POLICY BRIEF

LABOUR AND JUSTICE.

THE GREEN AND DIGITAL FUTURE OF WORK IN GREECE TOWARDS 2050

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March 2023

Sustainability and the digital transition are broadly perceived to be interconnected in a positive feedback loop.

The green transition process in Greece is driven mainly by European initiatives, rather than Greek society

Policymakers and social partners in Greece should collaboratively and proactively define and elaborate on the specific goals of the green/ digital transition (and how this will transform the labour market), as well as on the possible paths towards them

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INTRODUCTION

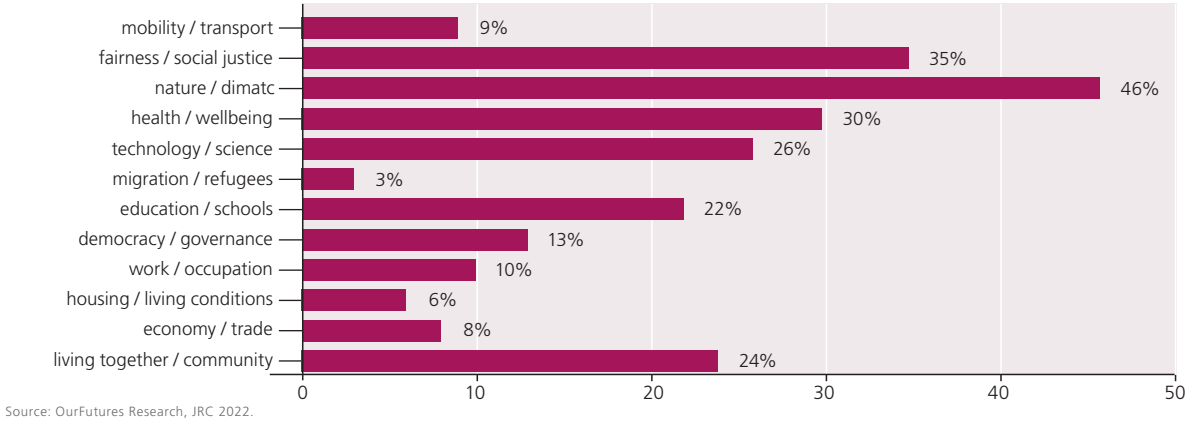
In the holistic context of strategic foresight, green policy or sustainable development agendas and digital transformation agendas cannot be analysed separately,[1] especially when discussing the future of work. Work is a turbulent field closely interconnected with all aspects of life. We have recently witnessed that, in the Covid-19 pandemic, digital transformation has released huge potential for achieving many Sustainable Development Goals (SDGs),[2] such as SDG 12 (responsible production and consumption) and SDG 7 (affordable and clean energy). But it has also revealed significant trade-offs in achieving other SDGs. For example, it has caused a dramatic increase in energy demand and energy cost, further widening of inequality gaps, cuts in employment and a wider digital gap across the board.[3] In general, it is expected that the *twin transitions* (green and digital) will profoundly change labour markets and skills, in response to which social and economic cohesion must be strengthened.[4]

Nevertheless, these changes in the landscape of work are not new; rather they are part of a continuous process that is rapidly accelerating. During recent decades, before the global financial crisis and the pandemic, the work environment had been undergoing a serious transformation, while more radical changes and transformations are expected in the next decades towards 2050. These changes have been triggered mainly by exponential technological change and a group of other megatrends, such as the climate crisis, demographic changes, the crisis (or deconsolidation) of liberal democracy, and the transformation of social values.

In such a rapidly changing, disruptive environment, labour will also be in constant transformation, facing emerging challenges that are impossible to predict. In this *raplex* (rapidly changing and complex) environment, it is required that people, trade unions, governments and international institutions first understand the emerging challenges and then take appropriate policy actions to address them.

In an ongoing research project coordinated by the EU's Joint Research Centre (JRC),[5] people in Greece have been expressing their views regarding the main challenges for the long-term future. According to this study (Figure 1), people are mostly concerned about the environment, social justice, well-being, technology, community and education, highlighting a number of issues that are directly connected with the future of work.

Figure 1
Topics of interest towards 2040



Source: OurFutures Research, JRC 2022.

1 https://www.weforum.org/agenda/2022/10/twin-transition-playbook-3-phases-to-accelerate-sustainable-digitization/

2 https://www.un.org/sustainabledevelopment/sustainable-development-goals/

3 https://www.ipcc.ch/report/sixth-assessment-report-cycle/

4 https://ec.europa.eu/info/strategy/strategic-planning/strategic-foresight/2022-strategic-foresight-report

5 https://knowledge4policy.ec.europa.eu/projects-activities/ourfutures-images-future-europe_en

This original policy brief builds upon a *strategic foresight approach*, which fundamentally accepts that the future is uncertain and full of surprises. Within that framework the brief is based upon, and responsive to, the three work/tech 2050 scenarios produced by the Millennium Project[6] in the context of a global foresight study with the participation of the Greek node. It also draws on the foresight study *Greece: Innovation 2035* (carried out in 2022 by the UNESCO Chair on Futures Research and the Foresight Secretariat of the Greek government).

In particular, *Greece: Innovation 2035* provides the basis for medium-term and country-focused approaches. The study flagged that the future of Greece, including jobs, inclusion, societal peace and the environment, is intrinsically linked to two key uncertainties: sustainability and the economy. The widespread adoption of sustainable practices would boost the country's competitiveness and jobs in the green sector, and radically enhance living conditions, while in the opposite direction the country will face serious challenges with the environment and competitiveness. The establishment of an open economy and a transparent governance environment will, arguably, allow the free movement of knowledge and ideas, as well as a closer interaction with other economies.

Moreover, the three work/tech 2050 scenarios produced by the Millennium Project provide a comprehensive and valuable basis for longer-term thinking and highlight a number of aspects that require coordinated global policies (see Figure 2):

Scenario 1: It's complicated – a mixed bag

A business-as-usual trend projection of the increasing acceleration of change, with *both* intelligence *and* stupidity characterizing decision-making. Irregular adoption of advanced technology; high unemployment, for which governments did not create long-range strategies; and mixed success in the use of universal basic income. The power of giant corporations has grown beyond state control in this government/corporate, virtual-3D, multipolar world of 2050.

