Digitalisation for recovery in Ukraine

Key messages

- Russia’s large-scale aggression against Ukraine is causing severe disruptions to internet connectivity, a pre-condition for the resilience and further development of the digital economy, while digital technologies have played a crucial role in continuing to provide citizens with access to digital services, including when they are displaced.

- The Ukrainian government’s response to the war in the area of digitalisation is structured around three key pillars: “Digital Infrastructure, Internet recovery and development”; “Public Services and Registers”; and the “Digital Economy”. The plans are articulated over the short (present to end of 2022), medium (2023-2025) and long (2026-2032) terms.

- Access to the Internet and quality of data transmission has decreased since the start of the war, due to both cyber and physical attacks on the digital infrastructure of the country. Looking ahead to the post-war period, Ukraine could leverage the reconstruction of infrastructure to modernise its communication network (e.g. laying fibre under the reconstructed roads).

- The digital delivery of public services, with new “state-of-the-art” services launched just before the war, is proving resilient after the first disruptions. The “Country in a Smartphone” programme and the “Diia” platform and applications are allowing public service delivery to be sustained, but issues such as extra-territorial connectivity still need to be addressed.

- The Digital Economy and IT sector in Ukraine were experiencing rapid growth in the years leading up to the war, leveraging highly-skilled Ukrainians and investment from multinational companies. Teleworking and cloud servers based both within and outside the country are allowing many businesses to continue operations, but migration and military service are exacerbating a chronic lack of IT specialists in the country.

- The recent law “On Amendments to the Tax Code of Ukraine on Stimulating the Development of the Digital Economy in Ukraine” (the “Diia City Tax Law”) was signed into law by the President of Ukraine at the end of 2021, introducing tailor made fiscal measures for the IT sector (e.g. a special corporate income tax regime, reduced payroll taxes and social contributions to facilitate the return of high-skilled R&D personnel from abroad).

- OECD policy tools such as the “Going Digital Policy Framework” can help Ukraine realise its ambitious plans to strengthen and rebuild its digital space.
Background and key issues

The Russian Federation’s large-scale war of aggression against Ukraine is causing severe disruptions to Internet connectivity, a pre-condition for the resilience and further development of the digital economy. Estimates\(^1\) show that since the start of the war, the quality of data transmission decreased on average by 13% over fixed Internet networks and by 26% over mobile networks (May 2022). In addition, 12.2% of settlements do not have access to mobile communication and 3.1% have only partial access. Stations of mobile operators across the countries have been damaged; it is estimated that almost 11% are inactive – and this share is rising rapidly. Access to a stable, reliable high-speed broadband network is the key framework condition for the restoration and development of Ukraine’s digital economy. Even before the war, only 26% of the population had at least a 4G mobile network coverage in 2020\(^2\).

Ukraine has made significant progress in reducing the digital divide, with all oblasts increasing Internet access (by 289% on average over the last decade, 2010-2019). At the same time, progress has been uneven across territories. Kyiv City has the highest level of Internet access in the country (84% of households\(^3\)), followed by Dnipropetrovsk and Zakarpattia Oblasts (79% and 76% respectively). By contrast, the oblast with the lowest level of Internet access was Rivne, where only 49% of citizens had access to broadband services. These data show that there is still room for improvement in the rollout of Internet networks across Ukraine. In addition, the Russian Federation is actively trying to fragment Ukrainian digital space, for example by moving people in occupied areas to Russian networks (e.g. by distributing Russian SIM cards). This will isolate those populations from accessing factual information about the war and provide a new outlet for Russian propaganda. Ukraine’s efforts in this area, including its use of donated Starlink dishes, are a good step toward ensuring Internet access and the free flow of information.

A solid system of administrative service provision integrating advanced electronic tools for service delivery was in place in Ukraine, but the war poses important challenges. The network of Administrative Service Centres (ASCs) across the country remained largely functional and operational in combination with the work on Diia. Both are based on well-developed catalogue of services that allowed the service delivery level (existing, modified or even the creation of new services) could be maintained. However, extensive attempts to destroy administrative data by Russian hackers; the decreased capacity of service providers due to the lack of employees (due to mobilisation or migration); and the difficulty in accessing digital services from abroad when displaced across borders are all serious issues.

Ukrainian’s digital economy was growing fast before the war and the Ministry of Digital Transformation and the Ukrainian IT community have accelerated their efforts since the beginning of the war. In 2021, Ukrainian IT exports grew 36% year-on-year to total USD 6.8 billion, representing 10% of the country’s total exports. Meanwhile, the number of Ukrainians employed in the IT industry increased from 200,000 to 250,000 across start-ups, SMEs and large firms. In Q1 of 2022, the ITC sector provided export earnings of USD 2 billion (+28% on the previous year). The war has caused severe disruption to the sector, but the increased international attention can unlock important opportunities for future development.

