

## Overview (En anglais)

Since the pandemic started in 2020, the stringent distancing measures put in place around the world in response to the spread of the Covid-19 virus have underlined the vital importance of digital connectivity infrastructure for maintaining economic exchanges and social interactions. Indeed, recent research has shown that access to broadband Internet has been a predictor of individuals' ability to comply with lockdown measures. Access to digital technologies is therefore a key determinant of the resilience of individuals, companies and economies faced with the pandemic.

While access to ICTs is a powerful lever for development in an environment characterized by high transaction and information costs and a central element of economies' resilience to the current health and economic crisis, absence of vigorous measures aimed at reducing the digital divide involves the risk of increasing economic, social and spatial inequalities among and within countries of the Francophone area. Relationship between socio-economic inequalities and digital divide, which is exacerbated by the health crisis, is therefore a source of concern for the Francophone area, and more particularly for

the least-developed Member States (LDCs).

The first part of this paper provides an overview of the situation in IOF Member States, in order to put into perspective the scale of shock that States have to cope with, and to stress the strong heterogeneity among Member countries in terms of health impact and scale of distancing and business-support measures put in place by governments. The next section deciphers the role of digital technologies in an economic environment marked by high transaction and information costs, and explains why bridging the digital divide is essential in the context of severe restrictions on movement of people and goods that characterize the pandemic. The third section analyses the consequences of the pandemic for small and medium-sized enterprises, and sheds light on the role of digital technologies in mitigating the adverse effects of the crisis. The last part offers a list of recommendations aimed at promoting a sovereign and inclusive digital ecosystem that is promoting the self-sufficiency and sustainability of digital networks in the production, collection, storage, dissemination and use of information, for the benefit of the entire population.

## Severity of the pandemic in the Francophone area and an overview of the response provided by Member States

While the health impact of Covid-19 seemed to be relatively limited in southern countries at the start of the pandemic, the implementation of lockdown policies in northern countries - which were harder-hit by the virus - as well as the appearance of new variants giving rise to a tightening of lockdown policies in the poorest countries, seriously curtailed their development prospects.

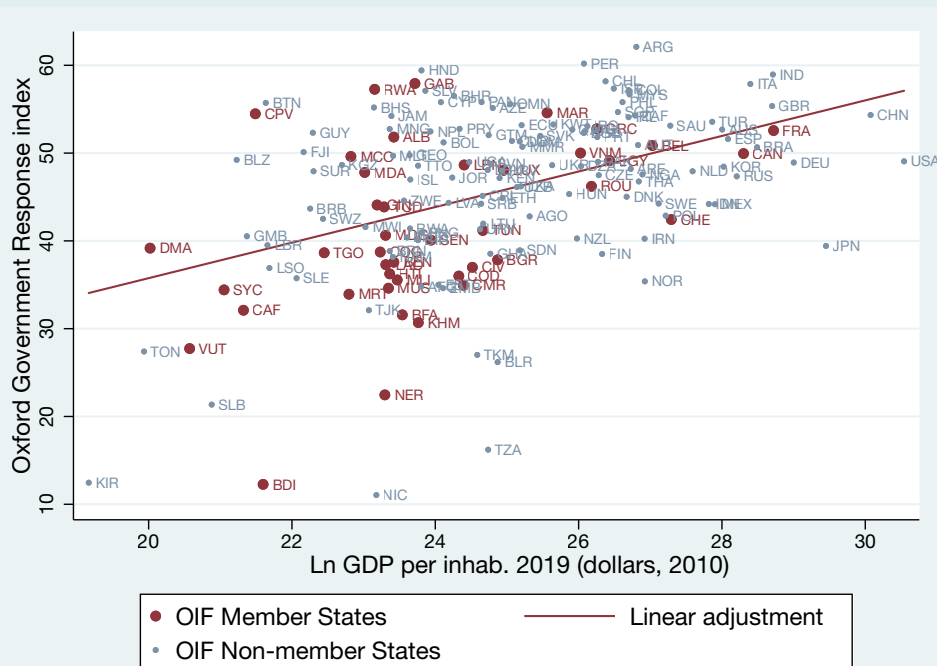
More than 40% of OIF members are in the category of Least Developed Countries, that is, countries with low per-capita income, low human capital and high structural economic vulnerability, three quarters of which are located in sub-Saharan Africa. Due to high poverty rates, low human capital, a largely informal workforce unable to use teleworking, geographical distance from global markets, a public sector with insufficient capacity, limited infrastructure coverage, poorly-diversified exports and heavy reliance on foreign trade, FDI, remittances and international aid, LDCs represent a category of countries for which the economic consequences of the pandemic and the policies it has generated are likely to be the greatest.

