AI, Sustainability and the Future of Work

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The 'creative destruction' impact of innovation and technological change upon industries, businesses and jobs has long been recognised, as have their implications for political systems[1]. Necessary or planned destruction may also be needed for sustainability reasons and to cope with negative externalities and existential threats such as global warming and climate change. In areas such as artificial intelligence (AI), the rate of change and pace of adoption have speeded up, benefitting some people, organisations, communities and political systems and disadvantaging others. Winners and losers will emerge, depending upon agility, openness to opportunities and new possibilities, willingness to adapt and innovate, and entrepreneurial and other responses. Multiple sequences of events and different reactions to them are underway. What might their implications be for the future of work?

General and Contextual Factors

The nature of future work, its extent, quantity and quality, and how, when, where, with whom, for what purposes and under what arrangements it is undertaken and remunerated will depend upon various factors. These include required responses to changing aspirations, requirements and priorities, global risks and existential threats, economic, environmental and social considerations, the impacts of AI and digital and other technologies, applicable and relevant

legal and regulatory changes, how people, organisations, communities and societies respond to challenges and opportunities, and how employers, professional and public bodies, trades unions and governments interpret and apply their responsibilities relating to work, employment, health and safety. Many of these factors are inter-related. Some may be common and/or shared, others might vary according to the jurisdiction.

Future work, employment prospects and working conditions may also depend upon the local context. Some areas might be impacted more than others by required transitions, necessary transformations and collective responses to trends such as global warming and the existential threat of climate change. For example, the transition away from fossil fuels may lead to high levels of local unemployment, while reskilling and/ or redeployment might depend upon available alternatives, infrastructures and resources, and the ability and capacity of community, regional and national authorities to cope. The costs and benefits of changes may be unequally shared. Social and economic support, the affordability of a minimum basic income and other measures, and responses to mass migrations may also vary and reflect an area's resilience and stage of development.

Different locations and patterns of work create their own potential challenges and opportunities, along with risks such as possible tension between organisational objectives and people's desires for purposeful work and work-life balance[2]. Future patterns of work could also have implications for other issues different entities face and whether they can attract talent and access the skills and capabilities they will need to address them. Future work may be influenced by general technological, socio-economic, political and demographic changes, as well as trends and developments in the specific contexts in which activities considered as 'work' occur.

Technology and Future Work
Speculation about the impact of technology on employment, workplace transformation and the nature of work in an age of greater automation and smart machines is not new[3]. The evolution of employment and work could impact most people, families and communities. Whether an application of technology helps or harms us depends upon how it is used and for what purpose and the extent to which it is monitored and controlled[4]. For much of human history, applications of successive technologies have initially benefitted an advantaged few rather than 'the many'[5].

AI and automation can replace people with machines and/or enable a more productive combination of people and technology[6]. The consequences could be positive or negative for those directly affected and result in human augmentation and beneficial opportunities, or human stunting with unwelcome consequences[7]. Automation can be used to reinvent work, which could impact the number and nature of jobs, as might the deconstruction of jobs in the search for new, leaner and more cost-effective operating models and greater organisational agility[8,9]. For some people, any job may be preferable to life without work, but new jobs created may differ in many respects from those displaced.

Consequences for future work can also be affected by the

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changing aspirations and requirements of different parties and demographic, educational and development factors. Some technological innovations improve working conditions and create new and secure full-time jobs but these may be unequally shared. Lower-skilled workers may derive fewer employment benefits from investments in technology and might experience lower wages. Unlike manufacturing automation there could be continuing demand for the lower-skilled in some areas. It might increase in the care sector, where populations are ageing.

The Quality of Future Work
In certain fields, technological developments could affect the culture of work as well as factors such as its location[10]. This may impact its acceptability and how it is seen by different groups. Greater agility in work processes may need to be matched by compatible changes in the attitudes and mindsets of employees and managers[11]. The extent to which this occurs may shape future work and attitudes towards it. The perceived quality of jobs can also reflect organisational and contextual factors and trends.

