-sized cities<sup>3</sup>.

The technologies for fixed Internet access in France mainly include DSL, cable modem, fiber, THD radio and others. The DSL network has almost a full coverage of the territory, except for some Blank Zones (“Zones Blanches”) in the rural areas, but the “Fiber To The Home” (FTTH) is considered the most powerful and promising one. After great efforts of the government promoting the deployment of FTTH network, there are already 22.3 million access lines on 30 September 2020, which provide access to 30 Mb+ broadband for 60% of the households in France. The utilisation rate of FTTH is 42%, and 9.2 million households have subscribed for the service. However, the coverage rate varies across the territory, from 82% in densely populated cities, to 72% in middle-sized cities, and 28% in small cities and rural areas<sup>3</sup>. Rural areas usually lag behind in infrastructure construction for economic reasons,

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<sup>3</sup> Arcep. Activity report 2021, Volume II. La régulation de l’Arcep au service des territoires connectés. <https://en.arcep.fr/news/press-releases/view/n/annual-report-230921.html>

<sup>4</sup> Arcep. Observatoire haut et très haut débit : abonnements et déploiements (T4 2020).

<https://www.arcep.fr/cartes-et-donnees/nos-publications-chiffrees/observatoire-des-abonnements-et-dploiements-du-haut-et-tres-haut-debit/historique-de-lobservatoire.html>

but the physical difficulties for fixed internet technology in rural areas and mountainous areas cannot be neglected.

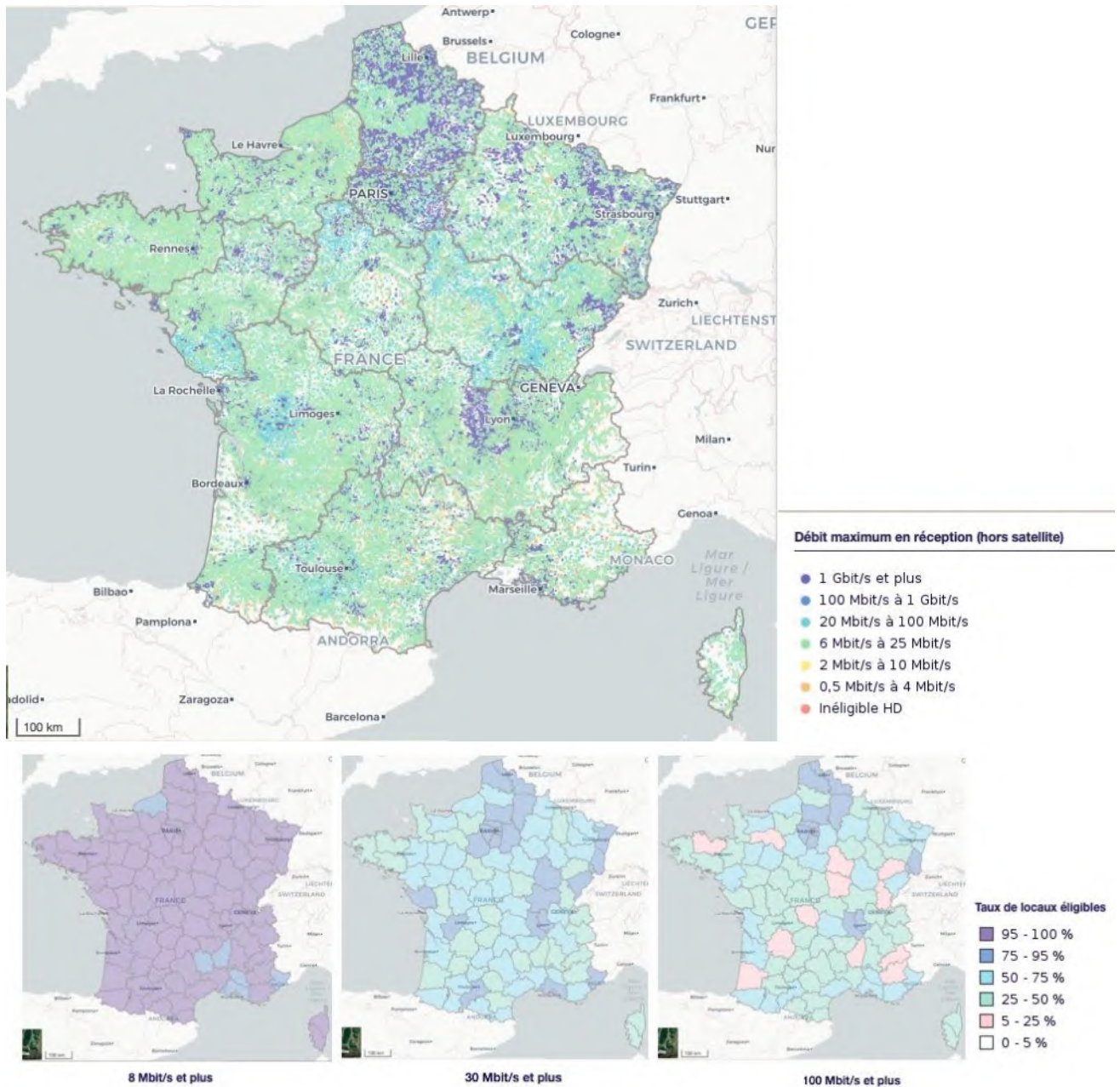


Fig. 3 Fixed Internet connectivity in Metropolitan France (top: maximum download speed of available non-satellite broadband for households, bottom: department-level broadband coverage)

Source: Arcep<sup>5</sup> (data on 2020-12-31)

<sup>5</sup> From the Arcep database « Ma connexion internet », <https://maconnexioninternet.arcep.fr>



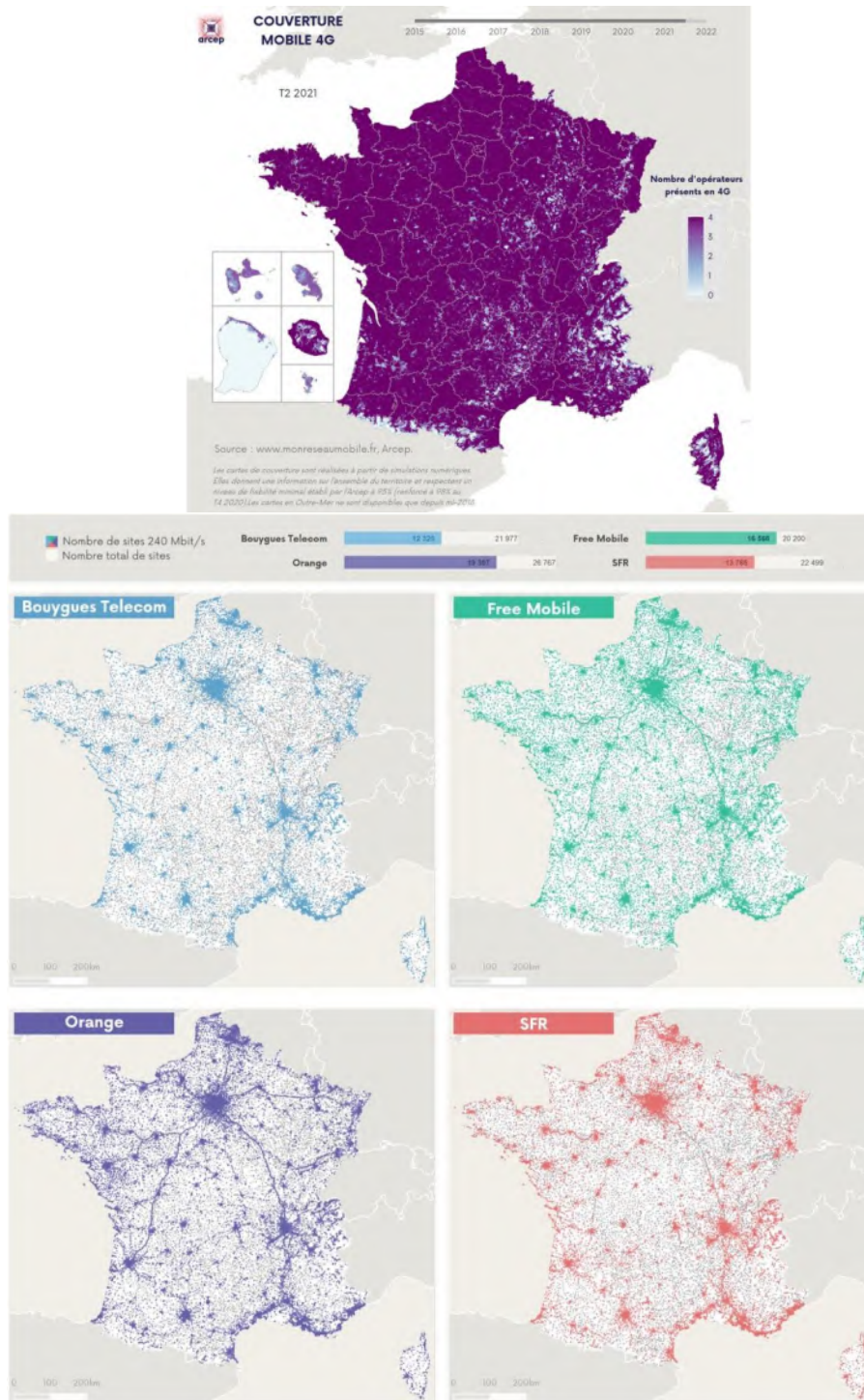


Fig.4 Mobile coverage in France (top: number of 4G operators serving the place, bottom: 4G+/5G sites (>240 Mbit/s) of different operators)

Source: Arcep<sup>6</sup> (data on 2021-6-30)

<sup>6</sup> <https://www.arcep.fr/cartes-et-donnees/nos-cartes.html>

Then, about the mobile Internet, which can be very important especially for rural areas, for example, for the operations of agricultural and forestry robots in open fields, and for households having difficulties to get access to fixed internet networks. According the Arcep report<sup>3</sup>, 96% of the French territory is covered by the service of at least one 4G operator in September 2020 and 76% by all the 4G operators. A big progress is that 63% of the mobile sites in marginalised zones are equipped with 4G technology, compared with 0% in July 2018. The average mobile internet speed in metropolitan France is 49 Mbit/s and the users consume 10.5 GB of data per month on average. The deployment of 5G started in late 2020, and a total of 8675 sites are commercially opened by the four French operators (Bouygues, Free Mobile, Orange and SFR) at the end of 2020. As shown in Fig.4, same as the fixed internet, big cities and their surrounding areas have better connectivity for superfast mobile Internet (4G, 4G+, 5G). Though almost the entire territory has access to 4G network, users are highly likely to encounter problems when traveling across rural areas and mountainous areas because the network of their operator may be not available there.

The prices of fixed high-speed and superfast broadband fell remarkably between 2016 and the middle of 2018, and keep rather stable since then, except for a slight rise in January-March 2019 and in January and December 2020 due to tariff increase for the FTTH and 4G box<sup>7</sup>. The price of the connection to DSL networks (ADSL and VDSL), which represent the majority of subscriptions for the fixed internet in France, is quite stable in 2020. As for the mobile internet, the rapid increase of data consumption had little influence on the minimum cost of mobile users. It indicates that the mobile internet is becoming relatively cheaper.

### 2.3. Digital skills and use of the Internet

A study<sup>8</sup> of INSEE (French National Institute of Statistics and Economic Studies) shows that, in 2019, 83% of households own a computer and 96% a mobile phone. Apart from young people, older people now are also embracing the digital technology. 82% of 60-74 years old and 47% of 75+ years old have a computer in 2019, showing an increase of 8-15 points in the last five years. However, inequalities persist among the different levels of living. In 2019, among the poorest 10% of the households, 68% have a computer and 75% have Internet access, while the proportions in the richest 10% are 95% and 96%, respectively. Another study<sup>9</sup> of INSEE shows, 15% of people aged 15+ did not use the Internet in 2019, 38% of users lack at least one basic digital skill and 2% have no skills. Thus, digital illiteracy affects 17% of the population. The oldest, least educated and low-income people, those living alone or couples without children or those residing in French overseas departments are the most affected by the lack of equipment and skills.

The rate of non-equipment is the highest in rural municipalities and small cities (13%), compared with 8% in Paris metropolitan area, and 12% in middle-sized cities. There is also an inequality in digital skills

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<sup>7</sup> Arcep. Évolution des prix des services de communications électroniques, 2020. <https://www.arcep.fr/cartes-et-donnees/nos-publications-chiffrees/marches-des-communications-electroniques-en-france-enquetes-trimestrielles-et-annuelles/indice-des-prix-des-services-fixes-et-mobiles.html>

<sup>8</sup> INSEE. Computer and Internet access: equipment inequalities persist according to standard of living. <https://www.insee.fr/en/statistiques/5346284>

<sup>9</sup> INSEE Première, N°1780. <https://www.insee.fr/fr/statistiques/4241397>

across the territory. The lack of basic skills for information searching and communication on the Internet is 44% and 72% higher in rural municipalities than Paris metropolitan area, respectively.

## 2.4. Integration of digital technologies in business

According to a study<sup>10</sup> of INSEE in 2019, digital platforms and e-commerce are developing rapidly in France, though they still occupy a minor place in the sectors concerned. Electronic sales have doubled comparing to ten years ago and account for 30% of the turnover of companies with over 250 employees in 2017. In 2020, 10% of companies with over 10 employees use interconnected systems (Internet of Things)<sup>11</sup>. The proportion is higher among large companies (29%) and in the transport sector (16%), accompanied with greater use of cloud computing and big data. 4% of companies use 3D printing, and this proportion increases to 17% in the companies with over 250 employees. 8% of companies use a robot, among which, the use of an industrial robot is twice as much as the use of a service robot.

Digital technology has been widely used in the agriculture sector and makes the cooperation between multiple actors possible<sup>12</sup>: producers, consultants, transformers, consumers, etc. 79% of farmers use the Internet in farming activities in 2019, which is higher than the national average of France<sup>13</sup>. 46% of farmers use GPS on tractor; 800000 ha (i.e. 3%) farmlands are monitored by satellite; 50% of milk farmers use robots, and there are 630 start-ups in AgTech and foodTech. The development of smart agriculture calls for technologies and experts on data sciences or big data, which has provided numerous opportunities for start-ups.

