GLOBAL SOLUTIONS

GS TAIPEI WORKSHOP 2019

PROMOTING HUMAN-CENTRED DEVELOPMENT IN THE DIGITAL AGE

January 30, 2019

Venue: Ambassador Hotel Taipei

GS Taipei Workshop 2019, January 30, 2019

Time	Programme
08:30 – 09:00	**Registration**
09:00 – 09:30	**Opening Remarks** **Mei-Ling Chen**, Minister, National Development Council, Taiwan **Dennis J. Snower**, President, Kiel Institute for the World Economy; President, Global Solutions Initiative, Germany (delivered by **Wan-Hsin Liu**, Senior Researcher, Kiel Institute for the World Economy; Coordinator, Kiel Centre for Globalization on behalf of **Dennis J. Snower**)
09:30 – 10:15	**Keynote Speech: *"Society 5.0: Aspirations, Opportunities and Obstacles"*** **Franz Waldenberger**, Director, German Institute of Japanese Studies, Japan; Professor, University of Munich, Germany
10:15 – 10:30	**Coffee Break**
10:30 – 11:30	**Invited Speeches** **1. 10:30-11:00*"Society 5.0 and Inclusive Innovation"*** **Atsushi Sunami**, Vice President, National Graduate Institute for Policy Studies, Japan **2. 11:00-11:30 *"The Race between Age and Technology"*** **Ingrid Ott**, Professor, Karlsruhe Institute of Technology, Germany
11:30 – 12:00	**Round Table Discussion** • **Moderator:** **Shin-Horng Chen**, Director of International Division, Chung-Hua Institution for Economic Research (CIER), Taiwan • **Panellists:** **Ingrid Ott**, Professor, Karlsruhe Institute of Technology, Germany **Atsushi Sunami**, Vice President, National Graduate Institute for Policy Studies, Japan **Franz Waldenberger**, Director, German Institute of Japanese Studies, Japan; Professor, University of Munich, Germany
12:00 – 13:30	**Lunch and Networking**

Time	Programme
13:30 – 15:00	**Panel I: Overcoming Population Ageing Challenges with Digital Technologies** • **Moderator:** **Jason Blackstock**, Professor, University College London, UK • **Panellists:** **Yeh-Liang Hsu**, Professor, Department of Mechanical Engineering, Yuan Ze University, Taiwan **Christophe Kunze**, Professor, Hochschule Furtwangen University (HFU), Germany **Sunkyo Kwon**, Research Fellow, Hanyang University, South Korea
15:00 – 15:30	**Coffee Break**
15:30 – 17:00	**Panel II: Human-Centred Artificial Intelligence for Social Good** • **Moderator:** **Katharina Lima de Miranda**, Researcher, Kiel Institute for the World Economy (IfW); Research Coordinator, Council for Global Problem-Solving at IfW, Germany • **Panellists:** **Jason Blackstock**, Professor, University College London, UK **Michael Fung**, Deputy Executive (Industry)/Chief Human Resource Officer/Chief Data Officer, SkillsFuture Singapore, Singapore **Jin Hyung Kim**, CEO, Artificial Intelligence Research Institute (AIRI); Professor Emeritus, Korea Advanced Institute of Science and Technology (KAIST), South Korea **Mike Orszag**, Head of Research, Willis Towers Watson, UK
17:00 – 17:15	**Closing Remarks** **Shi-Kuan Chen**, President, Chung-Hua Institution for Economic Research (CIER), Taiwan

Promoting Human-centred Development in the Digital Age

The GS Taipei Workshop 2019 with "Promoting Human-centred Development in the Digital Age" as its overarching theme is going to take place at the Ambassador Hotel on January 30, 2019 in Taipei. It will be co-organized by Chung-Hua Institute for Economic Research (CIER) and the Kiel Institute for the World Economy (IfW).

In 2018, human-centred focus was brought into discussions explicitly at the GS Taipei Workshop for the first time. Aiming for shaping the future of an inclusive digital society, we discussed about related risks and challenges faced by individuals, firms, governments and other organizations and explored first ideas to deal with these challenges. The upcoming Workshop in 2019 will build upon the discussions and insights from the Workshop in 2018 and will deepen the discussions to explore measures and solutions to promote human-centred development in the digital age. We will learn more about the ideas, opportunities, and potential challenges related to societies' digital transformation towards "Society 5.0". We will further discuss about how to use digital technologies to overcome population ageing challenges and about how to deal with the economic, societal as well as ethical consequences of the development of artificial intelligence and its application in our daily life. Both aspects are highly relevant for the sustained and inclusive development in many countries in the world.

The GS Taipei Workshop 2019 is expected to bring together experts from academia, business, politics and the civil society from different countries to join the discussions and provide their valuable insights and innovative ideas. Potential solution proposals are expected to be derived from the speeches, addresses and session discussions scheduled.

Panel I

Overcoming Population Ageing Challenges with Digital Technologies

With the decline in fertility and the improvement in medical care, the average age of the global population has increased over time. The United Nations (2017) predicts that there will be 2.1 billion people aged 60 years or over by 2050, accounting for about 20% of the global population. While the population ageing process is more advanced in some countries in Europe, North America and Northeast Asia, the increase in older population is expected to be particularly strong in developing countries in Africa, Latin America and the Caribbean over the next decades. Thus, population ageing poses not only challenges to countries which are considered as super-aged societies nowadays but also the world as a whole. New digital technologies may serve as new tools that can be used to develop innovative measures in support of successful ageing and better functioning ageing societies.

Indeed, digital technologies may, for example, be more prevalently used in remote regular health monitoring that helps improve health care for the elderly. They can also help foster cross-generational interactions and improve the social and economic engagement of the elderly. This requires, however, the elderly to accept not only the use of digital technologies in their daily lives but also to have necessary digital skills to use the technologies. But how can their willingness to use digital technologies and their digital skills be enhanced? How to improve older persons' abilities to live, move and work with the new technologies? How can assisted living technologies (ALT) be better developed and applied in support of the elderly health care and how can older people be better involved in the technology development processes? How can best practices and lessons in dealing with population ageing challenges by using digital technologies be more easily shared among countries?

Panel II

Fostering Human-Centred Development in Artificial Intelligence for Social Good

Artificial Intelligence (AI) has been increasingly applied in various fields over time. It is expected that AI, together with other digital technologies, and the advanced knowledge and techniques in the areas such as biology, physics and machinery, will have comprehensive impacts on all key aspects of societies, incl. economy, governance, health and security etc. AI will bring new development opportunities to societies but it will also pose challenges to conventional work and life styles, rules and regulations as well as common social norms. AI may, for example, challenge the traditional ways of creating, using, distributing and protecting data and information. It may be used to better understand but also better influence human behaviour. And it may replace tasks and jobs. As a result, many people are highly concerned about the impacts of the development and the use of AI on social inclusion and democracy and about the increasing AI-induced uncertainty and vulnerability in the societies.