Depending upon their affordability, employer policies and priorities and relevant legislative requirements may influence the treatment of those made redundant and the quality of what is offered. Reactions of existing and potential employees and contractors may reflect what alternatives are offered or available to them. Working conditions, locality, prospects, family friendly policies and practices, and opportunities for personal growth, upskilling and reskilling to remain current, can be important in differing degrees when competing for talent.

The quality of future work, its purpose and whether it is meaningful can also be important[12,13,14]. Employer attitudes and positioning in a marketplace for talent may influence and might even determine the extent to which tasks and work offered and/or undertaken and future work are viewed as worthwhile and meaningful. Work arrangements that hinder rather than help innovation and the recruitment, development and retention of talent can limit prospects. Being perceived as a caring and responsible employer can be helpful in attracting talent and retaining staff.

AI and Future Work
Due to its various forms, the many ways in which it can be applied, and the different factors that can affect outcomes, it has not been easy to predict the impact of artificial
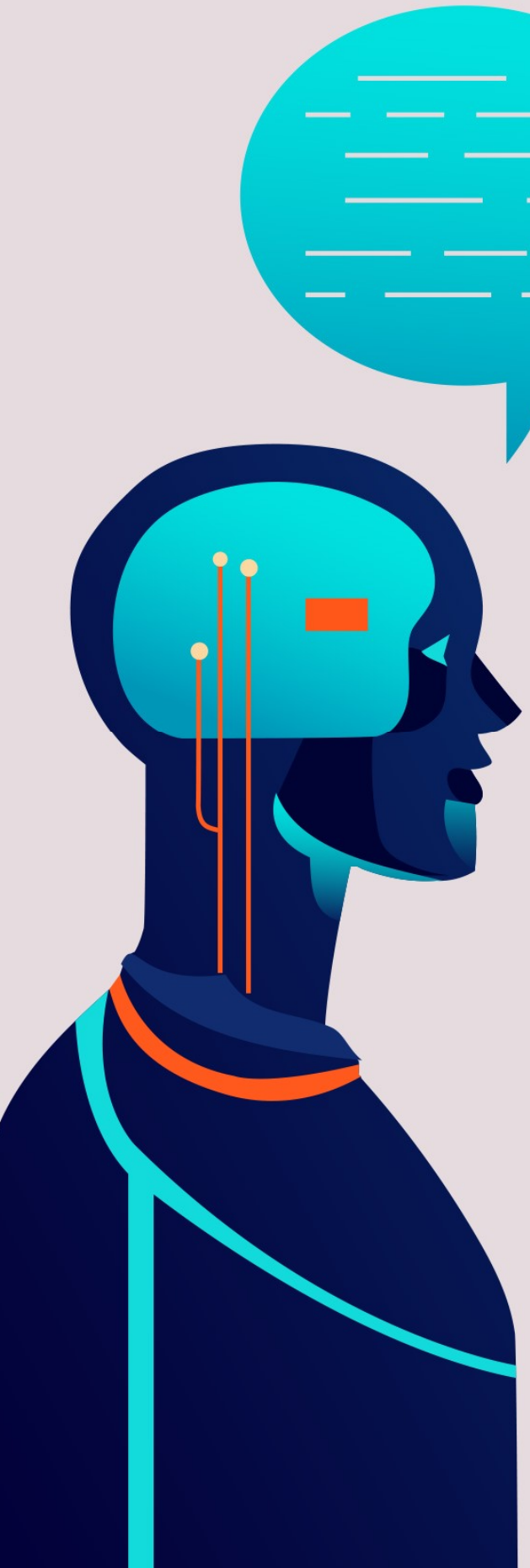
intelligence (AI) on productivity and the consequences of its use for the future of work[15]. AI adoption has however raised questions about the future nature of work, the significance of jobs and requirements for lifelong learning, and its implications for society and politics[16,17]. It has been estimated that AI will affect almost 40% of jobs around the world, replacing some and complementing others[18]. As its use spreads and experience grows, we may need a careful balance of policies to tap its potential.

