Higher Education and Research in the Post-Knowledge Society

Higher Education and Research in the Post-Knowledge Society:

Scenarios for a Future World

Edited by

Merle Jacob, Mary-Louise Kearney
and V. Lynn Meek

Cambridge
Scholars
Publishing

Higher Education and Research in the Post-Knowledge Society:
Scenarios for a Future World

Edited by Merle Jacob, Mary-Louise Kearney and V. Lynn Meek

This book first published 2022. The present binding first published 2022.

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN (10): 1-5275-8140-3
ISBN (13): 978-1-5275-8140-1

This book is dedicated to our respected colleague and friend,
Professor Vincent Lynn Meek (1948 - 2022).

Lynn was a distinguished scholar and well loved member
of the international higher education research community.

He will be long remembered in the academy and the wider world.

TABLE OF CONTENTS

PREFACE

How will higher education and research (HER) evolve in the decades ahead? How will policy makers, universities and other institutions and their partners cooperate to generate high-level knowledge and to train the skilled human capital which underpin the development of successful societies? These questions are perennial priorities for every country.

When this book was conceptualized in 2019, the aim was to explore the medium- and long-term challenges of HER in the era known as "the Post-Knowledge Society and Economy" where major socio-economic change was expected to occur in tandem with advances in communication and information technology. Two concurring and widely adopted agendas were the reference for this exercise:

- the 2008 OECD framework, *Tertiary Education for the Knowledge Society*, identified areas of the HER sector where governments and institutions should focus their efforts for renovation: *governance and institutional management, financing, quality assurance, equitable access, R+D+Innovation, the academic profession, graduate employment, expanding internationalization* and *the impact of technology;*
- the 2009 UNESCO report, *Trends in Global Higher Education: Tracking an Academic Revolution* (Altbach, Reisberg, and Rumbley), emphasized the very different contexts of middle- and low-income countries where access to the knowledge society and economy involves numerous barriers.

The international authors who are contributors to this book explore this agenda in terms of its future evolution and impact which may provoke a sea of change in its operations. These chapters are set against a background of important societal change notably the fourth wave of globalization, demographic shifts, socio-economic inequality and climate change. One essential mission of HER is to help address the challenges of these transformations at both global and local levels so as to ensure that the goal of social cohesion is achieved.

A particular influence on this book has been the unexpected COVID-19 pandemic which is sometimes described as a Black Swan phenomenon (see Chapter 1). Already, this ongoing global shock has touched virtually all aspects of personal lives and professional activities while, concurrently, the shift towards a more digital-driven society has sharply accelerated. It is now acknowledged that this crisis will continue to have serious ramifications worldwide in the years ahead.

Yet this event may have a positive aspect. It constitutes a unique opportunity to forge a new and more relevant contract between society and all stakeholders responsible for ensuring that the benefits of knowledge and know-how are shared more equally amongst the global community. For this reason, efforts to resolve and end the trauma brought about by this pandemic must continue and grow evermore robust.

We hope that policy makers, institutional leaders, the academy, students, employers and society at large will find this book topical and thoughtful in these uncertain times.

Merle Jacob
Mary-Louise Kearney
V. Lynn Meek

References

Altbach, Philip G., Liz Reisberg, and Laura E. Rumbley. 2009. *Trends in Global Higher Education: Tracking an Academic Revolution*. Paris: UNESCO.

Santiago, Paulo et al. 2008. *Tertiary Education for the Knowledge Society.* Paris: OECD.

ACKNOWLEDGEMENTS

The Editors thank the following for their valuable assistance in preparing this book:

Dianne Davies, Australia, Lauren Magnan, France, Rebecca Cronin, Yasmin Walker and Alice Yang, New Zealand and the University of Lund, Sweden

FOREWORD

SIR PETER GLUCKMAN ONZ KNZM FRS

PRESIDENT OF THE INTERNATIONAL SCIENCE COUNCIL
DIRECTOR, KOI TŪ; THE CENTRE FOR INFORMED FUTURES
UNIVERSITY OF AUCKLAND, NEW ZEALAND

It has been said that universities are some of the most conservative institutions in the world. A fair or unfair comment? That the question could even be posed, suggests the ongoing challenge for higher education and research as we head towards the middle of the 21st century. We face much of the globe deserving faster social and economic progress, while on the other hand we confront issues of climate change, environmental destruction, growing inequalities, geostrategic tensions, demographic change, rapid urbanization, greater societal polarization and rapid technological change. Societies are confronting the need to transform to sustain social cohesion and human development, while protecting our planet from our species' past and current ravages.