In the absence of vaccines, governments willing to contain the spread of the epidemic put in place a diverse range of measures that can be clustered into three categories: (i) distancing policies aimed at reducing interactions between individuals, (ii) measures aimed at strengthening the capacity of the health system to cope with the epidemic, and (iii) policies to help

the economy to absorb the impact of the recession brought about by distancing measures and to ensure its sustainability. Figure a. shows that the strength of government response correlates positively with the level of wealth. The ability of States to implement costly measures in order to protect their population from the coronavirus and its consequences is thus all the greater if those States have a high level of development.

The commercialization of vaccines at the end of 2020 and their gradual inoculation among the populations made it possible to begin to ease distancing policies, with vaccination policy becoming the main lever used by governments to counter the pandemic. This new dynamic was confirmed for countries in the North, which have a financial capacity to access to vaccines but were unable to cover all of the world's needs, whereas vaccination policies in many countries in the South were running into the financial and logistical difficulties associated with the urgency of a global vaccination campaign. These difficulties are reflected in the rate of vaccination, which tend to be lower in LDCs than in non-LDCs, and even lower in African Francophone LDCs. The economic and health consequences of the difficulties affecting the supply and distribution of vaccines are likely to become dramatic, at a time when the Delta variant seems to be spreading rapidly in African countries and the implementation of new lockdown measures could seriously compromise the future development prospects of vulnerable economies.

Figure a. Strength of government response to the pandemic and per capita GDP



Note: Sample of 171 countries. Average of the index over the period 2020. The measure of strength of the government response is based on the "Government Response Index" calculated by the University of Oxford. It increases with the intensity of the measures.

## Digital divide and Covid-19 in the Francophone area

The adoption and dissemination of digital technologies reduce the costs of storing, processing and transmitting information in all sectors of the economy. These technologies are called "general-purpose technologies", with strong network externalities, whose socio-economic impact increases with the number of users. These two characteristics make the digitalization process an essential lever of development and an element of economies' resilience to the pandemic.

### Digital technologies and resilience

While the development of digital technologies is widely recognized as a means of stimulating economic development, ICTs also have a particularly important role to play in coping with the current health crisis. For example, the dissemination of mobile technology in order to improve information transmission at a low cost in resource-limited environments such as rural areas in LDCs that are Members or Associate members of the Francophonie (Niger, Benin, Ghana) has proved to be effective in improving, inter alia, the functioning of the health-care sector (prenatal care, vaccination). Such technologies – which are easy to use and roll out – are therefore a significant public-health policy tool for coping with the pandemic.

Furthermore, in a health context of restriction on people's movements, improving access to various ICTs (mobile

telephony, radio and the Internet) is an important policy lever for maintaining decent living conditions for producers and consumers living in remote areas affected by high transaction and information costs. Improved connectivity between market players, by means of mobile phones or the Internet, broadens the spectrum of buying and selling opportunities for buyers and sellers and enables economic activity to be maintained despite the restrictions imposed on travel.

Furthermore, maintaining business activity in this way is boosted by the development of non-physical electronic payments using mobile money (MM) technology. Supporting the expansion of mobile money in developing countries that are members of the Francophonie - particularly LDCs - is therefore an effective mean of enabling sections of the population who are far from physical infrastructure and markets, but nevertheless affected by health restrictions, to continue to conduct monetary transactions and thus keep economic activity going. The use of this technology in social-assistance programmes, such as those currently being rolled out by governments and humanitarian organizations in response to the health crisis, could enable these programmes to function despite the distancing measures, while eliminating other transaction costs associated with transferring cash to the poorest sections of the population.

Using data gathered from mobile phone registers can also be useful for implementing social-protection programmes, particularly when government budget and statistical capacities are limited, and when health emergency requires a swift response targeted at the most vulnerable sections of the population. When combined with artificial-intelligence tools such as machine learning, these data can improve aid and facilitate rapid disbursement. Nevertheless, it is necessary that the use of such sensitive information be subject to strict rules on anonymity and privacy protection.