This session aims at discussing some key selected AI-related societal challenges as follows. How to identify and help individuals acquire skills and techniques required for tasks and jobs in an age with a rapid development in AI? How to deal with impacts of the AI development on ethics, values, human rights and trust? How to adjust and develop related rules and regulations, without unnecessarily impeding functioning market mechanisms and technological progress? How to support AI development for social inclusion and common interests? Since the economic, social and ethical consequences of AI are not limited to country boundaries and there might be conflicts between different countries' AI-related policies, it is also of high importance to discuss about how to establish an effective global framework for discussing, negotiating and clarifying responsibilities in AI-related issues.

Opening Remarks

Mei-Ling Chen

Minister, National Development Council, Taiwan

Education

- LL.B., National Chengchi University (Sep.1976 – Jun. 1980)
- LL.M., National Taiwan University (Sep. 1980 – Jun. 1984)
- Ph.D. in Law, National Chengchi University (Jun.1987 – Jun.1995)

Professional Experience

- Legal Officer (Oct. 1980 – Jun. 2000)
- Director-General, Department of Legal Affairs, Ministry of Justice (May. 2000 – Jul. 2002)
- Chairperson, Legal Affairs Commission and concurrently Chairperson, Petition Reviewing Commission, Executive Yuan (Aug. 2002 – May. 2006)
- Deputy Secretary-General, Executive Yuan (May. 2006 – Aug. 2008)
- Associate Professor of Law, Chinese Culture University (Sep. 2008 – Dec. 2010)
- Secretary-General, Tainan City Government (Dec. 2010 – May. 2016)
- Secretary-General, Executive Yuan (May. 2016 – Sep. 2017)

Opening Remarks

Dennis J. Snower

President, Kiel Institute for the World Economy
President, Global Economic Symposium, Germany

Dennis J. Snower is President of the Kiel Institute for the World Economy and Professor of Economics at the Christian-Albrechts-University of Kiel.

Dennis J. Snower earned a BA and MA from New College, Oxford University, an MA and a PhD at Princeton University. Prior to becoming President of the Kiel Institute, he was Professor of Economics at Birkbeck College, University of London.

He is an expert on labour economics, public policy and inflation-unemployment tradeoffs. He originated the "insider-outsider" theory of employment and unemployment with Assar Lindbeck, the theory of "high-low search" with Steve Alpern, and the "chain reaction theory of unemployment" and the theory of "frictional growth" with Marika Karanassou and Hector Sala. He has published extensively on employment policy, the design of welfare systems, and monetary and fiscal policy.

He has been a visiting professor at Columbia, Princeton, Dartmouth, Harvard, the European University Institute, Stockholm University, and the Vienna Institute of Advanced Studies. Furthermore, he has advised a variety of international organisations and national governments on macroeconomic policy, employment policy and welfare state policy.

Keynote Speech

Franz Waldenberger

Director, German Institute for Japanese Studies, Tokyo

Franz Waldenberger is Director of the German Institute for Japanese Studies (DIJ) in Tokyo. He is on leave from Munich University where he holds the professorship for Japanese Economy at the Munich School of Management and the Japan Center. He received his doctorate in economics from the University of Cologne. His research focuses on the Japanese Economy, Corporate Governance and International Management. At DIJ he initiated the research programme "Risks and opportunities in Japan – challenges in face of an increasingly uncertain future". Dr. Waldenberger has published numerous articles and books on the Japanese economy. He is editor in chief of "Contemporary Japan" and member of the editorial board of other Japan and Asia related social science and economics Journals. He was visiting professor at Hitotsubashi University, Osaka City University, Tsukuba University, the University of Tokyo and Shimomura Fellow at the Research Institute of Capital Formation of the Development Bank of Japan. He is member of the German Japan Forum and member of the board of the Japanese German Business Association (DJW).

Invited Speech

Atsushi Sunami

President, The Ocean Policy Research Institute
of the Sasakawa Peace Foundation
Vice President, National Graduate Institute
for Policy Studies (GRIPS)

Professor Sunami holds BSFS from Georgetown University. He obtained MIA and PhD in Political Science from Columbia University. He is currently Professor, and Vice President at National Graduate Institute for Policy Studies, Japan. He is serving as President and Executive Director, the Ocean Policy Research Institute, the Sasakawa Peace Foundation.

Before joining GRIPS, he was a Fellow at Research Institute of Economy, Trade and Industry established by the Ministry of Economy, Trade and Industry, Japan between 2001 and 2003. He also worked as a researcher in the Department of Policy Research at Nomura Research Institute, Ltd. from 1989 to 1991. He was a visiting researcher at Science Policy Research Unit, University of Sussex, and Tsinghua University, China. He is also a member of the Advisory Board for the Promotion of Science and Technology Diplomacy in Ministry of Foreign Affairs of Japan, the Council for Science and Technology in Ministry of Education, Culture, Sports, Science and Technology.

Invited Speech

Ingrid Ott

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Chair in Economic Policy,
Karlsruhe Institute of Technology, Germany

Ingrid Ott is a full professor in economics at the Karlsruhe Institute of Technology (Germany) where she is heading the Chair in Economic Policy since 2010. Her research interests centre around innovation and growth theory with the goal to derive theoretically founded policy advice.

Ingrid Ott studied economics and business administrations at the Universities of Hannover (Germany) and Alcalá de Henares (Spain.). She obtained her PhD (Dr. rer. pol.) from the University of Lüneburg where she subsequently held the Chair in Innovation and Growth. From 2007-2009 she was heading the research group 'New Technologies and Regional Innovation Systems' at Hamburg Institute for the World Economy and became a member of the group Knowledge Accumulation and Growth at the Kiel Institute for the World Economy where she is still associated.

Ingrid Ott's scientific work has been published in a variety of peer-reviewed journals. She is an experienced economic policy advisor for the German Government and active in various national and international scientific boards. In doing so she acted e.g. as a member of the expert commission in research and innovation (EFI), the innovation and technology analysis (ITA), the Strategy Dialogue of the Automotive Industry in Baden-Württemberg or the Finnish Research Council.

Round Table Discussion - Moderator

Shin-Horng Chen

Director and Research Fellow, International Division,
Chung-Hua Institution for Economic Research, Taiwan

Shin-Horng Chen is the Director and a research fellow of the International Division at the Chung-Hua Institution for Economic Research (CIER), a leading economic think tank in Taiwan. Apart from full-time research work, Shin-Horng Chen has taught EMBA/MBA courses at several universities in Taiwan, including National Taiwan University, National Tsinghua University and National Chiao Tung University.

Shin-Horng Chen has intensive research experience on the development of the ICT industry, science and technology policy, national innovation system, global production and innovation networks, R&D internationalisation. In recent years, he has extended his research fields into China's industrial development and innovation, technology foresight, and service innovation. He is also an experienced reviewer for a few R&D programmes sponsored by the Taiwanese government. For his well-respected work of innovation and policy studies, Shin-Horng Chen received Award for Innovation Model Promoter, First National Industry Innovation Award from the Ministry of Economic Affairs in 2011.

Out of his policy studies, Shin-Horng Chen has generated a number of academic publications in the international academic community. His recent academic publications can be found in a few referred journals, such as Research Policy, Technovation, R&D Management, Industry and Innovation, Asian Journal of Technology Innovation, Working Paper of National Bureau of Economic Research, China Economic Review, China Information, and NTU Management Review. He has also contributed papers to more than twenty editorial books, published by international academic publishers.