## 2.5. Digital public services

France has made great efforts in the digitalisation of public service, beginning with creation of websites for different administrative departments and digitisation of audiovisual resources since late 1990s. According to the Interministerial Department for Digital Affairs ([numerique.gouv.fr](http://numerique.gouv.fr)), 83% of the 250 most used public services are online nowadays. The target is to realise 100% paperless public services by the end of 2022. Among the online services, FranceConnect is an e-identity system providing secure access to 900 online procedures using a single password; it has now 30 million users and 18 million use per month after 5 years in service. The Observatory of the Quality of Online Procedures ([observatoire.numerique.gouv.fr](http://observatoire.numerique.gouv.fr)) was created in 2019 to provide assessment and recommendations around the 250 most used public services in order to make them more comfortable for use. An open data portal ([data.gouv.fr](http://data.gouv.fr)) was created in 2011 to gather all the public information of the government, public administrative institutions, local authorities, and private sectors in charge of a public service mission. The website has currently 39224 datasets, 83239 users and 3011 organisations.

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<sup>10</sup> INSEE. L'économie et la société à l'ère du numérique. Edition 2019 (English Version).

<sup>11</sup> INSEE Première, N°1854, 2021-4-21. <https://www.insee.fr/en/statistiques/5402817>.

<sup>12</sup> Ministry of Agriculture and Food. La révolution numérique. N° 1567, 2018.

<sup>13</sup> Ministry of Agriculture and Food. <https://agriculture.gouv.fr/infographie-lagriculture-connectee>.

The paperless procedure of administrative services helps to bring people in remote rural areas close to public services. However, the risk that a part of the population not comfortable with digital tools may be excluded from this process should not be neglected. For example, 72% of higher education graduates filed their income tax declaration online, while just 20% of those without even a primary education level did so in 2018 before online tax declaration became mandatory for all<sup>10</sup>. Likewise, the gap between the highest and lowest educated people exceeds 35 points in terms of searching for administrative information and downloading administrative forms.

## 2.6. Digital divide and gender differences

As already addressed in the sections 2.2 and 2.3, there is a remarkable divide between rural areas and urban areas (especially Paris and other big cities) regarding to the Internet connectivity, equipment of digital devices, and digital skills. Though France has almost achieved full Internet coverage of its territory, rural areas still have limited access to superfast broadband (i.e. FTTH, 4G, 5G). A study of CREDOC<sup>14</sup> towards 4000 people above 12 years old in metropolitan France shows that the proportions of people connected to the fixed Internet on computer, on smartphone or tablet, and connected to the mobile Internet account for 77%, 63%, and 55% in rural areas, respectively, compared with 84%, 74% and 69% in Paris metropolitan area, respectively. People who have never used the Internet account for 12% in rural areas and 4% in Paris metropolitan area; people who have never accomplished an online administrative procedure: 34% in rural areas and 22% in Paris metropolitan area; people who have never done an online shopping: 31% in rural areas and 18% in Paris metropolitan areas.

The results of the same study<sup>14</sup> show that the digital divide in France includes also differences among ages, levels of living and between the genders. As for age groups, more attentions should be paid to people of 60-70 and 70+ years old. The proportions of non-Internet-use of these two groups are 7% and 28%, respectively, but below 3% in all the other age groups. Likewise, supports should be provided to the low-income group to narrow the divide between different levels of living. Finally, it is quite clear that women keep a backward position in France. 9% of women v.s. 6% of men have never used the Internet. Women are more on smartphone (42%) and tablet (8%) than men (39% and 5%, respectively), and less on computer (39% in women v.s. 48% in men). Women has less confidence than men in their digital skills in using a computer (80% v.s. 84%), a smartphone (79% v.s. 81%), a tablet (67% v.s. 69%), online administrative procedure (72% v.s. 73%), and office tools (61% v.s. 67%).

However, among the EU countries, as Fig.5 shows, France performs better in gender equality (rank 9<sup>th</sup>) than its general place in terms of digitalisation level (defined by DESI index, presented in section 2.1). The proportion of female ICT specialists (% of total) is 21.2% in France whereas 17.7% in the EU. The proportion of people who have never used the Internet decreases in the younger generation, but the decrease is faster in women than men, so the gender difference is less remarkable in younger group (16-24yr) than older group (55-74yr).

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<sup>14</sup> CREDOC, Baromètres du numérique, Edition 2021.



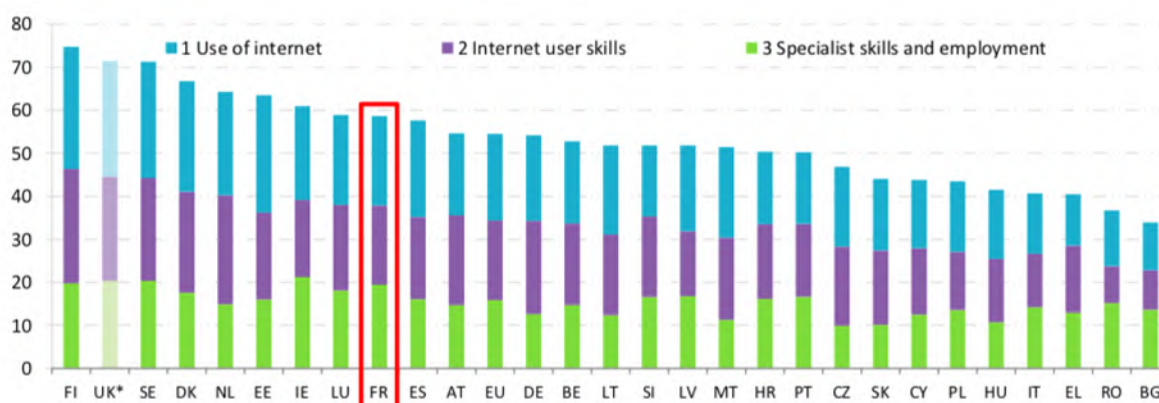


Fig. 5 Women in Digital Scoreboard 2020 – ranking

Source: The European Commission<sup>15</sup>

### 3. National policy framework for (rural) digitalisation

This section aims to identify the policies that boost rural digitalisation in France, including national digital policies within the framework of the EU’s Digital Agenda, and also the rural and agricultural policies fostering digital transition. Before the presentation of the national policies, a short section is dedicated to the EU’s Digital Agenda and general strategies.

#### 3.1. The EU’s digital policies and influences on French policies

##### 3.1.1. The EU’s digital policies

The EU’s digital policies can be traced back to its first Action Plan in 1994 following the release of the Delors White Paper in 1993 and the Bangemann Report in 1994 (FEIJOO et al., 2007)<sup>16</sup>. The Council of the EU then adopted the multiannual PROMISE programme (1998-2002). The objective was mainly to stimulate reflections and debates on “Europe’s way to the Information Society”. It can be characterised by a neo-liberal position around infrastructure liberalisation in the telecommunication sector, i.e. standardisation, interconnection and interoperability, etc., and an emphasis on the research of new digital technology.

However, the budget allocated to the PROMISE Programme was reoriented to the new initiative “eEurope – An Information Society for ALL” launched in 1999 after the election of the new President of European Commission<sup>17</sup>. The “eEurope 2002” Action Plan and “eEurope 2005” Action Plan tried to focus on a narrower scope and quantitative and specific targets, with the hope to turn the EU into the most competitive and dynamic knowledge-based economy by 2010. There were three main lines of action in this period: a cheaper, faster and more secure Internet, investment in people and skills, and

<sup>15</sup> The European Commission. Women in Digital Scoreboard 2020, France. <https://digital-strategy.ec.europa.eu/en/library/women-digital-scoreboard-2020>

<sup>16</sup> Feijóo, C., Gómez-Barroso, J. L., & Karnitis, E., 2007. More than twenty years of European policy for the development of the information society. Netcom. Réseaux, communication et territoires, (21-1/2), 09-24.

<sup>17</sup> COM (2005) 260.

a greater use of the Internet. A variety of e-concepts were developed: e-economy, e-commerce, e-government, e-education, e-inclusion... to bring Europe online. Concrete actions included the Trans-European Networks (TEN-Telecom Programme), SME GoDigital initiatives, policies or directives for a dynamic eBusiness Environment, benchmarking/comparative data through Eurostat, development of broadband and multiple-platform access to the Internet, and others.

When the eEurope initiative came to its end, the i2010 strategy “A European Information Society for growth and employment” was published on 1 June 2005<sup>18</sup>. It had three political priorities: promoting a single European Information Space or internal market for electronic communications and digital services; stimulating innovation through investment in ICT research and industrial application; achieving an inclusive information society by providing better public services and improving quality of life for all citizens.

Next, the European Commission launched A Digital Agenda for Europe<sup>19</sup> in 2010 as one of the seven flagship initiatives of the Europe 2020 Strategy for smart, sustainable and inclusive growth. The objective of this Agenda is to chart a course to maximise the social and economic potential of ICT, most notably the Internet. The action areas of the Agenda mainly include the following: a vibrant digital single market, interoperability and standards, trust and security, fast and ultrafast Internet access, research and innovation, enhancing digital literacy, skills and inclusion, and ICT-enabled benefits for the EU society (environment, climate, transport...).

The EU’s current digital strategy “A Europe fit for the Digital Age”<sup>20</sup> is expressed firstly by the three pillars of the “Shaping Europe’s Digital Future”<sup>21</sup>: technology that works for people, a fair and competitive economy, and an open, democratic and sustainable society. Meanwhile, the “2030 Digital Compass: the European way for the Digital Decade”<sup>22</sup> translates the EU’s digital ambitions into quantitative concrete targets, which makes it possible to establish a monitoring system and outline key milestones. The Digital Compass was launched on 9 March 2021 in response to the EC President von der Leyen’s call to secure the EU’s digital sovereignty with a common vision of the EU in 2030. This Digital Compass evolves around four cardinal points:

- Secure and sustainable digital infrastructures: Gigabit for everyone, 5G everywhere; double the EU’s share in global production of cutting-edge semiconductors; 10,000 climate neutral highly secure edge nodes for data; first computer with quantum acceleration.
- Skills: 20 million ICT specialists and gender convergence; at least 80% of population with basic digital skills.
- Digital transformation of businesses: 75% of EU companies using Cloud/AI/Big Data; grow scale-ups and finance to double EU Unicorns; more than 90% of SMEs reach at least a basic level of digital intensity.

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<sup>18</sup> COM (2005) 229.

<sup>19</sup> COM (2010) 245.

<sup>20</sup> [https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age\\_en](https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age_en)

<sup>21</sup> COM (2020) 67.

<sup>22</sup> COM (2021) 118 final/2

- Digitalisation of public services: key public services 100% online; 100% of citizens having access to medical records; 80% of citizens using digital ID.

The way towards these targets will be based upon existing policy achievements, such as the Data Governance Act, the Digital Services Act, the Digital Markets Act and the Cybersecurity Strategy. A number of the EU's budgetary instruments will provide necessary investments in digital transition, notably the Cohesion programmes, the Technical Support Instrument, the Digital Europe Programme, and a minimum of 20% of the Recovery and Resilience Facility in each member country. The Recovery and Resilience Facility is the key instrument at the heart of the NextGenerationEU aiming to mitigate the economic and social impacts of the COVID-19 pandemic, and to make European economies and societies more sustainable, resilient, and better prepared for the green and digital transitions.

### ***Influences of the EU's digital strategies on rural areas***

The first Action Plan "Europe's way to the Information Society" only mentioned actions to assess the "opportunities and barriers which disadvantaged social groups and peripheral and less-favoured regions may face in using Information Society products and services". Since "eEurope" and i2010, in order to meet its goal of an "information society for all", fully using the EU's Structural and Rural Development Funds has been taken as a solution to the problem that private investment in rural information infrastructure is held back by fears for its profitability. In the current Digital Compass, besides this logic of e-inclusion (Internet connectivity for all, basic digital skills of all, etc.), rural areas are also highly concerned because of smart agriculture or digital farming which is considered as one key sector to cut global carbon emissions and pesticide use.

During the Digital Day in 2019, the EU has made the development of smart and sustainable agriculture one of the three digital cooperation initiatives among member countries. The progress since then include various large-scale pilots: IoF2020, an innovative farmer-centric project promoting the uptake of IoT (Internet of Things) in agriculture, DEMETER, which enables the deployment of farmer-driven interoperable platforms, and SmartAgriHubs, a network of digital innovation hubs. Then, the idea to develop smart agriculture for environment concern and sustainability are highlighted in the proposal for a new Common Agricultural Policy (2023-2027) and in the Europe's Green Deal<sup>23</sup>. The third logic for promoting rural digitalisation in the EU's policy is Smart Villages, which means to find smart solutions both in public and private sectors in rural areas with the involvement of local community and use of digital tools. A plan of the "EU Action for Smart Villages" was launched in April 2017 and a Smart Villages Portal was created on the website of the European Network for Rural Development.

### **3.1.2. The link between the EU's and French digital policies**

First of all, France has benefited significantly from the cooperation among EU member countries through the EU's Digital Single Market<sup>24</sup> strategy published on 6 May 2015. It is built on three pillars: better access for consumers and business to online goods and services across Europe by breaking

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<sup>23</sup> European Commission Working document. Analysis of links between CAP Reform and Green Deal. SWD (2020) 93.

<sup>24</sup> A Digital Single Market Strategy for Europe, COM (2015) 192.

down barriers to cross-border online activities; creating right conditions for digital networks and services to flourish, including trustworthy infrastructures and content services, and regulations for a fair competition, etc.; maximising the growth potential of European Digital Economy by investment in ICT infrastructures, technologies, research and innovation to boost industrial competitiveness, public services, skills and e-inclusion. The EU's directives and regulations on e-signature, e-identity, open data, interoperability and others have provided legislative bases for the European Digital Single Market.

Then, the EU's rural digitalisation policies have profound influences on the national and regional policies in France, serving as guidance or restrictions to France's national budgets, legislation and action programs. For example, the European Database Directive 96/9/EC, the EU's General Data Protection Regulation (2016/679), the requirement of the European directive 2018/1972 for universal adequate high-speed internet access and other legislations have been transposed into the reform of the French Data Protection Act, the promulgation of the French Law N°2016-1321 "For a Digital Republic", the National Plan for Digital Inclusion, and other national programmes in France presented in the following sections of this report. In line with the EU's perspectives, France also invests strongly in the research and development of ICT or digital technologies, as declared in the International Digital Strategy of France published in 2017.

Furthermore, France has 83 programmes financed by the European Structural and Investment Funds (ESIF) for the 2014-2020 period, amounting to 28 billion euros from the latter (See [www.europe-en-france.gouv.fr](http://www.europe-en-france.gouv.fr)). Most of these programmes are at the regional level. Concretely, the money are from the following funds: structural funds as part of the economic, social and cohesion policy, including European Regional Development Fund (ERDF, 9.5 billion euros), European Social Fund (ESF, 6 billion euros), and Youth Employment Initiative (YEI, 310 million euros); European Agricultural Fund for Rural Development (EAFRD, 11.4 billion euros) as part of the Common Agricultural Policy for supporting rural development; and European Maritime and Fisheries Fund (EMFF, 5.88 billion euros) as part of the maritime affairs and fisheries policy. Digital and ICT development is among the 11 objective themes that should be considered by every programme, and the total budget attributed to digital and ICT development is 1.1 billion euros. These programmes can thus be very important for French digitalisation in the territory regarding to superfast broadband, free online training and education, co-working spaces, e-commerce, and usage of ICT in administration, health, education and tourism, etc.

