Infrastructure for Inclusive Economic Development Volume 2: Case Studies of Accelerated Projects

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Economic Research Institute for ASEAN and East Asia

MINISTRY OF FINANCE
REPUBLIC OF INDONESIA

Infrastructure for Inclusive Economic Development Volume 2:
Case Studies of Accelerated Projects

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Photo cover note, top to bottom:

Mass Rapid Transport (MRT) in DKI Jakarta
Ministry of Transportation

Kayuagung Interchange, Bakaheuni-Terbangi Besar Toll Road at Ogan Ilir, South Sumatra
Government Property Agency (LMAN), Ministry of Finance

Border Post Skouw, Jayapura, Papua
Financial Education and Training Agency (FETA), Ministry of Finance

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Foreword

Chairman of Financial Education and Training Agency and Acting President
Director of the Educational Fund Management Institution, the Ministry of Finance

Infrastructure development plays a vital role in social and economic growth in any emerging nation. It encompasses the improvement of essential physical structures, systems, and facilities that support the functioning of society and the economy. By investing and maintaining a robust infrastructure system, countries can create enabling environments that attract investments, fosters innovation, and promotes sustainable economic growth.

Acknowledging the crucial role of infrastructure in fostering competitiveness and facilitating development across the nation, Indonesia's President Joko Widodo has made infrastructure development his top priority agenda. One of his notable policies is issuing the National Strategic Projects (Proyek Strategis Nasional, PSN) scheme. The government initiated the PSN scheme as one of the strategic steps to accelerate the fulfilment of essential infrastructure requirements to support economic growth and improve people's well-being.

Introduction to the National Strategic Projects Scheme

The PSN scheme, first signed on 8 January 2016, through Presidential Regulation Number 3 of 2016, is a project or programme implemented by the government, regional governments, and/or business entities that have strategic significance for promoting growth and equitable development, with the aim of improving the welfare of society and regional development. The inclusion of a project in the PSN list requires a thorough evaluation of proposals by the Committee for the Acceleration of Priority Infrastructure Provision (KPPIP) based on three criteria: basic, strategic, and operational. By being selected as a National Strategic Project, an infrastructure project will gain numerous advantages. However, the implementation of the PSN scheme is not without its challenges.

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To provide a comprehensive introduction to the PSN scheme, Chapter 1 has been dedicated to exploring the background of the PSN scheme, the criteria for national strategic projects, advantages of being listed as a national strategic project, the cumulative progress achieved from 2016 to 2022, followed up with pertinent issues that need attention for the continued success of the PSN scheme.

PSN Development in Indonesia and Case Studies of 20 Completed PSNs

Since its establishment from 2016 to December 2022, a total of 153 PSNs have been successfully completed with an investment value surpassing Rp1,040 trillion. The construction progress of the PSN scheme across different sectors has made a substantial contribution to infrastructure development in Indonesia. It has generated a wide-ranging multiplier effect with social and economic implications. These projects have contributed to improving regional connectivity and economy. Notable achievements include the operation of the first mass rapid transit (MRT) in Indonesia, the expansion of the rail network, the construction of dams, the expansion of toll roads, and the implementation of drinking water supply.

As we dig into the development of PSNs in Indonesia, the chapters will first explain the needs of infrastructure development, highlight the importance of economic and social infrastructure development, present a literature review on national strategic projects, and provide an in-depth overview of the benefit and impact of PSNs.

Chapter 3 will provide in much greater detail, accompanied with photo illustrations, 20 selected PSNs. These PSNs have been clustered into three distinct groups: connectivity economic infrastructure, non-connectivity economic infrastructure, and social infrastructure. Connectivity economic infrastructure focuses on enhancing the economy by improving the mobility of people and goods. Non-connectivity economic infrastructure aims to stimulate economic activities aside from transportation. Social infrastructure refers to projects that contribute to the well-being of people.

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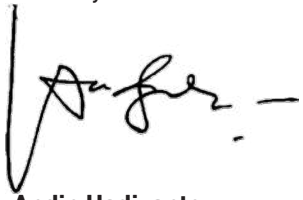
The PSNs were chosen to represent diverse regions across Indonesia (spanning from Sumatra to Papua) and showcase innovative financing approaches (such as SPAM Umbulan), as well as breakthrough solutions to existing challenges (as demonstrated by the Benowo waste-to-energy plant). The chapters will explore the history and background of the selected PSN projects, the urgency of each project, the cost and financing schemes, project implementation, challenges faced, and the benefits these projects have on society, both in terms of economic and social aspects. It is hoped that the stories in this book, which are presented in a lighter format than the first book, can serve as an effective illustration of the distribution of social and economic infrastructures throughout Indonesia.

Appreciation to ERIA, KPPIP, and the Ministry of Public Works and Housing support

On behalf of the Financial Education and Training Agency (FETA), I would like to thank the Economic Research Institute for ASEAN and East Asia (ERIA), for its invaluable support and contribution to the publication of this book. We would also like to extend our deep appreciation to Fauziah Zen for her role as ERIA's representative in the collaborative work between FETA and ERIA. In addition, I thank the KPPIP and the Ministry of Public Works and Housing for their support in providing data and facilitating discussion regarding each PSN case study. Finally, let me express our gratitude toward everyone who has been involved in documenting knowledge about PSN.

We hold that this book and the first book that explains Indonesia's strategy to achieve inclusive development through the National Strategic Project scheme, will serve their purpose to showcase the importance of infrastructure development for a developing country.

Chairman of Financial Education and Training Agency,
Ministry of Finance



Andin Hadiyanto

COORDINATING MINISTRY FOR ECONOMIC AFFAIRS
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Foreword

Accelerating Priority Infrastructure through Cross-sector Coordination
Deputy Minister for Regional Development and Spatial Planning,
as Chairman of KPPIP

Accelerating the provision of priority infrastructure plays a crucial and strategic role in achieving accelerated economic growth for the welfare of the people. Coordination amongst stakeholders is necessary to ensure the accuracy of the implementation of infrastructure priority projects. The government established the Committee for Acceleration of Priority Infrastructure Provision (Komite Percepatan Penyediaan Infrastruktur Prioritas, KPPIP) through Presidential Regulation Number 75 of 2014 in an effort to accelerate coordination and decision making to promote the provision of National Strategic Projects (PSN). Led by the Coordinating Minister for Economic Affairs as the Chairperson, the Committee consists of the Coordinating Minister for Maritime and Investment Affairs, the Minister of Finance, the Minister of National Development Planning/Head of the National Development Planning, the Minister of Agrarian Affairs and Spatial Planning, and the Minister of the Environment and Forestry.

The KPPIP serves as a cross-sectoral point of contact in implementing coordination for debottlenecking the PSN. Formed with the main purpose of being a coordination unit in decision making, the KPPIP acts as a driver for resolving coordination issues amongst various stakeholders across ministries and agencies and local governments.

As the population of Indonesia continues to grow, urbanisation and economic development have surged and the demand for infrastructure has escalated significantly. The government increasingly strives for significant economic growth through the acceleration of infrastructure development in Indonesia, especially the PSN. For the first time, the list of National Strategic Projects is determined in a Presidential Regulation regarding the acceleration of the implementation of National Strategic Projects as stipulated in Presidential Regulation Number 3 of 2016 concerning the Acceleration of the Implementation of National Strategic Projects, which consists of 225 projects and one programme.

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Priority projects that are considered as a PSN should have urgency and high priority to be realised in a certain period. These projects are selected based on their potential to catalyse economic growth, create jobs, improve connectivity, enhance public services, as well as having positive impacts on the gross domestic product, reduction of unemployment, socio-economic aspects, and the environment. The PSN list can be modified based on assessments conducted by the KPPIP. Changes to the list of National Strategic Projects are determined by the Coordinating Minister for Economic Affairs, who serves as the chair of the KPPIP, after obtaining the President's approval.

Starting from 2016, more than 300 projects have been granted the status of a National Strategic Project. Based on the latest list of PSNs stipulated in the Coordinating Minister of Economic Affairs Regulation Number 21 of 2022 concerning on National Strategic Projects List, the government has designated 210 projects and 12 programmes as a PSN, with a total investment value of Rp5,746.4 trillion (equivalent to about $383.4 billion).

From 2016 to December 2022, a total of 153 National Strategic Projects have been completed and fully operational, with a total investment value of Rp Rp1,040 trillion[1].

The PSNs under the assistance of the KPPIP strengthen Indonesia's commitment to sustainable and inclusive development. Through efficient project management, streamlined decision-making processes, and strong collaboration between government entities, the private sector, and communities, these approaches aim to accelerate infrastructure delivery and maximise socioeconomic benefits for society.

[1] As of August 2023, the number of completed national strategic projects is at 161 National Strategic Projects have been completed and fully operational, with a total investment value of Rp1,134.7 trillion. Moreover, 31 projects have been partially operated, and 68 projects already started construction, amassing an estimated investment of around Rp1,946.5 trillion.

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The KPPIP plays an instrumental role in expediting National Strategic Projects, leveraging the experience to navigate the complexities of infrastructure development and tactfully addresses some primary obstacles such as the acquisition of land, meticulous project planning, financing and preparation, financial capabilities, and construction-related issues. To mitigate these challenges, the KPPIP synergises with all the member ministries, agencies, and local governments to devise comprehensive policies, which are then woven into regulations. The KPPIP also played a pivotal part in crafting Government Regulation No. 42 of 2021, designed to support National Strategic Projects, and Government Regulation No. 19 of 2021 about land acquisition, established to oversee land acquisition for public projects. Financing, another crucial facet, is also managed under the KPPIP's stewardship, ensuring projects receive the requisite funding to flourish. Thus, under the strategic guidance of the KPPIP, the acceleration of pivotal infrastructure development is made feasible and efficient.

The Indonesian government realises that infrastructure development not only contributes to strengthen the macroeconomy but also has significant impacts on various layers of government, businesses, and society in general in their daily lives.

This book is written as one of the efforts of the Government of Indonesia to gain an overview of the various significant impacts generated by PSN infrastructure development, both measurable and immeasurable, at all levels of government, businesses, and society, and to analyse strengths, weaknesses, opportunities, and threats (SWOT), opportunities, and challenges of each infrastructure project in pursuing infrastructure standards similar to those in developed countries. The book will additionally emphasise the insights gained from 20 PSN projects spread evenly across Indonesia, spanning from Sumatra to Papua. These projects encompass a wide range of infrastructure initiatives, such as connectivity improvements, regional development encompassing industrial areas and special economic zones, the construction of dams, cross-border facilities, and waste-to-energy projects.

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The KPPIP, together with the government, state-owned enterprises, regional-owned enterprises, the private sector, and other institutions, will continue to strive to accelerate the completion of infrastructure projects according to the targets, benefiting the community, contributing to national economic growth, and promoting job creation.

Deputy Minister for Regional Development
and Spatial Planning as Chairman of KPPIP

Wahyu Utomo

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Acknowledgments

This book, **'Infrastructure for Inclusive Economic Development Volume 2: Case Studies of Accelerated Projects in Indonesia,'** is the second instalment in a two-part series that delves into Indonesia's National Strategic Projects programme (*Proyek Strategis Nasional* – PSN). It complements the first book in the series, **'Infrastructure for Inclusive Economic Development Volume 1: Lessons Learnt from Indonesia.'**. While the first book expounds on the theoretical framework and rationale behind Indonesia's strategy for achieving inclusive development through the groundbreaking PSN initiative, this book takes a practical approach by showcasing selected projects from across Indonesia as case studies.

The projects featured in this book were carefully chosen to represent three clusters that provide readers with intuitive insights into how specific infrastructure initiatives have impacted Indonesian society. These clusters are categorised as (i) economic connectivity, (ii) economic non-connectivity, and (iii) social development. To provide context and ease readers into the third chapter, which comprises the showcases of PSN as subchapters, the first two chapters introduce and explain the current development of PSN in Indonesia. Furthermore, the selection of these projects illustrates the execution of President Joko Widodo's vision of *Nawacita*, particularly the idea of developing the country from its periphery.

The chapters and subchapters in this book are a collaborative effort by authors from the Ministry of Finance, the Coordinating Ministry for Economic Affairs, and the Ministry of Public Works and Housing, all working under the direct supervision of the book's editors. This inter-institutional collaboration aims to provide a comprehensive book that not only offers accurate data and policy explanations but also diversity of insights and perspectives.

Additionally, the editors and authors of this book received invaluable guidance from Her Excellency Sri Mulyani Indrawati, the Minister of Finance, and Professor Suahasil Nazara, the Deputy Minister of Finance, who played a pivotal role in setting the tone of this book. We also extend our appreciation to Andin Hadiyanto, chairman of the Financial Education and Training Agency, for initiating and leading the project, ensuring its timely completion.

Acknowledging the collaborative spirit within the Ministry of Finance, we express our gratitude for the technical and personnel support received from the Fiscal Policy Agency, the Secretariat of the Financial Education and Training Agency, the Leadership and Managerial Education and Training Center, the Budgetary and Treasury Education and Training Center, and the Polytechnic of State Finance STAN.

List of Abbreviations

3T	*Terdepan, Terluar, dan Tertinggal*
AC	Air Conditioner
ACWC	Asphalt Concrete-Wearing Course
ADB	Asian Development Bank
AIIB	Asian Infrastructure Investment Bank
ALKI	*Alur Laut Kepulauan Indonesia* (The Maritime Route of the Indonesian Archipelago)
AP	*Angkasa Pura*
AP	Availability Payment
APBD	Regional Budget and Expenditure (*Anggaran Pendapatan dan Belanja Daerah*)
APBN	State Budget and Expenditure (*Anggaran Pendapatan dan Belanja Negara*)
APL	Other Use Areas (*Areal Penggunaan Lain*)
ATP	Ability To Pay
ATR	Agrarian Affairs and Spatial Planning (*Agraria dan Tata Ruang*)
BAST	Minutes of Handover (*Berita Acara Serah Terima*)
BAPPENAS	Ministry of National Development Planning (*Badan Perencanaan Pembangunan Nasional*)
BBM	Petroleum Fuel (*Bahan Bakar Minyak*)
BBWS	River Basin Management Organization (*Balai Besar Wilayah Sungai*)
BCFD	Billion Cubic Feet per Day
BCR	Benefit Cost Ratio
BLP	Tipping Fee (*Biaya Layanan Pengolahan Sampah*)
BLU LMAN	Government Property Public Service Agency (*Badan Layanan Umum Lembaga Manajemen Aset Negara*)
BNI	Bank Negara Indonesia
BNPP	National Border Management Agency (*Badan Nasional Pengelola Perbatasan*)
BOT	Build Operate Transfer
BP2P	Housing Provision Implementation Agency (*Balai Pelaksanaan Penyediaan Perumahan*)
BPJN	(National Road Implementation Agency (*Balai Pelaksana Jalan Nasional*)
BPJT	National Toll Road Authority (*Badan Pengatur Jalan Tol*)
BPKP	Finance and Development Supervisory Agency (*Badan Pengawas Keuangan dan Pembangunan*)
BPMPTSP	One Stop Investment and Services Agency (*Badan Penanaman Modal dan Pelayanan Terpadu Satu Pintu*)

BPN	National Land Agency (*Badan Pertanahan Nasional*)
BPP	SPAM Support Agency for Drinking Water Supply System Development (*Badan Pendukung Pengembangan Sistem Penyediaan Air Minum*)
BPPT	Agency for the Assessment and Application of Technology (*Badan Pengkajian dan Penerapan Teknologi*)
BPS	Indonesian Statistics (*Badan Pusat Statistik*)
BSPS	Self-Help Housing Stimulus Assistance (*Bantuan Stimulan Perumahan Swadaya*)
BUJT	*Badan Usaha Jalan Tol* (Toll Road Business Entity)
BUMD	Local-Owned Enterprise (*Badan Usaha Milik Daerah*)
BUMDes	Village-Owned Enterprise (*Badan Usaha Milik Desa*)
BUMN	State-Owned Enterprise (*Badan Usaha Milik Negara*)
BUPP	Development and management of the business entity (*Badan Usaha Pembangunan dan Pengelola*)
BWS	River Basin Organization (*Balai Wilayah Sungai*)
CBTC	Communication Based Train Control
CCTV	Closed Circuit Television
CHSE	Cleanliness, Health, Safety, and Environment Sustainability
CIQS	Customs, Immigration, Quarantine, Security
CNN	Cable News Network
CP	Contract Packages
CPO	Crude Palm Oil
CT	Container Terminal
Damija	Road Owned Area (*Daerah Milik Jalan*)
DAMRI	*Djawatan Angkoetan Motor Repoeblik Indonesia*
DAS	Watershed (*Daerah Aliran Sungai*)
DED	Detailed Engineering Design
Disparpora	Department of Tourism, Youth, and Sports (*Dinas Pariwisata Kepemudaan dan Olahraga*)
DJKA	Directorate General of Railways
DKI	Special Capital Region Government (*Daerah Khusus Ibukota*)
DLH	Environment Agency (*Dinas Lingkungan Hidup*)
DPSD	Direktorat of Human Resource Utilization (*Direktorat Pendayagunaan Sumber Daya Manusia*)
DPSP	Super-Priority Tourism Destinations (*Destinasi Pariwisata Super Prioritas*)
DTT	Digital Terrestrial Television
EARR	Emergency Assistance for Rehabilitation and Reconstruction
EBP	Earth Pressure Balance
EFAS	External Factor Analysis

El	Elevation
ESDM	Energy and Mineral Resources (*Energi dan Sumber Daya Mineral*)
ETLE	Electronic Traffic Law Enforcement
FHO	Final Hand Over
GAP	Gender Action Plan
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
GRDP	Gross Regional Domestic Product
ha	Hectare
HI	Hotel Indonesia
Himbara	(Association of State-Owned Bank) *Himpunan Bank Negara*
HPT	Limited Management Rights (*Hak Pengelolaan Terbatas*)
ICT	Information and Communication Technology
IFAS	Internal Factor Analysis
IKN	National Capital City (*Ibu Kota Nusantara*)
IMB	Building Permit (*Izin Mendirikan Bangunan*)
Indirjen	Directorate General Instruction (*Instruksi Direktur Jenderal*)
IPA	Water Treatment Plant (*Instalasi Pengelolaan Air*)
IRR	Internal Rate of Return
ITDC	Indonesian Tourism Development Corporation
IUKI	Industrial Business Permit (*Izin Usaha Kawasan Industri*)
Jabodetabek	Jakarta Bogor Depok Tangerang Bekasi
JBIC	Japan Bank of International Cooperation
JICA	Japan International Cooperation Agency
JMB	Manado Bitung Toll (*Jalan Tol Manado-Bitung*)
JORR	Jakarta Outer Ring Road
JTTS	Trans Sumatra Toll Road (*Jalan Tol Trans Sumatera*)
K/L	Ministry/Government Agencies (*Kementerian/Lembaga*)
KA	Train (Kereta Api)
KAI	*Kereta Api Indonesia*
KAPET	Integrated Economic Development Area (*Kawasan Pengembangan Ekonomi Terpadu*)
KCI	Kereta Commuter Indonesia
KEK	*Kawasan Ekonomi Khusus* (Special Economic Zone)
Kemenparekraf	Ministry of Tourism and Creative Economy (*Kementerian Pariwisata dan Ekonomi Kreatif*)

Kementerian PUPR	Ministry of Public Works and Housing (*Kementerian Pekerjaan Umum dan Perumahan Rakyat*)
KK	Household (*Kepala Keluarga*)
km	Kilometre
KPBU	Public Private Partnership (*Kerjasama Pemerintah dengan Badan Usaha*)
KPPIP	*Komite Percepatan Penyediaan Infrastruktur Prioritas* (Committee for Acceleration of Priority Infrastructure Delivery)
KRL	Electric Multiple Unit (*Kereta Rel Listrik*)
KSDPK	Regional Cooperation with Third Parties (*Kerja Sama Daerah dengan Pihak Ketiga*)
KSP	Presidential Staff Office (*Kantor Staff Presiden*)
KSPI	Infrastructure Provision Cooperation (*Kerja Sama Penyediaan Infastruktur*)
KSPN	National Strategic Tourism Areas (*Kawasan Strategis Pariwisata Nasional*)
Kv	Kilovolt
LAKIP	Government Agency Accountability and Performance Report (*Laporan Akuntabilitas Kinerja Pemerintah*)
LED	Light Emitting Diode
LPEM-FEBUI	Institute for Economic and Social Research – Faculty of Economics and Business, University of Indonesia (*Lembaga Penyeledikan Ekonomi dan Masyarakat Fakultas Ekonomi dan Bisnis, Universitas Indonesia*)
LPG	Liquified Petroleum Gas
LPS	Litres per Second
LRT	Light Rail Transit (*Lintas Rel Terpadu*)
LSM	Nongovernment Organisation (Lembaga Swadaya Masyarakat)
LVC	Land Value Capture
LWS	Law Water Spring
m	Metre
MA	Water Level
MA	Supreme Court (*Mahkamah Agung*)
MAW	Reservoir Water Level (*Muka Air Waduk*)
MoU	Memorandum of Understanding
M0W	Malamoi Olom Wobok
MP3EI	Master Plan for the Acceleration and Expansion of Indonesia's Economic Development (*Masterplan Percepatan dan Perluasan Pembangunan Ekonomi Indonesia*)
MRT	Mass Rapid Transit (Moda Raya Terpadu)
MSMEs	Micro, Small, and Medium-sized Enterprises
MTPA	Matrix Ton per Annum