### Network externalities and digital divide

The size of the network of digital technology users is a core dimension of its cost-cutting potential. Whether it is mobile money, ordinary mobile telephony, or more complex insurance products, the number of users of those technologies will condition their impact on development and the resilience capacity of the population which is exposed to shocks such as the health crisis.

Since the size of the network of digital technology users is a key determinant of its impact on development and economies' resilience to the pandemic, prior analysis of its diffusion among the population and identification of the causes of the digital divide - that is, the various obstacles to dissemination of mobile telephone and/or Internet services among the population - are therefore necessary in order to achieve the dividends expected of digitalization.

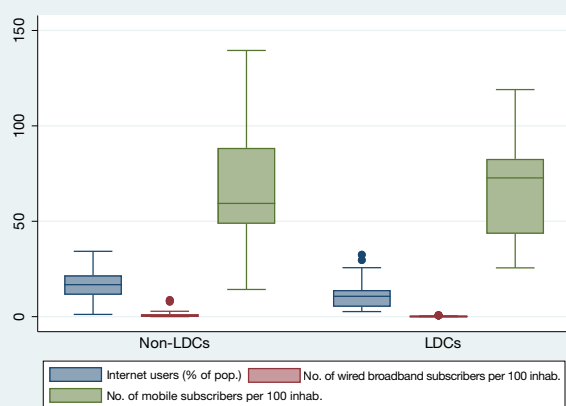
There are significant differences in access to digital technologies within and between Member States in the Francophone area. Over the period 2016-2019, Internet and wired broadband penetration rates are much higher in high-income countries (HICs), with median rates (dividing the population of the sample into two equal parts) approaching 90% of Internet users, and 40% for the number of wired broadband subscriptions, compared to 55% and 4% respectively for middle-income

countries (MICs), and 11% and less than 0.1% for low-income countries (LICs). Internet (broadband) penetration rates among LDCs are much lower than in other countries (Figure b.). This international heterogeneity of the digital divide can be explained by several factors related to the level of development, such as income, degree of urbanization, access to energy, literacy and numeracy rates of the population, as well as by specific knowledge related to certain technologies (for example, know-how to use a smartphone, tablet or computer).

### Digital divide and vulnerability to the pandemic

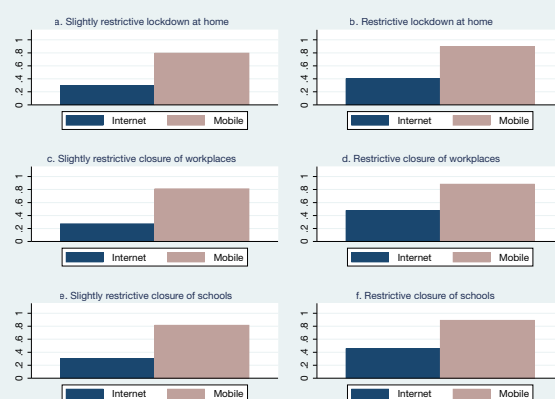
Does the crisis hit harder where the digital divide is deeper? To answer this question, the survey data on the digital divide in Francophone Africa are analysed in the light of policies put in place by governments to contain the pandemic. Figure c. compares the frequency of Internet and mobile phone usage in the African Francophone countries that have implemented restrictive or slightly restrictive distancing measures. It appears that Internet penetration is more widespread in countries that have put in place restrictive measures (lockdown at home, closure of workplaces and schools), standing at around 20% of users in the African countries that have implemented slightly restrictive measures and 40% in countries with restrictive measures in place.

**Figure b. ICT penetration in the Francophone area, LDCs and non-LDCs, 2016-2019**



Notes: 50 IOF member countries (49 countries with the broadband subscription variable).

**Figure c. Frequency of digital use (as a %) according to the stringency of government measures, Francophone African countries**



Note: Afro-Barometer survey data and Oxford Government Response Index data. Sample (Internet variable): chart a. 9 countries, 22,998 observations; chart b. 6 countries, 13,033 observations; chart c. 10 countries, 25,392 observations; chart d. 5 countries, 10,639 observations; chart e. 11 countries, 27,769 observations; chart f. 4 countries, 8,262 observations. Surveys conducted between 2014 and 2018 in 12 sub-Saharan African countries, and 3 Maghreb countries, which are members of the Francophone area.

