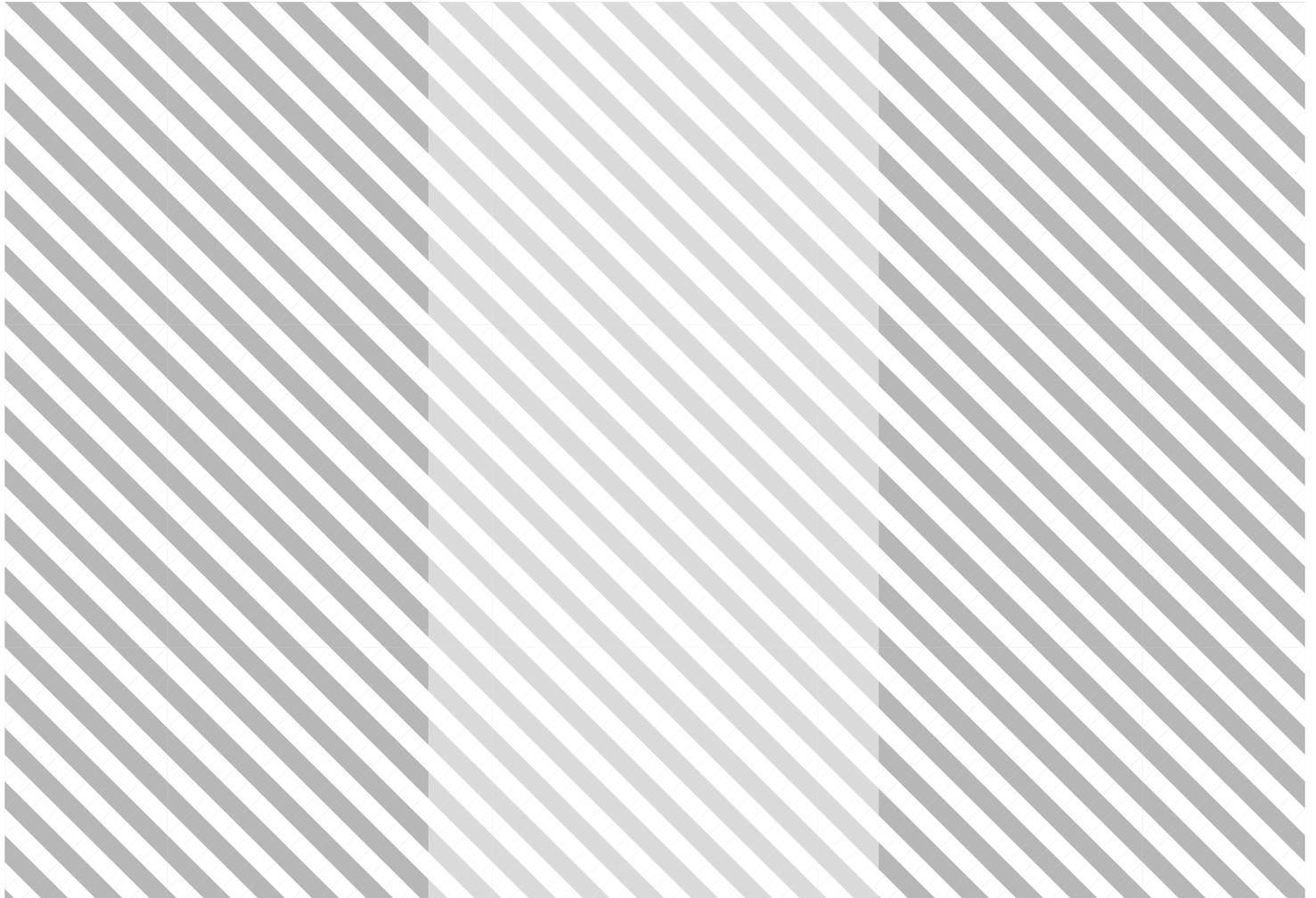


White Paper

Realizing Human Potential in the Fourth Industrial Revolution

An Agenda for Leaders to Shape the Future of Education, Gender and Work

January 2017



This *White Paper* is the outcome of an international, multistakeholder Dialogue Series organized by the World Economic Forum's System Initiative on Shaping the Future of Education, Gender and Work. The goal of the Dialogue Series has been to bring together leaders to develop a common vision on emerging issues.

As a key output of the learning created by the discussion, this *White Paper* draws upon submissions by leaders and experts who engaged in the dialogue, as well as the latest thinking from international organizations, think tanks, businesses and other stakeholders. It provides a common narrative on the new context for emerging issues, identifies priorities for leaders, and supports the development of policy roadmaps.

The *White Paper* is intended to be a resource for governments, business and other stakeholders interested in strengthening the enabling environment for human capital formation in the Fourth Industrial Revolution.

For more information, or to get involved, please contact the World Economic Forum's Education, Gender and Work team at egw@weforum.org.

World Economic Forum
91-93 route de la Capite
CH-1223 Cologny/Geneva
Switzerland
Tel.: +41 (0)22 869 1212
Fax: +41 (0)22 786 2744
Email: contact@weforum.org
www.weforum.org

World Economic Forum®
© 2017 – All rights reserved.

No part of this publication may be reproduced or transmitted in any form or by any means, including photocopying and recording, or by any information storage and retrieval system.

REF 040117

Contents

- 05 Introduction
- 07 Transforming Education Ecosystems
- 15 Facilitating the Transition to a New World of Work
- 25 Advancing the Care Economy
- 33 Acknowledgements

The views expressed in this *White Paper* are those of the author(s) and do not necessarily represent the views of the World Economic Forum or its Members and Partners. White Papers are submitted to the World Economic Forum as contributions to its insight areas and interactions, and the Forum makes the final decision on the publication of the White Paper. White Papers describe research in progress by the author(s) and are published to elicit comments and further debate.

Introduction

Three key interconnected features affect how talent is developed and deployed in the world—today and in the future, across the life cycle of an individual and, in the aggregate, entire populations.

First, technology and globalization are significantly shifting business models in all sectors, increasing the pace of change in job destruction and job creation—including new forms of work—as well as skills churn within existing jobs. While some estimates have put the risk of automation as high as half of current jobs, other research forecasts indicate a risk at a considerably lower value of 9% of today's occupations. The more conservative estimate takes into account specific job tasks within occupations that, even when not automatable, will go through significant change. On average, a third of the skillsets required to perform today's jobs will be wholly new by 2020.

Second, education and training systems, having remained largely static and under-invested in for decades, are largely inadequate for these new needs. Some studies suggest that 65% of children entering primary school today will have jobs that do not yet exist and for which their education will fail to prepare them, exacerbating skills gaps and unemployment in the future workforce. In addition, poorly developed adult training and skilling systems in most economies delay the speed of adjustment to the new context for the currently active workforce of 3 billion people.

Third, outdated but prevailing cultural norms and institutional inertia create roadblocks particularly when it comes to gender. Despite rising levels of education, women continue to be underrepresented in the paid workforce—especially in high potential sectors and high status jobs. According to the latest data, on average globally, women have less than two-thirds of the economic opportunity that men have, and the rate of progress is stalling, with current forecasts to economic parity at 170 years.

These dynamics are further affected through demographic, geopolitical and economic factors, and their results are a challenge to businesses, governments and individuals around the globe. However, they need not be foregone conclusions. If leaders act now, using this moment of transformation as an impetus for tackling long overdue reform on education, gender and work, they have the ability not only to stem the flow of negative trends but to accelerate positive ones and create an environment in which over 7 billion people can live up to their full potential.

The World Economic Forum's System Initiative on the Future of Education, Gender and Work is a platform bringing together business leaders, policymakers, unions, educational institutions and academics for informed exchange of ideas, setting of priorities and engagement in coordinated action.

The Dialogue Series on the Future of Education, Gender and Work is one format within the System Initiative through which leaders from business, government, academia and civil society develop a common, future-ready agenda on important emerging topics in order to drive change themselves and support others with their expertise. The questions are selected bi-annually and seek to address the most pertinent issues requiring a broad-based leader-level consultation. Over the course of the fall of 2016, the System's multistakeholder community sought to answer three questions through the Dialogue Series:

- What are the key features of a future-ready education ecosystem?
- What are the key adaptation strategies for managing the transition to a new world of work?
- What are the key features of a robust care economy sector?

These questions were chosen for their relevance to the current technological, economic and social trends affecting education, gender and work. The three chapters compiled in this *White Paper*—“Transforming Education Ecosystems”, “Advancing the Care Economy” and “Facilitating the Transition to a New World of Work”—are the outcome of the deliberations on these questions. They aim to lay out key action areas and core design principles that can help set a common agenda for advocacy and reform, for leaders, experts and the public.

In each chapter, the key issue is described briefly, followed by the main proposed features of a successful model. In addition, the underlying design principles are described, followed by short success cases. Lastly, there is a simple benchmarking framework allowing stakeholders from all sectors to assess the situation within their own local context and to adapt aspects of the findings as relevant. The community's questions in the spring of 2017 are expected to cover other dimensions within the broader topics of education, gender and work.

As the Fourth Industrial Revolution unfolds, it offers the impetus for rapid reform—without these reforms we will not be able to ensure that the benefits of new technologies are distributed widely. At the same time, it also offers a unique set of tools that can scale and accelerate reform and spread new opportunities more rapidly than at any point in history.

At the World Economic Forum, the proposals in this *White Paper* will be used to shape public-private collaborations on education, gender and work in specific countries and regions, and will form the basis of leaders' discussions on global multistakeholder collaboration. In addition it is our hope that this *White Paper* will encourage a shared vision of priorities for reform within education, work and care, and support leaders in advocating for investments in human capital in the context of the Fourth Industrial Revolution.

Transforming Education Ecosystems

The Issue

Most education systems today are based on models put in place over a century ago. Fragmented attempts at reform and modernization have proven, in most cases, insufficient in addressing the growing gap between conventional education systems, the demands of modern life and new labour markets. Governments, businesses and individual learners must grasp the need for real, comprehensive change in order to close the preparedness gap as the world enters the Fourth Industrial Revolution.

Education—from early childhood and continuing throughout the course of a working life—has tremendous potential to combat inequality and unlock the potential of individuals and entire economies. Today, the quality of and access to education continues to vary widely between countries and individuals, depending on a host of factors, such as gender, socioeconomic status or geographic location. For example, today, in sub-Saharan Africa and South Asia, less than two-thirds of young women can read.¹ Given the breadth of the transformations required, governments, employers, educators and parents must work together to develop talent-rich economies that drive growth and enhance social cohesion.

There's no single path forward. Depending on context, certain strategies and tools will be more feasible and effective than others. Digital technology can help firms, schools and governments anticipate and respond to the needs of the labour market. The growing body of research on early childhood intervention bolsters the case for investing in quality pre-school and day care, and allowing parents to care for new children. Short “boot camps” and online training modules teach skills such as coding, and then match trained workers directly to employers. The world's top universities put materials from thousands of courses online for free download while other platforms offer peer-to-peer tutorials to pick up a wide range of skills.

The increasing pace of technological change and globalization has opened up new opportunities, but has also revealed the importance of aligning company practices, public policy and education and training systems with the skills needs of today, underscoring the need to outline a basic common agenda linking governments, businesses and the education sector. And while education systems are highly context-specific, consensus is emerging on key principles and core

features that can best meet the challenges and maximize the opportunities of the Fourth Industrial Revolution.

This document is intended to set forth principles to which all countries, regardless of resources and levels of economic development, can aspire as they move towards a “future-ready” model of education and lifelong learning. We hope these priorities can help set the agenda for reform and reinforce the urgency for transforming education ecosystems.

Key Action Areas

The following key action areas are intended to guide policymakers, education specialists and the private sector as they move towards a relevant and responsive education ecosystem that can meet the needs of today's—and tomorrow's—labour market. They form a valuable global blueprint as countries continue to build up their education ecosystem, regardless of starting point.

Early childhood education

The first 1,000 days of a child's life are critical to their future life chances. By the time children from disadvantaged backgrounds reach age five, they have already had a 30 million word exposure gap in terms of linguistic and brain development. Conversely, studies have shown that mothers' literacy rates are highly correlated with those of their children. Early childhood education is therefore critical to making further progress on human capital in developing countries as well. Currently, this subject too often lacks a coherent policy. For example, in many countries ministries of labour approach the matter through the lens of alleviating the “care burden” in order to increase women's labour force participation, whereas ministries of education consider their remit to begin only at the primary school level.² A more coherent approach should create formalized touchpoints and opportunities for exchange between parents, care-takers and early childhood teachers. There is a very strong case for reframing this entire issue in terms of human capital development and its exceptionally high future “return on investment” (ROI), requiring inter-ministerial coordination.³

‘Future-ready’ curricula

At the heart of any ‘future-ready’ education ecosystem are curricula designed to impart the knowledge and skills that have

purchase in the modern workplace. Given the rapid evolution of the job market, most individuals relying on just one skill set or narrow expertise are unlikely to sustain long-term careers in economies of the future. These modern curricula may be best delivered through public institutions, a well-regulated and thoughtfully incentivized private sector, or a combination of the two. There are two key components to getting this right: first, what to teach; and, second, how to teach it. While acknowledging the wide range of pedagogical approaches around the world, there is a growing consensus that forward-looking curricula must focus on: the linguistic, mathematical and technological literacies all job roles will require in the future; ensuring the breadth and depth of subject knowledge and the ability to make inter-disciplinary connections; developing global citizenship values, including empathy and character; non-cognitive employability skills such as problem solving, critical thinking, project management and creativity. Regarding the second point, although education systems vary widely (public v. private, centralized v. decentralized), there is consensus that curricula must be: 1) updated and adapted on a rolling basis, based on insights and forecasting regarding the evolution of local and global labour markets and trends in skill demands; 2) developed and revised collaboratively, with input from all relevant stakeholders, including businesses; and 3) subject to regular review, in order to avoid the disruption and implementation time-lag associated with major but infrequent curricular overhauls. It is also important to teach “how to learn” through experience-led approaches just as much as instruction-led ones, and by empowering students to be lifelong learners who take ownership of their upskilling throughout their lifetime.