AI applications can be a force for good and potentially transformative in healthcare and other applications. The use of AI can further social aspirations and objectives, for example in fostering financial and digital inclusion. According to the IMF, while raising productivity, growth and incomes, AI could also replace jobs and increase inequalities[18,19]. New technologies such as AI and advanced automation might additionally accelerate the casualisation of work[20]. Views on whether the impacts of digital technologies on their future work will be positive or negative may reflect whether people are securely employed or vulnerable.

Developments at the frontier of AI pose challenges and risks for people, organisations and their boards, as well as myriad opportunities[4,21]. For example, corporate and other applications of AI, and their use by malevolent actors represent a profound and possibly existential threat to many communities[22]. Generative AI has been identified as both an existential threat and a serious challenge for governments, regulators, corporate boards and governance arrangements[4,23]. The World Economic Forum has identified disinformation and misinformation which can be spread by AI, and the polarisation its use may cause, as leading global risks in terms of their potential impacts[24].

Sustainability and the Future of Work

Where certain activities are not sustainable and/or need to stop, localised unemployment may result. Proposed remedies such as a universal basic income may politicise debates about the future of work[25]. If they are supported economically, could some of those who are made redundant by AI and automation contribute to more sustainable development? Both paid and voluntary work, present and future, could be devoted to achieving sustainability objectives. Sustainability related activities may need to be more prominent in future work. Climate adaptation and mitigation could also create opportunities for both high and low-skilled work, whether remunerated or voluntary. Commitment to net-zero, and its pursuit as quickly and responsibly as possible, is a priority not just for post COP28 discussions, but also for our collective survival. Strategies for a greener future could create 'green jobs'.

Communities facing water shortages, or at risk from flooding, inundation or wildfires, face significant relocation and infrastructure replacement challenges. Where capital budgets and plant availability are limited, the availability of labour could be a resource constraint. Multiple opportunities may be created for both paid and voluntary work. Rewilding and biodiversity initiatives could also give rise to paid work opportunities, supported by a range of unpaid or voluntary activities and subsequent monitoring, maintenance and

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protection by volunteers from local communities. These activities and green roof projects might further both sustainability and employment objectives, while at the same time enabling more people to experience contributions that are fulfilling, meaningful and socially worthwhile.

Community and Social Responses

Given various challenges, risks and threats, many people, organisations and institutions need to do things differently. This will often involve reskilling and redeployment. In some jurisdictions and locations, collective and community action and initiatives might be instigated to address future employment and work-related issues. These may involve public-private partnerships, social enterprises, community interest companies or a co-operative framework to bring local interests together. Such collaborations could be especially relevant where hitherto public body responses have failed to address environmental, employment, sustainability and other issues?[26]

Changes in employment levels and working conditions, practices and terms can have negative economic, health and wellbeing impacts on employees, contractors, business partners and local communities. If a business is a major local employer, these can be particularly acute. Various laws, legal decisions, regulations and requirements concerned with employment and work-related issues affect directors and their duties and responsibilities. Depending upon the jurisdiction, these can range from health and safety and/or equal opportunities legislation to reporting requirements, and they may be subject to change.

Economic pressures can affect people at work and their wellbeing. Inflation can quickly erode the quality of life and savings of those on modest and fixed incomes. Corporate, collective or community action may be required to help address such shared challenges. More business leaders and other decision-makers may need to think about personal, family, social and environmental as well as economic options and impacts[27]. Corporate diversity, equity and inclusion (DEI) policies and corporate social responsibility initiatives could also affect future work. Voluntary activities might deliver some of the social benefits of paid work and reach previously excluded and/or marginalised groups.

Corporate Leaders and the Future of Work

Given the large numbers of people affected by their decisions, and the impact of these on human activities, time and lifestyles, responsible CEOs, corporate boards and senior executives should be aware of issues relating to the future of work. Their attitudes, policies and priorities could influence technology applications, sustainability initiatives, employment prospects, and working arrangements and conditions. There may be certain groups, communities and/or minorities who are especially at risk. These could include the disabled who might be assisted or disadvantaged by different applications of the same or a similar technology. The value that might, could or should be put on future work, and the extent to which it is democratic and/or sustainable, may be suitable areas for board discussion[28].

Perceptions that directors have of their social and environmental responsibilities might affect their responses to the impacts of technology and challenges, risks and threats facing contemporary organisations, and so influence the future of work in areas for which boards are responsible.