\(^1\) Information from the sub-Working Group on Digital Infrastructure, Internet recovery and development
\(^3\) Data by oblasts at TL2 provided directly to the OECD team by the Cabinet of Ministers of Ukraine
What are the impacts?

The war has pushed the government to seek European Union membership and thus access to the EU Digital Single Market (DSM), including an alignment with international regulations and standards. On 28 February 2022, the European Council received Ukraine's application for EU membership and on 17 June the European Commission published its Opinion⁴, recommending that the Council accept Ukraine's candidacy. In the Opinion, there is a specific reference to the “particularly good results” achieved by Ukraine in the area of information society and media (within the “Competitiveness and inclusive growth” cluster), with a reference to the “in-depth sectoral reform and approximation to EU DSM acquis”, in particular by adopting the laws on electronic communications and telecommunications regulator and enforcing them since the beginning of 2022.

The move towards integration in the DSM means a progressive alignment with international regulations and standards on digital practices, which could bring important benefits in terms of reduction of cross-border barriers to digital trade and acceleration of Ukraine's digital economy. As a concrete example, in June 2022 the national regulatory authority of Ukraine responsible for electronic communications (NCEC) was authorised to participate in the Body of European Regulators for Electronic Communications (BEREC) and the BEREC Office, the agency that supports BEREC.⁵ In another example, Ukraine is the first country to use Article 14 eIDAS (mutual recognition and 3rd country). Ukraine submitted a request for mutual recognition of electronic trust services between Ukraine and the EU in 2019. As a result, the European Commission developed the mutual recognition agreement (MRA) Cook-book in 2021. The MRA process started already before the war.

Access to reliable public services remains fundamentally important during the conflict and, despite the challenges posed by the war, the Ukrainian government has relentlessly continued its effort to provide, expand and digitise its public services. The destruction of physical infrastructure and displacement of citizens makes it challenging for people to access in-person services through the existing network of Administrative Service Centres (Центр національної адміністрації, ЦНАП). In this context, the flagship digital government initiative Diia, with its application and online platform that were launched in February 2020, has proven instrumental to responding to the needs of citizens and businesses dealing with the consequences of the conflict. Also, there is a gender-related digital divide to address, as in 2020 there were 58% of men and 49% of women using public digital services. Gender mainstreaming in government action can help identify the causes and develop solutions for this type of problem.

There is a critical need for portable and internationally interoperable digital identity solutions to ensure people can prove they are who they say they are, despite the loss of critical documentation or displacement across borders. The necessity of digital identity solutions has been brought into focus as a result of the conflict in Ukraine. Internally displaced people may have lost access to their physical documentation, while those who have sought refuge overseas urgently need their Ukrainian identities to be recognised in their host countries. A simplified digital ID can be obtained through the Diia app, which is recognised by local law enforcement and border guards of neighbouring countries. Similarly, workers living in the regions affected by the war can verify their eligibility for financial support and apply directly via the Diia app. The service delivery system has also evolved over the time, starting from almost no services available during the first days of invasion to the provision of all significant services (except 28 out of 2230) in three months after invasion when the system was adapted to the new risks.

What is the outlook?

To face the crisis, Ukraine’s National Recovery Council is working on developing an action plan on digitalisation with a focus on infrastructure, public services and digital economy. In terms of immediate measures, while the war continues, Ukraine needs to focus on trying to ensure that businesses and citizens can connect to the Internet, and on modernising its communications and public service infrastructure. The OECD’s Recommendation on Broadband Connectivity, adopted in 2004 and revised in 2021, provides a reference for policy makers and regulatory authorities to unleash the full potential of connectivity for people, firms and the government. The following key recommendations can help Ukraine in the very short-term:

- As roads are rebuilt, Ukraine should consider laying fibre cables and connect more people even if operators may not be able to provide services for several years, including in rural areas. To this end, the regulator (NCCR) could also stimulate broadband providers to deploy more fibre deeper into the networks and gradually phase out xDSL (Digital Subscriber Line) technologies, as appropriate.
- To the extent that administrative burdens are still in place under the current state of emergency, Ukraine should reduce such burdens to help operators deploy networks more rapidly. It may also be possible to release additional spectrum on a temporary basis or approve temporary commercial spectrum transactions between providers that put unused spectrum into service.

To ensure the largest number of firms and public institutions are able to continue operations during the war, uptake of teleworking software and practices is very important. This practice can also support firms’ productivity and develop new digital business models. But to achieve this goal, complementary investments in workers’ skills and managerial practices are crucial and the government can help (e.g. grants for training, apprenticeship programmes for younger workers, cooperation with business associations/chambers of commerce).