Scenario 2: Political/economic turmoil – future despair

Governments did not anticipate the overwhelming impacts of Artificial General Intelligence and had no strategies in place as unemployment exploded in the 2030s, leaving the world of 2050 in serious political turmoil. Socioeconomic polarisation and political gridlock in many forms have burgeoned. Global order has deteriorated into a combination of nation-states, mega-corporations, local militias, terrorism and organised crime.

Scenario 3: If humans were free – the self-actualisation economy

Governments did anticipate the impacts of Artificial General Intelligence, conducted extensive research on how to phase-in universal basic income systems, and promoted liberating self-employment, with full labour rights. Artists, media moguls and entertainers helped to foster qualitative cultural change from an employment culture to a self-actualisation economy.

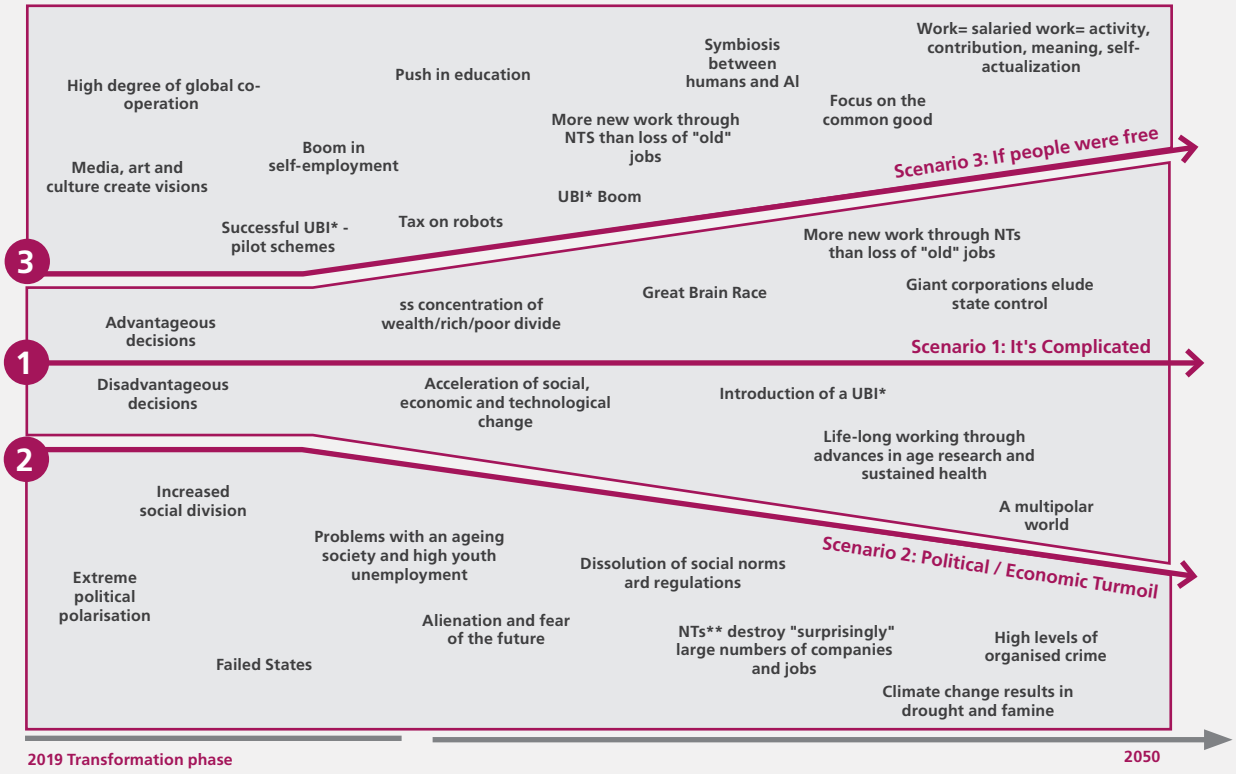
All scenarios reveal a number of *challenges* that need to be addressed by policymakers at both national and global level, such as:

- ethical issues related to Artificial Intelligence and synthetic biology, and their implications in society;
- long-termism as a new approach to address global challenges such as climate change;
- social security and especially the long-term sustainability of the current social security structure and new approaches;
- diversity, inclusion and social justice;
- development of soft skills among students and workforce;
- management of tech evolution with regard to work, mental health, and society;
- rising imbalances within society and among countries.

It is important to stress, however, that *scenarios are not predictions.* It is impossible to foresee the future because 'the future' does not exist. Scenarios are used as tools to allow us to deal with uncertainty and not to forecast what might happen. Thus, the scenarios in this policy brief provide the analytic basis for developing policy recommendations and help us make better decisions today, in order to create preferable and sustainable futures.

6 https://www.millennium-project.org/projects/workshops-on-future-of-worktechnology-2050-scenarios/

Figure 2
The Millennium Project scenarios for the future of work towards 2050



*** UBI= Universal Basic Income, ** NT= Next Technologies**

Source: Future Impacts/Bertelsmann Stiftung, Glenn et. 2018

Source: Daheim and Wintermann, 2019.

2

GREEN AND DIGITAL TRANSITION

Sustainability and the digital transition are broadly perceived to be interconnected in a positive feedback loop, in which policies to achieve sustainability enhance digitalisation, while policies to increase digitalisation have positive feedback effects on sustainability. Along with its national recovery plan (the so-called 'Greek Recovery and Resilience Plan', or *Greece 2.0*),[7] Greece has also started to design more medium-term policies and regulation, including labour law reform that also deals with 'future of work' issues, such as digitalisation and greening the economy.

Nevertheless, neither green nor digital transition policies can be implemented without inclusive dialogue among the various societal actors. The dialogue should involve more people in the process of priority-setting and emphasise the social impacts of the various policies. *Social dialogue*, often underestimated in Greece, will arguably be valuable for the future of work. In this regard, two different short-/medium-term scenarios seem to be emerging (or a mixture of them).[8] In the *first scenario*, social dialogue is promoted and enriched.

The government, national employers and workers' organisations engage productively in a social dialogue aiming to reconcile the objectives of economic growth, social (digital) cohesion and environmental sustainability in a world increasingly shaped by technological change, including digitalisation and automation ('integrative bargaining'). In the *second scenario*, social dialogue decreases dramatically, with forms of dialogue aimed at more 'redistributive' social dialogue – notably collective bargaining for (re)distributing wealth and regulating working conditions – taking precedence.