MUTIP	Mandalika Urban and Tourism Infrastructure Project.
MW	Megawatts
NIA	National Interest Account
NPCT	New Priok Container Terminal
NPEA	New Priok Eastern Access
NPV	Net Present Value
NSTA	National Strategic Tourism Area
NTB	West Nusa Tenggara (*Nusa Tenggara Barat*)
NTT	East Nusa Tenggara (*Nusa Tenggara Timur*)
NYIA	New Yogyakarta International Airport
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
OSS	Online Single Submission
OTD	Affected People (*Orang Terdampak*)
PAD	Local-Owned Source Revenue (*Pendapatan Asli Daerah*)
PBJ	Procurement of Goods/Services (*Pengadaan Barang/Jasa*)
PDAM	Local Government-Owned Water Utility (*Perusahaan Daerah Air Minum*)
PDB	Gross Domestic Product (*Produk Domestik Bruto*)
PDF	Project Development Facility
PDRB	Gross Domestic Regional Product (*Produk Domestik Regional Bruto*)
Perpres	Presidential Regulation (*Peraturan Presiden*)
PHO	Provisional Hand Over
PIK	Electricity Infrastructure Development (*Pembangunan Infrastruktur Ketenagalistrikan*)
PINA	Non-budgetary Investment Financing (*Pembiayaan Investasi Non-Anggaran*)
PJPK	Government Contracting Agency (*Penanggung Jawab Proyek Kerjasama*)
PKRS	Improvement the quality of self-help houses (*Peningkatan Kualitas Rumah Swadaya*)
PKS	Cooperation Agreement (*Perjanjian Kerja Sama*)
PLBN	Cross-Border Post (*Pos Lintas Batas Negara*)
PLTA	Hydroelectric Power Plant
PLTA	*Pembangkit Listrik Tenaga Air*
PLTMH	Micro Hydro Power Plant
PLTS	*Pembangkit Listrik Tenaga Surya*
PMA	Penanaman Modal Asing (Foreign Investment)
PMDN	*Penanaman Modal Dalam Negeri* / Domestic Investment

PNG	Papua New Guinea
PP	Government Regulation (*Peraturan Pemerintah*)
PPKM	Community Activity Restrictions Enforcement
PPP	Public–Private Partnership
PSEL	Waste-to-Energy Plant (*Pengolahan Sampah menjadi Energi Listrik*)
PSN	National Strategic Project (*Proyek Strategis Nasional*)
PT	Limited Liability Company (*Perseroan Terbatas*)
PT	Product Terminal
PT JMB	*Perseroan Terbatas* Jasamarga Manado Bitung
PT Pelindo	PT Pelabuhan Indonesia
PT IIF	*Perseroan Terbatas* Indonesia Infrastructure Finance
PT SMI	*Perseroan Terbatas* Sarana Multi Infrastruktur
PTPN	PT Perkebunan Nusantara
PTSP	One Stop Service (*Pelayanan Terpadu Satu Pintu*)
PUPR	Public Works and Housing (*Pekerjaan Umum dan Perumahan Rakyat*)
RDF	Refused Derived Fuel
RDMP	Refinery Development Master Plan
RDTR	Detailed Spatial Planning (*Rencana Detil Tata Ruang*)
RDTRD	Regional Detailed Spatial Planning (*Rencana Detil Tata Ruang Daerah*)
RI	Republic of Indonesia
RKL	Environmental Management Plan (*Rencana Kerja Lingkungan*)
RKP	Government Work Plan (*Rencana Kerja Pemerintah*)
RM	Metre House
Rp	Rupiah
RPJMD	Medium-term Regional Development Plan (*Rencana Pembangunan Jangka Menengah Daerah*)
RPJMN	Medium-term National Development Plan (*Rencana Pembangunan Jangka Menengah Nasional*)
RPL	Environmental Monitoring Plan (*Rencana Pemantauan Lingkungan*)
RRC	People's Republic of China (*Republik Rakyat Cina*)
RTRW	Spatial Plans (*Rencana Tata Ruang Wilayah*)
SAR	Special Area Road
Sarhunta	Tourism Housing Facilities (*Sarana Hunian Pariwisata*)
SBOT	Supported Build Operate Transfer
SDG	Sustainable Development Goal

SDGs	Sustainable Development Goals
SEZ	Special Economic Zone
SHIA	Soekarno Hatta International Airport
SKB	Joint Decree (*Surat Ketetapan Bersama*)
SKNVT	Specific Non-Vertical Work Unit
SMA	Stone Mastic Ashphalt
SMI	Sarana Multi Infrastruktur
SNI	Indonesian National Standard (*Standar Nasional Indonesia*)
SNVT	Specific Non-Vertical Unit
SPAM	Drinking Water Supply System (*Sistem Penyediaan Air Minum*)
SR	House Connection (*Saluran Rumah*)
SUTET	Extra High Voltage Air Duct
SUTT	High Voltage Air Duct
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TBM	Tunnel Boring Machine
TDS	Total Dissolved Solids
TEUs	Twenty Feet Equivalent Unit
THI	Temperature Humidity Index
TKD	*Tanah Kas Desa*
TKDN	Domestic Component Level (*Tingkat Komponen Dalam Negeri*)
TOD	Transit-Oriented Development
TPA	Final Disposal Site (*Tempat Pemrosesan Akhir*)
Trans	Transportation (*Transportasi*)
UGK	Compensation (*Uang Ganti Kerugian*)
UMKM	Micro, Small, And Medium-sized Enterprises (*Usaha Mikro, Kecil, dan Menengah*)
UU	Law (*Undang-Undang*)
V/C	Vehicle Volume/Road Capacity
VGF	Viability Gap Fund
VMS	Variable Sign Message
VSAT	Very Small Aperture Terminal
Wi-Fi	Wireless Fidelity
WTE	Waste-to-Energy
WTP	Willingness To Pay
WWTP	Wastewater Treatment Plant

The Contributors

Editors

Kiki Verico is the senior advisor to the Minister of Finance for Industry and International Trade. He holds a PhD in international studies (economics) from Waseda University in Tokyo. A prolific researcher, he has published his academic works in various peer-reviewed journals, contributed several chapters in books on Indonesia – Australia's economic relations and China – ASEAN economic cooperation (the case of Indonesia), and authored a book on the future of ASEAN economic integration. His research interests are international trade, foreign direct investment, regional economic integration issues, ASEAN economic integration process, and Southeast Asian economies.

Heru Wibowo is the director of State Assets and Fiscal Balance Education and Training Center, the Ministry of Finance. He holds a PhD in economics from the University of Western Australia, and a Master of Arts in international development from the International University of Japan. His previous works centred on fiscal decentralisation and income inequality. He also has extensive professional experience in the fields of macroeconomics and public finance due to his previous roles in the Ministry of Finance's Fiscal Policy Agency and Directorate General of Budget.

Muhammad Halley Yudhistira is a lecturer and researcher affiliated with the Institute for Economic and Social Research, the Faculty of Economics and Business, University of Indonesia. He holds a PhD in public economics from the National Graduate Institute for Policy Studies (GRIPS), in Tokyo, Japan. His research interests are in the fields of applied econometrics, regional and urban economics, and theory and empirics in transportation economics.

Foreword Contributors

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Chapter 1

Introduction of National Strategic Projects

Boediarso Teguh Widodo
Lalu Hendry Yujana

Indonesia's National Strategic Projects (PSN) scheme is an effort to realise a just and prosperous society based on Pancasila and the 1945 Constitution of the Republic of Indonesia, by developing physical and non-physical infrastructure that will have an important role in increasing economic growth. PSNs are an integral part of efforts to build a sustainable and socially just economy towards Golden Indonesia 2045.[1]

The government accelerates PSNs implemented by the central government, regional governments, and/or business entities to meet basic needs and improve national welfare. PSNs are stipulated by Presidential Regulation (Perpres) and listed in the Appendix, which is an integral part of the Presidential Regulation. For the first time, PSNs are contained in the Appendix of Perpres Number 3 of 2016 concerning the Acceleration of Implementation of National Strategic Projects, as amended several times, most recently by Perpres Number 109 of 2020. In accordance with the provisions stipulated in the Presidential Regulation, PSNs can be amended based on a study conducted by the Committee for the Acceleration of Provision of Priority Infrastructure (Komite Percepatan Penyediaan Infrastruktur Prioritas, KPPIP).

PSNs also play a role in supporting the development of various goods and service industries, as well as creating massive jobs to support the improvement of the national economy and welfare. One of the main factors for creating economic growth (Todaro and Smith, 2006; Canning, Fay, and Perotti, 1994) is infrastructure. PSNs accelerate infrastructure development that will boost the productivity of production factors, expedite the flow of goods and services and people, and uncover regional isolation. Infrastructure will create equitable distribution of development and increase investment competitiveness.

The implementation of a PSN is aligned to national development priorities that consider the needs, benefits, and supporting capacity for the well running of the PSN, as well as connectivity between infrastructure and/or centres of economic activity. So that, the implementation of a PSN can create an increasing and stable economic growth, as well as an equitable distribution of the results of national development to all levels of a just and prosperous society.

[1] Golden Indonesia 2045 is Indonesia's vision for 2045 when Indonesia will celebrate its 100 years of independence. Indonesia expects to become a top five global economic power with excellent education, widespread prosperity, and strong governance. Through four development pillars that include human capital development and mastery of sciences and technology, sustainable economic development, equitable national development, and strengthening national resilience and governance, the vision is expected to be achieved. (Bappenas, 2019, 2023).

1. Background of National Strategic Projects

PSNs are projects and/or programmes implemented by the central government, regional governments, and/or business entities that have a strategic objective to increase growth and equitable development by creating jobs and improving people's welfare.

PSNs are carried out by prioritising the integration of connectivity between infrastructure and/or centres of economic activity to encourage acceleration of regional-based economic growth by considering the direction of regional development contained in the national development plan.

The PSN scheme was first published in 2016 through Perpres Number 3 of 2016, which contains the number, details, and location of each PSN, and has undergone six amendments before finally being stipulated in the Regulation of Coordinating Minister (Permenko) for Economic Affairs of the Republic of Indonesia Number 21 of 2022. The change in the PSN in the Perpres and the Permenko, was mainly due to the change of projects that is included or excluded from the PSN list. Projects included in the PSN list are project proposals evaluated by the KPPIP and approved through a limited cabinet meeting, and projects from the previous list which are still being continued and being pushed by the government. Meanwhile, projects excluded from the PSN list are projects that have been declared completed and there are no issues that need to be resolved, and projects no longer requiring PSN support.

By being included in the list of PSNs, an infrastructure project will gain several advantages, in the form of accelerating development, because any obstacles, both regulations and permits, must be resolved by the relevant ministers, governors to regents, accelerated time for land provision, and guaranteed political security.

As PSNs, the project proposals are submitted by the central government, regional government, or the private sector to the KPPIP to be further screened by the KPPIP based on the criteria requirements, strategic benefits, inter-regional connectivity, and infrastructure that has been built as well as the deadline for completion. The results of the screening are then discussed at a limited cabinet meeting and finally the projects are stipulated through Perpres. For projects whose financing is non-state budget (APBN) or non-budgetary investment financing, the Minister of National Development Planning/Head of the National Development Planning Agency acts as the coordinator of the PSN and may propose changes to the PSN to the KPPIP.

2. Definition of National Strategic Projects

The PSN scheme was initiated by President Joko Widodo as one of the strategic steps to accelerate the fulfilment of the need for the provision of basic infrastructure needed to support economic growth and welfare. Since the 1998 economic crisis, the stock of Indonesia's infrastructure has fallen sharply due to the absence of massive infrastructure development. The infrastructure budget allocation fell sharply, from around 9% of the gross domestic product (GDP) in the mid-1990s to only around 2% of GDP in 2001 (Salim and Negara, 2018). Similarly, the availability of Indonesia's infrastructure has also decreased, from 49% of GDP in 1998 to 35% of GDP in 2015, although at the beginning of 2019 it increased again to 43% of GDP.

These conditions prompted the Minister of National Development Planning (Badan Perencanaan Pembangunan Nasional, Bappenas), for the 2016–2019 period to conclude that Indonesia needs to immediately catch up with the average standard of infrastructure availability in developed countries, China, and South Africa, which reached around 70%, 76%, and 87% of GDP, respectively (Bappenas, 2018).

The 2015–2019 National Medium-Term Development Plan (RPJMN) as regulated in Presidential Regulation (Perpres) Number 15 of 2015 stated that the main problem of the Indonesian economy is the limited availability of infrastructure to support economic growth. Limited infrastructure stock also creates obstacles in increasing investment, makes logistics costs expensive, and creates disparities between regions. The World Bank estimates that the poor quality of infrastructure has contributed to reduced economic growth by 1% since 2014.

Based on Bappenas, estimation, Indonesia needed a large investment to develop infrastructure, namely around Rp4.76 trillion during the 2015–2019 period, of which around Rp1,978.6 trillion or 41.3% is provided from the state budget (APBN) and regional budget (APBD), about Rp1,066.2 trillion or 22.2% came from state-owned enterprises (BUMN), and the remaining Rp1,751.5 trillion or 36.5% came from the private sector (Bappenas, 2018). For the 2019–2024 period, the need for investment funds in the infrastructure sector is projected to increase to Rp6,445 trillion (Hidayat, 2019), with the largest contribution expected to come from the private sector, namely 42% or Rp2,706.9 trillion, followed by APBN/APBD at 37% or Rp2.38 trillion, and from BUMN at 21% or Rp1,353.5 trillion.

The government initiated PSNs that are strategic infrastructure projects to increase economic growth, equitability, and community welfare. The PSN scheme is also adjusted to the 2015–2019 RPJMN to improve national connectivity, provide basic infrastructure such as drinking water and sanitation, electricity infrastructure, food and energy security, and develop urban mass transportation systems.

In the 2020–2024 RPJMN, infrastructure development is still one of the seven main national development agendas. One of the challenges facing the national economy is Indonesia's economic growth which tended to stagnate at around 5.0% during the 2000–2015 period. To get out from the middle-income trap, Indonesia needs to increase productivity and strengthen structural transformation, mainly by improving infrastructure, particularly connectivity infrastructure.

In this regard, one of the priorities of the 2020–2024 RPJMN is continuing infrastructure development to connect production areas with distribution areas, facilitate access to tourist areas, boost new jobs, and accelerate the economic added value increase. Infrastructure development during the 2020–2024 period is prioritised to support basic services, economic and urban development, which is supported by energy and electricity development, as well as the digital transformation implementation, considering the mainstreaming of sustainable development goals as well as social and cultural capital.

The innovative financing efforts are needed due to the limitation of government budget by encouraging the participation of the community and business entities through public–private partnership (PPP) schemes and other creative financing schemes. This is in accordance with the new paradigm of infrastructure funding which makes APBN and APBD the last alternative source of funding.

In carrying out the infrastructure development agenda (national priority), the 2020–2024 RPJMN has prepared Strategic Priority Projects (Major Projects). This project is structured to achieve development priority targets by making the RPJMN more concrete in resolving development issues and its benefits impact directly to the community. In the 2020–2024 RPJMN, 41 major projects are planned with clear targets, locations, and implementing agencies. The major project implementation involves ministries/agencies, local governments, state-owned enterprises (BUMN), and communities and business entities. The Major Project is a reference for emphasising policy and funding in the RPJMN, government work plans, and APBN. Integration funding is also carried out between funding sources through ministry/agency expenditure and other funding sources such as subsidies, transfers to regions, regional budget, communities, BUMN, and other funding sources. In addition, alternative funding mechanisms are also being taken, including PPP, blended finance, green finance, and output based transfers/grants to the regions. In its implementation, Major Projects and their indications of funding can be updated through the government work plans by considering the readiness for implementation, updating the amount and source of funding as well as the Presidential Directive. This is primarily to ensure that the Major Project can be carried out more effectively and efficiently in accordance with progress of developments. In addition, the Major Project became a development control tool, so that the development goals and targets in the 2020–2024 RPJMN can be continuously monitored and controlled.

3. National Strategic Project Criteria

The PSNs are required to meet three elements of criteria: basic, strategic, and operational. Elements of the basic criteria are compliance with the RPJMN and/or the Medium-term Regional Development Plan and strategic plans for the infrastructure sector, conformity with the spatial and regional layout plans as long as they do not change green open spaces.

Strategic criteria refer to the benefits of the project on the economy, social welfare, national defence and security, linkages between infrastructure sectors and between regions (connectivity), and the diversity of distribution between islands. The diversity of inter-island distribution refers to the balance between development in western and eastern Indonesia with the aim of encouraging connectivity and better distribution of goods. Meanwhile, the operational criteria are in the form of a pre-feasibility study and the investment value must be above Rp100 billion or the project has a strategic role in encouraging regional economic growth.

The PSNs are implemented by the central government, regional governments, and/or business entities. If there are no business entities or the private sector that are interested in working on PSNs because of the high return on investment and high financing needs, the government can appoint a BUMN to work on it. In its implementation, PSNs are required to prioritise the use of domestic components. One form of supervision carried out by the government is by forming an ad-hoc cross-ministry team to ensure the fulfilment of the domestic component level, which includes goods, services, and goods, including intellectual abilities.

In this book we clustered PSNs into three distinct groups: connectivity economic infrastructure, non-connectivity economic infrastructure, and social infrastructure. Connectivity economic infrastructure focuses on enhancing the economy by improving the mobility of people and goods. Non-connectivity economic infrastructure aims to stimulate economic activities aside from transportation. Social infrastructure refers to projects that contribute to the well-being of people. Later in chapter 3, the book showcases several selected PSNs from these distinct groups.

4. National Strategic Project Financing

PSN funding can be sourced from the APBN, APBD, and other sources that comply with laws and regulations. There are three methods for financing PSNs.

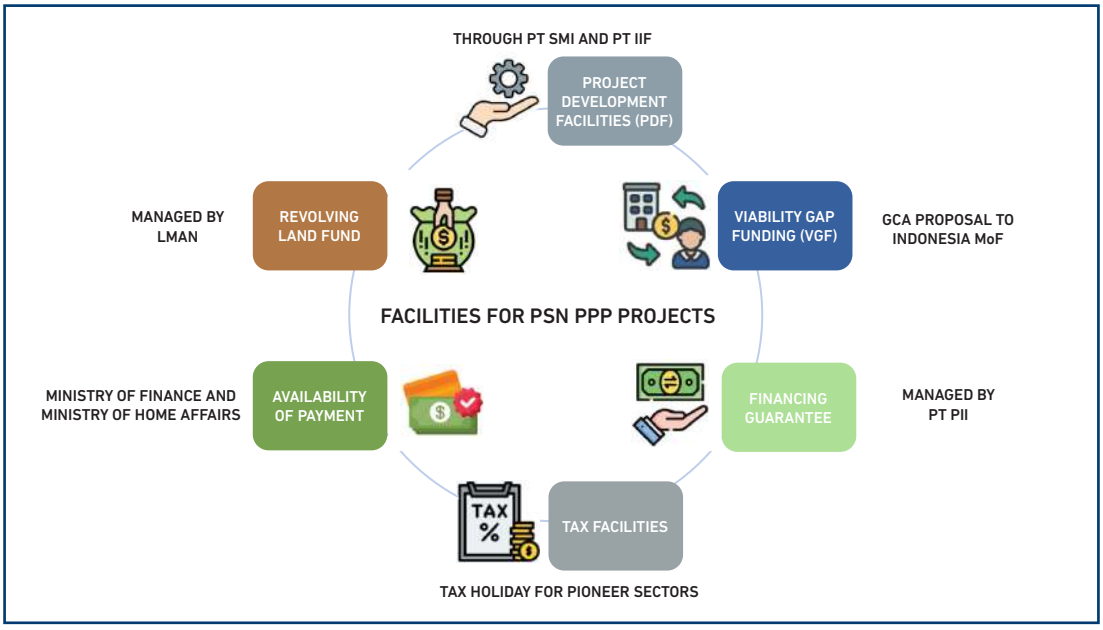
First, financial planning for PSNs sourced from the APBN and/or the APBD is carried out in accordance with the national development planning system. Second, financial planning for the PSNs originated from other legitimate funding sources is carried out through technical integration with the master plan of related sectors, economic and financial feasibility, and the ability of the business entity to finance the implementation of the provision of a PSN, which the business entity acts as the initiator and/or receives an assignment from the government. Third, financial planning for the PSNs from the combination of both APBN/APBD and other legitimate funding sources is carried out by prioritising the integration of planning, budget allocation, as well as plans for project completion and operation.