Finally, there is little doubt that France will be able to achieve the EU's digital targets for 2030 defined by the Digital Compass, according to its current speed and achievements in the digitalisation process. However, local constraints, for example, the heterogeneity in the population and geographical conditions, are barriers among others to the implementation of the EU's digital agenda in France.

## 3.2. National digital agenda or roadmaps in France

### 3.2.1. A framework of national digital strategies: a historical view

When the EU's digital targets were becoming less vague in the late 1990s, the French government began to emphasise on the potential benefits of the Internet and Information Society, and to

accelerate ICT development with the hope to make France one of the leaders in Europe and the world. After the speech of the Prime minister Lionel Jospin at the University of Communication in Hourtin on 25 August 1997 “To prepare the entrance of France into the Information Society”, several national digital agenda/roadmaps were launched in different times. A minister was nominated and public agencies were created to ensure the steering and coordination of public policies in the digital field. Fig.6 has summarised the evolution of the national policy framework on digitalisation in France:

The minister in charge of digital affairs relies on the Interministerial department for Digital Affairs and the Digital Agency. The National Digital Council serves as an independent observatory and consultant commission for the government. The prototype of this structure already existed in the 1990s for the development of “Information Highways”. The Digital Agency has been integrated with two other public institutions and become the National Agency for Territorial Cohesion. It shows the intention of the French government to strengthen the linkage between national public actions and local territories.

The first national digital plan was the Governmental Action Programme for Information Society (PAGSI) launched on 16 January 1998 declaring six priorities of public policies by 2002: application of ICT in education and media and by enterprises, development and sharing of e-contents, initiation of electronic administration and internet regulation, etc.

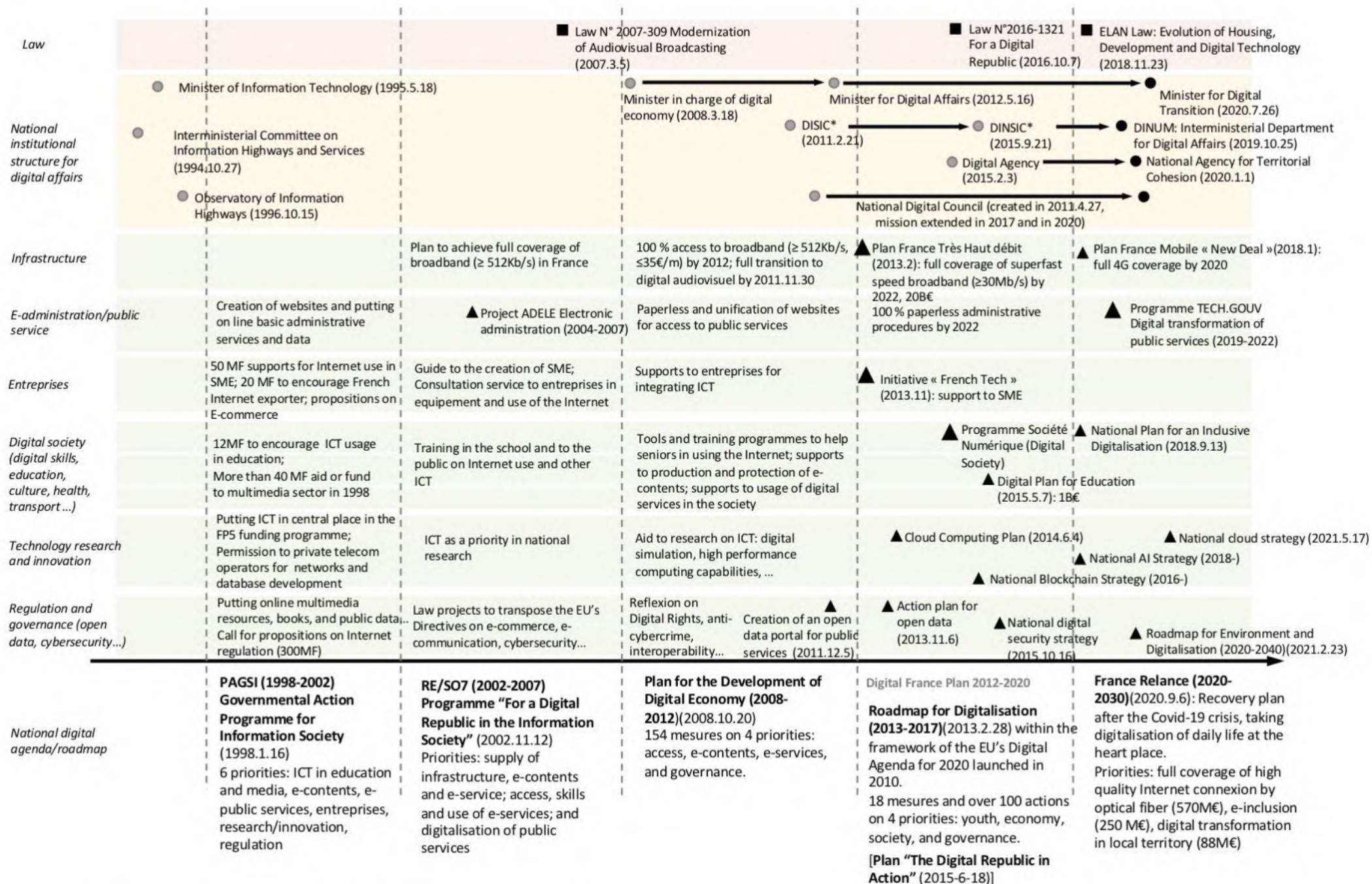
Then, the RE/SO7 Programme “For a Digital Republic in the Information Society” launched in November 2002 proceeded in the same direction. From a supply-demand perspective, the national digital plan recognised specific problems such as coverage and access to infrastructure, skills and training, etc. The government also decided to accelerate the use of ICT in public services with the Project ADELE (2004-2007) to pilot the entrance of France into the Information Society.

The third one was the Plan for the Development of Digital Economy launched in October 2008, including the target to achieve 100% access to broadband ( $\geq 512\text{Kb/s}$ ,  $\leq 35\text{€}/\text{month}$  for each family) by 2012, and unification of the websites of public services.

From 2013, the national digital strategy was composed by a general Roadmap for Digitalisation and several specific plans each focusing on one issue, among which the most important ones are the National Broadband Plan, French Tech Initiative and Digital Society Programme, in the charge of the Digital Agency. Other plans are about open data, cloud computing, blockchain, etc. These strategies are within the framework of the objectives set by the EU’s first Digital Agenda for 2010-2020.

The French national digital strategy is therefore embodied by these specific plans, complemented by the National Plan for an Inclusive Digitalisation launched in September 2018, the Programme TECH.GOUV for Digital Transformation of Public Services launched in 2019, the Roadmap for Environment and Digitalisation launched in February 2021, etc. Furthermore, within the framework of the NextGenerationEU (see Section 3.1.1), France launched a recovery plan “France Relance (2020-2040)” in September 2020 to surmount the impacts of Covid-19 crisis and digitalisation is at the heart of the plan.





\*DISIC : Interministerial Directorate of State Information and Communication Systems

\*DINSIC : Interministerial Directorate for Digital Affairs and State Information and Communication System

These national digital plans, usually promulgated along with a change of the president and government, varied in terms of structure and institutional basis, but they were actually consecutive and proceeding in the same direction. The measures were related one of the following six dimensions (Fig.3-1): digital infrastructure, e-administration, ICT application in enterprises, digital society (including digital skills and ICT application in education, culture, health, transport...), technology research and innovation, regulation and governance (especially open data and cybersecurity), in line with the main dimensions of the EU's Digital Agenda and Digital Compass. The existence of dedicated institutions (i.e. Digital Agency and Interministerial Digital Department) is also a beneficial factor for the stability of the national strategies. In a comprehensive perspective, the national digital strategies in France have the following objectives:

- **Inclusive digitalisation**, combining full coverage of high-speed broadband in the whole territory, full access to the Internet at an affordable price for every family, inclusive technology and e-services accessible by disabled, seniors and other disadvantaged groups, improved digital skills of the whole society, and specific actions against urban-rural divide and digital fractures...
- **Full development of digital business models**, making the most of digital solutions in public services, enterprises (especially SME) and different social sectors, e.g. media, culture, education, health, transport... There are several steps equally important: identification of demands, development of digital tools, training to users, and legislative actions to ensure their functioning (e.g. validity of e-identity, digital signature, e-payments, etc.).
- **Abundant e-contents and open data**, including the construction of e-contents e.g. putting online traditional collections of libraries, museums and schools, creation of platforms facilitating the production of public multimedia contents, and providing free but secured access, based upon consideration on interoperability, unified open data portal, data protection, use terms and conditions, digital rights...
- **Cybersecurity**, anti-cybercrime, including security of data and digital systems.
- **Digital leadership and innovation**, leadership in Europe and the World both in the development of digital high technology, such as ultra-fast and hyper fast broadband, cloud computing, AI, blockchain, etc. and in digital regulation and governance, e.g. the making of international standard.

It is worth noting that during the last 20 years, a couple of law projects promoted by the government have become laws, among which, the Law for a Digital Republic, promulgated on 7 October 2016 (Fig. 3-1). This law stipulates obligations and directions around the circulation of data and knowledge, protection of individuals in the digital society, and access to digital services for all. It provides thus a legal basis for the four keywords of the French digital strategy: open, inclusive, cybersecurity and innovation.

### 3.2.2. How the French national digital plans are related to agriculture, forestry and rural areas?

Though digital technology provides opportunities to change the unfavorable place of rural areas for geographical reasons, the French national digital strategy mainly focused on urban and metropolitan areas at the beginning, in order to quickly catch up with its counterparts in the transition into Information Society. A rare example for measures emphasising on rural areas in the framework of PAGSI Programme (1998-2002) was the project call “Territory and new pedagogical practices” to encourage ICT use in schools.

However, “internet for all” or “information society for all” was already an important target mentioned in the reports to Prime Minister in the 1990s. To promote an “inclusive digitalisation” quickly became the primary objective of the national digital plans as presented above, and has been the most important driving factor for digital policies related to rural areas. “Broadband access for all” was explicitly addressed in the RE/SO7 Programme (2002-2007) and was succeeded and further developed by the following national plans. The Law for a Digital Republic makes access to digital services for all an obligation, while the transformation of the Digital Agency to the National Agency for Territory Cohesion provides an institutional basis for digital projects initiated with local authorities. The National Broadband Plan, the Digital Society Programme, and the National Plan for an Inclusive Digitalisation together will have important influences on digitalisation in rural areas in all aspects: infrastructure, digital skills, and development of digital solutions for rural life (health, transport, education, public service, etc.).

Furthermore, the agriculture and forestry sectors have also benefited significantly from the national digital strategies. Early in the framework of the PAGSI Programme (1998-2002), the Ministry of Agriculture tried to promote digital public service such as providing real-time information on the prices of agricultural products and warning service for urgent information to farmers. Throughout the years, the French national digital plans have influenced on the agriculture and forestry sectors in the following ways: first, promotion of internet access everywhere and for all (high-speed broadband, satellite telecommunication, GPS, mobile internet, etc.) makes it possible for farmers to use digital technology in their activities; second, Agritech or foodtech start-ups using digital technology (robotics, online platform, software, ...) can benefit from the supports to SME within the national digital plans; third, farmers can improve their digital skills (using digital tools to perform precision agriculture, creation and maintaining of virtual communities in the social media, ...) thanks to the training programmes in the Digital Society Programme and the National Plan for an Inclusive Digitalisation.

Finally, the agriculture and forestry sectors are highly concerned by the national strategies on digital innovation and open data. Robotics, big data, precision agriculture, traceability, agro-ecological transition..., plenty issues are at the heart of digital innovation now and in the future, and will be key indicators of digital leadership. Rarely mentioned explicitly in the early national digital plans, the word “agriculture” appeared repeatedly in the Roadmap for Environment and the Digitalisation. Agriculture is considered as a key sector in alleviating human impacts to environment, biodiversity and climate, in



the form of “smart agriculture”, “precision agriculture” or “intelligent agriculture” based upon massive data exchange and analysis. A national digital roadmap for agriculture and food sector will possibly be made.

### **3.3. National policies for digital inclusion**

To achieve the objectives set by the national digital plans, different ministries have launched a variety of specific policies and initiatives. Policies on broadband infrastructure, digital literacy or divide, and digitalisation for territorial cohesion are related to the target of digital inclusion, the first reason why rural areas are concerned in digital policy.

#### **3.3.1. Broadband infrastructure**

The National Fixed Broadband Plan (France Très Haut Débit) launched in February 2013 set out the targets of high-speed broadband ( $\geq 8$  Mbit/s) access for all by 2020, superfast broadband ( $\geq 30$  Mbit/s) access for all by 2022 and fiber for all by 2025. The national strategy is expected to mobilise private and public investments of up to 25 billion € (3.3 billion € from the State). The National Mobile Broadband Plan (France Mobile) launched in January 2018 set the target of full 4G coverage by 2020. Furthermore, the Arcep published a 5G action plan of France in July 2018 and set the target of full coverage of 5G by 2030. The National Fixed Broadband Plan includes from 2019 an aid of up to 150 € to household with no wired networks to get access to at least high-speed ( $\geq 8$  Mbit/s) wireless Internet (the instrument “Cohésion numérique des territoires”). Rural areas are highly concerned by these policies because the areas with no or limited Internet access are usually located in rural and mountainous areas. See Table A.1 in the Appendix for more information of these policies.

The broadband technologies used in France are presented in Section 2.2. Regarding fixed broadband, ADSL based upon telephone line is the most widely used network, but the main focus has been the deployment of FTTH “Fiber To The Home” since 2008. VDSL network has been activated and open to commercialisation in France only since 2013. The Arcep has distinguished the French territory into high-density areas and low-density areas for the deployment of FTTH, and the low-density areas are further distinguished into the zones of private investment (middle-sized cities) and the zones of public investment (rural areas and small cities). Multiple networks are integrated with the FTTH network, such as the cable network initially used for television, the copper wire telephone network VDSL, Long Term Evolution Radio technology (e.g. fixed 4G, WiMAX) and satellite. Especially, the deployment of VDSL through the funding of Public Initiative Networks (Réseaux d’Initiative Publique) can be a good choice in the rural areas waiting for the arrival of FTTH.

