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**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.

Working paper, taking into account contributions to the e-discussion of the e+i and education networks

Version 4 January 2022.



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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 E-discussion Future of Work

This paper combines the input paper which served as a starting point for the e-discussion held between 15 and 25 November 2021, with a summary of the contributions during the e-discussion itself. The e-discussion continued and deepened earlier discussions¹ held by the SDC's Education and Inclusive Economic Development focal points and networks.² The input 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

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

² 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 expert team 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.



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World Economic Forum and the World Bank in the past two years (see section 5). The e-discussion is summarized in separate sections (see sections 1.3, 3.1, and 4.4). We would like to thank all the contributors (see list of contributors in section 6), and everyone who has taken the time to participate in this knowledge exchange.

1.2 What is the Future of Work?

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 focused on the implications of technological change and in particular of digitalisation on the world of work. This working definition was used:

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

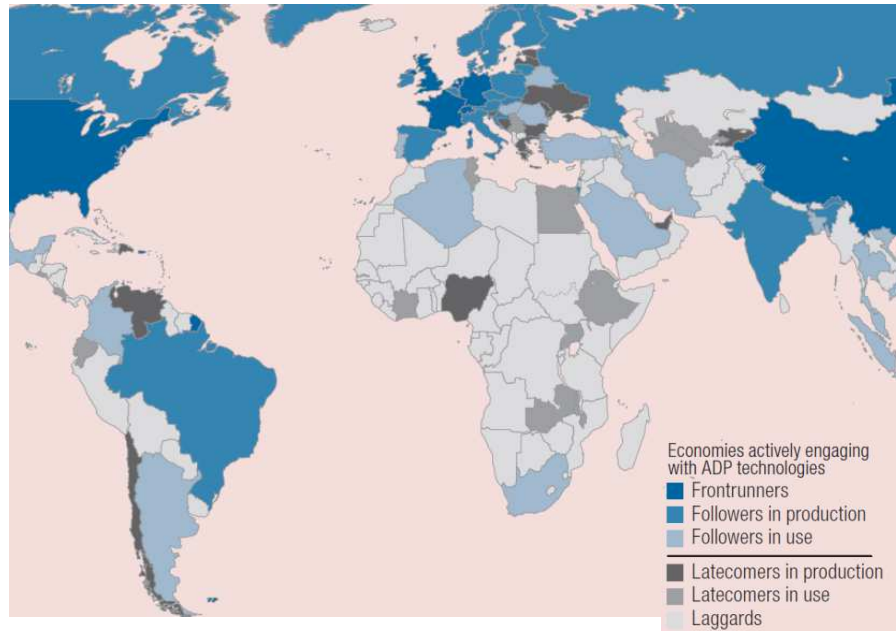
Digitalisation is the process of making data computer-readable and enabling a host of related technologies such as automation, robotics, big data analytics and machine learning. Uptake of these technologies differs between countries, industries and firms, mirroring differences in digital infrastructure,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

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



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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.

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

Do you already observe "Future of Work" changes in your context, and if so, what are your observations?

- > In most contexts discussed, some changes are already visible or at least foreseeable. Various examples of new or changing markets, jobs and skills were given; ranging from jobs in digital transformation to waste disposal in the automobile sector. In some of the countries, these changes are already high on public agendas, in others less so.
- > The Covid pandemic has been accelerating some of these changes, and will continue to do so, as companies are planning to invest into transformation and skills development. In Myanmar, the recent



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internet shutdown has shown how engrained the digital changes have become in daily lives.

- > In one contribution from West Africa, we were reminded that in some contexts, “new jobs” might relate to just a small minority of employment or livelihoods, and that modernisation in agriculture needs to relate to professionalism and sustainability, and not just technological change.

Which opportunities and challenges do you foresee within your context in relation to the shifts associated with the “Future of Work”?

- > In terms of opportunities, there is hope that new markets can be accessed, and that companies can take better part in global value chains. New occupations could have a better social image, which in turn helps attracting learners and workers. The changes are also seen as a good opportunity to involve the private sector in jointly defining requirements for education and training. And more broadly, as an opportunity to do things differently and better, to develop a common vision and to learn from each other.
- > In terms of challenges, different barriers to reap the above opportunities were mentioned, including a lack of access to digital tools and newly forming markets. Producing the required quality and consistency of products and services, as well as developing and accessing new skills could be difficult, especially for small companies. One contributor feared that digitization and mechanisation could lead to more youth unemployment and unrest in his country.
- > The uncertainty around changes makes it difficult to proactively put suitable education systems and framework conditions in place. It was also mentioned that the capacity is lacking to address current development needs; how can catching-up and responding to new needs be managed at the same time?



