



## Research Paper

# Employment Transitions

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## About the Author

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## About the Grand Challenge

Inequality and exclusion are among the most pressing political issues of our age. They are on the rise and the anger felt by citizens towards elites perceived to be out-of-touch constitutes a potent political force. Policymakers and the public are clamouring for a set of policy options that can arrest and reverse this trend. [The Grand Challenge on Inequality and Exclusion](#) seeks to identify practical and politically viable solutions to meet the targets on equitable and inclusive societies in the Sustainable Development Goals. Our goal is for national governments, intergovernmental bodies, multilateral organizations, and civil society groups to increase commitments and adopt solutions for equality and inclusion.

The Grand Challenge is an initiative of the Pathfinders, a multi-stakeholder partnership that brings together 36 member states, international organizations, civil society, and the private sector to accelerate delivery of the SDG targets for peace, justice and inclusion. Pathfinders is hosted at [New York University's Center on International Cooperation](#).



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# 1. Introduction

The world of work is undergoing a fundamental transformation that will impact on workers and job seekers everywhere. Among the key drivers of this change are the climate emergency, demographic shifts and technological revolutions.

The World Economic Forum (WEF) has described the current period as a fourth industrial revolution, but this is an inadequate framework for describing our time. This is a revolution, but it is not the fourth transformation of this nature, it is the first. As I have shown, this is analogous to the Age of Discovery which was associated with the Renaissance of five hundred years ago. It also is not industrial, as it has a much wider influence on the economy, and impacts both manufacturing and services, which accounts for the bulk of employment, and on agriculture, which remains the biggest employer in low-income countries.

The industrial revolution which began about 150 years ago has yet to reach all parts of the earth, as there are still millions of farmers who do not have access to machines that can assist them in ploughing their fields. Yet both the benefits and some of the costs of our current technological and economic revolution are already being felt globally, as mobile phones are common globally, and the benefits and threats which globalization offers, from viruses to vaccines, are being spread globally, even though the threat is racing far ahead of the response.

Far from heralding better lives, the employment transition which was created by the industrial revolution led to immense hardships, rapidly rising pollution and heightened levels of poverty, malnutrition and civil strife, culminating in the French and other revolutions. Today we are faced with an even more rapid, radical and wide-ranging transformation of work, which threatens to be as disrupting. This time, however, we have the means to analyze and prepare for change.

The purpose of this paper is to identify how employment is being transformed and to examine the options for a just transition, which will lead to improvements for workers around the world. This paper begins by identifying the challenge we are facing. It then defines employment transitions and lays out the weaknesses of current models of employment. Finally, it suggests policy options which tackle transitional assistance for workers, aiming to draw overall conclusions on what works in different economies.

To address the mounting pressures on the world of work requires a concerted effort on multiple fronts. One focus area needs to be the fostering of new employment sectors, in order to ensure that workers can exit from the declining sectors labor markets need to become more flexible. But flexibility is more about how workers get retrained and move from one geographic location which is losing jobs to another where employment is growing. It is not about undermining collective bargaining, minimum wage, health, and safety legislation. As Denmark and Sweden demonstrate, countries with high levels of social protection and strong safety nets also have high degrees of social mobility. Increasing both public and private investment in reskilling is required to reduce the costs on individuals and firms of the employment transition. Improving social protection and labor market regulation to include gig and hourly contractual workers is also required.



## 2. Technological Disruption

Studies suggest that automation technologies could affect as much as 1.2 billion jobs.<sup>1</sup> My Oxford University research program on the Future of Work has identified that almost half of US jobs and approximately 40 percent of European and UK jobs, and an even higher share of jobs in many developing countries could be at risk from automation and associated technologies over the coming decades.<sup>2</sup>

COVID-19 has accelerated the deployment and integration of automation, robotization and machine learning, with many aspects of production and consumption having gone online.<sup>34</sup> The COVID-19 pandemic will impact the way we work long after the health emergency has passed. As it has accelerated the employment transition, it has made addressing employment transitions more urgent.

The future of work promises innovation, higher productivity, and efficiency. Simultaneously, inequality amongst workers is likely to rise and unemployment among individuals with redundant qualifications and skills is likely to grow. As the pay between the lowest and highest paid continues to diverge, the polarization of societies and workplaces may be expected to increase.<sup>5</sup> Individuals that perform jobs which are not easily automatable will benefit from skill biased technological change. This means that the technologies, such as the robots and computing systems, will require more highly trained people to operate them, while these machines replace workers with lower levels of training and income. It is the workers doing repetitive low paid jobs in factories, call centers, and administrative back-offices that are most threatened by automation and robotics. As a result, unemployment will grow for these categories of workers and those remaining in employment will face stagnating wages. For those that can find work in professions which are not threatened, such as care or hospitality industries, the great number of similarly skilled workers looking for work will exercise a depressing impact on wages and undermine the organizing power of workers.

## 3. Defining Employment Transitions

The fact that there will be a major change in the nature of work is not contested, nor that it will impact globally. However, there is no agreement on the pace and extent of transformation even within one country or skill cluster, let alone across countries. It is easier to have clarity on the jobs being lost, than those which the WEF and others predict will emerge, but whatever estimates are made about future jobs, it is clear that they will in most cases require different skills and be in different cities or even countries to the jobs that are being lost. The implications for workers and society of this accelerated employment transition is dramatic.

Employment transitions constitute jobs gained, jobs lost and jobs changed. Jobs gained encompass job creation driven by the integration of technological advancements and investment in new sectors of employment. Jobs lost includes the displacement of work due to rapid progress in the ability of machines and artificial intelligence (AI) to automate tasks performed by humans, as well as developments, such as climate and demographic change.<sup>6</sup> Jobs changed focuses on occupations whose skill requirements are amended due to altered activities.<sup>7</sup>

As these transformations occur, policymakers are faced with the task of managing the transitions of employment in different regions and industries. Ideally, they should adopt a whole-of-government approach, although there are very few places where such joined-up systems of government function effectively.<sup>8</sup>