Funding for PSNs originated from other legitimate funding sources can be executed through PPP and/or other financing mechanisms through cooperation in accordance with statutory provisions. Regarding PPPs, funding for PSNs this way is based on government or business entity initiatives. In the case of a PPP based on a business entity initiative, the initiating business entity must provide a feasibility study for the proposed PSN, which includes the following categories: provision of public service infrastructure, optimising state-owned goods (BMN) and regional-owned goods (BMD), optimising BUMN assets, and increasing state and/or regional revenues.

Moreover, in terms of cooperation in accordance with statutory provisions, funding for PSNs through other legitimate funding sources can be done with the following:

a. Cooperation in providing public services, such as infrastructure provision cooperation, regional cooperation with third parties, and land value capture.
b. Cooperation in optimising BMN and/or BMD, as well as BUMN assets and other forms of limited management rights.
c. Cooperation in increasing national and/or regional income, such as rent.
d. Other forms of cooperation if it is not against the law.

Figure 1.1. Facilities for PSN PPP Projects



MOF = Ministry of Finance, PPP = public–private partnership, PSN = National Strategic Project.

Source: Compiled by the authors.

In promoting the feasibility of a PPP project, the government has provided various facilities (KKBP, 2017), including:

a. Project development facility (PDF) to support the government contracting agency (GCA) in preparing PPP projects managed by PT SMI and PT IIF.
b. Viability gap funding to increase financial feasibility by contributing to construction costs managed by the Ministry of Finance based on a proposal from the GCA.
c. Financing guarantee, as a guarantee for the government obligations in the infrastructure concession agreement managed by PT PII.
d. Tax facilities as Minister of Finance Regulation (PMK) Number 159 of 2015 concerning tax holidays for pioneer sectors such as metal-based industries, oil refineries, basic petrochemicals, machinery, renewable energy, and telecommunication equipment.
e. Availability payment (AP) is the government's periodic payment scheme during the concession period after the assets have been completed by the private sector; therefore, the project is bankable. This mechanism is managed by the Ministry of Finance if the AP funding comes from APBN. Otherwise, it is managed by the regional government and the Ministry of Home Affairs if AP funding comes from APBD.
f. The revolving land fund is a land acquisition fund facility for toll road projects to bridge the limited availability of funds for land acquisition by the private sector, which is managed by the State Asset Management Agency, the Ministry of Finance, and the Ministry of Agrarian and Spatial Planning. Figure 1.1 illustrates these facilities.

5. National Strategic Project Policies and Facilities, Ecosystem, and Governance Accountability

The government has established policies and strategic steps through Law Number 11 of 2020 concerning Job Creation to create the widest possible job opportunities, including the acceleration of PSNs. Regulations and institutions are still one vital obstacle, in addition to fiscal, infrastructure, and human resource obstacles. Existing regulations are considered unable to support business creation and development, and even tend to limit PSN implementation. Therefore, regulations that provide facilities for accelerating PSN implementation as well as ease of procurement, operation, and maintenance of the PSN are needed.

In accordance with Government Regulation Number 42 of 2021 concerning Ease of National Strategic Projects, the central government, regional governments, and/or business entities obtain PSN ease facilities. These convenience facilities are provided at the stages of planning, preparation, transactions, construction, operation and maintenance, and procurement process. These ease facilities are coordinated by the coordinating minister for Economy Affairs. The ease of PSN implementation provides certainty in the distribution of risks and division of tasks in each stage of the PSN implementation, including guarantees that the PSN will not be nationalised in a concession period.

Relaxation is also carried out in the procurement and selection process through the Business Entity Panel without reducing fair business competition to obtain implementing business entities. Another approach in ease of a PSN is carried out in the ability of the PSN to leverage for regional economic growth through infrastructure integration as a supply chain continuity system and the availability of a logistics system for enhancing the regional economy and empowering local workers through labour intensive. After completion of the construction and/or the concession period, the management of BMN and/or BMD includes the obligation to maintain, both operational continuity and the value of BMN and/or BMD.

The government also provides guarantees for a PSN whose financing comes from other legitimate financing. The government guarantee is provided for sharia credit or financing, business feasibility, PPP, and/or political risk. The guarantee is given by the Minister of Finance by considering the principles of financial capacity, fiscal sustainability, and APBN fiscal risk management. The government guarantee is given to a PSN that meets the following criteria: technically and financially feasible and adequately identifies documents and risk mitigation plans. The Minister of Finance can give special assignments to infrastructure guarantee business entities to provide government guarantees in accordance with statutory provisions.

Guarantees from the central government can also be given for PSNs carried out by business entities or local governments in collaboration with business entities for public interest infrastructure projects. The form of guarantees includes the related policies taken or not by the central government resulting in delays in the PSN and affecting the financial condition of business entities. Guarantees can only be submitted by ministries/agencies, regional governments, or BUMN, after the project procurement process has been completed. This government guarantee will automatically not apply if the main construction project fails to be carried out by a business entity within 2 years but can be extended if the cause of the failure is not the fault of the business entity.

To accelerate the strategic project implementation, ministers, governors, and regents/mayors provide permits and non-permits required for the implementation of a PSN in accordance with their authority. The permits and non-permits needed to start the implementation of a PSN include location determination, environmental permit, borrow-to-use permit for forest areas, and/or building permit. Furthermore, the minister can issue permits and non-permits, which are the authority of the minister as the person in charge of the PSN. In addition, governors, and regents/mayors, as mandated by Law Number 23 of 2014 concerning Regional Government, must provide licensing services in accordance with legislation through a one-stop integrated service unit based on related regulations.

The government issued Government Regulation Number 5 of 2021 concerning the Implementation of Risk-Based Business Licensing. Risk-based business licensing is a business license based on the level of risk of business activities. The implementation of risk-based business licensing includes regulation, norms, standards, procedures, and criteria for licensing; licensing through the OSS system service; procedures for supervision of licensing; evaluating and reforming the policy; funding; resolution of problems and obstacles to licensing; and sanctions.

The PSN implementation is carried out in accordance with the Regional Spatial Plan (RTRW), Detailed Regional Spatial Plan (RDTRD), or the Zoning Plan for Coastal Areas and Small Islands. Provision of land for the PSN is carried out by the central government, regional governments, and/or business entities in accordance with the provisions of laws. The PSN scheme also prioritises the use of domestic components. Furthermore, the central government provide guarantees for PSNs that are public interest projects implemented by business entities or regional governments in collaboration with business entities. The Coordinating Minister for the Economy Affairs evaluates and reports the PSN implementation to the President at least once in 6 months.

Figure 1.2. PSN Social and Environmental Principles

Source: Author.

The PSN implementation is carried out synergistically with ecosystem preservation. In essence, the condition of the ecosystem is directly proportional to the life processes in the development environment. Ecosystem stability that is maintained in the process of infrastructure development can increase the essence of the development itself. Before infrastructure development is carried out, its potential impact on social and environmental conditions must be well calculated. Damage to the ecosystems and the quality of community life is most likely to occur if infrastructure development is not accompanied by the concept of ecosystems and social and environmental preservation. The development of infrastructure must meet the social and environmental principles, as shown in Figure 1.2.

Next, to maintain accountability for accelerating the implementation of PSNs, the government issued Presidential Instruction 1 of 2016 concerning the Acceleration of Implementation of PSNs instructed to increase governance accountability and improve the function of the government's internal supervisory apparatus in supervising PSN implementation (Sumarto, n.d.). The increase in governance accountability is carried out through:

a. Enhancing the governance oversight.
b. Investigative audits or specific purpose audits on cases of abuse of authority.
c. Calculating of the state financial losses if the loss occurred.
d. Supervising the follow-up of audit results in terms of losses of state finances are identified.
e. Assistance in the procuring certain goods/services based on requests from ministers or the KPPIP.

In implementing the supervision, the government internal supervisory apparatus reviews 11 aspects and the results of the review are reported to the President periodically. The 11 aspects of the review are project preparation, land provision, spatial planning, project funding, government guarantees, licensing and non-licensing, procurement of goods and services, domestic components utilisation, implementation of physical project development, supervision, and control, as well as regulation. In particular, the purpose of the review is to:

a. Map the achievements of the physical and PSN financial progress.
b. Identify obstacles to accelerating the implementation of PSN and its alternative solutions.
c. Identify the regulations that impede the PSN acceleration.
d. Identify the effectiveness of achieving the PSN target output.
e. Provide suggestions for alternative solutions to obstacles, inconsistencies, disobedience, and ineffectiveness in achieving the PSN target output.

Regarding the results of the review and audit showing the indications of administrative violations, further inspection actions will be taken, which are based on General Principles of Good Governance, objective reasons, conflicts of interest avoidance, and done with good intention.

6. Conclusion

The PSN scheme is one of the strategic steps to accelerate the fulfilment of the basic infrastructure needed to support economic growth and welfare to realise a just and prosperous society based on *Pancasila*[2] and the 1945 Constitution of the Republic of Indonesia. As stated in Perpres Number 15 of 2015, the short supply of infrastructure is a problem for Indonesia's economic growth. The low stock of Indonesian infrastructure since the 1998 Asian financial crisis has led Bappenas to conclude the need to improve the availability of infrastructure to the level of countries under similar conditions. Indonesia needs large investments to develop infrastructure, and due to the limitations of the APBN and ABPD, innovative financing efforts are needed.

A PSN is a project or a programme that has a strategic objective to increase growth and equitable development in the context of efforts to create jobs and improve community welfare. It is classified as a PSN if it fulfils basic, strategic, and operational criteria. The project is implemented by prioritising the integration of connectivity between infrastructure and/or centres of economic activity to encourage the acceleration of regional-based economic growth by considering the direction of regional development contained in the national development planning. Furthermore, it is implemented by the central government, regional governments, and/or business entities.

The funding for these projects is sourced from the APBN, APBD, and other sources that comply with laws and regulations. Funding from other legitimate sources is executed through PPP and/or other financing mechanisms through cooperation in accordance with statutory provisions. Being included in the list of PSNs, a project gains advantages compared to other infrastructure projects. In terms of funding, the facilities provided are PDF, VGF, financial guarantees, tax facilities, AP, and access to revolving land funds. The Indonesian government also facilitates the procurement, operation, and maintenance of the PSN. Additionally, it provides convenience facilities throughout various stages, including planning, preparation, transactions, construction, operation and maintenance, and procurement processes.

PSN implementation is carried out synergistically with ecosystem preservation that considers the environment, society, and governance. Governance accountability is carried out by the government's internal supervisory apparatus. If there are indications of administrative violations, further inspection actions will be taken.

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[2] *Pancasila* is Indonesia's basic philosophy, way of life, and national ideology. Derived from the sanskerta word of *panca* (five) and *sila* (principle) it is defined as the five principles that guide Indonesia's Ideology (Lenhamnas, 2012).

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Chapter 2

National Strategic Projects Development

Maman Suhendra
Dian Handayani

1. Background

The 2017 Asian Development Bank (ADB) report 'Meeting Asia's Infrastructure Needs' unveiled that infrastructure in the Asian region has improved rapidly but is still far from sufficient (ADB, 2017). Developing countries in Asia have experienced significant improvements in their transportation networks, power generation capacity, telecommunications, and water infrastructure. Better access to infrastructure has boosted growth, reduced poverty, and improved people's lives. However, that is not enough. There are still more than 400 million people lacking electricity, around 300 million people without access to safe drinking water, and 1.5 billion lacking basic sanitation. Poor quality is still a problem. Power outages can hamper economic growth. City traffic jams hurt the economy because of lost productivity, wasted fuel, and the mental and emotional stress on people is no exception.

The ADB report also suggests that the Asia and Pacific region needs to invest in infrastructure at around 6% of gross domestic product (GDP) from 2016 to 2030, at least one percentage point more than existing investment, to continue the trend of economic growth while ensuring new investment addresses for climate change mitigation and adaptation. Furthermore, the novel coronavirus disease (COVID-19) pandemic had a devastating effect on the emerging economies of Asia. This raises awareness of the importance of investing in infrastructure to increase resilience. According to post-pandemic analysis, the Asian region will invest USD1.7 trillion annually for the next 20 years, up from USD1 trillion during 2007–2018. China will remain the largest contributor, whilst India will be the second largest, contributing 10% of developing Asia's spending (Rao, et al., 2023).

India is the most progressive country in infrastructure governance since the 2017 InfraCompass survey (Global Infrastructure Hub, n.d.). With a GDP per capita of USD2,280 and a population of around 1.4 billion people, India allocates 4.5% of GDP to investment in infrastructure. India's infrastructure quality is ranked 68.1 (scale 1 to 100) and the infrastructure gap is 0.5% of GDP. A recent survey found that India's infrastructure procurement process has improved significantly, resulting in higher quality investment returns and better value for money. The ease of starting a business has significantly improved as a result of regulatory and licensing reforms, which has encouraged investment and competition from new suppliers. India's ability to fill the infrastructure gap and deliver future projects faces major obstacles due to the COVID-19 pandemic and a lack of private investment in infrastructure projects (Global Infrastructure Hub, 2020).

Similar to Indonesia, in addition to issuing a 5-year development plan, the Government of India has also issued a special document that contains pipelines for infrastructure projects to be built, called the National Infrastructure Pipeline (India Investment Grid, n.d.). It is anticipated that the National Infrastructure Pipeline will make it possible to improve project preparation, lessen the

amount of aggressive bidding that occurs during the delivery of projects – which typically results in their failure, and guarantee increased access to financing sources in line with increased investor confidence. India's ambitious goal of becoming a USD5 trillion economy by 2025 and achieving strong infrastructure growth for smooth work and productivity across multiple sectors are expected to be addressed in the document.

The strength of India's infrastructure is directly related to the success of the 'Make in India' manufacturing sector. There is a constant need for government intervention, solid funding, and project monitoring. Some of the factors that will require additional support for India's infrastructure sector include an increase in the working-age population, urbanisation, a shift to a service-based economy, and climate change. The National Infrastructure Pipeline document is prepared on a best effort basis by combining information from various stakeholders including ministries, departments, state governments and the private sector across infrastructure sub-sectors. The India Investment Grid, which provides access to investment information across infrastructure sectors, and ministries and agencies, is expected to continuously update this document so that it becomes a living repository with wide access.

Indonesia also sees infrastructure projects as important in escaping the middle income trap. As a response, in the Medium-Term National Development Plan (RPJMN) 2015–2019 planning document, the Government of Indonesia sets several infrastructure development targets in logistics and energy projects. From a logistics perspective, the government is targeting revitalisation of road efficiency by building and repairing roads; reducing logistics costs through rail infrastructure by building new lines in Java, Sumatra, Sulawesi, and Kalimantan; implementing the sea highway concept so that Indonesia becomes the world's maritime axis; strengthening connectivity through the development of air infrastructure; as well as the development of urban transportation. As for the energy side, Indonesia targeted to achieve an electrification ratio of 96.6% in 2019 with capacity development, achieving food security through the development of irrigation systems, and increasing fuel supply by maximising domestic oil refineries (KPPIP, 2023). Furthermore, according to the Presidential Regulation Number 18 Year 2020, Indonesia expects to achieve 100% electrification ratio in 2024.

This chapter aims to provide academic justification for the infrastructure need. The chapter starts with the literature on the importance of infrastructure in a nation's development process. Next, the chapter summarises the impact of the National Strategic Projects (PSN) scheme documented in the literature. The chapter also explains the facilities given to the projects under the PSN. Lastly, the chapter discusses the strengths, weaknesses, opportunities, and threats (SWOT) analysis to evaluate the completed PSN projects presented in the subsequent chapter.

2. Infrastructure and Development

2.1. Economic Impact of Infrastructure Development

It is generally agreed that infrastructure plays a significant role in a country's economic growth. When combined with labour and other input factors, the existence of infrastructure will provide services. The service is more important than the infrastructure used or required to produce it. To avoid losing sight of the end goal – which is the provision of services rather than the acquisition of the infrastructure itself – it is essential to keep this in mind when formulating policy. The confusion that often arises between the two reflects that in many cases, these services are very capital intensive (Prud'homme, 2004).

The Global Infrastructure Hub estimates that the multiplier effect of investing in public infrastructure on GDP is significantly higher – 1.53 in 2 to 5 years – compared to government spending in social transfers – 0.84 in 2 to 5 years. In the medium and long term, infrastructure plays a significant role in achieving the Sustainable Development Goals (SDGs) and a new economic direction that aligns with policies regarding decarbonisation and renewable energy (Global Infrastructure Hub, 2020).

The role of infrastructure on development differs across types. Economic infrastructure is described as infrastructure that stimulates economic activity. 'Economic infrastructure' refers to the same thing as 'infrastructure' in its physical form. Infrastructure's primary purpose is to support production activities to lower production costs and increase labour productivity. The development of basic infrastructure, which includes water, energy, information and communications technology (ICT), transportation, and sanitation systems, is one of the areas that every nation focuses on to achieve social and economic prosperity. Building basic infrastructure in underdeveloped areas is expected to boost economic growth and reduce disparities between regions.

The government's economic infrastructure development initiatives aim to boost the country's economic expansion. The relationship between infrastructure and economic growth has been extensively discussed in the academic literature using a variety of approaches. Infrastructure development can impact industrial policy due to the government's ability to allocate funding to specific infrastructure projects and influence private sector investment decisions (Kumo, 2012). Additionally, infrastructure can potentially foster economic expansion at the micro, regional, and national levels. Although it does not always guarantee robust economic growth, infrastructure development does create the conditions necessary to achieve regional development objectives(Mačiulytė-šniukienė, Butkus, and Davidavičienė, 2022).

If economic infrastructure is important for the economy and society and is treated as basic infrastructure, then social infrastructure is designed more to increase the workforce's efficiency and expertise. Social infrastructure contributes to education, health, and community culture, including schools, universities, libraries, hospitals, clinics, theatres, museums, parks, playgrounds, and other institutions (Fourie, 2006). When infrastructure can accomplish both these objectives, every nation strives to satisfy the fundamental requirements of its citizens and achieve higher growth rates. If physical infrastructure can directly support economic growth, then social infrastructure helps improve the quality of people's lives (Kumari and Sharma, 2017).

A consensus from previous studies has concluded that investment in basic and social infrastructure contributes to increasing economic growth, social development, and reducing inequality and poverty. Improved electricity infrastructure plays a role in reducing output losses due to power outages and surges, which positively impacts business productivity. The existence of water and sanitation infrastructure has a significant impact on the productivity of a business. This basic infrastructure indirectly protects and enhances health, thereby increasing individual productivity. Providing this fundamental infrastructure also contributes to the effectiveness of educational and health facilities (Brenneman and Kerf, 2002). Sustained economic growth and social development are necessary conditions for reducing poverty and inequality (Gnade, Blaauw, and Greyling, 2017).

South Africa is an example of how economic growth is not directly proportional to the reduction in the level of poverty and inequality. It is found that the infrastructure allocation in the education and health sectors does not guarantee the efficiency of its use (More and Aye, 2017). Likewise, building more school and health infrastructure does not result in improved services for education and health. Education spending in favour of schools where elite, racial, or gender-specific children is bound to lead to inequality. Spending on schools does increase economic growth by increasing the quality of the workforce, but the quality of the workforce can only increase if the quality of education improves. Although education budgets have increased over the years, South Africa is still amongst the worst in mathematics and science education.

