



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra



ied | inclusive economic  
development

**Swiss Agency for Development  
and Cooperation SDC**

# The Future of Work

Effects of technological change and digitalisation on the world of work and learning – implications for international cooperation.

Version 29 October 2021.



## 1. Why Future of Work?

One of the four objectives of Switzerland's International Cooperation Strategy 2021–24 is to contribute to sustainable economic growth, market development and the creation of decent jobs, taking into consideration environmental impact, education and human development, peacebuilding and governance. Globally, changes associated with the Future of Work include significant shifts in markets and value chains, some of a disruptive nature, leading to jobs disappearing in some areas and new ones being created in others, for example through digitalisation. Such changes are expected to have important implications for the SDC's mandate to promote inclusion, and more specifically for interventions related to employment, employment conditions including social protection schemes, skills requirements, and the education system on all levels. The pandemic has accelerated some of these trends (McKinsey 2021).

### 1.1 Role of this Input Paper

This input paper serves as a starting point for the forthcoming e-discussion, which continues and deepens the discussions<sup>1</sup> held by the SDC's Education and Inclusive Economic Development focal points and networks.<sup>2</sup> It is structured according to the topics that will be taken up in the e-discussion. The paper is based on several flagship reports on the implications of the future of work in low- and middle-income countries that have been released by the ILO, UNDP, UNIDO, UNESCO, OECD, the World Economic Forum and the World Bank in the past two years.

### 1.2 What is the Future of Work?

---

<sup>1</sup> <https://www.shareweb.ch/site/EI/Pages/Content/Profiles.aspx?SmartID=4535&item1=Decent%20Work>

<sup>2</sup> The SDC has already organised several exchanges on the Future of Work, e.g. SDC-internal workshops organised by the IED expert team in December 2020, the Education Global F2F organised by the EDU unit in collaboration with e+i on the topic in 2019, webinars organised by the EDU expert team with the World Bank in 2018 and with the World Economic Forum in 2021.

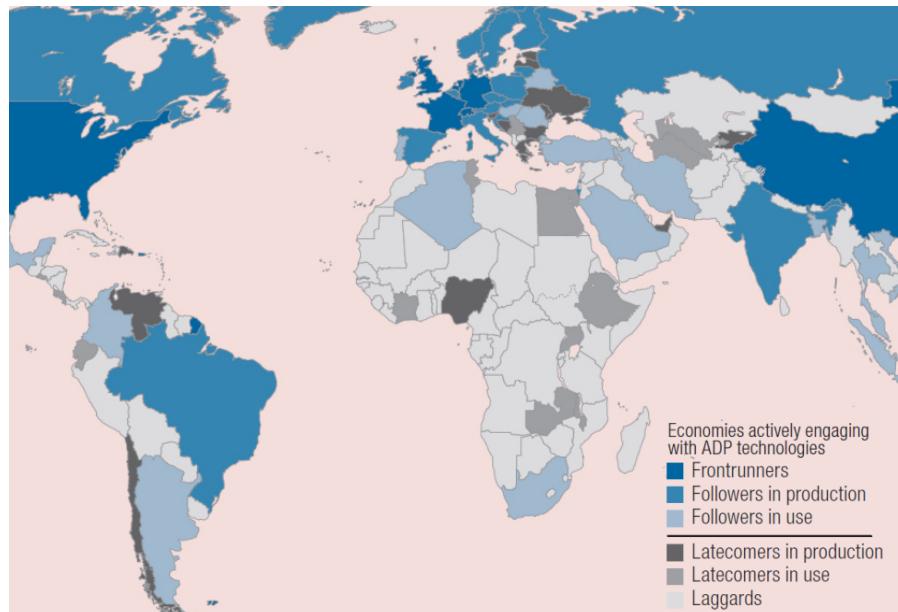


**Swiss Agency for Development  
and Cooperation SDC**

There is no set definition of the term Future of Work, and the debate is driven by diverse factors. While technological change is often central, other key drivers include climate change, demographic change and globalisation. For the SDC e-discussion, we proposed to focus on the implications of technological change and in particular of digitalisation on the world of work. The working definition used for this input paper is:

Future of Work refers primarily to the impact of digitalisation on value chains, skills and learning requirements, and employment over the next 10 to 20 years.

Digitalisation is the process of making data computer-readable and enabling a host of related technologies such as automation, robotics, big data analytics and machine learning. Uptake of these technologies differs between countries, industries and firms, mirroring differences in digital infrastructure, including electricity and connectivity, digital capability, access, and affordability.



Some SDC priority countries are followers, others latecomers or laggards in the adoption of new technologies.