Universities are critically important institutions in this context. They are responsible as sources of higher education, scholarship and research. But how should they now evolve? These are the questions that this volume of very thoughtful essays sets out to explore. The various chapters look at the issues through very different lenses, but in reading them it becomes very clear that the sector is a critical infrastructure asset for all societies, although it is indeed evolving and must continue to do so.

This volume raises many questions, but the one universal proposition that hopefully all can agree on is that higher education has a critical part to play in every society because of its multiple and essential roles—its enhancement of human capital, its contributions to the production of new knowledge, its transfer of that knowledge to the benefit of the economy and importantly to the benefit of both its local society and more broadly. Yet the broader value of higher education is not always clear to key stakeholders, leading to the risk of constraints on how higher education can contribute. In many countries, especially in the developed world, higher education institutions are increasingly caught between being a community of scholars and teachers

and being a business—this managerial turn has been very obvious in many universities.

How should higher education be provided in a hyper-connected world—a world in which facts are increasingly contested, a world in which information and disinformation flow freely, yet also a world in which knowledge is expanding at an unprecedented rate and is widely available? And these questions must be asked in the context of a very different cadre of students who have access to knowledge in forms not previously available—albeit requiring the skills of critical thinking to separate reliable from unreliable knowledge. How do we look at institutions in context? A well-established, highly ranked research university is very different from a new university in a low-income and rapidly developing country. Yet while one is well resourced and one is not, developing the latent potential of the latter and enhancing higher education across the globe are critical to the sustainability agenda and the Sustainable Development Goals.

We are seeing the rapid development of online higher education accelerated by the pandemic, but what is lost and what is gained in that transition? Can it enhance North-South and South-South intellectual collaboration? How do we ensure the many other advantages of in-person teaching? Can online delivery ensure teaching in context, can it give students the many soft skills that collegial learning provides? As technologies evolve further will such concerns be obviated by developments in virtual reality and holography? Will such methods make access to the highest quality education more universal? How will we marry the principles of degree-based teaching with the increasing need for lifelong relearning and micro-credentials? How should universities balance their roles as educators, as research engines, as service and impact providers? These are questions all interested in the future of higher education must grapple with.

At the same time, the utilitarian turn of society and governments has put uneven emphasis on the range of disciplines, particularly STEM subjects, that are well supported. How do we allow new disciplines to emerge—conservative universities and structures can inhibit the emergence of new disciplines at the very time they could be most valuable and responsive to the changing needs of society. No one would doubt the importance of STEM subjects and the graduates who emerge from such training, but financial concerns are in many places putting pressure on the social sciences, creative arts and humanities. We cannot build quality and healthy societies without investing in these too—but that does not stop these disciplines feeling increasingly threatened. Higher education has been at the forefront of

confronting the many issues of bias and diversity in society, their efforts creating more healthy societies.

Both society and the students themselves invest real resources into higher education. The issues of quality assurance and accountability arise for the institution, faculty, students and potential employers. We have seen in some countries how changing the balance of funding affects the relations and operations of universities with mixed views on their impact. The complexities of higher education and research assessment have led to a plethora of approaches with little consensus on what is important to measure. Clearly, institutions must be accountable and performance must be assessed but we are still searching for approaches that meet the needs of all the stakeholders without inappropriate negative effects.

An autocratic turn has taken hold in some countries putting at risk the principles of academic freedom that have served humanity so well—yet at the same time the concept of the university as a safe place for difficult and challenging conversations seems at times to be undermined by students and faculties themselves. This raises the hard and contentious question of whether the university is a tool of ideological engineering. The university certainly must be a tool of social advancement but while it must encourage active thought it must not generate thought control.

Such questions bedevil the future of higher education even in the most advanced countries. Issues of governance, funding, faculty development and competition between institutions—based on pseudo-objective, so-called ranking systems which now dominate so much higher education thinking and management attention in rich countries—need to be addressed. Academia feels increasingly squeezed with declining time to think and research in the face of this managerial turn. The relationship between student and teacher changes in such an environment. Needed areas for development such as transdisciplinary education and research are choked by the need for disciplines to protect their patch in the eternal war for resources via available funding mechanisms whether internally or externally driven. All this suggests that the value proposition of higher education in the 21st century must be redeveloped for policy makers. It also suggests that higher education institutions must be adaptable to new circumstances.

Can developing countries learn from these issues which are rife in the Global-North and avoid them? They too must make investments in higher education. How can they use technology to leapfrog expensive infrastructural development? Can they ensure adequate funding to develop and retain

quality faculty? How can we ensure that the remarkable knowledge base of the developing world can contribute to addressing the issues of sustainability and human development? Developing countries must be assisted to become even greater contributors to what is ultimately an international commons of knowledge, while at the same time making critical and essential contributions to their own nations' development.

