Digital Economy and Society Index (DESI) 2021

Cyprus

About the DESI

The European Commission has monitored Member States' progress on digital and published annual Digital Economy and Society Index (DESI) reports since 2014. Each year, the reports include country profiles, which help Member States identify areas for priority action, and thematic chapters providing an EU-level analysis in the key digital policy areas.

In 2021, the Commission adjusted DESI to reflect the two major policy initiatives that will have an impact on digital transformation in the EU over the coming years: the Recovery and Resilience Facility and the Digital Decade Compass.

To align DESI with the four cardinal points and the targets under the Digital Compass, to improve the methodology and take account of the latest technological and policy developments, the Commission made a number of changes to the 2021 edition of the DESI. The indicators are now structured around the four main areas in the Digital Compass, replacing the previous five-dimension structure. 11 of the DESI 2021 indicators measure targets set in the Digital Compass. In future, the DESI will be aligned even more closely with the Digital Compass to ensure that all targets are discussed in the reports.
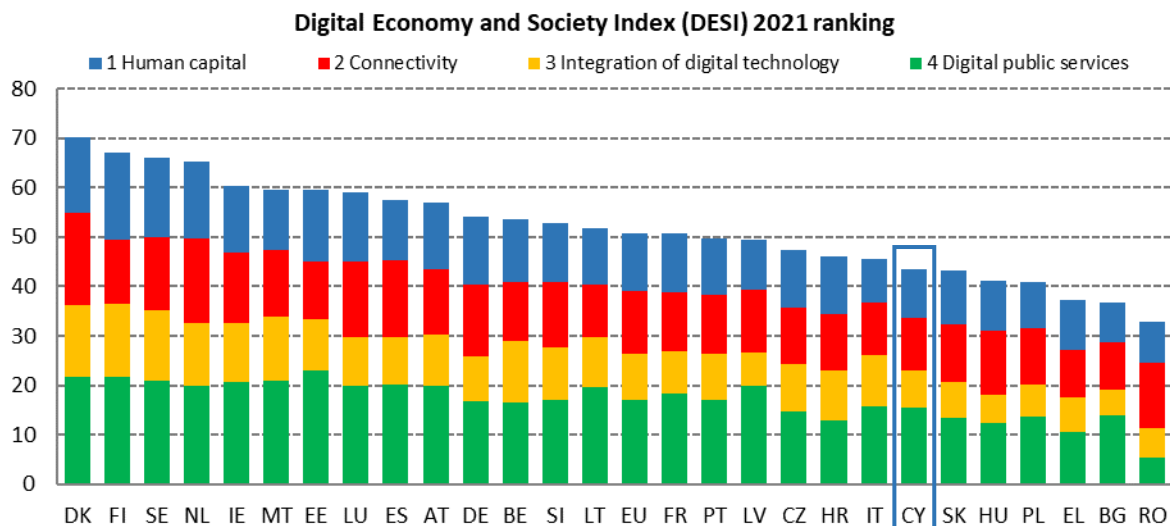
In addition, DESI now includes an indicator measuring the level of support that adopted ICT technologies provided companies in taking more environmentally-friendly measures (ICT for environmental sustainability) and the take up of gigabit services, plus the percentage of companies offering ICT training and using e-invoicing.

The DESI scores and rankings of previous years were re-calculated for all countries to reflect the changes in the choice of indicators and corrections made to the underlying data.

For further information, see the DESI website: https://digital-strategy.ec.europa.eu/en/policies/desi.

Overview

	Cyprus		EU
	rank	score	score
DESI 2021	**21**	**43.5**	**50.7**

Digital Economy and Society Index (DESI) 2021 ranking

Cyprus ranks 21st among 27 EU Member States in the 2021 edition of the Digital Economy and Society Index (DESI).

Cyprus has improved its performance in almost all DESI dimensions, although in most cases it still scores below the EU average. Most of its progress has been made in Connectivity.

Cyprus ranks above the EU average on mobile broadband take-up, has improved its coverage of Very High Capacity Networks (VHCN) and scores high (67%) in the 5G readiness indicator, which means that the biggest part of the 5G pioneer spectrum harmonised at EU level has been assigned. However, the country is well below the EU average in the take-up of fast broadband, while almost one in two Cypriots lack basic digital skills. Despite growing demand on the labour market, the supply of ICT specialists is still below the EU average.

The newly established Deputy Ministry of Research, Innovation and Digital Policy (DMRID)[1] is responsible for implementing the 'Digital Strategy for Cyprus (2020-2030)' which will accelerate its digital transformation. The strategy, adopted in June 2020, is in line with the objectives proposed in the Commission Communication '2030 Digital Compass: the European way for the Digital Decade'[2] strategy, and is set to contribute substantially to economic growth and productivity. The Cypriot strategy aims to (i) achieve the digital transformation of the public sector (e-government); (ii) promote the digital transformation of the private sector; (iii) facilitate high-speed network connectivity; (iv) promote an accessible and inclusive society that has the skills to embrace the national digital transformation; and (v) promote innovation in line with the country's level of digital maturity.