As for mobile broadband, the public policy has mainly focused on areas with no or limited mobile Internet. For example, the Programme “Zones Blanches centres-bourgs” was launched in 2015 offering a State support up to 30 M€ in total to 268 selected small municipalities (100000 € maximum for each municipality, and 130000 € for a municipality in the mountainous areas). Similarly, the

Programme “1300 sites stratégiques” is launched with the hope to develop 1300 sites with strategic role in the rural areas (73.5 M€ budget in total, 50000 € for each municipality, 75000 € for a municipality in the mountainous areas). The national mobile broadband plan “France Mobile” was launched to implement the agreement “New Deal” between the State and four main mobile operators (Bouygues, Free Mobile, Orange and SFR) made in 2018. 1361 mobile sites to be constructed in 2018-2019 were identified by local actors and recognised by the government decree. The mobile operators should provide 4G coverage within 2 years for these sites after the selection. This list of priority sites includes currently 2997 mobile telephone sites.

The Arcep, who has been working to pave the way for 5G since 2017, has published the 5G Action Plan of France in 2018. The current frequency bands for 5G networks in France are 700-800 MHz, 1800-2100 MHz, 3500MHz. The objectives of the action plan are to release and award frequencies (ex. 26 GHz band), to prepare and streamline rollout conditions, to mobilise stakeholders and foster new uses, and to anticipate the disruptions created by 5G, etc.

Local authorities (region, department, ...) can make their Master Plan of Digital Development (Schémas Directeurs d’Aménagement Numérique, SDTAN), according to the General Code of Local and Regional Authorities (Code général des collectivités territoriales). The master plan is a report that identifies existing e-communication infrastructure and networks, the zones they served, and strategies to develop these networks. It aims to promote the coherence of public initiatives and their articulation with private investment. All the Master Plans made by local authorities in France are available on the website of the Arcep<sup>25</sup>.

### 3.3.2. Policies and strategies to boost digital literacy and tackle the digital divide

The initiatives aiming to improve digital literacy and reduce digital divide in France mainly include three categories: digital education for school children, for unemployed people and for disadvantaged groups in the society (e.g. old people and people with a low level of education). See Table A.1 in the Appendix for the summary of these policies. Their main characteristic and influences to rural areas are as following:

First of all, the Ministry of Education and the Ministry of Higher Education have established together a Strategy for Digital Education which should be implemented from the school year of 2018. The objectives are to prepare students for their future professional life and to be able to stimulate creation and innovation in the 21<sup>st</sup> century. The main actions are to enforce digital teaching skills of teachers on the one hand, and to develop digital skills of students on the other hand. Measures to support teachers include online training resources, supporting network, self-evaluation and certification of digital skill level, development of Third-Places or laboratories e.g. “110 bis” for pedagogic innovation... Measures for students include mandatory digital and computer science classes in high school; training workshops about coding; a reference framework for the level of digital skills; self-evaluation and certification of digital skills, etc. Schools in rural areas are generally concerned by these instruments,

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<sup>25</sup> <https://www.arcep.fr/demarches-et-services/collectivites/liste-et-carte-des-schemas-directeurs-damenagement-numerique-sdtan.html>

and there are also special efforts for promoting digital innovation in rural schools, e.g. a call for projects launched in June 2018 entitled “Innovative digital schools and rurality (ENIR)).

The second initiative is the Pass numérique within the Digital Society Programme in the charge of the National Agency for Territorial Cohesion. The Digital Pass Tickets allow beneficiaries to participate digital training class in qualified locations paid by a third party. The tickets are distributed by a local structure (public service counter, associations, social workers, ...). The State has allocated a budget of 10 M€ to support local authorities in their purchase of Digital Pass Tickets through a call for project. The objective is to create a coalition of multiple actors for digital inclusion (e.g. the State, local authorities, public service operators, private companies, etc.), among which, each can participate with a different role.

The third is the “Conseillers numérique France Services” Initiative within the France Relance Programme also in the charge of the National Agency for Territorial Cohesion. The target is to recruit 4000 digital advisors or assistants who, after professional training, have the task to organise digital skill training workshops for local people. The initiative includes also the development of supporting tools and networks. The objective is to ensure that all the citizens and rural residents have basic digital skills and thus to reduce the digital divide in France.

Rural areas are highly concerned in these initiatives because people who lack basic digital skills and have few resources to get help are usually in rural areas. The Digital Pass Tickets and the Digital Advisors/Assistants can be good solutions to mobilise different actors within a certain geographical proximity to improve digital inclusion and to strengthen the coalition of national and local authorities in the territory.

### 3.3.3. Policies supporting digitalisation for territorial cohesion

In the dimension of digital inclusion, a third category of policies or instruments are about supporting local authorities in promoting digitalisation for territorial cohesion or rural revitalisation, which can also help to create and reinforce rural development networks. The merger of the Digital Agency with other institutions to become the National Agency for Territorial Cohesion from January 2021 is one manifestation of the Government’s digital strategy more and more towards local territories. There are mainly four important policy instruments in this domain. See Table A.1 in the Appendix for the list of these policies.

First, the programme “Incubateur des Territoires” piloted by the National Agency for Territory Cohesion, provides financial and consultant supports to local authorities in the development of digital public services to resolve local problems, including the selection of problems, search of funding, creation of networks, and support of digital skills, etc. The objective is to help local authorities to develop digital solutions to local problems, and thus to promote digital transition in the territory. The programme can also contribute to the sharing of experiences among different local territories.

Second, the Initiative “Nouveaux lieux, nouveaux liens” within the Programme Société Numérique has been established for the period 2019-2022 to promote Third-Place development. A total of 45 M€ will

be used to support 300 projects labelled “Fabriques de territoire”, among which, 150 projects should be in rural areas. Since the integration of digital technology and services in all dimensions are highly emphasised, more and more projects have been labelled “Fabriques numériques de territoire” (Digital factories of territory). The objective of the initiative is to facilitate the creation of networks involving public and private partners, to develop digital services meeting local needs and to improve digital inclusion in the territory.

Third, ten "Territoires d'actions pour un Numérique Inclusif" were created in 2019 by signing a charter of commitment between the State and local authorities. These are pioneer territories with the role to mobilise the expertise and resources of the Digital Society Programme to develop and test local digital strategies. The objective is to accelerate digital transition in the local territory and to synthesise local experiences to benefit other territories. Ten more projects/local territories joined the charter in 2020.

Finally, the initiative "Hubs Territoriaux pour un numérique inclusive" is financed by the Banque des Territoires and co-piloted by the National Agency for Territorial Cohesion. It includes 12 first Hubs. A Hub covers 2-3 departments and serves as the intermediate structure between the national and local level for e-inclusion. The target is to develop more Hubs and to cover the total territory of France. The initiatives developed in the Hubs should be complement of existing instruments. The objective is to federate actors and resources in the local territory for e-inclusion and to support the creation and strengthening of e-inclusion projects.

Rural areas are important targeted areas in these initiatives. Local authorities can benefit significantly from the federation of national and local actors, development of digital solutions to local problems and exchange of experiences among different territories, and thus accelerate digital transition and reinforce e-inclusion in the rural territories.

### 3.4. Digital public services

The current situation of digital public service usage has been presented in Section 2.5. 83% of the 250 most used public service in France are online and the e-identity system FranceConnect has passed 30 million users. The paperless procedure also helps to bring people in rural areas close to public services. 66% of rural population use online administrative procedure<sup>14</sup>. The Observatory of the Quality of Online Procedures ([observatoire.numerique.gouv.fr](http://observatoire.numerique.gouv.fr)) provides a regularly updated overview of the paperless procedure of the 250 most important administrative services in France. Based upon their results and personal opinions of the authors, the notes for the use of digital services in different dimensions of the public services are presented in Table 1.

Besides e-administration and e-identity, online payment of tax and bills are very common in France. For example, the purchase of tax stamp and withholding tax are both 100% online now, and the number of online uses reaches 5 million and 6.3 million per year, respectively. The electronic invoice for public procurement is 75% online, reaching 60 million online uses per year; individual tax payment, 93% online, 241 million online uses per year; payment of fines, 46% online, 9.2 million online uses per

year. However, a study for the French Banking Federation shows that 34% of people interviewed do not use online banking applications<sup>26</sup>, especially those more than 50 years old.

The progress in e-education is also remarkable in France. As demanded by the Ministry of Education<sup>27</sup>, a variety of digital solutions for education in middle school, high school and higher education have been developed: e.g. AI based online learning assistant and regular self-evaluation systems, bank of digital resources (eduscol.education.fr), online supporting platform for teachers, online platforms (e.g. Etincel) for professional education, etc. Online free-access learning resources are also made available for public, for example, the Digital University (luniversitenumérique.fr), FUN MOOC, Platform Canal-U, etc. E-learning is particularly favored by enterprises: a study of the Federation of Digital Education Industry towards 300 enterprises in different domains shows that 93% of them use e-learning in 2020<sup>28</sup>.

Table 1 Digital Public Services usage

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

\* Notes based upon the statistics of the Observatory of the Quality of Online Procedures (observatoire.numerique.gouv.fr) and personal opinions of the authors.

<sup>26</sup> Les Français, leur banque, leurs attentes, étude n°2, février 2021, fbf.fr

<sup>27</sup> <https://www.education.gouv.fr/le-numerique-au-service-de-l-ecole-de-la-confiance-308365>

<sup>28</sup> <https://www.afinef.net/wp-content/uploads/2020/07/Barometre-AFINEF-Digital-Learning-2020-Presses.pdf>

After the announcement of a Roadmap for e-health in 2019, France has seen an accelerated development of digital solutions for e-health because of the Covid-19 pandemic<sup>29</sup>. These digital solutions widely used all over the country include, for example, the application Tousanticovid to track the virus, the Operational Resource Directory (ROR) to optimise hospital beds use at national level, the SI-SAMU system to regulate the flow of patients and inter-hospital transfers, the SI-VIC system for monitoring victims of attacks and exceptional health situations like the COVID pandemic; interactive online map of testing centers; the information system linked to the Pharmacovigilance Form for reporting and communicating vaccine-associated adverse events, etc. Finally, the G-NIUS National Center for e-Health Innovation and Uses makes that the entrepreneurs can launch their new services more quickly. In 2020, more than 260,000 SI-VIC files were created; 82 ambulances and regional health agencies are connected to the SI-SAMU system; the interactive map of testing centers has received 1 million visits; and the G-NIUS has 606 registered members.

As presented in the Section 3.2.1, France has made great efforts in promoting digital usage in public services, i.e. e-government or paperless procedure of administrative services. See Table A.1 in the appendix for the list of current principal policies on e-government. These policies are mainly piloted and coordinated by the Interministerial Department for Digital Affairs (DINUM) and the Ministry for Transformation of Public Services, with the support of all other ministries. There are different types of policies according to their roles as presented below:

The first type includes the initiatives and actions to develop digital public services which are useful, simple, easy to use, and truly meet people's needs, and thus can accelerate digital transformation of public services. For example, the FranceConnect initiative was launched in 2016 which is an e-identity system aiming to provide unified access to all the important online administrative procedures. The Programme beta.gouv.fr was also launched in 2016, with the objective to help public administrations to develop digital solutions to local problems using an approach called "Startup d'Etat" (start-ups of the State). These initiatives have been integrated into the Programme TECH.GOUV (National strategy and roadmap for accelerating digital transformation of public services) launched for the period 2019-2022. The target is to realise 100% paperless procedure of public services by the end of 2022. The policies and actions within the Programme TECH.GOUV should address six issues: simplification of the administrative procedures for individuals, enterprises and public agents; inclusion; enhancing attractiveness of the jobs in public institutions; mastery over technology so to preserve national sovereignty; reducing the cost of public services; and alliances among different partners in public and private sectors. The Programme includes 8 missions: labelling digital services (LABEL); unified access/e-identity (IDNUM); collection and sharing of public data (DATA); coalition of financial and technical resources in the development of infrastructure and digital services (INFRA); support to the design and management of government information systems (PILOT); attracting digital talents and providing support to public managers in digital use (TALENTS); designing innovative digital public services (BETA); and supporting public transformation through digital technology (TRANSFO).

The second type includes the funding programmes. For example, the DINUM has launched the Fonds d'accélération des Startups d'État et de Territoire (FAST) in 2019 with a budget of 1 M€. Nine phases

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<sup>29</sup> Agency of e-Health (Agence du Numérique en Santé), Activity Report 2020.

[https://esante.gouv.fr/sites/default/files/media\\_entity/documents/ra-ans2020-a4-210916\\_web.pdf](https://esante.gouv.fr/sites/default/files/media_entity/documents/ra-ans2020-a4-210916_web.pdf)

of Call for projects around the development of digital public services have been open to applicants till today. The 10<sup>th</sup> phase is in preparation. The applicant administration should provide itself 50% funding of the project in order to get the other 50% from the DINUM. Another important funding programme is the Fonds Transformation numérique de l'Etat et des Territoires from France Relance (presented in Section 3.2.1). The funding is distributed in the form of Call for projects (duration: 18 months) aiming at digital transformation and innovation in state services and local authorities. It includes 15 themes covering all the important issues in digital public services. The selected project will receive not only the funding and but also supports for methodology and technology. The programme has a total budget of 500 M€ (88 M€ for local authorities).

The third type is the programme designed and carried out jointly by the State and local authorities with the objective to accelerate digital transformation in the local territories. The current one is the Programme TNT (Transformation Numérique des Territoires) launched by the Ministry for Transformation of Public Services for the period of 2021-2024. It was the successor of the Programme DCANT (Développement Concerté de l'Administration Numérique Territoriale) in 2018-2020. The objectives of the Programme TNT are threefold: to bring together all the public actors, to target concrete digital solutions and to encourage local authorities to seize the opportunities offered by the fund of France Relance.

### 3.5. Policies and strategies promoting digital innovation and development of business models in rural areas

This section presents the initiatives fostering digital innovation and boosting new digital business models in rural areas, agriculture, and forestry. See Table A.1 in the Appendix for the list of policies and instruments in this domain.