## 4. Pressures on Current Models of Employment

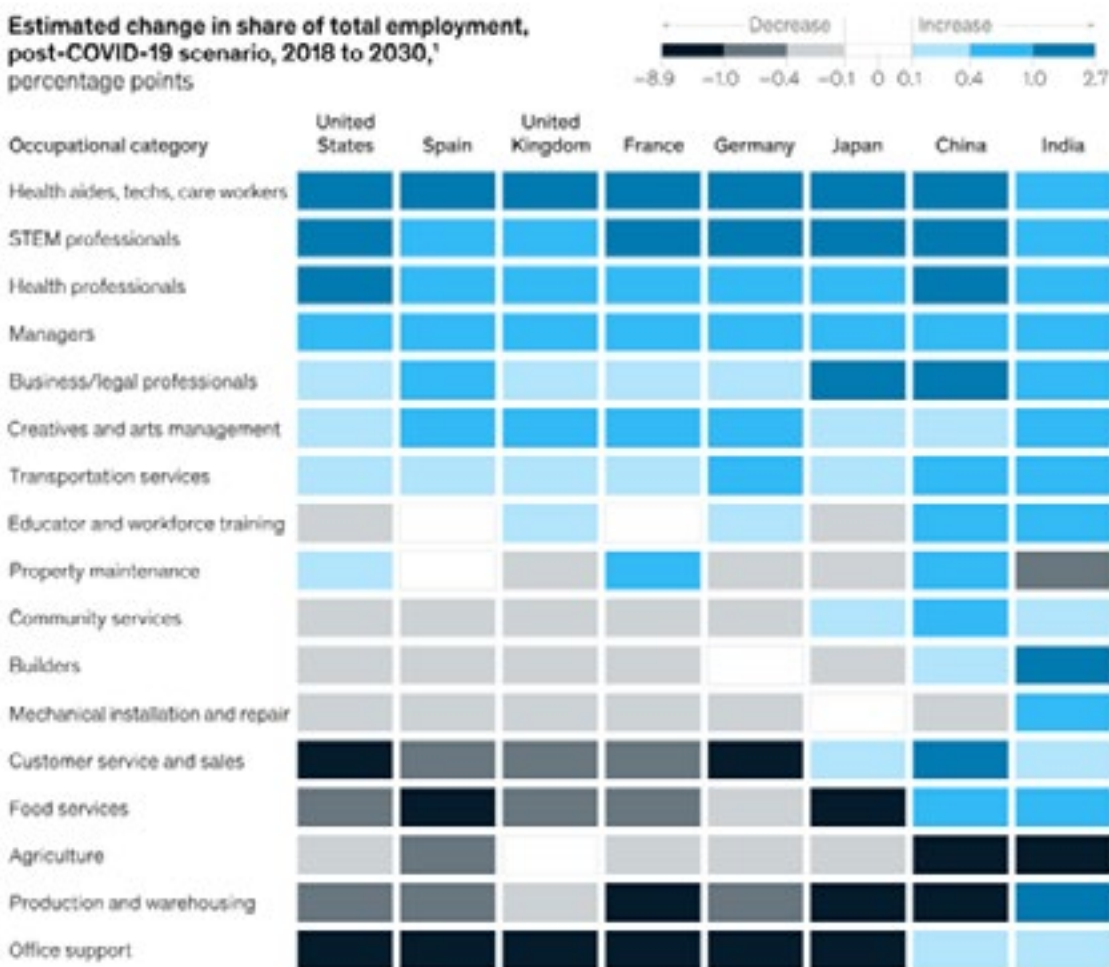
The world of work is in a state of flux. Technological progress, the digital transformation, climate change, aging populations, migration, and the shift from full-time work to less traditional, more flexible forms of employment are among the factors challenging traditional employment relations. At the same time, the growing polarization of work opportunities, stagnating wages, and rising income inequality are contributing to widespread discontent with existing employment relations and feeding into populist politics.

Debates on the future of work are not new. From the Industrial Revolution, commentators and politicians alike have warned of technological unemployment. In the 1960s, John F. Kennedy identified the maintenance of full employment at a time when automation replaced workers as the major domestic challenge.

The global spread of COVID-19 has been accelerating the integration of digital technologies in work, impacting a range of occupations (See Figure 1). Meanwhile, demographic, environmental, and economic pressures are adding to the pressures for change in farming and many other occupations.

**Figure 1: Mix of occupations may shift by 2030 in our post-pandemic world<sup>9</sup>**

**The mix of occupations may shift by 2030 in our post-COVID-19 scenario.**



<sup>1</sup>The pre-COVID-19 scenario includes the effects of eight trends: automation, rising incomes, aging populations, increased technology use, climate change, infrastructure investment, rising education levels, and marketization of unpaid work. The post-COVID-19 scenario includes all pre-COVID-19 trends as well as accelerated automation, accelerated e-commerce, increased remote work, and reduced business travel. Source: McKinsey Global Institute analysis.







**Figure 2: Employment growth and decline by occupation, % change in labor demand, midpoint automation<sup>10</sup>**

Industry	China	Germany	India	Japan	Mexico	United States of America
<b>Creatives: artists, designers, entertainers, media workers</b>	+85%	+17%	+58%	-4%	+28%	+8%
<b>Technology professionals: computer engineers, computer specialists</b>	+50%	+59%	+129%	+15%	+27%	+34%
<b>Teachers: schoolteachers, postsecondary teachers, other education professionals, education support workers</b>	+119%	+17%	+208%	-8%	+37%	+9%
<b>Managers and executives</b>	+40%	+21%	+75%	+%	+24%	+15%
<b>Builders: building engineers, architects, surveyors, construction workers, installation and repair workers, crane, and tower operators</b>	+9%	+13%	+117%	-16%	+48%	+35%
<b>Care providers: doctors, nurses, physician assistants, pharmacists, therapists, health aides and health support, childcare workers, health technicians, community, and social workers</b>	+122%	+25%	+242%	-1%	+83%	+30%
<b>Professionals: account managers, engineers, business and financial specialists, lawyers, and judges, legal-industry support staff, math specialists, scientists, and academics</b>	+26%	+20%	+46%	+2%	+32%	+11%
<b>Office support: IT workers, information and record clerks, office-support workers, financial workers, and administrative assistants</b>	+14%	-15%	+21%	-23%	+22%	-20%
<b>Predictable physical work: includes fine-equipment installation and repair workers, protective services, gaming, industry workers, dishwashers, cleaning-equipment operators, food preparation workers, and general mechanics</b>	-4%	+21%	+15%	-33%	+8%	-31%
<b>Customer interaction: food service workers, sales workers, therapeutic workers, entertainment attendants, hotel, and travel workers</b>	+36%	+11%	+46%	-13%	+15%	-1%
<b>Unpredictable physical work: special mechanics and repair, emergency first responders, material movers and loaders, machinery installation and repair workers, agricultural field workers, transportation maintenance, building and grounds cleaners</b>	+12%	-6%	+9%	-8%	+16%	+6%



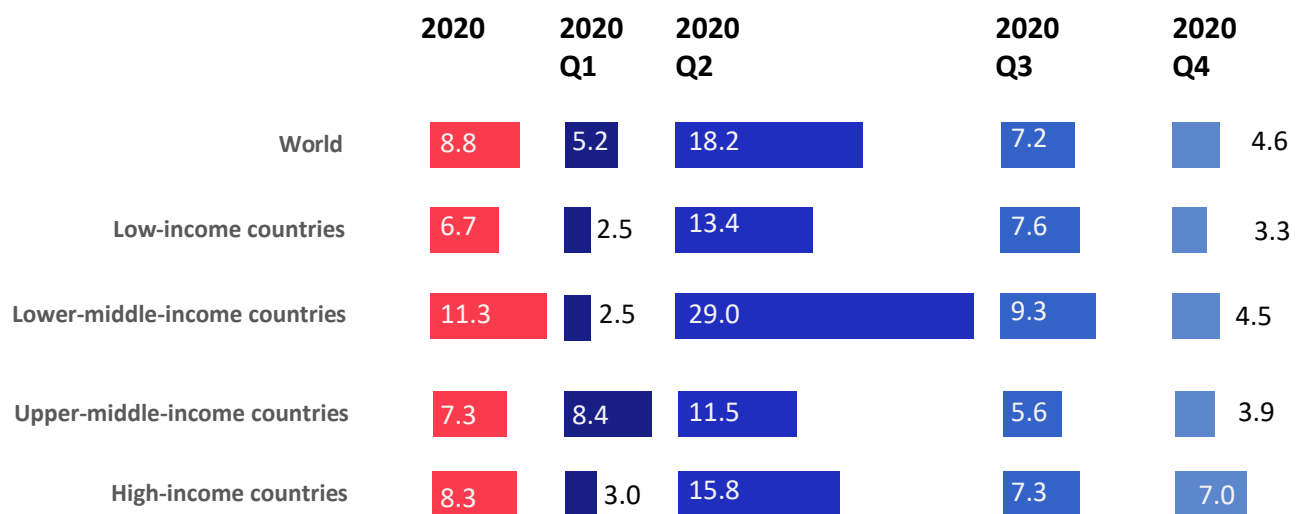
## 4.1 Technology Transformation

There is no agreement on the speed and impact of automation, artificial intelligence and robotics. For example, while my Oxford group suggest that 47 percent of existing jobs in the US are at risk of,<sup>11</sup> others estimate it will be 14 percent<sup>12</sup> or even as low as 8 percent,<sup>13</sup> The World Economic Forum meanwhile believes that ninety-seven million new jobs will be created over the period 2021-2025 and that eighty-five million will be destroyed. It argues that COVID-19 “has accelerated the arrival of the future of work.”<sup>14</sup>

The McKinsey Global Institute’s James Manyika estimates that that 60 percent of all occupations have at least 30 percent of activities that are technically automatable.<sup>15</sup> To a considerable extent the range of estimates reflects uncertainty as to the relation between the different tasks or activities which employers perform and their jobs. The optimists believe that as tasks are automated individuals will do other tasks but remain in their jobs. The pessimists believe that jobs can be unbundled and that once most of the tasks can be automated, the jobs will be lost.