Panel I - Moderator

Jason Blackstock

Professor, University College London

Dr. Jason Blackstock has a unique background spanning quantum physics research, Silicon Valley technology development, international public policy, and higher education innovation and leadership. He is an internationally respected educator, scholar and policy adviser on the interfaces between science, technology and engineering with society and public decision-making.

From 2013-2018 Dr. Blackstock was the co-founder and founding Head of UCL's Department of Science, Technology, Engineering and Public Policy, where he remains a member of faculty. Over the last 15 years, he has taught and led policy-engaged research programmes at renowned universities and think tanks such as Harvard, Oxford, the Centre for International Governance Innovation, and the International Institute for Applied Systems Analysis.

Panel I - Panellist

Yeh-Liang Hsu

Professor, Department of Mechanical Engineering, Yuan Ze University
Director, Gerontechnology Research Center, Yuan Ze University
Editor-in-Chief, Gerontechnology (official journal of International Society for Gerontechnology)
IT Director, International Society for Gerontechnology
Editor-in-Chief, Journal of Gerontechnology and Service Management (in Chinese)
Founder / CEO, Seda G-Tech Co. Ltd.

Professor Yeh-Liang Hsu received his bachelor's degree in mechanical engineering from National Taiwan University and was conferred PhD by Stanford University in 1992. He then became a professor at Yuan Ze University, Taiwan, where he has had many important roles, including Secretary General and Dean of Academic Affairs.

Professor Hsu directed his research interest in design to the field of gerontechnology, and established the Gerontechnology Research Center in 2003, which is the pioneering research institute in this field in Taiwan. He has published many papers, books and patents in gerontechnology, and is a renowned academic in this field. Professor Hsu has been actively involved in the International Society for Gerontechnology (ISG). He has chaired the 9th World Conference of Gerontechnology and is concurrently Editor-in-Chief for "Gerontechnology" and IT Director of ISG.

In 2016, Professor Hsu founded Seda GTech Co. Ltd. Working with 8 young cofounders who were his students, Professor Hsu has been pushing gerontechnology research to real products for daily applications by the older adults and caregivers.

Panel I - Panellist

Christophe Kunze

Professor for Assistive Technologies,
Applied Health Sciences Department,
Furtwangen University, Germany

Christophe Kunze is head of the Laboratory for Care & Technology and professor for Assistive Technologies at the Furtwangen University, Germany. From 2006 to 2011, he was heading the Medical Information Technology department at FZI Research Center for Information Technology, Karlsruhe, Germany. He earned a PhD in Information Technology from Karlsruhe Institute of Technology (KIT) in 2005. He is also co-founder of the healthcare IT company nubedian software (Karlsruhe, Germany).

His research interests cover a broad range of applications of (information) technologies in health and social care, including assistive technologies, gerontechnology, eHealth/mHealth, telecare, and technology for inclusion. Current research activities focus on technology-based reminiscence for people with dementia, nursing technology in acute care hospitals, mobile interventions for health promotion and IT-supported collaboration in caring communities.

Panel I - Panellist

Sunkyo Kwon

Research Fellow & CEO,
Hanyang University & ITSA, Co.

Sunkyo Kwon is a research fellow at Hanyang University. As a professor, he directed the first Applied Gerontology Graduate Program in South Korea at Sookmyung University (SMU).

Dr. Kwon's multi-facetted research and public service relates to cognition, public health, cross-cultural issues, social epidemiology, quantitative & qualitative methods, and particularly information and communication technologies in a gerontological context.

He earned bachelor's degrees at Yonsei University (South Korea) and the University of Maryland (Honor Society of Phi Kappa Phi), a Dipl.-Psych. (Master's Degree) at the Technical University Berlin (TUB), and a Doctorate at the Free University Berlin (FUB, summa cum laude).

Dr. Kwon has held research and faculty positions at the FUB, at the Humboldt University Berlin, at the Beuth University of Applied Sciences Berlin, at the Institute for Health Sciences/Public Health, TUB, SMU, Duksung Women's University, Hallym University, as well as Hanyang University.

Sunkyo Kwon's activities, both past and present, include chair, consultant, expert, and advisor functions for the Gerontological Society of America (Technology and Aging), the United Nations East and North-East Asia Office, the German Federal Ministry for Family Affairs, Senior Citizens, Women and Youth, the Prime Minister's Office Singapore, the South Korean National Information Agency, the Korean Chapter of the International Society for Gerontechnology, as well as the Science and Technology Policy Institute.

Panel II - Moderator

Katharina Lima de Miranda

Researcher, Kiel Institute for the World Economy

Research Coordinator - Council for Global Problem-Solving, Kiel Institute for the World Economy

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Katharina Lima de Miranda is a researcher at the Kiel Institute for the World Economy. In her research she studies individual and group decision making with applications to the labour market, health economics or gender equality. She uses primarily experimental methods and designs and implements surveys and experiments. She is also the Research Coordinator of the Council for Global Problem-Solving – a network of world-class think tanks committed to providing long-term policy advice to the G20 and associated international organizations. She studied Economics in Kiel and Paris and was a Carlo-Schmid-Fellow at UNCTAD in Geneva, where she continued to work as a consultant afterwards. Subsequently she was a research assistant at the Chair for Public Economics at the Kiel University, where she received her PhD in Economics

Panel II - Panellist

Jason Blackstock

Professor, University College London

Dr. Jason Blackstock has a unique background spanning quantum physics research, Silicon Valley technology development, international public policy, and higher education innovation and leadership. He is an internationally respected educator, scholar and policy adviser on the interfaces between science, technology and engineering with society and public decision-making.

From 2013-2018 Dr. Blackstock was the co-founder and founding Head of UCL's Department of Science, Technology, Engineering and Public Policy, where he remains a member of faculty. Over the last 15 years, he has taught and led policy-engaged research programmes at renowned universities and think tanks such as Harvard, Oxford, the Centre for International Governance Innovation, and the International Institute for Applied Systems Analysis.

Panel II - Panellist

Michael Fung

Deputy Chief Executive (Industry),
Chief Human Resource Officer,
and Chief Data Officer, SkillsFuture Singapore

Michael Fung is the Deputy Chief Executive (Industry), Chief Human Resource Officer, and Chief Data Officer at SkillsFuture Singapore (SSG), a statutory agency under the Ministry of Education. He oversees the development of the continuing education and training system in Singapore, through managing funding and contractual partnerships with private training providers, institutes of higher learning, and enterprises. He also oversees the human resource function, and champions the data capabilities, governance, and reporting practices at SSG. He previously led the strategic policy and resource planning functions at SSG and the Singapore Workforce Development Agency.

Michael is an adjunct Senior Fellow at the Singapore University of Technology and Design, and was a Senior Advisor to the Office of the President at the Hong Kong University of Science and Technology (HKUST). He formerly held the position of Director of Planning and Institutional Research at HKUST, and provided leadership and support for the University's strategic and academic planning, decision-making, resource allocation, and assessment of institutional effectiveness. He also led the University's participation in international rankings, and was an advisor to several leading international ranking bodies.