2.2. Importance of Infrastructure for Urban and Rural Development

Infrastructure development is required in villages as much as in cities. Urban infrastructure is commonly characterised by physical elements of a city as well as soft infrastructure concerning services, social groupings and personal skills which improve city livelihood and liveability. A 2021 World Bank report (Lall, et al., 2021) reveals that 55% of the world's population resides in urban areas. By 2050, this share is likely to exceed two-thirds (68%). Rapid urbanisation presents cities and nations with new challenges as well as opportunities. Policymakers must take strategic, concrete steps for city growth to be properly managed and liveable. The phenomenon is described as 'pancakes to pyramids.'

A city in pancake form has relatively low development and grows horizontally. A city in the shape of a pyramid grows partly outwards and partly inwards and upwards, filling in areas of vacant land and raising the height of new buildings in the city centre to increase the density of businesses and homes. Both economic and residential density can help cities address the challenges of growing populations and create platforms with more options for managing the threat of climate change. For instance, an investment in transportation policy and infrastructure can impact a city's growth potential, pollution levels, and carbon footprint.

Contrarily, issues with rural infrastructure are primarily focused on creating the necessary production conditions for social and economic growth as well as improving the quality of life in rural regions. The nation's rural infrastructure is essential for agro-industries, agriculture, and poverty alleviation of rural poverty.

In South Africa, urban areas continue to receive development priority over rural areas, resulting in uneven infrastructure provision. It contrasts the common knowledge that economic growth can be sped up by local economic development, which can also maintain rural residents' means of subsistence and reduce inequality (Makathini, Mlambo, and Mpanza, 2020). In the community development framework, public construction infrastructure projects have been recognised as one of the fundamental tools in improving the socio-economic conditions (Hussain et al., 2022). In construction projects, social related factors should be carried out to enhance community development. Instead of solely focusing on economic factors like creating jobs, increasing regional income, and reducing transportation costs; the government needs to play a role in the formulation of a series of policies that pay attention to social aspects, such as quality of life improvement, employment opportunities, environmental security, and well-being satisfaction.

2.3. Maintaining Quality

Inadequate infrastructure causes public services are not delivered to their full potential. Maintaining quality in infrastructure development projects is important. Time, cost, and quality are generally regarded as important factors for project success in the context of project management. The quality dimension is regarded as the least explicit indicator of project success. In order to meet deadlines and budgets, project quality is frequently overlooked (Hussain et al., 2018).

Quality requires proper supervision in every phase of the project, and given its connection to the project's long-term viability, it is currently receiving more attention. In most cases, building project quality entails meeting quality standards and exceeding user expectations. It is crucial that project contractors and the government as policy makers to have a better understanding of the factors that affect construction quality, ensure proper planning and implement a quality management monitoring model (Hussain et al., 2018).

Related to quality, maintenance is also an issue that is no less important. When considering allocating limited resources for public infrastructure development, many countries abandon maintenance in favour of new infrastructure projects. It is found that maintenance affects the quality of infrastructure and services produced (Gibson and Rioja, 2017). Japan had to pay a heavy price in the Sasago Tunnel incident in Tokyo in 2012, which resulted in deaths due to the collapse of the suspended roof for air ventilation. Since then, the government has promoted research and development programs in infrastructure maintenance, renovation, and management (Fujino and Siringoringo, 2020).

3. National Strategic Projects in Literature Review

Literature has documented various effects of existing PSNs on Indonesia's development process. Empirical studies show that the estimated impact of national strategic infrastructure development has a positive impact on the economy with varying magnitudes depending on the amount of sectoral allocation and investment. At the same time, other studies also show possible adverse effects such as social and environmental aspects due to the ongoing process.

The challenge with strategic infrastructure projects is not only the source of funding and financing. In its execution, strategic projects receive a lot of attention, particularly related to their impact on local economic and social conditions. One of the example is the New Yogyakarta International Airport (NYIA) project. The project caused local communities to flee, relocate, receive inadequate compensation, and lose their farmer identities and livelihoods. Due to the extensive infrastructure that will be built to support the region, the international airport's expansion may also result in water shortages and changes to the shoreline. In the Special Region of Yogyakarta Province, economic inequality is expected to decrease as a result of the NYIA development project. However, it is feared that those who are unable to keep up with the pace of urbanisation will be marginalised, whilst others will receive greater economic benefits as the NYIA develops into an international entry point for additional investments (Edita, 2019).

Connectivity has indeed become one of the government's concerns in infrastructure development and academics have faced various findings related to the development process. Observations on the Makassar–Parepare railroad project demonstrates an improvement in the well-being of the communities in Ajakkang Village, South Sulawesi, that will be impacted by the project (Darwis, Banowati, and Husain, 2022). Communities will receive compensation that is sufficient to enable them to obtain better housing. Local contractors are involved in the construction which also revitalises the local economy around the project site. Improvements to affected public facilities

and more modern transportation modes also provide the local community with benefits and pride. However, there are a number of negative aspects that require attention, particularly social and environmental aspects. Reduced agricultural land and the removal of trees have increased the temperature and caused flooding during rains. Friction between groups is inevitable due to protests by residents whose activities have been disrupted.

The reduction in agricultural land and the impact on the local people are also felt in the Solo–Yogyakarta toll road procurement. Klaten is one of the areas affected by the project. The majority of farmers in the region are landowners as well as cultivators with fertile land due to supportive irrigation. Generally they also rely on the sale of agricultural produce in the paddy fields, which is the main source of income. Land conversion for national strategic projects, including the construction of toll roads, often occurs at the expense of productive agricultural land (Utami, Hariadi, and Raya, 2022).

Projects that include the requirement for land in their development will quite often raise advantages and disadvantages – SPAM Umbulan is no special case. The Umbulan water source in Pasuruan Regency has a lot of discharged water of the highest quality, making it an excellent choice for drinking water. Although this water source has been used since the reign of the Dutch East Indies, it was not until 1972 that the Provincial Government of East Java came up with the idea to make use of Umbulan spring's quality, which would be wasted if it only ran into the sea. From 1988 to 2010 a project feasibility study was carried out by various parties but never reached a satisfactory conclusion. If summarised, the primary causes are mainly from the funding source and the failure of the prospected source of financing. Academic studies, on the other hand, demonstrate that, in terms of requirements, many people continue to purchase drinking water, which is relatively expensive, despite the dire situation of drought-prone regions and the absence of reliable water sources. In the meantime, it is known that access to water is an important capital to maintain livelihoods. Access to water supply is one of the components that influence the poverty classification and the difficulty of access to clean water increases disease rates and reduces productivity. Unfortunately, the government's failure to effectively communicate with the community regarding the project construction has sparked apprehension amongst the local residents that the availability of water sources will diminish and subsequently impact the overall agricultural output, which is typically the community's source of income (LPEM FEBUI, 2017; Surachman et al., 2020).

The development process is indeed often accompanied by various externalities, therefore monitoring and evaluation is very important to be carried out to ensure that the goals are achieved. The Presidential Staff Office under the leadership of President Joko Widodo is mandated to monitor and evaluate infrastructure development in Indonesia. Analysis shows that there are still problems in the management of results-based monitoring and evaluation at the Presidential Staff Office, along with overlapping authorities between ministries/agencies. These problems cause monitoring and evaluation to be ineffective so that the realisation of national strategic projects is slow (Emir and Juwono, 2021).

4. Examples of PSN Facilities Received by Priority Projects

The previous chapter discussed what kind of support can be given to a project that meets the criteria as a National Strategic Project, where the KPPIP's strategic role is crucial here to coordinate with the related parties and harmonise the various policies and facilities that can be utilised. The main function of the KPPIP is debottlenecking if there are problems in the implementation of a PSN. This can be done by coordinating between parties, for example with the Ministry of Agrarian Spatial Planning/National Land Agency if there are spatial planning and land acquisition issues, with the Ministry of Maritime Affairs and Fisheries regarding sea spatial planning and shipping lanes including landing stations. There is also the Ministry of Public Works and Public Housing and the Ministry of State-Owned Enterprises if the infrastructure built uses state-owned assets. The KPPIP will likewise involve the local government especially in licensing at the local level as well as the end user of the project. In public–private partnership (PPP) schemes, the KPPIP cooperates with the Ministry of National Development Planning and the Ministry of Finance, especially for project guarantees or viability gap fund or availability payment facilities. The Palapa Ring project is a national fibre-optic backbone network development project that stretches from the west to the east of Indonesia. The existence of the Palapa Ring is expected to support fixed and cellular telecommunications networks, including long-distance education and health support at low cost. Connected telecommunications access will also strengthen national resilience, expedite the implementation of universal service obligations, e-government, e-education, e-healthy, and internet access. In 2006 the Palapa Ring project was included as one of the 10 PPP project models whose development was prioritised by the government. But only in 2014 the commitment to build the PPP Palapa Ring project was refreshed. During its preparation, the project was divided into three packages: the West Package, the Central Package, and the East Package. The West and Central Palapa Rings started operating in 2018, whilst the East Palapa Ring started operating in 2019. Nonetheless, despite the fact that they are already in operation, each of these packages is not optimal in its utilisation if they are not connected to each other.

Palapa Ring integration will increase the utility of the existing Palapa Ring and complement the backbone network of national industrial operators. As quoted from the Infrastructure Director of BAKTI Ministry of Communications and Informatics on Primetime News on Metro TV, 27 October 2021, the use of the existing Palapa Ring is great, however, it is still exceptionally distant from its actual capacity. If not integrated, the utilisation of the three Palapa Ring packages will still be in the range of less than 50% as it is today. Palapa Ring integration will connect the three backbone networks of the West, Central, and East Palapa Rings to improve quality and reliability. This integration will likewise strengthen resilience when problems occur on one of the networks. The Palapa Ring integration will stretch for 12,261 kilometres across 14 provinces and 78 regencies and cities. This integration has the potential to increase the coverage of internet services to 10,091 companies and 16.4 million people who are currently not served by the internet.

To realise the full capacity of Palapa Ring service, cooperation and coordination between ministries, institutions, regions and related agencies are needed, such as the ease of the licensing process and the application of competitive licensing rates. The support of stakeholders for the completion of the project is very much needed, especially in the alignment of the Palapa Ring integration route into the spatial plans of the provinces, districts, and cities that are traversed. Through the PSN scheme, the government encourages the development of telecommunications infrastructure as well as improving the investment climate and ease of doing business. In the telecommunications sector, the government provides an easy space for synergy between all parties. Regional governments themselves can play an active role in the operation of telecommunications in their respective regions through efforts to develop infrastructure, finance, and provide facilities that can be used jointly.

In 2020 the government inaugurated the National Strategic Project PPP Bandar Lampung Drinking Water Supply System (SPAM Bandar Lampung). The city government of Bandar Lampung has long intended to improve clean water services, especially drinking water in its area. Even though there is PDAM Way Rilau, which is a locally-owned water company, the service coverage is minimal due to limited sources of raw water (2014 data shows service coverage of 20% of the population). In 2010 the Mayor of Bandar Lampung officially decided that the SPAM Bandar Lampung project would be built under a PPP scheme.

The preparation of the Bandar Lampung SPAM PPP project has progressed, reaching the feasibility support approval stage. However, the dynamics of water sector regulations, that is the submission of Law no. 7 of 2004 concerning the Processing of Water Resources and all of its derivative regulations to the Supreme Court halted the entire process. In 2016 SPAM Bandar Lampung became one of the PSNs. Meanwhile in response to changes in water sector regulations, it was taken to divide the project into two parts where the first part was carried out with the PPP, while the second part was built by the government with the state budget. This is a solution to water management regulation which prohibits the domination of the private sector from upstream to downstream. With the support of the PSN, there has been synergistic collaboration between the Ministry of Public Works and Housing, the Ministry of Finance, the Coordinating Ministry for the Economy, the City Government of Bandar Lampung, PDAM Way Rilau, and PT Penjaminan Infrastruktur Indonesia.

The Ministry of Public Works and Housing issued a letter of support for this project in July 2017. The Ministry through Supporting Agency for the Development of Drinking Water Supply Systems (Badan Pendukung Pengembangan Sistem Penyediaan Air Minum) and PT Sarana Multi Infastruktur also provided mentoring support to increase the capacity of the PPP team and the procurement committee for the SPAM Bandar Lampung Implementing Business Entity. The Ministry of Public Works and Housing through the Directorate General of Highways also provides licensing and construction support for the placement of pipes in road-owned spaces on national

roads and permits for the construction of intake construction and issuance of permits for taking and utilising surface water from the Directorate General of Water Resources. In September 2017, the Minister of Finance issued principle approval for providing feasibility support amounting to Rp258.8 billion. In its development, this project requires permits that cross the authority limits of the mayor, considering that the location of the raw water sources is partly in the South Lampung Regency area. Under the KPPIP coordination, this problem was immediately resolved (Surachman, et al., 2020).

SPAM Bandar Lampung is implemented using a PPP scheme between the City Government of Bandar Lampung which mandates PDAM Way Rilau as the cooperation project person in charge with PT Adhya Tirta Lampung as the implementing business entity, which is a consortium of PT Bangun copyright contractor and PT Bangun Tjipta Sarana. The signing of the guarantee agreement between PT Penjaminan Infrastruktur Indonesia and PT Adhya Tirta Lampung, the regress agreement between PT Penjaminan Infrastruktur Indonesia and the PDAM Way Rilau were carried out in February 2018. In August 2018 the PPP SPAM Bandar Lampung project reached financial close. The concession period for the project is 25 years.

The main target of the PSN PPP SPAM Bandar Lampung is to improve the quality of raw water, where the water that is distributed becomes water with ready-to-drink quality. This 750 litres per second water supply is expected to benefit around 300,000 residents of the City Bandar Lampung which is spread over eight sub-districts.

5. SWOT Analysis on National Strategic Projects

As of December 2022, the government has accelerated the construction of 153 projects under the PSN scheme with a total investment value of Rp1,040 trillion. The success of PSNs has significantly impacted Indonesia's citizens, especially in the infrastructure sector supporting connectivity, energy security, food sovereignty and disaster mitigation, industrial down streaming, and investment support. However, there are still some challenges in certain sectors (Berita Papua, 2023) that need to be properly addressed. The first is related to land acquisition, especially in the toll road sector. Several alternative approaches need to be discussed so that the land acquisition process can be improved in which then the agreed timeframe can be managed by the relevant stakeholders. Second is related to funding issues. The APBN cannot fund investment needs in the infrastructure sector alone, so alternative schemes must be sought to fund these needs. Lastly, the third is permits. It is hoped that the enactment of Law Number 6 of 2023 can fix this permit issue. In this section the benefits and impacts of several PSN projects will be briefly elaborated as an introduction to the following chapters.

A strengths, weaknesses, opportunities, and threats (SWOT) analysis was carried out to obtain perceptions from respondents on the implementation of the construction of several PSNs through the distribution and processing of relevant questionnaires. The SWOT analysis is used to analyse the results of the questionnaire processing above and identify the strengths and weaknesses of internal factors as well as opportunities and challenges from external factors. Perception in this case is seen from two perspectives – reality and the level of importance using a score of 1 to 6. Reality describes the respondent's perception of the facts that are observed or felt, where a score of 1 indicates a very unfavourable perception, while a score of 6 indicates a very good perception of the project. Importance describes how important each of the factors assessed is, where a score of 1 indicates that the perception is not very important, while a score of 6 indicates that the perception is very important to the project. Furthermore, the results of the survey were assessed using the Internal Factors Analysis Summary (IFAS) and External Factors Analysis Summary (EFAS). The IFAS and EFAS assessments are then grouped into four quadrants based on the results of the assessment of each SWOT component: strengths, weaknesses, opportunities, and threats. Respondents who were involved represented the local community, academics, businesspeople, and public authorities who directly or indirectly involved in project execution. SWOT analysis is part of the expert choice method in which the respondents are those who have a complete set of knowledge on the discussed object. The researchers choose respondent experts individually based on the expert's competence.

5.1. PSN Challenges and Benefits Overview

General analysis of several PSNs shows promising results. The construction of several toll road sections within the confirmed PSN scheme can improve the quality and quantity of connectivity and accessibility of the related areas. The construction of the Manado–Bitung toll road can shorten the travel time between the City of Manado and the City of Bitung. The average travel time is around 1.5 to 2 hours when using the arterial route, and about 35 to 45 minutes when using the toll road. This toll road provides easy access for goods and services to the Bitung international port, which is one of the export and import gates for the eastern part of Indonesia. This toll road is also the main access to the Bitung special economic zone (SEZ). With this accessibility, it is hoped that the Bitung SEZ will encourage down streaming and boost the competitiveness of the fisheries, agriculture, and pharmaceutical sectors.

The construction of the Manado–Bitung toll road can also reduce the burden on national arterial roads and regional roads whose conditions are increasingly congested due to the growth in the number of vehicles and economic activity in supporting economic activities in North Sulawesi Province. In turn, this toll road can influence regional growth around the toll road area through the realisation of the potential for the emergence of new economic growth areas. Still related to the toll

road project within the PSN, the Jakarta–Cikampek (Japek) elevated toll road apart from providing benefits as briefly described which are similar to the previous toll road project, this project is also part of the traffic density solution on the previous section by making a significant contribution on the smooth flow of the Japek toll road through relatively effective breakdown of traffic flow for commuters and long trips.

In the PSN scheme there are also several infrastructure projects to support the achievement of food security targets in the form of dams. The Raknamo Dam in NTT Province, for example, provides several benefits, including increasing the planting period for rice and expanding agricultural land. The rice planting period, which was originally only possible during the rainy season in a relatively short time of 3–5 months, can now be extended. Rice planting does not solely depend on the rainy season but can be throughout the year. In addition to the increased planting period, there is also an expansion of agricultural land up to 2–3 times. This condition has the potential to increase the welfare of farmers. The construction of the dam also supports the construction of the SPAM Raknamo with a capacity of 100 litres per second to improve drinking water services in Kupang Regency. In addition, the existence of the dam also encourages the development of tourism as a new tourist destination in Kupang Regency. Another project in an effort to increase food security is the Jatigede Dam and Reservoir. This project provides benefits as an irrigation facility for more than 87,000 hectares of agricultural lands, flood control with a buffer discharge and flood reduction capacity of 585 cubic metres per second, as a raw water provider for Cirebon and Indramayu Regencies of 3,500 litres per second, and as a power plant with an output of 2 x 55 megawatts (MW).

The development of several SEZs as part of the PSN also brings economic and social benefits. Based on the 2023 Press Release by Coordinating Ministry for Economic Affairs, it is known that the Sorong SEZ provides benefits in creating new jobs for local Papuan workers and increasing community accessibility and mobility. From an economic standpoint, there has been an increase in the activity of the property and housing business in the buffer zones of the Sorong SEZ, the development of micro and small and medium-sized enterprises and cooperatives to support people's lives, as well as an increase in people's purchasing power and welfare due to growing economic activity. SEZ Mandalika has a direct and indirect effect on job creation. Kompas Research and development research information shows that the 2022 MotoGP event in Mandalika directly absorbed as many as 4,600 labourers, indirectly providing jobs related to tourism facilities to local entrepreneurs and communities. The MotoGP 2022 event was covered by domestic and foreign media as well as a means of publication for Mandalika tourism destinations (Yuniarto, 2023).

The development of an integrated national cross-border post (PLBN) project is part of the national strategy of building from the periphery. The Skouw coordinated PLBN, situated on the land border between the Republic of Indonesia and Papua New Guinea (PNG), serves as a hub for people and goods to cross borders, a hub for economic growth, and a tourist destination. Specifically, this coordinated PLBN provides advantages in expanding connectivity, serving as a cross-border administrative centre between nations, a cross-border trading hub, and a tourist destination for both domestic and international visitors.

The social infrastructure discussed in this book has generally met expectations of improving the community's quality of life, such as providing drinking water and solving the waste problem as well as providing electricity. The acquisition of social infrastructure frequently fosters positive externalities by creating new economic centres and jobs. The inclusion of technology additionally raises new expectations for work creation. For instance, in the Benowo waste-to-energy (WTE) project there is a great opportunity for opening positions related to the operation of the waste handling infrastructure since additional distribution and operational chains are involved.

However, without adequate local human resources' support and capacity, the advantages of the existing infrastructure will not be maximised. For instance, in the Tourism Residential Facility Project, it is concerning that the lack of human resource expertise could hinder the proper care and management of the residential facility. The same thing with Benowo WTE project. The required human resources need to have sufficient knowledge and proficiency about the technology in the facility. The support from affected communities is also crucial, as evident in the SPAM Umbulan project. Worries about the local community's resistance, as highlighted in the project's feasibility study, are still apparent. The sustainability of the springs remains a concern for the local community, regardless of the benefits brought by the existence of the SPAM Umbulan, which can provide clean and drinkable water to meet basic human needs and enhance the quality of life. In projects involving technology, there are also community apprehensions regarding environmental impacts, such as potential pollution resulting from WTE operations.