Being perceived as uncaring, unfair and irresponsible, may lead to challenge and intervention by government and those seeking to represent the interests of people and communities disadvantaged by business model, organisational and technological changes affecting the nature, location and/or patterns of work. Trade unions, community organisations and others might campaign for action to protect working conditions and enhance the quality of work[29]. Impacts of technology and the replacement of workers may give rise to new legal obligations that concern directors and boards[30].

Future Work Alternatives

Some people may welcome a future option to be free of the necessity to find paid work that dominates much of their lives. Finding alternative activities and incomes for significant numbers of those who are less flexible and skilled, and people who are made redundant and forced to leave paid employment as a result of economic and/or market forces, technological change, automation and AI, could become a social and political challenge[6]. A lack of future replacement or alternative activities might lead to boredom, self-harm, involvement in crime and other mischief, and increase migratory flows already compounded by climate change. Redundancy for some might also trigger collective action to

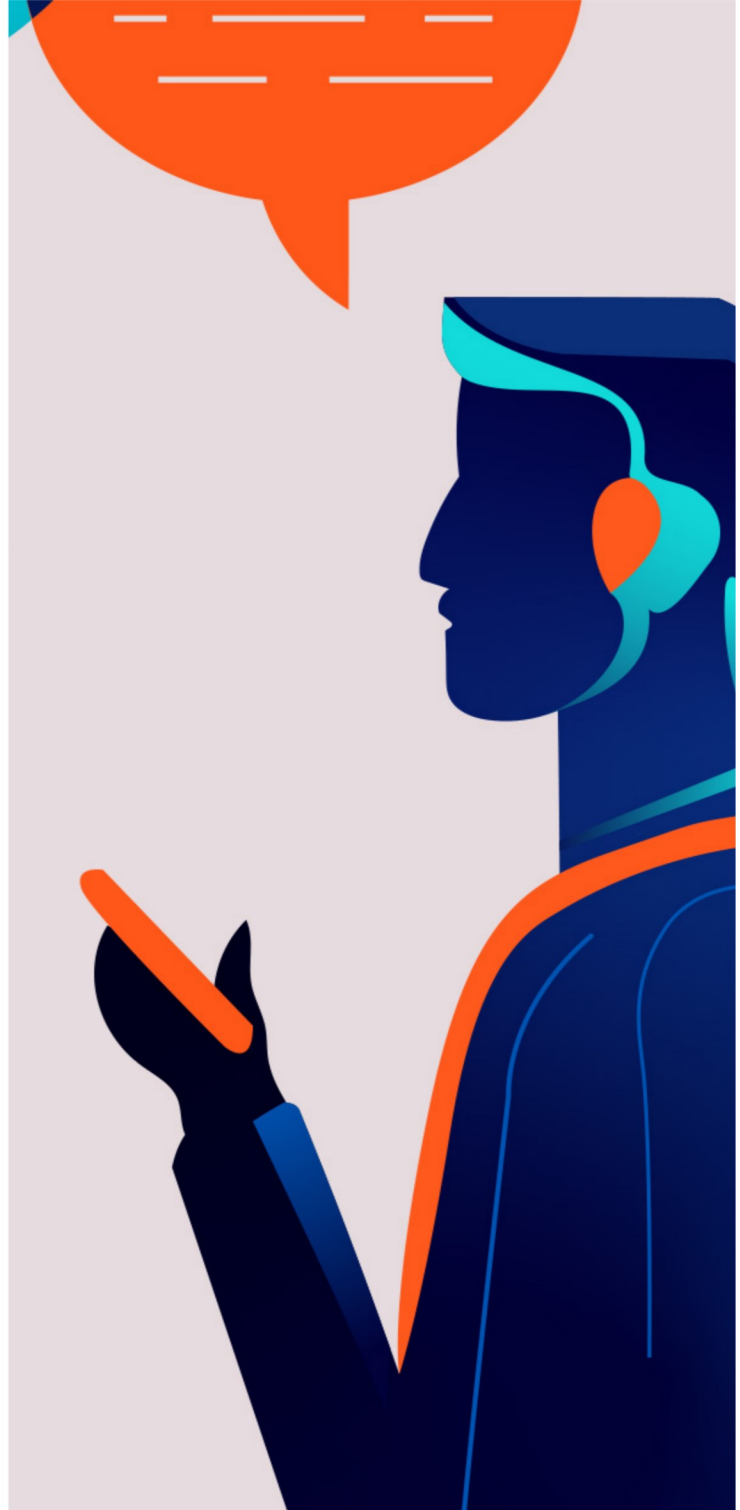recharge transition to more sustainable communities, lifestyles and societies.