Universities operate in an informal environment of competition for excellence—but how does one define excellence in scholarship, in research, and in research informed by engagement and impact? It is a word that has to be interpreted in context. What is a highly nuanced and contextual variable word has been constrained by its cooptation as the basis for competition in pseudo-objective, global and national university rankings that in turn creates incentives both good and bad for the institutions.

We need a much more holistic approach to what is an excellent university in the 21st century—one defined by the quality and range of graduates, its willingness to evolve, its commitment to intellectual freedom, its responses to the challenges of diversity and inclusion as well as producing knowledge of value within the context of both where it is situated and being a member of the global knowledge community. Only with a healthy, diverse and global community of scholars and students within an ecosystem of institutions developing and using knowledge and well connected to policy makers and civil society can we expect to make optimal progress in advancing the human, societal and planetary condition.

The chapters in this book each in their own way provoke thinking on these and other related questions. The authors and editors are to be congratulated on producing such a timely, certainly needed and thoughtful volume—it should stimulate much reflection in the higher education and research community.

CHAPTER 1

HIGHER EDUCATION AND RESEARCH: SCENARIOS FOR A FUTURE WORLD

V. LYNN MEEK AND MARY-LOUISE KEARNEY

Abstract

This book explores future challenges for higher education and research (HER) in "the Post-knowledge Society and Economy" (PKSE) across a range of relevant domains. In 2008–09, the OECD and UNESCO, as major IGOs in the HER field, proposed an agenda for this sector to guide governments and institutional policy renovation in the years ahead. Crucial areas were: governance and institutional management, financing, quality assurance, equitable access, R+D+ Innovation investment, the academic profession, graduate employment, internationalization and the impact of IT. Since then, pursuit of this agenda has taken place against a background of socio-economic change and crisis notably the 2008 global financial crisis (GFC) and the 2020 COVID-19 pandemic which will affect global development for years to come. HER will continue to play a pivotal role in generating research-based knowledge and in training skilled graduates to address the macro-transformations of the next decades, inter alia, socio-economic recovery, shifting geo-political alliances, the protection of democracy, climate change, demographic trends, migration patterns and their cultural impact, food security, re-occurring health crises, the evolution of employment, investment in R+D+ Innovation and equitable access to AI potential. Drawing on its crucial foresight role and traditional partnership with governments, the private sector and local communities, HER will seek renewed opportunities to redefine its social responsibility and relevance to help manage global change. This chapter sets the scene for future HER policies linking to the specific domains discussed in subsequent chapters. The PKSE will see major advances in many fields which could help build a stronger contract with society.

Keywords*: HER frameworks; role of IGOs; foresight; socio-economic and cultural transformation; society 2020–50; renewed HER contract with society*

Introduction

'The times, they are a-changin'. Bob Dylan

Times are constantly changing so why is reliable future planning crucial for public policy and why is higher education and research (HER) central to this exercise?

This book explores the evolution and future pathways of important HER policy frameworks proposed in 2008–09 by leading inter-governmental organizations engaged in this sector. By 2020, the "Post-knowledge Society and Economy" (PKSE) was shaping the decade ahead to 2030 and beyond. Open to numerous interpretations, this term often denotes an era where the impact of innovative technology on the generation of knowledge and its applications will bring major social change. But this era may also offer a new relation between knowledge and society in the years ahead. Will the world seize an important opportunity for more equitable and inclusive social development?

The OECD sought to define a new policy agenda to guide governments and institutions towards renovating the tertiary and higher education sectors and defining the modern academy (OECD, 2008). Major elements comprised *governance and institutional management, financing of the HER sector, quality assurance, equitable access, R+D+ Innovation investment, the academic profession, employment prospects for graduates, expanding international education* and *technology impact.* UNESCO's report, *Trends in Global Higher Education: Tracking an Academic Revolution* (Altbach et al., 2009), concurred with this approach but emphasized its very different implications for middle- and low-income countries where access to the knowledge society and economy involves numerous barriers. Overall, this agenda has shaped and repositioned HER policy over the last decade for countries in both the OECD and further afield.

Two milestones occurred during this period. The 2008 global financial crisis (GFC) resulted in years of economic volatility and, in 2020, the COVID-19 pandemic unleashed worldwide human and socio-economic upheaval. Such large-scale disruption is rarely experienced in high-income

countries but is all too familiar for poorer nations. This disaster could have long-term ramifications for global governance, security and social cohesion in the years ahead. Academic cooperation is a crucial part of the global response to this crisis since it affects and even necessitates the reconfiguration of numerous areas of society. Thus, authors were invited to consider how the future HER agenda might be impacted in this regard.

