



APPENDIX V

About the Authors

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ABOUT THE AUTHORS

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Robson Braga de Andrade is President of the National Confederation of Industry (CNI), Director of the Social Services for the Industry (SESI), President of the Board of the National Service for Industrial Training (SENAI), and President of the Orteng Group, a leading company that has produced equipment for the energy, oil, gas, mining, steel, sanitation, telecommunications, and transport sectors for over 30 years. He is a member of the Economic and Social Development Council of the Presidency of the Republic (CDES) and a member of the National Council of Industrial Development (CNDI). He was Vice-President of CNI from 2002 until 2010; President of the State Federation of Industries of Minas Gerais (FIEMG) from 2002 to 2010; a member of Minas Gerais State Economic and Social Development Council; Director of the Latin American Business Council (CEAL) from 2004 to 2006; President of the Association of the Electrical Appliances and Electronics Industry (Sinaees) from 2004 until 2010; a member of the Brazilian Association of Infrastructure and Basic Industries (ABDIB) Strategic Council from 2001 to 2003; and a member of the Brazilian Association of Electric and Electronic Industry (Abinee) Board from 2001 until 2004. He graduated in Mechanical Engineering from the Federal University of Minas Gerais (UFMG), Brazil, and has postgraduate diplomas in Strategic Management for Business Leaders from the Dom Cabral Foundation, in Minas Gerais State, and from INSEAD, France.

Kyle Bergquist is a Data Analyst in the Economics and Statistics Division of the World Intellectual Property Organization (WIPO). Mr Bergquist holds a Master of Science in Economics from the University of Neuchâtel in Switzerland and a Bachelor of Arts in Political Science from the University of Nevada in the United States. Prior to working at WIPO, Mr Bergquist was a data analyst for the patient safety department at CRICO, the malpractice insurance company for the Harvard medical community, where his research focused on the occurrence and prevention of adverse medical events as well as risk assessment. His research topics of interest are intellectual property, environmental policy, and economic geography.

Francisco Boshell is an Analyst in markets and standards for renewable energy technologies at the International Renewable Energy Agency (IRENA). He focuses primarily on providing policy advice and guidance to countries regarding technology innovation, quality control, and standardization programmes for the successful deployment of renewables. Mr Boshell analyses technology development strategies for a wider deployment of renewables in energy systems. During more than 15 years in his professional career, Mr Boshell has also developed technical standards for quantifying greenhouse gas (GHG) emission reductions from clean development mechanism (CDM) projects and supported the climate change negotiations under the UNFCCC; provided consultancy services for the development of renewable energy and energy efficiency projects at KEMA Consulting; and designed and implemented infrastructure and energy-related projects in the automotive manufacturing sector at General Motors. His background is in Mechanical Engineering, and he holds an MSc in Sustainable Energy Technology from the Eindhoven University of Technology, in the Netherlands.

Robert Chwalik is an Advisor to executives in the automotive, industrial, and oil & gas industries for Strategy&, PwC's strategy consulting business, helping them to improve both top-line growth and bottom-line performance in key operational and strategic areas such as global engineering and product innovation. He is a Principal with PwC US and is based in New York; he was formerly a Principal in PwC's PRTM management consulting business. Prior to joining PRTM, he held a variety of management positions in engineering and sales/marketing for BASF's automotive and chemical divisions. Over this 10-year period Mr Chwalik gained insight and perspective on the challenges and opportunities across engineering and sales/marketing. He holds a Master of Business Administration from the Ross School of Business at the University of Michigan. Additionally, he has a Master of Science and Bachelor of Science with honors in Chemical Engineering from Wayne State University, as well as a Bachelor of Art in Chemistry and Political Science from Albion College, all in the United States.