As more work is undertaken by machines, and if alternative and less materialistic lifestyles spread, more people may see the opportunities that could accompany technological advances, and become more supportive of minimum income support, especially when it enables activities that may help to ensure our future survival[6,31]. Widespread social and community service enabled by minimum income support could absorb large numbers of people in eco-system and other environmental projects ranging from planting trees and re-wilding to reclamation, flood protection and firebreaks. Initiatives that could be quickly scaled up and/or adapted for use elsewhere might attract the interest of those seeking social responses to collective challenges that could be emulated.

Differential Impacts of Technology

Advanced economies may experience more of the opportunities and challenges of AI than less developed areas[18,19] Some 60% of jobs may be impacted by AI, and in around half of these cases it may undertake tasks previously performed by humans, thus reducing the demand for labour and resulting in lower wage rates and less recruitment. In emerging and lower income countries the impacts, opportunities and potential benefits will be limited by infrastructures and/or skills[18]. Inequalities and social unrest may consequentially increase.

Much will depend upon the social safety nets, retraining, infrastructure and other support programmes and policies and regulations that are put in place to support vulnerable people, families and communities[18,19]. Applying the IMF's *AI Preparedness Index* suggests that higher-income countries are better equipped to adopt AI than less advanced and lower-income ones[18]. Priorities will depend upon the stage of development. Advanced economies could focus on AI innovation, integration and regulation, while lower-income countries may concentrate on building up their digital infrastructures, capabilities and skills[18,19].

In future, boundaries between work and other activities may blur. Attitudes towards work and working conditions and arrangements, expectations of them, and the extent to which they are paid or unpaid, voluntary or imposed, and accepted or rejected may evolve. Available possibilities, and for whom they

might be open, may reflect skill levels, growth trajecto[...]
location, gender, social, ethnic and other factors. Pur[...]
priorities may change. When anticipating and preparir[...]
possible eventualities it might be prudent to be agile, [...]
and ready for many scenarios, rather than plan for a p[...]
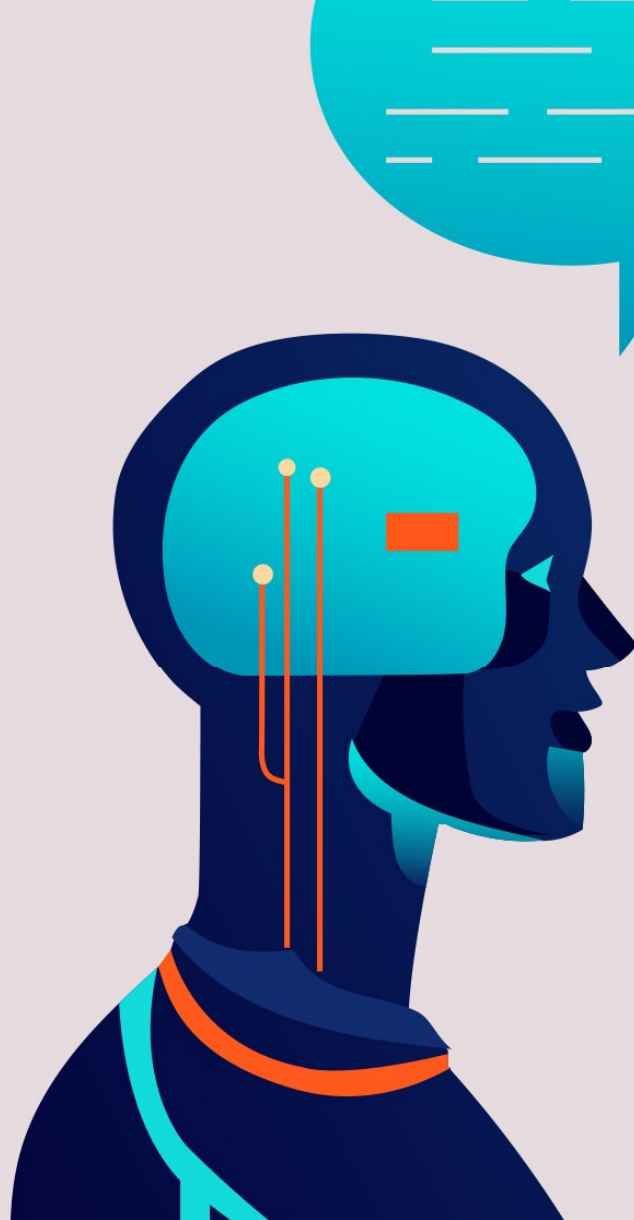form of future work.