During the pandemic, the pace of job loss was unprecedented, with the ILO estimating that in 2020 the equivalent of 255 million full-time jobs were lost<sup>16</sup> (See Figure 3). While the evidence from the US job market suggests some bounce back once the economy recovers and the pandemic recedes, others estimate that 42 percent of the jobs lost during the pandemic will not be recovered.<sup>17</sup>

**Figure 3: Working-hour losses, world and by income group, 2020 total and quarterly estimates (percentage)<sup>27</sup>**



Source: ILO nowcasting model (see Technical Annex 1)



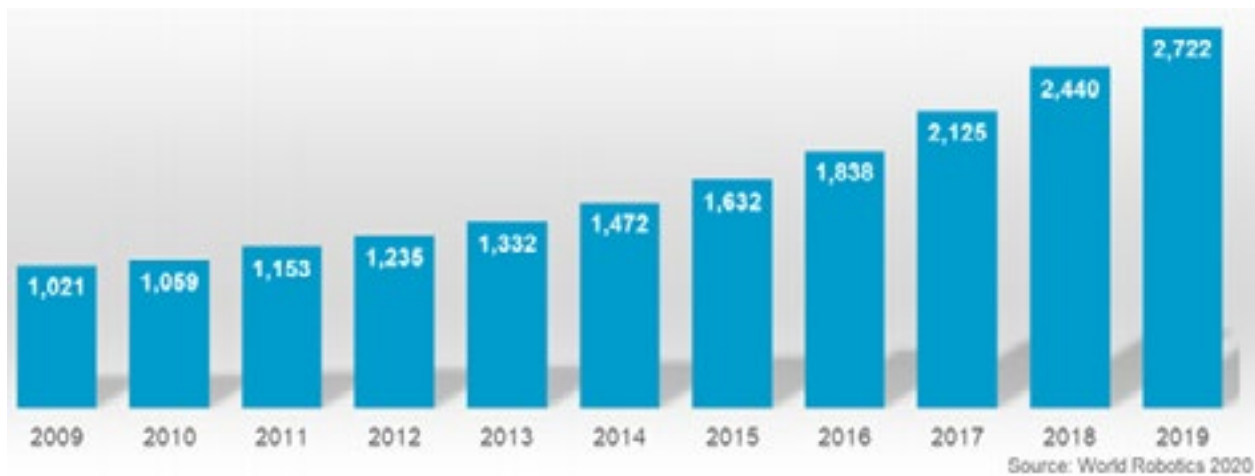


Orders of new robots have increased almost threefold in the last decade. Whereas they previously were confined to automotive and other assembly lines, they increasingly are being utilized in the hospitality and healthcare sector. Having moved beyond factory floors, projections indicate continued rapid growth (See Figure 4).<sup>18</sup> As automated process incorporates machine learning the potential uses are widening.

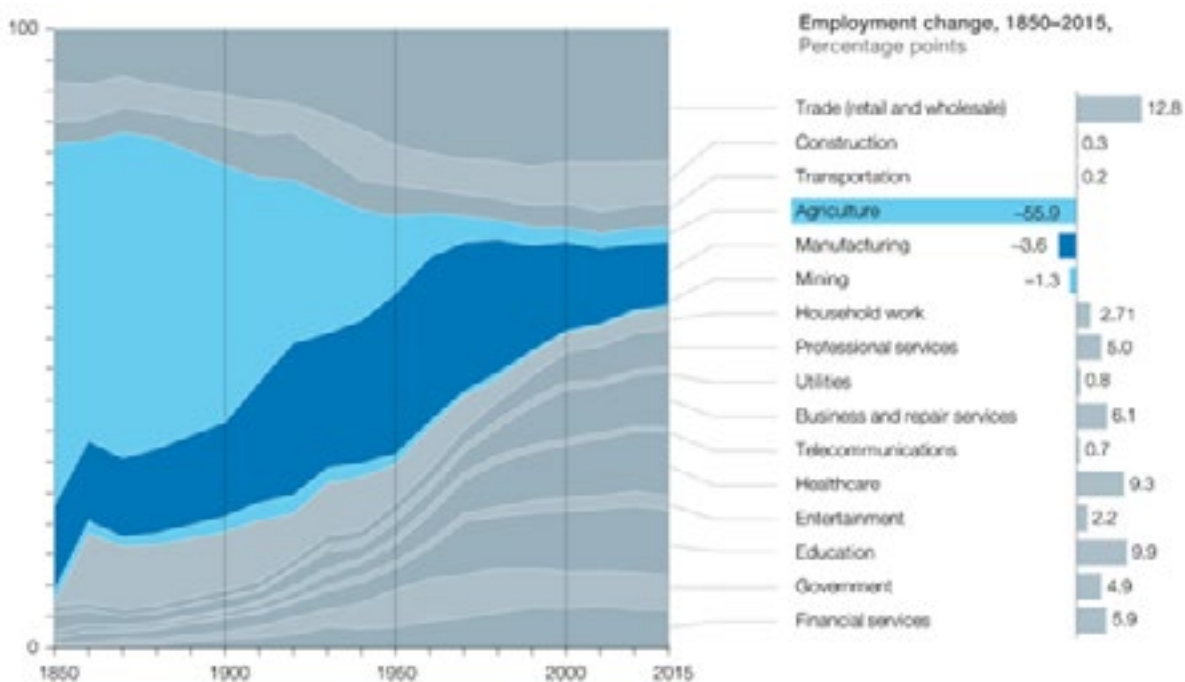
Automation and AI allow companies to employ fewer people, yielding higher output per worker. As companies automate, they share their revenues with fewer employees, allowing more profit to go to shareholders. To compare, in 1964 AT&T, at that time the most valuable company in the USA, employed 758,611 people; and in 2020 Apple, which has much higher profits, had around 137,000 employees.<sup>19</sup> Growing industry concentration and associated monopsony power, along with the weakening of collective bargaining, has contributed further to a secular decline share in labor income.<sup>20</sup>

Operating machinery in predictable environments, such as factories, agriculture and the food processing and preparation industry, as well as data collection and analysis are susceptible to digital transformation.<sup>21</sup> History suggests, labor markets, when sufficiently incentivized, adjust to changes in demand for workers (See Figure 5).