Ukraine should focus on further enhancing its omni-channel approach and on supporting the resilience of the Government as a platform ecosystem, in order to ensure that citizens, including those displaced abroad, can access public services. Omni-channel strategies are critical for ensuring services can be accessed through any channel at any time but need to be complemented by efforts to provide face to face support to those who would otherwise be digitally excluded. This approach relies heavily on establishing models for Government as a Platform that secure access to the enabling resources and tools (including state information system and data centres where citizens’ data are stored) that are critical in a crisis.

While Ukraine has performed admirably in maintaining much of these foundations, the conflict has highlighted the need to physically protect digital government infrastructure, achieve greater integration among government organisations and improvements to data governance. Despite the challenging circumstances, these efforts will require mobilising support from partnership with the GovTech community.

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9 OECD (2019), The Path to Becoming a Data-Driven Public Sector
as well as equipping the public sector workforce with digital government user skills and incentivising public sector leaders to find ways to encourage innovation and support flexible working practices.\(^{10}\)

In the medium term (2023-25), multiple fiscal, regulatory and financial mechanisms could be put in place to support the development of the post-war digital economy. For firms, and in particular for small and medium enterprises (SMEs), finance and talent would be the two main resources needed to support the digital transition. For finance, the government of Ukraine has already introduced a tailor-made special tax regime for IT sector – which entered into force on 1 January 2022 and is known as *Diia* city tax regime.\(^{11}\) As this is a new preferential tax regime, it is still to be reviewed against the international standards, and in particular the criteria established in 1998 by the Forum on Harmful Tax Practices (FHTP) against harmful tax competition and revamped in 2015 with the Base Erosion and Profit Shifting (BEPS) Project, of which Ukraine is an Associate. Provided this tax regime is in line with the agreed international standards, it will allow a highly competitive and attractive tax regime for digital and innovative IT companies and employees working in such companies.

Any fiscal measures introduced or to be introduced by Ukraine that are in scope of the work conducted by the FHTP would need to be reviewed against the FHTP criteria and comply with them. Should any further fiscal measures be needed to stimulate investment and development of this sector, it should be analysed and considered how the existing tax incentives and special tax regimes support the development of the digital economy and whether additional fiscal measures would be needed or beneficial. For example it can be considered, whether this tailor-made tax regime should be replaced or supplemented by another measure, such as a tax credit for R&D expenditures as they have been found to be effective tools elsewhere.\(^{12}\) Any such fiscal measures should be accurately forecasted and the impact on public finance should be carefully managed, including by setting the budgetary limits for such measures, while taking into account the other features of the existing taxation framework for this sector. This could be complemented by reducing "red tape" for innovative start-ups to reduce their compliance and administrative costs, while representing a limited budgetary cost.\(^{13}\) A Credit Guarantee Fund active in the country could support the development of the digital economy for example by easing access to credit for innovative start-ups, or by financing capital R&D expenditures, or for “traditional” SMEs (outside the ITC sector) willing to invest in the uptake of digital tools. In its reconstruction effort the government could strengthen the “mainstreaming” of SME policies, ensuring that the SMEs are taken into account in the design, implementation and monitoring phases of new policies. Any effective transition to a more digitalised economy in Ukraine will be conditional also on SMEs’ increased uptake of digital tools.\(^{14}\)

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\(^{10}\) OECD (2021), *The OECD Framework for digital talent and skills in the public sector*; Gerson, D (2020), *Leadership for a high performing civil service*

\(^{11}\) On 18 December 2021, the law “On Amendments to the Tax Code of Ukraine on Stimulating the Development of the Digital Economy in Ukraine” (the “Diia City Tax Law”) was signed into law by the President of Ukraine.


To support talent, the newly introduced “Diia city tax” regime with significantly reduced payroll taxes and social contributions should facilitate the return of the highly skilled R&D personnel from abroad. It may be considered whether any additional measures could further facilitate the stimulus for the “returning brains”. The government can also consider to implement preferential VISA regimes for high-skilled workers in strategic industries. Specific subsidies to support high-quality training programmes could also support the uptake by firms, and especially SMEs, of emerging technologies, such as Artificial Intelligence/Machine Learning and Blockchain/Distributed Ledger Technologies. For the latter, a possible development of a public infrastructure or the integration in the European Blockchain Service Infrastructure (EBSI) could also be envisaged.

Ukraine has been working to address the tax challenges arising from the digitalisation of the economy through the OECD/G20 Inclusive Framework on BEPS (the Inclusive Framework). In October 2021, 137 of the Inclusive Framework’s members reached political agreement on a “Two-Pillar Solution”. Ukraine stands to benefit from Pillar One which will ensure a fairer distribution of profits and taxing rights among countries with respect to the largest MNEs (many being digital platforms) by reallocating taxing rights on more than USD 125 billion of profit to market jurisdictions each year.