Cyprus is in the preparation of an 'e-skills Action Plan' to develop and strengthen digital skills across all population groups. This action plan aims to (i) deliver an open and accessible digital society, fully

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[1] www.dmrid.gov.cy
[2] COM(2021) 118 final

reaping the benefits of digital transformation, (ii) boost basic digital and basic software skills, the levels of which have decreased recently, and (iii) act as a driver of an accelerated digital transition. The action plan will be implemented under the Cypriot National Coalition for Digital Skills and Jobs[3]. The mechanism for implementing these actions includes input from the public sector, academia and private sector.

In May 2019, Cyprus adopted its new 'Cyprus Industrial Strategy Policy'[4]. In January 2020, the government approved the national strategy on Artificial Intelligence (AI)[5], while a cybersecurity strategy has been in place since 2012. The Digital Security Authority has proposed a new, revised cybersecurity strategy, which will be approved by the Ministry of Communication and the Council of Ministers (CoM) by the end of 2021. The implementation of these strategies together with the successful implementation of the digital transition actions set out in the Recovery and Resilience Plan (RRP) would provide a good basis to accelerate the digitalisation of businesses.
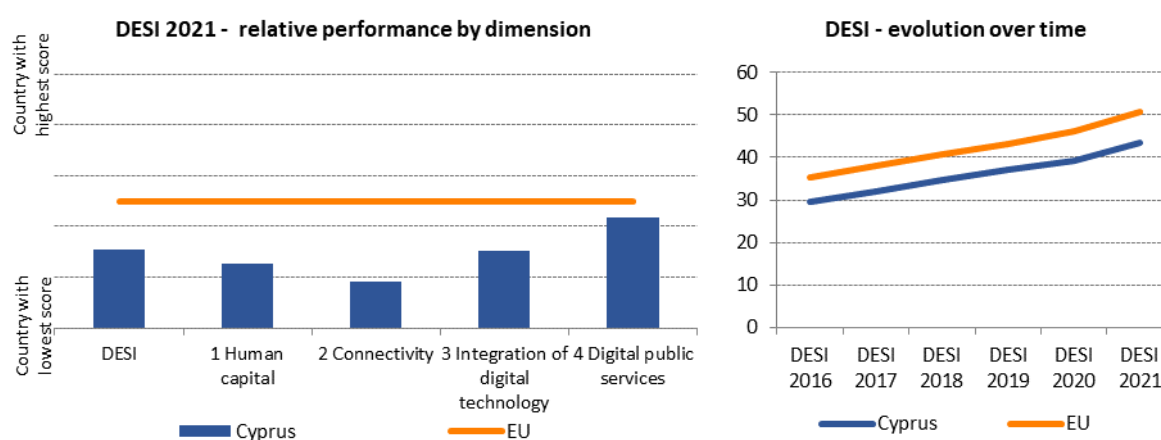
Digital in Cyprus's Recovery and Resilience Plan (RRP)

With a total budget of about EUR 1.2 billion, Cyprus's RRP (hereinafter 'the plan') will support the economic recovery by mitigating the economic and social impacts of the COVID-19 crisis, while strengthening the resilience and transformation of the economy through its digital transformation. To this end, the plan includes significant investments in digitalisation exceeding the digital target of 20% by reaching 23%, i.e. about EUR 282 million.

The plan was developed around five policy axes: (i) health and civil protection; (ii) transition to a green economy; (iii) resilience and competitiveness of the economy; (iv) digital transformation; and (v) labour market, social protection, education and human capital. It contains 13 components. The most important contributions to the digital transition come from components 4.1 (upgrade infrastructure for connectivity) and 4.2 (promote e-government). Component 3.4 (modernising public and local authorities, making justice more efficient and fighting corruption) addresses, among other things, e-justice and smart cities and component 3.5 (safeguarding fiscal and financial stability) focuses on fiscal and financial stability.

Measures related to digitalisation are included in almost all of the other components: (i) digital

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[3] http://www.digitaljobs.cyprus-digitalchampion.gov.cy/el/page/home
[4] https://cutt.ly/xmnUIwj
[5] https://knowledge4policy.ec.europa.eu/sites/default/files/cyprus_ai_strategy.pdf

transformation of the education system and digital skills in 5.1 (educational system modernisation, upskilling and retraining); (ii) digitisation of businesses in 3.3 (business support for competitiveness); (iii) e-health in 1.1 (resilient and effective health system, enhanced civil protection); (iv) intelligent transport systems (ITS) in 2.2 (sustainable transport); (v) smart metres, smart grids and water management in both 2.1 (climate neutrality, energy efficiency and renewable energy penetration) and 2.3 (smart and sustainable water management); as well as (vi) certain measures in 5.2 (labour market, social protection, social welfare and inclusion).

The plan includes one multi-country project to further improve connectivity: a submarine link between Cyprus and Greece.