Professionalized teaching workforce

There will be an additional 26 million teachers needed by 2030 in order to achieve the sustainable development goals (SDGs) on education. Moreover, we rely on teachers to impart the ability to learn how to learn—to instill the curiosity and critical thinking so necessary in today’s job market. However, many teachers today are not given adequate opportunities themselves to re-skill or continue their professional development over the course of their careers. To address this, the teaching profession, where it has been undervalued, needs investment to become a high-quality, high-productivity role, especially given its crucial role in the Fourth Industrial Revolution: high in demand and at the same time heavily disrupted. Educational institutions should create mechanisms to ensure that teaching is an evidence-informed profession, and involve teachers in their own professional development. Technology can play a role, for example, by automating routines, enabling sharing of classroom experiences, knowledge and best practices, including between diverse geographies. Depending on the pre-existing situation in each country, raising pay and opening up teacher training and accreditation to well-regulated private sector providers can also help to professionalize teacher training and to enhance the social value of this section of the workforce while drawing more talent to the field. Finally, the past and current system should not limit our imagination in terms of what and who a teacher *is*. There has been an expansion in peer-to-peer learning (via social media for example), in workplace mentoring, and so on. Where relevant, such developments should be recognized and supported in the design of future adult learning systems.⁴

Early exposure to the workplace and ongoing career guidance

Broad, balanced curricula should also feature exposure to the workplace, with an eye toward professionalizing the future workforce. Internships, mentoring, access to employer networks and site visits, for example, can all contribute to the work-readiness of young people, helping them envision a variety of career paths and equipping them with the relevant competencies. Exposure to employment opportunities can also reveal the returns on education investment. For example, research has found that, in low-resource settings, even the mere visibility of work opportunities can bolster the case for education, especially for girls’ schooling, since knowing about the required education and basic skills has incentivized parents to keep their daughters in school for longer.⁵ Career counselling and workplace exposure can also facilitate school-to-work transitions and help create a more level playing field by orienting individuals towards occupations or opportunities outside of their normal frame of reference and debunking gender and other stereotypes.⁶ This guidance should ensure that people gain accurate and up-to-date information about their options based on available labour market data, individuals’ interest and aptitude, and, where appropriate, input from local, regional and national employers. In addition, career guidance should no longer encourage a learner to choose a “job for life”, but rather should focus on equipping individuals with the skills to navigate a changing world of work.

Digital fluency

Technology is rapidly altering the ways we interact and work, linking communities and workers in increasingly sophisticated ways and opening up new opportunities. In that sense, it has become a language, one that individuals must master from an early age if they are to thrive in the modern workplace and society.

However, simply increasing the number of science, technology, engineering and mathematics (STEM) graduates within the framework of currently existing education systems is not a silver bullet for mastering the Fourth Industrial Revolution. While increasing the STEM-literacy of the population is certainly very important, currently these subjects are often taught in a way that reinforces a disconnect between sciences and humanities and existing education gender gaps, and focuses on theory over application and experiential learning.⁷ Even within STEM-specific fields, employability will depend in part on strong creative, critical thinking and non-cognitive skills. Finally, skills such as coding may themselves soon become redundant due to advances in machine learning; what will remain useful is the underlying training in computational and logical thinking they provide—reiterating the importance of generalized digital fluency.

Technology should thus be embedded across the educational experience to mirror its relevance in all sectors and careers. In addition to basic digital literacy, i.e. the possession of digital skills and an understanding of what to do with them, education should go further, by giving learners a deep understanding of how to apply and innovate with technology so they can play an active role in shaping the tools of the future. It is critical to

ensure curricula are kept up-to-date, and teachers have regular opportunities to refresh their own skills and knowledge.

Robust and respected technical and vocational education

With a few notable exceptions, technical and vocational education and training (TVET) has been neglected within education systems globally in recent decades. Moreover, even in countries with well-established dual education and apprenticeship systems, the Fourth Industrial Revolution forces a fundamental rethink of the content and delivery of TVET education. Quality TVET is a key driver of economic growth, as it trains workers for technical and skilled jobs in growing fields such as healthcare, construction and advanced manufacturing. However, the premium placed on college attainment, in both developed and developing economies, means TVET is often viewed as a “second-best option” for learners.

That view is not wholly unwarranted: TVET is too frequently of uneven quality and opportunities to follow a TVET pathway from school into the workplace can be limited and complex to navigate. Technical qualifications are often designed without the necessary input from employers or industry bodies, leaving credentials with little purchase in the labour market. Education and training institutions are often restricted by a lack of teachers trained to deliver quality technical education and a shortage of TVET facilities and infrastructure.

A future-oriented TVET education ecosystem requires several key actions on the part of all stakeholders: 1) increase access to well-developed and modern TVET study and qualifications; 2) evolve certification and credentialing systems based on agreed industry standards and the identified needs of both learners and employers and updated on a rolling basis to ensure continued relevance; and 3) improve the social status of TVET as a viable education pathway among learners, families, employers, policymakers and other stakeholders. It is difficult to overstate the importance of proactive private sector involvement in this process. By its very nature, TVET can only be as good as employer input into its design.⁸ Finally, policymakers, investors and politicians should balance more evenly between ‘academic’ and TVET education reform and funding, and better understand the linkages and complementary nature of both routes, both for individuals and for businesses and economies.

A new deal on lifelong learning

Across nearly all industries, technological and socio-demographic changes are shortening the shelf life of workers’ skill sets. Regardless of their current competencies, workers will need to dynamically reskill throughout their working lives. Many education systems, however, were built around educating children, not adults. Adult learning systems, where they exist, are usually niche and aimed at individuals, not at systemic collective training, reskilling and upskilling of whole workforces on an ongoing basis. Significantly improved adult training and learning opportunities are vital to ensuring that the 3 billion people already in the workforce—and their employers—can navigate the disruptions of the Fourth Industrial Revolution.

This requires governments, educators and the private sector to collaborate on developing and strengthening an educational infrastructure to enable ongoing learning and training opportunities for workers at all stages of their careers. Priorities for reform include: 1) moving from front-loading education in the earlier part of the life course towards learning at all stages of life by default (moreover, there is no pedagogic rationale for early selectivity in education: “second chances” and multiple pathways should be built into education in a systemic way); 2) shifting toward a system of accreditation based on “micro-credentialing” of skills that one picks up throughout the life course; and 3) transferring ownership of learning to students: workers/learners should be put centre-stage to take ownership of their own training/reskilling. A promising model to incentivize this is individual training accounts as implemented, for example, by Singapore’s SkillsFuture initiative.

A truly relevant lifelong learning system cannot be delivered by the public or private sector alone, nor is it the sole responsibility of either party. Training and upskilling opportunities should meet the changing demands of employers as job roles shift; satisfy the needs and interests of learners; and be quality assured, transferable and accessible. Given the right balance, a dynamic training ecosystem has the potential to provide deeply fulfilling careers to future workers. Successful models are likely to encompass both ‘formal’ and ‘informal’ scenarios and in-person and digital delivery, including self-paced autonomous learning, community-based courses, workplace learning schemes and co-funded adult learning colleges. This also includes shifting the rhetoric around such schemes to remove any remaining perceptions that perceive them as merely remedial.

Building a lifelong learning culture in the workplace entails moving from “education for employment” to “education for employability” and from “job security” to “career security”. Additional features that might help such a culture gain traction include learner-centred approaches, adapted to the needs and interests of the individual and encompassing a wide range of skills and training, rather than traditional subject-focused learning; and stronger employer incentives and support, as employees must juggle the tension between short-term efficiencies of productivity and long-term intellectual growth.⁹ A key strategy is to mainstream competency-based recruitment to complement or replace conventional degree-based models.

Competency-based credentialing and recognition systems can be set up in a multistakeholder way by governments and industries and at a national or potentially even global level.¹⁰ If combined with labour market forecasting capabilities, such a setup creates a continuous feedback loop between labour markets and education systems, allowing for continuous and gradual adaptation as opposed to a need for irregular, large scale reforms. Such a system would also facilitate re-entry into the workforce of individuals that have temporarily left the workforce, for example due to family care obligations. Finally, such a system may be especially relevant for high-skilled vocational professions, such as medicine, teaching and the law, avoiding a situation in which professionals are over-credentialed but lacking in contemporary skills.

Openness to education innovation

Whether as part of lifelong learning or formal education, and whether in the context of developed or developing economies, technology presents opportunities to deliver learning in innovative and personalized ways. It could change the role of the teacher in future education systems, and potentially allow for a deeper and broader learning experience. In some instances, technology can provide solutions to unequal education access, for example in rural or hard-to-reach communities or those affected by disaster and conflict, by “leapfrogging” traditional infrastructure requirements.¹¹ New research from pedagogy, psychology, neuroscience and other fields also indicates areas for innovation and a more evidence-based approach to education. As new approaches and new technologies emerge, funding and experiments are necessary for identifying the most effective models with potential to scale and create meaningful change in education. Education innovation is one of the most evident areas for public-private collaboration, especially when centred on the needs of learners and traditional education institutions should be incentivized and supported to adopt a mindset of embracing such disruptions, to collaborate and to experiment.

Core Design Principles

The key action areas above can only fully succeed if they are underpinned by the following core design principles. They should be built into reform efforts in a systemic way to enable future-ready education systems to reach their full potential as a key factor in adapting to the Fourth Industrial Revolution.

Universal, equal access

As recognized by the international community’s Sustainable Development Goals (SDGs), high-quality basic education is the foundation on which individuals can build dignified, meaningful lives. It is the basis for human flourishing, and fosters development and prosperity. Yet nearly 263 million children remain out of school today, primarily in parts of South Asia and Africa, a gap that limits their own and their communities’ future development. Over 60% of these children are girls, who are often the first to lose out when resources and access are scarce. As an added problem, pre-existing inequalities created in K-12 education are often reinforced rather than ameliorated in on-the-job training, since low-skilled workers tend to have the lowest exposure to on-the-job training while higher-skilled workers tend to have the greatest. Therefore, it is essential that all children can access equitable and inclusive primary and secondary education, regardless of gender, race, religion and social background. In addition, the way in which assessments and selection are built into legacy education systems, particularly in pre-tertiary education, frequently reinforces inequality, thereby diminishing the broader population’s future workforce potential.¹²

Multistakeholder leadership and governance

Whereas education impacts most areas of public and economic life, current education systems often exclusively follow directives from government bodies, with little or no representation

from other relevant stakeholders. An interdisciplinary and multistakeholder approach to education ecosystem governance can ensure that these wide-ranging implications are recognized and factored into broader policy-making decisions. The public sector may support this through much greater inter-ministerial coordination on education issues and strengthened governance, management and financing of education.

In addition to bringing together key ministries, a multistakeholder approach to education should bring together employers, unions, and others in pursuit of a comprehensive National Skills Strategy, as advocated, for example, by the OECD. This means carefully balancing autonomy for education leaders and practitioners with guarantees of high standards for all, as well as defining clear regulatory frameworks for private-sector actors. Employers, in particular, have a key role to play in designing a new social compact, which includes re-thinking their role as consumers of “ready-made” human capital. In particular, firms must invest in and incentivize lifelong learning, re-skilling and up-skilling of existing employees, in addition to working closely with educators to support the development of both general and specialized skills. Parents, teachers and students also have a fundamental role to play in proactively transforming the education ecosystem. Together, these stakeholders can make education policies and curricula more relevant and responsive.

Long-term planning and reform

According to some estimates, the average length of tenure of ministers of education around the world is about 1.6 years. However, education reform requires long-term thinking and stability beyond electoral cycles, especially given the transformational challenge of the Fourth Industrial Revolution. A national skills strategy, developed via a multistakeholder approach to reform, can help ensure continuity of direction and some stability as the system evolves. This means working to achieve consensus on the future direction, funding and organization of education, by learning from and adapting the best practice examples available in different systems globally.

Success Stories

The following examples of established success stories and effective reform efforts illustrate best practices and role models for transforming education ecosystems.

Comprehensive adult training and skilling: SkillsFuture (Singapore)

SkillsFuture, an initiative by the Ministry of Manpower in Singapore, seeks to develop skills within the population by providing tailor-made training courses with the objective of creating a highly skilled and competitive workforce that contributes to a higher standard of living. The government recognises that due to technological advancements and innovations, skills required on a job today may not be relevant in the future. The SkillsFuture Council, led by Singapore’s Deputy Prime Minister, will focus on developing future oriented skills that help enhance workers’ productivity. The focus is on moving towards an economy where individuals seek lifelong learning within their areas of expertise which is not only motivated by the current demands of their jobs. Key focus areas include:

(a) helping individuals make well-informed choices in education, training and careers; (b) developing an integrated, high-quality system of education and training that responds to constantly evolving industry needs; (c) promoting employer recognition and career development based on skills and mastery; and (d) fostering a culture that supports lifelong learning.

Singapore's government has also announced that every individual aged 25 and above will receive an initial credit of S\$500, which will be topped up at regular intervals and will not expire. This credit can be used on a number of government supported courses targeting a wide range of individuals, including students in school to workers with years of experience. SkillsFuture is expected to invest over S\$1 billion a year from 2015 to 2020 on initiatives such as career guidance for students, enhanced internships, subsidies for mid-career learning, among others. About S\$600 million a year over the last five years has already been spent on continuing education and training. Singaporeans who want to build specific skills in growing industries can apply for the SkillsFuture Study Award. About 2,000 such awards will be given out annually. About 100 SkillsFuture Fellowships a year will be awarded from 2016 to those who want to further develop their skills to an even higher level.

Future-ready foundational education: The Finnish Education Model (Finland)

The Finnish education system has long been recognized as one of the most successful in the world, including by the Forum's *Human Capital Report*. The Finnish model is based on a number of core success factors, including: (a) significant emphasis on teacher education, considered an elite profession with high entry standards; (b) a corresponding light-touch approach to standardized curricula, based on systemic trust in high-quality teaching delivery; (c) a distinctive emphasis on inclusion and diversity in elementary education, integrating children with learning difficulties from early on; (d) regular updates to the national curriculum every 10 years to provide an overall framework, with local freedom to customize; (e) even levels of school quality, de-emphasizing the importance of testing and selection. Certain schools in Finland are also pilot-testing "self-assessments", whereby students are involved in determining their own progress, and "peer assessments", whereby students review their peers' work and are encouraged to offer positive feedback and constructive criticism. Recently, the Finnish Department of Education decided to abolish individual subjects, with students instead studying events and phenomena in an interdisciplinary format. The changes are expected to be completed by 2020.¹³

Comprehensive approach to TVET: Apprenticeship Systems (Germany and Switzerland)

Contemporary industry requires working with highly technical and complex processes that give individual workers more autonomy but also significantly more responsibility. Development of these skills within a practical setting is a way to overcome the mismatch between the skills acquired by the potential workforce in a classroom and those that are required

on the job. The goal of the apprenticeship model is to educate the workforce in a broad range of future oriented and practical skills that will be needed to be successful in their careers.

In Germany, vocational training is implemented in a dual programming manner which includes education and training.¹⁴ The country's Vocational Training Act provides for 500,000 company-based training contracts a year.¹⁵ Apprentices divide their days between classroom instruction and on the job training at a company, typically spending 3-4 days a week at a company acquiring practical skills required for their field of work. This also gives them an opportunity to learn work habits and absorb the culture of the company. The duration of the apprenticeship is between 2-3 years and during this period, the trainees are also paid for their time. Employers in Germany have demonstrated that such practical application helps develop the skills of this critical talent pool allowing them to make an easier transition from the classroom to a work environment.