He was previously the Director of Strategic Planning and Quality Assurance at the Singapore Management University (SMU), a Deputy Director at the Singapore Ministry of Manpower (MOM), and held various senior positions at the Infocomm Development Authority (IDA) and the National Computer Board (NCB) of Singapore.

He is the Founding President of the Higher Education Planning in Asia Association, serves on the Carnegie Mellon University Admissions Council, and sits on the board of IP Academy Singapore. He is an alumnus of the University of Southern California and Carnegie Mellon University in the US, and Tsinghua University in China.

Panel II - Panellist

Jin Hyung Kim

CEO, Artificial Intelligence Research Institute
& Professor Emeritus, KAIST, South Korea

Jin Hyung Kim is the founding CEO of Artificial Intelligence Research Institute (AIRI), founded in 2016 by funding support of seven companies: Samsung, LG, Hyundai Motors, SKT, KT, Hanwha, and Naver. Before joining AIRI, he was the president of Software Policy Research Institute under Korean Ministry of Science and ICT. He also served as the chairman of Open Data Strategy Council, Korea.

He received a BS in engineering from Seoul National University, MS and PhD in computer science at UCLA. Before joining the faculty of KAIST Computer Science Department in 1985, he worked at KIST and Hughes Research Laboratories. At KAIST, he taught artificial intelligence, pattern recognition and neural network, while serving as the department head and the director of Center for Artificial Intelligence Research. On leave from KAIST, he served as the president of Korea Institute for Science and Technology Information and worked at IBM Watson Research Center and Samsung as a visiting scholar.

He is a fellow of IAPR, KAST, NAEK. He was a president of Korean Institute for Information Science and Engineering. He received Industrial Medal, the order of service merit, Internet Award from Korean Government.

Panel II - Panellist

Mike Orszag

Head of Research, Willis Towers Watson

Mike Orszag is an economist based in London whose main interests at present are focused on foresight about the role of demography and technology in shaping the future of insurance, labour markets and retirement. He has worked at the leading actuarial and brokerage firm Willis Towers Watson since 2001 and has played a leading role in shaping the evolution of its research and new approaches to client problems. He has started and managed commercial research groups in five locations including India, China and Uruguay.

Orszag is a founding editor of the Journal of Pension Economics and Finance (published by Cambridge University Press in cooperation with the OECD) and a co-editor of the Oxford Handbook of Pensions and Retirement Income (Oxford University Press, 2005). Orszag has a Ph.D. from the University of Michigan in economics and an AB from Princeton University in economics.

In 1987-1988, while at university, Orszag spent a year in Taiwan at the Stanford Center at National Taiwan University and has continued to have a deep interest in China. He has travelled to every province of China and loves to hike in China and watch Chinese movies.

Closing Remarks

Shi-Kuan Chen

President, Chung-Hua Institution for Economic Research (CIER), Taiwan

Dr. Shikuan Chen has been the President of Chung-Hua Institution for Economic Research (CIER) since January 2019. Before joining CIER, she was a professor in the Department of International Business, National Taiwan University. She also served on several boards of companies, including banking, eCommerce, electronics and manufacturing industries.

Dr. Shikuan Chen graduated from the National Taiwan University with BA in Economics. She earned her Ph.D. degree in Economics from the Yale University. Her research specialty is Macroeconomics, International Economics and Exchange Rate Dynamics.

After getting her Ph.D., she joined the faculty in the Department of International Business, National Taiwan University. During her tenure in the University, she served as the Chairperson in the Department of International Business and then the Associate Dean for the College of Management.

Master of Ceremony

Wan-Hsin Liu

Senior Researcher, Kiel Institute for the World Economy
Coordinator, Kiel Centre for Globalization

Dr. Wan-Hsin Liu is a senior researcher in the Research Areas „The Global Division of Labour" and "Knowledge Creation and Growth" at the Kiel Institute for the World Economy. She started to work as a researcher at the Kiel Institute in 2007. She is a member of the Kiel Institute's Management Board since 2015. Since 2016 she is also the Coordinator of the Leibniz Science Campus "Kiel Centre for Globalization".

Her current research focuses on investigating the determinants of innovation with China as her main research region. Her further research interests include higher education in China, foreign direct investment and the role of informal institutions for firm activities in China. Additionally, she is responsible for the coordination of the Kiel Institute's network in the Greater China region.

Wan-Hsin Liu obtained her bachelor degree from the National Taiwan University in 2002 with Accounting as her major and Economics as her minor. After that she studied Economics at the University of Münster and obtained her German master degree in 2006 (Diplom). She earned her Ph.D. in 2012 at the Kiel University (Dr. sc. pol.).

Speech Abstracts

and

Solution Proposals

Keynote Speech

■ Society 5.0: Aspirations, Opportunities and Obstacles

Franz Waldenberger
Director, German Institute of Japanese Studies, Japan; Professor, University of Munich, Germany

Abstract:

Society 5.0 is Japan's answer to Industry 4.0 and the Internet of Things. First introduced by the 5th Science and Technology Plan in 2016, it quickly became the framework of reference for public discourses related to the digital transformation and Japan's role. The country's goal is to be a world-leader in the creation of a "super smart society". Society 5.0 describes an almost utopian state of a perfectly connected, highly efficient and inclusive society, where the cyber and the physical world are fully integrated. The concept of Society 5.0 plays a central role in the economic policies of PM Abe and in policies devised by various ministries. In my talk, I will describe the main elements and policy initiatives under Society 5.0. I will then critically assess the concept and also ask to what extent Japan will be able to realize its highly ambitious goals. To do so requires a closer look at Japan's information and communication infrastructure, IT related technological capabilities, legal frameworks, human resources and management. Success also requires the ability to exploit scope and scale through cross-organizational and cross-national modes of organization. The conclusion will combine the strengths and weaknesses of Japan in brief summary statements.

Invited Speeches

■ Society 5.0 and Inclusive Innovation

Atsushi Sunami
Vice President, National Graduate Institute for Policy Studies, Japan

Abstract:

Premier Abe has made Japan's strategy for economic growth a top priority for his administration since the day one. The real test of Abenomics relies on the fundamental structural reform with "the 4th industrial revolution" based on IoT/AI and advanced robotics, etc., through institutional reforms and deregulation. Recognizing that innovation is the growth engine of Japanese economy, Abenomics addresses to spur more effective investment linking innovation in the private sector both from deregulation and industry-academy partnership, the national university system reform is urgent and indispensable.

Despite the success of Japanese economy in the latter half of the 20th century, a looming strong fear that Japan is clearly falling behind in the 21st century's open innovation. The fate of Abenomics rests on the success of a serious reform of its economic institutions that are perceived to hinder innovation along with a strong pushing factor of globalization. The Trans-Pacific Partnership (TPP) could help to substantially place Japan on the track for globalization whereas its prospect remains a foreseeable uncertainty and that requires momentum for Japan to make structural reform in her competitive fields.