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Soumitra Dutta is Professor of Operations, Technology and Information Management at the SC Johnson College of Business at Cornell University, New York. Previously he was the Founding Dean of the SC Johnson College of Business (March 2016 to January 2018) and Dean of the Johnson Graduate School of Management (July 2012 to June 2016). Before joining Cornell University he was on the faculty and part of the leadership of INSEAD, a leading international business school in France and Singapore. Professor Dutta is an authority on all aspects of innovation in the knowledge economy, with a refreshing global perspective. Throughout his distinguished career, he has focused on how to drive business innovation and growth through the right combination of innovative people and technology. He is the co-editor and author of *The Global Information Technology Report*, published by the World Economic Forum, and the *Global Innovation Index*, published by the World Intellectual Property Organization—two influential reports in technology and innovation policy. He is on the boards of two listed firms—Sodexo (a food services and facilities management multinational) and Dassault Systèmes (the world leader in 3D modelling systems)—and on the advisory boards of several business schools. He has co-founded two firms, including Fisheye Analytics, which WPP group acquired. He was also the Vice Chair and Chair of AACSB International, the leading accreditation body for business schools worldwide. He is a member of the ‘Davos Circle’ group of participants who have been invited to the Annual Meeting of the World Economic Forum in Davos for more than 10 years. He received a B. Tech. in Electrical Engineering and Computer Science from the Indian Institute of Technology, New Delhi; and an MS in both Business Administration and Computer Science and a PhD in Computer Science from the University of California at Berkeley. In 2017, he received the Distinguished Alumnus award from the Indian Institute of Technology, Delhi.

Max E. Easton received undergraduate degrees from Western Sydney University and Macquarie University before completing his PhD in Chemistry (specifically on the chemistry of the zinc bromine flow battery) at the University of Sydney in 2016. Specializing in ionic liquids, green chemistry, and electrochemistry, he worked as a Postdoctoral Research Fellow at McGill University, Canada, in 2017 and is currently a consulting scientist and freelance journalist based in Sydney, Australia. His interests in expanding upon fundamental chemistries for applied technologies led him to co-author a patent for a gel-based static zinc bromine battery currently being developed by Gelion Technologies.

Rafael Escalona Reynoso has been Lead Researcher at the Global Innovation Index since October 2013. His previous professional experience includes working as Economic and Science and Technology Policy Advisor to the Senate of Mexico and as a member of the Trade and Foreign Investment Advisory Board at the office of the President of Mexico. His research experience at Cornell University includes comparative studies between Mexico and Spain on the regulatory aspects of modern biotechnology and the biosafety of genetically modified organisms (GMOs), and on the reach of intellectual property rights (IPRs) in the information technologies era. He holds a PhD in Regional Planning and a Master of Public Administration from Cornell University as well as a BA in Economics from Universidad Panamericana in Mexico.

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Carsten Fink is the Chief Economist of the World Intellectual Property Organization (WIPO) based in Geneva. Before joining WIPO, he was Professor of International Economics at the University of St. Gallen, Switzerland. He has also held the positions of Visiting Professor at the Fondation Nationale des Sciences Politiques (Sciences Po) in Paris and Visiting Senior Fellow at the Group d'Economie Mondiale, a research institute at Sciences Po. Prior to his academic appointments, Dr Fink worked for more than 10 years at the World Bank. Among other positions, he was a Senior Economist in the International Trade Team of the World Bank Institute, working out of the World Bank's office in Geneva, and an Economist in the Trade Division of the World Bank's research department, based in Washington, DC. Dr Fink's research work—focused on intellectual property, innovation, and international trade—has been published in academic journals and books. He holds a Doctorate in Economics from the University of Heidelberg in Germany and a Master of Science in Economics from the University of Oregon in the United States of America.

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Dolf Gielen is Director of the International Renewable Energy Agency (IRENA) Innovation and Technology Centre (IITC) in Bonn. Leading the IITC since 2011, he holds overall responsibility for the agency's work on advising member countries in the area of technology status and roadmaps, energy planning, cost and markets, and innovation strategies. His previous work experience includes IEA and UNIDO. Dolf Gielen holds a PhD from Delft University of Technology in the Netherlands.

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Francesca Guadagno is an Economist and International Consultant. Her research interests cover the broad area of innovation and development, with a focus on the role of public policies. She has considerable experience in policy-oriented research, working with the Asian Development Bank, the Dutch Ministry of Foreign Affairs, the Gates Foundation, the E15 Initiative, ECDPM, UNIDO, UNCTAD, and WIPO. Dr Guadagno holds a Master of Economics and Management of Innovation from Bocconi University (Milan, Italy), a second Master of Management of Innovation from the Rotterdam School of Management (the Netherlands), and a PhD in Innovation Studies and Development from UNU-MERIT and Maastricht University (School of Business and Economics).