6. Conclusion

Infrastructure development is one of the initiatives for achieving the ultimate objective of every nation, which is development growth and the equal distribution of citizens' welfare. Both economic and social infrastructures are important and complementary to each other, and, likewise, infrastructure development in villages is required as much as in cities. Policymakers must take strategic and concrete steps for city growth to be appropriately managed and liveable, whilst issues with rural areas are primarily focused on creating the necessary production conditions for social and economic growth, as well as improving the quality of life. Maintaining quality in infrastructure development projects is also important. The quality dimension is regarded as the least explicit indicator of project success and is frequently overlooked. However, given its connection to a project's long-term viability, it is currently receiving more attention.

The urgency of infrastructure in providing the appropriate means to attain such objectives has been validated in numerous scholarly studies. The Indonesian government acknowledges this significance and is taking strategic measures through the National Strategic Project programme. Large numbers of physical structures that have been actualised have yet to be fully completed. Not all development processes progress smoothly; in fact, they can engender conflict amongst impacted occupants, but a considerable number serve as the foundation and source of hope for bringing about positive transformation to enhance the quality of life. It is undeniable that every development process often elicits both support and opposition. All elements of the government, both at the national and regional levels, must work together to enhance the quality of public communication and collaborate in providing local empowerment programmes to ensure that impacted occupants also perceive the benefits of the ongoing development. In the following chapters, the advantages and effects of several economic and social infrastructure PSN initiatives will be explained in greater detail.

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Chapter 3

Selected Showcases: National Strategic Projects

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This chapter showcases 20 selected completed National Strategic Projects (*Proyek Strategis Nasional* – PSN) that were constructed between 2016 and 2022. In addition, the selected projects are taken from the three PSN clusters mentioned in Chapter 1 and showcases 11 connectivity economic infrastructure projects, six non-connectivity economic infrastructure projects, and three social infrastructure projects. The PSNs were chosen to represent diverse regions across Indonesia (spanning from Sumatra to Papua) and showcase innovative financing approaches (such as SPAM Umbulan), as well as breakthrough solutions to existing challenges (as demonstrated by the Benowo Waste-to-Energy Plant). The chapter further delves deeper into each showcase by elaborating on the project profile, the PSN objective, and the facilities received by being classified as a PSN, the project cost and sources of funding, and the challenge and benefit of the project. Lastly, each subchapter analyses the challenges and benefits of the project through a strengths, weaknesses, opportunities, and threats (SWOT) analysis on a survey conducted to the stakeholders of the PSN.

Connectivity Economic Infrastructure

The primary purpose of economic infrastructure is to provide support for production activities with the goal of lowering production costs and increasing labour productivity. It also focuses on enhancing the economy by improving the mobility of people and goods. This subchapter showcases the following projects: the Komodo International Airport, the Jakarta–Cikampek elevated toll road, the Manado–Bitung toll road, the Medan–Binjai toll road, the Gorontalo–Manado connecting road, the Kalibaru Terminal, the Palu ports development, the Jakarta Mass Rapid Transportation, the Skouw integrated border post, the Palapa Ring, and the Soekarno–Hatta International Airport express train.

Non-connectivity Economic Infrastructure

The government's economic infrastructure development initiatives aim to boost the country's economic expansion. Non-connectivity infrastructure, which includes dams and economic zones, are some of the areas that every nation focuses on to achieve economic prosperity. This subchapter showcases the projects of the Jatigede and Raknamo dams, three special economic zones located at Sorong, Morotai, and Mandalika, and the Batulicin Industrial Park.

Social Infrastructure

Social infrastructure is designed to assist in increasing the workforce's efficiency and expertise such as in the case of electricity and water infrastructure. Improved electricity infrastructure plays a role in reducing output losses due to power outages and surges, which in turn has a positive impact on business productivity. Next, water and sanitation infrastructure indirectly protects and enhances health. This subchapter features the Self-Housing Development Progress, the Umbulan Drinking Water Supply System, and the Benowo Waste-to-Energy Plant projects.

Part 1:
Connectivity Economic Infrastructure

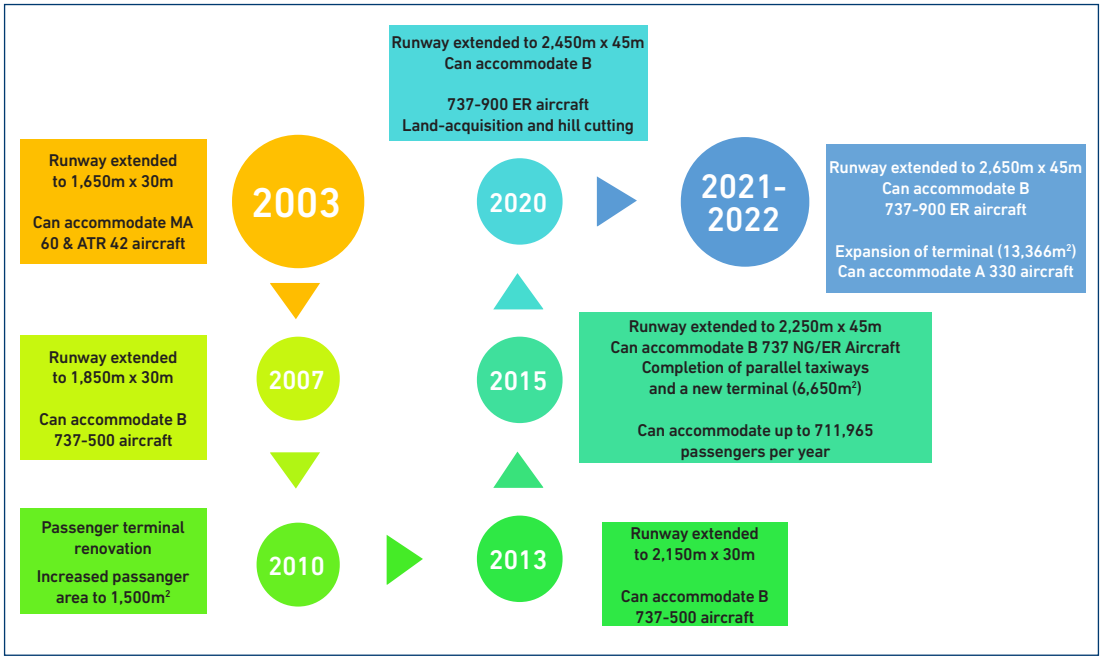
1.1. Komodo International Airport

1.1.1. Project Profile

Komodo Airport is located in Labuan Bajo, Komodo District, West Manggarai Regency, East Nusa Tenggara (on the island of Flores). It was originally named Mutiara II Airport and was built in 1990 with a runway length of 1,200 metres (m) x 30 m, the passenger terminal area of 240 square metres (m^2) and could serve Cessna and Casa 212 aircraft types.

The development of the airport in the form of extending the runway and expanding the passenger terminal was carried out in stages. In 2010, the passenger terminal was expanded so that the shape of the facade became wider and the area increased from 1,260 m^2 to 1,500 m^2, with a capacity of 35,000 passengers per year.

Figure 3.1. Development of Mutiara II Airport, Labuan Bajo, 2003–2022



m =metre, m^2 = square metre.

Source: Compiled from Ministry of Transportation (2023).

In 2015, the name of the airport was changed from Mutiara II to Komodo Airport (Jemali, 2023). The new name used was a symbolic ode to the ancient animal 'Komodo', which is a tourist icon in the area, hence the name, Komodo Island. The expansion of the passenger terminal in 2015 to 6,650 m² increased the passenger capacity by 20 times that of 2010, from 35,000 passengers per year to 711,965 passengers per year. The renovations and repairs were carried out throughout 2016–2018 at a cost of Rp125.98 billion. In 2019 a review of the Komodo Airport master plan was carried out, which cost Rp1.40 billion. The development stages of the airport can be seen in Figure 3.1.

With this development, the passenger capacity of Komodo Airport increased to 1.1 million passengers per year from the previous 712,000 passengers per year. The inauguration of the 2020–2022 Komodo Airport development was carried out by President Joko Widodo on Thursday 21 July 2022.

In 2015, the government initiated tourism development that was more focused on 10 priority Indonesian tourist destinations outside Bali, one of which was Labuan Bajo in East Nusa Tenggara. In line with that, Komodo Airport continued to improve through renovations and improvements to better the quality of the runway and passenger terminal, as well as to review the Komodo Airport master plan.

In 2017, the Research and Development Centre of Civil Aviation (*Puslitbang*) of the Ministry of Transportation conducted research related to fulfilling the criteria for Komodo Labuan Bajo Airport for upgrading the status from a domestic airport to an international airport (Ministry of Transportation, 2019). This research conducted by Yarlina (2018) concluded that the current infrastructure for Komodo Labuan Bajo Airport is sufficient to be developed into an international airport, judging from the existing conditions and stages of the development of the runway, taxiway, apron, and flight safety facilities. Furthermore, in 2019 the Ministry of Transportation conducted a review of the Komodo Airport master plan, which cost Rp1.40 billion. In 2020, based on Presidential Regulation (*Perpres*) Number 109 of 2020, 17 November 2020, Komodo Airport was included as part of the National Strategic Projects (PSN) scheme.

1.1.2. Project Objectives

In 2011, with Government Regulation (PP) Number 50 of 2011 concerning the National Tourism Development Master Plan for 2010–2025, the government included Komodo National Park as one of the national tourism destinations, which is the target of increasing and strengthening Indonesia's tourism image in a sustainable manner. In 2015 the government initiated tourism development that is more focused on 10 priority Indonesian tourist destinations outside Bali (10 new Balis), one of which is Labuan Bajo, East Nusa Tenggara. In line with that, Komodo Airport was developed so that in 2015 the capacity of its passenger terminal increased to 712,000 passengers per year. In the following years (2016–2019) the growth in the number of foreign and domestic tourist visits to the area was encouraging, with as many as 84,000 people in 2016, 133,000 people in 2017, 161,000 people in 2018, and 255,000 people in 2019.

In a limited cabinet meeting on 15 July 2019, in Jakarta, President Joko Widodo initiated the development of Super Priority Tourism Destinations (DPSP) in five regions, one of which is Labuan Bajo, East Nusa Tenggara (KPPIP, 2022). This development is part of the PSN programme, specifically the National Tourism Strategic Area Development Programme, as stated in Perpres Number 109 of 2020 concerning the Third Amendment to Presidential Regulation Number 3 of 2016.

In line with the development direction of Labuan Bajo as a DPSP under the PSN, quality infrastructure support is needed, including the expansion and development of Komodo Airport and the existing passenger capacity. The inclusion of the development of Komodo Airport as one of the PSNs is a form of government support in connection with the establishment of Labuan Bajo as part of the development of one DPSP. PSN's goal of developing Komodo Airport is to support tourism development, so that the community's economy can grow and develop, which in turn can have an impact on increasing people's welfare.

As part of the PSN, Komodo Airport receives a government guarantee facility, through PT Penjaminan Infrastruktur Indonesia or PT PII, for the Komodo Airport public–private partnership (PPP) project. This guarantee will only be obtained if the project is entered as a PSN. On 7 February 2020, an agreement was signed between the Ministry of Transportation and the CAS Consortium or PT Cinta Airport Flores with the PPP scheme for Komodo Labuan Bajo Airport in Jakarta. Unfortunately, the PPP was declared terminated in early 2023, because the CAS Consortium was unable to fulfil the conditions precedent set forth in the PPP agreement.

1.1.3. Project Cost and Source of Fund

The amount of funds that have been spent to finance the development of Komodo Airport from 2016–2022 is Rp459.35 billion. All the funding came from the state budget (Anggaran Pendapatan dan Belanja Negara, APBN). Details of expenditure allocation can be seen in Table 3.1.

Table 3.1. Komodo Airport Development Costs, 2016 to 2022

Year	Work	Realisation
2000		**54,597,201,900**
	Airport Development Supervision 1 Package	1,285,350,000
	Airport Fence Making Work 1 Package	7,154,000,000
	RW, TW, Apron, Turning Area and Fillet Coating Work to Increase PCN Carrying Capacity Including Markings 1 Package	33,408,268,900
	Installation of Box Culvert Under Taxiway Alpha Along with Channel 1 Package	2,205,100,000
	Security Office Construction 200 m^2	1,232,000,000
	Land side Parking Expansion of 3,200 m^2	2,623,083,000
	Procurement of Cargo X-RAY with 1 Unit TIP Application	1,199,000,000
	Expansion of the Powerhouse Building including Rehab of the Old PH Building 1 Package	1,370,000,000
	Procurement of Airport Maintenance Vehicle Equipment 1 Unit	350,000,000
	Airport Electrical System Optimisation 1 Package	3,770,400,000
2017		**8,534,400,000**
	Drainage Channel Making 1 Package	8,534,400,000
2018		**61,457,921,000**
	Apron coating 495 m^3	2,957,320,000
	Apron expansion 7,987 m^2	21,726,400,000
	Supervision of Airport Infrastructure Work 1 Package	1,272,424,000
	Passenger Terminal Setup Work 1 Package	9,476,200,000
	Terminal Canopy Work and Travelator Installation 1 Package	7,434,097,000
	Work on Landscaping, Car Parking and Curb Side 1 Package	18,287,000,000
	Procurement and installation of 2 units of WTMD	304,480,000

Year	Work	Realisation
2019		**1,400,000,000**
	Review of the Comodo Airport Master Plan	1,400,000,000
2020		**204,221,186,410**
2020	Land Acquisition for Airport Development	150,417,255,020
2020	Transitional Area Hill Cutting	27,831,547,390
2020	Supervision of Transitional Area Hill Cutting	620,000,000
2020	Runway Extension including Marking	24,821,589,000
2020	Supervision of Runway Extension	530,795,000
2021		**72,911,087,913**
2021	Integrated Design and Build Construction Work for the Construction and Development of Komodo Airport – Labuan Bajo (MYC 2021–2022)	65,767,612,000
2021	Komodo Airport Construction Management Work – Labuan Bajo (MYC 2021–2022)	2,858,286,672
2021	Continuation of Consignment Land Acquisition	4,285,189,241
2022		**56,225,243,000**
2022	Komodo Airport Construction and Development Work (MYC 2021–2022)	56,225,243,000
2022	Construction Management (MYC 2021–2022)	
TOTAL		**459,347,040,223**

MYC = multi-year contract, WTMD = walk-through metal detector.

Source: Project Report and Financial Realization 2016–2022, Ministry of Transportation.

Of the Rp459.35 billion, not all the costs are due to its status of a PSN as Komodo Airport was only registered as a PSN in 2020. Therefore, the amount of funds spent for Komodo Airport as a PSN is Rp333.36 trillion, that is the funds disbursed from 2020–2022.

1.1.4. Internal and External Factors

1.1.4.1. Internal Factors

Internal factors analysis (IFAS) is an analysis tool that provides the internal conditions of a company or project to be able to determine its strengths and weaknesses. In this study, an IFAS was carried out after identifying the aspects of the airport's internal environment to determine its strengths and weaknesses. The internal factors analysed are the location, physical quality, financing, regulations, conformity with regional spatial planning and land use, tender implementation, queue time for check-in, facilities at the airport, waiting time for baggage collection, supporting facilities, implementation permit constraints, duration of airport construction, technical obstacles in construction, development results, and impact on the environment.

1.1.4.2. External Factors

An external factor analysis (EFAS) is an analysis tool that provides the external conditions of a company or project to be able to determine its opportunities and threats. The external factors analysed are support from local communities, opportunities to open/expand businesses, job creation, increase in community income, increase in state/regional income, implementation of national and/or international standard activities, attraction to investors, development delays, land procurement constraints, the disbursement of funds, travel business actors, and cultural attractions and activities. In this study, an EFAS was carried out after identifying the aspects of the external environment to determine the factors of opportunities and threats.

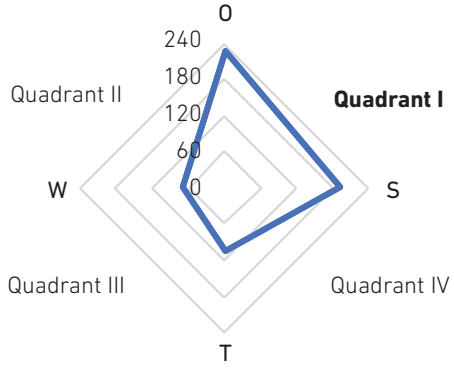
These factors were then entered into the IFAS and EFAS tables and their values were calculated by weighting. By multiplying the weights and rankings, the values of each factor were obtained, which were then added together to obtain the total IFAS and EFAS scores.

1.1.5. SWOT Analysis

A SWOT analysis is a systematic identification of various factors to formulate a company or project strategy, by evaluating the strengths, weaknesses, opportunities, and threats that exist in a company or project. In a SWOT analysis, strategic mapping of strengths and weaknesses with opportunities and threats can be carried out using Internal Factor Analysis (IFAS) and External Factor Analysis (EFAS). Data collection was carried out through a questionnaire, which was submitted via a survey link on a Google Form, via WhatsApp to each respondent. Responses from these respondents were recorded on a Google Sheet, and then processed by the authors. Out of the 12 respondents who were asked to fill out the questionnaire, there were eight respondents who filled out and returned the questionnaire.

The result of IFAS is 331.94 with the difference between the strength and weakness values of 122 (226.97–104.97). This can be interpreted as the internal factor strengths of Komodo Airport being greater than its weaknesses. In contrast, the value of EFAS is 258.64 (189.80+68.84). The difference between the opportunity and threat values is 120.96 (189.80–68.84), which can be interpreted as Komodo Airport having greater opportunities than threats. Depicted in matrix form, the internal–external matrix of Komodo Airport can be seen in Figure 3.2.

Figure 3.2. SWOT Analysis Results



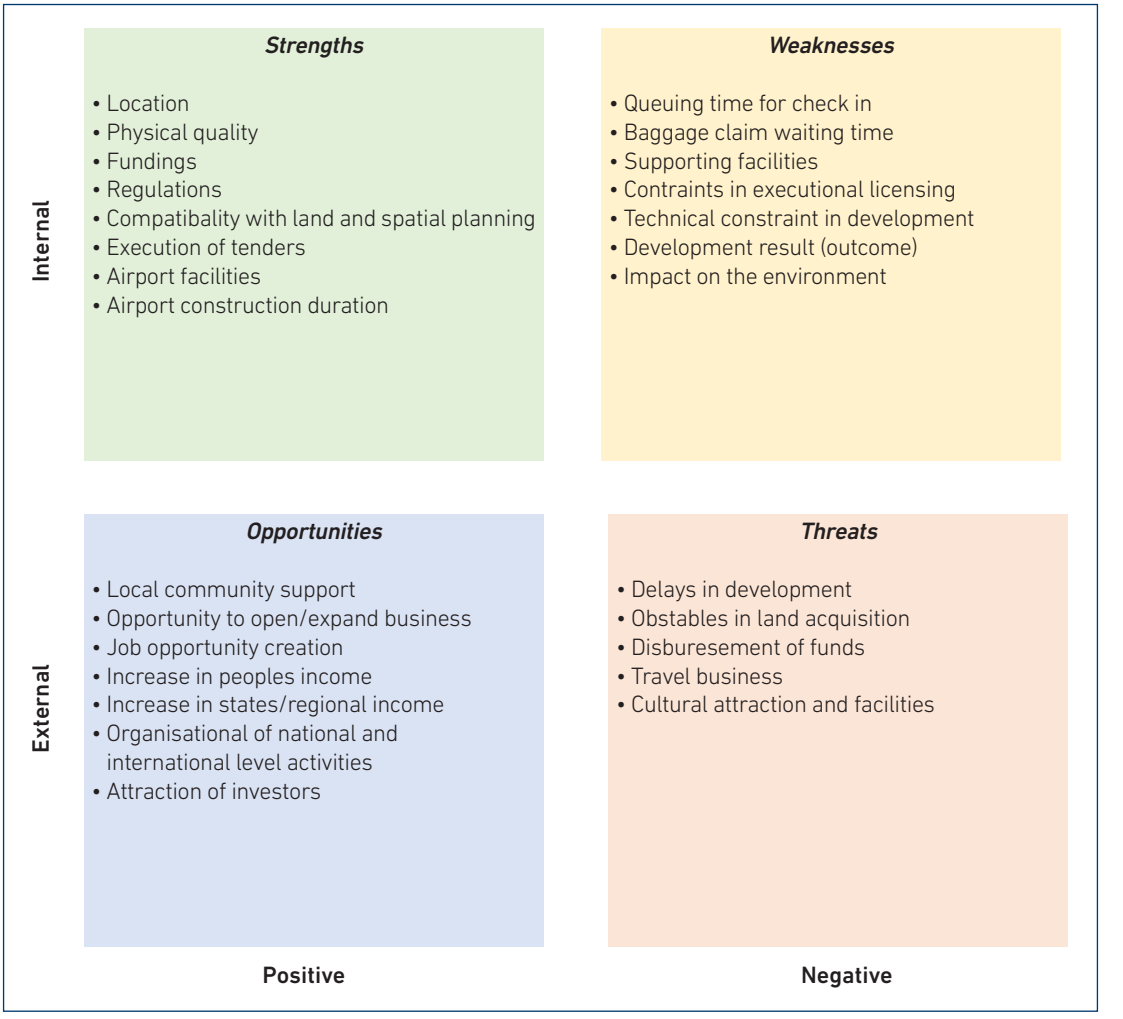
Categories		Values
S	**Strengths**	**226.97**
W	Weaknesses	104.97
O	**Opportunities**	**189.80**
T	Threats	68.84

Source: Authors, 2023.