Already countries are preparing policies to address global changes expected before 2050. Long-term societal forecasting is the traditional domain of the United Nations and its specialized agencies to attain equitable development, social cohesion and world peace. This is complemented by the predictions of other key players such as the World Bank, the International Monetary Fund, the World Economic Forum, and major regional and national think tanks. The priority focus is the sustainable development and stability of future society. Macro-issues include new directions for globalization (including reducing dangerous socio-economic inequalities); demographic challenges posed by ageing societies (notably in the western world) and by rising youth cohorts in Africa and Asia; climate change; migration patterns which create more diverse and multicultural societies; recurring health crises; achieving global food, water and energy security; shifting geo-political alliances including the future influence of China, India and Africa; protecting democracy; and harnessing the potential of information technology and artificial intelligence (AI).

How will current HER policy frameworks adapt to these emerging macro-forces? Already governments, universities, the private sector and local communities agree that "business as usual" seems an outdated strategy. Recognizing evidence-based research and foresight studies, the chapters of this book suggest possible future scenarios for specific domains of the HER sector. This introductory chapter sets the wider stage influencing this debate.

Foresight and Higher Education and Research

Foresight serves two purposes. Firstly, this helps national public policy-makers to plan in areas dependent on advanced research-based knowledge such as security, defence, demographics, health, education, welfare, energy, agriculture and R+D+ Innovation, urban renewal and technology capacity. Secondly, foresight planning in the HER sector helps generate new—sometimes ground-breaking—knowledge involving researchers and a highly skilled workforce whose academic credentials provide the

capacity to build societal and community wellbeing. Both purposes recall that the HER mission extends beyond the academic domain into the political sphere.

Future studies are traditionally associated with advanced science-based knowledge. Yet, this focus also concerns artistic fields: medieval cathedrals were built for completion many decades later; George Orwell wrote *1984* to warn against a totalitarian future; avant-garde artists Andy Warhol and Yayoi Kusama depict images of approaching mortality and infinity; *The Graduate*, an acclaimed 1967 film, satirizes the misadventures of a young man without ambitions.

A review of HER policy directions, whether probable or unexpected, should start with the principles and practices of foresight which rely heavily on cutting-edge academic research. Foresight is the capacity to ascertain future events and plan adequately for these. Usually relating to medium or longer term periods, this concerns public policy, community projects and individual initiatives. Acting with foresight implies prudence, sound judgement, maturity and even genius in the public or private spheres. Foresight is also understanding the past and focusing this knowledge on future planning. This involves research on trends and patterns (including disruption to these processes) so as to describe future options using methods such as Delphi surveys, scenario workshops, critical thinking exercises, horizon-scanning studies and forecasting techniques. In public policy-making, foresight has three objectives: to critically determine the optimal directions of long-term development; to foster debate amongst experts; and to propose policy frameworks to guide national progress. It operates in three main areas: future-oriented action such as forecasting and prospective studies; planning via strategic studies and priority setting; and networking amongst experts to compare approaches and data.

Foresight methods guided the OECD and UNESCO HER frameworks involving national data analysis, country and issue studies, focus groups and wide consultation with stakeholders from governments, civil society and the private sector. Twenty-four countries took part in the OECD exercise, while UNESCO obtained wide-ranging stakeholder input across five regions with vastly different socio-economic and cultural conditions to arrive at defining a relevant global agenda. Foresight defines the competencies applied to future problem-solving in specific domains which underpin national development. Beyond its central role in planning public

policy, foresight is also a "future-proofing" exercise to anticipate and avoid dangers.

Globally, the United Nations assures processes embodied in documents such as *Transforming Our World: The 2030 Agenda for Sustainable Development* (UN, 2015b) and *UN75: The Future We Want, The UN We Need* (UN, 2020), and via platforms notably the *UN Sustainable Development Goals* (UN, 2015a) deal with the future of the Global Commons (inter alia, security, climate, education, health, energy, agriculture, water, technology). Academic research provides evidence and reliable forecasting to guide this process. International and private sector entities undertake similar foresight analyses such as *The Future of Jobs Report* (WEF, 2018, 2020a) and *The Great Reset* which proposes a post-COVID world built on inclusive and sustainable policy approaches (WEF, 2020b). Regional exercises include the African Union's *Agenda 2063: The Africa We Want* (AU, 2015), the Asian Development Bank report *Firing Up Brain Networks: The Promise of Brain Circulation in the ASEAN Economic Community* (ADB, 2017) and *Latin America's Missing Middle: Rebooting Inclusive Growth* (MGI, 2019). As an example of foresight at country level, China's planning is both global and national. The *Belt and Road Initiative* launched in 2013 engages some 138 countries and 30 international organizations in a worldwide diplomatic and economic network. The *China Vision 2035* is a national plan to track economic growth and soft power capacity, notably in education, in anticipation of becoming the world's leading economy by that date.

