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Foreword

This monograph charts the research undertaken by the policy and finance team within the infrastructure cluster of the Australia-Indonesia Centre (AIC). The research conducted was an international collaboration between The University of Melbourne, Universitas Indonesia and Universitas Gadjah Mada into project initiation in ports and infrastructure projects in Indonesia and Australia, with funding and support from the AIC. An outline of the research approach and collaboration is provided in the paper titled 'Collaborative international industry-university research training in infrastructure projects: an Australian-Indonesian case study' by Hui et al. 2018.[1]

The material presented in this monograph relates to research into efficient facilitation of major infrastructure projects, with an emphasis on infrastructure investment and a focus on port planning and development. Prominence was initially given to examining infrastructure investment in Indonesia and then relating this to the infrastructure environment in Australia. This approach has contributed to a better understand of how Indonesia and Australia can improve infrastructure investment and more particularly investment that enhances how ports function.

The lessons learnt in port infrastructure projects can also be broadly applied to large infrastructure projects. Efficient initiation and facilitation processes in rail infrastructure, road infrastructure, water infrastructure or energy infrastructure are also needed especially when these projects compete for the same pot of government funds.

The outline of the monograph is as follows:

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Chapter 1: Infrastructure Investment in Indonesia — The Economic Context.

Authors: Professor Colin F. Duffield, Regina Duffield, Dr Sally Wilson

The first chapter sets the scene for infrastructure investment in Indonesia from an economic perspective. It takes into consideration the country's geography, its government, its growing population, its economy, and its investment and infrastructure needs.

Chapter 2: Infrastructure Planning, Challenges and Risks.

Authors: Professor Colin F. Duffield, Regina Duffield, Dr Sally Wilson

The second chapter briefly outlines relevant national and international plans and initiatives to assist with infrastructure investment and development in Indonesia. It then presents and discusses the challenges, barriers, risks and issues associated with delivering the required infrastructure necessary to underpin the economic growth and reform strategies for Indonesia. The chapter then presents some results from a survey of port executives, government officials, financiers and consultants undertaken in both Indonesia and Australia into efficient facilitation of major infrastructure projects with a focus on port planning and development.

Chapter 3: Funding and Financing Infrastructure: Indonesia and Australia.

Authors: Professor Colin F. Duffield, Regina Duffield, Dr Sally Wilson

The third chapter explores the financing mechanisms available and funding required to support infrastructure investment in Indonesia. The Australian situation is also considered. A range of alternate investment approaches are explored as well as priority areas for investment in Indonesia and Australia. The relative effectiveness of various financing methods are explored from the perspective of Indonesian and Australian respondents to the port planning and development survey.

Chapter 4: Efficient Facilitation of Major Infrastructure Projects

Authors: Professor Colin F. Duffield, Dr Felix Kin Peng Hui, Vijayshree Behal

The fourth chapter considers the processes involved in implementation of major infrastructure projects. It identifies the theoretical processes to instigate projects and compares them to the real-world practices that are being implemented in Indonesia and Australia with a focus on case study examples. A comparison with the Gateway review process undertaken for implementation of major infrastructure projects in Australia is presented.

Chapter 5: Port and Hinterlands: The Combined Infrastructure Costs of Seaports, Intermodal Terminals and Transport Access, Port Botany, Sydney.

Authors: Emeritus Professor John Black, Associate Professor Violeta Roso

The fifth chapter commences with a review of the literature on intermodal terminals (dry ports). It then examines the symbiotic relationships between port and hinterland, including investment costs (in current Australian dollars using an inflation calculator), with an historical case study that focuses on Port Botany in Sydney, Australia's second largest container port. The historical backdrop is important for researchers to understand the social, economic and environmental effects of port locational decisions on its hinterland. Specifically, the development of Port Botany has been associated with environmental and social conflicts due to landside constraints and community action. The problem of increasing container volumes handled in seaports requires adequate land to be available nearby or in the immediate hinterland for port-associated functions with efficient inland multi-modal transport access. The relevance to Indonesian ports is discussed.

Chapter 6: Comparative Efficiency Analysis of Australian and Indonesian Ports.

Authors: Dr Felix Kin Peng Hui, Professor Colin F. Duffield, Andrew Chin, Hanlong Huang

A comparative analysis of Australian and Indonesian port efficiency is presented in the sixth chapter. The analysis utilises the Data Envelope Analysis model to quantify and measure the efficiency of ports, focusing on port and container cargoes. Ports included in the benchmarking included major Australian, Indonesian and Chinese international ports. International benchmarking of port facilities provides an opportunity to identify areas for improvement.

Chapter 7: Innovation in Port Development: The Quad Helix Model.

Author: Associate Professor Sari Wahyuni

The seventh chapter presents a comprehensive case study from Japan on how an Academic-Business-Community-Government plus bank partnership can be nurtured to create innovation through various strategies, including engagement with key stakeholders for local industrial vitalization, analysis for new industries, support for creating an industrial vitalization plan, and support for collaboration with other regions.

Chapter 8: Revealing Indonesian Port Competitiveness: Challenge and Performance.