In fact, as the global economy enters into a recovery characterised by accelerated growth combined with inflationary pressures fuelled, among other things, by energy and commodity price increases, it is possible that *hybrid* forms of social dialogue may appear, including collective bargaining on wages. Regardless of what scenario ultimately prevails, the Greek government and its social partners need to be aware of the urgent need to care for the 'losers' of major changes emerging or accelerating since the pandemic, notably those related to rising inequalities, the transition to the digital and green economies, and demographic developments. In this setting, it is critical to jointly devise and implement solutions for a job-rich recovery, taking into account 'future of work' issues (also outlined in the ILO's *Global Call to Action for a Human-Centred Recovery*).[9]

Moreover, taking a longer view of work, the Millennium Project scenarios describe a turbulent and disruptive landscape that is expected to follow different trajectories after 2030 (Figure 2), depending on government policies. Important topics for Greece include open knowledge-sharing and access to technologies within society and across countries; the establishment of mechanisms to address the impact of emerging technologies (AI, robotics, synthetic biology, cognitive technologies, nanotechnologies, 3D/4D printing, blockchain, advanced brain-to-computer interfaces, and so on); and the transformation of social security.

An alliance among all stakeholders would ensure suitable lifelong learning programmes that empower workers to learn new skills – especially soft skills – which will boost adaptiveness, resilience and antifragility in the future complex and rapidly changing environment. The soft skills gap is already apparent and is expected to grow with relevant policies in all education levels and with tailor-made lifelong learning schemes. Already in 2018, the IBM Institute for Business Value[10] (Figure 3) identified soft skills as more critical than technical or core skills, a finding also backed by other studies.[11]

7 https://greece20.gov.gr/en/

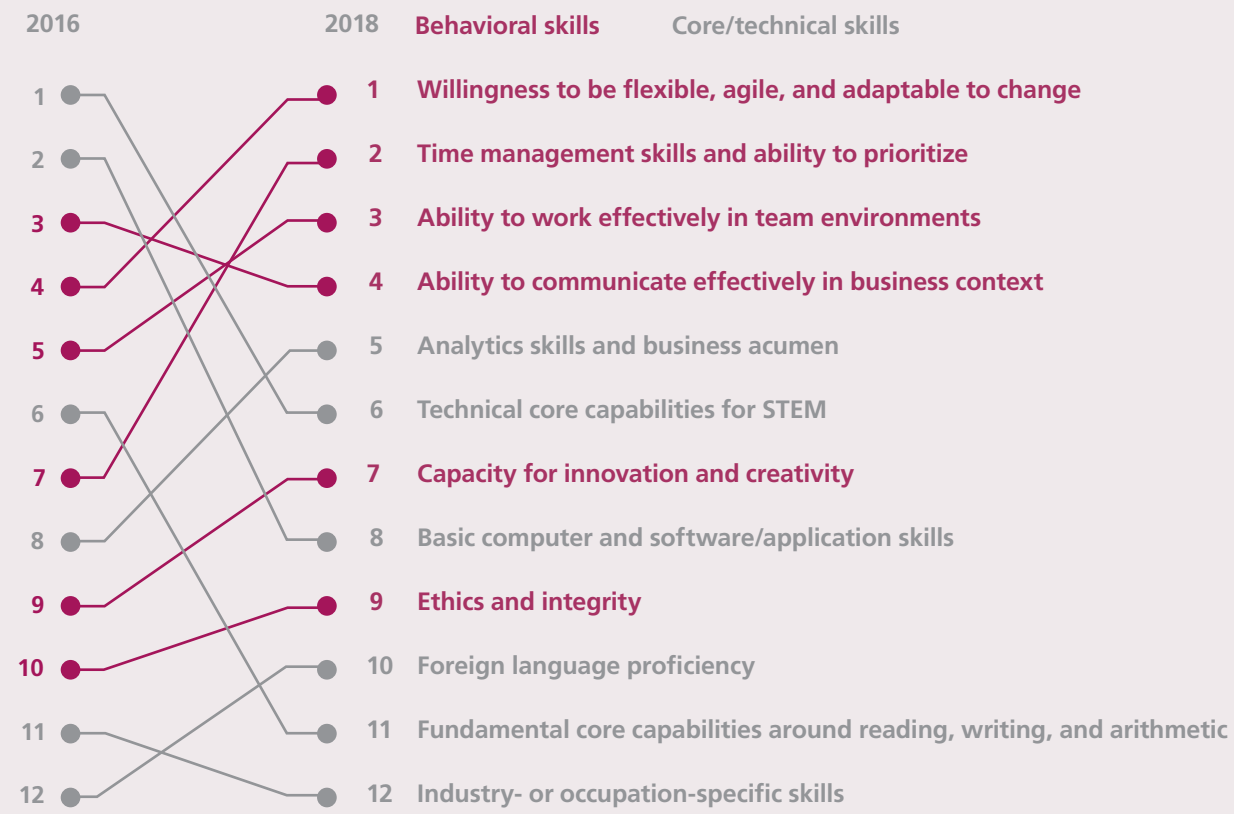
8 https://www.ilo.org/europe/publications/WCMS_857214/lang--en/index.htm

9 https://www.ilo.org/infostories/en-GB/Campaigns/covid19/globalcall

10 https://www.ibm.com/thought-leadership/institute-business-value/report/closing-skills-gap

11 https://www.cedefop.europa.eu/files/9137_en.pdf

Figure 3
IBM Institute for Business Value, Closing Skills Gap report (2018)



Sources: 2016 IBM Institute for Business Value Global Skills Survey; 2018 IBM Institute for Business Value Global Skills Survey.

2.1 IMPACT OF DIGITALISATION ON GREEN TRANSITION IN GREECE

Digitalisation is perceived to be a catalyst in the process of green transition. In Greece, we are currently experiencing the first steps in a massive global digitalisation process which, at national level, manifests in various ways. Society as a whole and companies have started to energetically explore the possible benefits of digital transition that will transform systems of production, management and governance, but also boost innovation across sectors.