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 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



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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.

2.2 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).



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

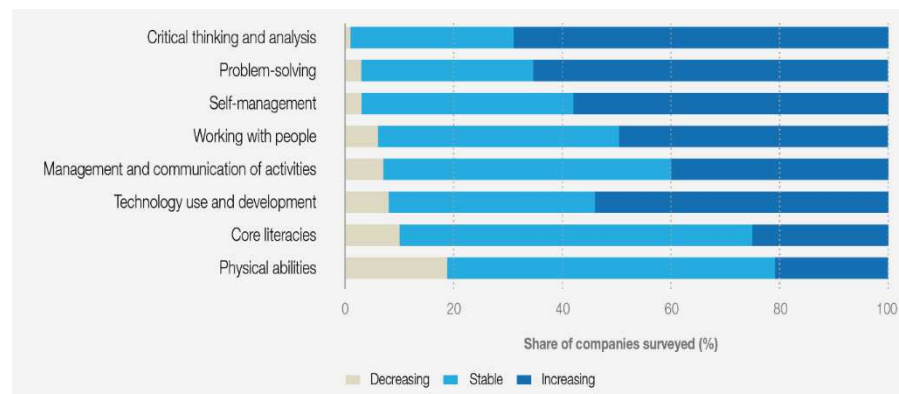
The first is that skills requirements will change quicker than in the past, and that education systems will have to adapt to this pace. The WEF report *'The 7 Forces that will Change the Way you Work'* (2018) states that the half-life of learning and skills has dropped from 30 years to an average of 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.

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.



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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).



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.

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 SDC need to adapt its interventions in the context of the “Future of Work”?

- > Several colleagues shared their view that the market systems approach, and the focus on systemic change more broadly, continues to be relevant for SDC in the context of Future of Work. It will remain important to foster resilience within systems to react quickly to the accelerated rhythm of change.
- > There were several posts emphasizing SDC’s role in strengthening analytic capacity and providing support to governments alongside private sector to understand the new realities and prepare accordingly.
- > One contributor pointed out that as development practitioners, we may also need to change the ways we plan and implement projects, moving towards more flexibility and “design thinking” in international cooperation.

Which implications do you foresee for SDC’s work in economic development, value chains and labour markets?

- > There was a call for SDC to not only focus on high-potential industries but also have a nuanced approach to quality of jobs within these and other industries by providing support to move up the value chain through technological upgrade, absorption of knowledge and innovation.
- > On this latter aspect – innovation – there were somewhat different views. While several contributors agreed that SDC should foster innovation, especially within the private sector, there was also a cautious voice reminding us that there are other Swiss actors, which are more specialized in R&D and technology transfer.

How do the future skills needs affect the work of SDC in both basic education and vocational skills development?

- > Start early! Various contributions underlined that early childhood is a critical stage to build the foundation skills that are crucial for “21st



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century skills". Linked to this, colleagues pointed out the investments needed in quality basic education, the development of soft skills, the pedagogical dimension in general, as well as the need for SDC to further pursue its reflection around access to and appropriate use of ICTs in education.

- > Another aspect that was highlighted by several contributors was the growing importance of non-formal education. While it seems clear for many contributors that SDC should increasingly promote relevant non-formal education, especially for upskilling and reskilling basic education skills and competences of youth and adults that missed out a quality formal education, this may also need a conscious reflection on what this means in terms of the definition of SDC target groups.
- > The accelerating pace makes it even more important that employers articulate their skills needs. For SDC this means a continued or even further enhanced focus on collaboration with the private sector in vocational skills development as well as an enhanced focus on the development of basic education skills.
- > One contributor pointed out that technological change could make it easier in the future to provide quality training to a larger number of learners.

What are the learnings from SDC's education as well as employment and income (e+i) interventions in regard to such adaptations? Are there emerging good practice examples?

Several contributors from the Western Balkans shared their lessons with adaptations to changes in the labour market that are linked to the Future of Work:

- > In Bosnia and Herzegovina, the focus on atypical working arrangements – primarily freelancing – proved relevant to respond to a growing trend in the labour market. Emphasis was put on systemic solutions that create favourable policy and market conditions for atypical work, increase decency of freelancing work and capacitate institutions to provide „flexicurity“.