**Figure 4: Worldwide operational stock of industrial robots, thousands of units<sup>28</sup>**



**Figure 5: Share of total employment by sector in the United States, 1850-2015, percentage of jobs<sup>29</sup>**





In low- and middle-income economies, the pace of the digital transformation’s impact on employment has been relatively slow, compared to high-income countries. Reasons for this are two-fold. Firstly, emerging economies’ labor markets have a relatively large proportion of low cost, unskilled workers. Secondly, emerging economies have a productive structure centered around small and medium-sized enterprises (SMEs). Consequently, necessary resources for the uptake of digital technologies frequently remain out of reach of entrepreneurs.<sup>22</sup> Nonetheless, a number of economic studies suggest that in the medium-term, emerging economies will face a higher risk of automation because agriculture and low value-added industries make up a large share of employment, and therefore has a greater share of employment is in repetitive and easily automatable tasks.<sup>23</sup>

## 4.2 Growing Demand For Technological and Soft Skills

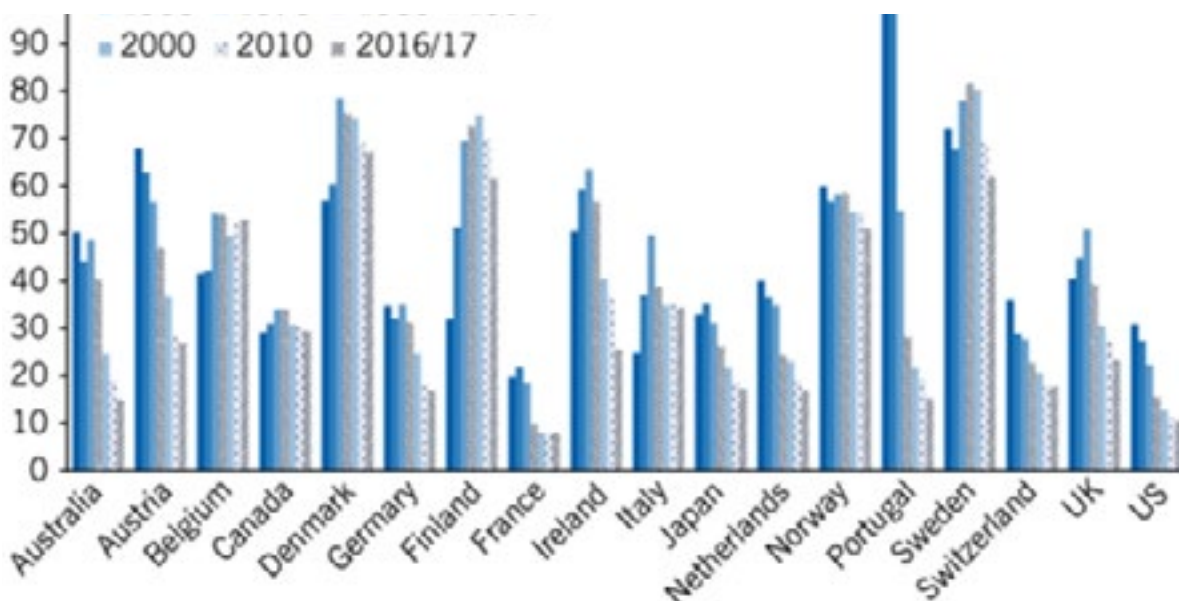
Education, training, and reskilling are critical to adapting to new technologies. Those with lower levels of education, who are often unskilled laborers, are at greater risk of being displaced by machines and less likely to have the skills or training required for new more complex tasks.<sup>24</sup> As investments in continuing education are often inadequate and unable to meet the growing demand for retraining, the risk is that those living in poorer areas, with poorer facilities and training will be provided with far less opportunities to retrain than more skilled workers.

As higher-skilled workers receive more training, disparities among workers widen. More than 50 percent of the adult population in high-income countries have no information and communication technology (ICT) skills or can only carry out a simple set of computer skills, such as browsing the internet and writing emails.<sup>25</sup> In low-income countries where the majority of employed women are in agriculture, transitioning into new sectors will be particularly challenging.<sup>26</sup> Improved soft and STEM skills are required.

In all continents except Africa, the aging of the workforce and greater longevity means that it is likely that people need to work longer. This too is an employment transition which requires a culture of adaptability and lifelong learning. Digital learning tools and the internet offer the potential for this, but much greater investment and planning is required to realize this potential.

To ensure that the benefits of machine learning, robotics, and automation are harnessed and distributed equitably across society, governments and businesses need to work together. However, with many companies not providing employee training and reskilling, and a decreasing share of workers being represented by unions (See Figure 6), the responsibility for reducing the burden on individuals and society of the employment transition increasingly rests with governments.

Figure 6: Union density (%) in selected countries, 1970-2016/17<sup>30</sup>



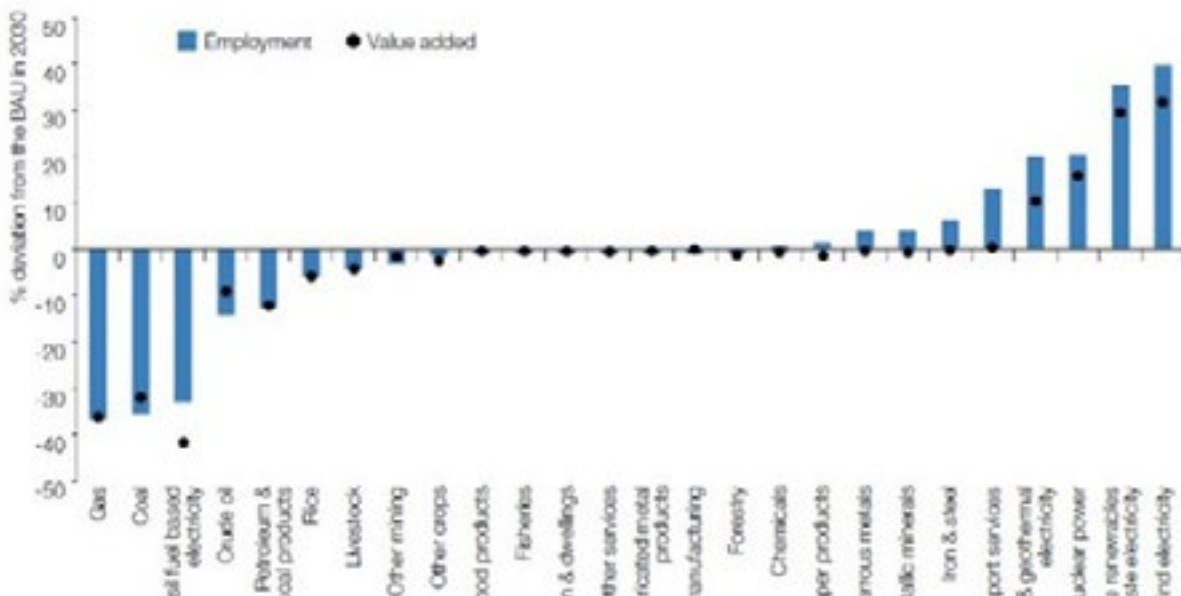


### 4.3 Climate Change

Climate change and the transition towards a low-carbon economy is another key dimension of the employment transition. While jobs in industries involving carbon-intensive emissions will be lost, new ones addressing greener energy production and conservation will be created (See Figure 7) (Organization for Economic Co-operation and Development, 2019). Rising temperatures and changing weather patterns will render entire regions unproductive. Climate induced migration already is contributing to the increase in precarious and informal work in many developing countries, as individuals are forced off fragile lands and to see often informal sector work in urban areas.

Vulnerable workers, including women, migrants, ethnic minorities, persons with disabilities, and other disadvantaged groups, are particularly affected by the risks and hazards linked to environmental degradation. In the G20 countries, it is estimated that 34 percent of jobs that rely on natural processes, such as air and water purification, soil renewal, fertilization, pollination, and pest control directly rely on ecosystem services.<sup>31</sup> Threats to the ecosystem directly threaten agricultural, fisheries, forestry, and tourism jobs. But numerous other sectors are impacted directly, as the loss of income and livelihood ripples through economies. In addition, as climate change renders places unlivable, for example due to excess flooding or drought, entire local economies are likely to be destroyed, and with them all the associated jobs. While in places that can afford it, work will retreat to within air-conditioned offices, factories, and homes, many jobs such as construction and agriculture are outside, and in many places air-conditioning is unaffordable or power unavailable or unreliable.