#### 3.5.1. Start-ups and SME

France has made important initiatives to support start-ups and SMEs, and those in rural areas or in agricultural and forestry sectors can benefit from these supports. First of all, the Ministry of Economy and the Agency for Territorial Cohesion launched the French Tech Programme in 2013 with assistance of other ministries. The objective is to build public-private networks and an innovative ecosystem for the development of start-ups, with the hope to make France one of the leader countries for start-ups. The programme is financed by PIA (Programme d'Investissements d'Avenir), and has an emphasis on digital technologies and the search for digital solutions. It includes a variety of initiatives. For example, the Label "Métropole French Tech" helps to identify the zones most favorable for start-ups. The thematic networks of French Tech foster collective actions around #HealthTech, #EdTech, #FoodTech, #GreenTech, etc. The Funding "French Tech Accélération" with a budget of 200 M€ provides a 5-year investment to private start-ups which have the role of accelerator. The Funding French Tech provides to start-ups a "first bucket of gold" to help them in the creation phase and to enter into the market. 46.41 M€ were distributed in this way in 2014-2016. The French Tech Green20



is dedicated to selected leading start-ups in ecological transition. However, rural start-ups have a marginal place in these initiatives till now, for example, rural areas are only possibly concerned by the FoodTech sector in the 120 projects of French Tech Next40/120, which itself accounts for only 6% among all sectors represented.

Second, the Initiative France Num was established by the Ministry of Economy with several partners (e.g. all the French Regions and professional organisations) in 2018 to support digital transformation of SME in France. The programme has a budget of 1 Billion € and the following missions: building a network of experts to facilitate exchanges and provide individual diagnostic and consulting to SME (e.g. to support 150 000 SMEs in trade and craft sectors by 2022); and distribution of financial aid (500 euros each) and training to SME. The supports to SME are mainly about creation of websites, management of social media, e-commerce, etc. There is no data available about how many SMEs in rural areas have already benefited from these supports, but all SMEs in rural areas can contact the digital expert, the Chamber of Commerce and Industry or the Chamber of Trade and Craft in their department to get access to these supports. It is estimated that about 705 000 enterprises in France, mainly located in rural areas and in the agricultural and commerce/crafts sectors, feel moderately behind their peers but have a high demand for digital technologies.

The third initiative is the Competition i-Nov coordinated by the Ministry for Ecological Transition, Ministry of Economy, ADEME, bpiFrance and FranceAgriMer from 2018. It provides awards to projects with strong potential for the French economy carried by start-ups or innovative SMEs. The following themes are targeted: digital revolution, ecological and evolution transition, health, and cybersecurity. Each of the selected projects (duration: 12-36 months) receives a funding of up to 45% of its cost in the form of subsidies and recoverable advances. The total budget is 80 M€ per year. Among the 404 projects selected in the last six waves (2018-2020) of the i-Nov rewards, 25 projects accounting for 13.3 M€ supports in total are explicitly about digitalisation in rural areas, especially about the use of robotics, IoT, AI, blockchain, big data, satellite and other digital technologies in agriculture, forestry, and environmental monitoring. Projects for other sectors in rural digitalisation are still very rare.

### 3.5.2. Agricultural and food sectors

Regarding to the agricultural and food sectors (including forestry and fishery), the Ministry of Agriculture and Food published in October 2015 the Action Plan “Agriculture – Innovation 2025” with the objective to provide guidelines for innovative and sustainable agriculture and so to improve the competitiveness of the sectors. The plan includes 30 projects of public action. 4 among its 9 axes in priority are related to digital agriculture, robotics, open innovation and agricultural education. The specific objectives are full development of new technologies in agriculture and creation of network among different actors.

Besides the general action plan, there are several initiatives focusing on specific dimensions. The Ministry of Agriculture and Food has also published a Triennial Action Plan for the Development of Digital Teaching in Agricultural Technical Education for 2018-2020. It includes 5 axes: diversified and



adapted teaching methods, development of digital resources, training and support to education organisms, interoperability with interministerial and regional policies, communication with different actors. Several digital tools have been developed for governance and tracking of actions. The objective is to promote the use of digital technologies in agricultural education, and thus to stimulate innovation in agriculture.

The Ministry of Agriculture and Food offers a funding of “Projets Agricoles et Agroalimentaires d’Avenir (P3A)” (Agricultural and Food Projects for Future) to support modernisation of agricultural and food chains, for example, robotics, digital tools and others. This initiative has a budget of 120 M€, and like many other programmes for digitalisation, it is also financed by the PIA Programme. 81 projects were selected and supported for the period 2014-2017. The objective is to support and reinforce the competitiveness of French enterprises in agricultural and food sectors.

Among the ten Convergences Institutes (research projects) piloted by the National Agency for Research, the #DigitAg Digital Agriculture Convergence Lab focuses on innovation in digital agriculture. It receives a funding of 9.9 M€ from the PIA Programme for the period 2016-2024. The #DigitAg Lab is based upon a consortium of 16 public and private partners and 29 research units. Besides research, it has also the role to offer higher education (i.e. PhD students and Graduate Schools).

The French government recently launched two Calls for projects financed by the 4<sup>th</sup> PIA Programme with a budget of 200 M€ for 5 years (2021-2026): “Innovation for success in agroecological transition” (90 M€) and “Meeting the food needs of tomorrow” (110 M€). The objective is to provide long-term support for research and innovation projects in FoodTech and AgriTech (including the development of digital technology and solutions) coordinated by a company (SME and others) or a group of companies and research institutions.

### 3.5.3. Other sectors (health, transport, ...)

Policies for other sectors can also have big influences on rural areas, especially the health and transport sectors. The Ministry of Health, Ministry of Research, Minister for Digital Affairs and other governmental institutions have launched an Action Plan “Healthcare Innovation 2030 – Strategy of accelerating digital health” for the period 2021-2030. The objective is to shape France as the leading European nation in innovation and sovereignty in healthcare and to accelerate the development of e-health. It includes a Call for projects financed by France Relance and the PIA Programme around 5 priority axes: professional and public education or training, research and application of new digital technologies, mutualisation of experiences among projects, experimentation and industrialisation, and deployment of innovative solutions at large scale. The Programme has a budget of 7 Billion €, and 650 M€ is dedicated to digital health.

Another Action Plan is about transport, the “French Mobility”, launched by the Ministry for Ecological Transition for the period of 2018-2020. The programme is open to all the public and private actors of the transport sector in an approach of co-construction. It works on six axes and around three key missions: innovation, digitisation, and territory. The objective is to create a network of multiple actors,

to promote the experimentation and diffusion of new technologies, and to deploy innovative solutions in the whole territory especially in the rural areas.

#### **3.5.4. French strategies for the EU's policies (CAP, Smart Villages...)**

The EU has several important initiatives related to digitalisation in rural areas and agricultural and food sectors. This section presents the French national or regional strategies for these EU initiatives, for example, the Common Agricultural Policy (CAP), Smart Specialisation, Smart Villages and others. See Table A.1 in the Appendix for the full list of the policies.

##### ***National Strategic Plan of the CAP 2023-2027***

The new common agricultural policy will start in 2023, and is expected to be able to “foster a sustainable and competitive agricultural sector that can support the livelihoods of farmers, provide healthy and sustainable food for society, and vibrant rural areas”; it is also considered as “key to achieving the objectives of the European Green Deal”<sup>30</sup>. In order to deliver to the EU a final version of the French National Strategic Plan of the CAP 2023-2027 by the end of 2021, the Ministry of Agriculture and Food has piloted a diagnostic project from September to December 2019 (last update of the document in May 2021), and a campaign of public debate “imPACTons” (final report published in January 2021). The diagnostic project and the public debate were jointly coordinated and carried out by the State, the regions, and other organisations, to establish a review of the agricultural, food and forestry-wood sectors and rural areas in France about local needs, opportunities, risk and weakness, etc. These initiatives serve as a first step for the establishment of a national plan of the new CAP by contributing to the identification of priority actions and definition of intervention strategies.

According to the reports of the diagnostic project and the public debate, as well as the EU's recommendations to CAP in France<sup>31</sup>, digitalisation of rural areas and the agricultural sector will be an important part in the French national strategy of new CAP. Efforts are called to complete investments in building fast broadband reaching the door of all households in rural areas, accelerating the development of digital and knowledge skills in rural areas, and fostering modernisation and digital transition of French farming. There will be initiatives to promote research and innovation and to support SMEs and start-ups around various themes: robotics, traceability, direct linkage between consumers and producers, etc.

##### ***Research and Innovation Strategies for Smart Specialisation (RIS3)***

The French General Commission for Territorial Equality made a synthesis report of the French Regions' RIS3 strategy for the period 2014-2020, which served to appropriate and locally translate the EU's Smart Specialisation initiative in order to stimulate innovation in the local territories. The synthesis report underlines the diverse nature of the contexts and advancement made by the regions. There

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<sup>30</sup> [https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/new-cap-2023-27\\_en#innovation](https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/new-cap-2023-27_en#innovation)

<sup>31</sup> SWD (2020) 379. The European Commission recommendations for France's CAP strategic plan.

was a big heterogeneity among the regions in terms of their research, development and innovation capacities. The central themes include health, energy, agri-food, agricultural resources and fisheries, environmental protection, biodiversity, risk prevention, and others. Whereas, services, tourism, humanities and social sciences are among the least represented. Many regions have integrated a transverse issue around digital technology: digital society, precision agriculture, digital data, digital economy, etc. Among them, two regions explicitly addressed digitalisation in rural areas: Limousin (Digitisation of services in rural areas and associated infrastructures) and Mayotte (Project for a Centre of rural excellence).

For the next generation of RIS3 initiative for the period 2021-2027, the Region of Bourgogne-Franche-Comté has defined its strategy in April 2021. It is designed to meet the strategic objective "A smarter Europe" of the European Commission's new cohesion policy 2021-2027. The objectives are to strengthen the support to the entire regional economic network, especially SMEs; to enhance public-private partnership in the region for innovation in companies; and to develop the unique and featured assets in the region by supporting regional specialisation. There will be six Strategic Domains for which research and innovation on digital technology and smart solutions will be inevitable: value chains for sustainable food; sustainable, smart and connected mobility; personalised and integrated healthcare; advanced materials and processes; hydrogen for energy and economic transition; microtechnology and intelligent systems.

### ***Smart villages***

The EU's Smart Villages Initiative calls for approaches combining the involvement of local community and the use of digital tools to develop smart solutions in both public and private sectors, and thus to ameliorate rural life in a local territory. Some local authorities in France have made their local digital strategies within the framework and support of the ENRD Smart Villages programme launched in 2018. For example, in the case of 'Nièvre numérique', the digital strategies include measures to build and manage rural fiber networks, to facilitate new digital services to different stakeholders, and to create a Rural Digital Hub, etc. The Smart Villages in France have also received supports from LEADER, CAP, the National Rural Network and other national and regional policies<sup>32</sup>.

### ***Digital Innovation Hub (DIH)***

The European Digital Innovation Hub will function as one-stop shops which connect different groups of actors and help enterprises and administrations in the territories to get access to resources and ecosystems they need for a successful digital transformation. The DIH should be based upon one of these technologies: artificial intelligence (AI), cybersecurity and high-performance computing. The DIH should also make efforts on network creation with other DIH to ensure a mutual increase in

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<sup>32</sup> <https://www.smartrural21.eu/countries/france/>

competence. In the national preselection phase asked by the EU, France has selected 17 projects, among which, 14 on AI, 11 on cybersecurity, and 6 on high-performance computing.

Since the objective is to develop a network of competitiveness clusters (“pôles de compétitivité”) for digital transformation in France, these projects do not directly focus on rural areas except for one of them who has explicitly mentioned the target of supporting digital transition in small rural municipality. However, these DIH projects do have important impacts to rural areas if the rural actors can make good use of these resources. On the one hand, these projects are all dedicated to the improvement of regional and territorial ecosystem for digital transformation through the creation of partnerships between different actors and development of digital technology. On the other hand, all the projects emphasise on providing supports to start-ups and SMEs. There are thus great opportunities for the development of digital services in agriculture and food industry and in rural health, transport, education and other sectors. The projects finally selected by the EU will be supported in the period of 2021-2023 with the possibility to be extended to 2024-2027.

## 3.6. Data management

### 3.6.1. Open Data

The EU’s Directive 2019/1024 regulates Open Data at EU Level. In France, the Open Data policy is guaranteed by the law “Loi pour une République numérique” (#LoiNumérique n°2016-1321). Therefore, citizens have the right to access to administrative algorithmic processing rules, database of public services, and database of private sectors with a public interest. Data and results produced by research programmes benefiting from public grants should be available for free access. Currently, open data policies in France are relatively more developed for public data, agricultural data, scientific data and health data. Rural areas and agricultural sectors are highly concerned. See Table A.1 in the Appendix for the full list of the policies.

First, the opening up of public data is mainly in the charge of the Etalab in DINUM (Interministerial Department for Digital Affairs) or in the former SGMAP (General Secretariat for the Modernisation of Public Action) before November 2017. Etalab has created an open data portal ([data.gouv.fr](http://data.gouv.fr)) providing access to all the public information of the national and local authorities, public administrative establishments, and private sectors in charge of a public service mission, etc. In 2013, at the basis on previous legislation and policies, the French Government published a roadmap for open sharing of public data and an action plan to implement the G8 Charter on opening up public data. This resulted in the reform of the portal [data.gouv.fr](http://data.gouv.fr) to its current scope and its current version. The objective is to modernise public services and improve their transparency, as well as to foster innovation through open sharing of public data and supports for their reutilisation. France also joined the Open Government Partnership in 2014. The DINUM and the Ministry for Transformation of Public Services launched recently a new movement for opening up public data in response to the Prime Minister’s

call on 27 April 2021 about this issue. Each of the ministries has thus established an action plan for a period of 2-3 years (i.e. 2021-2022/2023).

Second, for the open sharing of agricultural data, the Ministry of Agriculture and Food delegated to Irstea a mission to conceive a data portal called AgGate for agricultural sector in 2016. A report was submitted by the working team in October 2016. The portal under construction will collect data from public and private actors and provide free access for all. The objective is to accelerate the development of knowledge, models, and ultimately services to agriculture. Another Platform API-AGRO of AgDataHub has been in use since 2019. It is an initiative of private actors but supported by the Ministry of Agriculture and Food. It is originated from a research project on data exchange and reuse in the agricultural sector. Selected in a Call for Projects in 2021, AgDataHub receives a public funding of 3.2 M€ from PIA (managed by bpifrance) to develop its platform.

Third, the Ministry of Research has published the Second French Plan for Open Science for the period of 2021-2024. The first Plan was published in 2018. The target of the current plan is to generalise open access of publications, data, and source code produced by research. Besides the regulations on the sharing procedure, the action plan has envisaged also supports to users and construction of a platform, etc. It is in accordance with the Digital Republic Act of 2016 and the Research Programming Law of 2020. The action plan has a variety of objectives: to allow publicly funded research projects to retain control over the results they produce; to make better use of research results; to democratise access to knowledge; and to improve public trust in science.