Especially in the process of green transition, digitalisation in Greece is expected to have positive feedback effects, allowing the country to reach sustainability objectives:

- Digitalisation will allow vast savings in energy consumption: for example, through smart grids, better energy management and the digitalisation of services (such as education and health care). In this direction, serious investments will be required to cope with infrastructure, but also changes in the regulatory framework (for example, in the provision of health care or education).
- Physical–digital (or cyber–physical) integration, and especially the creation of 'digital twins'[12] will arguably allow us to study how to better address environmental risks. For example, an exact digital replica (digital twin) of Thessaloniki would allow us to better study the actual impacts of climate change on the city and improve participatory resilience.
- Wearables and other sensors will increasingly be used to monitor the environmental and energy performance of companies and of the state, and also potentially support broader behavioural change in Greek society at individual level, thus helping households to significantly reduce their environmental footprints. For instance, through gamification schemes, individuals might be encouraged to recycle or use public transportation.

The green transition process goes together with significant challenges for Greece that need to be addressed adequately:

- The stronger dependence on digital technologies will increase the potential risks of cyberattacks, thus posing serious threats to the operation of critical infrastructures, such as energy distribution.
- Traditional production models need to be transformed, including the energy sector. Coal plants need to be phased out, while the energy grid has to be upgraded to become smart and to allow more distributed energy production.
- Digitalisation will rapidly transform the work landscape and production models. The changes might affect between 1.4 and 14.4 per cent of the national

12 https://en.wikipedia.org/wiki/Digital_twin

workforce,[13] and not only low-skilled staff. Among the employees that are expected to be strongly affected are farm workers, construction workers, handicraft and printing workers, drivers, machine operators, assemblers, metal workers, cashiers and cleaners.[14]

2.2 IMPACT OF GREEN TRANSITION ON DIGITALISATION IN GREECE

The increased intensity of human activities (for example, industry, agriculture, tourism) has overstressed the natural environment in certain areas of Greece. The ensuing anthropogenic climate crisis, driven largely by global economic and population growth, is also already impacting multiple regions, while the paradigm of extraction, which has long guided the Greek economy, is leading to depletion of multiple key resources (such as water basins).

The green transition process in Greece is driven mainly by European initiatives, rather than Greek society. Although somewhat delayed, action is now being taken to mitigate against the detrimental impacts of environmental degradation to safeguard the long-term sustainability of human presence within the natural environment. The process will be supported by various financial schemes (for example, the EU Structural Funds or the Just Transition Fund), while gradually it will become impossible to find financial resources for any activity not complying with the sustainability objectives.

In the coming decades, the green transition process is also expected to have a significant impact on research focus, the introduction of new national policies, laws and regulations, and the creation of an emerging 'green' economy in Greece. Public and private investments are expected to focus on renewable energy[15] (for example, photovoltaics, wind energy, including off-shore production), energy storage and management, various modes of recycling, and the use of alternative (greener) materials. Furthermore, traditional activities will gradually be phased out, or be heavily transformed, such as unsustainable agriculture, livestock, mineral resource industries, and tourism.

In this green transition process, digitalisation will be a key driver. The increasing availability of data can inform the development of solutions in many sectors (such as health care, commerce, farming, transportation and public administration), while adaptation to the various environmental challenges will go hand in hand with better ecosystem management based on data collection and analysis. Digitalisation is likely to support the process, raising awareness, changing economic signals and behaviours, as well as consumption patterns, exploring new business opportunities, and evolving new methods of resource management. Investments, start-ups and job opportunities are expected in various areas related to data collection and management, across sectors.

Looking towards 2050, it is anticipated that the focus will shift to correcting industrial-age environmental damage. In this case, climate change mitigation and adaptation might create many green jobs and more digitalised jobs. In parallel, the growing environmental disasters along urban coastlines caused by climate change are also expected to change the political climate and societal attitudes. In addition, the current concepts of 'circular economy' and net-zero, focusing on a neutral environmental footprint, are expected to be utterly insufficient and will be replaced by net-negative policies and proactive individual and collective initiatives, in line with this new environmental ethos.

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13 https://www.inegsee.gr/wp-content/uploads/2020/01/46_MELETH_Final_E-Book.pdf

14 Eurofound (2021), https://www.eurofound.europa.eu/el/publications/flagship-report/2021/the-digital-age-implications-of-automation-digitisation-and-platforms-for-work-and-employment#tab-01

15 https://reform-support.ec.europa.eu/supporting-clean-energy-investments-greece_en

3

STRATEGIC UNCERTAINTIES

Throughout human history, people's decisions and choices have partly determined their future possibilities. Such decisions and choices could be said ultimately to have defined the course of human civilisation down to the present day.[16] In the same sense, it is clear that the choices we make today, individually or collectively as a society, will somehow impact the futures we will find before us, and delimit our potential in subsequent decades or centuries.

The strategic foresight approach is built upon this line of thought and is intrinsically connected to radical uncertainty. The basic assumption here is that the future of work in Greece – and also the process of digital and green transition – cannot be predicted.[17] The future trajectory of the work landscape is connected with policy decisions, climate change, the level of technological acceleration, natural disasters and other 'black swan' events. It is important to be conscious of this state of affairs and to follow the development of such uncertainties. In the case of the work landscape in Greece, the main key uncertainties, identified by two major foresight studies,[18] are as follows:

- *Demographics*: the Greek population is diminishing and getting older.[19] This *negative trend* is directly impacting the jobs landscape, but also the economy, putting additional strain on social security systems. However, the trend might change radically in the coming decades, for instance because of an influx of war- or climate refugees from Africa.
- *Diffusion of new technologies:* the global acceleration of technology is broadly accepted. However, the level of penetration in Greek organisations and society is disputable. Moreover, it is uncertain whether Greek organisations (or society) will have open access to the new technologies.
- *Transforming education:* all levels of education are crucial for the development of soft or critical core technical skills. The work landscape and national competitiveness are directly related to the establishment of a future-oriented education system and VET policies. The transformation of the system remains a critical uncertainty.
- *Human resources:* brain drain or brain gain? During the financial crisis, Greece experienced a massive brain drain.[20] There are currently policies to reverse the trend and also to attract 'digital nomads'. There is also a lack of workforce in specific technical areas. The success of these schemes is uncertain. Nevertheless, massive new immigration from neighbouring countries, teleworking and foreign investments might reverse current dynamics.
- *Adoption of sustainable practices:* the wide adoption of sustainable practices by companies and organisations is directly related to the establishment of a strong environmental ethos within Greek society. Ethics will increasingly drive consumer choices. Millennials and Generation Z are replacing Generation X as market drivers affecting all business segments and policymaking. In this framework, consumers will increasingly make purchasing decisions based on their resonance with firms' ethical positioning. Nevertheless, predicting societal changes entails a high level of uncertainty.
- *Working conditions:* after the Covid-19 pandemic, the 'great resignation' of white- and blue-collar workers, as well as the widespread emotional exhaustion have highlighted the need to improve working conditions. Better conditions, flexible working hours, 'augmented humans', remote working and polyworking are only some of the uncertainties as we move towards 2050.
- *Digital platforms:* the wide use of digital (Metaverse-like) platforms, the creation of a dynamic creator economy, and digital scarcity are some of the uncertainties of a digital reality that might transform the work landscape forever. Also, the rights of workers in virtual communities, or in digital platforms, are already an issue of concern and uncertainty. The strike by riders at Efood, Greece's largest food delivery company in autumn 2021 revealed that this challenge has affected Greece directly.