Rethinking Work

The scale of individual, corporate and collective adjus[...]
and change required in many locations and internatio[...]
and the limited time available for the widespread adap[...]
transition and transformation that is required, are botl[...]
unprecedented. Multiple issues are already arising, an[...]
of them relating to future work may increasingly need[...]
be handled simultaneously by corporate boards, regul[...]
public bodies, community organisations and national [...]
governments.

The rapidly increasing use of AI raises multiple quest[...]
about the future nature of work, the quantity, quality a[...]
significance of tomorrow's jobs and paid employment, [...]
requirements for lifelong learning and reskilling, and tl[...]
implications for society and politics[16,17]. Will authoritari[...]
societies that use AI applications for surveillance and c[...]
and to spread disinformation, misinformation and fake[...]
have an advantage over democracies? Might certain be[...]
and interactions be easier or more difficult to monitor [...]
others in some forms of reinvented and virtual work?[2][...]
they evolve differently in capitalist and command ecor[...]
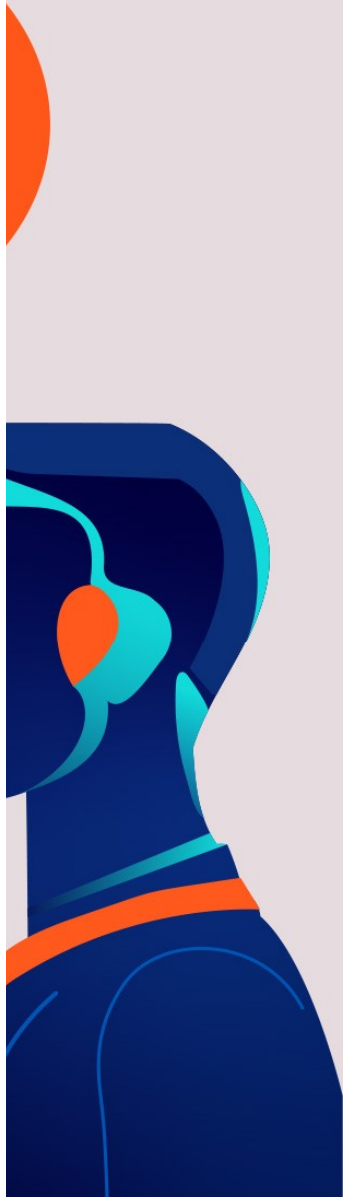and/or democratic and authoritarian societies?

Given the many people likely to be affected by chall[...]
emerging technologies and other trends, it may be ad[...]
and desirable to re-think the meaning of work and its [...]
purpose and value[32]. Ideally, future work arrangement[...]
practices should be inclusive, compatible with availab[...]
digital technologies and sustainable[33]. Work offered may [...]
have to accommodate evolving and perhaps contending
requirements of both employers and employees or contractors
to be mutually acceptable. Take up rates and remuneration
may reflect supply and demand of the work on offer, its
attractiveness and relative bargaining power. Readiness
to prepare for and seize opportunities and required skills,
capabilities and infrastructures will determine likely prospects.

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