"Society 5.0" is the vision adopted by Abe's administration in 2016 to realize through Japan's 5th Science and Technology Basic Plan 2016-2020. Society 5.0 refers to "A society that can facilitate human prosperity with aims to create a human-centred society through the advance fusion of cyberspace and physical space achieving the balance between economic growths and solving social problems including rapidly aging and shrinking population. Such society is capable of providing necessary goods and services to the people in need at the right time and amount; responding precisely to a wide variety of social needs where all people can readily obtain high-quality services regardless of age, gender, region, and language."

In implementing numerous steps towards the realization of the Society 5.0, Japan will also explore policies and business models to accelerate the global impact of disruptive inclusive innovations for 2030 Agenda of Sustainable Development Goals (SDGs). In this effort, it is vitally important to identify how governments can sharpen policies; how large corporations can improve their impacts; and how entrepreneurs and venture companies to be supported to utilize their advantage of creativity and risk taking culture.

Meanwhile, innovations from the bottom-up have a growing impact in emerging economies. Yet the benefits of most inclusive innovations often stay local, the underlying principle of inclusive innovations – providing more value, less cost and more people – is the same principle underlying disruptive innovations. Such innovations can expand from emerging economies to developed economies. Key actors include large businesses, entrepreneur laboratories and think tanks, NGOs, policy makers and the broader populations across the global that represent the customers as well as co-creation partners.

There are emerging examples of inclusive innovations having cross-border impact. Yet this is still an emerging phenomenon. The challenges for Japan are not only to create an ecosystem conducive to the realization of the Society 5.0, but to make sure such ecosystem is inclusive and disruptive at the same time.

■ The Race between Age and Technology

Ingrid Ott,
Professor, Karlsruhe Institute of Technology, Germany

Abstract:

Ever since the First Industrial Revolution, innovation and the associated increase in labour productivity have been recognized as the key to growth and prosperity. Man and machine in this understanding act as complements. During the last two centuries, life expectancy at birth has continuously been rising while the demographic transition leads to stagnating population sizes as countries develop. Given such conditions, the age of the population becomes a crucial determinant in the relationship between man and machine or puts differently between population age and technology. The population age is not only the outcome but also the driver of the future technological development.

Independent of the age or the skill composition within economies, significant parts of productivity growth have always been the result of increased automation. The latter is not uniform across countries or sectors. There is also a strong discrepancy between the actual and the potential degree of automation. Especially the continuously growing and labour intensive service sector is still characterized by a very low degree of automation.

It is expected that the recent technological advancements in AI, the decline in hardware costs and the flexibility of the new technologies open up new automation potentials, especially in unstructured environments. As a consequence, this allows for productivity gains in new domains and may help overcome labour force shortages if the interaction between humans and machine is efficiently re-organized. As the aggregate labour force ages, the skill composition within economies needs to be thoroughly adjusted to make sure that man and machine keep pace with each other. This interaction and thus the direction of technological change will not only be shaped by demand-side and supply-side factors. Technological development is increasingly also accompanied by social innovation, i.e. by changes in social practices to meet social needs. A careful and wise institutional design which addresses changing societal needs and their embedding in a technological environment is crucial for ongoing prosperity.

Panel I

Overcoming Population Ageing Challenges with Digital Technologies

Yeh-Liang Hsu
Professor, Department of Mechanical Engineering, Yuan Ze University, Taiwan

A Design Approach to Gerontechnology: Bring Research to Daily Living

The world is facing two striking trends: Widespread population aging and rapid diffusion of technology. It is only natural to consider applying technologies to provide positive solutions in maximizing the efficiency and effectiveness of manpower and resource in elderly care.

"Gerontechnology" is an emerging interdisciplinary field, which has started to receive attentions worldwide. Gerontechnology is actually about "design". As defined by the International Society for Gerontechnology (ISG),

"Gerontechnology: designing technology and environment for independent living and social participation of older persons in good health, comfort and safety."

Designing Gerontechnology product/service requires a broader view than technology alone. Understanding the changes in physical and psychological conditions of the older adults, the interaction with the environment, as well as the cultural and social differences, are all important design tasks.

Gerontechnology research is only valuable if the research can be commercialized into real products for daily applications. After decades of development, there are many research projects and technological products aiming for the purpose of helping the older adults and their caregivers, such as home telehealth systems, wearable devices, home robots, and smart living systems. However, very few of these technological products are widely adopted for the care of older adults. There is a huge barrier to be overcome. The key problems to be solved are often design issues rather than technology issues.

Gerontechnology Research Center (GRC) of Yuan Ze University was established in 2003, the pioneering research institute in this field in Taiwan.

However, it was Seda GTech Co. Ltd., a start-up company spin off from GRC in 2016, that completely changed the mindset, from a professor to a boss. In particular, we use designer mentality (as opposed to technologist mentality) trying to fill the gap between needs of older adults and caregivers and the current technological products. We designed the familiar artefacts at home, such as bed, carpet, chairs etc., into IoT products. Older adults do not have to change their living patterns and behaviours, do not have to learn to use the technologies, but just live in them.

In this design approach, we, engineers, caregivers, even older adults themselves, are all designers. Transdisciplinary talents, people who have expertise in several related fields, are needed.

Christophe Kunze
Professor, Hochschule Furtwangen University (HFU), Germany

Solution 1: Social Innovations to Bridge the Digital Gap

Digital technologies are a double edged sword for the inclusion of older adults and other disadvantaged groups. While digital technologies can help to promote social engagement and participation of, for instance, people with limited mobility, they also may lead to new barriers. (Non-) Adoption of digital technologies tends to replicate existing inequalities. This can lead to more exclusion if more and more services are only available online. Internet usage is stagnating in the case of the very old for different reasons, so they risk being left behind. Bridging the digital gap is also important in order to enable the use of digital health interventions for the very old.

Strong legal regulations regarding IT accessibility are necessary for people with disabilities. In addition to that, we need social innovations that promote digital literacy and internet use for elderly people. In order to lower barriers to adopt digital technologies, these programmes should allow older adults to learn how to use digital technologies in a familiar environment, at their own paces, and with social supports. Community centres could for instance provide opportunities for accompanied technology experiences, training, and peer support.

Solution 2: Technology-supported Caring Communities

The concept of Caring Communities is often seen as a highly relevant approach to overcome challenges in elderly care such as shortage of care staff and decline of family support potentials. Caring Communities are based on shared responsibilities, solidarity, sustainability, acceptance of interdependency and reciprocity beyond family relationships, and the co-production of care services. The potential of digital technologies in this context is far from being fully exploited. Social online networks, for example, have rather contributed to an individualisation of social interactions, even at the neighbourhood level. And while digital care coordination tools are increasingly being used to support collaboration in formal care (or even in platform economy models), they are rarely seen as tools for a caring community where a common identity and mutual support are at the forefront. In order to better exploit the potential of digital technologies in this context, local institutions and community actors

should actively co-design, take up and use these technologies to strengthen caring communities.