16 Graeber, D. and Wengrow, D. (2021), *The dawn of everything: A new history of humanity.* Penguin UK.

17 For a general account of unpredictability, see, for example, Katerelos, I.D. and Koulouris, A.G. (2004), Is prediction possible? Chaotic behavior of multiple equilibria regulation models in cellular automata topology, *Complexity*, 10(1), 23–36.

18 Work/Tech 2050 & Greece: Innovation 2035.

19 https://www.dianeosis.org/research/demography/

20 https://www.sev.org.gr/Uploads/Documents/Brain_Drain_executive_summary.pdf

4

POLICY RECOMMENDATIONS

4.1 FUTURE-ORIENTED POLICIES IN GREECE

A synergetic futureproof model

Interestingly, Greece ranks twenty-second as regards the Digital and Green Transitions, according to *Green, Digital and Competitive: An SME Agenda for the 21st Century* (2022), a recent policy brief that investigates how Europe's 22 million small and medium-sized enterprises (SMEs) are faring in the 'twin transition', drawing on official public data (Eurostat). In particular, both SME Digitalisation, which ranks twenty-fourth, and SME Digital Skills, which ranks twenty-third, remain important problems and signify strong negative signals for Greece's work landscape.[21]

Moreover, the labour market in Greece is characterised to some extent by poor or inefficient conditions, encompassing labour underutilisation, underpaid jobs, increased non-wage costs, informal/undeclared employment, lack and waste of skills, horizontal and vertical skills mismatches, brain drain, limited labour mobility, and low participation of women.[22] Taking a long view, the country's labour force is about 300,000 down on 2010, indicating a significant exodus of skilled workers over the past decade, while no foresight plans are in place to reverse this dynamic.

Further advancing the anticipatory UN 2030 Agenda, which echoes the Millennium Project Global Challenges, may well be able to ensure proactively that the future of work will be more prosperous and fairer for all. In this direction, we strategically need *eco-social policy mixes* for a just and resilient transition. These are still rare, not only in Greece, but also across Europe. Unfortunately, even when in place, these mixes are often characterised by a narrow/myopic scope and a merely 'investment-oriented' approach, while also sometimes attached to alarmingly low climate ambitions.[23]

Current changes already indicate a declining trend for jobs based on routine tasks and physical work, as well as a growing trend for jobs based on intellectual micro- or macro-tasks (especially digital and green jobs).[24] These dynamic trends provide a relatively safe indication for the next decade, while things are expected to be transformed radically after 2030–2035, according to the Millennium Project's 2050 scenarios. Initially, more jobs will be created in sectors with exponential growth (synthetic biology, AI, robotics, cognitive tech, clean energy), but after 2035 it is expected that Artificial General Intelligence (AGI) will reduce the need for human labour in a broader range of jobs, thus increasing the demand for social protection and justice.

In this setting, a holistic *futureproof model* is both vital and necessary in order to capture all the dimensions and aspects involved, as well as to maximise the probability of unleashing growth potential in a work-friendly, inclusive and just manner. Such a much-needed model is highly *synergetic*; it points to possible synergies not only in economic and social policy, but also in other policy areas in relation to demographic issues, family policy, female labour force participation, immigration policy, and so on. In addition, synergies must be strongly considered at the level of stakeholders. Policymakers and social partners in Greece should collaboratively and proactively define and elaborate on the specific goals of the green/digital transition (and how this will transform the labour market), as well as on the possible paths towards them. In light of the ongoing green/digital transition, the role of the Labour Market Diagnosis System must be drastically expanded and deepened. From a *strategic foresight* viewpoint, it is urgently needed to synergistically prioritise concrete scenarios, roadmaps and investments in the (converging) disruptive technologies and innovation sectors of the future.[25] This could also help to maintain and attract talent in the country.

Education and lifelong learning

Education must be at the heart of such efforts. More specifically, the modernisation of the education system and a skills revolution, in the long run, can be considered a productivity and competitiveness challenge, but also as a societal and

21 https://gdc.lisboncouncil.net/en/greece

22 See Greek National Productivity Board Annual Report 2022, https://www.kepe.gr/index.php/en/research/recent-publications/national-productivity-board/item/3212-national-productivity-board-annual-report-2022.html

23 https://www.etui.org/publications/mapping-eco-social-policy-mixes-just-transition-europe

24 https://www.cedefop.europa.eu/files/9137_en.pdf

25 Strategic foresight also ensures that the green/digital policy and regulatory frameworks will be implemented in a consistent and forward-looking manner.

democratic challenge, in order to successfully address negative demographic trends, diminish existing and emergent skills gaps, sustainably transform and support labour markets, and create more and new types of well-paid jobs.