1 Human capital

1 Human capital	Cyprus		EU
	rank	score	score
DESI 2021	23	39.7	47.1

Human capital
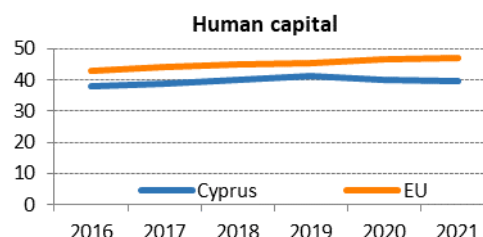
	Cyprus			EU
	DESI 2019	DESI 2020	DESI 2021	DESI 2021
1a1 At least basic digital skills	**50%**	**45%**	**45%**	**56%**
% individuals	2017	2019	2019	2019
1a2 Above basic digital skills	**19%**	**25%**	**25%**	**31%**
% individuals	2017	2019	2019	2019
1a3 At least basic software skills	**54%**	**46%**	**46%**	**58%**
% individuals	2017	2019	2019	2019
1b1 ICT specialists	**3.2%**	**2.7%**	**3.1%**	**4.3%**
% individuals in employment aged 15-74	2018	2019	2020	2020
1b2 Female ICT specialists	**19%**	**19%**	**18%**	**19%**
% ICT specialists	2018	2019	2020	2020
1b3 Enterprises providing ICT training	**26%**	**31%**	**25%**	**20%**
% enterprises	2018	2019	2020	2020
1b4 ICT graduates	**2.7%**	**2.6%**	**2.9%**	**3.9%**
% graduates	2017	2018	2019	2019

Cyprus ranks 23rd in the EU on Human capital, below the EU average. The basic digital skills of Cypriots remain below the EU average of 56%, with only 45% of people between 16 and 74 years having at least basic digital skills. 25% of the population have more than basic digital skills and 46% have basic software skills against EU averages of 31% and 58%, respectively. Although there has been some progress compared to 2019, the share of ICT specialists in the workforce is lower than the EU average (3.1% compared to 4.3%). Cyprus almost reaches the EU average of 19% with 18% of total ICT specialists. However the share of female ICT specialists in Cyprus has decreased since 2019. Furthermore, ICT graduates account for 2.9% of total graduates compared to the EU average of 3.9%.

Cyprus's 'e-skills Action Plan'- that is in the preparation by the DMRID includes actions for integrating digital skills into the educational system and aligning educational curricula with industry needs. It also includes promoting STEM education and professional pathways to effectively address the market shortage in ICT professionals, as well upskilling and reskilling the workforce of both public and private sectors. This plan also promotes a lifelong learning culture and innovation by using and developing advanced digital tools.

The 'e-skills Action Plan' will be implemented by the DMRID in cooperation with various stakeholders from the public and private sector, academia and enterprises in a complementary way, laying the foundation for creating a digital academy.

The Cyprus Pedagogical Institute (CPI) of the Ministry of Education, Culture, Sport and Youth is implementing the 'Digital Competence Development for Educators programme'[6] aiming to strengthen

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[6] https://www.pi.ac.cy/pi/index.php?option=com_content&view=article&id=3149%3A2021-02-15-07-33-16&catid=34%3A2010-06-02-08-27-34&Itemid=65&lang=el

and further develop teachers' digital competence. It promotes the effective use and integration of digital technologies in the teaching and learning process. The CPI plans to implement the programme during the next 4 school years, aiming to increase the number of teachers trained, with an estimated annual budget of EUR 100,000.

All secondary schools in Cyprus participated in the 2020 EU Code week, carrying out relevant activities. This initiative attracted some 3.5 million people who participated in over 70,000 activities in over 80 countries around the world. In 2020, Cyprus organised 51 activities, less than in 2019 due to the COVID-19 restrictions, and attracted 2,100 participants. These events saw a balanced share of male and female participants (51% female), with most held in schools (88%).

Cyprus launched several initiatives in vocational education and training (VET). Over recent years, Cyprus has aimed to improve the relevance of VET to labour market needs and boost its attractiveness. However, participation in upper secondary VET remains low. Cyprus has built new premises, upgraded equipment, modernised curricula and established new courses of studies to better meet the labour market's needs. The post-secondary institutes of technical education have received a new impetus and their graduates have high percentages of employability. Cyprus is also modernising its apprenticeship system, offering learning pathways with prospects for their students.

Cyprus is developing and promoting initiatives to boost digital skills. However, additional effort would be beneficial to further improve the capacity and relevance of VET and to promote VET as an attractive choice for both women and men. An additional boost for stepping up cooperation between academia and industry along with market needs would be beneficial, and research should feed into the process of creating new courses of studies. It is very important that school infrastructure is modernised and its digital capacity improved, while further support is provided to the National Skills Coalition in implementing actions to improve digital skills.

Highlight 2020: Single and Multi-Company Training Programmes

The Human Resource Development Authority of Cyprus (HRDA)[7] promotes the build-up of digital skills via a number of training programmes, outlined below, to improve and boost the ICT knowledge and skills of companies' employees.