Authors: Associate Professor Sari Wahyuni, Alif Azadi Taufik, Dr Felix Kin Peng Hui

The eighth chapter considers Indonesian port competitiveness. It notes that the Indonesian government is in the midst of planning broad policies and strategies concerning maritime and port development and has recently provided a reform package to improve logistics in the country to improve the supply chain. Results from focus group meetings, a detailed questionnaire and in-depth interviews with key port industry stakeholders and financial bodies in Indonesia are presented. Problematic factors contributing to port problems were identified from the perspective

of research participants. The chapter identifies important aspects of port competitiveness: government support, business support and operational performance. Despite general support towards the government policies in facilitating port investment, there seems to be a substantial gap between policy expectation and policy realisation.

Chapter 9: Initial Investigation into the Effectiveness of Australian Ports' Governance and Management Structures.

Authors: Haya Al-Daghlas, Dr Felix Kin Peng Hui, Professor Colin F. Duffield

The ninth chapter considers effectiveness of port governance and management structures in Australia. It briefly reviews Australian port reform, before considering private, local and international investment in Australia; the make-up of investors in major city ports in Australia; and the need to carefully assess foreign investment in critical infrastructure. Asset recycling in Australia is discussed. Factors identified from focus group discussions (in Australia) with key port stakeholders that help improve or act as obstacles to governance/policy, and that help improve or hinder management structures in ports, are also presented.

Chapter 10: Alternative Ways to Finance Major Port Projects: Seaports in Indonesia.

Authors: Waskitha W. Galih, Associate Professor Ruslan Prijadi

Various alternatives of port infrastructure project financing are explored in the tenth chapter. The insights and perspectives of various Indonesian seaport industry stakeholders on financing of infrastructure projects are presented from findings from an online survey, focus group discussions and in-depth interviews conducted in Indonesia. A detailed case study of the New Priok Container Terminal One (NPCT-1) is used to illustrate how different scenarios of financing schemes would affect the project risks allocation, and the project value itself. The first scenario examines the project's current financing structure — the contractual relationships between the project company, its sponsors, lenders and the government. The second scenario is

built under a what-if assumption where the project is assumed to be financed under a Public Private Partnership (PPP) scheme with an annuity availability payments feature.

Chapter 11: The Critical Importance of Land Transport when Considering Port Development: the Case of Three Indonesian Ports.

Authors: Professor Danang Parikesit, Said Basalim, Wiratno Wahyu Wibowo

The eleventh chapter discusses the intricate relationship between ports and their hinterland and the critical importance of land transport when considering port development. The chapter considers the integration between a port and an industrial area. Multimodal operations of ports are discussed through a comprehensive review of the international literature which considers the following issues: regionalisation and spatial control, structural and organisation challenges of multi-mode port operation, and the disruption of land access to ports. Three Indonesian port case studies are then presented: Belawan Port in Medan, North Sumatera; Tanjung Priok Port in Jakarta; and Tanjung Perak/Teluk Lamong Port Terminal in Surabaya. The case studies touch on a variety of issues: traffic congestion in and around ports; control of inbound and outbound traffic at ports; empty trips; land-use management and local-through access traffic separation; dedicated toll access; the use of inland waterways as an alternative transport mode; dedicated rail service from an industrial area/special economic zone; expansion of rail services; use of intermodal systems; IT solutions; the green port concept; inter terminal freight transport; infrastructure that can guarantee efficient freight movement. The chapter concludes with several policy recommendations.

Chapter 12: Potential Infrastructure Enhancements for Ports and Cities: Conclusions, Future Research and Policy Concepts.

Authors: Professor Colin F Duffield, Associate Professor Sari Wahyuni, Professor Danang Parikesit, Dr Felix Kin Peng Hui, Dr Sally Wilson

The final chapter of this research monograph draws together key points from each of the chapters. It summarises key findings from

the research and poses questions that would benefit from future/ further research.

The compilation of this research monograph highlights the importance of collaborative international research as a model for capacity building and knowledge transfer. This research monograph has been a true collaborative venture between the research partners from The University of Melbourne in Australia, and Universitas Indonesia and Universitas Gadjah Mada in Indonesia. It has built goodwill between the research participants and has resulted in strengthened professional relationships and increased engagement between the university research partners. The collaborative approach also enabled greater engagement with key port stakeholders within both countries and enhanced the understanding of the common problems faced by both countries.

Author Biographies

Editors

Colin Duffield is Professor in Engineering Project Management and Deputy Head of the Department of Infrastructure Engineering at The University of Melbourne. He is also a fellow of the Law School and formerly a Director of Infrastructure Australia. Colin has extensive experience in the governance of long-term contracts and the interaction between policy, technical matters, risk management, financing and contractual arrangements as they apply to infrastructure. Colin has been involved in infrastructure delivery for public and private clients; an advisor to projects on risk and project structuring; and an independent reviewer and researcher of major engineering contracts.