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- > One amongst various lessons from Kosovo reminds us that there is high risk to invest in future skills that are not based on proper market analysis. The lesson is to find industry leaders in selected sectors that are ready to invest financially and share that risk.
- > As mentioned earlier, collaboration with employers is ever more important to make and keep VSD relevant. In Albania, good experience was made by fostering so-called Sectorial Skills Committees. They enable institutionalized cooperation between employers and policy actors and strengthen the private-public dialogue.

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:

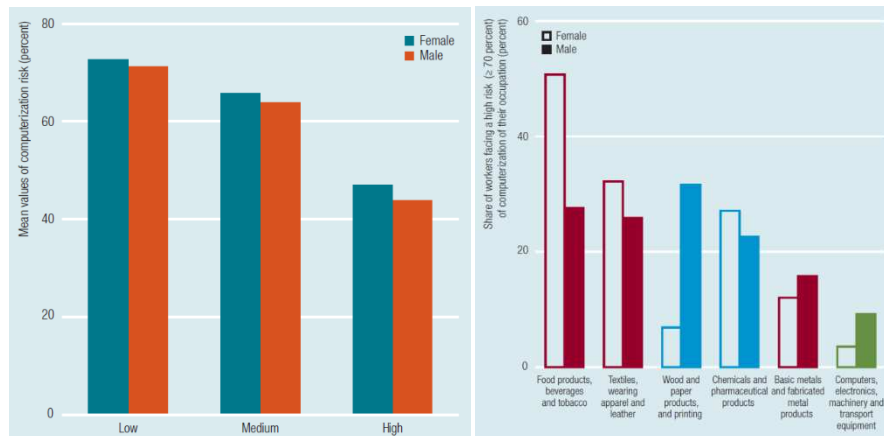
- > Unequal exposure to risk of job loss: Workers with tasks which can be automated are most affected. Women and younger workers often perform such tasks.
- > Unequal opportunities: The ILO (2019) writes that “Technological advances [...] will create new jobs, but those who lose their jobs in this transition 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. They are also more exposed to non-decent working conditions.

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



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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'.



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4.2 Decent work

The topic of [Decent Work](#)³ was explored in an SDC e-discussion⁴ 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

³ 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.

⁴ www.shareweb.ch/site/EI/Documents/HowTo/Decent%20Work/Working_Paper_Decent%20Work_v2_final.pdf



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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 (Leave No-One Behind, LNOB) and risks related to decent work?

- > Contributors pointed out that the gig economy / “Uber-isation” offers opportunities (low entry threshold, flexibility, income through different sources) and risks (lack of stability, security, and sometimes even safety). More needs to be done to ensure protection, with posts highlighting different layers and solutions: from raising awareness, extending rules and schemes to include new forms of employment, making sure regulation is actually implemented, to new forms of insurance, mixed financing models, or even the universal basic income. Furthermore, SDC may need to review the definition of target groups to include e.g., working poor.
- > Contributions further outlined how social protection and education are pre-conditions to effectively take part in the opportunities digitalisation provides.
- > The need for a systemic, holistic approach to decent work and LNOB was emphasised from different angles (nexus education-training-decent work; continuum professional, entrepreneurial, and



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economic insertion; inclusive market systems).

- > One post reflected on solutions which could help to increase the number of women in STEM jobs, namely to invest into gender equality in STEM education, build STEM lifelong training programmes, and use in-company skills development as a way to close the persistent gender divide in the STEM workforce and leadership.

What role can policy dialogue play on a systemic level in this regard, what are your experiences and lessons learned?

- > Several contributors posted that they believe that policy dialogue will play an important role in addressing the risks indicated above. SDC has experience and resources to guide such interventions, e.g., the How to note: Human Rights in Policy Dialogue.⁵
- > In this regard it was also said that social dialogue and the tripartite system (round tables employers' associations, trade unions, and government) can address the topics, but that it is important to be inclusive and integrate the voices of those unorganized or informally organized, not least from the informal sector of the economy.
- > And finally, it was pointed out that digitalisation could actually be an opportunity to gain better insights into who is left behind, and to strengthen evidence-based policy advice in general.

⁵ www.shareweb.ch/site/Conflict-and-Human-Rights/our-topics/human-rights-justice/Human_Rights_in_SDC_work



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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



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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



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Document details

Date

04.01.2022

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SDC Education and IED expert teams and their
backstopping mandates, with helpful comments from the
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This document is also available at

www.shareweb.ch/site/ei > e+i How to > Future of Work