Source: UNIDO 2019, cropped image. Note: ADP stands for advanced digital production.

Low- and middle-income countries are lagging in terms of widespread digitalisation



**Swiss Agency for Development  
and Cooperation SDC**

because of learning and skills gaps, missing information, incl. insufficient understanding of opportunities and risks, as well as shortage of investment capital and trade barriers. The fact that labour is abundant and cheap in many countries is further slowing adaptation.

Yet despite these impediments, new technologies will affect the markets in developing countries as well. If not through direct use, then at least through increased competition by market participants who use these technologies. For instance, even if small-scale farmers do not apply modern farming technologies themselves, they will still be affected if companies elsewhere apply such technologies and export their produce.

### **1.3 First set of e-discussion questions: Observations in your country context**

- > Are you already observing changes regarding the Future of Work and impact from digitalisation on value chains, skills and learning requirements, and employment in your context? If so, what are your observations?
- > Which opportunities and challenges do you foresee within your context in relation to the shifts associated with the Future of Work?

## **2. Implications for economies, value chains and labour markets**

### **2.1 Implications for economies**

Technology and digitalisation are transforming productivity, relative production costs and comparative advantages, and thus directly impact local, national and regional economies. However, the impact of technological innovation in a specific case depends very much on the respective country context and the position of an industry in national and global value chains. The adoption of technology results in economic gains (higher productivity and value addition). However, most developing countries lag behind in the adoption of advanced technologies (see map above) and cannot yet benefit from the related economic opportunities in the same ways. There is a risk that the technological change may result in increased divergence between developed and



**Swiss Agency for Development  
and Cooperation SDC**

developing countries. Developing countries are therefore engaging in policy responses such as investments in digital infrastructure and capabilities of the work force (as explained further in the section on learning and skills) and in those of start-ups and SMEs, to enable them to integrate and adapt the new technologies.

## **2.2 Implications for economic sectors and value chains**

It is very difficult to estimate which industries are going to prosper in which developing countries; the interlinkages of the world economy are far too complex and the implications too little known. Yet research and discussions with local and national stakeholders can certainly give insights to what changes are more and which ones less likely.

Very broadly speaking, in the *agricultural sector*, technological developments could be particularly relevant because agriculture still offers employment for large proportions of the population in Africa and Asia. Productivity in the agricultural sector is likely to increase with the introduction of precision agriculture (automation/internet of things), which may accelerate structural transformation in Africa and many countries in Asia.

In the *industrial sector*, one concern is that the model of labour-intensive manufacturing exports – which has worked well for a number of developing economies – won't be viable any longer. Yet evidence for developed countries' re-shoring of manufacturing is limited, apart from a few high-profile examples, for instance Adidas 3D-printing shoes in the US and Germany and downsizing the number of its factory workers in Vietnam. In fact, robotisation may even boost North-South trade, as technology reduces trade and logistics costs.

Finally, many segments of the *service sector* are already greatly affected by technological change or are already technology-centred. A number of developing countries have experienced rapid expansion of the digital financial services sector, which creates opportunities both within this sector but also has spill-over effects on other sectors, boosting new business models like e-commerce.



## 2.3 Implications for employment

Overall, the Future of Work debate has moved away from the prospect of mass unemployment and the elimination of whole occupations to the transformation of jobs and the necessary skillsets. Not all tasks that are automatable will necessarily be automated, see above for a discussion of the various obstacles to technological adoption. Moreover, increased automation in richer countries can enhance productivity and income, thus further increasing demand for intermediate inputs and other goods from developing countries. Overall, the evidence tends in the direction that adoption of advanced technologies leads to positive employment effects on the macro level, taking into account indirect effects (such as on suppliers).

To give an example of the quite complex effects of technological change on employment, it is reported that in Kenya the adoption of mobile payment services led to the loss of several thousand jobs at physical bank branches. At the same time, however, several tens of thousands of jobs for mobile financial services agents were created (IBRD / The World Bank 2020).

## 3. Education, learning and skills of the future

The World Economic Forum (2020) surveyed companies to identify what learning and skillsets will gain in importance. The most frequently referred-to skills were critical thinking and problem-solving. The WEF's findings are reflected in other reports. UNIDO refers to analytical skills, technology, ICT and STEM (science, technology, engineering and mathematics) *skills as skills of the future*, while UNESCO and the OECD talk about *21st century skills* covering learning and innovation skills – critical thinking, communication, collaboration, creativity – as well as digital literacy skills, career and lifelong learning skills, including flexibility, self-direction, cross-cultural interaction and productivity.