## Access to ICTs and the private sector's resilience to the pandemic: lessons for the Francophone area

In most countries, the health crisis led to the implementation of lockdown and distancing measures that had a strong impact on economic activity. Many companies coped with these constraints by adopting new organizational methods based on digital technologies (teleworking, online sales, takeaway sales). The aim is to survey the role of digital technologies in companies' resilience and rebound capacity, based on a sample of about 15,000 small- and medium-sized enterprises in 40 high-, middle- and low-income countries.

A preliminary statistical analysis shows that almost 95% of companies in rich countries remained open, while this rate is 10 % lower in developing countries. Analysis of trends in sales, or production capacity, yields a very similar result to business that stayed open: half of the companies in developing countries, whether or not OIF Members, experienced a drop in sales of more than 30%, while the median drop in sales for companies in high-income countries was 5%. The evolution of companies' cash flow since the beginning of the crisis confirms this trend: four-fifths of companies from developing countries experienced a decrease in their cash flow, whereas this affected "only" 60% of companies in rich countries.

### The role of digital in the face of the crisis

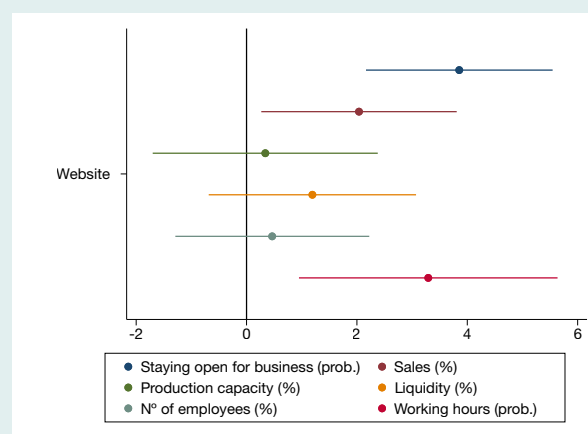
The health crisis has thus been marked by the introduction of innovations in the internal organization of companies (teleworking) or in their relationship to customers (online sales). What these changes have in common is the importance of ICT in enabling them to be implemented. Therefore it is assessed that better access and familiarity with digital technologies have enabled SMEs to better absorb the effects of the health crisis. The analysis thus distinguishes between the effect of having access to digital tools (4G coverage) and the effect of using these digital technologies (use of a websites) before the crisis, on firms' ability to resist the shock of the pandemic.

Both dimensions of digitalization – access and usage – can play a different role in companies' performances. Access is a technical obstacle that prevents companies from mobilizing digital technologies due to lack of sufficient coverage (in mobile or wired Internet, even though only mobile Internet is surveyed here, due to lack of data). If access is the main barrier, companies operating in well-covered areas should be able to easily implement digital solutions in order to cope with the crisis (such as online sales or teleworking). On the contrary, access may be insufficient if the adoption of digital solutions requires prior learning and therefore familiarity with the use of IT tools in order to be able to benefit from them during the crisis. In this case, better access is insufficient to enable SMEs to implement effective strategies based on digital technology.

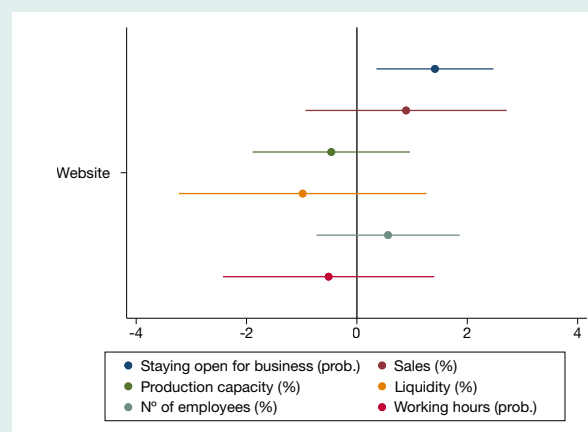
Use of the Internet prior to the crisis (a website) has a positive effect on several performance variables, including maintenance of business activity, the trend in sales and adjustment through employment levels: for example, having a website increases the probability of remaining open by 3%, sales by 2%, employment levels by 1% and reduces the propensity to resort to part-time working by 5%. When a distinction is drawn between the effect of Internet access and Internet usage as a function of countries' income level (Figure d.), the observed positive effects of Internet use are found mainly in developing countries since Internet usage before the crisis had the most significant effect on companies' performances in those countries.