Figure 7: Sectoral changes in employment with ambitious climate change mitigation policies in OECD countries. Deviation from the business-as-usual (BAU) scenario in 2030 (%)<sup>35</sup>





## 4.4 COVID-19 Pandemic

The COVID-19 pandemic has caused a global employment crisis, putting hundreds of millions of workers out of work and forcing millions of essential workers to expose themselves and their families to grave, and at times fatal health risks. Its full extent and impact on people, businesses, and governments is yet to be determined as the recession continues to evolve.<sup>32</sup>

The pandemic has been associated with the accelerated automation of work, with professional services and many office functions being done from home (See Figure 8). Some sectors, notably those associated with online delivery, home entertainment, gardening, pets, and those directly associated with the pandemic have seen demand for work increase, while those working in the hospitality, tourism, entertainment, airlines, and other sectors which have experienced the brunt of the lockdown have seen demand for employment collapse.

The abrupt imposition of lockdowns and changing rules regarding travel and work has seen millions of workers being laid off without sufficient time to reorient themselves. This has revealed and exacerbated structural inequalities in the labor market. Women, ethnic minorities, the self-employed, informal, migrant and gig workers have been among the hardest hit.<sup>33</sup> Young people are amongst those disproportionately affected by the pandemic, with the loss of employment and internship opportunities compounding the hardships they have experienced due to severe constraints on their education and social lives.

Initial labor market experience significantly impacts one’s career trajectory. The lack of employment opportunities, brought about by the COVID-19 pandemic, are likely to have long-term effects on future opportunities and earnings. As young workers, below age 25, experienced a higher proportion of job losses, the danger of permanent scarring of this young generation needs to be overcome through concerted action (See Figure 9).<sup>34</sup>

**Figure 8: Executives say they have accelerated the deployment of digitization and automation during the COVID-19 pandemic. Since the start of the COVID-10 outbreak, how has your company’s business area’s adoption of the following technology trends changed? % of respondents (n=800)<sup>36</sup>**

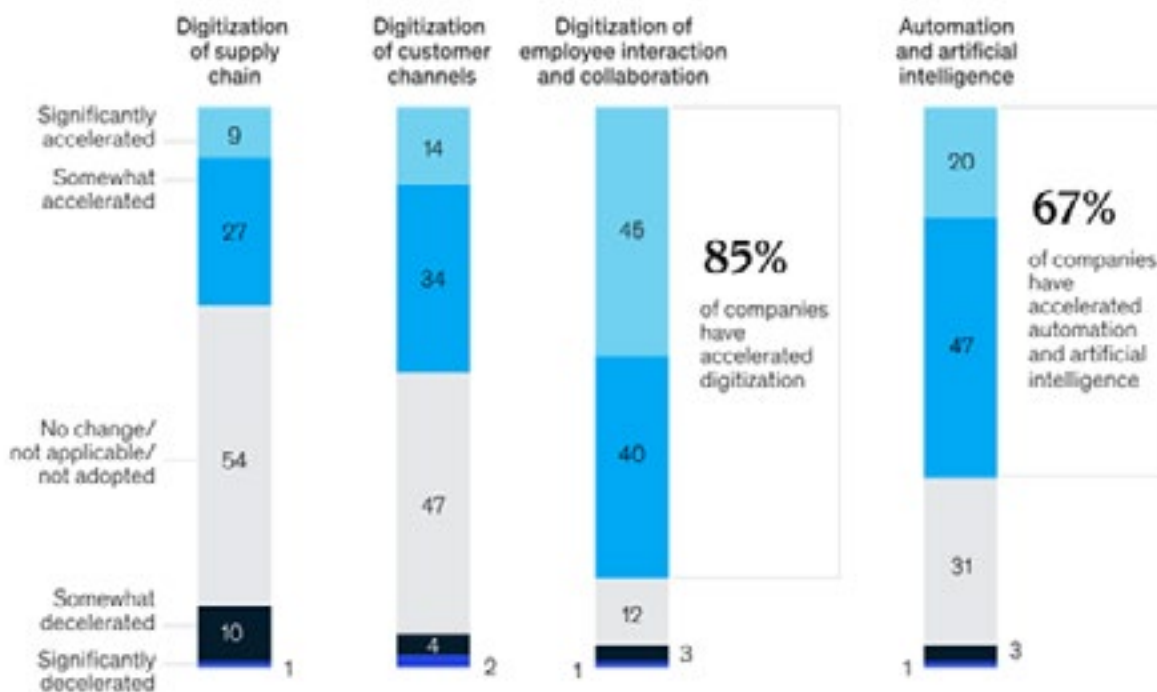
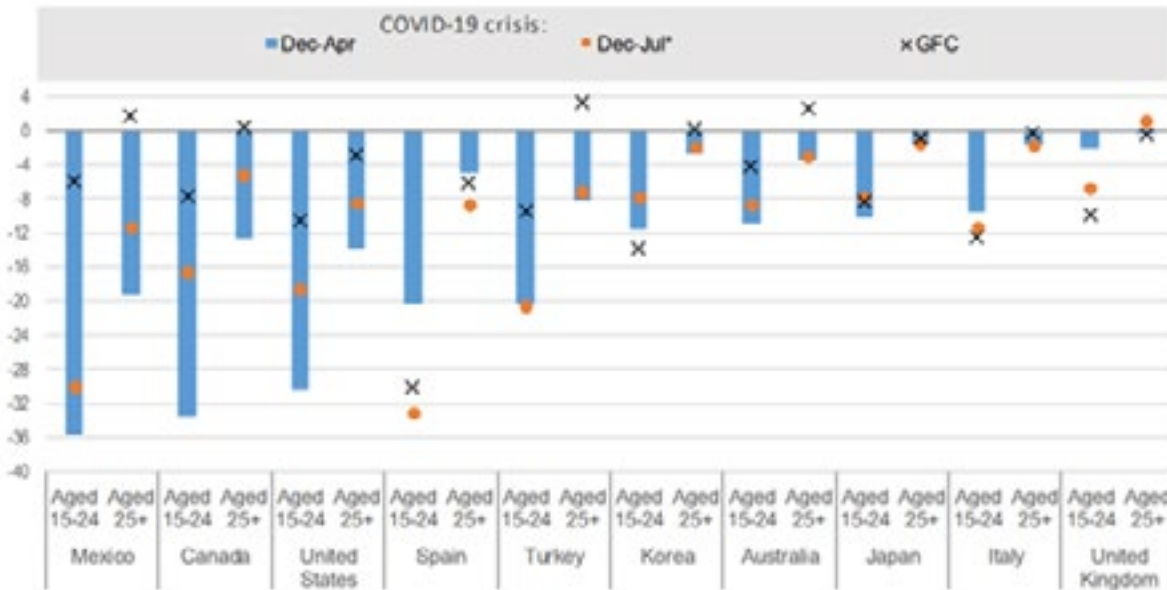




Figure 9: Change in employment from peak to trough during the COVID-19 crisis and the Global Financial Crisis (GFC) in %<sup>41</sup>



### 4.5 Demographic Change

The labor market’s transformation is associated with rapid population ageing in many advanced and some emerging economies (See Figure 10). By 2030, there will be at least 300 million more people aged 65 years and older, as compared to in 2014. Spending patterns and demand for goods and services will shift with age. Countries with largely ageing populations will likely see a decreased demand of durable goods while a higher share of incomes is allocated to healthcare and related services. This is expected to create up to eighty-five million new jobs globally in the healthcare and old age care sector.<sup>37</sup> At the same time, the ageing of populations is anticipated to further accelerate the technological transformation.<sup>38</sup> Countries with the most rapidly ageing population, such as Japan and South Korea, have been among the fastest to adopt industrial robots.<sup>39</sup>

As life expectancy increases, social security and pensions systems will be put under increasing strain, unless retirement ages increase too. The average age of labor-market exit for men in OECD countries is 63.5 and 62.3 for women. Increasing this by at least a year a decade is necessary if governments are to be able to sustain support for an increasingly elderly population, while other measures, such as a greater tolerance of migration, as well as greater reliance on automation and remote services is also likely to be necessary.<sup>40</sup>