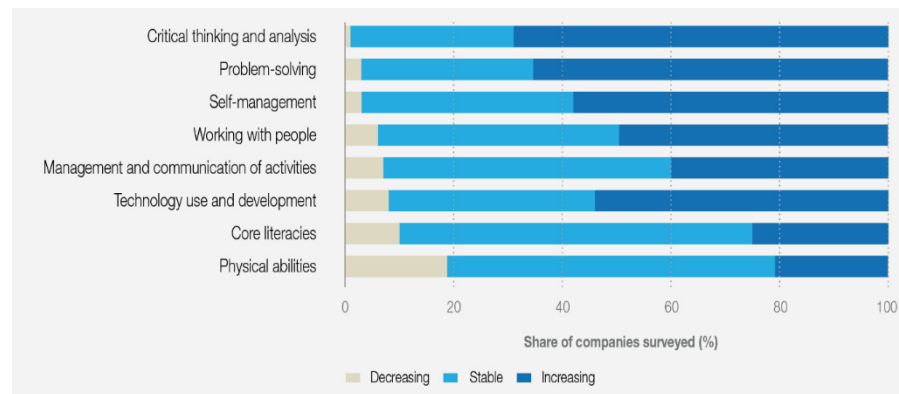
There are also dissenting views in the Future of Work debate. Some think that digital skills and learning are over-prioritised, and forecast that only uniquely human tasks remain once all other tasks have been automated (Brookings Blum Roundtable 2017, JQ 2018). In addition, there are open questions as to how these future skills can be



**Swiss Agency for Development  
and Cooperation SDC**

learned, taught and assessed. Three common threads run through the debate, however.

The first is that skills requirements will change quicker than in the past, and that education systems will have to adapt to this pace. The WEF report *‘The 7 Forces that will Change the Way you Work’* (2018) states that the half-life of learning and skills has dropped from 30 years to an average of 6 years. Reskilling and upskilling will be the ‘new normal’, requiring sound and diversified lifelong learning systems (engaging public and private actors, civil society organisations, etc.) and people equipped with the necessary learning skills.



Perceived skills and skills groups with growing demand by 2025.

Source: WEF 2020. Note: 291 responses from formal sector companies with 100+ staff. 26 countries, of which 11 are middle income countries, and 15 are high income countries.

Secondly, there is a consensus that knowledge and skills relevant for the Future of Work must be taught from an early age, starting from compulsory basic education. Developing foundational and 21st century skills during compulsory basic education is an essential aspect of preparing the young generation for the future labour market, for post-compulsory education, training and lifelong learning. The WEF (2021) notes that investing in the development of holistic skills in primary and secondary education will be critical in addressing the root causes of the worldwide skills gap, preparing the next generation of talent to engage in lifelong learning, and ensuring that future efforts in reskilling and upskilling pay off for individuals, businesses and governments.



**Swiss Agency for Development  
and Cooperation SDC**

However, both digital skills and 21st century skills are still weak or even missing elements of education in many low, middle, and even high income countries (Banga, K and te Velde, DW, 2019).

Finally, there is also a discussion about *job polarisation*, namely that the share of employment in high-skilled and low-skilled occupations has increased, while jobs requiring a medium skill level have been in decline. This phenomenon can be observed in many developing countries. The World Bank cautions, however, that in the developing world, there are many different models emerging, including some where the middle segment in the skills continuum is strengthened.

### **3.1 Second set of e-discussion questions: Implications for the work of SDC**

- > In your opinion, how does the SDC need to adapt its interventions in the context of the Future of Work? Specifically:
  - > Which implications do you foresee for the SDC's work given the changes in economies, value chains and labour markets?
  - > How will future skills requirements affect the work of the SDC in both basic education and vocational skills development?
- > What are there the learnings from the SDC's IED and Education interventions in this regard? Are there examples of good practice emerging?

## **4. Implications for *leave no one behind* (LNOB) and *decent work***

### **4.1 Leave no one behind (LNOB)**

As indicated above, the debate has moved away from the elimination of whole labour markets towards a discussion of how the learning and skills requirements are changing. As part of this new discussion, three hypotheses are directly relevant to the LNOB principle:

- > Unequal exposure to risk of job loss: Workers with tasks which can be automated are most affected. Women and younger workers often perform such tasks.