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Anil Kakodkar is the President of National Academy of Sciences, India; Chairman of Rajiv Gandhi Science & Technology Commission; and Chairman of Technology Information, Forecasting & Assessment Council. He joined the Bhabha Atomic Research Centre (BARC) in 1964, following a one-year post-graduate training with highest honours in Nuclear Science and Technology in what was then the Atomic Energy Establishment. He became the Director of BARC in 1996 and was the Chairman, Atomic Energy Commission, and Secretary to the Government of India, Department of Atomic Energy, during the years 2000–09. He currently chairs a high-level committee set up by the Ministry of Petroleum and Natural Gas. Dr Kakodkar devotes his time primarily to issues related to energy, education, and societal development. He has chaired a committee that provided recommendations to boost the autonomy of the Indian Institutes of Technology (IITs) and advanced a detailed report that would make them into world-class institutes. He also chaired a committee to implement those recommendations. He led another committee that has carried out a similar exercise in the context of National Institutes of Technology. He also led a committee set up by the Government of Maharashtra to look at higher education in the state; that committee has made important recommendations that could lead to a paradigm change improving state higher education. Dr Kakodkar also led a Technology Information, Forecasting and Assessment Council (TIFAC) apex group that has brought out the Technology Vision 2035, and another high-level committee under his chairmanship has made comprehensive recommendations to improve safety on Indian railways.

Robert Kalcik is a Junior Scientist at the AIT Austrian Institute of Technology in the Center for Innovation Systems & Policy. His current work focuses on the socioeconomic impact of international research, technology, and innovation (RTI) policy. He previously worked at the Brussels-based economic policy think-tank Bruegel conducting research on innovation and competitiveness in low-carbon technologies. Prior to this position, he was the leading data manager for an international consultancy supporting evidence-based policy making for education authorities in Australia and the Middle East. He also conducted research for the Austrian National Bank, the University of Melbourne, and the Sustainable Europe Research Institute. He holds a Master's degree from the University of Vienna, Austria.

Yeong Jae Kim joins the Tyndall Center for Climate Change Research as a Senior Research Associate after completing his PhD in the School of Public Policy at the Georgia Institute of Technology, United States of America. He has an MS in Agricultural Economics from Texas A&M University and a BA from Hanyang University in the Republic of Korea. He is an applied economist whose research focuses on the economics of innovation. His research interests lie in conducting an econometric ex-post policy evaluation of energy policies. He is investigating how energy and environmental policy instruments affect the development of low-carbon technologies. A key issue that he is attempting to address in his PhD dissertation is the different role of energy-efficiency policies in technological change. Additionally, his research interests include the role of behavioural economics in environmentally friendly technology adoption. He is currently working on developing an empirical relationship between innovation systems and key energy technology innovation processes.

Bruno Lanvin is INSEAD's Executive Director for Global Indices. From 2007 to 2015 he was the Executive Director of INSEAD's eLab, managing INSEAD's teams in Paris, Singapore, and Abu Dhabi, and then Executive Director for INSEAD's European Competitiveness Initiative (IECI). From 2000 to 2007 Dr Lanvin worked for the World Bank, where he was inter alia Senior Advisor for E-strategies and Regional Coordinator (Europe and Central Asia) for ICT and e-government issues. He also headed the Capacity Building Practice of the World Bank's Global ICT Department and was Chairman of the Bank's e-Thematic Group. From June 2001 to December 2003, he was the Manager of the Information for Development Program (infoDev) at the World Bank. In 2000 Dr Lanvin was appointed Executive Secretary of the G8-DOT Force. Until then, he was Head of Electronic Commerce in the United Nations Conference on Trade and Development (UNCTAD) in Geneva, and occupied various senior positions including Chief of the Cabinet of the Director-General of the United Nations in New York, Head of Strategic Planning, and later Chief of the SME Trade Competitiveness Unit of UNCTAD/SITE. He was the main drafter, team leader, and editor of *Building Confidence: Electronic Commerce and Development*, published in January 2000. Since 2002, he has been co-authoring *The Global Information Technology Report* (INSEAD-World Economic Forum-Cornell University); he is currently the co-editor of the *Global Innovation Index* report (INSEAD-WIPO-Cornell University). In 2013, he created and launched the first edition of the *Global Talent Competitiveness Index* (GTCI), and still is the co-editor of this annual report. He holds a BA in Mathematics and Physics from the University of Valenciennes (France), an MBA from Ecole des Hautes Etudes Commerciales (HEC) in Paris, a PhD in Economics from the University of Paris I (La Sorbonne) in France, and is an alumnus of INSEAD (IDP-C). A frequent speaker at high-level meetings, he advises a number of global companies and governments and has been a member of numerous boards for many years, including those of ICANN, IDA-Infocomm, GovTech, IP-Watch, AAID, and the Bin Rashid Foundation for Government Innovation.