Finally, the collection and utilisation of health data for public interests are becoming more and more important nowadays with the development of big data technology and e-health. Piloted by the Ministry of Health, the Health Data Hub was created following the Law of 24 July 2019 related to the transformation of health system. The Hub is expected to build a non-exhaustive and anonymous collection of health data of the French public. Two databases are already available on the platform. All public and private actors who want to use the data for a research objective with a public interest can ask for access. The objective is to provide easy, unified, transparent and secure access to health data in order to improve the quality of care and support to patients.

### 3.6.2. Cybersecurity and data safety

Since 2008, France has been leading an increasing effort to strengthen its cybersecurity. The obligation of the government to protect personal data has been formalised by the law “Loi pour une République numérique” (#LoiNumérique n°2016-1321). The national policies and initiatives now are principally piloted and coordinated by the ANSSI (National Agency for the Security of Information Systems). Rural areas and agricultural sectors are also closely concerned. See Table A.1 in the Appendix for the full list of the policies.

The most important policies or strategies addressing cybersecurity and data safety in France include firstly the General Safety Reference (Référentiel Général De Sécurité, RGS). The RGS in service since 2014 has been adopted by a decree of the Prime Minister on 10 June 2015. RGS V2.0 was published

on 1 July 2016 and is the version currently in use. The RGS is composed by rules and guidelines for methodology and good practices in developing an information system or using digital technology. The objective is to reinforce the trust of citizens to the information systems of the administrative authorities.

Secondly, France has adopted a new National Digital Security Strategy coordinated by the ANSSI since 2015 with the objective to develop a holistic vision of cybersecurity underlining the whole French society. The first strategy for digital security was published in 2011. The new national cybersecurity strategy demands attentions of three communities concerning both public and private actors: the first one is responsible for recommendations of digital technology, products and services with high level of security; the second one for protecting the nation from digital pirates; and the third one (including the general public) for good use of digital technologies and services, respectively.

Thirdly, following the national strategy for digital security of 2015 and supported by the ANSSI and several ministries concerned (e.g. the Ministry of the Interior, the Ministry of Justice...), the Public Interest Group GIP ACYMA has created a platform for Cybersecurity: [Cybermalveillance.gouv.fr](http://Cybermalveillance.gouv.fr). Its objective is to assist individuals, companies, associations, and administrations who are victims of cybercrime, and to inform people about the digital risks and threats and the means to protect themselves. The platform is based upon a partnership between public and private actors, and has been active since 2017.

Finally, France adopted its National Cloud Strategy piloted by the Ministry of Economy, the Ministry for Transformation of Public Services and the Minister for Digital Affairs in 2021. The objective is to protect data of French companies, administrations and citizens while asserting data sovereignty of France. The Cloud strategy includes 3 pillars: implementation of a Trusted Cloud Label, promoting the "Cloud at the center" policy in the digitalisation of administration, and providing direct financial support from France Relance and PIA to selected projects.

### 3.6.3. Interoperability

Interoperability refers to the functionality of information systems to exchange data and to share information. There are several aspects that must be considered to make it possible: standardisation of data and interfaces, agreements about data sharing, etc. In accordance with the EU's strategy and policies for a Single Digital Market (See Section 3.1), France has begun its reflection and efforts in improving digital interoperability since early times.

The most important instrument is the General Interoperability Reference (RGI). It is a framework of recommendations referencing norms and standards that promote interoperability within the information systems of public administration. The RGI was coordinated by the DINSIC and now DINUM (Interministerial Department for Digital Affairs). V2.0 was formalised by the decree of 20 April 2016, and is currently in use. The objective is to set the technical rules that ensure the interoperability of information systems, in order to exchange effectively among different departments of public

administration. The RGI should be also followed by all the delegate private actors of public administration.

Besides the RGI for public services, France has also established an Interoperability Framework for Health IT Systems (CI-SIS) in 2009 soon after the creation of the Nation Agency for e-Health. This is a reference document offering technical and semantic rules based on international norms and standards to health stakeholders with projects to exchange and share health data.

## 4. Challenges and opportunities

### 4.1. Barriers to digitalisation in rural areas

This section presents the results of an analysis on the main barriers in France for its digital transition in rural areas, agriculture, and forestry, including economic, technical, legal, skills, and other barriers, summarised in Table 2. The influences of the COVID-19 on rural digitalisation are also addressed.

As summarised in Table 2, there are several important barriers for rural digitalisation in France: the relatively low development level in rural areas of infrastructure, connectivity, skills, and digital tools or technology; the poor utilisation of open data and information because of the lack of a unique portal providing entrance to different databases; the contradictions among different groups and targets; the lack of economically profitable business model, etc.

In contrast with these barriers, the current French digital policies regarding to rural areas may have the following problems:

First, there lacks a general digital agenda/plan that integrates the different digital plans or strategies about infrastructure, skills, e-inclusion, public service, innovation, agriculture, health, cybersecurity, etc. A general digital agenda helps to identify potential conflicts or competitions among different targets, and to optimise the distribution of funds, human capital and institutional resources. It also helps to identify the priorities among the targets and to have a general idea about the digitalisation level of France in an international background. There were several digital roadmaps/plans of such kind at different times (See Section 3.2.1), however, these national roadmaps had different formats and were usually incomplete because of limited understanding of certain issues at the time. The establishment of a general digital agenda with a relatively unified structure may be helpful for maintaining a certain continuity of policies.

The second problem is about the scaling between national strategies and local digital transition. There are numerous initiatives and resources at national level about open data, digital technologies and services, and funding for infrastructure. The information is usually fragmented and stored in different places. Only a small part of these resources are well known by the local actors, which is the reason for low utilisation of these resources and inequality across local territories. Or, the local actors may find that there is too much information online and it is difficult to find what they need or to distinguish



important information from less important, official platforms from private ones, etc. Therefore, efforts are needed to strengthen the channel that groups the national resources and appropriate the national initiatives to serve local needs. The French Government has already begun this approach, for example, the creation of the National Agency for Territorial Cohesion, and many initiatives between the State and local authorities. But many still need to be done.

Table 2 Barriers to rural digitalisation

Barriers to digitalisation		Influence of COVID-19
Technical	Low connectivity in rural areas	Positive: strengthened the awareness of public and private sectors about the issue. Negative: retarded certain infrastructure projects.
	Low interoperability of services and information	
	Lack of digital technology and tools with a high level of security and easy to use	Positive: promoted identification of social needs for digital services, and stimulated investment and development of digital tools and services. Negative: retarded progress.
Data and information	Lack of data in certain domains to enable the development of digital business models	Positive: strengthened awareness. Negative: retarded progress.
	Lack of a unique portal for a particular territory (a municipality, a department, a region...) which provides entrance to all important digital services for people in that territory	
	Low utilisation of open databases and lack of a unique portal providing entrance to all open data resources	
Skills	Lack of digital skills for people in rural areas	
Social	Lack of public trust in certain digital technologies or general distrust of certain social group towards digital revolution	Positive: improved trust from one part of the population. Negative: reduced trust from another part of the population.
	Contradictions among different groups	Positive: contributed to identification of contradictions. Negative: increased contradictions.
Economic	Lack of methods to evaluate the return on investment in digital services	Positive: contributed to identification of potential opportunities. Negative: retarded progress.
	Lack of profitable business models	
	Low industrialisation/generalisation level of successful models	
Legal	Lack of legislation or regulation to define and guarantee the obligations and rights around certain issues, e.g. teleworking, e-payment, data protection, etc.	Positive: strengthened awareness and stimulated establishment of regulations for some urgent issues. Negative: retarded progress.
Others	Contradictions among different political targets	Positive: contributed to identification of contradictions. Negative: increased contradictions.



Third, despite of the numerous digital strategies and initiatives in France, rural areas are still weakly represented, and are mainly concerned because of digital agriculture and e-inclusion. However, rural areas can also be a pioneer in certain areas of digital revolution. More efforts are needed in rural digitalisation policy to work on the opportunities in rural areas offered by digital technology, and the particularity of rural areas in the development of broadband network, digital skills and business models, which are surely different from urban areas.

The pandemic COVID 19 has both positive and negative influences on rural digitalisation in France. It has stimulated investment and acceleration in the development of digital tools and services, especially teleworking, e-pass, e-payment, video conferences, and others. Generally, the pandemic and the lockdown measures in 2020 and 2021 have had a positive impact on strengthening public and political awareness of the necessity to develop digital technology, but also a negative impact for having retarded progress on all sides (e.g. broadband projects, e-inclusion project...). The good point may be that it has stimulated the identification of social needs and provided inspirations for start-ups. The difficult situation in the pandemic has also made people to think more about the contradictions among different groups (e.g. between the groups in favor of digital transition and those against) and among different targets (e.g. between cybersecurity and simplification of procedures, digital sovereignty and Single Market, speed and quality...). However, it has increased contradictions at the same time. An example can be the protests against Sanitary Passports, which are mandatorily required for going to restaurants, museums, hospitals, and even work in France from September 2021.

## 4.2. Recommendations for actions to boost sustainable digitalisation

Based upon the results in the above sections, several recommendations can be drawn for the new generation of rural policies that boost sustainable digitalisation of agriculture, forestry and rural areas in France. See Table 3 for the ideas of actions.

The recommendations are therefore the following:

- 1) To build a general digital agenda/plan at the national level with a relatively unified structure and continuity in the time, which integrates all the digital plans or strategies on specific issues (e.g. broadband, e-inclusion, start-ups and SMEs, agriculture, health, research...). This general digital plan will allow to identify the priorities and potential conflicts or competitions among different targets, and thus to optimise the distribution of funds, human capital and institutional resources, etc.
- 2) To strengthen the channel which groups and appropriates national initiatives and resources to serve local needs, e.g. a local digital plan with a unique portal providing entrances to all the important digital public services and resources related to the local territory.
- 3) Apart from digital agriculture and e-inclusion, policies need to make more efforts to stimulate exploration of opportunities in rural areas offered by digital technology, and to encourage research

and projects on the particularity of rural areas in the development of broadband network, skills and business models, etc.

4) Specifically, the priorities among the actions that should be carried out include: improvement of digital infrastructure in rural areas to provide access to superfast internet for all and everywhere; to provide digital training to different groups of people in rural areas (e.g. public agents, farmers, rural residents...); to cultivate digital talents (e.g. researchers, engineers, and workers...); to support research and innovation of digital technology adapted to rural areas; to encourage network building among different actors and the development of digital ecosystem; to support experimentations and start-ups of innovative business models; to improve the collecting, maintaining and sharing of rural data; and to develop indicators for the monitoring of rural digitalisation level, its impacts and efficiency of governance and policies, etc.

Table 3: Actions to boost sustainable digitalisation in rural areas

	Key rural development domains			
	Human capital	Innovation	Investment	Governance
<b>Creating the basic conditions for digitalisation</b>	Cultivating talents (researchers, engineers, and workers with digital expertise)	Encouraging network building and technology innovation	Support to broadband projects and professional schools	Monitoring digital infrastructure and equipment coverage and quality
<b>Anchoring digitalisation to sustainable development</b>	Developing digital education	Encouraging open innovation	Support to e-health, e-transport, digital agriculture...	Monitoring contributions of digitalisation to Sustainable Development Goals
<b>Adapting digitalisation to different context</b>	Attracting and training of local actors	Encouraging exchange among local territories	Support to local projects	Monitoring the efficiency of digitalisation projects, and impacts to local areas
<b>Favouring digital inclusion</b>	Identifying vulnerable groups and digital divide	Encouraging peer-to-peer networking	Support to vulnerable groups and to e-inclusion projects	Monitoring DESI indicators and national indicators
<b>Developing digital ecosystems</b>	Building a diversified team with different expertise	Encouraging networking among different components	Support to projects of digital	Developing indicators to evaluate digital ecosystem and monitoring the progress
<b>Developing adaptative governance models</b>	Attracting digital talents into the administration; offering digital training to public agents	Encouraging public feedback to the governance model	Support to experimentations on adaptive governance model	Developing indicators and monitoring the efficiency of the governance models
<b>Designing policy tools for sustainable digitalisation</b>	Attracting digital talents into the policy-making team; offering digital training to policy-makers	Encouraging public participation along the designing of policies	Support to experimentations on policy tool designing	Developing indicators and monitoring the impacts of policies

## 5. Conclusions

The statistics show that France has a medium digitalisation level while ranks relatively higher in gender equality in the EU and among the high-income countries in the world. Basically, France has almost achieved full coverage of high-speed Internet in its territory at the end of 2020: 98% of households have access to 8 MB fixed broadband, 73% to 30 Mb fixed broadband, 60% to FTTH, and 96% to 4G. Digital illiteracy affects 17% of the population. Comparing to the EU's average, France performs better in the digitalisation of business and public services, while lags behind in the use of digital services for social life and by individuals. Digitalisation of public services has been well developed in France in order to achieve the target to go 100% paperless in administrative services by 2022. 83% of the 250 most used public services are already online.

However, there is a quite remarkable urban-rural divide (only 44% of rural households have access to 30 MB fixed broadband, 28% to FTTH). There is also an urban-rural divide in public digital skills and use of the Internet. In rural areas, integration of digital technology in business is relatively more common in agriculture (including forestry and fisheries) compared with other sectors, and more common in big companies than in SMEs. The paperless procedure of administrative services helps to bring people in remote rural areas close to public service. 66% of rural population use online administrative procedure.

On the background of the EU's policies for a Digital Single Market and from the "Information Society for All" in the late 1990s to the current "A Europe fit for the Digital Age", France has made several national digital plans along the time. Their objectives can be concluded to fivefold: inclusive digitalisation (infrastructure, access to the Internet and digital technology, skills...), full development of digital business models, abundant e-contents and open data, cybersecurity, and digital leadership and innovation. Furthermore, France has 83 programmes financed by the European Structural and Investment Funds (ESIF) for the 2014-2020 period, among which, 1.1 billion euros are dedicated to digital and ICT development. Within the framework of the NextGenerationEU, France has launched a recovery plan "France Relance (2020-2040)" to surmount the impacts of the Covid-19 crisis, and digitalisation is at the heart of the plan.

Rural areas, agriculture and forestry are highly concerned for 4 reasons: inclusive digitalisation; integration of digital technology in "smart agriculture" and "precision agriculture"; agriculture and forestry as pioneer sectors for digital innovation and open data; smart agriculture being considered as a key sector in alleviating human impacts to environment, biodiversity and climate. Correspondingly, the following policies had bigger impacts on rural digitalisation: the e-inclusion policies, e.g. National Broadband Plan and initiatives about public services; and the policies promoting digital innovations and development of digital business models in agriculture (including forestry and fisheries) and food sectors. In addition, the policies for improving rural digital literacy (e.g. Digital Pass Tickets and Digital Advisors) and those supporting digitalisation for territorial cohesion (Section 3.3.3) are rather in the beginning phase, but will have important influences on rural areas.