- **Single-Company Training Programmes** aim to provide incentives to employers to design and organise in-company training programmes in order to meet the specific needs of the enterprise so as to effectively use its staff. In 2020, there were 463 participants in 52 programmes, with total expenditure amounting to EUR 116,000.
- **Single-Company Training Programmes Abroad** aim to provide incentives to employers to participate with their staff in training programmes abroad. During 2020, there were three participants in three training programmes in ICT and digital skills, with total expenditure amounting to EUR 8,000.
- **Standard Multi-Company Training Programmes** aim to provide continuing training through training programmes provided by certified public or private vocational training centres. Each vocational training centre may also accept unemployed people who are registered with the Public Employment Service. During 2020, there were 185 participants (183 employees and 2 unemployed) in 20 training programmes in ICT and digital skills, with total expenditure amounting to EUR 98,000.
- **High Priority Multi-Company Training Programmes** aim to provide continuing training to meet the training needs of employees through training programmes in specific high-

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[7] http://www.cea.org.cy/en/we_qualify/anad

priority issues implemented by public or private vocational training centres. During 2020, there were 61 participants in three training programmes in ICT and digital skills, with total expenditure amounting to EUR 97,000.

Human Capital in Cyprus's Recovery and Resilience Plan

The development of digital skills is among the main objectives of measures in component 5.1 of the plan, which dedicates EUR 24 million to digital skills development. The measures planned include modernising primary and secondary education curricula, developing new educational material, training teachers, and making investments in digital equipment for schools. In parallel, Cyprus is in the preparation of a national e-skills action plan to boost digital skills across all population groups, including in public administration, enterprises and society at large.

2 Connectivity

2 Connectivity	Cyprus		EU
	rank	score	score
DESI 2021	**24**	**41.8**	**50.2**

Connectivity
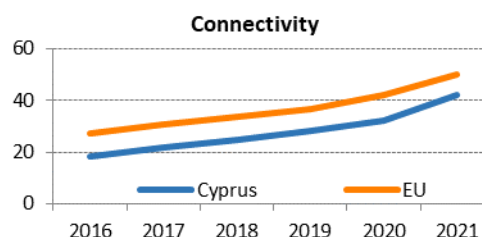
	Cyprus			EU
	DESI 2019	DESI 2020	DESI 2021	DESI 2021
2a1 Overall fixed broadband take-up	**85%**	**87%**	**92%**	**77%**
% households	2018	2019	2020	2020
2a2 At least 100 Mbps fixed broadband take-up	**2%**	**2%**	**3%**	**34%**
% households	2018	2019	2020	2020
2a3 At least 1 Gbps take-up	**NA**	**<0.01%**	**<0.01%**	**1.3%**
% households		2019	2020	2020
2b1 Fast broadband (NGA) coverage	**90%**	**100%**	**100%**	**87%**
% households	2018	2019	2020	2020
2b2 Fixed Very High Capacity Network (VHCN) coverage	**1%**	**10%**	**26%**	**59%**
% households	2018	2019	2020	2020
2c1 4G coverage	**97.2%**	**99.6%**	**99.6%**	**99.7%**
% populated areas	2018	2019	2020	2020
2c2 5G readiness	**0%**	**0%**	**67%**	**51%**
Assigned spectrum as a % of total harmonised 5G spectrum	2019	2020	2021	2021
2c3 5G coverage	**NA**	**NA**	**0%**	**14%**
% populated areas			2020	2020
2c4 Mobile broadband take-up	**74%**	**79%**	**79%**	**71%**
% individuals	2018	2019	2019	2019
2d1 Broadband price index	**NA**	**37**	**42**	**69**
Score (0-100)		2019	2020	2020

In Connectivity, Cyprus ranks 24th among 27 EU countries and is therefore below the EU average. It performs well in fast broadband (NGA) coverage (100%, ranked first, exceeding the EU average of 87%). Cyprus ranks also above the EU average in the overall fixed broadband take-up (92% against 77%). On the other hand, it still lags behind in at least 100 Mbps fixed broadband take-up, in VHCN coverage and in the broadband price index, where it ranks among the lowest in the EU. Concerning VHCN coverage, Cyprus showed a remarkable increase in 2020, from 10% to 26%. However, its VHCN coverage remains close to the bottom and well below the EU average (59%), and the take-up of at least 100 Mbps continues to stall at a very low level (3%)[8]. Furthermore, Cyprus remains close to the bottom of the price ranking, being among the three most expensive countries in almost all baskets above 100 Mbps[9]. In 2020, Cyprus scored 42 in the broadband price index compared to the EU average

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[8] A significant increase occurred in the fourth quarter with the percentage reaching almost 22%.
[9] The only exceptions are the 100-200 Mbps 2-play and 3-play baskets, where Cyprus is the fifth most expensive country.

of 69. Cyprus's 4G performance is better, with coverage of 99.6%, more or less reaching the EU average (99.7%). Commercial use of 5G started in January 2021 (not yet reflected in the DESI figures)[10].

Cyprus is making progress in deploying VHCN and there is an increasing interest from the main operators to deploy fibre. According to Cyprus's national regulatory authority (OCECPR), it is estimated that in total 190,000 premises will be connected to the fibre to the home (FTTH) network of the incumbent operator (CYTA) until 2023, and it will cover approximately 300,000 premises (premises passed). Epic has already deployed a FTTH network covering a very small area in Nicosia and it plans to further expand its FTTH network within the urban boundaries of all the cities. Cablenet is also undertaking new deployments of fibre networks, while Primetel announced its intention to deploy fibre infrastructure too.