Sunkyo Kwon
Research Fellow, Hanyang University, South Korea

Technologies are Never Solutions – Technologies are Tools to Solutions

Solution 1: Humans Need Humans

The complexities involved in world-wide rapid population aging, along with low fertility rates may seem to require solutions that are just as complex. Such beliefs derive from logical fallacies involved with associational thinking. Put differently, complex problems can have simple solutions and – conversely – issues that seem complicated on a surface level may call for complicated ways to be resolved. Some wants and wishes are subject to fads and trends, but others are so basic that no technological innovations have to be implemented, even though the parties involved – such as researchers, the media, marketers, and policy-makers – may want to make us believe they really must. For instance, advanced humanoid smart assistants can aid in providing companionship and the reduction of social isolation. Instead, it should seriously be considered to turn to telepresence solutions instead, since they serve as extensions of individuals' psycho-physical selves if the elders in question are, for instance, mobility-restricted – human-machine interactions bear the hazard to severely restrict the actual interaction with other people. Non-technical human relationships, both lay and professional have been neglected in the discourse of ultra-modern digitalization. From an ethical stance, technological infrastructures for elders also need to be appraised from different viewpoints: a machine-based view, the purely 'human' viewpoint, as well as the technology-human interaction (cp. Mollenkopf, 2017). Hence, one of the solutions in dealing with population ageing qua modern technologies lies in unifying the multifarious components in research and development approaches, in particular the 'human factor.'

Solution 2: Old Can Be Gold

With life expectancies increasing across all nations, qualifications of the older workforce such as enduring skills and expertise are being progressively more embraced in different socio-economic strata of society. The demographic shifts require such changed perspectives both on the individuals' and on the gerontechnological product-services' side. From the consumer-recipient's position, it is salient that the 'Silver Market' has in many respects been inflated with so-called "brand-new," cutting-edge technological innovations. Just as

often as not, it stands to reason whether they suit the changed desires, wants, and needs of consecutive age cohorts, that is the soon-to-be-old, ready-to-be-old, already old, and very-old. A virtually overwhelming yet all-too-often-ignored scientific body of evidence suggests that existing off-the-shelf technology can cover the majority of old adults' needs (Cutler, 2017; Kwon, 2017; Kwon, 2018), even if eye-catching new digital technologies are normally the focus of the providers' and general public's attention.

Panel II
Human-Centred Artificial Intelligence for Social Good

Jason Blackstock
Professor, UCL, UK

Solution 1: Higher education institutions need to integrate the knowledge, understanding and skills necessary for the effective implementation of human-centred design processes into computer science, engineering and technology degree programmes (as well as provide similar offerings to current working professionals).

For understandable reasons, traditional models of higher education in engineering and science have focused on technical rigour and excellence. Entrants to degree programmes are selected on the basis of the mathematical and scientific strengths, and these strengths are built upon throughout the programmes.

The rationale underlying this narrow focus is simple: the development of a highly technically skilled workforce has been – and remains – central to the technological progress and economic growth of communities and nations. Unfortunately, as noted by many colleagues in the G20/T20 community, technological progress and economic growth have become increasingly decoupled from social progress and wellbeing.

I would suggest that one driver underlying this decoupling is the lack of human-centric focus within technological innovation systems. This is partly due to the structures and incentives associated with contemporary 'innovation systems' (which I address below in Solution 2). More fundamentally, however, it is also due to a lack of knowledge, skills and experience of those most central to technology development; specifically, the scientists, engineers and technologists. As we understand well from the social sciences and humanities, societal challenges (such as inequality, poverty, environmental degradation, etc.) are highly complex, 'wicked' problems.

Effectively engaging these challenges through technological development requires appreciation of far more than simply rigorous technical analysis; it also requires effectively engaging the complex human dimensions of these

challenges. Integrating the development of the skills, knowledge and experience necessary for such human engagement into our technically robust higher education programmes can go a long way to prepare future generations of technology pioneers and leaders to develop human-centric technical solutions to our societal challenges.

I would suggest that higher education institutions have a critical opportunity – and a fundamental responsibility – to implement this change. (I would also suggest there are significant opportunities and needs to expand such educational offerings to current early- and mid-career technology professionals, as well as to business schools.)

Solution 2: National (and local) innovation systems need to invest energy and resources in brokering more effective relationships between technology developers and targeted end users.

Considerable research and literature exist regarding national (and local) innovation systems and their importance in economic development and growth. I focus here narrowly on the issue of decoupling raised above (for Solution 1), and whether there are relatively simple changes that (some) innovation systems could undertake to reduce that decoupling.

As I suggest above, one of the challenges restraining technological development (and thus economic progress) from effectively addressing non-economic societal challenges is the lack of effective engagement between technology developers and the human dimensions of the challenges. Nonetheless, throughout contemporary societies, there already exist numerous institutions – governmental agencies, NGOs, civil society organisations, think tanks, etc – who are primarily focused on understanding and working with those human dimensions (i.e. the actual humans at the heart of a given challenge). Yet these organisations generally have no formal (or even informal) status within established innovation systems.

Fostering engagement between technology development and societal-challenge-focused institutions can serve as an important complementary (and quicker to implement) intervention for improving the engagement and integration of human dimensions into technological development processes, even while higher education institutions work to improve the capacity of our technically skilled workforce to engage these challenges.

Michael Fung
Deputy Executive (Industry)/Chief Human Resource Officer/Chief Data Officer, SkillsFuture Singapore, Singapore

Solution 1: Skills Forecasting – Using Big Data and AI to Augment Conventional Approaches

With the increasing pace of transformation of industry sectors and enterprises brought about by globalization and Industry 4.0, the skills needs of enterprises are evolving rapidly in tandem with the disruptions faced in their industries. This leads to mismatches between skills demand and supply in the workforce, and governments can play a role to help address these gaps. Big data and AI tools can be deployed to augment conventional skills forecasting approaches, to increase the agility and responsiveness of the skills training system in meeting industry and economic needs. Case studies of initial pilots and projects were carried out in Singapore in this area.

Solution 2: MySkillsFuture – Matching Leaners with Training Options and Job Opportunities

In a rapidly evolving skills marketplace, individuals have to be empowered to champion their own learning and career development, and supported with appropriate resources and relevant information regarding jobs and skills. The MySkillsFuture portal launched in 2017 enables Singaporeans to create individualized learning and career profiles, access labour market information, explore training opportunities to acquire skills aligned with the industry-specific skills frameworks, and identify job opportunities aligned with their career goals. The use of machine learning and data analytics enables the recommendation of suitable training courses and job openings, based on the educational and job history, individuals' profiles, and career aspirations and goals.

Solution 3: Emerging Skills Training – Mobilising Public Institutions, Private Providers, and Employers

Industry 4.0 has wide-ranging impact across almost all industry sectors. With emerging skillsets needed by companies to digitalise their business processes, there is an acute shortage of skills in emerging areas such as AI, data analytics, robotics, cybersecurity, and industrial IOT. There is a need to ramp up access and capacity for training in these emerging skills areas, to meet the needs of companies and to enable the digitalisation and transformation of their

businesses. Working through public institutes of higher learning, private training providers, and employers with progressive HR practices, Singapore is accelerating the acquisition of emerging skills and digital literacy across various population segments.