**Figure d. Effect of Internet usage on companies' resilience, DC vs. HIC**

a) Developing countries



b) High-income countries

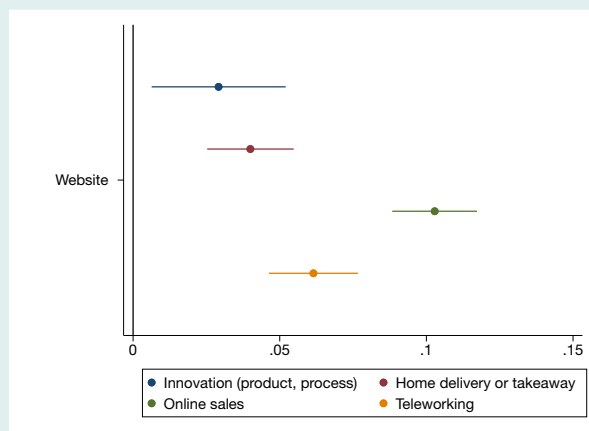


Note: The figure shows the marginal effect brought about by 4G mobile coverage (top of the figure) and by prior use of a website (bottom of the figure) on the six performance measures. Each point gives the average level of the effect and the confidence interval with a 5% risk of error. Panel a) presents the results for the developing-countries sub-sample (low- and middle-income countries) and panel b) the results for the high-income countries sub-sample. The sample comprises 15,037 companies from 25 developing countries and 15 high-income countries.

In order to better understand how the use of ICT played a role in companies' resilience capacity, two explanations are tested. First, better connectivity may encourage the implementation of adaptation strategies, such as teleworking or online sales. These new organizational methods may keep business activity going and reduce the negative impact of the crisis. Second, the Internet is a means of linking a company to its financiers, both public (public aid) and private (bank loans). The best-connected companies are able to take advantage of this digital link when faced with distancing measures.

The results, which are reproduced in Figure e. below, show that the use of digital tools before 2020 had a strong impact on the likelihood of adopting different adaptation strategies. Online sales, teleworking and, to a lesser extent, takeaway sales and innovations involve a use of the Internet to be put in place. Thus, the probability of using online sales is increased by almost 10 percentage points, which is far from negligible as only 30% of the companies in the sample resorted to this strategy. Similarly, the probability of adopting teleworking is increased by 8 percentage points (40% of companies have used this organizational method). A more in-depth analysis reveals that the companies which previously used digital tools also tend to make more intensive use of these strategies.

**Figure e. Effect of Internet access and use on the implementation of adaptation strategies**



Note: The figure shows the marginal effect brought about by 4G mobile coverage (top of the figure) and by prior use of a website (bottom of the figure) on the probability of adopting one of the four adaptation measures: innovation, takeaway sales, online sales and teleworking. Each point indicates the average level of the effect and the confidence interval with a 5% risk of error. The sample comprises 15,037 companies from 25 developing countries and 15 high-income countries.

Finally, an econometric analysis also examines the contribution made by the various adaptation strategies mentioned above to companies' ability to absorb the effects of the crisis. Among those strategies, delivery, online sales and teleworking helped to mitigate the decrease in activity. The companies that had adopted these methods were thus able to maintain their business activity, albeit at a slower pace, but this helped to mitigate the drop in sales. Furthermore, only the use of teleworking had an impact on maintaining the employment level.

On the other hand, the results do not confirm the second hypothesis. Prior use of the Internet did not make it easier to obtain public aid, whereas that usage did facilitate access to bank loans. Finally, the analysis shows that bank loans had little or no effect on companies' performance, with the exception of maintaining job levels. In other words, it is unlikely that companies having a higher Internet usage before the crisis were more resilient thanks to a bank loan channel.

### ICT user profile and digital divide

Until then, all analyses were done by checking companies' features in order to measure, as accurately as possible, the effect of using digital technologies. Nevertheless, the digital divide exists and not all companies have the same propensity to use ICTs, and therefore have the same resilience capacity. The empirical analysis does also highlight the role of a company's size and age on the probability to have a website. Companies operating in the service sector and geared to foreign markets (exporters and foreign-owned) are more likely to have a website. On the other hand, the results do not suggest a difference in Internet usage according to the experience or gender of the company's chief executive.