The Cypriot authorities are currently updating the national broadband plan for 2021-2025 and aim to have it ready by the end of 2021. Cyprus has already included in the Recovery and Resilience Facility (RRF) a series of investments and reforms and is also planning to submit proposals for CEF2 digital infrastructure funding in the next programme period. An important part of the new broadband plan is to expand the VHCN by using EU funding and focusing on digitally excluded, rural and suburban areas. At the same time, the socio-economic drivers such as schools, hospitals, research and business centres, universities, ports, airports, stadiums and other underserved areas with limited speed internet access, located throughout the country, will be connected to symmetric gigabit speeds.

Another major project is the deployment of submarine fibre cables connecting Cyprus to Greece as well as other non-EU countries. This project is expected to boost the capacity and resilience of the backhaul infrastructure in Cyprus and lead to reduced prices for high-speed broadband services, which will benefit end users, both through fixed and mobile networks. Meanwhile, Cypriot authorities implemented demand-stimulating measures as part of the 2019-2020 national broadband plan[11]. Specifically, to increase the very low take-up of very high capacity connections, the Department of Electronic Communications launched in 2019 a 'Pilot' voucher scheme, using national funds, aimed at all people in Cyprus, which subsidised broadband connections of at least 100Mbps.

On 29 April 2021, Cyprus notified the Commission of its national roadmap for implementing the Connectivity Toolbox[12], in which it plans to review the existing national framework in order to implement fast track procedures for granting permits and higher transparency of information. This will include assessing the necessity of all the best practices included in the Toolbox.

All major operators are keen to invest in 5G, keeping in mind that national authorities have set concrete targets for awarding 5G spectrum. Currently, Cyprus scores 67% on the 5G readiness indicator as it has assigned the two pioneer bands (700 MHz and 3.6 GHz). The auction included the 3.4-3.8 GHz band and the 700 MHz band, but did not include the 26 GHz band because the market has not shown interest according to the Cypriot authorities. The main issue with the effective use of this band is interference from areas that are not under the effective control of the Republic of Cyprus. Cypriot authorities expect such interference to cease soon, in view of parallel migration from TV to mobile telephony use. This is, of course, a prerequisite for the effective use of the band. The reluctance

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[10] The cut-off date for the data of this report was July 2020 and the cut-off date for the regulatory developments was 31 May 2021. During 2020, there were no 5G coverage in Cyprus. By the end of May 2021, CYTA managed to establish around 400 sites (adding 5G panels to existing sites) within the urban areas of Cyprus, in this way, with conservative calculations, covering over 60% of the population with 5G coverage.

[11] https://dec.dmrid.gov.cy/dmrid/DEC/dec.nsf/All/D0C6BE2B00CDE23DC22584F5004B471A?OpenDocument

[12] https://digital-strategy.ec.europa.eu/en/policies/connectivity-toolbox

of some local authorities to grant permits for antenna masts and delays in permit-granting procedures are other major challenges in developing 5G networks and services.

The main challenges to improving take-up of high-speed broadband persist, stemming from a number of factors including the lack of demand and the retail pricing structure adopted by the operators, according to the Cypriot authorities[13].

Main market & regulatory developments

Operators focus on bundling to gain a competitive advantage. They seek to offer packages that combine fixed telephony, mobile communications, broadband internet and pay TV with prime content, especially football. As a result, around 73% of fixed broadband subscriptions are part of a bundle, with the remaining 27% being single play connections. The most popular bundle remains fixed telephony and broadband access accounting for around 44% of the bundled services followed by fixed telephony, broadband access and IP/Cable TV that make up 30% of the bundled connections. Given the importance of prime content, three operators agreed to share football rights both for local and international games for 2020-2021.

In 2020, prices for fibre-based services charged by the incumbent fell considerably, providing a strong incentive for the transition from copper to fibre. In 2020, the cable provider upgraded all its available services to speeds over 100 Mbps without increasing its prices, which combined with the new FTTH offers had a positive impact on the take-up for high-speed broadband connections. The impact on the take-up for high speeds (≥ 100 mbps) was already visible by the end of the year with their market share being almost 22% compared to 3% in the middle of the year.

Concerning the transposition of the European Electronic Communications Code (EECC), the Department of Electronic Communications of the Deputy Ministry prepared a first draft of the amended national legislation concerning spectrum issues, which was submitted to a public consultation from 18 October 2019 to 27 November 2019. A new amended draft was prepared incorporating the comments received from the public consultation and was submitted to the state legal service for legal vetting. Following this, the final draft was approved by the Council of Ministers. It has been submitted to the Parliament for adoption. In parallel, OCECPR also prepared a final draft covering the areas of its responsibilities, which was forwarded to the Deputy Ministry of Research, Innovation and Digital Policy for approval. However, the national elections, which took place in May 2021, delayed the adoption of the new legislation.

Cyprus deployed a smartphone application and an SMS service allowing end users with disabilities to access the European Emergency number 112. However, it does not ensure yet non-voice 2-way communication and instant caller location. Cypriot authorities have committed to implementing these features and the Commission is monitoring the implementation of equivalent access for disabled end users in Cyprus.