The Swiss vocational and training system follows a similar process, i.e. 3-4 years of training combined with classroom instruction with an apprenticeship salary for the time spent at work. The Swiss system is managed as a public-private partnership: the professional organizations, the cantons (state governments) and the Swiss Confederation (federal government) work jointly to define curricula and skill sets, and set standards for occupations across the country. After graduation, in addition to working, apprentices can earn a university degree or take additional classes to obtain further certifications, creating a strong basis for lifelong learning. Models such as the Global Apprenticeships Network (GAN) aim to promote the apprenticeship model in other countries.

Skills forecasting and upskilling partnerships: LinkedIn and Greater Manchester Authority (UK) and The RightSkill Programme (USA)

The increasing proliferation of information such as online job ads has created opportunities to predict a local economy's emerging skills requirements in near-real time through collaboration between data analysis firms such as BurningGlass,¹⁶ workforce agencies and education providers. In the UK, LinkedIn, the world's largest professional network, and the Greater Manchester Combined Authority (GMCA) have collaborated to analyse local vacancies and more than 600,000 local LinkedIn users' skills and employment data to create a detailed snapshot of skills and employment in the Greater Manchester region. Based on this information training modules will be developed and delivered by GMCA. The collaboration, the first of its kind in Europe, aims to address concerns that education is not sufficiently targeted at the actual skill gaps in the workforce.¹⁷

Similarly, in the United States, Capella Learning Solutions, a leading provider of HR software-as-a-service, and CareerBuilder, one of the largest online job sites in the United States, have used their large repository of historical and real-time labour market data paired with competency-based education to design The RightSkill Programme, providing job seekers with tailored learning experiences that prepare

them for in-demand careers while partnering with employers who are looking for verified, job-ready candidates.¹⁸

New education delivery models: Holberton School (USA), 42 (France), MEST (Ghana) and Sama School (USA)

A range of education providers, such as Holberton School¹⁹ in the United States and 42²⁰ in France, have created a range of innovative short-duration coding education programmes based on peer-to-peer pedagogy and project- or challenge-based learning. With no formal teachers and no formal classes, such models are theoretically much more scalable than traditional education programmes and thus can be replicated around the world. The schools work on peer reviews, project-based learning, internships and gamification to impart real life knowledge to students. Instead of upfront tuition fees, students agree to contribute a percentage of their future salary to the school for a certain number of years. Similar models have also been replicated across the emerging world, for example at the Meltwater Entrepreneurial School of Technology (MEST) in Ghana.²¹ While the previous examples are primarily aimed at school leavers, Sama School pursues a lifelong learning and reskilling approach targeted at individuals from lower-income segments, providing them with digital literacy, professional skills, and online work competency needed to succeed in digital work and the freelancing economy.²²

Multistakeholder consultation and leadership: Sprout Fund and The Grable Foundation (USA), Camfed (Sub-Saharan Africa) and Plan International (Zambia)

An effective multistakeholder approach to education ecosystem governance should look beyond government, education providers and businesses, to include teachers, parents and students. In Pittsburgh, United States, the Sprout Fund and The Grable Foundation are working on obtaining parental buy-in on the importance of STEM education during their “Remake Learning” week.²³ They create events all over the city, showing parents how to play computer games such as Minecraft so they understand why these are useful. Getting systemic buy-in is important because parental skepticism is often a key obstacle. In a different context, following the motto “The distance to school is not about how far you walk”, education charity Camfed works across Sub-Saharan Africa to sensitize parents who can’t read, especially those of girl children, about the benefits of education.²⁴

In addition to winning over parents as stakeholders for transforming education ecosystems, another key constituency is the students themselves. In Zambia, Plan International works to improve the participation of boys and girls in decision-making by building their capacity to identify and address various problems in their schools. The key social accountability methodology used is a child-friendly community scorecard approach, adaptable for the use of children within different age groups. The strategy employs a two-pronged approach, empowering children as rights holders to participate in school governance combined with building

the capacity of duty bearers (parents, teachers, school management and District Education Boards) to strengthen their responsiveness and accountability. The inclusion of girls and boys’ perspectives lead to more effective decision-making, resource allocation, and service delivery in education, as well as reduced opportunities for mismanagement and corruption. As a complementary component, the strategy also strengthens the local partners’ wider potential for advocacy on improved child participation in school governance.²⁵

Frameworks and standards for scaling private sector education: Standard of Excellence in Education and Development (India)

Although India has more than 300,000 low-cost private schools, their fragmented and unorganized nature means there is no uniformity in curriculum or operating procedures and little capacity for quality education interventions. Standard of Excellence in Education and Development (SEED) is a provider of curriculum, training and management services working to solve this problem. It works with underperforming low-cost private K-12 schools to institute a standardized curriculum, teacher training and other operational processes to improve efficiency and help these schools deliver high-quality education at affordable levels.²⁶ Professional development of teachers has resulted in improved retention while SEED also aims to incorporate opportunities for children’s social development through project-based learning.

Education technology and innovation: The New York City iZone and Badiliko (Sub-Saharan Africa)

The New York City Department of Education’s innovation zone (iZone) initiative works by assigning a small number of schools with ‘Lab’ status and tasking them with the job of reinventing what it means to be an inner city school.²⁷ Working on behalf of the entire system, these schools prototype radical models of teaching and learning, with a particular focus on EdTech. Well-developed school networks are then used to ensure the entire system benefits from what the Lab schools have learned.

In a different context, Badiliko is a multistakeholder initiative that aims to improve digital access and quality education in Sub-Saharan Africa by building digital hubs in existing schools across Kenya, Tanzania, Uganda, Ethiopia, Ghana and Nigeria while empowering educators through world-class professional development.²⁸ For each digital hub, teachers are trained in leadership and innovative teaching practices to make the best use of the IT equipment provided for transforming student learning. Those teachers in turn train other teachers, who work together to disseminate their newfound skills through their own schools and communities. The digital hubs in schools are used for teaching and learning during the day, and by the wider community for skills training after hours. Where schools are off the grid, the digital hubs are supported by solar power and long range Wi-Fi.²⁹

Benchmarking Framework

To complement the above discussion of key action areas and core design principles, below is a simple self-assessment tool describing, in a qualitative way, essential steps that could be undertaken collaboratively to create good basic conditions for transforming education ecosystems and to implement a

“best-in-class” approach. Within each collaborative action area, steps are organized in ascending order of complexity and are non-exhaustive. They are meant to serve as an initial guide for stakeholders to use for self-assessment against their own existing efforts and features highlighted in this document.

Table 1: Transforming Education Ecosystems

CORE DESIGN PRINCIPLES		
Universal, equal access Multistakeholder leadership and governance Long-term planning and reform		
Collaborative Action Areas	Private Sector Roles	Public Sector Roles
Early childhood education	<ul style="list-style-type: none"> Promote literacy and a culture of reading among current and expecting parents to encourage active participation in their child’s early learning Provide flexible work arrangements, workplace nurseries, allowances or other assistance programs for working parents 	<ul style="list-style-type: none"> Increase inter-ministerial coordination on early childhood development Incentivize employers to provide access to childcare solutions
‘Future-ready’ curricula	<ul style="list-style-type: none"> Partner with local educational institutions to ensure that curricula development is informed by market-demand skills Design and deliver interventions that strengthen STEM skills, employability skills, and/or global citizenship skills 	<ul style="list-style-type: none"> Align micro-credentials with national standards and qualifications frameworks Broaden assessment beyond traditional test-based approaches Create framework for continuous curriculum review and updating
Professionalized teaching workforce	<ul style="list-style-type: none"> Provide workplace exposure to educators (teacher externships) Develop skills-based employee volunteering programs Introduce tools and resources to educators to improve learner-centred pedagogy 	<ul style="list-style-type: none"> Promote private sector participation in teacher training and upskilling Incentivize teachers to actively participate in their own lifelong learning
Early exposure to the workplace and ongoing career guidance	<ul style="list-style-type: none"> Link with educational institutions to provide mentorship and career coaching Organize work-based learning for current students (work exposure, internships, apprenticeship) 	<ul style="list-style-type: none"> Include work-based learning as a graduation requirement for both higher education and vocational training programs Improve capacity and quality of public career advice service providers Partner with private sector on skills accreditation
Digital fluency	<ul style="list-style-type: none"> Develop digital literacy and ICT skills among current workforce through online learning platforms and short-term training (“boot camps”) Reinforce requisite technology skills in the workplace with students during work-based learning and with educators during teacher externships 	<ul style="list-style-type: none"> Support ICT infrastructure and access in educational institutions Mandate ICT and digital literacy in teacher training
Robust and respected technical and vocational education	<ul style="list-style-type: none"> Organize work-based learning for current students (work exposure, internships, apprenticeships) Address TVET stigma and promote TVET career pathways through parent-teacher associations 	<ul style="list-style-type: none"> Promote TVET careers through public campaigns Introduce vocational tracks in upper secondary education Encourage private sector TVET infrastructure investment
A new deal on lifelong learning	<ul style="list-style-type: none"> Actively support staff to engage in learning for continual professional development through multiple channels Incentivize re-education and training among staff in the workplace 	<ul style="list-style-type: none"> Align micro-credentials with national standards and qualifications frameworks Incentivize and support individuals to pursue lifelong learning opportunities
Openness to education innovation	<ul style="list-style-type: none"> Partner with educational institutions to provide learning opportunities outside the classroom (e.g. challenge based learning/hackathons) 	<ul style="list-style-type: none"> Experiment with greater autonomy for higher education and TVET institutions Support testing and scale-up of education innovations

Notes

- 1 World Economic Forum, *Global Gender Gap Report 2016*, goo.gl/ENMpe7.
- 2 UNRISD, *Childcare Service Expansion in Chile and Mexico: For Women or Children or Both?*, <https://goo.gl/2Uw45K>.
- 3 NPR, *How Investing in Preschool Beats the Stockmarket Hands Down*, <https://goo.gl/rGkKU7>.
- 4 See, for example: CEDEFOP, *Validation of Non-formal and Informal Learning*, <https://goo.gl/D64PcB>.
- 5 Mushfiq Mobarak, *How to keep more girls in school? Lessons from Bangladesh*, <https://goo.gl/yyO1EE>.
- 6 See, for example: Black Girls Code, www.blackgirlscore.com.
- 7 Nesta, *The Fusion Effect: how firms gain from combining arts and science skills*, <https://goo.gl/UFKWMV>.
- 8 ILO, *TVET plays crucial role in "Industry 4.0"*, <https://goo.gl/ldf9w0>.
- 9 Tomas Chamorro-Premuzic and Mara Swan, *It's the Companies Job to Help Employees Learn*, Harvard Business Review, <https://goo.gl/TJH5J>.
- 10 Successful examples include current efforts by the government of the United Arab Emirates and by Portugal in the early 2000s.
- 11 Quartz Africa, *Bridging the Gap: Google may have a solution to Africa's last-mile internet connectivity problem*, <https://goo.gl/3jzlb7>.
- 12 BBC News, *Grammar schools benefit rich, says OECD*, <https://goo.gl/AhJboh>.
- 13 The Independent, *Finland schools: Subjects scrapped and replaced with 'topics' as country reforms its education system*, <https://goo.gl/oaDeAm>.
- 14 Quartz, *Advantage of Youth: The world would be \$1.1 trillion richer if it treated its young people more like Germany does*, <https://goo.gl/PXQdR9>.
- 15 Federal Ministry of Education and Research, *The German Vocational Training System*, <https://goo.gl/F9oCUF>.
- 16 BurningGlass, <http://burning-glass.com/labor-insight>.
- 17 The Financial Times, *Manchester needs cameramen and Twitter experts, says LinkedIn*, <https://goo.gl/ObAbAv>; also see World Economic Forum, *The Human Capital Report 2016*.
- 18 The RightSkill Programme, <https://rightskill.com>.
- 19 Holberton School, *A New Kind of Education*, www.holbertonschool.com/about.
- 20 See <https://www.42.us.org> and <http://www.42.fr>.
- 21 Meltwater Entrepreneurial School of Technology, *About the School*, <http://meltwater.org/school/about-the-school>.
- 22 Sama School, www.samaschool.org.
- 23 Remake Learning, <http://remakelearning.org>.
- 24 Camfed, <https://camfed.org>.
- 25 See project overview: "The Good School – Zambia", <https://goo.gl/5lbW54>.
- 26 SEED Schools, *About Us*, <http://seedschools.in/about-us-2/who-we-are>.
- 27 New York City Department of Education, iZone, *What We Do*, <http://izonenyc.org/about-izone>.
- 28 Badiliko, *What We Do*, www.badiliko.org/what-we-do.
- 29 Center for Education Innovations, *Badiliko Digital Hubs*, <https://goo.gl/SEKQYH>.

Facilitating the Transition to a New World of Work

The Issue

On average, globally, around 53% of the working-age population are employees of some kind—whether working formally for others, working for others without a formal contract in the informal economy or contributing to a family business—employed mainly by the 4% of the population that are considered employers. Another 7% are underemployed and 13% are self-employed, own-account workers. Additionally, 4% are unemployed and 20% are inactive—having dropped out of, or never entered, the labor market and usually engaged in unpaid work.

Most work is undergoing profound shifts around the world, in advanced and emerging countries alike. New technologies, globalization, changing consumer preferences and shifting demographics are changing business models and leading to the emergence of new, hitherto unforeseen jobs, rapid skills churn within existing jobs and the decline of many traditional jobs, both blue and white collar. In many firms in developed and developing countries, multiple drivers of change have led to outsourcing of work to locations with cheaper workers, automation of parts of their production and distribution and replacement of employees with independent contractors, including wholly new forms of work exchange on digital platforms.

As a result of the changes set in motion over the last two decades, many blue-collar jobs in manufacturing have disappeared—and developed and emerging economies and most governments and businesses around the world have been unprepared for the large-scale adult reskilling and retraining needed to help people through difficult transitions. This change is now occurring in other areas—and appears to be speeding up. What has thus far been considered skilled, white-collar work is now also under transformation, requiring rapid adaptation by both workers and their employers. These trends affect genders and geographies differently. Even jobs that are likely to remain relevant and plentiful are going through a major shift in the skills required to perform them. Wholly new jobs have also emerged, unforeseen before the rise of the digital economy. Professions that build on a base of science, technology, engineering, math, digital media and communications have become the backbone of high-skilled, high-paid work and are highly in-demand. However, the base of new job growth

has not been driven solely by technology—it is also driven by shifting demographics and cultural norms. For example, “care” professions—from childcare and eldercare to nursing and therapy to personal trainers and career coaches—have also grown although they often remain lower-paid. “Green jobs” present another area of current and expected rapid growth.