The Black Swan theory is a foresight tool to assess attitude and behaviour related to ongoing risk based on disasters which are impossible to predict yet more easily understood with hindsight (Taleb, 2007). Examples are Al-Qaeda's 9/11 attacks on New York in 2001 and the United Kingdom's 2020 Brexit process. The genuine rarity of Black Swan events generates public disbelief and often denial so that recovery from their damage requires acceptance, adaptation to necessary and innovative change and the construction of mechanisms to protect against re-occurrence.

Is the COVID pandemic a true "Black Swan" event? Certain economists and risk experts consider that its economic damage could be greater than any recession in living memory. Yet, scientists are divided as to whether this virus is really unique. Throughout history, pandemics have been frequent so should the COVID phenomenon now become part of every nation's medical prevention processes? Already, based on the Bloomberg COVID-19 vaccination database records, seven years may be needed to

achieve equitable medical protection worldwide. Unequal access to treatment could cost over US$9 trillion in lost business according to the International Chamber of Commerce (ICC Report, 2021). Strangely, devastating events can sometimes be followed by economic booms as witnessed in the 1920s and 1950–60s.

So, how best to plan future policy? Since 2020, COVID has impacted on virtually every area of human, social, economic and even cultural endeavour: death and widespread illness, disrupted human interaction, financial disaster, job losses and reduced leisure, cultural and artistic activity. Solutions depend upon the knowledge and skills of scientific researchers, medical personnel, economists, bankers and financial experts to reset policies and avoid market collapse and innovative communication technology to maintain daily human and commercial interaction. Hardship has been widespread but poorer countries have been hit hardest. The 2021 report by the World Health Organization analysing country responses to the pandemic found numerous failures of foresight by governments and their public health authorities in terms of planning, resource allocation, human capacity and international collaboration (WHO, 2021). Whatever future remedial action ensues, HER expertise will be a crucial part of the solution.

The Global Socio-Economic Context: Major Drivers of Higher Education and Research

The OECD and UNESCO HER frameworks should be examined in context. Some experts doubt that the world can revert to its previous modus vivendi and so a "new normal" will materialize. Certainly the COVID crisis has accelerated the world's transition into the future.

A first step is to consider the current 21st century landscape. Despite confusion about the future, there is a new regard for the role of government, notably its pastoral duty and social stewardship to protect citizens and their wellbeing. This change in attitude recalls the guiding principles of the UN's 2015 Sustainable Development Goals—*people, planet, peace, prosperity* and *partnerships*. This shift could stimulate a renewed and more relevant social contract between the HER sector and society demonstrating their enduring importance and close links. Academic knowledge based on scientific investigation and analysis—complemented by the wider and more practical provision from the tertiary education sector—is essential to manage future socio-economic change.

At any moment, various complex and often contradictory forces can influence the public policy process. As knowledge experts, the HER community understands these critical drivers and can predict their future impact. Four such forces have special socio-economic relevance.

Over four decades, **globalization** has won both avid supporters and sceptics. Klaus Schwab, engineer, economist and founder of the World Economic Forum (WEF), contends that its imminent fourth era will bring a paradigm shift driven by AI offering both risk and opportunity for far-reaching social development (WEF, 2016). Conversely, Michael O'Sullivan, an economist and academic, argues that worldwide growth will be lower until 2050 compared to the past forty years necessitating a more people-centred approach to politics and public policy (O'Sullivan, 2019). During globalization's third phase—roughly from 1980 to the present—worldwide flows of trade in goods and services, human and financial capital and information technology accelerated. Proponents of this philosophy would point to forty years of benefits, notably increased job opportunities and prosperity, an improved global GDP and significant poverty reduction in some (but not all) emerging economies. Critics perceive less positive effects such as economic migration as a loss of human and work rights, climate damage beyond global warming including pollution and habitat destruction, an unstable financial system and a growing gap in income levels. Hence, economic success for some might be viewed as social regression for others. *The Fourth Industrial Revolution* explores the social impact of AI on governments and the academy along with the progress of drone and microchip technology into nano-materials, robotics and "smart and clean tech" approaches to areas such as medical surgery, agriculture and manufacturing (Schwab, 2016). Social disruption and dislocation for low-skilled workers must be avoided by ensuring that this technology will empower people rather than replace them. New legislative and regulatory frameworks and closer public–private collaboration will be needed to manage socio-economic activity along with broad debate on the ethical aspects of new practices described as the fusion of the biological, digital and physical sectors. *The Future of Jobs Report* examines the expected evolution of the labour market over the next five years in relation to the pandemic and a possible global recession (WEF, 2020a). AI might eliminate some 85 million jobs but could help create perhaps 95 million new ones requiring more sophisticated skills. Because the COVID crisis has forced a re-evaluation of the human and socio-economic importance of work, necessary dialogue is underway amongst government, employers and workers to consider strategies for job

retention and upskilling to prevent job loss. Obviously, education, training and research will be central to addressing these challenges.