In particular, government, business and trade unions should cooperate to create *futureproof lifelong learning models*, including forecasts of future skills requirements and training programmes relevant to green and digital jobs. This process will make skillsets relevant and actually help to develop them throughout workers' professional lives, so that they are capable of meeting the diverse demands of a fast-changing labour market.[26] Notably, problems concerning skills and specialisations are acute in Greece. For example: *(i) initial vocational education and training cannot meet the demand for certain specialisations, and (ii) the skills acquired by students do not reflect technological advances and the needs of modern enterprises*.[27] Especially the lack of exposure to digital tools and digital ambition makes many young people ill-prepared for the jobs of the future.[28]

A sustainable, just and fair (leaving no one behind) transition implies the progressive *right to quality training and lifelong learning* for each and every worker, as well as strong support for job-to-job transitions, including the much-needed reskilling and upskilling of the current workforce. In parallel, the education system (at all levels of formal education and all types of learning) must be radically updated, or even redesigned in order to fit and anticipate the VUCA (Volatile, Uncertain, Complex and Ambiguous) or BANI (Brittle, Anxious, Non-Linear and Incomprehensible) world that is looming and to develop new hybrid models and future-oriented training programmes for the changing and constantly emerging job profiles of the green/digital economy, over against traditional occupational orientations and vocational (re)training of low-skilled labour.[29]

All in all, trade unions have to strategically empower workers to move along with the complex green/digital transition, while government policy has to guarantee quality jobs,[30] namely, jobs with rights and decency, fair pay, safety and social protection when it is needed. These are indispensable for the future of democracy and are the means of reducing poverty, social unrest and inequalities. Nevertheless, although reskilling will for some time support the transition to new jobs, exponential technological growth after 2030 will probably limit people's capacity to re-skill and the focus is expected to shift to creative industries and crafts.

Fighting inequalities: green/digital intelligence

By 2030, new-technology applications in medicine, agriculture, education, entertainment, and other industries and services are expected to create opportunities for extraordinary wealth extraction. In this regard, crowdsourcing for investments, sharing-economy enterprises, and some guaranteed income schemes should help spread (and redistribute) some of this new wealth among the general public.

In addition, given the *centre–periphery inequalities* that broadly characterise Greece (for instance, the most densely populated and developed regions typically attract more ICT capital and R&D investments, slowing down regional convergence), all regions must be empowered with urgent and practical solutions for their workers, production base, and public income.[31] Along these lines, Jens Geier, a Social Democrat lawmaker in the European Parliament, is calling for regional transition councils.[32]

But a forward-looking social agenda should also address regional inequalities together with *inequality among sectors* (that is, ICT-intensive sectors generally have slower productivity progress than other sectors of the economy), inequality among firms (large high-tech firms attract most R&D and become much more productive than other firms), and *inequality or polarisation among workers* (high-skilled people receive most benefits from digital transformation, while low-skilled people tend to lose income).

Nevertheless, there is always the risk that these multiple (digital) inequalities will become unsustainable.[33] Hence, from a foresight policy viewpoint, a common value-based language must be systematically cultivated and promoted at different levels (workers, employers, SMEs, businesses, institutions, and the polity), a new type of open strategic intelligence or rather a green/digital intelligence. This mainly involves building an ethical green–blue/digital ecosystem as a collec*tive responsibility* (for the history we are writing and the nature we must look after), with digital and green skills, competences, knowledge and awareness.

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26 https://www.euractiv.com/section/economy-jobs/news/the-transition-has-to-come-faster-can-it-still-be-just/

27 https://republic.gr/futureofwork/skills4jobs-a-comprehensive-training-and-employment-initiative/

28 https://www.weforum.org/agenda/2022/10/why-are-young-people-not-preparing-for-the-jobs-of-the-future/

29 For relevant policy recommendations, with a focus on education and learning, aimed at reinforcing the link between the skills supplied by the education system and the skills required by firms, see Greek National Productivity Board Annual Report 2020, https://www.kepe.gr/index.php/en/research/recent-publications/national-productivity-board/item/3054-national-productivity-board-annual-report-2020.html

30 Promoting quality jobs must also be combined with support for fair tax/benefit systems and affordable essential services. See https://ec.europa.eu/social/main.jsp?langId=en&catId=1146&furtherNews=yes&newsId=10303

31 Interestingly, in a recent paper entitled 'The global polarization of remote work', Oxford Internet Institute researchers explore the global geography of remote work mediated by online labour platforms, showing how remote work conducted via online labour platforms (such as Fiverr, Freelancer, and UpWork) mirrors the geographical (centre/periphery, urban/rural) and skills-based polarisation of labour markets in general, rather than spreading work more evenly across countries and regions. See https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0274630

32 https://www.euractiv.com/section/economy-jobs/news/eu-lawmaker-calls-for-regional-transition-councils/

33 For a comprehensive elaboration of the digital inequalities in Greece, see the most recent work of the World Internet Project – Greece (WIP-GR) here: http://eprints.lse.ac.uk/107537/. Notably, according to the WEF's Global Risks Report 2022, digital inequalities are a major risk for Greece in the coming years. See https://www.weforum.org/reports/global-risks-report-2022/

In principle, green/digital (green/blue, or 'turquoise') intelligence can be construed as an expansion and completion of the world's first global standard related to digital literacy, digital skills and digital readiness, the IEEE 3527.1™ Standard for Digital Intelligence (DQ), which was approved by the IEEE Standards Board on 24 September 2020.[34] At policy recommendation level, it must be constructed as an institutionalised agile tool and translated into concrete, reflective and inclusive green/digital policymaking,[35] allowing flexible national and organisational adoption/adaptation and built to promote universal moral values and global or international future-facing agendas, such as the OECD's 11 welfare areas, the Universal Declaration of Human Rights, the European Charter of Social Rights, and the UN's Sustainable Development goals.

This could also be the basis for new, hybrid employment policies and *anticipatory regulation*[36] to deal with current and future changes to working conditions in Greece towards 2050, as well as relations between employees and employers. Of course, this type of intelligence ideally would attract the aforementioned *Scenario 3: If Humans Were Free – the Self-Actualisation Economy*.

Anticipatory regulation should particularly be applied to *gig work*, that is, project-based forms of labour that do not resemble what we would traditionally think of as standard employment relations,[37] especially because online platforms operate within an unclear legal framework. In fact, Greece is one of the few European countries that have made a legislative attempt (in 2021) to introduce a regulatory framework for online platforms (addressing the specific needs of service provision and the working conditions of people working though platforms), without, however, having a specific register of online platforms and with no collective agreement related to platform work. In addition, there are still no court cases relating to the employment status of platform workers.[38]

At policy recommendation level, the government should encourage collective agreements and establish a *national register* to collect relevant information and support *evidence-informed labour policymaking* (given that little is known about the number of platform workers and the heterogeneity of online platforms' business models), as well as to strengthen labour inspectorates and social protection institutions. All platform companies, operators and employees must be registered. Importantly, this is a way to ensure that platform workers obtain the correct employment status in light of their actual relationship with the digital labour platform and gain access to the applicable working and social rights, something that is included in the proposal for *a directive on the working conditions of platform workers*,[39] published in December 2021 by the European Commission.