While full-time employment is still the predominant form of work in most advanced countries, a growing share of people work independently and combine income from multiple sources.¹ These alternative work formats vary from moonlighting to full-time freelance work to subcontracting to entrepreneurship, and can be facilitated through traditional routes (staffing firms, word-of-mouth, and so on) or through new online platforms. Most social safety nets, labour statistics, financial services and adult education systems in advanced economies are unprepared for this growing de-formalization of work. In many emerging economies, independent work was already a significant portion of labour force participation, and safety nets were already stretched or non-existent. This gap is expected to grow. For example, by 2020, online platforms such as accommodation platform Tujia and car app Didi Kuaidi are expected to make up 10% of China’s total GDP.² There is demand for better measurement, legal frameworks and safety nets.³

These new work formats, particularly on-demand online platform work, has in some instances been deeply polarizing, with its potential to exacerbate and make more visible the income inequalities between those who already hold some capital⁴—human or financial—and those who do not.⁵ It has also shed new light on old questions. What is the social contract between business and society?⁶ What is the basic safety net societies want to offer to all their citizens? For some, such work represents new forms of economic activity and new earning opportunities that can enhance quality of life, flexibility and mobility. For others, online “gig work” is a last resort, representing significant insecurity and uncertainty.

Overall, whether we end up with more job losses or more job gains as a result of these transformations has been the subject of many forecasts. Most conclude that while it is possible that losses could outstrip gains in the short term, the medium-to-long term opportunities for workers will be plentiful. However, even the most optimistic scenarios are predicated on two basic conditions: one, that workers have the skills to leverage new

opportunities, and two, that there are basic safety nets in place to support the adaptation required. Without such support, many economies risk fear and uncertainty among their populace, growing income inequality—both perceived and real—and the associated social and political strife. With such support, advanced and emerging countries could instead unlock growth in their economies and corresponding prosperity and equality for their citizens. In the very long term, such support would be the stepping stone needed to shift to a world where all people can engage in work primarily for purpose rather than earnings.

This aims to lay out a common set of future-oriented priorities for managing the current transition, in particular by enhancing the potential for individual workers' dynamism, entrepreneurship and flexibility, while limiting insecurity and inequality. We hope these priorities can help set the agenda for reform and reinforce the urgency for a new vision to facilitate the transition to a new world of work.

Key Action Areas

To ensure that individuals are prepared for and can benefit from the transition to a new world of work, below are the key action areas we believe policymakers and the private sector must tackle.

Recognition of all work models and agile implementation of new regulations

There is a lack of comprehensive, meaningful data on all forms of work. While much of full-time, formal employment is captured in labour statistics, non-standard work (temporary, part-time and independent work as well as new forms of work such as ICT-based mobile work and platform-based crowdwork) is generally not adequately measured or in some cases, even measured at all.⁷ Recent research from the United States suggests that a significant proportion of the net employment growth since 2005 has occurred in alternative work arrangements, including among the self-employed, temporary workers, and contracted workers.⁸ Globally, the share of own-account work may soon rise well above 13% of the working-age population.

To better measure this phenomenon across the global economy, countries must harmonize terminology and standards as they gather and share data. For example, the online gig economy, which is not just creating digital channels for freelance work but also generating novel economic activity, is poorly captured in official statistics. Most studies to date have been piecemeal, relying on a few platforms to share data, and few countries have completed comprehensive labour market analyses that include such forms of work. Accurate measurement will provide significant headway in designing the appropriate policy responses.

Worker classification must also evolve to reflect the transformation of growing segments of the workforce in both advanced and developing economies. For example, a recent report estimated nearly half of the 145 million working Americans⁹ will be self-employed or engage in occasional independent forms of work combined with traditional jobs by

2021.¹⁰ This poses new organizational challenges for employers, too, such as the need to develop the capability to engage with talent in a multitude of ways, tapping into freelance communities and embarking on more collaborative ways of working. For example, in the ICT job family, over 70% of global employers now have a hybrid workforce of permanent and contract ICT employees to fill talent shortages and fast-changing technical skill needs.¹¹ Yet at present, legal interpretations for what constitutes an employee versus an independent contractor varies widely globally and even within countries, such as between individual states in the United States. This patchwork regulatory framework must be improved within countries and harmonized across countries for globally comparable data and standards on a wider range of work models, including situations where a worker falls into multiple categories.¹² Finally, whereas a lot of recent attention has focused on updating social security legislation, a different top-of-mind issue that concerns many freelancers and independent contractors concerns their limited recourse against non-payment by clients and unclear rules concerning intellectual property in the context of crowd-based work on many online talent platforms. For example, New York City's "Freelance Isn't Free Act" creates harsh penalties for clients who delay or deny payment for freelancers and sets a strict window within which freelancers must be paid for their services.¹³

Reforming employment law and regulatory classifications to better enable independent workers to benefit from new opportunities while managing associated challenges may require an agile approach that involves modifying current policies as well as testing wholly new models, and measuring and monitoring outcomes. All relevant stakeholders will need to remain open to iterative learning.

Updated social protection

Most existing social security systems have been built around the concept of employment in a full-time job for a single employer. However, people already work, study, have families and retire differently in their lifecycle than in the past.¹⁴ The increasingly heterogeneous career paths of workers necessitate updated social protection systems to support workers through these transitions.¹⁵

The International Labour Organization's social protection floor calls for basic income security for persons of working age who are unable to earn sufficient income, in particular in cases of sickness, unemployment, maternity and disability.¹⁶ The renewed emphasis in this space ranges from calls for universal basic income to unemployment insurance. In addition, in many economies, benefits are dependent on the type of work an individual is doing rather than the individual themselves, leading to different entitlements on the basis of work format.¹⁷ The OECD notes that temporary, part-time and independent workers often face different statutory and effective entitlements to taxes and benefits, compared with workers in standard jobs. For example, independent workers may have less access to employer-subsidized healthcare, paid family leave and retirement savings, while full-time employed workers may be offered automatic paycheck deductions to

fund retirement accounts. In the new world of work, benefits should centre on the worker rather than the employer.

Businesses and governments should work collaboratively to explore: 1) incentivizing and creating sustainable benefit plans, products and solutions tied to workers and not employers; 2) creating a simple process and single point of entry for managing benefits irrespective of income source; and 3) creating a portable system that follows the worker from job to job, and is universal (across employers, employees and employment types).¹⁸

Adult learning and continuous reskilling

While much recent debate has focused on the job displacement potential of future automation, comprehensive research suggests that the number of jobs that could be fully automated by currently demonstrated technology is under 10% overall—although it reaches a high of 20% in some middle-skilled job categories. However, even if comparatively few jobs may be completely replaced by robots and algorithms, recent research by the McKinsey Global Institute found that nearly two-thirds of all jobs comprise at least one-third of tasks and activities that could be automated based on current technology, such as virtual assistants.¹⁹ This dovetails with estimates by the World Economic Forum's own *Future of Jobs Report*, which finds that, across job types and geographies, some 35% of core skills required by occupations will change or be wholly new by the year 2020.²⁰ Adult training and learning opportunities are thus vital to ensuring that the 3 billion people who make up today's workforce—whether self-employed or through employers—can navigate the current disruptions and prepare for new skills requirements in their existing or new roles.

However, most education systems have been built around educating children, not adults. Where adult learning mechanisms exist they are usually within specific companies or aimed at individuals, not at systemic collective reskilling of whole workforces. Regardless of the relevance of their current skillsets, the Fourth Industrial Revolution will pose the challenge that workers will need to reskill throughout the course of their working lives. Building a lifelong-learning culture in the workforce entails moving from “education for employment” to “education for employability” and from “job security” to “career security”.

In partnership with both academic institutions and vocational training providers, governments and companies should develop and incentivize general and customized learning and training opportunities that can be used by those who are currently employed and those who are searching for work (also refer to the section “A New Deal on Lifelong Learning” in the **Transforming Education Ecosystems** chapter). For example, employers should work with governments and industry associations to manage current disruptions through concerted efforts at reskilling and upskilling within at-risk or high-demand job families. This type of employer-led reskilling can also have the effect of boosting productivity, as workers with firm-specific knowledge can adopt new technologies to augment and enhance their existing work. Similarly, independent workers should be able to seek training through public-private collaborations, in order to upgrade their skills and productivity

in delivering a service or product. Standardized certifications for such programmes can enhance their recognition and returns.

Business and governments will also need to think about the practicalities and pathways of how workers are going to be reskilled. For example, small companies might be less able to invest in reskilling, given a lack of budget and inability to free up workers from daily routines. Similarly, pre-existing inequalities are often reinforced, rather than ameliorated, in on-the-job (OTJ) training, since low-skilled workers tend to have the lowest exposure to OJT training while higher-skilled workers tend to have the greatest. Finally, businesses and governments should consider creative ways to deliver skill-enhancing training opportunities. They are not only a vital investment—they can also be a source of stimulus and job growth in many economies, because the adult training and skilling sector can be a commercially-viable and high-employment sector.

Priorities for reform include: a) moving away from front-loading education in the earlier part of the life course: learning should occur in all stages of life by default; b) moving beyond multi-year degree programs as the default towards a system of accreditation based on “micro-credentializing”; and c) transferring ownership of learning back to students: a promising model to incentivize this are individual training accounts.

Proactive employment services

While the new employment landscape will see job growth as well as displacement, labour markets globally continue to undergo a long-term trend of increasing polarization, with jobs concentrated at both the high-skilled and lower-skilled end of the occupational spectrum. Middle-skilled occupations that, for a long time and in many countries used to constitute the gateway to stable middle-class lifestyles, are being “hollowed-out”.²¹ While these developments predate the disruption of the Fourth Industrial Revolution and are not solely driven by technology, accelerating technological change is nevertheless amplifying wage instability and polarization trends. For example, online talent platforms create a global online marketplace in which workers based in Ohio and Marseille may compete directly with those based in Nairobi and Manila. Average earnings per hour on Amazon's “Mechanical Turk” platform are below the U.S. minimum wage but 14 times the minimum wage in India. National regulators and tax officials will find it ever harder to get to grips with this borderless “human cloud”.²² Even in countries where significant new good quality jobs are being created, these may well be in different localities from the old ones. For example, whereas many urban areas have successfully offset the loss of traditional manufacturing jobs with the creation of innovative service sector jobs, smaller towns and rural areas often cannot, since large-scale service sector employment usually requires a higher population density to be economically viable.²³ Combined, these trends exacerbate income inequality and add to a loss of identity. In many countries, a failure to sufficiently recognize this, and provide viable alternative pathways to those affected, has begun to lead to a rising political backlash, among other challenges.

To address the global geographic task-reallocation and polarization we will need new partnerships and mechanisms to connect workers with jobs, and jobs with workers,

complementing adult skilling and training and income safety nets. Many traditional active labour market policies seek to provide publicly-supported access to employment services such as job centres and labour exchanges. The new world of work will require more innovation in such policies, including tapping into the very same technologies that have caused disruption. For example, for many white collar jobs, new forms of remote working can be harnessed—including transitioning such jobs from freelance work to long-term employment. Such efforts will also require new regulatory frameworks and tax models when cross-border remote work is involved. For blue collar manufacturing jobs that are displaced, the opportunities for remote global work are severely limited and the loss of identity acute. Reskilling and social safety support will not be enough and governments will need to take a proactive approach to job creation in such geographies.

Core Design Principles

The successful transition to the new world of work should be underpinned by the following core design principles. They should be built into reform efforts in a systemic way to enable workers to reach their full potential as a crucial element of adapting to the Fourth Industrial Revolution.

Universal, equal access

A vast body of research has documented the productivity benefits of diversity and inclusiveness in the workplace. As the new world of work takes shape, this presents an opportunity to leave behind past discriminatory practices and build principles to promote a gender-balanced, diverse, inclusive, inter-generational workforce into workplace design from the outset.²⁴ In addition, by 2020, many countries will have a multigenerational workforce comprising up to five different generational cohorts working at the same time. Three-fourths of baby boomers plan to continue working after they reach traditional retirement age in many advanced economies. Nearly half the global workforce will be millennials by 2030. There is a real opportunity to fundamentally rethink how having such a diverse cross-generational workforce can be an asset for businesses and governments. For example, the increasing decoupling of age from career stage, as a result of flatter hierarchies and an emerging trend towards later-life career changes, creates opportunities for employees of different generations to share skills and may become an increasingly important aspect of workplace learning.²⁵

Multistakeholder leadership and governance

Governments should facilitate inter-ministerial coordination between education, labour and social protection bodies, in collaboration with unions, academia, vocational training providers and the business community. Employers must proactively engage in the design and responsibilities of a new social contract—both as responsible corporate citizens and for their own long-term viability. Businesses should also consider the potential efficiency gains from intra- and cross-industry collaborations when providing training and benefits.

Empowerment of the individual

Workers must lie at the core of managing the transition to the new world of work. Benefits, training and services must be tailored to worker's needs and priorities in order to ensure social safety nets are both efficient and effective, reduce the risk of growing inequality, promote social mobility, and allow developing economies to tap into the growth opportunities of the Fourth Industrial Revolution. Another key aspect of this individual empowerment is expansion of digital access to all to enable more workers to reach new markets and benefit from the digital economy. As recently pointed out by the McKinsey Global Institute, over half of the world's population, is still offline—a population that is disproportionately rural, low income, elderly, illiterate, and female. Keeping individuals at the centre will go a long way towards ensuring all workers have the opportunity to create dignified, meaningful working lives.

Success Stories

The following examples of established success stories and effective reform efforts illustrate emerging best practices for facilitating the transition to a new world of work.