Figure 10: Number of persons aged 65 years or over by geographic region, 2019 and 2050<sup>42</sup>

Region	# of persons aged 65 or over in 2019 (millions)	# of persons aged 65 or over in 2050(millions)	Percentage change between 2019 & 2050
World	702.9	1548.9	702.9
Sub-Saharan Africa	31.9	101.4	31.9
Northern Africa & Western Africa	29.4	95.8	29.4
Central & Southern Asia	119.0	328.1	119.0
Eastern & South-Eastern Asia	260.6	572.5	260.6
Latin America & the Caribbean	56.24	144.6	56.24
Australia & New Zealand	4.8	8.8	4.8
Oceania, excluding Australia & New Zealand	.5	1.5	.5
Europe & Northern America	200.4	296.2	200.4



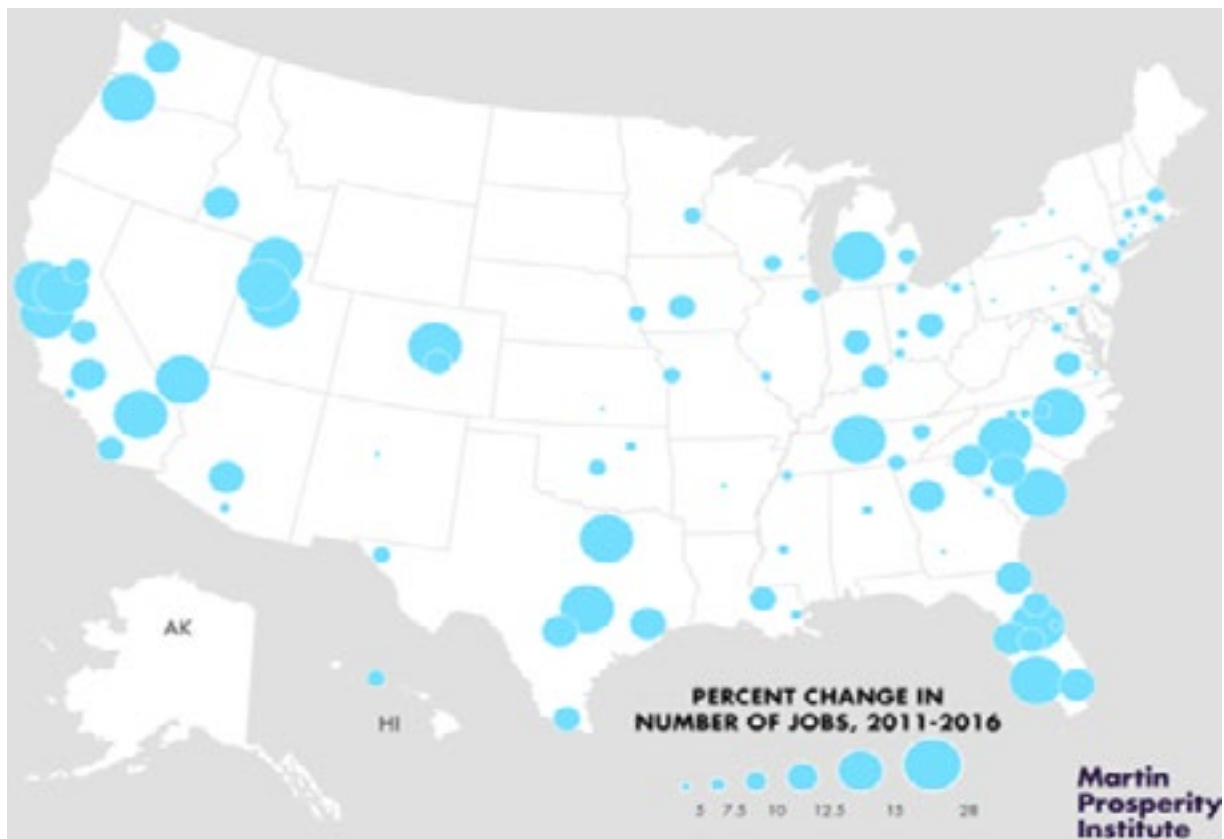


## 5. Geography of Jobs

Geographical inequalities between different areas within countries have been growing. Geographical disparities are particularly stark between rural and urban areas. As urban areas attract more knowledge-intensive firms with higher job prospects, a virtuous circle of higher incomes and greater opportunity is created. Both innovation and the dynamism of firms is considerably higher in urban areas, generating more new employment opportunities, which more than makes up for those being lost in the process of creative destruction.<sup>43</sup>

The greatest employment challenge is in cities and regions where job prospects are declining due to their reliance on industries and associated local ecosystems which rely on dying industries. In parts of the United States' Midwest and the 'rust belts' elsewhere there is a dearth of employment opportunities and as the routine labor-intensive jobs decline, so too do all the associated small businesses and retail outlets and the value of homes. Between 2000 and 2010, manufacturing employment across six Great Lakes states dropped by 35 percent, causing a loss of 1.6 million jobs.<sup>44</sup> Dwindling social safety nets in this region have contributed to what Angus Deaton, the Nobel Prize economist has characterized as the 'diseases of despair.'<sup>45</sup> This in turn is associated with a rise in populism, coupled with feelings of dissatisfaction with economic inequality, trade and immigration.<sup>46</sup> Figure 11 demonstrates that extent of the regional disparity of job creation in the US, with the metropolitan areas, clustered on the coasts, having seen the highest rates of overall job growth.

**Figure 11: Geography of job growth in the United States of America's 100 largest metropolitan areas between 2011 and 2016.**



Source: Based on data from Josh Wright, mapped by Taylor Blake of the Martin Prosperity Institute<sup>47</sup>





## 6. Case Studies of Successful Adaptation Studies

This section highlights policies in developing and developed countries which aim to ensure an equitable future of work.

### 6.1 Sweden's Active Labor Market

Sweden is characterized as one of the EU’s economies with the most equal wage distribution and highest rates of employment. It is frequently among the world’s best performing economies due to its continued labor market reforms, high productivity levels in manufacturing, stable macroeconomic conditions, as well as strong human capital and innovation capacity.<sup>48</sup>

Reforms of Sweden’s labor market in the 1990s and 2000s pursued three overarching objectives:

first, increasing labor market participation, shifting the policy focus from passive to active labor market activities;<sup>49</sup> second, protecting the unemployed; and third, creating incentives for the unemployed to find a job.<sup>50</sup> In order to achieve its targets, the Swedish government reduced unemployment benefits, introduced a two-tier benefit system, raised membership fees for unemployment insurance, and introduced work placement as well as adult education training programs (See Figure 12).<sup>51</sup> Consequently, job searches and the placement rate for the unemployed significantly increased (See Figure 13).<sup>52</sup>

More recently, in response to the COVID-19 pandemic, the Swedish government introduced an extensive crisis package to prevent soaring unemployment, focusing on reskilling.<sup>53</sup> In addition, Sweden’s central government assumed the entire cost of sick pay for employees and self-employed persons for the most part of 2020. To date, health care professionals who have been infected by COVID-19 whilst at work are compensated for their loss of income and other costs. In order to help firms adjust to working times and preserve jobs, employers’ wage costs can be reduced by 70 percent and working hours can be reduced by up to 80 percent, while workers retain approximately 90 percent of their original wage, with the central government covering most of the costs. Furthermore, the state agency Almi Foeretagspartner AB, has increased its lending to Swedish SMEs in the belief that small firms have the greatest growth potential and would be at risk of closing due to the pandemic.<sup>54</sup>