Figure 3.2. shows that, from an internal perspective, the relative position of Komodo Airport is in quadrant one and is located at coordinate 226.97:189.80. A high coordinate indicates that Komodo Airport has relatively high opportunities and strengths. Thus, the strategy to follow is to take advantage of existing opportunities and use the available strengths. From the external side, Komodo Airport has a slight threat indicated by the coordinate 68.84 on the left side and a slight weakness indicated by the coordinate 104.97 down. An overview of the SWOT analysis is provided in Figure 3.3.

From the results of the SWOT analysis that was carried out, the development strategy that can be implemented by Komodo Airport is the strategy of utilising its strengths to obtain maximum opportunities (strengths and opportunities [SO] strategy), for example: using regulatory powers to obtain opportunities for holding national and/or international activities and attracting investors to the airport location and its surroundings; the facilities at the airport to be used by the community for opening or developing their business, thereby increasing the attractiveness of tourism.

Figure 3.3. SWOT Overview



Source: Authors.

1.1.5.1. Main Challenges

In 2016–2019, the number of tourist visits to Labuan Bajo increased sharply. 2019 was the peak year for tourist visits – about 255,000 people. In 2020 and 2021, due to the impact of the COVID-19 pandemic, this number decreased drastically. Nonetheless, in 2022, the number of tourist visits increased to 170,000 people.

The growth in tourist visits has had an impact on the growth in the number of passengers at Komodo Airport, where during 2016–2019 there was an increase in the number of passengers at the airport. In 2019, the number of passengers experienced a peak, at 694,000 passengers. With this number of passengers, the passenger capacity used is optimal, namely 97.48% of the existing capacity of 712,000 passengers per year.

In 2020–2021 there was a decrease in the number of passengers at the airport due to the decrease of tourists. However, the development of Komodo Airport continued to be carried out to accommodate the possibility of a surge in passengers after the end of the COVID-19 pandemic. This development has, amongst other things, increased passenger capacity to 1.1 million passengers per year in 2022. In 2022, the number of passengers at Komodo Airport increased to almost the same as the number of passengers in 2019, about 610,000 people. With these numbers, the airport only reached 56% of the available capacity.

One of the external factors that can increase the number of visits to Labuan Bajo is through national and/or international activities being held there. Through this implementation, more domestic and foreign people will know Labuan Bajo, so that the number of tourists is expected to continue to increase. The increase in tourist visits will increase the number of passengers served by Komodo Airport, so that the existing airport capacity can be used optimally.

1.1.5.2. Main Benefits

Location is one of the internal factors, which is significantly the strength of Komodo Airport. The location of Komodo Airport is strategic because it is the entrance for tourists who want to visit the Komodo National Park and the main entrance for those who want to visit Flores Island. This position provides an advantage for the airport to promote tourism activities in Labuan Bajo and Flores in a comprehensive manner, by providing initial information for passengers about tourist attractions, culinary experiences and activities or attractions that can be enjoyed by tourists; micro and small and medium-sized enterprise products; and other matters related to tourism activities. This can be done by providing several location points inside or outside the airport area that are easily accessible and viewable by people to provide or display that information. The more often this information is obtained by the public, it is hoped that the higher the interest and more tourists will visit.

Based on the facts previously mentioned, Komodo Airport occupies a strategic location. However, up to now, only 56% of the available airport capacity has been utilized. By implementing this SO strategy, it is hoped that the number of airport passengers can be increased so that existing capacity can be maximized.

Conclusion

Komodo Airport is in Labuan Bajo, Komodo District, West Manggarai Regency, East Nusa Tenggara (on Flores Island). Previously this airport was named Mutiara II Airport, which was built in 1990. The construction and development of this airport have been ongoing throughout the years, until it was declared complete and inaugurated in 2015 by President Joko Widodo.

In 2019, Labuan Bajo was designated as one of the DPSP development areas, which is part of the PSN Programme for the Development of National Strategic Tourism Areas based on Presidential Regulation Number 109 of 2020. To support the DPSP under the PSN programme, Komodo Airport was also included as part of the PSN in the same Presidential Regulation. The development of Komodo Airport from 2016 to 2022 incurred a cost of Rp459.35 billion. All of the funding sources came from the state budget.

Based on the SWOT analysis, Komodo Airport is positioned in quadrant I with high coordinates, indicating that it has relatively high opportunities and strengths. With this position, Komodo Airport has been able to increase the number of passengers served, reaching a peak in 2019 with 694,015 passengers.

From 2020 to 2022, despite a decrease in the number of passengers due to the COVID-19 pandemic, the development of Komodo Airport continued, resulting in an expansion of the passenger terminal area to 13,366 m^2 and an increase in passenger capacity to 1.1 million passengers per year.

The airport only reached 56% of its capacity in 2022, with 610,014 passengers. This number is still below the number of passengers in 2019.

In addition to increasing the number of passengers served, the presence of Komodo Airport also boosts tourist visits to West Manggarai. Along with that, the number of star-rated and non-star hotels in West Manggarai Regency has also increased (BPS, 2021). This increase is accompanied by the growth of gross regional domestic product in the accommodation and food and beverage sectors (BPS, 2023).

With the establishment of Labuan Bajo as one of the super priority tourism development destinations, it is hoped that the number of domestic and foreign tourists making recreational visits will increase. The growth in tourist visits has also had an impact on the growth in the number of passengers at Komodo Airport and the growth in the number of hotels.

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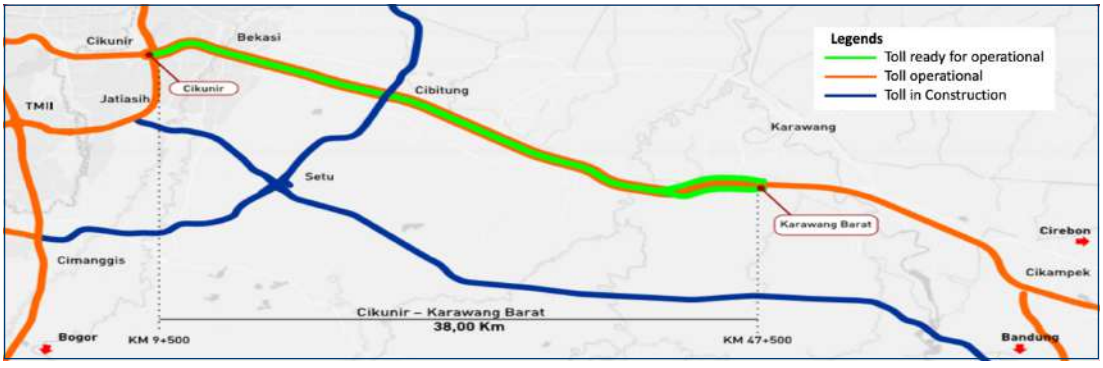
1.2. Jakarta-Cikampek II Elevated Toll Road

1.2.1. Project Profile

The Jakarta–Cikampek (Japek) II elevated toll road connects the Cikunir interchange and the West Karawang toll gate, approximately 38 kilometres in length. It is constructed entirely as an elevated road and is the longest flyover in Indonesia. The flyover construction is over the existing Jakarta–Cikampek toll road, covers a right of way area of 915.375 hectares, 70–80 metres width land. Considering the limited availability of land and the availability of technology for the construction of flyovers, construction over the existing road was considered the most logical choice. The elevated toll road section covers the area of Bekasi City, Bekasi Regency, and Karawang Regency and can be seen in Figure 3.4

Figure 3.4. Map of the Location of Jakarta–Cikampek II Elevated Toll Road



Source: PT Jakarta Jalan Layang Cikampek.

The growth of industrial estates and the big number of commuters from the eastern part of Jakarta have added to the burden on the Japek toll road. To reduce the burden on the Japek toll road, which has almost exceeded the carrying capacity, PT Jasamarga initiated the Japek toll overpass project, which is referred to as the Jakarta–Cikampek II elevated toll road. This idea was approved by the government, and it was categorised as one of the National Strategic Projects (PSN) based on Presidential Decree number 58 of 2017. With this categorisation, along with the project inauguration it received a joint guarantee by the Ministry of Finance and PT IIF for the safety and convenience of investment for business entities (PT IIF, 2017). Prior to construction, the Jakarta–Cikampek elevated toll road received a spatial conformity statement from the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency, with Decree No. 1124/200/XI/2016 concerning the Status of the Jakarta–Cikampek Highway Freeway Elevated Law, and in line with the National Spatial Plan.

The development consisted of two stages: the construction stage and the operational stage, with the Ministry of Public Works and Public Housing through the toll road regulatory agency (BPJT) as the project manager. Construction was planned for 24 months, starting in November 2017. It hired 250 workers, consisting of project elements (owners), supervision elements, and implementation elements (contractors). The workers were local, their jobs did not require special skills, and from outside the project area, as shown in Table 3.2.

The operational and maintenance phase was carried out by PT Jasa Marga Toll Road Operator through the Toll Road Business Entity (BUJT), PT Jasamarga Jalanlayang Cikampek (PT JJC). Entering the operational stage, the workers shifted to operating officers, such as toll gate guards, branch office employees, and toll operation and maintenance officers.

After completing construction and tests were done, the elevated toll road was inaugurated by President Joko Widodo on 12 December 2019. In April 2021, as an appreciation from the Indonesian government to the United Arab Emirates government, which has established diplomatic relations for 45 years, this flyover was renamed Jalan Layang Sheikh Mohammed bin Zayed.

Table 3.2. Workforce in the Construction of the Jakarta-Cikampek II Elevated Toll Road

No.	Labor Classification	Outside Regions	Locals	Quantity
1	Road and Bridge Experts	5	5	10
2	Expert Assistants	5	5	10
3	Project Administration	5	5	10
4	Logistics	5	5	10
5	Security	10	10	20
6	Heavy Equipment Operators	25	0	25
7	Forepersons	15	10	25
8	Labourers	40	100	140
Total		**110**	**140**	**250**

Source: PT Jasa Marga Persero Tbk.

The flyover section consists of two lines, the Cikunir–Karawang route (Line A) and the Karawang–Cikunir route (Line B), each line has two lanes. Each lane is 3.5 metres wide, with an inside sidewalk, 1 metre in width, and an outer sidewalk, 2.5 metres in width. To comply with toll road service standards, various supporting facilities have been provided. Cikunir access has six on/off ramps, whilst Karawang has two ramps. Along the flyover, four parking bays are provided, with a limited lot because vehicles are not allowed to stop. The parking bays are in line A (located at KM 21+000 and KM 41+500) and line B (KM 22+000 and KM 40+000). As the emergency openings in case of extraordinary situation, U-turns and emergency stairs are provided at eight points. The U-turns are only for official vehicles, not for road users. To provide information to users, two units of variable sign messages were built, at KM 23+800 A and 28+000 B, 113 CCTV were installed, and two units of smart CCTV to support Electronic Traffic Law Enforcement (ETLE).

Figure 3.5. Bumpy Appearance of Japek II Elevated Toll Road

Source: Authors.

An interesting fact about this toll road is its bumpy look (Figure 3.5). PT Waskita Karya, the contractor, explained the main reason for this bumpy look is that the flyovers were built following the topography of the road and constructions below and above. This flyover intersects with many constructions, including existing toll roads, interchanges, pedestrian bridges, as well as the Perusahaan Listrik Negara's (PLN) (Indonesia's electric power company) high voltage electricity transmission. According to the provisions, it must have 5.1 metres distance from the construction below or above (clearance area). With the varying heights of the constructions that intersect, it is not possible to build flyovers at the same height. If enforced, it would be very high and costly to build.

Since the beginning, this flyover was designed as a free load road allowing all types of vehicles to pass. Construction has also been tested with load tests carried out at 15 points. However, with various considerations, only small vehicles are allowed, whilst buses and trucks are not. This setting is based on Regulation of the Director General of Land Transportation Number 4963 of 2019. The consideration for this prohibition is due to the limited width of the lanes and sidewalks. if a large vehicle broke down causing traffic jams, it will be more difficult to handle.

1.2.2. Project Objectives

The density along the Japek toll road is inseparable from the growth of industrial areas in eastern Jakarta. The East Jakarta Corridor is one of the biggest contributors to the national economy. This area, which also includes the Bekasi agglomeration area, has seven industrial estates containing more than 4,000 companies (Irawan, 2020). Several large industrial areas in the corridor are Jababeka Industrial Estate Cikarang, Karawang International Industrial City, and Suryacipta City of Industry (PT Jasa Marga Persero, 2015). Before the elevated toll road, the accessibility of this corridor was served by the existing Japek toll road, which mostly consisted of four lanes in each direction. Without additional lanes as a solution to overcome congestion, the existing toll road is no longer able to accommodate the increasing traffic volume.

Figure 3.6. Cikunir Interchange, Starting Point for the Japek II Elevated Toll Road

Source: Authors, 2023.

The cause of congestion on the Jakarta–Cikampek toll road is the mixture of commuter traffic going to Bekasi and its surroundings with the flow of intercity vehicles to the west, central, and east Java. Commuter vehicles are dominated by small cars, whilst intercity vehicles are dominated by the transportation of goods and people, large and small vehicles. The elevated toll is expected to increase road capacity to complement the existing road network system and to expedite traffic flow on the Japek toll road. The congestion could be reduced by dividing the flow on the Japek toll road into two, the lower line for commuter and the top for intercity vehicles. If traffic eases, vehicles could reach 80 kilometre (km)/hour speeds. This situation increases transportation's efficiency, which is further expected to support national economic growth.

Traffic congestion has become a common situation on the Jakarta–Cikampek toll road. Congestion occurs all day, especially during Eid or long holidays. This toll road, which is the main node between the western and eastern parts of Java Island, has seen increasing traffic density from year to year, and has even been overloaded. The traffic overload of the Japek toll road shown from the vehicle volume and road capacity (V/C) ratio which has exceeded 0.8 in both lanes, and in some sections has even reached more than 1 (Ministry of Public Works and Public Housing, 2021). If the V/C ratio reaches 0.8 or greater, it means that the traffic flow category approaches the maximum capacity of the road.

In addition, easing the flow improves the quality of land transportation services, so that the mobility of people, goods, and services increases, too. It is hoped that this increased accessibility will also spur the development of cities in West Java Province, which have so far not maximised their development.

1.2.3. Project Cost and Source of Fund

The Japek elevated II toll road construction project was carried out under the public–private partnership (PPP) scheme. Construction of the toll roads began after the project was declared economically and financially eligible – the two eligibility types were requirements under the PPP scheme on the initiative of a Business Entity (unsolicited PPP), with PT Jasa Marga (Persero) Tbk as the project initiator. The total investment cost is Rp16.23 trillion, so the construction cost per kilometre is around Rp427 billion. Compared to the construction of another elevated toll road that will be built, the 22-km elevated Jakarta Outer Ring Road (JORR) toll road at a construction cost of Rp21.5 trillion (Rp977 billion per km), the cost for the Japek elevated toll road is more efficient. Of the total investment cost, Rp11.66 trillion was allocated for construction (National Toll Road Authority, 2016).

The funding scheme for this project is contractor pre financing, where the contractor funded the construction of this project first. After completion, there was a handover to the National Toll Road Authority (BPJT), which was to purchase it. The construction itself was carried out through a joint operation between PT Waskita Karya Tbk (51% equity) and PT Acset Indonusa Tbk (49% equity) (CNN Indonesia, 2017). The concession is 45 years.

1.2.4. External and Internal Factors

1.2.4.1. External Factors

The identified external factors are the level of support from the local community for PSN (E_1); the level of investor interest in the development of the Japek elevated toll road (E_2); PSN opportunities in job creation (E_3); PSN impact in new business creation for the community (E_4); PSN support for the development of regions through the opening of access to neighbouring areas (E_5); PSN opportunities for increasing tourism (E_6); the level of accessibility to western, middle, and eastern Java (E_7); level of smoothness of road traffic (E_8); timeliness of disbursement of toll development funding from the investors (E_9); potential for disputes or lawsuits in the PSN implementation process (E_{10}); level of fuel efficiency (E_{11}); level of risk of accident (E_{12}); level of people and goods mobility (E_{13}); PSN opportunities to increase land value (E_{14}); level of accessibility for local communities (E_{15}); impact of the PSN on land transportation services (E_{16}); and the impact of the PSN on the economy of regions not traversed by the elevated toll road (E_{17});

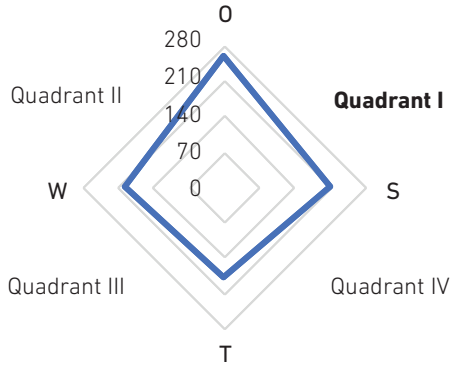
1.2.4.2. Internal Factors

The identified internal factors are the deregulation or enactment of regulations (I_1); suitability of the PSN development location (I_2); compatibility of PSN development with regional spatial planning and land use (I_3); availability of infrastructure that supports PSN (I_4); appropriateness of PT Waskita Karya's appointment as the project operator (I_5); support from the central and/or regional government in PSN financing (I_6); ease of licensing in the PSN preparation and implementation process (I_7); level of technical smoothness of PSN construction (I_8); level of use of modern technology in PSN development (I_9); timeliness of PSN construction (I_{10}); PSN physical quality level (I_{11}); suitability of PSN to split the traffic for commuters and long-distance travellers (I_{12}); level of concern for the development of PSN for environmental sustainability (I_{13}); adequacy of PSN-supporting facilities (I_{14}); and the reasonableness of the toll rate (I_{15}).

1.2.5. SWOT Results and Analysis

A SWOT analysis was used to evaluate this PSN project. In a SWOT analysis, strategic mapping of the strengths and weaknesses with opportunities and threats can be carried out using Internal Factor Analysis (IFAS) and External Factor Analysis (EFAS). Data collection was carried out through a questionnaire, which was submitted via a survey link on a Google Form to each respondent. There were 13 respondents, which came from internal parties (PT JJC and PUPR) and external parties, which were commuters, businessmen, and academics. The responses from these respondents were recorded and then processed by the author. From the SWOT analysis as shown in shown in Figure 3.7, it is in quadrant I, with the strenghts (S) still dominate with 206 points, whilst the weaknesses (W) have a score of 199. In terms of opportunities, many opportunities (O) have been presented, compared to the threats (T) faced. This can be seen from the pull towards O which is more than towards T. It can also be seen that the opportunity score of 260 is much higher than the threat score of 177.