Cyprus is making progress on rolling out VHCNs, as all main operators are seeking to deploy fibre networks. The expected updated National Broadband Plan, which includes targeted investments and reforms in connectivity, combined with the investments and reforms that will be funded under the RRF, will help the country meet the gigabit society targets, including connectivity targets. The multi-country project involving the deployment of submarine cables, including the connection with Greece, would help Cyprus improve its international connectivity and positively affect broadband prices.

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[13] According to Statistical Service, the main reason for households not upgrading their internet connection to higher data transfer speeds is lack of need (83.6%), followed by high cost (52.6%).

Cyprus needs to transpose the EECC and adopt a pro-investment regulatory framework, which would further facilitate and speed-up the deployment of 5G and VHCNs.

Connectivity in Cyprus's Recovery and Resilience Plan
Component 4.1 of the plan (EUR 53 million) includes reforms and investments that aim to foster and facilitate the widespread deployment of VHCN, including 5G (wireless) and fibre. The reforms are expected to identify and remove the administrative bottlenecks, facilitating the rapid deployment of VHCN and investments by private operators. Investments support the build-up of VHCN in areas where there has been no private interest thereby addressing territorial disparities of broadband availability. The plan also includes a voucher scheme for individuals, to encourage the construction of their building internal cabling, for connection to VHCN. Furthermore, the installation of a high-capacity internet submarine link between Cyprus and Greece should further improve connectivity.

3 Integration of digital technology

3 Integration of digital technology	Cyprus		EU
	rank	score	score
DESI 2021	**20**	**30.5**	**37.6**

Integration of digital technology
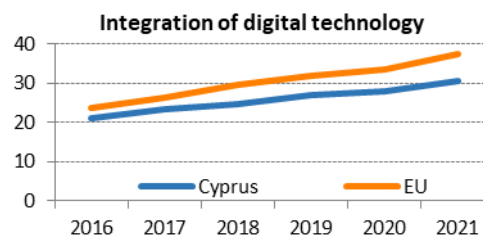
	Cyprus			EU
	DESI 2019	**DESI 2020**	**DESI 2021**	**DESI 2021**
3a1 SMEs with at least a basic level of digital intensity % SMEs	**NA**	**NA**	**49%** 2020	**60%** 2020
3b1 Electronic information sharing % enterprises	**35%** 2017	**33%** 2019	**33%** 2019	**36%** 2019
3b2 Social media % enterprises	**37%** 2017	**38%** 2019	**38%** 2019	**23%** 2019
3b3 Big data % enterprises	**5%** 2018	**5%** 2018	**6%** 2020	**14%** 2020
3b4 Cloud % enterprises	**14%** 2018	**14%** 2018	**22%** 2020	**26%** 2020
3b5 AI % enterprises	**NA**	**NA**	**NA** 2020	**25%** 2020
3b6 ICT for environmental sustainability % enterprises having medium/high intensity of green action through ICT	**NA**	**NA**	**NA** 2021	**66%** 2021
3b7 e-Invoices % enterprises	**11%** 2018	**11%** 2018	**13%** 2020	**32%** 2020
3c1 SMEs selling online % SMEs	**12%** 2018	**12%** 2019	**15%** 2020	**17%** 2020
3c2 e-Commerce turnover % SME turnover	**6%** 2018	**8%** 2019	**5%** 2020	**12%** 2020
3c3 Selling online cross-border % SMEs	**9%** 2017	**9%** 2019	**9%** 2019	**8%** 2019

On Integration of digital technology in business activities, Cyprus ranks 20th in the EU, but is making progress. Cypriot enterprises take advantage of technology capabilities using social media (38% compared to the EU average of 23%), while 15% of SMEs sell online (below the EU average of 17%). The adoption of new technologies is improving but still relatively low: 22% of businesses use cloud services (compared to the EU average of 26%) and 6% big data analytics (below the EU average of 14%). 41.2% of enterprises that recruited or tried to recruit ICT specialists had difficulties in doing so[14]. 49% of Cypriot SMEs have at least a basic level of digital intensity, scoring below the EU average of 60%. On electronic information sharing, Cyprus scores close to the EU average (of 36%) with 33%, while for e-invoices, with 13% Cyprus is far below the EU average of 32%.

In December 2019, Cyprus launched a programme to encourage SMEs to adopt digital technologies[15]. It aims to boost the digital identity of business, increase the number of SMEs that use information and communication technologies, including the e-commerce sector, and promote digital

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[14] https://digital-agenda-data.eu/datasets/digital_agenda_scoreboard_key_indicators/visualizations
[15] https://meci.gov.cy/gr/sxediaxorigion

entrepreneurship. A total of 509 proposals were submitted, which would require a total of EUR 18.5 million in investments, corresponding to EUR 8 million in grants. The Ministry of Energy, Commerce and Industry is preparing the SME digital upgrade scheme[16], which aims to strengthen the degree of integration of digital technology in enterprises located or to be established in areas of Cyprus controlled by the Republic of Cyprus. The financial consists of providing public support of up to EUR 40,000 for the digital upgrade of existing or new SMEs.