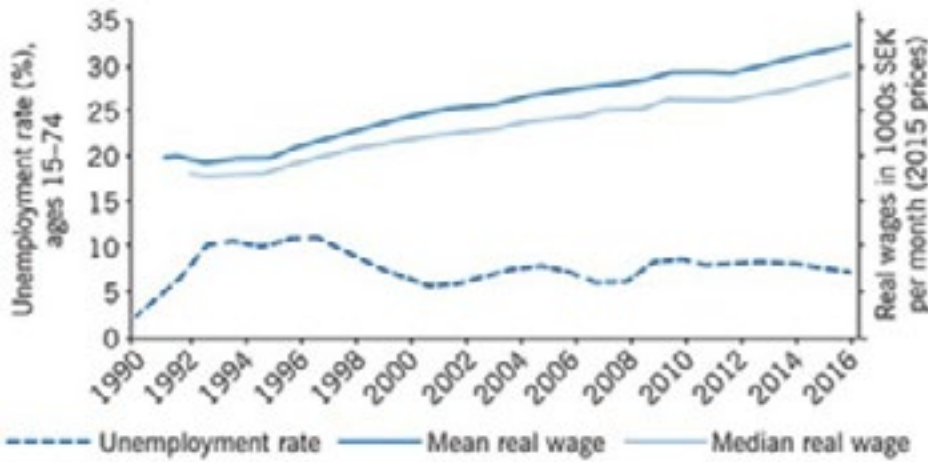
Figure 12: Public expenditure on active labor market policies, % of GDP in 2016<sup>55</sup>







Figure 13: Unemployment rate and real monthly wages<sup>56</sup>



## 6.2 Rwanda's 2050 Vision

Over the past decade, Rwanda has been the tenth fastest growing economy globally, having focused on investing in infrastructure, digital literacy and expanding knowledge-intensive employment sectors, such as green energy.<sup>57</sup> It aims to become an upper middle income-country by 2035, by continuing to create jobs, encourage the expansion of local companies, and transition its workforce from the primary sector to services in information technology (IT), finance and light manufacturing.<sup>58</sup>

Innovation, integration, agglomeration, and competition are the drivers of its recently announced 2050 strategy for high growth. The Government of Rwanda has identified six priority areas as drivers of growth: 1) human capital development; 2) export dynamism and regional integration; 3) well-managed urbanization; 4) competitive domestic enterprises; 5) agricultural modernization; and 6) capable and accountable public institutions (See Figure 14).

Whilst it is too early to assess Rwanda’s 2050 vision, observing how Paul Kagame and his cabinet tackle the challenge of achieving higher investment rates will provide potential lessons learnt for other emerging economies. At present, Rwanda has an investment rate of 26 percent. According to the World Bank, double-digit growth rates require investments of around 40 percent. While external assistance in the form of international aid and foreign investment can contribute, domestic mobilization is also vital, which implies a dynamic private sector is necessary.<sup>59</sup>





Figure 14: Future drivers of Rwanda’s growth: Innovation, integration, agglomeration, and competition<sup>60</sup>



### 6.3 South Korea's New Deal

The South Korean government initiated its New Deal in 2020, consisting of a Green New Deal, Digital New Deal, and Social Safety Net provisions. The aim is to achieve its threefold vision to transition in three key areas: fast follower to a first-mover economy; carbon-dependent to a low-carbon economy; and socially-divided to an inclusive society. The Korean New Deal encompasses 28 key projects (See Figure 15) ranging from smart healthcare to the green transition of infrastructure and the energy sector, as well as green industry innovation.<sup>61</sup>

Financial investments can be broken down as follows (See Figure 15):

1. **Digital New Deal:** With the aim to accelerate the transition towards a digital economy, USD 51 billion will be invested focusing on the integration of data, network, and AI (DNA), and aim to create 903,000 jobs.
2. **Green New Deal:** To strengthen climate action and realize a green economy, investments comprising USD 65 billion will focus on green infrastructures, renewable energy, green industry and aim to create 339,000 jobs.
3. **Stronger Safety Net:** To respond to structural transformations, such as ageing populations, and the recession caused by the COVID-19 pandemic, employment and social safety nets will be strengthened and aim to create 339,000 jobs with investments of USD 25 billion in capacity building in digital and green sectors.

In summary, the New Deal includes plans to invest USD 144 billion and create 1,901,000 jobs by 2025 (See Figure 16).<sup>62</sup>



Figure 15: Korean New Deal – List of Projects<sup>63</sup>

	Focus Areas	Projects
<b>Digital New Deal</b>	1. Stronger integration of DNA throughout the economy	1) Collecting, disclosing, and utilizing data in areas closely related to people’s lives
		2) Expanding the integration of 5G and AI into industries
		3) Making a smart government that utilizes 5G and AI
		4) Advancing cybersecurity
	2. Digitalization of education infrastructure	5) Creating technology-based education infrastructure for grades 1-12
		6) Strengthening the online education system of universities and job training institutions
	3. Fostering the ‘Untact’ Industry	7) Building smart medical and care infrastructures
		8) Promoting remote working in SMEs
		9) Supporting online activities of microbusinesses
	4. Digitalization of Social Overhead Capital (SOC)	10) Building a smart management system in four sectors
		11) Adding digital innovation to urban spaces and industrial complexes
		12) Building a smart logistics and distribution system
<b>Green New Deal</b>	5. Green Transition of Infrastructures	13) Turning public facilities into zero-energy buildings
		14) Restoring the terrestrial, marine, and urban ecosystems
		15) Building a management system for clean and safe water
6. Low-carbon & decentralized energy	16) Building a smart grid for more efficient energy management	
	17) Promoting renewable energy use and supporting a fair transition	
	18) Expanding the supply of electric and hydrogen vehicles	
7. Innovation in the Green Industry	19) Promoting prospective businesses to lead the green industry and establishing low-carbon and green industrial complexes	
	20) Laying the foundation for green innovation via the R&D and financial sectors	