Finally, it should be emphasized that better access to 4G has a positive and significant - at 5% - impact on the use of digital technologies, suggesting that on the one hand, companies located in areas with poor coverage are less likely to make use of digital solutions, with an impact on their vulnerability, but that on the other hand, access to high Internet speed is not a sufficient precondition to embrace digital use. Development policies that aim to strengthen the private sector's resilience through digitalization should therefore not only focus on extending infrastructure coverage but also on emphasizing the capacity of companies to absorb digital technologies, i.e. to strengthen their ability to integrate digital technologies and use them for their own benefit.

## Building digital sovereignty of States for greater resilience in the Francophone space

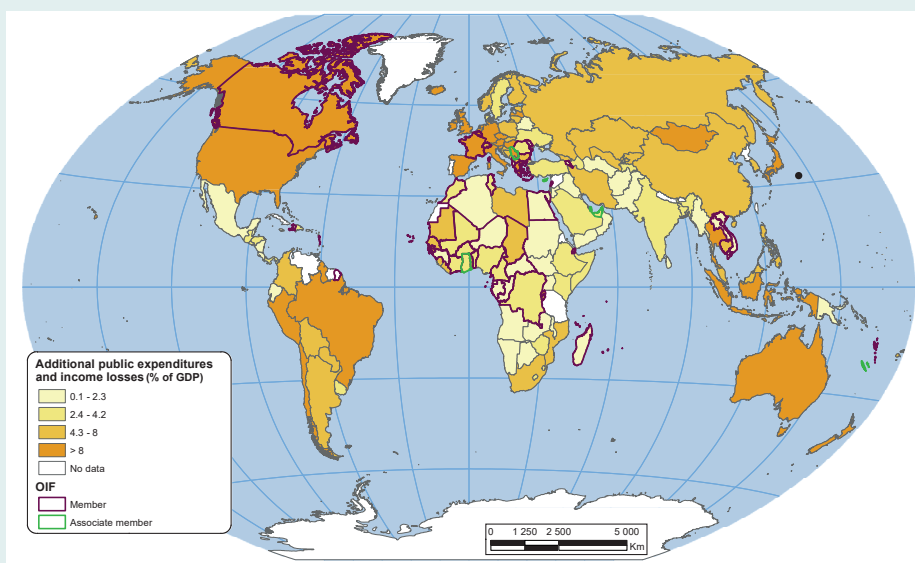
The digital divide is widening global inequalities, in the context of a pandemic in which digital technologies are playing an increasing role in social interactions and economic exchanges. The risk of increased inequalities is all the greater because the recovery plans put in place by governments are heterogeneous (Figure f.). Though massive in industrialized countries, they remain limited (less than 5% of GDP) in LDCs, particularly in the Middle East, Central Asia, South-East Asia and Sub-Saharan Africa. The risk of amplifying the digital divide is reinforced by the fact that the industrialized countries' recovery plans are partly devoted to strengthening their digital infrastructure and usage rates (such as the "France Num" section of the French recovery plan). It is therefore urgent to support the implementation of ambitious policies to accelerate the digital transition, reduce the digital divide and strengthen the digital sovereignty of States.

Moreover, although the effect of Internet usage on companies' resilience has been more pronounced in developing countries than in high-income countries (Figure d.), the pandemic probably acted as an accelerator of corporate digitalization in the industrialized countries. Indeed, many companies in those economies had to develop teleworking or online sales to keep their business activity going. In addition, application for public support often requires the use of the Internet. Finally, while recovery plans in high-income countries have emphasized this issue, companies in developing countries have been

less committed to this "digital transition" due to a lower level of participation by authorities, limited access, less use by workers, suppliers and customers, and less digitalization of public services. While there is a lack of studies that quantify the scale of these changes - and especially their sustainability - the health crisis may increase the digital divide between companies in industrialized countries and in developing countries.

The aim of proposed actions is to meet the need for a sovereign and inclusive digital ecosystem, i.e. to promote self-sufficiency and sustainability of digital ecosystems in terms of production, collection, storage, dissemination and use of digital information for the benefit of the whole population. Thus, public policy elements put forward aim to encourage the localization, protection, circulation and use of digital content. These elements refer to the need, on the one hand, to speed up the deployment of physical infrastructure that promotes data localization and self-sufficiency of the national and regional digital ecosystem, as opposed to an international infrastructure and, on the other side, the need to strengthen the non-physical digital infrastructure – regarding rules, knowledge, innovation, structures and institutions that are shaping the digital ecosystem – so that the ecosystem can fully act as a catalyst for development and contribution to the resilience against shocks.