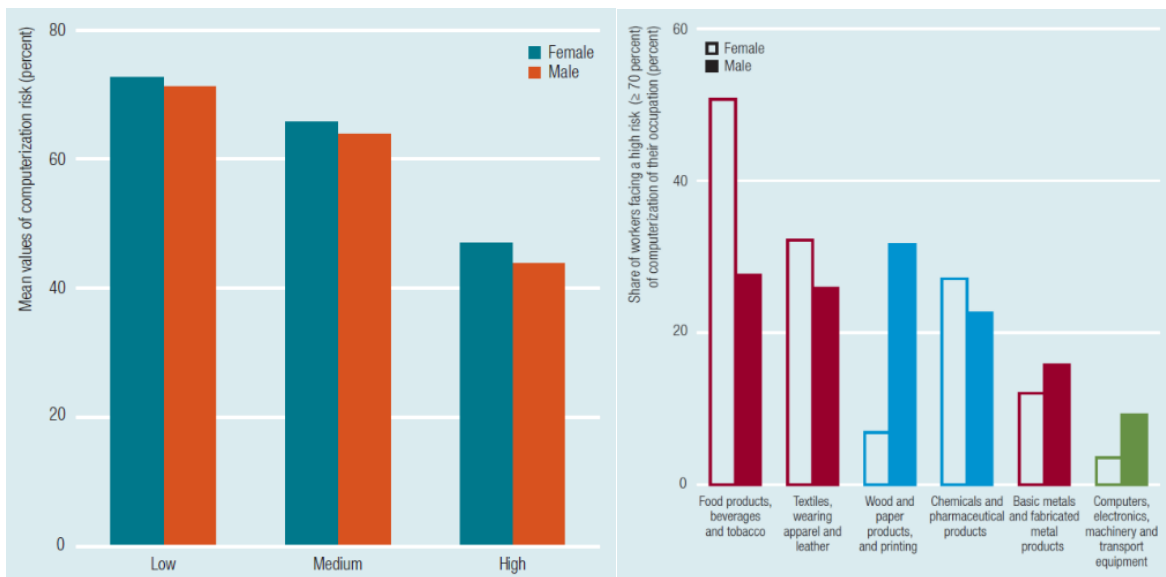




**Swiss Agency for Development  
and Cooperation SDC**

- > Unequal opportunities: The ILO (2019) writes that “Technological advances [...] will create new jobs, but those who lose their jobs in this transition may be the least equipped to seize the new opportunities.”
- > Unequal access to education, learning and skills: Youth and adults with low literacy proficiency levels and low educational levels are less likely to benefit from lifelong learning and reskilling opportunities.

The graphs below, taken from the UNIDO flagship report, show that the implications will likely differ for women and men in different industries. There will be industries in which men are more exposed to the changes, given the distribution across occupations and roles. Overall, however, the forecast is that women are in a more difficult position to deal with the changes.



Expected shifts, depending on education level (left) and gender (right)

Source: UNIDO 2019. Left: Risk of computerisation of occupations declines with formal education, but is higher for women in each of the groups. Right: Allocation of tasks within industries can lead to very different levels of exposure. The risk is particularly high for women in ‘food & beverages’, and for men in ‘wood and paper products’.



**Swiss Agency for Development  
and Cooperation SDC**

## 4.2 Decent work

The topic of [Decent Work](#)<sup>3</sup> was explored in an SDC e-discussion<sup>4</sup> in May 2021 focussing on how to best address, operationalise and monitor the concept of *decent work* in the SDC's projects and programmes. Topics brought up during the e-discussion such as health and safety, informal economy, social protection and social dialogue, and access to education are all topics which are also discussed under the header Future of Work.

The debate regarding the implications of the Future of Work for decent work has so far focused mainly on platform companies such as Amazon, Alibaba and Naspers as providers of new opportunities, such as more flexible work arrangements, or connecting small and remote businesses with larger markets. However, there are also risks, such as a dilution of worker's rights and social protection. In low and middle income countries, where most people never had such protection in the first place, "new working patterns are adding to a dilemma that predates the latest innovations" (World Bank 2019).

New tasks and work modalities will necessitate the anticipation of new health and safety topics, and identifying what social protection and social dialogue means (ILO 2019) for people losing their old jobs, accessing new ones, and the transition in between. The current pandemic has also underlined how little protection there is currently in place for many workers in low- and middle-income countries (UN DESA 2021).

## 4.3 Social protection and other policy responses

The flagship reports on the Future of Work contain various policy recommendations to mitigate risks and negative consequences of some of the anticipated changes related to LNOB and working conditions. The recommendations are addressed to governments, but can in turn be understood as areas where development partners can invest in capacity building, technical support, and policy dialogue. These

---

<sup>3</sup> The ILO identifies four strategic pillars of Decent Work: (1) job creation, (2) rights at work, (3) social protection and (4) social dialogue, with gender equality as a crosscutting objective.