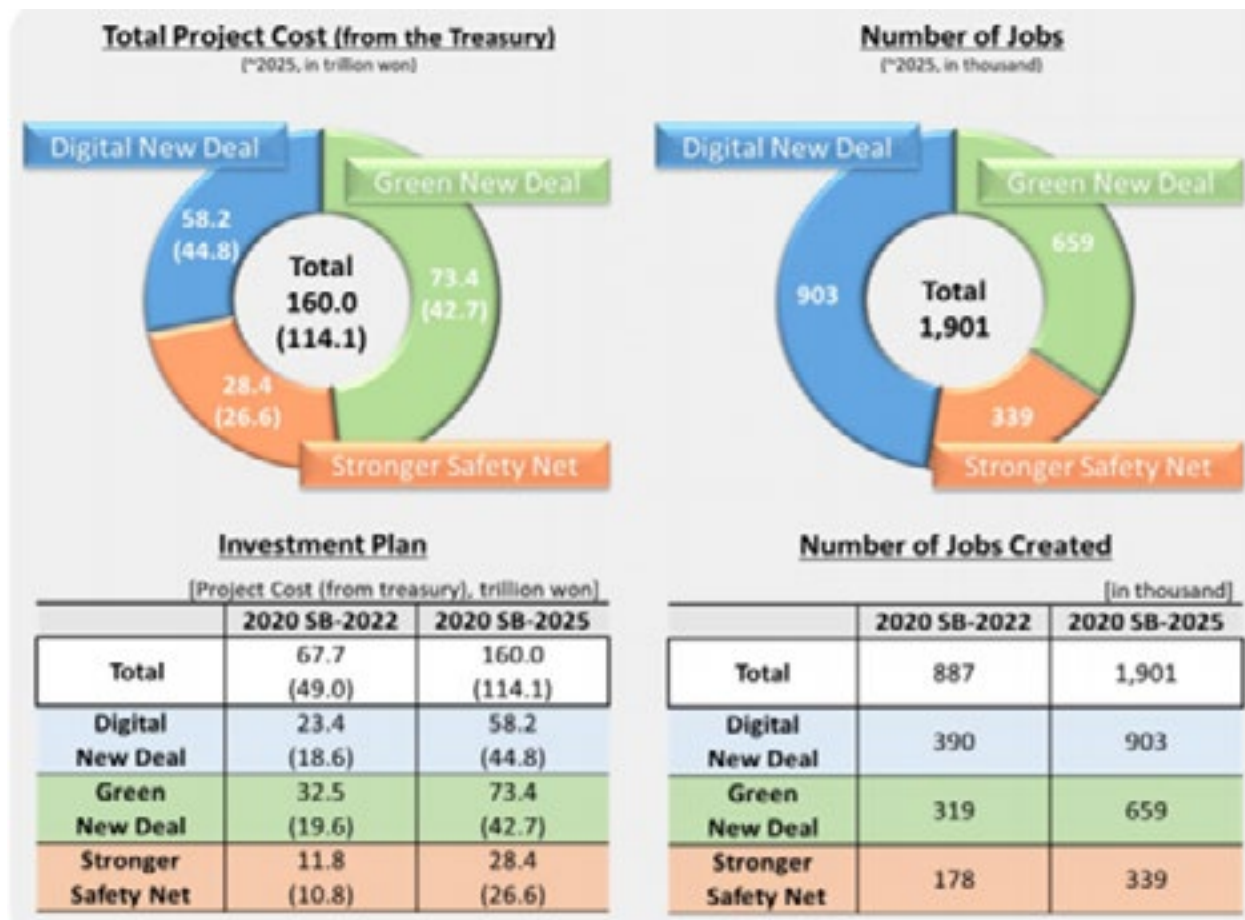


	Focus Areas	Projects
<b>Stronger Safety Net</b>	1. Employment and Social Safety Net	21) Building a universal employment safety net
		22) Strengthening the social safety net for an inclusive society for all
		23) Ensuring livelihoods and employment stability for those not covered by employment insurance
		24) Helping new employees in the labor market and those looking for new positions
		25) Innovating the working environment and industrial safety standards
	3. Investment in Human Resources	26) Training digital and green talents
		27) Restructuring the job-training system to be future-oriented
		28) Enhancing the accesibility to digital infastrucrure for rural residents and vulnerable people





Figure 16: Korean New Deal – Investment Plan And Jobs Created<sup>68</sup>



In response to the COVID-19 pandemic, the Republic of Korea offered emergency disaster relief payments of KRW 14.3 trillion to all households. In addition, it has been providing nationwide financial support, including the provision of emergency living allowances, consumption vouchers and reduced health insurance premiums to low-income households who have lost their jobs or have had to close their businesses. The government of South Korea has also committed to increasing job seekers' allowance for young adults and continue supporting industries suffering from financial difficulties, such as airlines, shipping, automobiles, shipbuilding, machinery, power, and communications via the KRW 40 trillion (about \$35 billion) key industry stabilization fund. Support will only be provided when overall employment is maintained.<sup>64</sup>

## 7. Policy Recommendations for Governments, International Agencies, and Other Partners

### 7.1 Building an Adaptive Workforce

Policymakers, business leaders, individual workers, and community and worker organizations have important roles to play in safeguarding a successful and equitable labor transition. There is an urgent need to reverse the decline in training and investment in workers, as this has been eroded by austerity, with this decline accelerating in the years following the global financial crisis. Education models too need urgent reform, with many barely having changed in the post Second World War period. Increasing public spending on workforce training needs to become an urgent priority.<sup>65</sup>



As new sectors of employment emerge and more people work alongside machines, this paper recommends the following interventions:

- Invest in training and reskilling, fostering digital literacy, STEM-based, logical reasoning, creativity, together with emotional and social skills. Additionally, governments should create incentives for companies to train people on the job. Initiatives may include training and apprenticeship programs, and reskilling opportunities for mid-career or people returning to the workforce.
- Subsidize transition costs, targeting government and corporate reskilling, as well as stimulate childcare subsidies for parents undergoing reskilling or pursuing higher education. Particular attention should be given to the transition from one location to another, with housing vouchers, school and nursery places and care places for elderly dependents part of the package to encourage individuals to move from high unemployment to low unemployment places.
- Invest in digital education platforms, creating industry partnerships with massive open online courses (MOOCs).
- Increase transparency on labor demand trends, rolling out informational campaigns targeting workers whose jobs may become displaced.

In conjunction with human capital development, reskilling programs and continued adult education, income support between jobs, and other forms of transition assistance are crucial in helping displaced workers find decent employment. To ensure societal fairness and well-being, governments should explore more wide-ranging minimum-wage policies, secure pensions which create affordable living for older people, and develop basic income guarantees which ensure that no-one in society starves or lives below socially acceptable levels of poverty and are deprived of basic needs, including food, health, education, and shelter.

## 7.2 Supporting the Creation of Jobs

Governments should accelerate the creation of jobs as they explore new sectors. Recent estimates suggest that the new renewable energy sector has the potential to reach 100 million by 2050, up from around 58 million today, with incentives to accelerate this transition serving to address both the climate emergency and employment needs.<sup>66</sup>

This transition should embrace the following:

- Decarbonizing the energy sector via renewable, clean energy projects, such as wind, hydrogen, and solar
- Promoting new forms of entrepreneurship, targeting digital and green jobs
- Working with the private and third sector firms to invest in new firms and jobs
- Investing in cheaper and healthier forms of public transport<sup>67</sup>

## 7.3 Improving Public Infrastructure

Increasing investments in efficient, accessible, and equitable public infrastructure, such as public transport, social housing, schools, senior and childcare facilities, will not only help create new opportunities for employment, allow workers to move to where the jobs are, but also enhance societal wellbeing. Providing universal or accessible childcare via public or corporate policy interventions in order to help women balance paid and unpaid care work is also vital.



With more than half the world's population still offline, in both developing and developed economies public-private partnerships and international assistance should be explored to stimulate investments in digital infrastructure, particularly in rural, low-income regions where the greatest deficits are to be found. Increasing internet connectivity and access to technology can unlock education, growth, and employment opportunities, and overcoming the digital divide is a necessary but not sufficient means to assist with the employment transition.

## 7.4 Regulating and Fostering Inclusive Labor Markets

In order to draw on the entire labor force's potential, addressing structural inequities faced by women, ethnic minorities, migrants, and young people is essential.

Policies to advance these goals include:

- Publicly subsidizing parental leave and childcare as women spend significantly more time on unpaid care work
- Addressing persistent gender wage disparities
- Rethinking incomes via conditional transfers, basic income grants, and social safety nets as automation increases downward pressure on wages and may increase unemployment
- Regulate non-standard work, ensuring minimum standards of job security and quality, as well as decent minimum wages
- Fostering dynamic career paths for women and disadvantaged peoples via the promotion of networking and mentorship opportunities
- Increasing public visibility of female roles in male-dominated industries to reduce stereotypes about gendered occupations
- Removing complex barriers to entering the workforce faced by people living with disabilities, youth, LGBTQ, indigenous people, ethnic minorities, immigrants, and those with low socioeconomic status
- Providing support to develop digital skills and creating pathways in STEM, especially targeting disadvantaged workers
- Addressing funding gaps for women, youth and BAME entrepreneurs

## 8. Conclusion

Increasing automation, climate change, urban agglomeration, and aging populations have the potential to upend the world of work. The transformation of work, if steered to overcome structural inequities through careful policy action, could provide an opportunity to create more inclusive, equitable, and dynamic societies of shared opportunity. Allowing all workers to benefit from future opportunities represents the single most important challenge that policy makers face. A multi-stakeholder approach which focuses on the employment transition is essential. This requires a focus on job creation, social mobility, reskilling, life-long learning, establishing appropriate social safety nets, public infrastructure, and decent wages as the building blocks to building an agile, resilient, and thriving workforce.





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