Innovations to create portable safety nets (France, Kenya, USA)

There are many new ideas and proposals that attempt to protect and support workers in the new economy without undermining its characteristic flexibility and efficiency. Steven Hill at the New America Foundation has proposed individual security accounts, based on the multi-employer security account model, in which one central entity manages contributions and benefits for workers across multiple employers. To date, these bodies have largely served a single industry, such as construction or mining. They provide workers a range of benefits they can earn and retain even as they move from employer to employer or job to job, addressing the safety net challenges of new labour markets such as the gig economy. The proposal calls for businesses hiring independent contractors or freelancers to pay a few additional dollars per hour into each worker's account, which would fund benefits such as healthcare, unemployment insurance, sickness/injuries insurance, paid sick leave, and vacation.²⁶

France's *Compte Personnel d'Activité* (CPA) is anticipated to be in place by early 2017, as introduced by the 2015 Bill on Social Dialogue and Employment. It aims to enable individuals to decide how to best mobilize their benefits to fit their individual circumstances. The CPA would guarantee that benefits are no longer contingent on an individual's job. Instead, an individual activity account would provide each active member of the labour force their social benefits (training, support to start a business, shift to part-time work, early retirement) in the form of 'points', regardless of employment status. These 'points' would be adjusted to correct for different inequalities, targeting in particular early school leavers and under-26-year-olds in precarious employment, granting them more points than their university-graduate peers for example.²⁷

The online marketplace Etsy has called for another plan that allows self-employed workers to request withholdings that can be channelled towards a single federally run “MyFlex account” that can be used for multiple types of benefits. This would include a single online portal where they could purchase and enrol in the types of benefits they need.²⁸ Etsy is a member of a coalition made up of a number of researchers, executives of digital talent platforms, labour representatives, venture capitalists and others who are working together to develop viable solutions for the new employment landscape.²⁹

New insurance instruments have recently begun to be designed along these lines. US-based Northwestern Mutual Life Insurance recently added a new flexible disability insurance product for part-time workers. It is portable between jobs, and allows workers to increase their coverage if they transition from part-time work into full-time employment.³⁰ In Kenya, mobile operator Safaricom has partnered with investors and an insurance company to create a low-cost health insurance product to cover the 97% of Kenyans who currently lack employer-provided health insurance. Customers can pay the annual premium in instalments, using Safaricom’s mobile payment service M-Pesa.³¹

The European Union has proposed to update EU rules on social security coordination, to improve the portability of benefits beyond the national level. The proposal covers areas such as jobseekers’ eligibility to export their unemployment benefits for a period of up to six months. This will give them a better chance to find work in another EU member state, and help tackle EU-wide unemployment and skill mismatches. The proposal also clarifies the circumstances under which mobile citizens can claim long-term care benefits in another country, providing legal certainty to a growing group of citizens in Europe’s aging societies that rely on long-term care. Finally, the proposal does not modify the EU’s already existing rules on export of child benefits: the country of work of the parent(s) remains responsible for paying the child allowances, and that amount cannot be adjusted if the child resides elsewhere. However, less than 1% of child benefits in the EU are exported from one member state to another.³²

“Flexicurity” model (Denmark)

The Danish “flexicurity” model has its roots in the strong, productive relationship between trade unions, the government and business. This collaborative relationship, which dates back more than a century, produced the three pillars of the country’s so-called “Golden Triangle.” Flexibility in hiring and firing was intended to benefit small artisan establishments, and still promotes labour dynamism. An active labour market policy, with a heavy emphasis on training and lifelong education and an extensive vocational training system, forms the second pillar. And a generous social welfare scheme, especially for low earners, supports workers while they retrain between jobs. As a result, Denmark’s employment rates are among the highest in the European Union and unemployment rates are among the lowest. Unions play a very prominent role in both shaping and implementing the policy.³³

The Danish model enables “protected mobility” for the labour force. By ensuring its comparatively small pool of workers is continuously and appropriately trained, the country can

support high employment during technological advances and transformation. The European Union has identified a set of common flexicurity principles and is exploring country-level implementation of the following four components: (1) flexible and reliable contractual arrangements; (2) comprehensive lifelong learning strategies; (3) effective active labour market policies; and (4) modern social security systems.³⁴

Comprehensive adult training and skilling: SkillsFuture (Singapore)

SkillsFuture, an initiative by the Ministry of Manpower in Singapore, seeks to develop skills within the population by providing tailor-made training courses with the objective of creating a highly skilled and competitive workforce that contributes to a higher standard of living. The government recognizes that due to technological advancements and innovations, skill required on a job today may not be relevant in the future. The SkillsFuture Council, led by Singapore’s Deputy Prime Minister, will focus on developing future oriented skills that help enhance workers’ productivity. The focus is on moving towards an economy where individuals seek lifelong learning within their areas of expertise that is not motivated solely by the current demands of their jobs. Key focus areas include: (a) helping individuals make well-informed choices in education, training and careers; (b) developing an integrated, high-quality system of education and training that responds to constantly evolving industry needs; (c) promoting employer recognition and career development based on skills and mastery; and (d) fostering a culture that supports lifelong learning.

Singapore’s government has also announced that every individual aged 25 and above will receive an initial credit of S\$500 which will be topped up at regular intervals and will not expire. This credit can be used on a number of government supported courses targeting a wide range of individuals including students in school to workers with years of experience. SkillsFuture is expected to invest over S\$1 billion a year from 2015 to 2020 on initiatives such as career guidance for students, enhanced internships, subsidies for mid-career learning, among others. About S\$600 million a year over the last five years have already been spent on continuing education and training. Singaporeans who want to build specific skills in growing industries can apply for the SkillsFuture Study Award. About 2,000 such awards will be given out annually. About 100 SkillsFuture Fellowships a year will be awarded from 2016 to those who want to further develop their skills to an even higher level.

ICT and digital skills development: National Association of Software and Service Companies – NASSCOM (India)

India’s ICT industry is leapfrogging towards advanced innovation and product development processes that require a workforce with highly specialized skills. However, achieving this workforce readiness requires radical reform on multiple fronts. An industry-driven public-private partnership, the National Association of Software and Service Companies (NASSCOM)—the association for India’s ICT industry³⁵—has launched the “ICT Sector Skills Council” (SSC) in partnership with the country’s

National Skills Development Corporation (NSDC), a government body set up to determine skills standards and future skills requirements across industries, with the goal of creating a sustainable national pipeline of work-ready talent. NASSCOM's SSC is working to identify future skills requirements in 39 industry sectors within which ICT will serve as a platform and a growth enabler. For this purpose, the body leverages the technology and knowledge of its member companies.

Through its education and skills development initiative, NASSCOM also works with its industry members and academic and skill development institutions to help improve the quality and quantity of future-ready talent available to the industry. To achieve this goal, NASSCOM's SSC has pre-defined a set of qualifications—called NOS (National Occupational Standards)—that are transferred across sub-sectors and other industry sectors and are validated and modified annually in response to dynamic market requirements. NASSCOM and its constituent bodies are also working closely with member companies, academia and other associations to understand how work will be impacted as a result of technology-driven skills disruption and to identify the new skills required to be work-ready in technology-related roles involving the Internet-of-Things, big data analytics, and cyber security. Moreover, the NASSCOM Foundation, in partnership with NGOs and the Government of India, has built National Digital Literacy Centers across the country to enable digital literacy for the uninitiated.

Vocational training for the Fourth Industrial Revolution (Germany, Switzerland, Saudi Arabia)

Contemporary industry requires working with highly technical and complex processes that give individual workers more autonomy but also significantly more responsibility. Development of these skills within a practical setting is a way to overcome the mismatch between the skills acquired by the potential workforce in a classroom and those that are required on the job. The goal of the apprenticeship model is to educate the workforce in a broad range of future oriented and practical skills that will be needed to be successful in their careers.

In Germany, vocational training is implemented in a dual programming manner that includes education and training.³⁶ The country's Vocational Training Act provides for 500,000 company-based training contracts a year.³⁷ Apprentices divide their days between classroom instruction and on the job training at a company, typically spending 3-4 days a week at a company acquiring practical skills required for their field of work. This also gives them an opportunity to learn work habits and absorb the culture of the company. The duration of the apprenticeship is between 2-3 years and during this period, the trainees are also paid for their time. Employers in Germany have demonstrated that such practical application helps develop the skills of this critical talent pool allowing them to make an easier transition from the classroom to a work environment. Companies such as Bosch are seeking 1,500 apprentices for their training program in 2017. Within this company program, applicants can choose from 30 different professions including those in the area of mechatronics engineering, industrial

mechanics, and electrical engineering for automation technology. Bosch's program focuses on providing autonomy and encourages cross-functional collaboration with other units.

The Swiss vocational and training system follows a similar process, i.e. 3-4 years of training combined with classroom instruction with an apprenticeship salary for the time spent at work. The Swiss system is managed as a public-private partnership: the professional organizations, the cantons (state governments) and the Swiss Confederation (federal government) work jointly to define curricula and skill sets, and set standards for occupations across the country. The private sector plays a critical role as the entities that provide the on-the-job training and thereafter employ these apprentices allowing the system to be driven and molded by the needs of different industries while the federal government ensures quality control and recognition. After graduation, the apprentices can earn a university degree or take additional classes to obtain further certifications creating a strong basis for lifelong learning.

Other promising future-ready vocational training models exist in various geographies or within particular industries. For example, in Saudi Arabia, Saudi Aramco has worked with the public sector to create a National Industrial Training Institute and an Energy Sector Training Board in order to provide best-in-class technical training to create a skilled and competent workforce for the hydrocarbon related industries through accredited programs and on-the-job training.

Proactive geography-specific skills development and job creation: Detroit Jobs Alliance (USA)

To contribute to Detroit's resurgence, community-based non-profit organizations and public agencies have been working to create opportunities for workers through workforce training, technical education and affordable quality day-care. As members of the Detroit Jobs Alliance,³⁸ these agencies are working together to effectively engage the city's workforce and to enhance employability. Since its inception in 2012, the Detroit Jobs Alliance has engaged over a hundred organizations and established a 25-member steering committee composed of community, education, economic, workforce, labour and other organizations. These stakeholders are part of a collaborative model aimed at creating collective impact. For example, in an effort to promote future job creation and growth, business and government representatives are working with community groups, social service agencies, school districts and non-profit organizations to bridge Detroit's digital divide.

New worker classifications: independent worker status (Argentina, Lithuania, USA)

Under the auspices of the Center for American Progress's Hamilton Project, professors Seth Harris and Alan Krueger have proposed a new intermediate worker classification that would give concerned individuals some of the rights and protections of regular employees, but not all of them. "Independent worker status" would give them the right to, say, some employer contributions towards federal social benefits such as Social Security (independent workers

currently pay the entire contribution), and protection under anti-discrimination laws. But they would not, for example, earn overtime pay, since they work at their discretion.

Globally, some of these concepts are already being pioneered or tested at the municipal, state or even country level. In Arizona, USA, a new regulation, “Declaration of independent worker status” went into effect in August 2016. The new law aims to provide more certainty over the employment status of independent work contractors and gives workers the option to sign a Declaration of Independent Business Status. This provides more clarity for independent workers and the businesses that engage with them, with specific criteria to assess a worker’s status.³⁹

Lithuania is introducing new forms of contracts in its reform of the Labour Code to include apprenticeship contracts, portfolio work contracts, job sharing contracts and employee sharing contracts, and project contracts of employment. Argentina introduced legislation in 2009 that equalizes part-time and full-time employees with respect to social security.⁴⁰

Organization and bargaining models for independent workers: Freelancers Union (USA), FairCrowdWork Watch (Germany), New York City Independent Drivers Guild (USA) and Self-Employed Women’s Association–SEWA (India)

Freelancers Union is the first of its kind. Labour lawyer Sara Horowitz founded the organization Working Today in the 1990s to address the needs of the growing population of freelance workers in the U.S. In 2001, Working Today launched a portable benefits network (PBN) for its members, which later grew into the Freelancers Union, a New York-based advocacy organization that also allows members to purchase benefits such as health insurance at a group rate. The union, which serves largely white-collar, creative urban constituents, has several core functions. It’s a buying collective, offers a physical meeting hub, and works for legislative action on issues affecting independent workers, such as non-payment for work. Any profits from its work are reinvested. In Germany, Fair Crowd Work Watch is an online platform created by the country’s IG Metall labour union to provide crowd-workers with a neutral space to transparently exchange experiences with different online talent platforms, rate them and provide a one-stop repository of applicable laws and regulations.⁴¹

In the United Kingdom, a recent landmark London court ruling derecognized Uber’s right to classify its UK drivers as self-employed.⁴² However, one less-noticed development was the rollout of Uber’s first quasi-union, a company-funded “guild” in New York.⁴³ The guild retains some of the bargaining features of a traditional union, but cannot organize strikes and is not pushing for recognition of employee status (which would grant them the right to formally unionize).⁴⁴ The guild, which is funded by Uber and supported by a traditional union, will provide professional labour representation to drivers in arbitration, among other services.

In a different context, Indian lawyer and activist Ela Bhatt registered the Self-Employed Women’s Association, or SEWA, as a trade union in 1972. The organization gave voice to the vast informal female workforce, who often occupied the least-respected and worst-paid jobs, such as rag picker or garbage collector. As its membership grew, its scale permitted the organization to offer new services to its members. It started its own bank, and provided small loans and other financial services to members. Its current leader, Reema Nanavaty, has proactively forged relationships with government and private-sector actors. One initiative, RUDI, was developed with the Cherie Blair Foundation and Vodafone. It is an app that provides farmers with data on market and weather conditions, allowing them to make decisions about how to deploy their crops or time. Another brings SEWA together with an Indian management school. Together, the two institutions designed coursework aimed at developing the business and entrepreneurship skills of SEWA’s members, enhancing their ability to scale their micro businesses to something more family-sustaining. Their model shows one way to serve marginalized workers through providing services at scale and by leveraging technology and public, private and non-profit sectors in cooperation.

Benchmarking Framework

This section aims to complement the above discussion of key action areas and core design principles by providing constituents from all sectors with a simple assessment tool describing, in a qualitative way, essential steps that could be undertaken collaboratively to create good basic conditions for facilitating the transition to the new world of

work and to implement a “best-in-class” approach. Within each collaborative action area, steps are organized in ascending order of complexity and are non-exhaustive. They are meant to serve as an initial guide for stakeholders to use for self-assessment against their own existing efforts and features highlighted in this document.