But the need for more 'futureproof' jobs that contribute to wealth distribution and alleviate job insecurity and income inequality or polarisation may potentially lead to the creative development of *platform cooperatives*, that is, more sustainable, stakeholder enterprises that are collectively owned and controlled by those who participate in them, largely considered as part of a broader social and solidarity economy.[40] Also, there is much more foresight need for clarity about *employment status* and, potentially, reviewing the definition of workers to include platform workers (gig workers), who are highly dependent on online platforms for their security and livelihood, with a parallel focus on the significant risks that digital monitoring and 'e-presenteeism' pose for equality and well-being in work.[41]

But building future-facing conditions of equality and (green/digital) human capital, as well as social and institutional capital, needs time and 'triple-A' – *anticipatory, agile and adaptive* – governance.[42] There are no miracle solutions. Maybe an agreed *deceleration* of the green/digital transition (at least at European level) would be necessary to give companies, workers and civil society time to better prepare themselves for the difficult, unpredictable futures of work.

4.2 OTHER SYSTEMIC AND LONG-TERM POLICY RECOMMENDATIONS

As the system is highly unstable and dynamic, the trajectory of the work landscape in Greece will be affected by various dimensions and parameters towards 2050. The following set of further anticipatory long-term policies[43] arguably complements the holistic and integrated 'synergetic futureproof' approach to address emerging challenges in this landscape.

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34 https://www.disk-project.eu/web/el/standard-for-digital-intelligence-dq/

35 For instance, the government should deploy green/digital intelligence to systematically examine teleworking's impact on the social and residential structure of cities, labour market opportunities, and the cost of housing, changes that may potentially exacerbate urban, green and digital inequalities and cause disproportionate harm to the workers who provide local services. See https://cepr.org/voxeu/columns/teleworking-will-reshape-labour-markets-and-cities

36 Anticipatory regulation is proactive, future-facing, inclusive and collaborative. Most importantly, it should be based on *ethical foresight*. See https://blogs.oii.ox.ac.uk/policy/the-future-of-europe-is-science/

37 https://republic.gr/futureofwork/el/apo-tin-provlepsimi-statherotita-sti-dynamiki-refstotita-i-ergasia-se-mia-koinwnia-psifiopoiimenwn-diktywn/

38 See FES's *Mapping Platform Economy* project: https://futureofwork.fes.de/our-projects/mapping-platform-economy

39 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2021%3A762%3AFIN&qid=1639058069638

40 CICOPA (2018), *Strategic Paper. The Future of Work: Where Do Industrial and Service Cooperatives Stand?* http://www.cicopa.coop/wp-content/uploads/2018/03/The-Future-of-Work.pdf

41 Enhanced employment rights in the digital age include consideration of a right to switch-off, as well as responsibilities to meet the costs of remote working and give online workers the right to access data on their performance. See relevant argumentation here: https://publications.parliament.uk/pa/ld5801/ldselect/ldcvd19/263/26302.htm

42 This new governance approach was initially developed by the UNDP team in Vietnam in 2019 and applied in work programmes in 2020. See https://www.undp.org/vietnam/blog/anticipatory-governance-%E2%80%94-primer

43 Some of these policies were suggested by the Millennium Project study and the Greek workshop organised in Thessaloniki (2017).

Institute for the Future

One critical horizontal action is the establishment of an independent agency to explore the emerging futures of work and propose realistically sustainable labour policy actions. This agency (or organisation) should be publicly supported and funded, but not under direct governmental control. In general, it shall include the following four basic functions:

i. host a *technology forecasting and assessment unit* to inform legislative, judicial and executive bodies about future technologies and their potential impacts (and ethical implications) on the worlds of work;
ii. create a public/private expert/citizen-accessible *national collective intelligence system* to issue early alerts concerning problems and opportunities with ongoing strategic-trend analysis, making it easier for the public to participate in decision-making;
iii. design special training programmes for politicians before they take up government roles and prototype agile governance methodologies;
iv. organise scientific research on anticipatory labour policies and propose experimental actions. For example, an Institute for the Future could produce *alternative cash-flow projections* for universal basic income to see if/when it is financially sustainable (consider license/tax robots, AI and their creations, reduction of tax havens, value added tax, and taxes on carbon, massive wealth growth from new technologies, minimum corporate tax).

Soft skills

It is critical for the education system to move beyond the (linear) industrial revolution model, and to shift education and learning programmes towards mastering skills, especially *soft skills*, rather than mastering a profession. In this context, primary and secondary education should increase focus on soft skills, such as *futures literacy*,[44] while university education should become more flexible to address emerging needs and allow multi- or transdisciplinary programmes, beyond formal undergraduate and postgraduate degrees. Finally, futures studies should be included in the curriculum (just as today we include, say, history), aiming to teach different and alternative visions of the future, strategic foresight thinking, and the creative ability to dynamically diagnose and assess potential futures.

The focus on soft skills must comprise developing creativity, imagination, critical thinking, qualitative human relations, philosophy, art and humanities, public good entrepreneurship, self-employment with real autonomy, social harmony, ethics and values, and 'knowing oneself' in order to be able to build and lead a meaningful working life. Interventions should start at school and end only at the end of a working life, with the emphasis on skills accreditation processes. Anticipatory policies for more fulfilling jobs (with greater human interaction) should arguably include strengthening trade unions and increasing worker involvement on corporate boards in Greece. Last but not least, cultural institutions such as libraries and museums, as well as 'maker spaces', should be strategically repurposed *as creative placemaking*, that is, inclusive hubs for integrating the arts and community building, a nexus for creative contributions and lifelong learning cultural exchange.