Jin Hyung Kim
CEO, Artificial Intelligence Research Institute (AIRI); Professor Emeritus, Korea Advanced Institute of Science and Technology (KAIST), South Korea

Solution 1: Cultivating AI Talent

Artificial intelligence (AI) is not a silver bullet, but the potential impact of it is broad in both the commercial and social sectors. In particular, computer vision and natural language processing can be applied to a wide range of problems. Although recent progress on deep learning, recognizing patterns from the types of unstructured data such as images, video, and text is still challenging and requires a high-level of AI expertise. There is not enough talent to improve AI capabilities and to develop models for new challenges. AI talent is mostly supplied by US universities and are employed by U.S.-based global high-tech companies. The rest of the world lacks engineers even to apply simple deep learning models.

Moreover, AI engineers are more limited in public sectors because of competition with for-profit sectors. In addition, providing secure and reliable software systems requires experienced software engineers who can implement information systems combing AI. Such engineers are also lacking in most countries. Solving social problems using AI requires considerable commitment to talent development and will take time. Recently the Korean government has announced that it will invest W570 billion for AI talent development by 2023.

Solution 2: Promoting Open Data and Democracy of AI

Scaling up AI usage for social good needs to overcome significant bottlenecks, especially around data accessibility. The performance of data-driven AI depends on the quality and quantity of available training data. In many cases, data critical for social applications may be privately owned or not easily accessible by social or non-governmental organizations. Also, due to bureaucratic inertia, government agencies keep public data closed rather than open. Therefore, useful public data is not collected in most cases and social solutions are not even attempted. A strong open data policy is the foundation of AI for social applications. Excessive regulation, which is carried out in the name of the protection of privacy, should be avoided. The Korean government is also putting in a lot of effort to open data policies.

Open source software makes AI accessible to anyone. Even if one does not have a deep knowledge of machine learning, it can easily create AI systems

through open software tools. Moreover, some of the trained deep learning networks are being transferred for solving other problems. AI technology is now spreading at the speed of light through the Internet. Due to the democratization of AI through open and shared practices, it will become easier to create social applications.

However, as AI is recognized as a core technology in almost all industries, including defence, the dark shadow of international politics has begun to spread into the AI ecosystem. Now is the time for the global AI community to join hands in overcoming narrow nationalism for the broader social good.

Mike Orszag
Head of Research, Towers Watson, USA

Solution 1: Deep Liberal Education: preparing human capital for the impact of artificial intelligence

Artificial intelligence technologies such as deep learning have profound implications for the labour market as it can lead to a significant amount of job displacement, particularly when coupled with the concurrent development of more robotics, 3D printing and other labour-saving technologies. The rise of these technologies is considerably different than that of the internet which over the past few decades facilitated job shifting across geographies such as the investment of Taiwanese firms in mainland China. New technologies will mean more localization of production and will make the world more autarkic as there is less need for long supply chains. And automation and data will raise economies of scale and make lower skilled labour much less necessary. Pay and reward will become less globalized as work will be less globalized but inequality will also rise within countries as jobs splinter into those low paid jobs helping machines do what they cannot yet do and those high paid jobs that involve designing what machines do.

The types of jobs that can be replaced by machines are very broad – waiters in restaurants, airport gate agents and the like. The implication for social stability and cohesion is therefore much broader and deeper than that of the rise of the globalized economy that has fuelled a populist reaction. Without significant efforts to prepare human capital for the future, societies with significant levels of unskilled labour face the uncomfortable choice of social unrest or engaging in significant levels of repression.

Neither vocational education nor a traditional liberal education is adequate preparation for the future. A vocational education is too narrow and inflexible and cannot respond to the unpredictable and changing impact of future technologies; if there was ever a time to abandon narrow approaches due to uncertainty about the future evolution of technologies, it is now. Yet a traditional liberal education is still focused on medieval categories and concepts that help the individual think more effectively and broadly but do not harness the cooperation and effectiveness of machine technologies. An individual who is most successful in the labour market of the future will need to work closely with machines in new computing paradigms that involve programming by imitation of activities rather than traditional computing

approaches that were more procedural in nature. At the same time, coping effectively with the ethical and other implications of machines requires a large slice of society comfortable working with and understanding the working of machine technologies.

This necessitates a rethink of the core curriculum in high school and university to do something conceptually similar to the original concepts of a liberal education – to draw on different disciplines that enhance the flexibility and breadth and capabilities of human capital – but to do it in a deeper way consistent with deep learning technologies so that the curriculum itself what individuals need to do to effectively work with and direct machines to do appropriate work in the future. Some of this is changing the approaches away towards learning algorithms and abstract computing paradigms and more focus on logic but a degree of it is also using computers to determine how individuals react to different content and changing the curriculum dynamically or individually to achieve impact. The goal is less to have everyone read a set of Great Books than to have everyone be able to work with a machine to be able to achieve certain things such as translating a text. Such an approach is "deep" in the sense that it is about using a computer to adjust content to determine whether certain core liberal education objectives are met.

Host Organisation

Host Organisation

Chung-Hua Institution for Economic Research

The Chung-Hua Institution for Economic Research has set becoming an international policy think-tank for economic and industry-related research as its goal. Since its establishment, the institution has been serving as a policy think-tank for the ROC government by making important recommendations, for which it has gradually gained prestige and recognition. Yet, as globalization in the economic and industrial sectors has proceeded, the institution has had to represent the country in conducting exchanges with international policy think-tanks. This has paved the way for the institution to be recognized internationally for its research capabilities. Guided by this goal, the institution continues to develop over the long term.