In May 2019, the Council of Ministers adopted the 'Cyprus Industrial Strategy Policy[4]' for 2019-2030. This strategy highlights the digital transformation, focusing on the use of renewable energy and 'green products'. It addresses all sectors of the economy, including traditional industries and manufacturing, and is in line with the 'EU Industrial Policy Strategy: A Vision for 2030'[17]. The strategy suggests taking action in six priority areas, three of which concern smart manufacturing, digitalisation and digital skills.

In January 2020, the government approved the national strategy on AI[5], which the DMRID will implement. This strategy is built around four key pillars: (i) maximising investment through partnerships, (ii) creating national databases, (iii) nurturing talent and lifelong learning, and (iv) developing ethical and trustworthy AI. These pillars are in line with the key pillars set by the European Commission. In this context, Cyprus has developed an action plan to be implemented until 2026. Its main objectives include: (i) strengthening existing technologies through implementing various AI systems and solutions, (ii) enriching available data and data infrastructure, (iii) developing a legal framework for the widespread implementation of AI, and (iv) establishing international partnerships.

The DMRID has committed to providing funding to a proposal submitted by a Cypriot consortium under the 'Digital Europe Programme 2021-2027'[18] for developing a Digital Innovation Hub (DIH) in Cyprus. The DIH will serve as a one-stop shop to assist in the digital transformation of the private and the public sector through providing: (i) technological expertise and access to experimentation platforms, (ii) training and development of skills, (iii) networking opportunities, and (iv) support to find investments.

The National Blockchain Legislation has been prepared since early 2020 and is due to be completed by the end of 2021. The evaluation process for the National Blockchain request for interest (RFI) showed market interest and identified the most promising fields for Cyprus to reap the greatest benefits by incorporating this technology. A proposal was submitted in 2020 under the CEF Blockchain Call for establishing European Blockchain services infrastructure node(s) in Cyprus.

Apart from blockchain, Cyprus is committed to developing new advanced technologies and investing in them through EU-coordinated programmes and plans. This concerns, among other things, HPC[19], AI and quantum communication infrastructure. In 2019, Cyprus signed a declaration agreeing to explore, together with 24 Member States, how to develop and deploy a quantum communication infrastructure across the EU over the next 10 years.

To boost the digital transformation of the Cypriot economy, it is important to raise awareness among SMEs of the relevance of digitisation and how it relates to their needs, and to support the full implementation of the 'Cyprus Industrial Strategy Policy'. This will enable SMEs and entrepreneurs to reap the full range of benefits from adopting digital technologies.

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[16] https://meci.gov.cy/gr/sxediaxorigion

[17] https://op.europa.eu/en/publication-detail/-/publication/339d0a1b-bcab-11e9-9d01-01aa75ed71a1

[18] https://digital-strategy.ec.europa.eu/en/activities/digital-programme

[19] HPC: High Performance Computing. Cyprus hosts the 'Cy-Tera' institute which has the necessary know-how to upgrade and successfully operate a more powerful HPC capacity, and has extensive experience in HPC-powered applications. Cyprus has recently established its own National HPC Competence Centre.

**Integration of digital technology in Cyprus's Recovery and Resilience Plan**

The plan is expected to contribute to enterprises' digital transition, in particular SMEs (components 2.3 and 3.3 with EUR 10 million in digital). The measures aims to step up the adoption of digital technologies such as cloud, big data, blockchain and digital infrastructure.

The plan also includes investments in the deployment of advanced technologies that will support the integration of digital technologies (components 1.1, 2.3, 3.3 and 3.4 with EUR 63 million in digital).This includes investments in smart cities to improve their infrastructure and e-services, and to boost community-driven economic growth, by implementing digital platforms and information systems. The plan envisages investments in civil protection (public warning system for supporting emergency operations through SMS), as well as in smart and sustainable water management.

Finally, the plan under investment 2 (Innovation funding programmes & funding schemes for the enhancement of growth & competitiveness of start-ups, innovative companies and SMEs) of component 3.2 is expected to contribute to the growth and competitiveness of start-ups, innovative companies and high-tech SMEs. These programmes aim to support businesses, in many cases collaborating with research organisations, to develop innovative products and services with international orientation from concept to ready-for-market. Funding could be used for investments supporting the digital transition of enterprises.

4 Digital public services

4 Digital public services	Cyprus		EU
	rank	score	score
DESI 2021	**19**	**61.8**	**68.1**

Digital public services
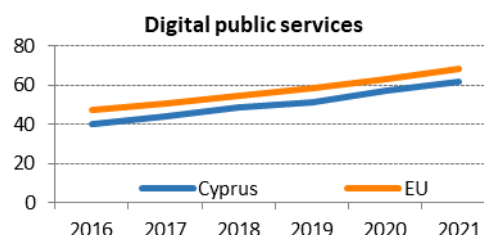
	Cyprus			EU
	DESI 2019	**DESI 2020**	**DESI 2021**	**DESI 2021**
4a1 e-Government users	**49%**	**58%**	**59%**	**64%**
% internet users	2018	2019	2020	2020
4a2 Pre-filled forms	**NA**	**NA**	**38**	**63**
Score (0 to 100)			2020	2020
4a3 Digital public services for citizens	**NA**	**NA**	**66**	**75**
Score (0 to 100)			2020	2020
4a4 Digital public services for businesses	**NA**	**NA**	**86**	**84**
Score (0 to 100)			2020	2020
4a5 Open data	**NA**	**NA**	**87%**	**78%**
% maximum score			2020	2020