Population growth, underpinned by demographic forecasting, is a top priority for national public policy-making and must include the pivotal global roles of Africa, China and India in the 21st century. The report, *World Population Prospects 2019: Highlights* (UN, 2019), estimates that the world's population might grow to 9.7 billion by 2050 and perhaps to 11 billion by 2100. Ageing western nations might have one billion citizens over 65. As early as 2025, India could overtake China as the most populous nation and 50% of all demographic increase will be in just nine countries of which eight are in Africa and Asia. Concentrated in the 16–24 age cohort and so favourable to the labour market and productivity, this increase is known as the "demographic dividend" which should encourage governments to invest in education, health and R+D+ Innovation to boost economic prospects.

Urban populations will also increase. In 2020, some 757 million people (about 11%) lived in the 101 biggest cities worldwide but this could rise to 66% by 2100. Tokyo is predicted to be the world's biggest city in 2025 with some 36.4 million to be overtaken by Mumbai in 2050 with 42.4 million and by Lagos in 2100 with 88.3 million. Conversely, some major western cities will not expand at this exponential pace. London could grow from 8.62 million in 2025 to just 9.56 million in 2100.

Demographic shift is an associated driver involving economic immigration, particularly for countries with zero or decreasing population growth. During the 21st century, some 14 countries are expected to add one million people to their populations while another 11 countries will lose this number due to conflict, food security and dwindling employment. Another sensitive factor is nurturing harmonious multicultural societies where diverse ethnicity becomes a component of the overarching national identity. Fostering equal opportunity will be a more complex process for policy-makers as social groups, including growing student populations, become more diverse over time. These data suggest that the greatest demand for post-secondary studies will come from highly populated countries where advanced research capacity is very weak. Such a situation cannot easily facilitate equitable knowledge exchange.

A third context-related element is **socio-economic inequality** which, for some leading economists, is the gravest danger for the future. Already high-income countries have been recording greater polarization between

wealth and poverty levels along with increased pressure on the middle class. *Under Pressure: The Squeezed Middle Class* reiterates the importance of this group for social stability and economic growth but also evokes rising concern at the polarizing effects of globalization (OECD, 2019). Academic economists focusing on this imbalance include Nobel laureate and former World Bank Chief Economist, Joseph Stiglitz, who advocates the importance of strong government and distrusts the market approach to economics; Jeffrey Sachs, Director of Colombia University's Sustainable Development Centre and Chair of the UN Sustainable Development Solutions Network, who believes world security depends on long-term protection of the Global Commons including water, agriculture, the atmosphere and even cyberspace; Thomas Piketty of the Paris School of Economics and Co-Director of the World Inequality Lab who regards political protection for plutocracy as a barrier to correcting imbalances; and Nobel laureates in development economics—Angus Deaton (2015) of Princeton, Michael Kermer of the University of Chicago and Abhijit Banerjee and Esther Duflo of MIT (2019)—who focus on measurable poverty reduction in low-income countries. This imbalance links directly to the global wealth debate such as 1% of the world's population owning 50% of the world's wealth as documented by the *Global Wealth Report 2020* (Credit Suisse, 2020) and *The Inequality Virus* (Oxfam International, 2021).

An often forgotten barrier to more equitable prosperity is the social damage caused by armed conflicts and economic crises. Expert agencies such as the Institute for Economics and Peace and the Uppsala University's Conflict Data Program calculate that some 105 armed conflicts have taken place since 2000. The World Bank estimated the cost of 41 conflicts in 2014 at US$14.3 billion which was 13.4% of the global economy. Recent economic crises with severe consequences have been Argentina's currency crisis in 2001–02, the GFC (2007–08) and the Russian financial crisis (2014–16). Such unstable conditions cause untold harm to citizens' lives and to essential public domains—including HER—which cease to function effectively.

Arguably, today's major driving force is **climate change**. Its complexity and controversial debate touch virtually every aspect of academic enquiry ranging from the atmospheric disciplines of meteorology and climatology through to economics, agriculture and food security, energy, oceanography, migration, medicine, international relations, law and employment. Moreover, designing the optimal policies to manage climate change will basically rely on a country's research capacity in these fields.

Academic expertise also dominates the United Nations' Intergovernmental Panel on Climate Change (IPCC) which provides objective data on human-induced action, natural, political and socio-economic risks and options for eradication. The IPCC does not prescribe policy but offers relevant advice based on data reported by its advisory research bodies.