Figure 3.7. SWOT Analysis Results

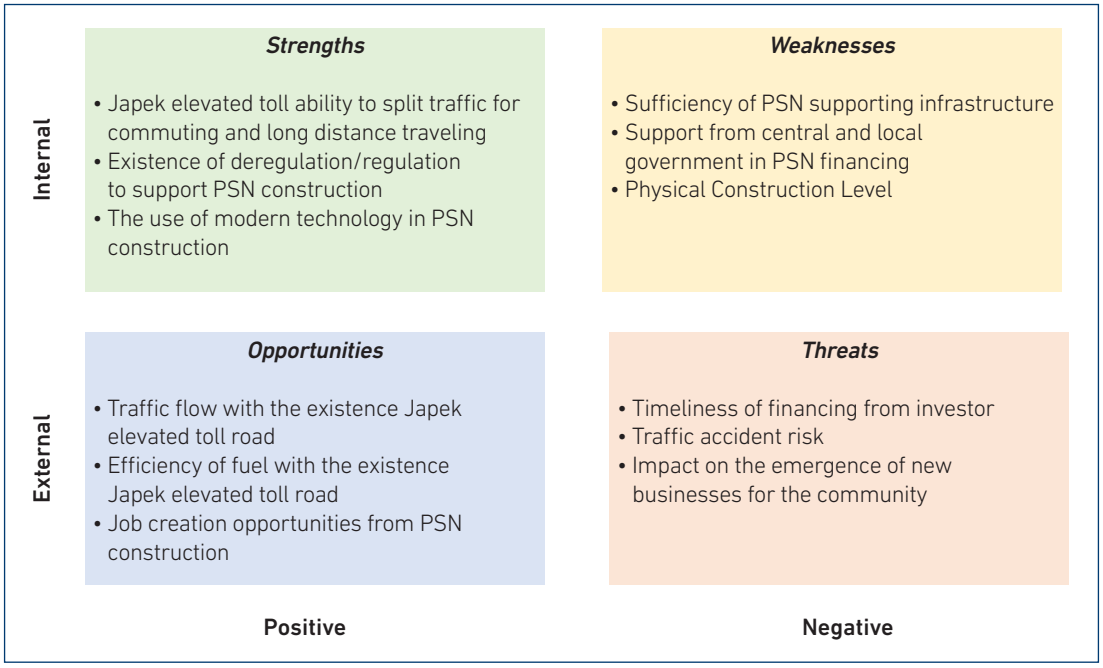


Categories		Values
S	**Strengths**	**206.39**
W	Weaknesses	199.23
O	**Opportunities**	**260.01**
T	Threats	177.92

Source: Authors, 2023.

A summary of the three factors with the highest values identified as strengths, weaknesses, opportunities, and threats is presented in Figure 3.8. The observed factors are ranked based on the highest values of the average perceived reality and importance by the respondents. The higher the score obtained, the better the perception of respondents for the factor.

Figure 3.8. SWOT Analysis Priority Matrix



Source: Authors, 2023.

1.2.5.1. Main Challenges

One of the weaknesses in the elevated toll road project, according to respondents, is the level of physical quality of the construction. Respondents consider this indicator important, but the score is low. This weakness seems to be related to the comfort of the user when passing over the joints, which has not been felt as a pleasant experience. The cause of this discomfort includes connections at the expansion joints that cause vehicles to 'bounce' when passing.

In addition to the physical quality, the adequacy of the supporting facilities is still a weakness. The elevated toll road is not intended to accommodate drivers seeking rest or stopping, except in emergency situations. Therefore, the facilities provided do not support such activities. This is often misinterpreted as a lack of facilities.

In the threats category, an indicator with a high score is the risk level of accidents on the toll road, whether on the existing toll road or the elevated one. The risk of accidents is perceived to increase due to the higher vehicle speeds resulting from reduced traffic volume after the traffic separation. This risk is expected to diminish with the regulation that only small passenger vehicles are allowed to pass through the elevated toll.

The accuracy of funding disbursement from investors is also a threat to toll road construction. This concern is reasonable because all funding comes from the private sector, and there is no funding from the national budget for this project. Additionally, respondents are also concerned about the impact of the elevated toll road on the growth of new businesses that could threaten existing community enterprises.

1.2.5.2. Main Benefits

On the strength factor, the highest score is the indicator of the ability of the elevated toll road to split traffic flow into two, for commuters and long-distance travel. This result is also supported by research conducted by Riwanto (2022), which states that the existence of the Jalan Layang Sheikh Mohammed bin Zayed is effective in unravelling congestion on the Jakarta–Cikampek toll road, as evidenced by the decrease in total traffic volume by 36.4%.

An indicator that also scores high is the existence of regulations to support the PSN implementation. This result is not surprising, because the main objective of a project designated as a PSN is to remove implementation obstacles related to bureaucracy. The existence of this regulation will also be needed to harmonise various existing conditions at locations affected by the existence of elevated toll roads. The West Java Provincial Government has anticipated this by adjusting the Provincial Spatial Plan by issuing West Java Provincial Regulation number 9 of 2022 concerning the West Java Provincial Spatial Plan for 2022–2042. These provisions were issued to accommodate the existence of various new infrastructures in the regional spatial layout plan.

Another indicator with a high score is the level of use of modern technology in the project development. This result is in accordance with the explanation from PT Waskita Karya Tbk as a contractor, which explained that the construction of elevated toll roads applied modern technology that is not used in other projects. The modern technology used includes the use of expansion joints in the form of asphaltic and seismic modular ones, which make the elevated toll road structure flexible so that it can withstand earthquakes.

In terms of opportunity, the benefit most felt by road users is the smooth flow of the existing Japek toll road after the flyover. The score for this indicator is the highest on external factors, at 30.67. This is consistent with the results on internal factors that the Japek elevated toll road managed to separate traffic flow for commuters and long trips. Data from the Ministry of Public Works and Public Housing (2021) state that there has been a decrease in the average traffic density (V/C ratio) on the Japek toll road, from previously 0.8 to 0.56 (Line A) and 0.81 to 0.54 (Line B).

Also getting a high score is the level of efficiency in fuel use that has increased after the construction of the flyover, which also got a score of 30.67. This result is in line with the results for indicators of the level of mobility of goods, services, and people after the construction of the Japek elevated toll road. One proof of this opportunity is the significant reduction in travel time from Jakarta to Bandung to 2.5 hours (Bawono et al., 2021), which previously took more than 3 hours.

The job creation opportunities were also considered by respondents as an opportunity that accompanies the existence of the elevated toll road and received a score of 29.52 in the SWOT analysis. The increased accessibility from Jakarta to the east has accelerated growth of the industrial areas in eastern Jakarta, and there is an opportunity for increasing demand for the workforce in these industrial areas.

Conclusion

The East Jakarta Corridor is the biggest contributor to the national economy. With the growth of the corridor, the road density is increasing along the Japek toll road as the main connection from the western side of Java to the eastern side. Congestion can occur at any time, and the road carrying capacity has almost been exceeded, as can be seen from the Vehicle Volume/Road Capacity (V/C) ratio, which has reached over 0.8 in both lanes. This condition certainly does not support efficiency and needs to be overcome. Because of the limited land and the ever-increasing volume of vehicles, the decision was made to build a toll road on top of the existing Japek toll road. This project, namely the Jakarta–Cikampek II Elevated Toll Road, was then designated as a PSN.

The 38-kilometre Japek Elevated Toll Road was built to increase road capacity to complement the existing road network system and expedite traffic flow on the Japek toll road. The congestion could be reduced by dividing the flow on the Japek toll road into two sections: the lower lane for commuter vehicles and the top for intercity vehicles. The easing of the flow has improved the quality of land transportation services and improved the mobility of people, goods, and services. The Japek Elevated II Toll Road construction project was carried out under a public–private partnership (PPP) with the initiative of a business entity (unsolicited PPP). It cost Rp16.23 trillion using the contractor pre-financing scheme.

Constructed above an active toll road, the Japek elevated project had many challenges during the construction phase. The biggest was the worsened congestion on the Japek toll caused by the project. In addition, there were three other massive projects at the same time, the LRT, MRT, and high-speed train. Despite these challenges, the project was completed on time and was inaugurated on 12 December 2019 by President Joko Widodo.

To understand the impact of the Japek elevated toll road, a SWOT analysis was carried out. The result showed that the strengths dominate the weaknesses. The opportunities also had a higher score than the threats, which means that the respondents had a better perception of the opportunities of the project. The project's ability to split traffic into commuting and long-distance travelling has been the strongest result of the project, evidenced by the decrease in traffic volume on the Japek toll road. Contrarily, the uneven surface has emerged as the primary weakness of the elevated toll road. The highest opportunity according to the respondents was the smooth flow for both the Japek and Japek elevated toll roads, whilst the threat was the increasing risk level of accidents due to the increase in driving speed.

In addition to the strong factors, with the smoother traffic flow, it is hoped that the Japek elevated toll road will also boost the growth of cities in the southern part of West Java

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1.3. Manado–Bitung Toll Road

1.3.1. Project Profile

The Manado–Bitung toll road project, situated in North Sulawesi Province, connects the City of Manado as the provincial capital and the City of Bitung. Manado City is famous as one of the best tourist cities in Indonesia. Bitung is famous as a producer of tuna and skipjack, a seaport city with a strategic location as an economic gateway to countries in the Asia-Pacific region. Bitung City was also designated as a special economic zone (SEZ) through Government Regulation Number 31 of 2014.

The distance between Manado City and Bitung City is approximately 44 kilometres. Presently, the roads connecting the two cities, including the national route, struggle to handle the growing vehicle traffic, particularly because of industrial activities lining these roads. In response to these anticipated challenges, the Ministry of Public Works and Housing planned to construct a toll road linking Manado and Bitung. The aim is to boost the accessibility between these pivotal cities, thereby fostering economic development, industry, tourism, and the overall well-being of the residents.

Figure 3.9. Manado–Bitung Toll Road

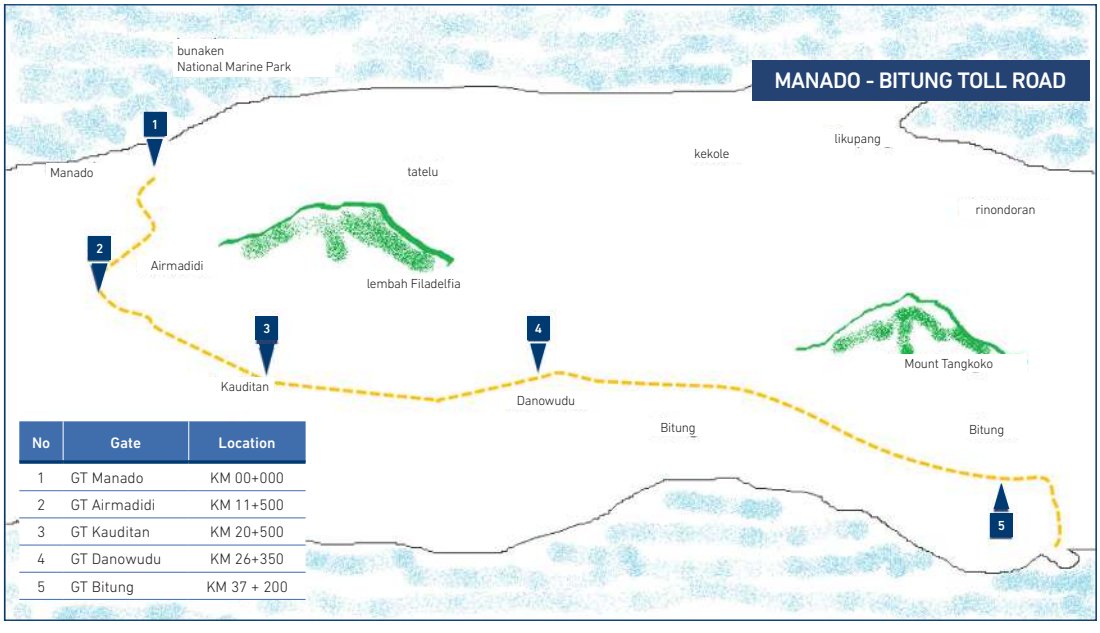
Source: PT Jasa Marga Manado Bitung.

The toll road infrastructure is the pioneering project in the Province of North Sulawesi and constitutes an integral component of the Trans Sulawesi Toll Road network.

The construction of the toll road is also a manifestation of the mandate of the Presidential Regulation concerning the Master Plan for the Acceleration and Expansion of Indonesia's Economic Development 2011–2025. In 2016, the Manado–Bitung toll road was incorporated into Presidential Regulation Number 3 of 2016 regarding the Acceleration of National Strategic Project Implementation. With this project's inclusion in the National Strategic Projects (PSN) list, its construction, which began in 2016, was able to be completed by 2022. Figure 3.9 illustrates the toll road.

The Manado–Bitung toll road Section A (Manado–Danowudu) began operating on 29 September 2020. It was then followed with Section B (Danowudu–Bitung) which has been fully operational since February 2022. The toll road is 39.9 kilometres (km) long and is divided into four sections, Section 1A Manado–Sukur (7.9 km), Section 1B Sukuk–Air Madidi (7 km), Section 2A Airmadidi–Danowudu (11.5 km), and Section 2B Danowudu–Bitung (13.5 km). The lane count in the Initial stage is two x two lanes, while the final stage is two x three lanes. The lane width is 3.6 metres, with an inner shoulder of 1.5 metres, and an outer shoulder of 3 metres. The pavement used for the main road and the inner shoulder is rigid pavement, while the outer shoulder uses flexible pavement.

Figure 3.10. Map of Manado–Bitung Toll Road



No	Gate	Location
1	GT Manado	KM 00+000
2	GT Airmadidi	KM 11+500
3	GT Kauditan	KM 20+500
4	GT Danowudu	KM 26+350
5	GT Bitung	KM 37 + 200

Source: Authors, 2023.

The Manado–Bitung toll road comprises five toll entrance and exit gates located in Manado, Airmadidi, Kauditan, Danowudu, and Bitung (Figure3.10). It is managed by PT Jasamarga Manado Bitung (PT JMB), which was established on 6 June 2016.

1.3.2. Project Objectives

The development of the Manado–Bitung toll road aims to achieve the Sustainable Development Goals (SDGs) by promoting economic prosperity, social well-being, environmental preservation, and equitable governance. It seeks to enhance the quality of life for current and future generations, ensuring justice and sustainable progress for the community. It also aims to increase accessibility between regions in North Sulawesi Province. In essence, the toll road is expected to increase the smoothness of logistics routes and the efficiency of travel time between cities, reduce the risks of accidents on provincial roads, and connect roads between Manado and Bitung.

As one of the PSN projects, the Manado–Bitung toll road was designed to foster balanced growth and decrease the export product logistics costs from Manado to the primary Bitung international port in North Sulawesi. Furthermore, the toll road will support Bitung's evolution into a special economic zone. As the inaugural toll in North Sulawesi, it is anticipated to slash the journey time between Manado and Bitung from its previous 90–120 minutes to roughly 30 minutes.

This project aims to increase regional development, support regional economic growth in North Sulawesi Province, and equitable development, especially in eastern Indonesia. This road is expected to open the development of areas around toll access, such as the Airmadidi sub-district, Kauditan sub-district, and Danowudu sub-district. This in turn support activities in the KEK in the city of Bitung, the Bitung international port, and tourism in surrounding areas such as the Bunaken National Marine Park, the Parom waterfall, the Tri Kora monument, and other tourist attractions.

As a National Strategic Project, this toll road holds a distinctive status due to its inclusion among the government's infrastructure acceleration priorities. The project commenced in 2016, with functional operation achieved by the end of 2018. Notably, it stands as the first toll road in North Sulawesi Province to connect regions within the province and is poised to become the key link in the trans-Sulawesi Island road network in the future.

1.3.3. Project Cost and Source of Funding

The development is carried out under government cooperation with a business entity (PPP) funding scheme with government construction support (Ministry of Public Works and Public Housing Decree) through foreign loans.

The Manado–Bitung toll road has a project value of Rp8.94 trillion (KPPIP, 2022), with the following funding sources:

- Section I, along 14.9 km from Manado–Sukur–Airmadidi, is financed through the state budget and loans from the Chinese government, with the government portion of Rp3.01 trillion. The construction of Section I is divided into (i) intersection to Manado–Bitung Ring Road (0.675 km), (ii) Section 1A Maumbi to Suwaan, 7 km long, carried out by the Sino Road and Bridge Group, and (iii) Section 1B Sukur to Tumaluntung along 7 km, which is divided into five sections and carried out by five different contractors.
- Section II, which is 25 km long from Airmadidi to Bitung, has a concession right owned by the Toll Road Business Entity (BUJT) PT. Jasa Marga Manado Bitung with an investment cost of Rp3.17 trillion. Section 2 construction is undertaken by PT JMB (Manado–Bitung Toll Road), whose shares are held by PT Jasamarga (Persero) Tbk (64.97%), PT Wijaya Karya (Persero) Tbk (20.04%), and PT Pembangunan Perumahan (Persero) Tbk (14.99%).

This project is being carried out under the supported build–operate–transfer scheme with a concession period of 40 years, in which the government provides construction support for a 13.5 km long section to make this project financially viable (PT.PII,2016). The government's role is to support infrastructure projects implemented through the PPP scheme through infrastructure guarantees. Manado–Bitung toll road financing is guaranteed by PT. PII.

To reduce investment costs for BUJT, the government provides physical assistance by building part of the toll road sections using the state revenue and expenditure budget (*APBN*) and loans from abroad. After that, the BUJT will be given a concession to operate all toll roads being built, both by the government and the BUJT itself.

Apart from that, financing for the Manado–Bitung Toll Road is also in the form of grants for some of the construction used in the toll road construction.

1.3.4. External and Internal Factors

1.3.4.1. External Factors

The identified external factors supporting the construction of the Manado-Bitung toll road are (i) The Level of Community Support for the Project; (ii) The Level of Interest of Prospective Providers/ Enterprises in Development; (iii) Project Opportunities in Job Creation; (iv) The Project's Impact Level on the Emergence of New Ventures for the Community; (v) increase in tourists; (vi) the level of accessibility to Manado-Bitung; (vii) the level of smooth of Non toll connecting road; (viii) Timeliness of Project Funding Disbursement; (ix) The Level of Potential Disputes or Legal Claims; (x) the efficiency of fuel use; (xi) The Level of Traffic Accident Risk (xii) The Level of Mobility of Goods, Services, and Toll Users; (xiii) Opportunities for Increasing Land Prices in the Area Traversed and Its Vicinity; (xiv) The Influence of the Toll Road's Existence on the Accessibility Level for the Local Community Surrounding the Toll Road; (xv) The Impact of the Existence of a Toll Road on the Use of Motor Vehicles for Accessing the Surrounding Areas; (xvi) The Influence of the Toll Road's Existence on Agricultural Land Area; and (xvii) The Impact of the Existence of the Toll Road on the Economy of Areas Not Served by the Toll Road (Existing Roads).

1.3.4.2. Internal Factors

The internal factors identified in the construction of the Manado-Bitung toll road are (i) the deregulation and/or issuance of regulations to support the construction of the toll road; (ii) the suitability of the project location for a toll road; (iii) compliance with spatial planning and land use; (iv) the availability of supporting infrastructure, such as primary roads for access to the toll road; (v) the decision of appointing PT JMB as the project implementer; (vi) support from the central government, provincial governments, and regency and/or city governments in financing; (vii) the ease of licensing procedures; (viii) the level of technical smoothness in construction development; (ix) use of technology in the toll road development; (x) timeliness in completing construction; (xi) the level of physical quality, including materials, the road contour, noise level, and comfort; (xii) level of harmony of the toll road construction with environmental sustainability; (xiii) supporting project facilities (signage, markings, rest areas, gates, lighting, etc.); and (xiv) toll road tariff costs.

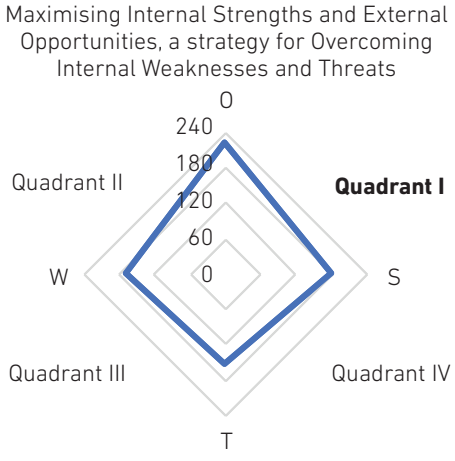
1.3.5. SWOT Results and Analysis

To ascertain the perception regarding the development of the PSN, a survey was conducted amongst individuals from within and outside the organisation. We collected data from stakeholders to measure respondents' perspectives. The participants include the central and local governments, academia, the business community, and users of Manado-Bitung Toll Road services. The internal

parties in this respondent were the project managers, namely the working unit of the North Sulawesi National Road Implementing Agency, the National Road Project working unit for the Manado–Bitung area, and PT Jasa Marga Manado Bitung. Respondents were from external parties, such as academics from Sam Ratulangi University in Manado, business actors in the cities of Manado and Bitung, and the Manado–Bitung toll road community users. Next, their perceptions of various internal and external factors – the perceived reality and the perceived importance – were collected and analysed. Perceived reality measures the stakeholders' perception of the facts observed, whilst the perceived level of importance scores factors that respondents feel are important to the success of the project.