There are a variety of barriers to rural digitalisation in France. The pandemic COVID 19 has increased awareness of digital technology and stimulated development of certain digital services, but has also retarded digital progress on all sides. The current French digital policies concerning rural areas have several problems, and the report recommends the following actions: to build a general digital agenda at the national level integrating all the specific digital plans or strategies; to strengthen the channel which groups and appropriates national initiatives and resources to serve local needs; apart from digital agriculture and e-inclusion, policy-makers need to make more efforts to stimulate exploration of opportunities in rural areas offered by digital technology, and to encourage research and projects on the particularity of rural areas. The final recommendation is about the priorities among the actions that should be carried out.

## **6. Annex**

Table A.1 presents a full list of the different categories of policies that have been analysed in this report.

## Annex A

Table A.1: Key policies and initiatives influencing rural digitalisation in France

Areas being addressed / supported by the policies		Policy	Brief Description	Objectives	Responsible authorities	Period of implementation	Budget (if any)	Public / Private	Address rural areas (Y/N) Specify how	Link
Broadband, connectivity, affordability	National	France Très Haut Débit (National Fixed Broadband Plan)	Including the instrument “Cohésion numérique des territoires” since 2019, an aid of up to 150 € to household with no wired networks to use high-speed wireless Internet (≥ 8 Mbit/s)	High-speed broadband (≥ 8 Mbit/s) access for all by 2020, superfast broadband (≥ 30 Mbit/s) access for all households by 2022 and fibre for all by 2025	National Agency for Territorial Cohesion* & Arcep**	2013-2022	25 Billion € investment by public and private actors (3.3 Billion € from the State)	Public & Private	Y (Public investment for Internet coverage in rural areas; supports and guide to local authorities)	<a href="https://agence-cohesion-territoires.gouv.fr/france-tres-haut-debit-53">https://agence-cohesion-territoires.gouv.fr/france-tres-haut-debit-53</a>
		France Mobile (National Mobile Broadband Plan)	To implement the agreement “New Deal” between the State and four main mobile operators in 2018 for zones without high-quality mobile Internet.	Full 4G coverage in France by 2020	National Agency for Territorial Cohesion & Arcep	2018-		Public & Private	Y (selection and construction of strategic sites for full 4G coverage in rural areas)	<a href="https://agence-cohesion-territoires.gouv.fr/france-mobile-54">https://agence-cohesion-territoires.gouv.fr/france-mobile-54</a>
		5G Action Plan	A national plan to define the priorities in 5G development and guide the actions	Full 5G coverage in France by 2030; to make France a leader in 5G	Arcep	2018-		Public & Private	Y (5G coverage in rural areas)	<a href="https://en.arcep.fr/news/press-releases/view/n/5g-1.html">https://en.arcep.fr/news/press-releases/view/n/5g-1.html</a>
	Local	Schémas directeurs d'aménagement numérique (SDTAN)	Master Plan of Digital Development, a report that identifies existing e-communication infrastructure and networks, the zones they served, and strategies to develop these networks	To promote the coherence of public initiatives and their articulation with private investment	Local authorities (department, region, inter-municipality syndicate...)	2016-		Public	Y (Internet coverage in rural areas)	<a href="https://www.arcep.fr/demarches-et-services/collectivites/liste-et-carte-des-schemas-directeurs-damenagement-numerique-sdtan.html">https://www.arcep.fr/demarches-et-services/collectivites/liste-et-carte-des-schemas-directeurs-damenagement-numerique-sdtan.html</a>
Digital Literacy and Digital Divide	Education to children and students	Digital Education Strategy - Enforce digital teaching skills of teachers - Develop digital skills of students	For teachers: online training resources, supporting network, self-evaluation and certification of digital skill level, development of Third-Places or laboratories e.g. “110 bis” for pedagogic innovation... For students: mandatory digital and computer science classes in high school; training workshops for coding; a reference framework for digital skills; self-evaluation and certification of digital skills. In local territories: experimentation “Territoires numériques éducatifs” .	To help students to develop digital skills for their future professional life, and for creation and innovation in the 21 <sup>st</sup> century.	Ministry of Education & Ministry of Higher Education	2018-		Public	Y (A special effort for the development of digital innovation in rural schools: Call for projects launched in June 2018 “Innovative digital schools and rurality (ENIR))	<a href="https://www.education.gouv.fr/le-numerique-au-service-de-lecole-de-la-confiance-308365">https://www.education.gouv.fr/le-numerique-au-service-de-lecole-de-la-confiance-308365</a>
	To a particular group of citizens (unemployed person)	Pass numérique (Digital Pass Tickets, within the Digital Society Programme)	allowing beneficiaries to participate digital training class in qualified locations paid by a third party (with the financial support of the State). The tickets are distributed by a local structure (public service counter, associations, social workers, ...)	To create a coalition of multiple actors for digital inclusion (the State, local authorities, public service operators, private companies, etc.),	National Agency for Territorial Cohesion	2019-	10 Million € in 2019	Public & Private	Y (Rural areas are in a central place in the inclusion policy)	<a href="https://societenumerique.gouv.fr/pass-numerique/">https://societenumerique.gouv.fr/pass-numerique/</a>
	To general public	Conseillers numérique France Services (Digital Advisors Initiative, within the France Relance Programme)	Initiative with the target to recruit 4000 digital advisors/assistants who, after professional training, have the task to organise digital skill training workshops for local people. The initiative includes also the development of supporting tools, online resources, and networks.	To ensure that citizens and rural residents have basic digital skills, so to reduce the digital divide in France	National Agency for Territorial Cohesion	2020-	250 M€	Public	Y (Rural areas are in a central place in the inclusion policy)	<a href="https://www.conseiller-numerique.gouv.fr">https://www.conseiller-numerique.gouv.fr</a>
Supporting local authorities in promoting digitalisation for	Incubateur des Territoires	The programme provides financial and consultant supports to local authorities in the development of digital public services to	To help local authorities to develop digital solutions to local problems, so to promote digital transition in the territory	National Agency for Territorial Cohesion	2020		Public & Private	Y (Rural areas are targeted)	<a href="https://incubateur.anct.gouv.fr">https://incubateur.anct.gouv.fr</a>	

territorial cohesion, rural revitalisation... / Rural development networks' initiatives		resolve local problems, including selection of problems, search of funding, creation of networks, support in digital skills...								
	Nouveaux lieux, nouveaux liens - « Fabriques numériques de territoire »	Initiative promoting Third-Place development. Integration of digital technology and services in all dimensions are emphasised.	To facilitate the creation of networks involving public and private partners, develop services meeting local needs and improve digital inclusion in the territory	National Agency for Territorial Cohesion	2019- 2022	45 M€	Public & Private	Y (A half of the projects should be located in rural areas)	<a href="https://agence-cohesion-territoires.gouv.fr/nouveaux-lieux-nouveaux-liens-56">https://agence-cohesion-territoires.gouv.fr/nouveaux-lieux-nouveaux-liens-56</a>	
	Territoires d'actions pour un Numérique Inclusif	It includes 20 projects/local territories engaged by signing a charter of commitment between the State and local authorities.	To help local authorities in developing digital strategy and sharing experiences among each other	National Agency for Territorial Cohesion	2019-		Public & Private	Y (Rural areas are targeted, and some of these pioneer territories are located in rural areas)	<a href="https://societenumerique.gouv.fr/territoires-daction-pour-un-numerique-inclusif/">https://societenumerique.gouv.fr/territoires-daction-pour-un-numerique-inclusif/</a>	
	Hubs Territoriaux pour un numérique inclusif	12 first Hubs. A Hub covers 2-3 departments and serves as the intermediate structure between the national and local level for e-inclusion. The target is to develop more Hubs and to cover the total territory of France. The initiatives developed in the Hubs should be complement of existing instruments.	To federate actors and resources in the territory for digital inclusion and to support the creation and strengthening of e-inclusion projects.	Banque des Territoires & Agency for Territorial Cohesion	2019-		Public & Private	Y (Rural areas are targeted)	<a href="https://agence-cohesion-territoires.gouv.fr/hubs-territoriaux-pour-un-numerique-inclusif-588">https://agence-cohesion-territoires.gouv.fr/hubs-territoriaux-pour-un-numerique-inclusif-588</a>	
E-government, paperless procedure of public services	Initiatives for e-government	FranceConnect	An e-identity system providing secure access to 900 online procedures using a single password.	Simplified and secured access to online administrative services	DINUM***	2016-		Public	Y (Rural areas are targeted)	<a href="https://franceconnect.gouv.fr">https://franceconnect.gouv.fr</a>
		Programme beta.gouv.fr & the approach of Startup d'État	The programme helps public administrations to develop digital solutions to local problems using the approach of developing a start-up	To develop digital services which are useful, simple, easy to use and really meet people's needs	DINUM	2016-		Public	Y (Rural areas are targeted)	<a href="https://beta.gouv.fr">https://beta.gouv.fr</a>
		Programme TECH.GOUV	National strategy and roadmap for digital transformation of public services, including 6 issues and 8 missions (LABEL, IDNUM, DATA, INFRA, PILOT, TALENTS, BETA, TRANSFO).	High quality digital public services and tools; improved openness and transparency of public actions; enhanced digital sovereignty. 100% paperless procedure of public services by 2022	DINUM	2019-2022		Public	Y (Rural areas are targeted)	<a href="https://www.numerique.gouv.fr/publications/tech-gouv-strategie-et-feuille-de-route-2019-2021/">https://www.numerique.gouv.fr/publications/tech-gouv-strategie-et-feuille-de-route-2019-2021/</a>
	Funding programme	Fonds d'accélération des Startups d'État et de Territoire (FAST)	Funding. Call for projects around the development of digital public services (50% funding from DINUM & 50% from the applicant administration)	Financial support for the development of digital public services	DINUM	2019-	1 M€	Public	Y (Rural areas are targeted)	<a href="https://beta.gouv.fr/approche/fast">https://beta.gouv.fr/approche/fast</a>
		France Relance – Fonds Transformation numérique de l'Etat et des Territoires	Funding. Call for projects (of 18 months) aiming at digital transformation and innovation in state services and local authorities. Benefices: funding and supports for methodology and technology	To promote simplification of online public administrations and digital transformation of public actions	DINUM & Ministry for Transformation of Public Services	2021-2022	500 M€ (88 M€ for local authorities)	Public	Y (Rural areas are targeted)	<a href="https://www.numerique.gouv.fr/services/francerelance-transformation-numerique-etat-et-territoires/">https://www.numerique.gouv.fr/services/francerelance-transformation-numerique-etat-et-territoires/</a>
	Programme of coalition between the State and local authorities	Programme DCANT : Développement Concerté de l'Administration Numérique Territoriale	Programme designed and carried out jointly by the State and local authorities to develop digital administration	To accelerate digital transformation in the local territories.	DINSIC****	2018-2020		Public	Y (Rural areas are targeted)	<a href="https://www.numerique.gouv.fr/publications/programme-dcant/">https://www.numerique.gouv.fr/publications/programme-dcant/</a>
Programme TNT : Transformation Numérique des Territoires		Successor of the DCANT Programme for the collaboration between the State and local authorities in digital transformation of public services	To bring together all the public actors, to target concrete digital solutions, and to encourage local authorities to seize the opportunities offered by the fund of France Relance.	Ministry for Transformation of Public Services	2021-2024		Public	Y (Rural areas are targeted)	<a href="https://www.numerique.gouv.fr/services/transformation-numerique-des-territoires/">https://www.numerique.gouv.fr/services/transformation-numerique-des-territoires/</a>	
Digital innovation/dev elopment and use of new	Start-ups and SME	Programme Frech Tech - Label "Métropole French Tech"	Initiative to support French start-ups, and build partnership and networks of public and private actors, around a variety of themes: #HealthTech, #EdTech, #FoodTech, #GreenTech, etc. Financed by PIA	To build an innovative ecosystem for the development of start-ups and make France one of the leader countries for start-ups	Ministry of Economy & Agency for Territorial Cohesion with the	2013-	200 + 46.41 M€	Public & Private	Y (AgTech and Food Tech start-ups in rural areas can benefit)	<a href="https://lafrenchtech.com/en/">https://lafrenchtech.com/en/</a>