The IPCC's scientific research base is complemented by the equally complex political process. The now famous 2016 Paris Agreement committed 191 signatory nations to the containment of global warming although implementing this goal will require massive changes in present economic policies and lifestyles. *The Great Reset* initiative of the World Economic Forum (2020b) proposes a thirty-year social transformation in global policy-making based on partnerships amongst governments, business and leading research universities. This journey is predicted to be long and controversial.

The Evolving Higher Education and Research Sector

The 2008 OECD framework defined four main missions to contextualize its eight areas of activity: training human capital through excellence in teaching; generating knowledge bases through R+D+ Innovation; disseminating knowledge widely via IT; and maintaining knowledge through solid structures for transmission. As this process evolves, the period 2021 and beyond may be viewed as a watershed affecting its future directions. The cost of the pandemic may exceed some US$11 trillion with countries choosing quantitative easing to mitigate social damage and promote economic recovery. Although the OECD (2021a) forecasts stronger growth than expected, figures remain uneven: 7.2% for the United Kingdom but 2.6% for Japan. Morgan Stanley's 2021 Global Economic Outlook (2020) for emerging markets is similar: China 9% but Russia 3.4%. Major future factors include rapid government and institutional responses to crisis containment, coping with pressures on public funding, lost teaching and learning time, the professoriate's readiness to upskill its IT capacity, and restarting international student mobility (Schleicher, 2020). What challenges could emerge for the OECD and UNESCO HER frameworks?

Governance and Management

New Management Philosophy (NMP) has dominated the operations of universities and tertiary education institutions since the OECD IMHE (Institutional Management in Higher Education) Programme was launched

in 1969 to monitor the expansion of post-secondary education and the necessary policy responses. The NMP corporate culture quickly became the benchmark not only in western nations but increasingly across other regions. Governing bodies were restructured to include wider stakeholder representation and vice-chancellors and presidents were CEO-type figures who could comfortably interact with government and business.

Future management might be much leaner as public budgets are reduced and even university leaders might have new profiles. A new trend could be illustrated by the appointment of Mark Scott as Sydney University's Vice-Chancellor. A former CEO of Australia's ABC Media Corporation and CEO of the New South Wales Education Department, he is the first VC of a Top 100 university without a formal academic career. Instead, his long experience and proven skills in government and private sector negotiations are deemed vital in turbulent times. Similarly, Warren Bebbington, a former VC of Adelaide University, believes that cash-strapped governments and institutions could clash over future priorities. Funding will likely predominate as the academy faces tough times in terms of status and income. University leaders must aim to keep control of the HER agenda and move beyond management and funding issues to insist on the social responsibility and stewardship of HER.

An important research area is the higher education sector itself, notably its policies, systems and trends. This is a niche domain of investigation with a limited number of centres of excellence (often located in leading universities) and publication outlets worldwide. This knowledge is an invaluable resource for policy-makers seeking expert advice on best practice for future planning.

Finance

Over two decades, exponential demand for post-secondary credentials has caused burgeoning levels of student debt often with little chance of full repayment. Current USA student debt is some US$1.5 trillion owed by around 44.5 million students across all age groups. Between 2006 and 2019, the average cost of tuition and residential fees rose from US$6,010 to US$14,042. In 2020–21, a 4-year Science degree at a public institution costs US$22,180 compared with US$50,770 at a non-profit private college. In the United Kingdom, where the average student debt is double that of an American counterpart, 40% of universities rely on tuition fees for primary income and, since 1998, only 19.3% of students have fully repaid their loans. Now debt is ubiquitous: Australian students usually take

a decade to repay their loans at an average cost of A$21,000; tuition at Japan universities is amongst the most expensive in OECD countries; even Swedish students who benefit from free tuition incur an average debt of US$19,000; in 2021, Universities in South Africa reported student debt of US$663 million including US$16 million owed to the University of Witwatersrand alone.

Pre-COVID, international education earned A$37.6 billion for Australia (in 2019) and NZ$1.25 billion for New Zealand (and representing 1.2% of all exports in goods and services). Foreign students pay £4.8 billion annually to study in the United Kingdom and C$22 billion in Canada (where they also generate some 170,000 jobs). Yet, student tuition fees often subsidize research but not teaching.

Despite the current damage to international higher education revenue, efforts to manage institutions more profitably are underway. Strategies include more cost effective use of re-purposed campus buildings, teleworking for administrative staff, improved communication networking via IT and generating income from specialized Master degrees (notably in fields such as health, the environment and IT) along with micro-academic credentials from working students. A hybrid management model to diversify delivery is already evident and will probably evolve further. Moreover, governments and institutions should open dialogue with local communities to explore reducing—or even waiving—tuition fees for the current 18–24 age cohort given the special circumstances of its student experience. Such intergenerational solidarity might garner strong support.