Table 2: Facilitating the Transition to a New World of Work

CORE DESIGN PRINCIPLES		
Universal, equal access Multistakeholder leadership and governance Empowerment of the individual		
Collaborative Action Areas	Private Sector Roles	Public Sector Roles
Recognition of all work models and agile implementation of new regulations	<ul style="list-style-type: none"> Sensitize human resources policies to address the needs of the entire workforce including contract, seasonal, platform and other workers Harmonize benefits available across all worker segments, such as leave allowances, parental leaves Develop standards and company guidelines for hybrid teams including project-based staff and contract workers 	<ul style="list-style-type: none"> Update national labour statistics to reflect all forms of work Update and regularly review regulatory classifications of different types of work
Updated social protection	<ul style="list-style-type: none"> Increase flexibility and provide options in company-provided benefit packages Disassociate benefit packages from formal business processes to facilitate portability Actively engage with and support government reform efforts 	<ul style="list-style-type: none"> Create universal, portable social security and benefits system that is centered on individual workers Create insurance schemes suited to the contract workforce and encourage their uptake Increase flexibility of social security systems to suit diverse needs
Adult learning and continuous reskilling	<ul style="list-style-type: none"> Support on-the-job learning through individual, specific and agile training modules in partnership with education institutions and training providers Support career mobility by developing learning modules that address the long-term needs and aspirations of the worker Migrate to a system of competency based recruitment and recognize the emerging system of micro-credentials 	<ul style="list-style-type: none"> Incentivize and support individuals to pursue lifelong learning opportunities, e.g. through individual training accounts Incentivize private sector to provide lifelong learning opportunities to their workforce Align micro-credentials with national standards and qualifications frameworks
Proactive employment services	<ul style="list-style-type: none"> Promote inclusive and coherent work culture within the organization regardless of geographic and contract status Involve employee representatives in work transitions and promote transparency and predictability Engage local communities across all areas of operation 	<ul style="list-style-type: none"> Increase technology foresight capabilities within regional economic policy Broker multistakeholder alliances for regional economic revitalization Create publicly funded programs that promote skills adaptability within and across industries

Notes

- 1 World Economic Forum, *The Human Capital Report 2016*.
- 2 The Guardian, *China is at the forefront of the sharing economy – here's why*, <https://goo.gl/n7Qnqm>.
- 3 ILO, *Non-Standard Employment Around the World: Understanding Challenges, Shaping Prospects*, <https://goo.gl/dm3SIV>; also see publications by the Aspen Institute's Future of Work Initiative, www.aspeninstitute.org/programs/future-of-work/fow-publications.
- 4 The Wall Street Journal, *Companies Find Tech Talent In Robust Freelance Market*, <https://goo.gl/KdGp8z>.
- 5 The American Prospect, *The Unsavory Side of Airbnb*, <https://goo.gl/qYo62P>.
- 6 The Conversation, *Uber in Pakistan: a lesson in the flaws of the sharing economy*, <https://goo.gl/s2UfiS>.
- 7 Eurofound, *New Forms of Employment*, <https://goo.gl/r9uwDJ>.
- 8 Lawrence Katz and Alan Krueger, *The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015*, <https://goo.gl/7ZfERJ>.
- 9 Workforce, *Majority of Workers to Be Independent By 2020*, <https://goo.gl/nolXjz>.
- 10 MBO Partners, *America's Independents: A Rising Economic Force*, <https://goo.gl/xTqqAq>.
- 11 Tech Republic, *Over 70% of global employers now use contractors to help fill IT skills shortages*, <https://goo.gl/re7dYT>.
- 12 Information Technology & Innovation Foundation, *Three Paths to Update Labor Law for the Gig Economy*, <https://goo.gl/GXp2l>.
- 13 Upwork and Freelancers Union, *Freelancing in America 2016*, <https://goo.gl/IPnu3E>; also see Raphael Pope-Sussman, *NYC Passes First Freelancer Wage Theft Protections In The Nation*, <https://goo.gl/7p6NKT>.
- 14 ManpowerGroup, *Millennial Careers: 2020 Vision – Facts, Figures and Practical Advice from Workforce Experts*, <https://goo.gl/wwWWBJ>.
- 15 McKinsey Global Institute, *Independent Work: Choice, Necessity, and the Gig Economy*, <https://goo.gl/DjpH15>; also see Laura Tyson and Jacques Bughin, *The Evolving Independent Economy*, Project Syndicate, <https://goo.gl/Cy2cAM>.
- 16 ILO, *Social Protection Floor*, <https://goo.gl/uvMrUc>.
- 17 Etsy, *Economic Security for the Gig Economy: A Social Safety Net that Works for Everyone Who Works*, <https://goo.gl/v03J1L>.
- 18 The Atlantic, CityLab, *What If You Could Take the Safety Net With You?*, <https://goo.gl/14a9Yo>; also see New America Foundation, *New Economy, New Social Contract: A Plan for a Safety Net in a Multiemployer World*, <https://goo.gl/8giMSn>.
- 19 Fast Company, *This Is The Hidden Challenge In The Future of Work*, <https://goo.gl/xjvMmC>.
- 20 World Economic Forum, *The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution*.
- 21 David Autor, *The Polarization of Job Opportunities in the U.S. Labor Market: Implications for Employment and Earnings*, Center for American Progress, <https://goo.gl/qi9nkq>.
- 22 Sarah O'Connor, *The gig economy is neither 'sharing' nor 'collaborative'*, Financial Times, <https://goo.gl/4P7RQU>.
- 23 Enrico Moretti, *The New Geography of Jobs*, <https://goo.gl/O3CKHH>.
- 24 Lynda Gratton and Andrew Scott, *The Hundred Year Life: Living and Working in an Age of Longevity*, <http://www.100yearlife.com>.
- 25 Lynda Gratton and Andrew Scott, *What Younger Workers Can Learn from Older Workers, and Vice Versa*, Harvard Business Review, <https://goo.gl/VeWZ1L>.
- 26 New America Foundation, *New Economy, New Social Contract*, op. cit.; also see Seth Harris and Alan Krueger, *A Proposal for Modernizing Labor Laws for Twenty-First-Century Work: The "Independent Worker"*, The Hamilton Project, <https://goo.gl/Kpq27r>.
- 27 France Stratégie, *Rapport: Le compte personnel d'activité, de l'utopie au concret*, <https://goo.gl/C2g7PL>.
- 28 Fortune, *Etsy Has a Plan to Expand the Social Safety Net for Gig Economy Workers*, <https://goo.gl/i5mfoc>; also see Etsy, *Economic Security for the Gig Economy*, op. cit..
- 29 Medium, *Common ground for independent workers: Principles for delivering a stable and flexible safety net for all types of work*, The WTF Economy, <https://goo.gl/m65dzp>.
- 30 Northwestern Mutual, *Press Release: Northwestern Mutual introduces income protection for part-time workers and stay-at-home spouses*, <https://goo.gl/zhM1IL>.
- 31 Risk Africa Magazine, *M-Pesa launches premium collection platform for Kenyan health insurer*, <https://goo.gl/IsNAd3>.
- 32 European Commission, *Press Release: Fairness at the heart of Commission's proposal to update EU rules on social security coordination*, <https://goo.gl/5EJ7fM>.
- 33 Eurofound, *Denmark: Flexicurity and industrial relations*, <https://goo.gl/9eYRXx>; also see Denmark.dk, *Flexicurity*, <https://goo.gl/lmyiD2>.
- 34 Ibid.
- 35 The National Association of Software and Services Companies (NASSCOM), www.nasscom.in.
- 36 Quartz, *Advantage of Youth: The world would be \$1.1 trillion richer if it treated its young people more like Germany does*, <https://goo.gl/PXQdR9>.
- 37 Federal Ministry of Education and Research, *The German Vocational Training System*, <https://goo.gl/F9oCUF>.
- 38 Detroit Jobs Alliance, <http://detroitjobsalliance.org>.
- 39 National Law Review, *New Laws Define Independent Contractor Status in Arizona*, <https://goo.gl/m6Zy7>.
- 40 ILO, *World Employment and Social Outlook 2015: The Changing Nature of Jobs*, <https://goo.gl/QoCEQr>; see page 115, Box 4.2.
- 41 Fair Crowd Work Watch, www.faircrowdwork.org.
- 42 The Guardian, *Uber loses right to classify UK drivers as self-employed*, <https://goo.gl/7G3r8M>.
- 43 Independent Drivers Guild, <https://drivingguild.org>.
- 44 Bloomberg, *Uber Found an Unlikely Friend in Organized Labor*, <https://goo.gl/mRHkUe>.

Advancing the Care Economy

The Issue

Ageing populations, cultural shifts and a growing number of dual-earner families are some of the factors converging to drive growing demand in the care economy. However, demand for care is not only driven by socio-demographic factors. It is also evolving rapidly due to the changing nature of work itself. As independent and flexible work arrangements grow, there is an urgent and growing need for more flexible care solutions too. Approached thoughtfully, the growing demand for care services has the potential to generate significant job opportunities, while boosting labour force integration for informal caregivers and supporting new, more flexible ways of working.¹

While care jobs are already a growing occupational sector, more work still needs to be done to ensure these jobs are high-skilled and fairly compensated. Closing the care gap and ensuring quality provision would have multifaceted benefits. It has the potential to create millions of new jobs globally. Since women are often the primary caregivers for both children and ageing relatives, a robust care economy will enable their workforce participation, allowing businesses and economies to benefit from an expanded talent pool, especially given that women make up half of tertiary graduates globally, while creating a better gender balance in unpaid care. A stronger care economy will boost family income by supporting the growing number of dual-earner families while quality care provision will provide a better experience of care for the elderly and young children. This is particularly important given the main populations receiving care: young children, for whom a stimulating and caring environment is linked to later flourishing, and the elderly, who must be cared for with skill and dignity.

However, in most countries today, the care sector fails to comprehensively address the needs of workers, employers and the individuals receiving care. They make insufficient use of new technologies and opportunities for collaboration between different stakeholders. Even among some more developed care sectors, there is evidence of major gaps in funding, delivery and regulation, leading to sub-optimal quality of care. Given the multiple economic and social pay-offs for families, businesses and entire economies, addressing this care gap through a robust, well-regulated care sector should be an urgent priority.

The demand for care varies. Each country's needs are different, with some characterized by high birth rates or a "youth bulge," while others face a rapidly aging population prone to disease and disability.² On the one hand, in the United States, for example, roughly 15% of the population was aged 65 or older in 2015.³ By 2050, that share is expected to reach nearly 21%, of whom about 70% will need some sort of long-term care—an average of three years' worth—during their lives.⁴ By 2020, for the first time in human history, the global number of people aged 65 and over will exceed the number of children aged 5 and under.⁵ On the other hand, Africa as a continent, in particular, will remain relatively young for the foreseeable future.⁶ One recent analysis found that across 53 developing countries, some 35.5 million children under five—more than the number of under-fives in all of Europe—went without adult supervision for at least an hour in a given week. The same report found that across 66 countries, covering two-thirds of the world's population, women shoulder an extra 10 or more weeks per year of unpaid care work in countries with a heavy and unequal care load.⁷

Currently informal, unregulated, ad-hoc arrangements for care are increasingly insufficient in the face of rapidly growing demand for care services everywhere.⁸ This is foremost a question of "sector building", not a gender issue per se. There is substantial evidence that, in the cases where care provision is of high quality and readily available, people make different choices with their time. They are able to spend more time at work or are more productive in the hours they do spend, while the time spent with their family members is more meaningful. A strong care sector opens up multiple personal and professional opportunities. More broadly, care work should be recognized—measured in terms of its contribution to economy and society, even when it is unpaid—its informality reduced—through widespread availability of both public and private supporting infrastructure and services—and its load redistributed—between men and women and between households and society. This document aims to lay out a common set of future-oriented priorities. We hope these priorities can help set the agenda for reform and reinforce the urgency for change in the care sector.

Key Action Areas

There is no one perfect care solution, and countries will need to continue to explore different paths to meeting all of their citizens' care needs. What follows are some of the key action areas we believe policymakers and the private sector should consider as they develop a comprehensive care economy that will enable individuals to flourish as both workers and as caregivers.

Recognizing and valuing care as a vital sector of the economy

Care is a vital element of developing and deploying human capital and boosting growth. It requires greater recognition and support by both government and private sector stakeholders. This means taking an interdisciplinary approach to issues at the intersection of care, education and work. For example, there is a strong correlation between affordable child and elderly care and labour force participation for the working-age population. In addition to boosting labour productivity and economic growth by lowering absenteeism and job turnover, there are also significant job growth opportunities directly in the care sector itself. Care, education and training are also linked when it comes to the re-integration of people into work through relevant (re-)skilling, once they have stepped out to provide care. Governments should strengthen the governance, management, financing of, and data collection on care,⁹ working closely with businesses, informal caregivers and care workers to design viable care sectors. Key issues to address include smart regulation and blending public investment and public-private partnership arrangements to improve the sector's standards and capacity. In essence, governments should look at care as a vital growth sector and recognize that the care economy is as much subject to disruption and disruptive technologies as any other sector. Employers should also take a holistic approach to care policies, in the context of talent policies as a whole. Accommodating such structural changes in the workforce will require companies to recognize the frequency with which caregiving events affect employees and to evaluate benefit packages to reflect the near universality of their impact.

Professionalized care workforce

Currently, most care work is informal, low-paid and uncertified. It is important to improve certifications, standards, attractiveness, pay and benefits in order to professionalize the care economy workforce. This entails creating viable career paths for care workers at family-sustaining wages, and ensuring they have the skills to competently care for the vulnerable populations they serve. As the care economy grows in importance over the coming years, leading to an expanded role for care professions in the future employment landscape, these issues will only become more urgent.¹⁰

Rebalancing paid and unpaid work responsibilities

The existence of a high-quality care economy system fundamentally influences people's life choices, including considerations such as: "What happens to us in our old age?" or "Can we afford to have children?" Yet, while care is an issue of concern to everyone, its provision has traditionally

been incumbent primarily on women. Even as women enter the workforce in unprecedented numbers, they continue to shoulder the bulk of unpaid care work, creating the so-called "second shift."¹¹ On average, men across OECD countries contribute just 34% of the unpaid work that women do. A better gender balance in care yields both economic and societal benefits. For example, rebalancing male and female unpaid working time has been shown to lead to higher workforce participation for women *and* men, and improve psycho-social outcomes for children. When it comes to rebalancing mindsets around care obligations, well-crafted policy and regulation often matters as much as culture. For example, a significant number of OECD countries have put in place paternity leave policies, yet in many the uptake of such policies by eligible men is low in the absence of well-designed incentives. Poorly-crafted policies and their unintended consequences therefore need to be addressed. Finally, formalizing the sector can change societal expectations about women and care work and stereotypes about feminized professions.¹²

Expanding high-quality public and private care infrastructure and services

The quality of care infrastructure is a key element in ensuring it is effective in supporting workers, carers and those who are in care. An emerging body of research shows that government investment in a "care infrastructure"—high-quality nurseries, home-care services, senior care centres, and the like—has a multiplier effect more powerful than investments in physical infrastructure.¹³ But direct public investment is not the only solution, and in most countries publicly provided care will not be able to keep pace with growing demand. Governments must therefore create incentives for employer-provided care and for the development of a well-regulated, socially responsible for-profit care sector. Given the magnitude and urgency of the demand, addressing it requires 'all hands on deck.' Key action areas include: a) development of standards and training to advance care economy jobs into high-quality, skilled, decent jobs; b) inclusive institutional design, creating incentives for people to join a national care economy system, whether fully public or multistakeholder-led; and c) promoting increased investment into sector-building, for example via institutional investors such as pension funds and through tax policy incentives.

Innovation in financial provisions to facilitate care

Governments and businesses have the power to incentivize, subsidize and—sometimes unintentionally—penalize care through policies such as childcare allowances, family benefits, differential policies for primary and secondary caregivers, incentives to employers and other subsidies. These approaches will impact people in different socio-economic strata differently, potentially exacerbating inequality across generations. For example, researchers found that California's state-run paid family leave programme was much more likely to be used by high- and middle-income families than low-income ones, because the programme's 55% wage replacement level was too low for workers in the lower income bracket. In April 2016, the state legislature voted to increase the minimum replacement

to 70% for the lowest-earning third of workers to ensure more Californians could take advantage of this vital benefit.¹⁴ Governments and businesses must take an innovative, agile approach to financing care benefits and conduct rigorous analysis of outcomes for families, employers, workers and the self-employed. Multinational companies are uniquely positioned to engage in and support this process, since they offer care-related benefits, often beyond statutory requirements, across different cultures, industries and geographies. Their ability to document, evaluate and compare outcomes is critical in promoting further research and innovation through cross-company data sharing and policy innovation.