**Figure f. Additional expenditures and revenue losses in response to the pandemic (% GDP)**



Source: IMF. This database focuses on governments' discretionary measures that complement existing automatic stabilizers. These existing stabilizers differ among countries in their scale and scope. The estimates presented here are preliminary because governments are in the process of taking additional measures or finalizing the details of individual measures. Making comparisons between economies based on these data is therefore questionable.

## **Building digital sovereignty by deploying physical infrastructure**

**Recommendation no. 1: Invest in land-based infrastructure coverage.** While many Francophone developing countries - particularly in Africa - are expanding their maritime infrastructure (submarine cables, SMCs) and reducing their digital divide by improving international connectivity, this progress often runs up against the shortages of physical land-based infrastructure – particularly in landlocked countries, without direct access to SMCs, resulting in a cost of access to the Internet that can sometimes be 30 to 40 times higher than in developed countries. Thus, in 2019, more than 80% of the population of countries in the Francophone area that did not belong to the LDC category were covered by a 4G network, compared to 40% in LDCs. Efforts to roll out land-based telecommunications infrastructure and more particularly mobile broadband, must therefore focus on LDCs, since they significantly lag behind in terms of backbone, intermediate and last-mile infrastructure coverage.

**Recommendation no. 2: Increase the number of national and regional Internet Exchange Points (IEPs) and develop data centres.** IEPs and data centres are important to improve the efficiency of telecommunication networks, embed digital content locally and minimize the reliance on international infrastructure. A low roll-out of IEPs and a reliance on data centres located abroad to access to Internet content may result in lower network efficiency and more costly access to the network, by directing traffic that could be more localized to international routes. In addition, the shortfall of this infrastructure makes countries vulnerable to failures of the international submarine cable infrastructure, which is extremely costly for their economies. Finally, externalisation of data storage and dissemination results in poor data protection due to lack of protection rules or dissemination of content in international languages only (particularly in English) with the consequence that less-educated parts of the population are less familiar with foreign languages.

**Recommendation no. 3: Bridge the digital divide by ensuring reliable and local renewable energy supply.** Energy infrastructure is involved at all levels of the telecommunication infrastructure: cable landing stations, data centres, Internet exchange points, telephone exchanges, mobile stations, network antennas and, of course, terminals from which users can access the Internet. Policies aimed at bridging the digital divide in low-income countries need to rely on a framework that is promoting a sustainable, green and inclusive energy supply. The development of sustainable, decentralized off-grid and mini-grid electrification projects to supply renewable energy to the last-mile infrastructure is a relevant solution. As regards to national or regional connectivity infrastructure, its energy needs generally requires a connection to the domestic electricity grid. That is why the roll-out of the connectivity infrastructure is dependent on the

roll-out of the energy infrastructure. Meeting the very high power requirements and stringent specifications of certain forms of infrastructure, such as data centres, is a challenge for developing countries located near the Equator. It calls for the use of innovative and environmentally-compatible solutions. In Kenya, the NBO1 data centre in Nairobi harnesses solar energy to reduce its dependence on the national grid and uses non-drinkable water to cool its facilities. In China, Microsoft is experimenting an underwater data centre on Hainan Island to facilitate infrastructure cooling. A similar experiment is being performed with the Natick project carried out by the French Naval Group and the Microsoft Company. In France, Norway, the United States and Switzerland, underground data centre projects, buried in bunkers, disused mines or in troglodytic caves, are increasing in number and have a much lower energy consumption than conventional installations thanks to the cool temperature of sub-soils.

## **The importance of non-physical infrastructure in bridging the divide and speeding up digital transition**

**Recommendation no. 4: Diversify sources of funding for physical telecommunications infrastructure.** A study commissioned by the United Nations found in 2016 that it would be necessary to invest USD 450 billion around the world to connect 1.5 billion people who do not have Internet access. For the African continent, these investment requirements were estimated at USD 62 billion for 267 million people without Internet access, while in the Asia-Pacific region, these needs corresponded to USD 314 billion for 932 million unconnected people. The great needs for land-based infrastructure in developing countries suggest that public-private partnerships should be used to meet them. However, this type of funding may lead to excessive market concentration that benefit to a limited number of - often private – players who take advantage of a balance of power, under-invest in the infrastructure promote regulations and charge tariffs unfavourable to users or competitors. This is why funding public infrastructure through taxation, in particular by broadening the tax base, remains a preferred option. Revenues from multinational corporations that provide content could be required to finance the roll-out of this public infrastructure. Such funds would make it possible to absorb the fixed costs incurred by the roll-out, to reduce the incomes derived from a natural monopoly and to offer the competitive conditions that are favourable to Internet users.