Cyprus ranks 19th in Digital public services. It performs well in digital public services for businesses, scoring above the EU average (86 against 84 of the EU). It also performs above the EU average on open data with 87%. However, the level of online interaction between public authorities and the general public is below the EU average, with 59% of Cypriot internet users actively engaged in using e-government services. Regarding pre-filled forms, Cyprus underperforms with a score of 38, well below the EU average of 63. Furthermore, in digital public services for citizens, Cyprus is improving, but it remains below the EU average of 75 with a score of 66.

The government is developing the national electronic identification (eID) scheme following the eIDAS Regulation[20]. However, Cyprus has yet to notify an eID scheme to the Commission, which is a pre-condition for the cross-border recognition of national eIDs. With the establishment of a national scheme on eID following the eIDAS regulation, and of an electronic signature (e-signature), the public will be able to access and interact digitally with the government through the Government Gateway[21] simply through using their eID. The related legislation was adopted by the Parliament in April 2021.

The DMRID is working on the Digital Services Factory, a new delivery model for developing end-to-end quality digital services where an 'Agile/Scrum' methodology[22] used for developing micro-services will be applied, through redesigning and reengineering procedures, and following an approach that provides adaptability, response to change and is based on user experience.

Cyprus will follow a 'cloud native/cloud-first' policy approach. In this context, a cloud policy is under preparation, which will set the criteria for the data classification, data residency and the decision to

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[20] The eIDAS Regulation on eID and Trust Services unlocks the digital single market. Its importance was in particular highlighted by the COVID-19 pandemic: https://ec.europa.eu/digital-single-market/en/discover-eidas
[21] https://eservices.cyprus.gov.cy/EL/Pages/Home.aspx
[22] A project management system that relies on incremental development

host and run government IT systems in a public cloud or a government private cloud (G-Cloud) environment.

Cyprus recognises that in order to boost interoperability and systems' interaction, a solid, secured, integrated and modern government digital architecture is key to achieving the transformation to a digital government and society. Consequently, the database of the Civil Registry Department and the Company Registrar Department are planned to be the single source of data for people and companies respectively.

On e-health, Cyprus is moving towards cross-border integration[23]. Supported by EU4Health[24] funds, Cyprus will become part of a secure peer-to-peer network that allows for the exchange of patient summaries and e-prescriptions via MyHealth@EU using the 'eHealth digital service infrastructure' (eHDSI). The objectives are to (i) align the Cypriot health infrastructure with the standards set by the European Commission for exchanging health data, across national borders within the EU, and (ii) provide interoperable e-health services. Cyprus is one of the signatories of the 'Declaration towards access to at least 1 million sequenced genomes in the EU by 2022' and part of the '1+Million Genomes' initiative[25].

Improving digital public services is very important for Cyprus's digital transition. This will help digitally transform the economy in line with EU objectives and will step up the public administration's resilience, sustainability and efficiency. Therefore, it is very important for Cyprus to implement the policy in line with the national digital strategy together with the Reforms and Investments envisaged in its Recovery and Resilience Plan.

Digital public services in Cyprus's Recovery and Resilience Plan

Component 4.2 is dedicated to promoting e-government, a goal also envisaged by various other complementary measures of the plan (EUR 35 million). Component 4.2 includes reforms and investments for creating secure and quality digital services for the public, developing a government cloud, creating a modernised registry for companies (beneficial owners), and digitising central government services, including certain police services and the processes carried out in the Cyprus Ports Authority. Component 3.5 provides additional measures for digitalising public administration, e.g. the digitalisation of the tax and customs departments and the investment in a cloud-based IT system for the Cypriot Securities and Exchange (EUR 28 million). Components 3.1, 3.3 and 3.4 dedicate EUR 28 million to the digitalisation of public services and include measures for (i) strengthening e-justice, (ii) setting up a blockchain platform for local traditional foods and drinks, (iii) creating an information system for the Registrar of Companies, (iv) improving public procurement using an e-procurement tool, (v) digitally transforming the Law Office and courts and (vi) strengthening the e-system for issuing building permits. Component 5.2 includes the digitalisation of the social insurance system and the labour department and public employment services (EUR 10 million), while components 2.1 and 2.2 include investments in smart metering infrastructure, smart grids and Intelligent Transport System (EUR 21 million). Finally, component 1.1 supports the digitalisation of healthcare infrastructure and equipment, stepping-up e-health services, developing dedicated digital platforms for the healthcare staff and deploying cross-border interoperable e-health services based on EU standards (EUR 10 million).

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[23] Law on e-health (59(I)/2019).
[24] https://ec.europa.eu/health/funding/eu4health_en
[25] https://ec.europa.eu/digital-single-market/en/european-1-million-genomes-initiative