digital business models in rural areas, agriculture, and forestry		- Thematic Network French Tech - Funding “French Tech Accélération” - French Tech Green20 ...	(Programme d'Investissements d'Avenir). Digital technologies and search for digital solutions are highly concerned.		support of other ministries						
		Initiative France Num	Established with several partners (e.g. all the French Regions and professional organisations) for the digital transformation of SME. Missions: network building; supporting SME in acting (150 000 SME in trade and craft sectors by 2022); funding and training.	To accelerate digital transformation of enterprises in France, especially SME	Ministry of Economy	2018-	1 Billion €	Public & Private	Y (agricultural, food and other SME in rural areas can benefit)	<a href="https://www.francenum.gouv.fr/france-num">https://www.francenum.gouv.fr/france-num</a>	
		Competition i-Nov	Awards to projects with strong potential for the French economy carried by start-ups or innovative SMEs	Themes targeted: digital revolution, ecological and evolution transition, health, and security. Each of the selected projects (duration: 12-36 months) receives a funding of up to 45% of its cost in the form of subsidies and recoverable advances.	Ministry for Ecological Transition, Ministry of Economy, ADEME, bpiFrance & FranceAgriMer	2018-	80 M€ per year	Public & Private	Y (SME and start-ups in rural areas or agricultural and food sectors can benefit)	<a href="https://www.enseignementsup-recherche.gouv.fr/fr/le-concours-i-nov-49817">https://www.enseignementsup-recherche.gouv.fr/fr/le-concours-i-nov-49817</a>	
	Agricultural and food sectors		Agriculture – Innovation 2025	Guidelines for innovative and sustainable agriculture, including 30 projects of public action. 4 among the 9 axes in priority are related to digital agriculture, robotics, open innovation and agricultural education.	To guide the development of a competitive and sustainable agriculture: full development of new technologies in agriculture, creation of network among different actors...	Ministry of Agriculture and Food	2015-2025		Public	Y (agriculture)	<a href="https://agriculture.gouv.fr/agriculture-innovation-2025-des-orientations-pour-une-agriculture-innovante-et-durable">https://agriculture.gouv.fr/agriculture-innovation-2025-des-orientations-pour-une-agriculture-innovante-et-durable</a>
			Triennial Action Plan for the Development of Digital Teaching in Agricultural Technical Education	5 axes: diversified and adapted teaching methods, development of digital resources, training and support to education organisms, interoperability with interministerial and regional policies, communication with different actors. Several digital tools have been developed for the governance and tracking of actions.	To promote the use of digital technologies in agricultural education, and thus to stimulate innovation in agriculture	Ministry of Agriculture and Food	2018-2020		Public	Y (agriculture)	<a href="https://chlorofil.fr/numerique/plan-2018-2020">https://chlorofil.fr/numerique/plan-2018-2020</a>
			Projets Agricoles et Agroalimentaires d’Avenir (P3A)	Funding for the modernisation of agricultural and food chains: e.g. robotics, digital tools... Financed by the PIA Programme. 81 projects were selected and supported.	To support and reinforce the competitiveness of French enterprises in agricultural and food sectors	Ministry of Agriculture and Food	2014-2017	120 M€	Public	Y (agriculture and food sector)	<a href="https://agriculture.gouv.fr/projets-agricoles-et-agroalimentaires-davenir-soutenir-linvestissement-et-linnovation">https://agriculture.gouv.fr/projets-agricoles-et-agroalimentaires-davenir-soutenir-linvestissement-et-linnovation</a>
			#DigitAg Digital Agriculture Convergence Lab	Research project financed by the PIA Programme and supported by a consortium of 16 public and private partners and 29 research units. The Lab has also a role of higher-education.	To promote innovation in digital agriculture	National Agency for Research	2016-2024	9.9 M€	Public & Private	Y (agriculture)	<a href="https://www.hdigitag.fr">https://www.hdigitag.fr</a>
			Call for projects in foodTech and AgriTech	Two Calls financed by the 4 <sup>th</sup> PIA Programme: Innovation for success in agroecological transition and Meeting the food needs of tomorrow.	To support start-ups and SMEs in FoodTech and AgriTech	Ministry of Agriculture and Food & Bpifrance	2021-2026	200 M€	Public	Y (agriculture and food)	<a href="https://agriculture.gouv.fr/foodtech-et-agritech-deux-appels-projets-de-200-millions-deuros">https://agriculture.gouv.fr/foodtech-et-agritech-deux-appels-projets-de-200-millions-deuros</a>
			Healthcare Innovation 2030 – Strategy of accelerating digital health	Call for projects financed by France Relance and the PIA Programme. 5 priority axes: professional and public education or training, research and application of new digital technologies, mutualisation of experiences among the projects, experimentation and industrialisation, and deployment at large scale.	To shape France as the leading European nation in innovation and sovereignty in healthcare and to accelerate the development of e-health	Ministry of Health, Ministry of Research, Minister for Digital ...	2021-2030	7 Billion € (650 M€ for digital health)	Public & Private	Y (rural areas are concerned)	<a href="https://gnius.esante.gouv.fr/fr/a-la-une/actualites/innovation-sante-2030-650-meu-pour-la-sante-numerique">https://gnius.esante.gouv.fr/fr/a-la-une/actualites/innovation-sante-2030-650-meu-pour-la-sante-numerique</a>
	Other sectors (health, transport...)		Action Plan “French Mobility”	Open to all the public and private actors of the transport sector in an approach of co-construction, and working on six axes and	To create a network of multiple actors, to promote the experimentation and diffusion of new technologies, and to	Ministry for Ecological Transition	2018-2020		Public & Private	Y (rural areas are concerned)	<a href="https://www.francemobilites.fr/demarche/plan-action">https://www.francemobilites.fr/demarche/plan-action</a>

			around three key missions: innovation, digitisation, and territory.	deploy the innovative solution in the whole territory especially in the rural areas					
French strategies for the EU's policies	Diagnostic project in sight of the future National Strategic Plan of the CAP 2023-2027	A diagnostic jointly carried out by the State and the regions to establish a review of the agricultural, food and forestry-wood sectors and rural areas in France, about local needs, opportunities, risk and weakness...	To identify the actions in priority and define the strategy of interventions with the target to establish a nation strategy plan of the CAP-post 2020	Ministry of Agriculture and Food	2019-2021		Public & Private	Y (agriculture and rural areas)	<a href="https://agriculture.gouv.fr/psn-pac-un-diagnostic-partage-essentiel-pour-etablir-le-prochain-psn">https://agriculture.gouv.fr/psn-pac-un-diagnostic-partage-essentiel-pour-etablir-le-prochain-psn</a>
	Regional Research and Innovation Strategies for the Smart Specialization (RIS3) of French regions	The General Commission for Territorial Equality made a synthesis of the French Regions' RIS3 strategy, which underlines the diverse nature of the contexts and advancement made by the regions. Many regions have integrated a transverse issue around digital technology: digital society, precision agriculture, digital data, digital economy...	To appropriate and locally translate the EU's smart specialisation concept in order to stimulate innovation in the local territory	Regional authorities	2014-2020		Public & Private	Y (agriculture and rural areas)	<a href="https://www.europe-en-france.gouv.fr/fr/ressources/guide-synthese-des-strategies-regionales-de-linnovation-sri-en-vue-de-la-specialisation">https://www.europe-en-france.gouv.fr/fr/ressources/guide-synthese-des-strategies-regionales-de-linnovation-sri-en-vue-de-la-specialisation</a>
	French strategies for digitising rural areas within the EU's Smart Villages Initiative	Digital strategies of local territories within the framework and support of the ENRD Smart Villages Initiative. The involvement of the local community is usually indispensable. The Smart Villages in France have also received supports from LEADER, CAP, the National Rural Network and other national and regional policies.	To ameliorate rural life in a local territory by developing smart and digital solutions in both the public and private sectors	Local authorities	2018-		Public & Private	Y (specifically for rural areas)	<a href="https://enrd.ec.europa.eu/enrd-thematic-work/smart-and-competitive-rural-areas/smart-villages_en">https://enrd.ec.europa.eu/enrd-thematic-work/smart-and-competitive-rural-areas/smart-villages_en</a> <a href="https://www.smartrural21.eu/countries/france/">https://www.smartrural21.eu/countries/france/</a>
Open data, standardisation of data, data access, etc...	Open public data portal: data.gouv.fr	An open data platform gathering all the public information of the government, its public administrative establishments, local authorities, and private sector in charge of a public service mission, etc.	Unified and free access to all the public data of France; transparency of public action	DINUM	2011-		Public	Y (rural and agricultural data)	<a href="https://www.data.gouv.fr">https://www.data.gouv.fr</a>
	Roadmap of the Government for open sharing of public data	Reform of the portal data.gouv.fr to its current scope (including also public data from non-governmental organisations) and its current version.	Modernisation and transparency of public action; open sharing of public data and supports for their reutilisation to foster innovation	SGMAP *****	2013-		Public	Y (rural and agricultural data)	<a href="https://www.etalab.gouv.fr/laf-euillederoutedugouvernement-enmatieredouvertureetdepartagedesdonneespubliques">https://www.etalab.gouv.fr/laf-euillederoutedugouvernement-enmatieredouvertureetdepartagedesdonneespubliques</a>
	G8 Charter on opening up public data – Action Plan for France	4 Axes of actions to implement the G8 Charter adopted by the French President, e.g. towards mandatory open sharing of public data; building an open data platform; co-construction of open data policy with the citizens; supporting open innovation.	Modernisation and transparency of public action; open sharing of public data and supports for their reutilisation to foster innovation	SGMAP	2013-		Public	Y (rural and agricultural data)	<a href="https://www.numerique.gouv.fr/actualites/plan-daction-g8-sur-louverture-des-donnees-publiques/">https://www.numerique.gouv.fr/actualites/plan-daction-g8-sur-louverture-des-donnees-publiques/</a>
	15 Ministerial Action Plans for Open Public Data	Each of the ministry has established an action plan for 2-3 years in response to the Prime Minister's call on 27 April 2021.	A general mobilization of all the departments of the French government to reinforce the modernisation and transparency of public action	DINUM and all the ministries	2021-2022/2023		Public	Y (rural and agricultural data)	<a href="https://www.numerique.gouv.fr/actualites/donnees-algorithmes-codes-sources-mobilisation-generale-sans-precedent-15-feuilles-de-route-ministerielles/">https://www.numerique.gouv.fr/actualites/donnees-algorithmes-codes-sources-mobilisation-generale-sans-precedent-15-feuilles-de-route-ministerielles/</a>
	Preparation of AgGate: A data portal for innovation in agriculture	An open data portal under construction for the agricultural sector, concerning data from public and private actors and free access for all.	To accelerate the processes of developing knowledge, models, and ultimately services to agriculture.	Ministry of Agriculture and Food	Conception from 2016		Public	Y (agricultural data)	<a href="https://agriculture.gouv.fr/un-portail-de-donnees-pour-linnovation-en-agriculture-la-synthese-du-rapport">https://agriculture.gouv.fr/un-portail-de-donnees-pour-linnovation-en-agriculture-la-synthese-du-rapport</a>
Agricultural data	Platform API-AGRO of AgDataHub	A platform originated from a research project for data exchange and reuse in the agricultural sector.	Supports to partners for data exchange and reuse.	Supported by the Ministry of Agriculture and Food	2019-	3.2 M€ from bpifrance in 2021	Private & Public	Y (agricultural data)	<a href="https://presse.bpifrance.fr/agd-atahub-obtient-un-financement-public-de-32-millions-deuros-pour-developper-sa-plateforme-technologique-dediee-aux-filiere-agricoles/">https://presse.bpifrance.fr/agd-atahub-obtient-un-financement-public-de-32-millions-deuros-pour-developper-sa-plateforme-technologique-dediee-aux-filiere-agricoles/</a>

	Scientific data	Second French Plan for Open Science	The first Plan was published in 2018. The target is to generalise open access of publications, data, and source code produced by research. Actions include regulations, supports and construction of a platform, etc. It is in accordance with the Digital Republic Act of 2016 and the Research Programming Law of 2020.	For publicly funded research projects to retain control over the results they produce; to make better use of the research results; to democratise access to knowledge; and to improve public trust in science.	Ministry of Research	2021-2024		Public	Y (research data on rural areas and agriculture)	<a href="https://www.ouvrirelascience.fr/second-national-plan-for-open-science/">https://www.ouvrirelascience.fr/second-national-plan-for-open-science/</a>	
	Health data	Health Data Hub	Created by the Law of 24 July 2019 related to transformation of health system, non-exhaustive and anonymous collection of health data of the French public. All public and private actors who want to use the data for a research objective with public interest can ask for access.	To provide easy, unified, transparent and secure access to health data in order to improve the quality of care and support to patients	Ministry of Health	2019-		Public	Y (health data from rural areas)	<a href="https://www.health-data-hub.fr">https://www.health-data-hub.fr</a>	
Cybersecurity		Référentiel Général De Sécurité (RGS), General Safety Reference	Adopted by a decree of the Prime Minister on 10 June 2015. A second version in service since 1 July 2016. Including rules and guidelines for methodology and good practices	To reinforce the trust of citizens to the information systems of the administrative authorities	ANSSI*****	2014-		Public	Y (rural and agricultural data)	<a href="https://www.ssi.gouv.fr/entreprendre/reglementation/confiance-numerique/le-referentiel-general-de-securite-rgs/">https://www.ssi.gouv.fr/entreprendre/reglementation/confiance-numerique/le-referentiel-general-de-securite-rgs/</a>	
		National digital security strategy	Three communities concerning both public and private actors: the one responsible for recommendations of digital technology, products and services with high level of security; for protecting the nation from digital pirates; for good use of digital technologies and services, respectively. A first strategy for digital security was published in 2011.	To support the digital transition of French society and also to promote a road map for European digital strategic autonomy	ANSSI	2015-		Public	Y (rural and agricultural data)	<a href="https://www.ssi.gouv.fr/en/actualite/the-french-national-digital-security-strategy-meeting-the-security-challenges-of-the-digital-world/">https://www.ssi.gouv.fr/en/actualite/the-french-national-digital-security-strategy-meeting-the-security-challenges-of-the-digital-world/</a>	
		Platform for Cybersecurity: Cybermalveillance.gouv.fr	Created and managed by the Public Interest Group GIP ACYMA following the national strategy for digital security of 2015.	To assist individuals, companies, associations, and administrations who are victims of cybercrime, to inform people about the digital risks and threats, and the means to protect themselves.	ANSSI, Ministry of the Interior, Ministry of Justice...		2017-		Public & Private	Y (rural and agricultural data)	<a href="https://www.cybermalveillance.gouv.fr">https://www.cybermalveillance.gouv.fr</a>
		National Cloud Strategy	3 pillars: Trusted Cloud Label, "Cloud at the center" policy in digitalisation of administrations, and direct financial support from France Relance and PIA to selected projects.	To protect data of French companies, administrations and citizens while asserting data sovereignty of France	Ministry of Economy, Ministry for Transformation of Public Services & Minister for Digital Affairs		2021-		Public	Y (rural and agricultural data)	<a href="https://www.numerique.gouv.fr/espace-presse/le-gouvernement-annonce-sa-strategie-nationale-pour-le-cloud/">https://www.numerique.gouv.fr/espace-presse/le-gouvernement-annonce-sa-strategie-nationale-pour-le-cloud/</a>
Interoperability		General Interoperability Reference (RGI)	Recommendations referencing norms and standards that promote interoperability within the information systems of the administration. V2.0 was formalised by the decree of 20 April 2016, and is currently in use.	To set technical rules that ensure the interoperability of information systems, in order to exchange effectively among different departments	DINSIC	2016-		Public	Y (rural and agricultural data)	<a href="https://www.numerique.gouv.fr/publications/interoperabilite/">https://www.numerique.gouv.fr/publications/interoperabilite/</a>	
		French interoperability framework for health IT systems (CI-SIS)	Reference document offering technical and semantic rules based on international norms and standards to health stakeholders with projects to exchange and share health data.	To promote the sharing and exchange of health data	Nation Agency for e-Health	2009-		Public	Y (rural and agricultural data)	<a href="https://esante.gouv.fr/interoperabilite/ci-sis">https://esante.gouv.fr/interoperabilite/ci-sis</a>	

\* The Digital Agency has been integrated with two other public institutions and become the National Agency for Territorial Cohesion (ANCT) from 1 January 2021.

\*\* Arcep: National Agency for regulation of telecommunications

\*\*\*DINUM: Interministerial Department for Digital Affairs

\*\*\*\*DINSIC: The former structure of DINUM

\*\*\*\*\* SGMAP: General Secretariat for the Modernization of Public Action, replaced by DTIP (Interministerial Department for Public Transformation) since November 2017

\*\*\*\*\*ANSSI: National Agency for the Security of Information Systems