Lorena Rivera León is Program Officer in the Economics and Statistics Division of the World Intellectual Property Organization (WIPO). She has over 12 years of experience working as a researcher, policy analyst, and consultant in the field of research and innovation. She has worked for international organizations including various services of the European Commission, UNESCO, the OECD, and the Inter-American Development Bank. Prior to joining WIPO, she was involved in the design and development of various innovation and entrepreneurship scoreboards at European level including the Regional Ecosystems Scoreboard of the European Cluster Observatory and the Regional Innovation Scoreboard of the EU. At WIPO she acts as Lead Researcher of the GII, including the review of data, the construction and the development of the analytical model, and the undertaking of related data computations. She is currently finalizing her PhD in Economics and Policy Studies of Technical Change at UNU-MERIT in the Netherlands. She received her MA jointly from the Department of Economics, University of British Columbia, Canada, and the Université Pierre-Mendès-France in Grenoble.

Baoshan Li has been Secretary General of the China Renewable Energy Society (CRES) since 2009. He graduated from the Institute of Hydro-Electric Power in Wuhan, China. He has more than 35 years of experience working in the renewable energy sector, including research at the Energy Research Institute of National Development and Reform Commission and the Institute of Planning and Engineering of the Ministry of Agriculture; he is also responsible for renewable energy at the Ministry of Science and Technology. His current work focuses on policy, strategy and planning research, and advancing industry and technology development for renewable energy and new materials. As a leader of CRES, he organized and participated in the important activities related to the development plan of new energy and the renewable energy industry, as well as academic exchange and international cooperation projects.

Thomas Maschmeyer is a Professor of Chemistry at the University of Sydney and served as Founding Director of the new A\$150 million Australian Institute of Nanoscale Science and Technology ('Sydney Nano'). He is the Founding Chairman of Gelion Technologies, a new battery company. In 2001, he was one of the Founding Professors of Avantium, a Dutch high-tech company that listed in 2017 on Euronext with a current market cap of A\$345 million. He is also co-founder of the privately held Licella, a waste-to-fuels and chemical company. In 2011, he was elected youngest Foreign Member of the Academia Europaea; he is also a Fellow of the Australian Academy of Sciences, the Australian Academy of Technological Sciences and Engineering, the Royal Australian Chemical Institute (RACI). In 2014 he was elected Fellow of the Royal Society of NSW (Australia's oldest scientific society). He has authored 290+ publications (including 25 patents and 22 book chapters) and been cited 8,500+ times. He serves on the editorial/advisory boards of 10 international journals and has received many awards, including the RACI Weickhardt Medal for Economic Contributions (2012), the RACI Applied Research Award (2011), and the Le Fèvre Prize of the Australian Academy of Sciences (2007). He has held positions at the Royal Institution of Great Britain and the University of Cambridge (Peterhouse), and was appointed Professor and Department Head at the Delft Institute of Chemical Technology (1998), becoming Vice-Chairman of that Institute in 2000. He returned in late 2003 to the University of Sydney to ARC Future and Federation Fellowships.

Ruth Mendum has a PhD in Rural Sociology and Women's Studies from Pennsylvania State University. She is the Associate Director of Gender Initiatives in the Office of International Programs, College of Agricultural Sciences. She works on gender integration in applied agricultural and natural resources systems. Currently she is involved in understanding gender in woodfuel systems, including resource recovery and reuse for energy in Eastern and Southern Africa. Her interests include transdisciplinary methods, capacity building, urban agriculture, and sustainable development in humanitarian conditions in Sub-Saharan Africa.

Helioisa Menezes holds a Bachelor's degree in Economics from PUC Minas and a Master's degree in Agricultural Development from CPDA/UFRRJ. She currently holds the position of Technical Director of Sebrae. Previously she was the Secretary of Production Development at the Ministry of Development, Industry and Foreign Trade (2011–14), and coordinated the industrial policy of the Federal Government – Brazil Major Plan; the Competitiveness Council of Petroleum, Gas & Naval Industry; and the Inovar Auto, the current Brazilian automotive policy. She also held the positions of Director of Institutional Relations at the National Confederation of Industry (CNI); Superintendent of Euvaldo Lodi Institute in Minas Gerais; Manager of Economic Affairs at the Federation of State of Minas Gerais Industries (FIEMG); Technical Director of the Meta Institute; and Director of Regional and Sectorial Planning at the Secretary of State of Minas Gerais. She has over 20 years of experience in industrial and social policy projects, innovation and technology. She is an INSEAD, Dom Cabral Foundation, and Singularity University alumna.