Gender policy

The government should promote gender-focused and gender-responsive strategic foresight policies, so that the green/digital transition will not reproduce the digital gender gap and the unequal distribution of income and labour between men and women in Greece and the EU. Notably, in contemporary Greece, there is a significant gender inequality in participation in professional ICT and high technology manufacturing.[45] All the above call for a gender budgeting approach at national and EU level, in order to ensure that funds include a *gender perspective*, assessing their impact on both women and men.[46] Besides, the EU is already determined to act on the *gender dimension* of environmental degradation and climate change with regard to fragile situations.[47] In general, support international efforts in reducing emergent green/digital gender divides and achieving UN SDG5: 'Achieve gender equality and empower all women and girls'.

44 That is, the skill that allows people to better understand the role that the future plays in what they see and do. See https://en.unesco.org/futuresliteracy/

45 Kontolaimou, A. and Skintzi, G. (2018), Digitisation patterns of the Greek economy and society, Greek Economic Outlook, 37, 41–48.

46 https://www.euractiv.com/section/participatory-democracy/news/experts-call-on-eu-to-fully-integrate-gender-approach-in-blocs-budget-and-policy/

47 https://www.eeas.europa.eu/eeas/challenges-opportunities-green-transition-digital-transformation_en

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CONCLUSIONS

In the present study, the 2050 horizon signifies the need to look not only at the primary consequences of the green/digital transition for the work landscape, but also at secondary and tertiary ones. Also, there is much evidence that we need to *think globally and long-term* about the future of work–technology dynamics, especially in light of this 'twin' transition. First, *thinking globally* because, even if Greece does everything right to make a relatively smooth transition to the next economy, failures in neighbouring countries will drive massive migration. Second, *thinking long-term* helps us to consider structural socio-cultural and ethical changes that may result from 'Artificial Narrow Intelligence', robotics and drones, also including the more distant possibilities of Artificial General Intelligence, quantum computing, advanced brain–computer interaction technologies and the proliferation of thousands, if not millions, of new life forms from synthetic biology.

Given this state of affairs, a synergetic futureproof model, including green/digital ('turquoise') intelligence as an institutionalised agile policymaking tool, could help to transform labour markets sustainably, support workers' dignity, and create more and new types of quality jobs. In the same context, technical upskilling, as well as reskilling are necessary in core technical skills. However, strategic attention is increasingly turning towards soft skills, as already indicated in the original study by the IBM Institute for Business Value, but also in the recent CEDEFOP study focusing on Greece.[48] Overall, the landscapes of both work and education/training require a new, forward-looking social democratic contract to repair injustices, while transforming the future.

The qualitative transformation of the education and training system should be a top priority, but also qualitative changes in government, business, technoscientific research, and the purpose of work. Several future challenges we will face in this ambiguous transition have been underlined by experts and governments, but equal time must be given to describing what we should do to make the green/digital shift better, fairer and more equitable. For instance, neither Greece nor any other country has done a cash-flow projection to show when and how a universal basic income would be financially sustainable and, in parallel, a study on its moral justification.

The pace of technological change is increasing exponentially and we now have less time to adjust to change. The only policy that buys more time would be the establishment of a *foresight agency* to help us gain strategic agility and look further into the future of diverse possibilities. This would widen the time gap between the present and those more distant possibilities described in the three Millennium Project's Work/Tech 2050 global scenarios (Mixed Bag, Future Despair, Self-Actualisation Economy). To achieve the positive or desirable scenario (Self-Actualisation Economy), conscious raising and collective action, as well as anticipatory policy and regulation matter enormously.

But we also need to reflect further (and more dialogically) and to elaborate on these scenarios and the relevant challenges and megatrends, which will impact the future across sectors, as well as on the critical strategic uncertainties (demographics, diffusion of new technologies, transforming education, human resources, adoption of sustainable practices, work conditions, digital platforms), to become better prepared and to transform the emergent risks into opportunities for all. As everything seems to be becoming more hybrid and complex, it is reasonable to assume that actions to address this transition will be hybrid and complex as well. A more inclusive, holistic, long-range and international approach is required to address the future of work in Greece.

48 https://www.cedefop.europa.eu/en/news/greece-findings-country-wide-large-scale-research-vet-graduate-tracking

The medium- and longer-term future of work in Greece is essentially unknown and unpredictable. It is part of a broader complex and rapid transformative process, driven by the fusion of the digital, biological and physical worlds, as well as by the growing utilisation of emerging and converging technologies, such as AI, quantum computing, nanotechnology, robotics, 3D/4D printing, blockchain, synthetic biology, bioengineering and advanced brain-to-computer interfaces.

Such a highly complex and uncertain system requires genuine hybrid approaches and synergetic futureproof models, including green/digital ('turquoise') intelligence as an institutionalised agile policymaking tool to sustainably transform labour markets, support workers' dignity, and create more and new types of quality jobs. This could also help to imagine, develop and use future-oriented strategies for the work environment through bottom-up participatory processes. Today, futures studies and strategic foresight are considered essential in order to dynamically understand or diagnose (but not to predict) the nature of the system, to offer a collaborative platform for democratic dialogue and, ultimately, to provide efficient and practical methods to design, re-design and apply work-friendly policies that embrace complexity, nonlinearity and uncertainty. To facilitate positive social outcomes from the green/digital transition and avoid or mitigate any negative ones, is the real value of any foresight analysis (including ethical foresight analysis).

Based on this approach, a number of national and international foresight studies are analysed, in combination with unpublished primary data. As it is presented in detail, the complexity of the work/tech scenarios (namely, Mixed Bag, Future Despair, Self-Actualisation Economy) and the key challenges require conscious-raising and systemic policies beyond the narrow job area, while other policies need coordination and action at a global level. The suggested future-facing policies acknowledge several strategic uncertainties (namely, demographics, diffusion of new technologies, transforming education, human resources, adoption of sustainable practices, work conditions, digital platforms) and accept that the system will be transformed dramatically after 2035.

A series of anticipatory policies are focusing on upskilling and reskilling (especially including the enhancement of soft skills), while others focus on tools to safeguard fundamental human rights, working and social rights, ethical principles, social justice, and societal peace in a turbulent future of rapid and nonlinear transformations. Also highlighted is the urgent need to implement policies and regulations focusing on longer-term horizons, which are usually neglected and have been unpopular among governments and citizens alike. Finally, the only proactive policy that allows more time to react is the establishment of a foresight agency to help us look further into the future of diverse possibilities and to identify creative, imaginative and inclusive pathways.

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IMPRINT

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Committed to excellence

ISBN
978-618-5779-00-9

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