Utilizing technology as a tool for balancing work and care

Parental leave, career breaks and other provisions to balance work and care have been historically geared toward women. More recently, these policies have been used to proactively shape a more gender-balanced approach to care. Technology provides for new modes of flexible and remote work that avoid the constraints of traditional working hours and locations for all workers who have care responsibilities. For example, freelance work brokered on online platforms can appeal to certain working parents or caregivers but full-time employment has yet to fully adopt some of the takeaways from these new, more flexible modes of work. However, there is also a growing demand for flexible care to match flexible or independent work. And it can be facilitated in part by using platforms to provide on-demand care services, as enterprises like Care.com have done. There is also room for experimentation and innovation by employers to identify optimal approaches to utilizing remote working technologies to empower individuals both as workers and as caregivers. Smart home technology may also enable novel approaches to support caregivers, for both children and the elderly.¹⁵

Core Design Principles

In addition to the aforementioned key action areas, the following underlying core design principles are critical to advancing a thriving care economy sector. They should be built into reform efforts in a systemic way to enable the care economy to reach its full potential as a crucial element of adapting to the Fourth Industrial Revolution.

Universal, equal access

Maternity benefit schemes providing income security are only a first key step towards a comprehensive set of care policies that promote women's economic empowerment. They still only cover a minority of women, particularly in developing countries. There are also important concerns about employers bearing the entire cost of maternity benefits, as it may create disincentives for employers to hire, retain and promote women workers.¹⁶ In many developing and advanced countries, public care provision is insufficient and market-based solutions are too expensive for many families. Scaled-up public investment, coupled with private sector incentives, are thus critical for ensuring basic access for all, and unleashing the benefits of the care economy across a wider range of workers, both women and men.¹⁷

Multistakeholder leadership and governance

There is a very strong link between care and early-childhood education and a strong case for reframing this issue in terms of its exceptionally high future human capital "return on investment" (ROI). Currently, this vital investment too often falls through the cracks of the care and education systems and lacks comprehensive and coherent policy. For example, in many countries ministries of labour approach the matter through the lens of alleviating the "care burden" in order to increase women's labour force participation whereas ministries of education consider their remit to begin only at the primary school level.¹⁸ In addition to inter-ministerial coordination, a more coherent approach should create formalized touchpoints and opportunities for exchange between parents, care-takers and educators. Multistakeholder partnerships can also be an effective tool for setting and monitoring quality standards across the care sector at all stages of life.

Better data and measurement

In order to make progress, the entire area of care and unpaid work requires much better metrics and global data to "gather the facts". A genuine call to action is needed. For example, the International Monetary Fund (IMF) has begun to conduct time-use surveys to start measuring and valuing unpaid work. There is also a need to better understand what policies work best in providing care successfully, for example by more systematically documenting outcomes in similar countries with different policies.

Success Stories

The following examples showcase successful or innovative policy and private sector approaches to promoting a better care economy.

Public and municipal innovations in financing and incentivizing care (Sweden, Germany, India, Netherlands, France, USA)

Sweden's publicly funded care economy is among the most advanced in the world. The country spends 3.2% of GDP on children and families, and its policies are designed to encourage gender balance in care. For example, the government added a 1,570 euro "gender equality bonus" in 2008 to incentivize more equal take-up of leave.¹⁹

In Germany, every child between the ages of one to school entry age has the legal right to early childcare support in a public day care centre. Municipalities are responsible for the provision of day care facilities and the federal government provides extensive financial and qualitative support for the needs-based expansion of day care services for children under three. Starting this year, a federal programme will provide access outside of normal childcare facility hours to benefit single parents, shift workers and others working outside of usual childcare hours.

In India, the Integrated Programme for Older Persons provides financial assistance (up to 90% of the project cost) to non-governmental organizations to establish and

maintain old age homes, day care centres, and mobile medical units, and provides non-institutional services to older persons. The scheme also works towards other needs of older persons such as reinforcing and strengthening the family and facilitates productive ageing.

Residential elderly care facilities in Europe and North America are taking in students who volunteer with their neighbours a set number of hours per week in exchange for free rent and access to the facilities' amenities. The experiment was first documented in Deventer, Netherlands, but has since spread to Cleveland, Ohio, and Lyon, France.²⁰

On a municipal level, Salt Lake City, Utah raised a \$7 million social investment bond in 2013 to pay for high-quality pre-school for nearly 600 children. Of these, 110 were identified as likely to need costly special education services in subsequent years. In 2015, school officials announced only 1 of out of those 110 students would need special education services, a savings estimated at \$2,607 per child. The city repaid investors 95% of the savings, or \$2,500 for each child who would continue in regular schooling.²¹ The program brought together private-sector investors including Goldman Sachs, city government and the public school system, and the non-profit United Way, which oversaw the programme.

Organizing and coordinating the sector: the Uruguayan Integrated National Care System (SNIC)

The Uruguayan Integrated National Care System (SNIC), created in 2015, includes both existing policies on health, education and social security and new policies for priority populations, in particular adults with specific care needs, including persons with disabilities, and young children. The National Care Secretariat within the Ministry of Social Development is the inter-ministerial coordination body. Incumbent ministries and secretaries form the SNIC "board", which establishes broad policies and priorities. An advisory group made up of civil society, academia, private providers and care workers interacts with the board and the secretariat. The National Care Secretariat was first envisioned purely as a coordinating secretariat, but to give it political room for manoeuvre, it was allocated a new budget to expand childcare services. Over time, the care services provided by other ministries and state agencies are to be moved under the SNIC budget allocation.²²

Professionalizing the care workforce by consolidating individual care tasks into a standard contract: the Titres-Services Voucher Model (Belgium)

While the care sector is frequently characterized by informal, undeclared labour—and therefore uncertain or even risky working conditions—certain schemes have been successful in creating formal jobs leading to standard contracts and full social protection coverage. The Titres-Services voucher model, established in Belgium since 2004, is one such successful example. Workers are employed by an organization (private or public, for-profit or not) that sells the services to different households. Households pre-purchase vouchers,

usually online, and use these to request the services they need (cleaning, washing, ironing, gardening, shopping, meal preparation, and so on) from the company. The company then assigns the tasks to a worker. The price of each hourly voucher is set by the state, which also offers a 30% tax deduction to users of Titres-Services, thereby providing users with an incentive to prefer a formal arrangement for these services over undeclared work. For the worker, the accumulation of vouchers by working in different households each day offers them access to a formal labour contract guaranteeing the same rights as any other worker, including paid vacation, health and pension rights. Depending on the number of vouchers collected, the worker may choose to work part-time or full-time, and after three consecutive months with the same provider, fixed-term contracts become open-ended. Employers can benefit from a reduction in their social contribution if they recruit long-term unemployed participating in activation programmes. Unemployed persons and recipients of social assistance are targeted by this measure, as 60% of jobs under the scheme must be attributed to such categories of people.

While the scheme is somewhat costly to the public purse due to the tax-reductions offered, its direct and indirect benefits far outnumber the costs. Among these: the societal benefits of creating new good quality jobs for low-skilled workers; reducing the informal sector; new social contributions; new receipts on personal income tax; the impact on consumption from new workers; indirect creation of new jobs like administrative jobs in the contracting agencies involved; and freeing up those who use the vouchers so they can pursue their own careers.

Care standards and business models (USA)

Companies such as Sodexo, Care.com and Home Instead facilitate access to care services, including childcare and eldercare, and are directly and indirectly beginning to create public awareness of the need to improve standards, quality and data among a traditionally informal or fragmented care sector. More recently, Sama—a tech platform aimed at formalizing informal work by connecting low-income people with gig economy jobs in the digital economy—has initiated a partnership with Care.com, a job site for caregivers, to create a "care institute." The program will train low-income people to be caregivers—a service that's offered by few, if any, state or federal entities in the United States, thereby creating an accreditation and an opportunity to demonstrate a formal track record of their on-the-job performance.²³

Holistic care and early education: aeioTU (Colombia)

In Colombia, aeioTU operates holistic Child Development Centers providing integrated services, including education, nutrition, and care for children below the age of six. Using exploratory processes that allow children to develop creative and critical thinking in different areas of knowledge, aeioTU encourages families and communities to be part of the learning process. Since its inception in 2009, aeioTU has established 16 centers with a 10-year objective of reaching some 20,000 children across the country. What differentiates aeioTU from its traditional peers is the way it funds its operations. Although it still relies on government subsidies, donations, and private

grants, the organization has been piloting an innovative cross-subsidization model to improve the sustainability of its operations. Child Development Centers are positioned in both higher-income urban areas and lower-income rural communities at varying price points. Profits generated through their higher-income operations are funneled back into the organization to support their activities targeting lower-income communities. In essence, the fees paid by one urban child help support childcare services for two additional children in rural centers. aeioTU is also experimenting with other revenue-generating activities, including the manufacturing and selling of child-appropriate furniture and materials used at their centers, laying out a promising model for future early childhood interventions targeting low-income communities.²⁴

Sharing economy model in care: Koru Kids (United Kingdom)

Parents are frequently in search of affordable, quality and flexible childcare. More often than not, the burden of childcare falls on mothers, leading to high incidence of attrition, absenteeism and lower productivity. Research suggests that, in the United Kingdom, two-thirds of inactive mothers are not working because childcare is too expensive, while 67% of mothers in work say the cost of childcare prevents them working more. While workplaces are adapting to the needs of the working parents and introducing several flexible measures, childcare provisions are limited and expensive. Koru Kids, a London technology start-up, helps parents connect with each other and share their nannies. This allows a larger pool of parents to have access to quality childcare at an affordable cost. The model is based on parents who have a nanny offering to share the services with other parents in the area. The nannies look after more children at the same time, redistributing the cost of care between the families so that each family pays lesser than what they are ideally expected to contribute to childcare expenses. At the same time, the care personnel also get a greater remuneration for the services rendered. In addition, Koru Kids also provides ongoing support with the administration of tax, contracts, payroll, pension, and so on.²⁵

Incentivizing uptake of paternity leave to rebalance paid and unpaid work responsibilities (Germany and Iceland)

Introducing paternity leave is showing encouraging effects. In Iceland, Norway and Sweden, which all have “Daddy Quotas”, almost half of leave-takers are male. In Iceland and Sweden, the “Daddy Quota” led to a doubling in the number of parental leave days taken by men. Even in South Korea—where only 4.5% of leave-takers were male in 2014—the number of men taking leave has nevertheless risen more than three-fold since 2007, when the father-specific entitlement was introduced. To encourage more fathers to take leave, countries could associate higher payments with shorter leave periods, thereby limiting additional costs. For example, in 2007 Germany switched from a low, flat-rate, means-tested child-raising allowance payable for two years to a higher earnings-related parental leave benefit with floors and ceilings. Payments were set for 10 months, with a further two months available if the partner (typically the father) uses at least two months. Following this reform, of all

the children born in 2007, 8.8% had fathers who claimed the parental leave allowance; this had gone up to almost one-third in 2013. Not surprisingly, research suggests that fathers’ use of parental leave is highest when leave is not just paid but well paid—around half or more of previous earnings.

The experience of Iceland provides a good illustration of the effects of both payment rates and payment ceilings on the use of parental leave by fathers. Following the economic crisis in 2007/08, the ceiling on the Icelandic earnings-related parental benefit—which nominally replaces 80% of previous earnings—was cut by almost half, reducing the actual proportion of earnings received for an average earner from 80% in 2008 to just under 59% at its lowest point in 2012. Despite the cut, the number and share of fathers taking any paid leave in Iceland has remained high—though the share of paid leave days used by fathers has fallen, from just over 34% in 2008 to just over 28% in 2012.

Innovations in employer-supported care (USA, Pakistan and Japan)

Companies such as Yahoo offer employees free access to the online care-finding service Care.com, in their US locations. Some companies also provide backup childcare as a work benefit, either at home or at a nearby childcare facility. Similarly, companies such as Unilever are employing the “Anytime Anywhere” principle, which is directed towards increasing productivity by creating an agile workforce but also facilitates work-life compatibility for working parents and other caregivers. Barclays maternal/adoption pay is not contractual. The policy includes 26 weeks at 100% normal pay plus 13 weeks statutory pay. In addition, Barclays shared parental pay provides 6 weeks at 100% normal pay.

Starting next year, PepsiCo is establishing discounted on-site childcare for employees at their global corporate headquarters in New York and near-site childcare for employees at their Frito-Lay headquarters in Texas. Centres will be staffed with highly-qualified, accredited early childhood educators. PepsiCo is also providing access to on-site or near-site childcare at international locations including Mexico and India and has a childcare facility in Pakistan. Vodafone analysed internal data and found most of its female employees were leaving the company in their first year following maternity leave. That led to the creation of a new global policy, announced in March 2015, to offer 16 weeks of fully paid maternity leave, followed by another six months of full pay for a 30-hour week.²⁶

Japan Post, Japan’s government-controlled postal system, recently partnered with IBM and Apple to provide laptops to elderly citizens so that Japan Post employees can better stay in touch with them. Japan Post already conducts a small elderly supervision program, including home visits. This program aims to make it easier for postal workers to check in on home-bound elderly people and communicate with their families, while IBM’s software will support the elders by reminding them to take their medicines or allowing them to buy groceries.²⁷ Yahoo Japan’s 4-day work week program for all its employees aims to retain employees, both men and women, who are responsible for taking care of their ailing parents in Japan’s unique demographic context.

Benchmarking Framework

This section aims to complement the above discussion of key action areas and core design principles by providing constituents from all sectors with a simple self-assessment tool describing, in a qualitative way, essential steps that could be undertaken collaboratively to create good basic conditions for advancing the care economy and to implement a “best-

in-class” approach. Within each collaborative action area, steps are organized in ascending order of complexity and are non-exhaustive. They are meant to serve as an initial guide for stakeholders to use for self-assessment against their own existing efforts and features highlighted in this document.