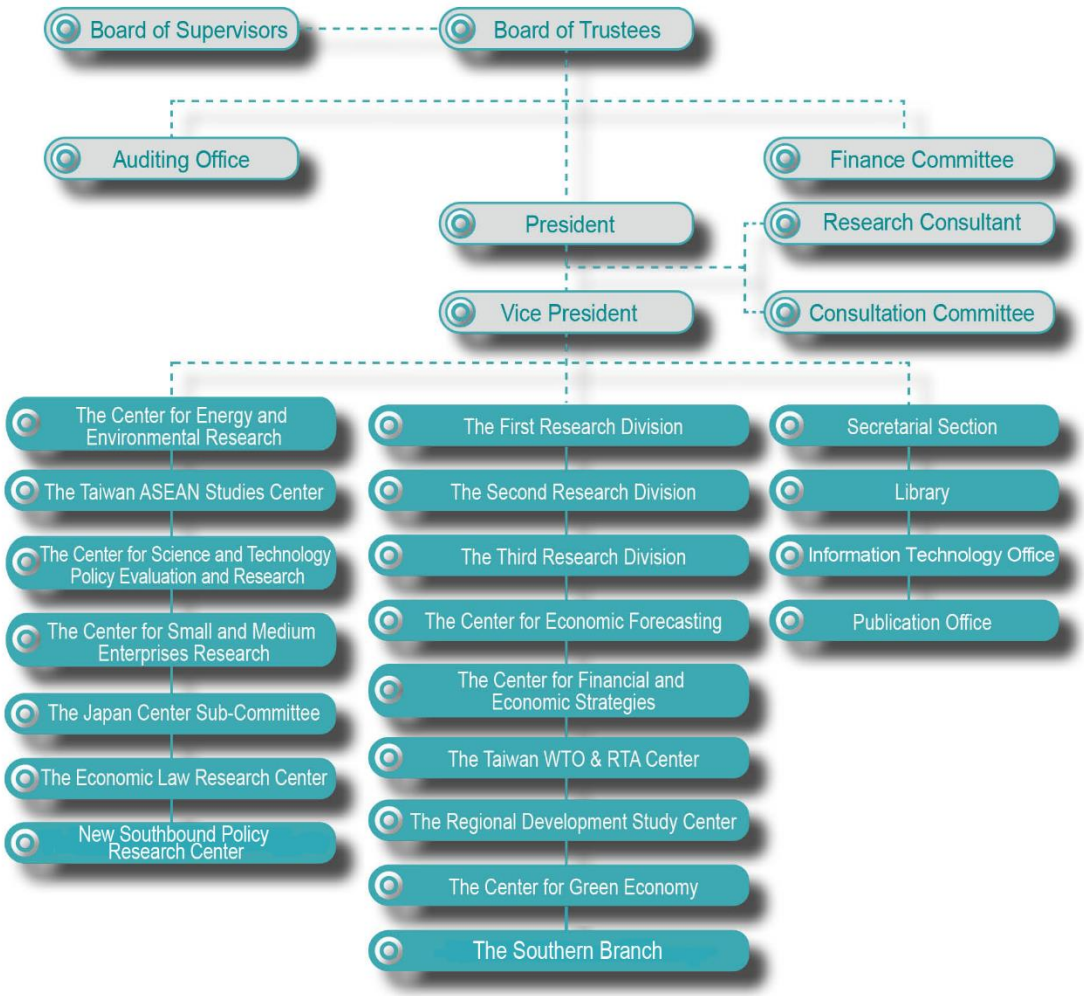
To achieve its goals, the Chung-Hua Institution for Economic Research engages in research with an emphasis on professional knowledge, innovative thinking and a concern for society, while maintaining an unbiased and objective stance in terms of providing sincere and constructive recommendations. As part of a government think-tank, CIER employees have high expectations for the institution in regard to its duties, which are concretely outlined as follows:

1. To orient the direction of the country's sustainable development as well as its economic and industrial policies.
2. To help navigate and serve as a warning mechanism on important matters concerned with economic and industrial policy issues.
3. To offer professional knowledge and analysis of industrial development strategies, and assist in industrial development.
4. To serve as a platform for the exchange of local and international economic-related knowledge and take the lead in policy formulation.
5. To cultivate talent to handle the policy analysis and evaluation work.

The CIER has also engaged in further consolidating the academic foundation of policy research by carrying out a careful analysis of issues related to policy-making and industries. By serving as a platform for exchange

among academia, government and industry, CIER will continue to serve the need to promote the sustainable development of Taiwan's economy.

Various Departments of CIER and Their Functions are as follows: First Research Division (Research on the mainland Chinese economy), Second Research Division (Research on the global economy), Third Research Division (Research on the Taiwanese economy), The Center for Economic Forecasting, The Center for Financial and Economic Strategies, The Taiwan WTO & RTA Center, The Regional Development Study Center, The Center for Green Economy, The Japan Center Sub-Committee, The Center for Energy and Environmental Research, The Taiwan ASEAN Studies Center, The Center for Science and Technology Policy Evaluation and Research, The Center for Small and Medium Enterprises Research, The Economic Law Research Center, and New Southbound Policy Research Center. The organisational structure is as follows.



Host Organisation

Kiel Institute for the World Economy

The Kiel Institute for the World Economy (Kiel Institute; www.ifw-kiel.de) is one of the major centres for global economic research. Its activities are organized in three pillars that reflect its three missions:

1. **Academy**: The Kiel Institute's research on global economic affairs is focused on problems and challenges that are significant to society, including, for example, trade and investment, digitalization, climate change and resource scarcity, global governance, poverty and inequality, as well as prosperity and stability. The research strives to be solution-oriented. The academic research community worldwide is the main target group in this mission.

2. **Think Tank**: Based on its research, the Kiel Institute advises policy-makers and other decision makers on global economic issues, provides information and advice to the general public on these issues, and establishes networks to address global economic problems. Think tank activities include, for example, business-cycle forecasting, economic policy advising and the Global Economic Symposium (GES)/Global Solutions (GS) and their related regional events. The Kiel Institute co-led the Think 20 (T20), which is one of the official engagement groups of G20, during Germany's G20 presidency in 2017.

3. **Education and Services**: Postgraduate education in global economic affairs particularly focuses on addressing pressing current problems (Advanced Studies Program in International Economic Policy Research (ASP) and Kiel Institute Summer School of Economic Policy). Scientific outreach involves cooperating with leading scholars through networks and scientific exchanges. Publication services are innovative and offer speedy links to a large community.

In order to quickly react to new challenges in research, the Kiel Institute's research activities are organized in relatively small research areas and centres. Work in research areas and centres is carried out by small flexible teams. They

can be adjusted when new topics emerge, or when new services become relevant. Flexible teams permit the leveraging of complementary skills and offer new opportunities, especially for young researchers. Many members of the Kiel Institute work in several research areas or centres, thereby strengthening the close links between various activities of the Kiel Institute.

As a portal to global economic research, it manages a broadly cast network of national and international experts, whose research work flows directly or indirectly into the Kiel Institute's research and advisory activities. The Kiel Institute closely cooperates with the world's largest library for economics "Leibniz Information Center for Economics/ZBW".

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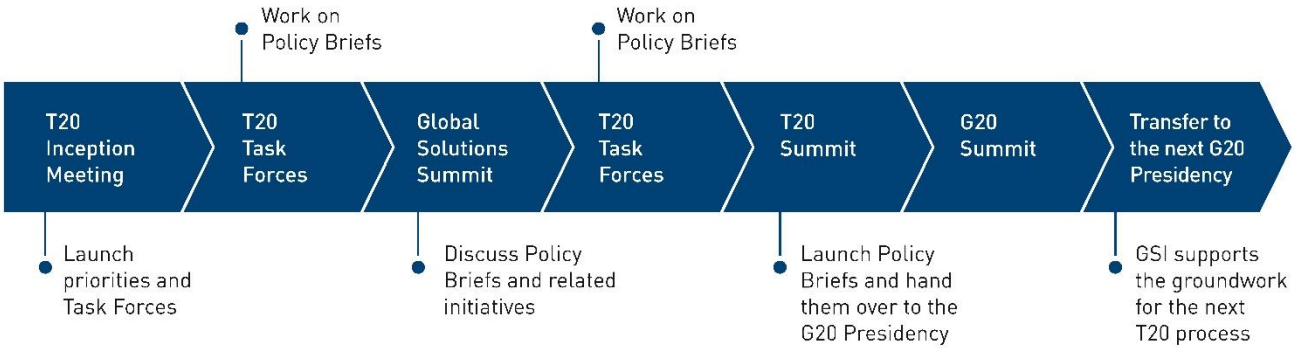
G20/T20-Timeline & the Involvement of the Global Solutions Initiative



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- **Global Solutions Publications**:
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  b) the G20 Insights Platform publishes Policy Briefs
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