Access and Equity

Access to post-secondary education has long been an aspiration and a necessity given the evolving labour market. As Martin Trow predicted in the 1970s, demand and diversity would characterize this sector in the 21st century. Demand has risen from school leavers and learners of all ages, thereby confirming that post-secondary study interests students, employers and society in general. While high-income countries now enjoy near universal access to this level of education, emerging nations face the needs of young populations. India achieved massified enrolment in 2010 increasing to 30% in 2021, while China had arrived at a GER ratio of 51.5% by 2019, followed by Indonesia (36%), Mexico (30%) and Pakistan (9%). Enrolment in public higher education in sub-Saharan Africa is the lowest in the world and demand for private provision has soared. When

these figures are compared with South Korea (94%), USA (88%) and Finland (87%), the scale of the problem becomes obvious.

Equity challenges reveal underlying issues. Even the most underprivileged countries have relatively wealthy segments in their populations who can access higher education in private institutions or abroad. So, this becomes a matter of income disparity. Another problem is rural populations whose place of birth or residence impede fair access to quality institutions. In China, only 0.3% of rural students are admitted to top universities compared to 2.8% of their urban counterparts (*The Economist*, 27 May, 2021, 14–15). A further concern is equal opportunity for growing multicultural populations. Certain peoples have their own recognized educational institutions based on indigenous epistemology. Governments are encouraged to harmonize approaches to knowledge to respect cultural identity and remove barriers to social mobility.

So, should academic and vocational credentials be re-assessed for their intrinsic value? Are undergraduate degrees a true proxy for skills acquired in the workplace? A review to ensure complementarity between tertiary and higher education credentials could be necessary with the latter focused on research and research-based teaching to address complex societal issues.

Quality Assurance

Since 2008, the Quality Assurance (QA) culture to assess institutional delivery processes steadily gained importance connecting with both NMP and the OECD's concept of the modern academy. International QA processes became necessary due to increasing student mobility and demand for cross-border credentials triggered by the 2004 World Trade Organization's approach to higher education as a commodity. To pacify rising disquiet over the potential loss of academic freedom and respect for advanced knowledge as a public good, alternative strategies were explored including the UNESCO-OECD's *Guidelines for Quality Provision in Cross-border Higher Education* (2005).

As a mechanism to determine quality, university ranking strategies attracted the attention of both government policy-makers and institutional leaders. Early evaluation systems such as the Times Higher Education (THE) and Maclean's were joined by the influential Academic Ranking of World Universities (ARWU/Shanghai Rankings) in 2003. Focused on the STEM fields and metrics, these were intended to help strengthen the

Chinese university system and to select the foreign universities where students could obtain the best foreign credentials. Other highly respected ranking systems exist, notably U-Multirank and Quacquarelli Symonds, but government regard for the Shanghai system serves to reiterate the political nature of the HER sector. In 2019, and as a countermove, the THE created the innovative Impact Rankings which is the only global assessment system based on the UN Sustainable Development Goals and using the criteria of research, stewardship, outreach and teaching. As the world struggles to emerge from the pandemic, perhaps this system can help restore significant human and social dimensions to the tough business of university assessment.

R+D+ Innovation

Research universities and investment in R+D+ Innovation operate as key components of the Triple Helix partnership amongst governments, academia and industry. Recently this alliance has become the Quadruple Helix (involving the creative industries, media and culture) and the Quintuple model extending to environmental entities. Current knowledge capacity is extremely polarized and, unless corrected, will present a major risk for the future. Because leading research universities possess abundant resources (acclaimed academics, laboratories, scholarships, libraries and advanced IT), they can deliver cutting edge teaching and research. However, despite modest resources, low-income countries also need research universities to connect with stronger knowledge hubs elsewhere and avoid total exclusion from the knowledge dividend.

In 2019, the OECD average GDP expenditure on R+D was 2.475% with the corresponding average EU expenditure at 2.102% (OECD, 2021b). R+D investment from China was reported as 2.235% and 3.499% for China–Taiwan. In stark contrast, UNESCO statistics demonstrate the gap in this area for lower income countries: India 0.8%, Morocco 7%, Brazil 1.2% and South Africa 0.7% (which does not even reach the African Union's target of 1% for R+D). Moreover, the share of the world's scientific researchers in middle-income countries fell from 17% to 15% between 1993 and 2013 thus exacerbating the brain drain and the knowledge divide (UIS, 2016).

Innovation complements pure and applied research by recasting, remodelling and renovating existing practices and tools for more effective socio-economic impact. Today, this adaptive process can improve socio-economic conditions, life quality and practices in areas such as agriculture,