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Julio Raffo is Head of the Innovation Economics Section at the Economic and Statistics Division of the World Intellectual Property Organization (WIPO). He holds a PhD in Economics from the Université de Paris Nord and has post-doctoral experience in the École Polytechnique Fédérale de Lausanne, Switzerland. His research topics of interest are the economics and metrics of innovation and intellectual property, with a particular focus on their intersection with socioeconomic development.

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Andrés Rebolledo is the Former Minister of Energy of Chile. He holds a degree in Economics from the University of Chile and a graduate degree in International Economics and Economic Development of the Complutense University in Madrid, Spain. As the former Director-General of International Economic Relations of Chile, Mr Rebolledo has extensive experience in international trade. He has been in charge of different departments such as the Latin America & Integration Department and the Market Access Department, leading the preparation, negotiation, and management processes of Free Trade Agreements signed between Chile and different countries. He has also been appointed Director of Bilateral Economic Affairs, Chilean Ambassador to Uruguay, and Permanent Representative of Chile at ALADI. He has also worked as a consultant in integration and trade at the International Development Bank (IDB) in Washington, DC, United States.

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Michaela Saisana leads the European Commission's Competence Centre on Composite Indicators and Scoreboards (COIN) at the Joint Research Centre in Italy. She conducts and coordinates research on the monitoring of multi-dimensional phenomena that feed into EU policy formulation and legislation. She collaborates, by auditing performance indices, with over 100 international organizations and world-class universities, including the United Nations, UNICEF, Transparency International, the World Economic Forum, INSEAD, the World Intellectual Property Organization, Yale University, Columbia University, and Harvard University. Her publications deal with composite indicators, multi-criteria analysis, multi-objective optimization, data envelopment analysis, and sensitivity analysis (20 peer-reviewed articles, 2 books, 60 working papers). She provides regular trainings/seminars on composite indicators (over 30 trainings and 60 invited lectures). In 2004 she was awarded the European Commission's JRC Young Scientist Prize in Statistics and Econometrics in recognition of her research on composite indicators. She has a PhD and an MSc in Chemical Engineering.

Alessandra Salgado is an Associate Professional at the International Renewable Energy Agency (IRENA). She is part of IRENA's Innovation & Technology Centre, where she performs analytical work and research on patents, technology innovation, and quality assurance for renewable energy. Before joining IRENA, she worked for five years in the private sector as an Engineer with McKinsey & Company and Intel Corporation. Alessandra Salgado has a Master of Science degree in Mechanical Engineering for Sustainable Energy from the Royal Institute of Technology (KTH), Sweden. She graduated as an Industrial Engineer from the University of Costa Rica.

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Daren Tang has been the Chief Executive of the Intellectual Property Office of Singapore (IPOS) since November 15, 2015. Under his leadership, IPOS has evolved into an innovation agency that drives Singapore's future growth. Mr Tang holds key positions in several international and national IP and innovation-related committees. He is the Chairperson of the World Intellectual Property Organization's Standing Committee on Copyright and Related Rights. He also sits on the Research, Innovation and Enterprise Strategy Committee, which oversees the development of Singapore's R&D sector. Mr Tang holds an LL.B (2nd Upper, Hons) from the National University of Singapore and an LL.M (with distinction) from the Georgetown University Law Center, Washington, DC. He also attended the Advanced Management Program at Harvard Business School in 2013. Mr Tang has written a book on the history and culture of tea and plays jazz piano in his spare time.

Daniel Vértésy is a Research Fellow at the Competence Centre on Composite Indicators and Scoreboards (COIN) at the Joint Research Centre (JRC) of the European Commission. He is conducting and coordinating econometric and applied statistical research projects focusing on the measurement of scientific and technological research and innovation performance at various levels in support of EU policies. Prior to joining the European Commission, he worked at the United Nations University (UNU-MERIT) conducting research on sectoral innovation system dynamics and emerging aerospace industries. He holds a PhD in Innovation Studies and Development from Maastricht University and UNU-MERIT, in Economics from the Corvinus University of Budapest, and a Master's degree in International Relations from the latter university.

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