Dr Felix Kin Peng Hui is a Senior Lecturer and Academic Specialist in the Department of Infrastructure Engineering at The University of Melbourne, and he teaches engineering management and marketing management to engineers at postgraduate level. He has a diverse industry background having spent more than 25 years at senior levels in manufacturing of machine tools, precision engineering, semiconductors, and infrastructure. He has also consulted widely to organisations seeking continuous improvements to optimise their operational

efficiency. His research interests are in the areas of operational process optimisation, operational efficiency, lean systems, organisational development, and change management for sustainability. Dr Hui is a registered professional engineer and is also Fellow of the Institute of Managers and Leaders, ANZ.

Dr Sally Wilson is a Research Fellow in the Department of Infrastructure Engineering at The University of Melbourne working with Professor Colin Duffield and Dr Felix Hui on the study into infrastructure policy and finance as part of the Infrastructure Cluster Agenda of the Australia-Indonesia Centre. She is a consultant pharmacist with wide experience as a clinical pharmacist in the hospital and community sectors. She has worked as a Research Fellow in the Department of Epidemiology and Preventive Medicine at Monash University and on numerous interdisciplinary programs and projects in primary care. She has broad experience in healthcare service-based research and has recently been Project Manager on a National Health and Medical Research Council study. She has previously assisted on a major infrastructure study in the Department of Infrastructure Engineering at The University of Melbourne related to the Victorian Regional Rail Project.

Chapter Authors

John Black was appointed as the Foundation Professor of Transport Engineering at the University of New South Wales (UNSW), Sydney in 1984 and is now an Emeritus Professor. Since 1968 his research has included all modes of transport and their economic, social and environmental impacts. He has an extensive record of the supervision of Indonesian higher degree students from 1974 to the present. Since 1978 he has worked as a researcher and consultant in Indonesia that includes: leading capacity building for Bina Marga on the 10-year Indonesian steel bridge replacement program funded by the Australian Government: co-director (with Professor Danang Parikesit) of reform in the transport sector and Public Private Partnerships funded by the Australian-Indonesian Governance Research Partnership; advisor to PT SMI on the Jakarta-airport rail link.

Violeta Roso is an Associate Professor at Department of Technology Management and Economics, Chalmers University of Technology,

Gothenburg, Sweden, where she is also Director of Doctoral studies. She has been researching dry ports since 2003 and today is the leading researcher within the subject with numerous highly cited publications. Violeta has acted as a visiting academic at the University of New South Wales (UNSW) in Sydney, Australia; and at the University of North Florida (UNF), Florida, USA. She supervises PhD and Master's students, and teaches Master's and postgraduate courses.

Danang Parikesit is a Professor of Transportation Engineering in the Department of Civil and Environmental Engineering at Universitas Gadjah Mada. Former policy advisor to the Minister of Public Works (2010–2014), Professor Parikesit is currently appointed by the Government of Indonesia as the Head of the Indonesia Toll Road Authority. He is also a commissioner of the PT Pelni, an Indonesia state owned shipping company.

Associate Professor Sari Wahyuni, Faculty of Economics and Business, University of Indonesia is the founder of the South East Asian Journal of Management and currently serves as the President of the Indonesian Strategic Management Society. She was the Director of the University of Indonesia's Institute of Management and Associate Professor of International Business at Nottingham University, Malaysia Campus. Sari is also a consultant for many multinational companies and government bodies in Indonesia. Her research interests are in strategic management, especially on regional economic development, national competitiveness, international business strategy, strategic alliances, human resources, international negotiations.

Ruslan Prijadi is Associate Professor of corporate finance in the Department of Management, Faculty of Economics and Business, Universitas Indonesia.

Haya Al-Daghlas is a PhD candidate in the Department of Infrastructure Engineering at The University of Melbourne. Haya obtained her BSc. In Civil Engineering from the University of Jordan in 2009. In 2016 Haya completed her Master's degree in Engineering Project Management at The University of Melbourne/School of Engineering, with first-class honours. Haya has worked in the field of engineering project management for several years and she was recently appointed as a

member of the Board of Directors at Melbourne Maritime Heritage Network.

Regina Duffield is a biomedicine graduate from The University of Melbourne and was a research assistant in the Department of Infrastructure Engineering at The University of Melbourne.

Vijayshree Behal is a Master of Engineering (Civil with Business) graduate from the Department of Infrastructure Engineering, The University of Melbourne, and was a student at the time of the project.

Andrew Chin, and Hanlong Huang are Master of Engineering (Civil) graduates from the Department of Infrastructure Engineering, The University of Melbourne, and were students at the time of the project.

Said Basalim is a PhD Candidate in the Civil Engineering Department, Transport Engineering at Universitas Gadjah Mada. Said is also a lecturer in the Faculty of Engineering at the University of Tanjungpura in West Kalimantan.

Waskitha Weninging Galih is a Master of Management student at Universitas Indonesia in the Faculty of Law.

Wiratno Wahyu Wibowo is a researcher in the Centre for Transportation and Logistics Studies (Pustral) at Universitas Gadjah Mada. Wiratno is an associate researcher of Professor Danang.

Alif Azadi Taufik was a student in the Department of Management, Faculty of Economics and Business, Universitas Indonesia.