Table 3: Advancing the Care Economy

CORE DESIGN PRINCIPLES		
Universal, equal access		
Multistakeholder leadership and governance		
Better data and measurement		
Collaborative Action Areas	Private Sector Roles	Public Sector Roles
Recognizing and valuing care as a vital sector of the economy	<ul style="list-style-type: none"> • Provide parental leave, flexible care policies and breaks from work • Provide employer-endorsed care facilities in the vicinity or within the workplace • Focus on reintegration into the workforce through the provision of opportunities to reskill personnel 	<ul style="list-style-type: none"> • Encourage private sector to adopt flexible care policies • Update public statistics to adequately represent the care economy • Facilitate inter-ministerial coordination on the care economy
Professionalized care workforce	<ul style="list-style-type: none"> • Promote sector building by providing monetary contributions to employees with care obligations to enable hiring of professional support • Recognize skills from the care sector and encourage recruitment of experienced care personnel into new roles • Extend in-house training expertise to develop learning modules for the care sector and provide opportunities for reskilling and upskilling among care professionals 	<ul style="list-style-type: none"> • Promote care careers through public campaigns • Create standards and certifications to provide adequate validation of skills in the sector • Provide incentives and social security to enhance attractiveness of the sector
Rebalancing paid and unpaid work responsibilities	<ul style="list-style-type: none"> • Promote uptake of paternity leave, career breaks, remote work, and flexible hours without discrimination • Contribute to care programs either in the form of money, in-kind services, vouchers or credits • Promote a balanced work culture across all geographic locations beyond statutory obligations 	<ul style="list-style-type: none"> • Update policies and mandatory requirements, e.g. paternity leave can be included under parental leave • Revise tax codes to reduce unintended disincentives for women’s labour force participation
Expanding high-quality public and private care infrastructure and services	<ul style="list-style-type: none"> • Encourage sector building through focused private sector investments • Partner with private sector care providers for onsite care services and/or employer-endorsed local services • Provide information system for locally available care providers to employees to match their requirements with care facilities 	<ul style="list-style-type: none"> • Increase direct public investment in care infrastructure • Increase investment in the sector through pension funds and tax policy incentives
Innovation in financial provisions to facilitate care	<ul style="list-style-type: none"> • Provide financial contribution as a component of the monthly salary 	<ul style="list-style-type: none"> • Provide tax-free care voucher schemes to increase affordability
Utilizing technology as a tool for balancing work and care	<ul style="list-style-type: none"> • Provide work from home opportunities and support to the employee to remain intergrated into the organization • Provide remote working options across geographic locations 	<ul style="list-style-type: none"> • Provide e-government services for the care sector

Notes

- 1 UNRISD, *Care Policies: Realizing their Transformative Potential*, <https://goo.gl/zmRWss>; also see UN WOMEN, *Gender Equality, Child Development and Job Creation: How to Reap the "Triple Dividend" From Early Childhood Education and Care Services*, <https://goo.gl/tVakVW>.
- 2 Population Reference Bureau, *Health Care Challenges for Developing Countries with Aging Populations*, <https://goo.gl/aveNwe>.
- 3 U.S. Census Bureau, *An Aging World: 2015*, <https://goo.gl/MAOSx9>.
- 4 Rebecca Glauber and Melissa Day, *The Unmet Need for Care: Vulnerability Among Older Adults*, <https://goo.gl/BWoJwj>.
- 5 U.S. Census Bureau, *An Aging World: 2015*, op. cit..
- 6 Ibid.
- 7 Overseas Development Institute, *Women's work: Mothers, children and the global childcare crisis*, <https://goo.gl/OblHpY>.
- 8 Ibid.
- 9 OECD, *Unpaid Care Work: The missing link in the analysis of gender gaps in labour outcomes*, <https://goo.gl/OxsLMs>.
- 10 ILO, *Women and the Future of Work – Taking Care of the Caregivers*, <https://goo.gl/zNpUjM>.
- 11 UN Secretary-General's High-Level Panel on Women's Economic Empowerment, *Men, Gender and Inequality in Unpaid Care*, <https://goo.gl/Lcxcdn>; and *Unpaid Work and Care*, <https://goo.gl/s8HfgZ>.
- 12 UN WOMEN, *Redistributing Unpaid Care and Sustaining Quality Care Services: A Prerequisite for Gender Equality*, <https://goo.gl/ilaPq8>.
- 13 International Trade Union Conference, *Investing in the Care Economy: A Pathway to Growth*, <https://goo.gl/inFsaS>.
- 14 ABC News, *Workers in California just got a boost in Paid Family Leave benefits*, <https://goo.gl/77ZWct>.
- 15 The Guardian, *Could the care we need come from the internet of things?*, <https://goo.gl/y1qKv9>.
- 16 ILO, *Maternity Cash Benefits for Women in the Informal Economy*, <https://goo.gl/qwKQXh>.
- 17 Rachel Carrell, *Working parents: our jobs are flexible, so why can't our childcare be?*, World Economic Forum Agenda Blog, <https://goo.gl/h63OHq>.
- 18 UNRISD, *Childcare Service Expansion in Chile and Mexico: For Women or Children or Both?*, <https://goo.gl/ljKiZf>.
- 19 European Commission, *European Platform for Investing in Children*, <https://goo.gl/c2IYEI>.
- 20 The Atlantic, CityLab, *The Nursing Home That's Also a Dorm*, <https://goo.gl/DMFDc9>.
- 21 United Way, *Press Release: Social Impact Bond for Early Childhood Education Shows Success*, <https://goo.gl/xJkvio>.
- 22 UNRISD, *Care Policies: Realizing their Transformative Potential*, op. cit..
- 23 Fortune, *How Entrepreneur Leila Janah Is Working to Transform the Caregiving Industry*, <https://goo.gl/ISstWa>.
- 24 World Policy Institute, *Child Care in Crisis*, <https://goo.gl/D24UVy>.
- 25 Rachel Carrell, *Working parents: our jobs are flexible, so why can't our childcare be the same?*, op. cit..
- 26 Vodafone, *Press Release: Vodafone pioneers global maternity policy across 30 countries*, <https://goo.gl/iQcXuC>.
- 27 The Wall Street Journal, *Apple, IBM to Work With Japan Post to Serve Elderly*, <https://goo.gl/iOvM4V>.

Acknowledgements

The World Economic Forum would like to thank the Steering Committees of the System Initiative on Education, Gender and Work for their leadership and guidance of the System Initiative and of the Dialogue Series on Shaping the Future of Education, Gender and Work.

We would equally like to express our gratitude to the members of the Global Future Council on Education, Gender and Work for their thought leadership and advice, and to the select group of invited subject matter experts for generously contributing to the Dialogue Series with their time and expert insight.

We also thank the members of our broader core community for their ongoing commitment and support to the System Initiative and for addressing gender parity and talent issues globally.

The views expressed in this *White Paper* do not necessarily represent the views of the World Economic Forum or its Members and Partners. White Papers are submitted to the World Economic Forum as contributions to its insight and interaction activities and are published to elicit comments and further debate.

Steering Committees of the System Initiative on Shaping the Future of Education, Gender and Work

Steering Committee on Education and Skills

Asheesh Advani	Chief Executive, JA Worldwide
Jane Broom	Head of Community Affairs, Microsoft Corporation
Laura Citron	Managing Director, Government Practice, WPP
Balaji Ganapathy	Head of HR Workforce Effectiveness, Tata Consultancy Services
Amanda Gardiner	Vice President, Sustainability and Social Innovation, Pearson
Ruth Harper	Director, Global Strategic Communications, ManpowerGroup
Sherif Hassane	Director, Government Affairs and Global Issues, GSK
Tom Hatton	Senior Director, Talent and Organizational Development, Alghanim Industries
Laura Liswood	Secretary-General, Council of Women World Leaders
Patricia Milligan	Global Leader, Multinational Client Group, Mercer (MMC)
Vikas Pota	Chief Executive, Varkey Foundation
Hanne Elisabeth Rasmussen	Chief Executive, The LEGO Foundation
Bettina Schaller	Head, Group Public Affairs, Adecco Group
Vandana Sikka	Chair, Infosys Foundation
Jennifer Suleiman	Director and Head of Corporate Social Responsibility, Zain Group

Steering Committee on Gender Parity

Barbara Byrne	Vice-Chairman, Banking, Investment Bank, Barclays
Beth Brooke-Marciniak	Global Vice-Chair, Public Policy, EY
Connie Collingsworth	General Counsel and Secretary, Bill & Melinda Gates Foundation
Stephanie Czerny	Managing Director, DLD, Burda Media
Joy Deshmukh Ranadive	Global Head, Corporate Social Responsibility, Tata Consultancy Services
Serge Dumont	Vice-Chairman, Omnicom Group Inc.
Mel Edwards	Chief Executive EMEA, Wunderman (WPP)
Anne Finucane	Global Strategy and Marketing Officer, Bank of America

Valerie Germain	Managing Partner, Heidrick & Struggles International
Sherif Hassane	Director, Government Affairs and Global Issues, GSK
Tom Hatton	Senior Director, Talent and Organizational Development, Alghanim Industries
Cary Hobbs	Senior Vice-President and Chief of Staff, Centene Corporation
Laura Liswood	Secretary-General, Council of Women World Leaders
Michael Lopez	Director, Global Inclusion and Diversity, Alcoa
Kim Metcalf-Kupres	VP and Chief Marketing Officer, Johnson Controls Inc.
Patricia Milligan	Global Leader, Multinational Client Group, Mercer (MMC)
Nasser Mohammed Marafih	Member of the Board and Advisor to the Board's Chairman, Ooredoo
Kiersten Salander	Deputy Chief of Staff to the Chairman, Bloomberg
Elinor Steele	Vice-President, Global Communications and Women's Initiatives, Tupperware Brands Corporation
Mara Swan	Executive Vice-President, Global Strategy and Talent, ManpowerGroup

Steering Committee on Work and Employment

Asheesh Advani	Chief Executive, JA Worldwide
Huda Al-Ghosen	Global Head of HR, Saudi Aramco
Ted Bililies	Managing Director and Chief Talent Officer, AxiPartners
Ilya Bonic	Senior Partner, Mercer (MMC)
Pablo Chavez	Vice-President, Global Public Policy, LinkedIn
Laurent Freixe	Executive Vice-President, Americas, Nestlé
Will Galgey	CEO, TNS UK (WPP)
Tom Hatton	Senior Director, Talent and Organizational Development, Alghanim Industries
Laura Liswood	Secretary-General, Council of Women World Leaders
DP Nambiar	Head of Business HR, Tata Consultancy Services
Jonas Prising	Chairman and CEO, ManpowerGroup
Bettina Schaller	Head, Group Public Affairs, Adecco Group
Ellyn Shook	Chief HR Officer, Accenture
Carl Smith	Global Talent Marketplace Leader, EY
Elinor Steele	Vice-President, Global Communications and Women's Initiatives, Tupperware Brands Corporation
Jennifer Suleiman	Director and Head of CSR, Zain
Andries Wilkens	Executive Director, Growth and Strategic Development, African Rainbow Minerals
Phil Wilmington	Co-President, Workday

Members of the Global Future Council on Education, Gender and Work

Anant Agrawal	President, edX, USA
Umran Beba	Senior Vice President, Global Human Capital Management, PepsiCo Inc.
Holly Benson	Vice President and Organizational Transformation Consulting Lead, Infosys
Azita Berar Awad	Director, Employment Policy Department, International Labour Organization (ILO)
Erik Brynjolfsson	Director, MIT Initiative on the Digital Economy, MIT Sloan School of Management
John Evans	General Secretary, Trade Union Advisory Committee to the OECD
Monica Flores	President, Latin America, ManpowerGroup
Rana Foroohar	Assistant Managing Editor, Business and Economics, Time Magazine
Lynda Gratton	Professor of Management Practice, London Business School
Yoko Ishikura	Professor Emeritus, Hitotsubashi University
Han Jian	Associate Professor of Management; Co-Director, Centre on China Innovation, CEIBS
Abdullah Karam	Chairman and Director-General, Knowledge and Human Development Authority, UAE
Stephane Kasriel	Chief Executive, Upwork, Co-Chair of the GFC
Alan Krueger	Professor of Economics and Public Affairs, Princeton University
Prakash Loungani	Adviser, Research Department, International Monetary Fund (IMF)
Sheila Lirio Marcelo	Founder, Chairwoman and CEO, Care.com
Naadiya Moosajee	Co-Founder and Chief Executive Officer, WomHub
Faraja Nyalandu	Founder and Executive Director, Shule Direct
Eric Parrado	Superintendent of Banks and Financial Institutions, Government of Chile

Jay Puckett	Senior Partner and Managing Director, The Boston Consulting Group
Stefano Scarpetta	Director for Employment, Labour and Social Affairs, Organisation for Economic Co-operation and Development (OECD)
Prasad Swaminathan	Global Head of Talent, Learning and Mobility, ABB
Laura D'Andrea Tyson	Distinguished Professor of the Graduate School, Haas School of Business; Chair of the Board of Trustees, Blum Center for Developing Economies, University of California, Berkeley, Co-Chair of the GFC
Dino Varkey	Group Executive Director, GEMS Education
Rebecca Winthrop	Senior Fellow and Director, Brookings Institution
Tae Yoo	Senior Vice-President, Cisco

Expert Contributors

Dialogue Series on Transforming Education Ecosystems

Anne Birgitte Albrechtsen	Chief Executive, Plan international
Keith Devlin	Executive Director, Center for the Study of Language and Information, Stanford University
Charles Fadel	Founder and Chairman, Center for Curriculum Redesign
Bogdan Serban	Chief Executive, Apateq
Jordan Shapiro	Educationalist and Blogger

Dialogue Series on Advancing the Care Economy

Caren Grown	Senior Director, Gender, The World Bank
Phumzile Mlambo-Ngcuka	Executive Director, UN-WOMEN
Monika Queisser	Head, Social Policy Division, Directorate of Employment, Labour and Social Affairs, Organisation for Economic Co-operation and Development (OECD)

Dialogue Series on Facilitating the Transition to a New World of Work

Stefaan Hermans	Head of Cabinet, EU Commissioner for Employment and Social Affairs, European Commission
Hanne Shapiro	Director, Division for Business and Society, Danish Technological Institute
Arun Sundararajan	Professor of Business, NYU Stern School of Business
Rajkamal Vempati	Head, Human Resources, Axis Bank
David Weil	Professor of Markets, Public Policy and Law, Boston University

World Economic Forum

Till Alexander Leopold	Project Lead, Education, Gender and Work, Council Manager, Global Future Council
Aditi Trehan	Project Collaborator, Education Gender and Work, <i>Seconded from Tata Consultancy Services</i>
Saadia Zahidi	Head of Education, Gender and Work, Member of the Executive Committee

We are very grateful to Yasmina Bekhouche for her early work on this project and for the support of Piyamit Bing Chomprasob, Valerie Peyre, Vesselina Ratcheva, Pearl Samandari, Paulina Padilla Ugarte and Susan Wilkinson at the World Economic Forum. We also thank Anna Louie Sussman.

A special thank you to Michael Fisher for his excellent copyediting work and Neil Weinberg for his superb graphic design and layout. Thank you to Kamal Kamaoui and the World Economic Forum's Publications team for their invaluable collaboration on the production of this *White Paper*.



**COMMITTED TO
IMPROVING THE STATE
OF THE WORLD**

The World Economic Forum is an independent international organization committed to improving the state of the world by engaging business, political, academic and other leaders of society to shape global, regional and industry agendas.

Incorporated as a not-for-profit foundation in 1971 and headquartered in Geneva, Switzerland, the Forum is tied to no political, partisan or national interests

World Economic Forum
91-93 route de la Capite
CH-1223 Cologny/Geneva
Switzerland

Tel +41 (0) 22 869 1212
Fax +41 (0) 22 786 2744

contact@weforum.org
www.weforum.org