**Recommendation no. 5: Implement regulations that are user-friendly and promote network externalities.** The regulations to be promoted for the telecommunications sector have the multiple objectives of reducing the players' market clout by creating a competitive environment, encouraging the interoperability of the various networks in order to maximize their externalities, ensuring users affordable and qualitative access to the network and protecting users from misuse of their data. In this respect, it is paramount that the National

Regulatory Authority (NRA) for the telecommunications sector should be independent and have its own budget. This regulator must also ensure the interconnection and interoperability (I&I) of telecommunications networks, allowing users and operators to benefit from network externalities without any technical obstacles or additional costs. The regulatory authorities should also be aware of the importance of having an open up market competition and fair access for populations to Internet services, national and international communication, co-location and connection services, as well as transparent, non-discriminatory, cost-based tariff conditions. In addition, the issue of data governance, on which the digital ecosystem is highly dependent, is paramount. It is essential that Member States of the Francophonie equip themselves with up-to-date legal instruments, based for example on the strict European model in this area, to regulate storage, dissemination and use of data in Members' area. It is also important that these legal instruments be considered at the level of the Regional Economic Communities and/or the Francophone area, in order to satisfy personal data protection requirements, while ensuring the benefit to free, large-scale information flow and participation in the integration of markets in areas that are poorly-integrated in digital terms. Finally, it is also necessary to ensure that States do have legal means to enforce such regulation.

**Recommendation no. 6: Prioritize simple and local digital solutions and innovations.** Given the digital divide between and within countries in the Francophone area, digital use based on low-tech digital technologies can bring great benefits to the poorest sections of the population and to developing economies. In particular, technologies based on mobile uses such as transmission of market information through phone calls or text messages, or the improvement of financial inclusion by means of mobile money, can be beneficial to poorly-digitized sections of the population, who are excluded from the banking system and far from education and health infrastructure as well as agricultural markets. In addition to their inclusion, these technologies presuppose less dependence on external expertise, a reduced ecological footprint and adaptation to local energy capacities. Finally, they pave the way to a transition to the use of more complex devices with a proven impact on poverty reduction, provided that access to broadband services is granted, i.e. a network of a developed and mature telecommunication and energy infrastructure.

Such a policy requires cooperation among multiple actors in the digital ecosystem for policy and regulation: telecom users' and operators' associations, content delivery network providers, cybersecurity specialists, software providers and, of course, government agencies, regulators, development agencies and international institutions. Organizing and participating in events such as Internet governance forums is a key dimension of digital policy. It contributes to the strengthening and networking of local ecosystems and to improving regulation. Support for business incubation and acceleration programmes is also an important lever to enable the private sector, particularly SMEs and digital companies, to take advantage of digitalization and contribute to the development of digital ecosystems.

**Recommendation no. 7: Improve technology absorption and innovation capacity by strengthening digital know-how.** While reaching the last billion people not covered by the network is an ambitious objective, strengthening the capacity of populations and organizations to absorb, and innovate in, digital technologies is just as ambitious. Policymakers in Francophone countries therefore have several levers for action to achieve this objective. Firstly, it is necessary to continue "traditional" development policies, which complement the digitalization process and are aimed at improving human capital, basic digital skills, access to electricity and transport infrastructure, as well as integration of economies at regional and continental levels. Secondly, in school curricula and in-service training courses (intended for the working population) policymakers shall put emphasis on lessons centred on more complex digital skills - familiarization with communication devices (computers, smartphones, tablets), word processing, programming, etc. - and on digital professions in the areas of communication, marketing, interface use and digital creation. Sustained research and development drive - in the fields of robotics, artificial intelligence, blockchain and Big Data - are also key elements of the long-term dynamic of digital ecosystems and technology absorption capacity of its components. Such efforts may also be accompanied by an active policy of incubating innovative companies in the field of new technologies. Finally, digital know-how also depends on a country's ability to train its own elites in civil engineering and information technology through a network of specialized schools. In the long run, such a network seems to be essential if the (developing) countries in the Francophone area are to build or strengthen their digital sovereignty.