<sup>4</sup> [www.shareweb.ch/site/EI/Documents/HowTo/Decent%20Work/Working\\_Paper\\_Decent%20Work\\_v2\\_final.pdf](http://www.shareweb.ch/site/EI/Documents/HowTo/Decent%20Work/Working_Paper_Decent%20Work_v2_final.pdf)



**Swiss Agency for Development  
and Cooperation SDC**

recommendations include, for instance:

- > Strengthening social dialogue (i.e. the exchange between representatives of employers, workers and governments), including 'reinvigorating the social contract'
- > Strengthening social protection schemes for all
- > Adapting the regulatory framework including governance systems for digital labour and policies to combat tax erosion
- > Removing limitations for women, creating pathways for youth, and expanding choices for older workers
- > Facilitating investments in decent work

Recommendations addressed to developing countries tend to emphasise social protection-related policies.

#### **4.4 Third set of e-discussion questions: How to address LNOB and decent work**

- > How can the SDC assist partner countries in mitigating Future of Work risks for the most vulnerable (LNOB) and risks related to decent work?
- > What role can policy dialogue play on a systemic level in this regard, what are your experiences and lessons learned?



**Swiss Agency for Development  
and Cooperation SDC**

## 5. Further reading

### 5.1 Flagship reports

ILO 2019: Global Commission on the Future of Work

UNDP 2019: Human Development Report 2019: Beyond Income, Beyond Averages, Beyond Today

UNIDO 2019: Industrial Development Report 2020: Industrializing in the Digital Age

WEF 2020: The Future of Jobs Report 2020

World Bank 2018: Learning to Realize Education's Promise

World Bank 2019: World Development Report 2019: The Changing Nature of Work

World Bank 2020: World Development Report 2020: Trading for Development in the Age of Global Value Chains

SDC 2017: The SDC's Education Strategy: Basic Education and Vocational Skills Development

### 5.2 Other reports

AfDB, ADB, EBRD, IDB 2018: The Future of Work: Regional Perspectives

Banga, K., and te Velde, D.W 2019: Preparing Developing Countries for the Future of Work: Understanding Skills-ecosystem in a Digital Era.

Brookings Blum 2016: The Future of Work in the Developing World

CEDEFOP 2020: Vocational Education and Training in Europe, 1995-2035

CGAP 2019: Fintechs and Financial Inclusion: Looking Past the Hype and Exploring their Potential

ETF 2019: The Future of Work and Skills in ETF Partner Countries



**Swiss Agency for Development  
and Cooperation SDC**

GIZ 2020: The Effects of the Digital Transformation on Technical and Vocational Education and Training and the Labour Market.

GIZ 2019: New Work and its Impacts on Vocational Education and Training in German Development Cooperation

Grimshaw 2020: International Organisations and the Future of Work: How New Technologies and Inequality Shaped the Narratives in 2019. Journal of Industrial Relations

ILO 2020: World Employment and Social Outcomes: Trends 2020

ILO / UNESCO 2020: The Digitization of TVET and Skills Systems

ILO 2019: Safety and Health at the Heart of the Future of Work

ILO 2018: The Future of Work: A literature Review

Jobs Queensland 2019: The Future of Work Literature Review

McKinsey Global Institute 2021: The Future of Work after Covid-19

OECD Employment Outlook 2019: The Future of Work

OECD 2018: The Future of Education and Skills, Education 2030

UNESCO-UNEVOC 2020: UNESCO-UNEVOC Study on the Trends Shaping the Future of TVET Teaching

UNESCO 2020: The Futures of Work: What Education Can and Can't Do

UNESCO 2021: Futures of Education, International Commission on the Futures of Education Progress Update

UN DESA 2021: A Changing World of Work: Implications for the Social Contract

WEF 2019: 4 Key Financial Services Trends in the New Age of Work

WEF 2018: The 7 Forces that will Change the Way you Work

WEF 2020: Schools of the Future: Defining New Models of Education for the Fourth Industrial Revolution

World Bank 2020: Realizing the Future of Learning: From Learning Poverty to Learning for Everyone, Everywhere



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra



ied | inclusive economic  
development

**Swiss Agency for Development  
and Cooperation SDC**

## Document details

### Date

29.10.2011

### Authors

SDC Education and IED expert teams and their  
backstopping mandates, with helpful comments from the  
SDC Poverty - Wellbeing expert team

### This document is also available at

[www.shareweb.ch/site/ei](http://www.shareweb.ch/site/ei) > e+i How to > Future of Work