Pillar One will also provide a method for streamlining the application of transfer-pricing rules taking into account the needs of low capacity countries. Pillar Two puts a floor on tax competition on corporate income tax through the introduction of a global minimum corporate tax rate at a rate of 15% that will ensure MNEs pay the minimum tax regardless of any tax planning to avoid tax or tax incentives available where they operate (the GloBE rules). In addition, a “subject to tax rule” will ensure that developing countries can protect their tax bases from certain base-eroding payments. The Inclusive Framework is working now to develop the rules and instruments to bring the Two-Pillar Solution into effect quickly. The model rules and commentary to implement the GloBE rules have already been agreed and countries around the world are moving to implement them.

Ukraine joined the political agreement in October and should continue to work within the Inclusive Framework for a swift implementation of the Two-Pillar Solution, both to support the stabilisation of the international tax architecture and because Ukraine stands to benefit. Specifically, as a large market jurisdiction, Ukraine should derive significant revenues from the reallocation of taxing rights under Pillar One. As the implementation of GloBE rules around the world is already happening, analysing the impact of the GloBE rules in the context of Ukraine’s existing incentives or any new tax measures being introduced to attract investment should also be a priority, since any revenue foregone may be taxed by other countries.

Digital technologies and data can play an important role in the post-war recovery of Ukraine. To make the most of the opportunities and to address the challenges, the OECD’s Going Digital Integrated Policy Framework identifies seven policy dimensions that allow governments – together with citizens, firms and stakeholders – to shape digital transformation to improve lives (Figure 1). One way to ensure a positive and inclusive digital future is to develop a national digital strategy to takes into account all of the different dimensions of the framework. The OECD stands ready to support Ukraine in the development of such a strategy.

17 The OECD has developed a novel methodology for using the OECD Going Digital Integrated Policy Framework to assess the comprehensiveness of national digital strategies, see: https://goingdigital.oecd.org/datakitchen/#/explorer/1/toolkit/indicator/explore/en?mainCubeId=GD_BREAKDOWNS_21&pairCubeId=&sizeCubeId=&mainIndId=NDSC&pairIndId=&sizeIndId=&mainBreakdowns=CL_GD_BREAKDOW
In the longer term (2026-2032), Ukraine could focus on building a sound data infrastructure for the measurement of the digital economy to support evidence-based policies. Ukraine could consider integrating into the European Statistical System (ESS), which aims to provide comparable indicators to support evidence-based policies. Ukraine’s integration to the ESS would facilitate the inclusion of its data in various OECD databases, including the Going Digital Toolkit which aims to help countries assess their state of digital development and formulate policies in response, the OECD Broadband Portal, or the OECD AI Policy Observatory, or the AI-Diffuse database, that collects comparable cross-country firm-based data on the adoption of AI and other digital technologies and their impact on productivity growth. Expanding the established macro-economic statistical output to include the recently developed Digital Supply-Use tables (Digital SUT) framework would provide evidence of any success in the take up of digitalisation in the Ukrainian economy. The Digital SUT framework was explicitly mentioned in the G20 Roadmap toward a Common Framework for Measuring the Digital Economy, as a means to improve the visibility of the digital transformation occurring in respective economies.


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What are the key considerations for policy makers?

- **The most urgent action (by the end of 2022)** is to ensure citizens, firms and public agencies can connect to the Internet. The destruction caused by the war should be leveraged as an opportunity to rebuild, modernise and extend the uptake/access of the communication and digital infrastructure – for example, by laying fibre cables while roads are rebuilt and put all unused spectrum to service, also to reduce current gaps across oblasts. Other immediate measures could focus on supporting teleworking practices and in easing digital access to public services, including for displaced citizens.

- **In the medium term (2023-2025)**, multiple measures can be introduced to ensure that firms in the digital economy can access finance (e.g. a Credit Guarantee Fund to support digital investments) and talents (e.g., implement preferential VISA regimes for high-skilled workers, subsidies for high-quality training programmes to increase uptake of emerging technologies as AI/ML or blockchain/DLT), including SMEs outside the IT sector. Other horizontal measures as reducing red tape for start-ups could also prove effective.

- **In the long term (2026-2032)**, Ukraine could focus on building a sound data infrastructure for the measurement of the digital economy. The inclusion in European and/or OECD databases could be envisaged, as well as an expansion of Ukraine’s established macro-economic statistical output to include the recently developed Digital Supply-Use table (Digital SUT) framework.

**Further reading**


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