The data is analysed with SWOT, where the results of data processing show:

Figure 3.11. SWOT Analysis Results



Categories		Values
S	**Strengths**	**211.10**
W	Weaknesses	149.78
O	**Opportunities**	**207.50**
T	Threats	198.19

Source: Authors, 2023.

The results of the SWOT analysis of internal and external respondents to the Manado–Bitung toll road project show that it is in quadrant I, and that internal strengths (S) and external opportunities (O) dominate internal weaknesses (W) and external threats (T) (Figure 3.11).

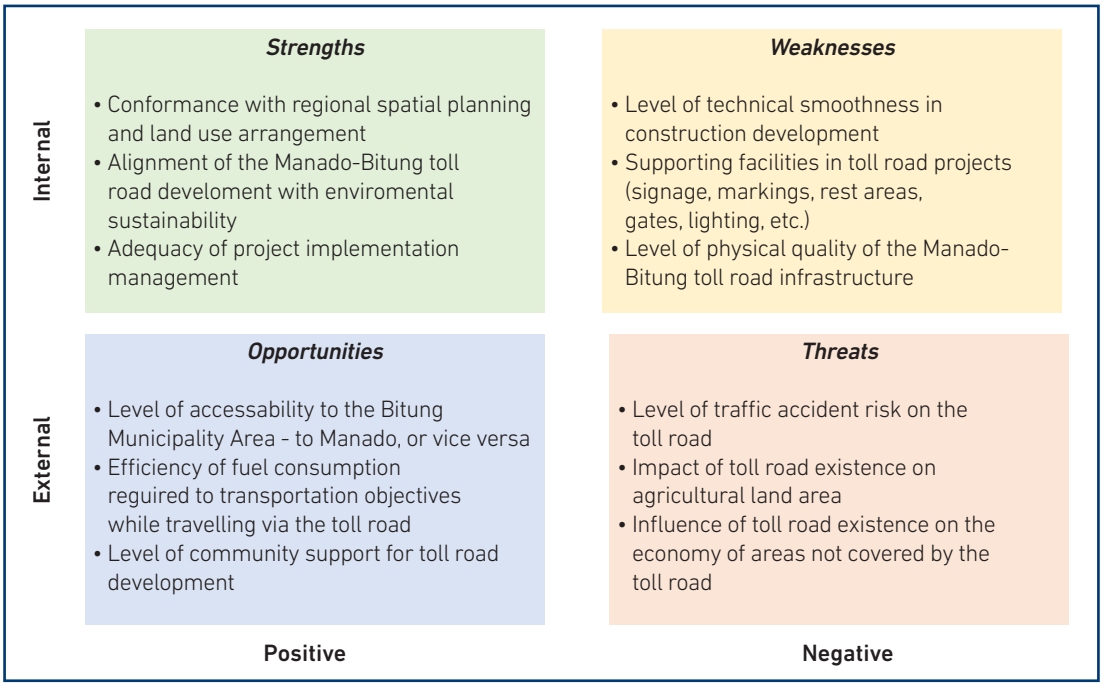
The results show that the internal strength factor has the highest points. The toll road project has solid internal strength to support the success of the project. Some strengths within the internal factors include the alignment of toll road construction with regional spatial planning and land use, the appointment of Toll Road Business Entities as project implementers, and the level of alignment with environmental sustainability in the surrounding area. Additionally, external opportunity factors also garnered a relatively high score, implying that toll road projects hold

significant potential to maximise their chances of success. Several opportunities stemming from external factors encompass the support of the local community towards toll road development, perceived fuel efficiency for toll road users, and the accessibility and smoothness of travel for toll road users.

Although internal weakness factors and external threats obtained lower scores compared to internal strengths and external opportunities, it remains imperative to mitigate these factors to minimise obstacles in the development and management of this toll road project. Internal weaknesses that require mitigation include the level of technical smoothness in toll road construction and development, as well as the physical quality of the toll road and its supporting facilities such as road signs, rest areas, gates, lighting, information boards, and others. External threats that necessitate mitigation may arise from the impact on the emergence of new businesses for the local community, affecting agricultural land areas, and the level of traffic accident risk.

The strategy can be used to maximise internal strengths and external opportunities to increase project effectiveness and efficiency. In contrast, internal weaknesses and external threats are managed not to hinder the project. Thus, toll road projects can increase the potential for success and achieve greater profits.

Figure 3.12. SWOT Analysis Priority Matrices



Source: Authors, 2023.

A summary of the three factors with the highest values identified as strengths, weaknesses, opportunities, and threats is presented in Figure 3.12 The observed factors are ranked based on the highest values of the average perceived reality and importance by the respondents. The higher the score obtained, the better the perception of respondents for the factor.

1.3.5.1. Main Challenges

a. Obstacles in land acquisition affected the target implementation time, so the project was halted with demands from the community to shift the project 200 metres from the Aerujang spring. Follow-up by the government and managers to resolve problems in the field was carried out by not installing toll road stakes in the Aerujang spring area.
b. Changes in land use and designation. The Manado–Bitung toll road project is part of a mega project comprising a special economic zone and an international hub port. The development of this mega project has changed land use in Bitung City, from plantation and agricultural land to industrial areas, residential areas, and the central business district (Lapatandau, Rumagit, and Pakasi, 2017). The development of this mega project will cause the temperature humidity index to become an uncomfortable category (Sanger, Rogi, and Rombang, 2016). Changes in land use around the corridor were from previously empty land into commercial, residential, and office buildings. Of course, the government needs to pay attention to land-use changes so that they can be controlled and follow regional spatial planning.
c. Competition amongst the roads linking the cities of Manado and Bitung is evident. Apart from the toll road, travellers can select the National Road or Ir Soekarno Road as alternative routes between the two cities. These access roads are commonly preferred over the toll road, potentially leading to lower-than-expected traffic volumes on the toll road. Additionally, the toll rates play a significant role in the decision-making process for the public, small and medium-sized enterprises, and industries when utilising the toll road. For illustrative purposes, the toll road vehicle volume in February 2023 averaged around 5,244 vehicles, generating an average revenue of Rp139.3 million. In March 2023, the average vehicle volume was 5,242 with an average revenue of Rp139.9 million, whilst in April 2023, the average vehicle volume reached 5,942, yielding an average revenue of Rp158.4 million (PT JMB, 2023).
d. The government needs to build and/or improve supporting infrastructure to support tourism in the vicinity, such as the Manado–Likupang access road, the Marinsow bridge, Malalayang SPAM, regional final processing facility Mamitarang, flood control, and others.
e. To facilitate the implementation of the project, adjustments and improvements in regulations are necessary to ensure the smooth technical progress of construction and timely completion. Additionally, enhancing the physical quality of the toll road, including materials, road contours, noise levels, and comfort, is crucial. Attention should also be directed towards improving supporting facilities such as road signs, markings, rest areas, gates, and lighting within the toll road project. Moreover, careful consideration and effective management of toll rates and access fees are essential aspects that require attention and oversight.

1.3.5.2. Main Benefits

a. Shortens the travel time between the city of Manado and the city of Bitung. With toll roads spanning 39.9 km, the average travel time is 1.5 to 2 hours via ordinary roads and arteries to about 35 to 45 minutes using the toll road.
b. As the primary access to the Bitung international hub port, this toll road provides easy access for goods and services to the Bitung port, one of the export and import gates for the eastern part of Indonesia. Logistics costs from Bitung port can also be reduced.
c. The direct connectivity to the Bitung Special Economic Zone (SEZ) presents an opportunity to stimulate and enhance the competitiveness of the fisheries, agriculture, and pharmaceutical sectors. The aim is to attract investments amounting to Rp32.89 trillion and provide employment opportunities for 34,710 individuals by the year 2025 (DNKEK, 2023).
d. Some tourist areas, both in Manado and in Bitung, are easier to reach. Several tourist areas in the city of Manado and its surroundings are the Ban Hin Kiong pagoda, ecotourism in the Bunaken National Park, one of the most beautiful marine parks in the world, the hinterland volcano area, the Rurukan agritourism village in Tomohon, Lake Tondano, and the Waruga Sawangan ancient park. In the city of Bitung and around it, there are several tourist areas such as underwater tours of World War II sunken ships, marine parks, ship stones, historical monuments, Japanese monuments, Trikora Mandalasakti, Bitung natural forest tours, and others. This toll road also supports the development of the Manado–Bitung–Likupang national strategic tourism area.
e. Reduces the burden on national arterial and regional roads whose conditions are increasingly congested due to the growth in the number of vehicles and economic activities supporting economic activities in North Sulawesi Province.
f. The increase in the local economy is directly correlated with the rising land prices and property values in the surrounding areas. Additionally, there has been a significant surge in the number of both domestic and international tourists visiting the North Sulawesi region. This, in turn, has led to the growth of small and medium-sized enterprises amongst the local communities. The construction of the toll road has also played a crucial role in the emergence of new economic growth points, particularly in the southern part of North Sulawesi Province. This positive impact is further bolstered by the development of the Gorontalo–Manado connecting road, which is strategically located in the southern route, connecting the cities of Manado and Gorontalo and linking with the Manado–Bitung toll road. Consequently, this development has contributed to the economic progress of the area, as well as the overall regional and national economic growth.

Conclusion

The Manado–Bitung toll road is located in the province of North Sulawesi, with the aim of establishing a vital transportation link between the cities of Manado and Bitung, covering a distance of 39.9 kilometres. Manado has earned a reputation as one of Indonesia's premier tourist destinations, offering a diverse array of attractions that appeal to domestic and international travellers alike. On the other hand, Bitung holds strategic significance as a prominent fish-producing centre and a maritime port city. Moreover, the city has been designated as a SEZ.

The analysis results indicate that the strong internal capabilities of the government and project managers greatly support the project's success, particularly when complemented by the development of supporting infrastructure. This can be further optimised by maximising the existing external potentials, such as expediting the development of the Bitung SEZ, establishing the Bitung international port, developing surrounding tourist areas, and providing investment facilitation facilities

The construction of the Manado–Bitung Toll Road as a National Strategic Project is relevant to its objective, which is to enhance interregional accessibility in the Province of North Sulawesi, facilitate transportation across the Sulawesi Island, stimulate economic growth in the eastern region, and promote equal development throughout Indonesia.

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1.4. Medan–Binjai Toll Road

1.4.1. Project Profile

The Medan–Binjai toll road is part of the Trans Sumatra toll road (Jalan Tol Trans–Sumatra, JTTS), which connects the City of Medan to the City of Binjai and is part of the connecting road for the Province of Nanggroe Aceh Darussalam and the Province of North Sumatra. The Medan–Binjai toll road section has a length of 17.42 kilometres (km) and is divided into three sections: (i) the Tanjung Mulia–Helvetia section of 6.97 km, (ii) the Helvetia–Semayang section of 6.175 km, and (iii) Semayang–Binjai section with a length of 4.275 km. Construction of the toll road began in 2015 and was fully completed in 2021.

The ground-breaking on the Medan–Binjai section took place on 27 January 2015 by the President of the Republic of Indonesia. On 27 March 2015, PT Hutama Karya (Persero) and the Toll Road Regulatory Agency (BPJT) carried out the signing of the Toll Road Concession Agreement (PPJT) for the Trans Sumatra toll road section of Medan-Binjai (PT Hutama Karya, 2016). The toll road project had a planned 3-year construction period, starting from 2015 to 2018 (KPPIP, 2018).

In accordance with Presidential Decree No. 62 of 2011 concerning Spatial Plans for the Medan, Binjai, Deli Serdang, and Karo Urban Areas, it has been designated as the Mebidangro urban area, a single urban area consisting of Medan City as the core urban area and the Binjai urban area in Binjai City, Hamparan urban area, Perak, Sunggal urban area, Tanjung Morawa urban area, Percut Sei Tuan urban area, Pancur Batu urban area, Lubuk Pakam urban area, and Galang urban area in Deli Serdang Regency, as well as Berastagi urban area in Karo Regency, as the surrounding urban areas. The core urban area and the surrounding urban areas have functional interrelationships linked to the regional infrastructure network system, including the transportation network, one of which is the construction of the Medan–Binjai toll road.

Apart from being one of the transportation networks and being part of the JTTS network, it is important to support the traffic of goods and people between Medan and Binjai. The construction of the Medan–Binjai toll road is also an alternative route for vehicles from Medan to Binjai and vice versa so that it can reduce the burden on Jalan Gatot Subroto and Jalan Medan–Binjai (roads which are the main route connecting Medan City with Banda Aceh City). Ultimately the construction of the Medan–Binjai toll road is expected to contribute to regional development and economic growth on the island of Sumatra.

1.4.2. Project Objectives

The construction of toll roads is carried out by the government to support the nawacita programme in the 2015–2019 National Medium Term Development Plan (RPJMN). Nawacita is an agenda of nine five-year development priorities, which is the vision of President Joko Widodo and Jusuf Kalla in the 2014 presidential election campaign. The nawacita agenda that must be realised includes developing Indonesia from the periphery by strengthening the regions (Agenda 3) and increasing people's productivity and competitiveness in the international market (Agenda 9). To realise this agenda, the government's strategy includes developing centres of economic growth and encouraging accelerated development of economic growth centres, as the main engines of growth, in each island outside Java, especially in the economic corridor area, by exploring regional potentials and advantages as well as developing national connectivity to achieve a balance of development. The development of these growth centres is accompanied by strengthening connectivity between economic growth centres and between economic growth centres and locations of economic activity and their supporting infrastructure. Links between regional growth centres and surrounding areas need to be facilitated by integrated and well-connected and integrated regional infrastructure, especially road and transportation infrastructure, both sea and air transportation, including information and communication networks, and energy supply, so as to create national connectivity, both domestically and internationally (locally integrated, internationally connected). Efforts to develop connectivity include the construction of 1,000 km of toll roads.

The main objective of the construction of the Medan–Binjai toll road is to increase transportation efficiency and reduce congestion in the region. With the toll road, travel time between Medan and Binjai is shorter, vehicle operating costs are reduced and productivity increased. The Medan–Binjai toll road is an alternative route to shorten travel time, where previously the travel time from Binjai to Medan took 1 to 2 hours using the Medan–Binjai road (Tarigan, 2021), with the toll road taking approximately 25 minutes. As an alternative, it can reduce the burden on the Medan–Binjai road. Before the existence of the toll road, traffic jams occurred on Jalan Medan–Binjai almost every day, especially in the mornings (Zulhijar, 2018). In the mornings the road, which should have four lanes, becomes only three lanes due to market activity that uses the road as a place to sell. In addition, the toll road is also expected to increase connectivity with surrounding cities, open access to remote areas, and strengthen economic integration between Medan and Binjai. Thus, the construction of the Medan–Binjai toll road is expected to provide long-term benefits for economic growth, social progress, and the quality of life for the people in the region.

The Medan-Binjai toll road has been designated as a national strategic project (Presidential Decree No. 3 of 2016) and is expected to support regional development on the island of Sumatra and national economic growth (Presidential Decree No. 100 of 2014). As part of a national strategic project, the Government is making efforts to accelerate the construction of the Medan-Binjai toll road by providing support in the form of toll road concessions carried out by the Government, the implementation of which is assigned to BUMN and its funding (Presidential Decree No. 100 of 2014), support for licensing and non-licensing aspects , adjustments to the Spatial and Regional Planning Plan, provision of land and resolution of problems and obstacles (Presidential Decree No. 3 of 2016 as last amended by Presidential Decree No. 109 of 2020).

1.4.3. Project Cost and Source of Fund

The total investment value for the construction of the Medan–Binjai toll road is Rp3.21 trillion (BPJT, 2023), through the assignment to PT Hutama Karya (Persero). Taking into account the low level of financial feasibility of the Medan–Binjai toll road section, the concession was assigned to BUMN PT Hutama Karya (Persero) through Presidential Decree No. 100 of 2014 concerning the Acceleration of Toll Road Development in Sumatra as last amended by Presidential Decree No. 131 of 2022.

The funding scheme is through the assignment of SOEs to PT Hutama Karya (Persero) in which the government provides State Equity Participation (PMN) for the equity portion and the loan portion will come from domestic funding as well as the direct lending. Funds for land acquisition are fully borne by the central government through the Ministry of Public Works and Public Housing (KPPIP, 2015). The funding structure for this segment consists of 70% of PT Hutama Karya's equity (fulfilment of which is supported by State Investment/PMN) and 30% is a loan from PT Sarana Multi Infrastruktur (PT SMI) (KPPIP, 2016, 2017).

1.4.4. External and Internal Factors

1.4.4.1. External Factors

The identified external factors support the construction of the Medan–Binjai toll road are (i) the level of mobility of goods, services, and people; (ii) the level of smooth flow of the Medan–Aceh provincial road; (iii) the level of accessibility to the northern part of Sumatra; (iv) the efficiency of fuel use; (v) the level of support from the surrounding community; (vi) level of potential for disputes or lawsuits in the land acquisition process; (vii) interest level of investors and operators; (viii) increase in tourists; and (ix) job creation.

1.4.4.2. Internal Factors

The internal factors identified in the construction of the Medan–Binjai toll road are (i) deregulation and/or issuance of regulations to support the construction of the toll road; (ii) compliance with spatial planning and land use; (iii) support from the central government, provincial governments, and regency and/or city governments in financing; (iv) use of technology in toll road development; (v) timeliness in completing construction; (vi) toll road tariff costs; and (vii) level of harmony of toll road construction with environmental sustainability.

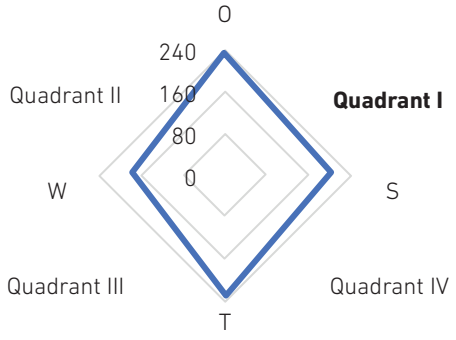
1.4.5. SWOT Analysis and Results

The construction of the Medan–Binjai toll road is one of the transportation infrastructure facilities built to support the development of the Medan–Binjai–Deli Serdang–Karo (Mebidangro) metropolitan area. The construction of this toll road is intended to support the traffic of goods and people between Medan and Binjai, it can be an alternative vehicle route to reduce the load on existing routes and facilitate access and improve connectivity. Ultimately the construction of this toll road will contribute to regional development and economic growth on the island of Sumatra (KPPIP, 2017).

To provide an overview of the possibility of achieving these objectives, a SWOT analysis was carried out by identifying strengths and weaknesses (internal factors) as well as opportunities and challenges (external factors). The SWOT analysis was carried out through a questionnaire to obtain the perceptions of various stakeholders: local government, academics, entrepreneurs, and the community. Perception is seen from two perspectives: reality and the level of importance, using a score of 1 to 6. Reality describes the respondent's perception of the facts observed or felt, where a score of 1 indicates a very bad perception while a score of 6 indicates a very good perception of the project. Importance describes how important each of the factors assessed is, where a score of 1 indicates that the perception is not very important, while a score of 6 indicates that the perception is very important to the project.

The results of the SWOT analysis show that the construction of the Medan–Binjai toll road has factors of opportunities (external) and weaknesses (internal) that are more dominant than factors of threats and challenges, as shown in Figure 3.13.

Figure 3.13. SWOT Analysis Result



	Categories	Values
S	**Strengths**	**195.3179**
W	Weaknesses	176.2192
O	**Opportunities**	**230.9763**
T	Threats	209.8637

Source: Authors, 2023.

A summary of the three factors with the highest scores identified as strengths, weaknesses, opportunities and threats is presented in Figure 3.14. The observed factors are sorted based on the highest value of the average perceived reality and the importance of the respondents. The higher the score obtained, the better the respondent's perception of this factor.

Figure 3.14. SWOT Analysis Priority Matrix

Internal	***Strengths*** • There is deregulation/issuance of regulations to support the construction of the Medan-Binjai Toll Road • Compability with spatial planning and land use • The use of modern technology in the construction of the Medan-Binjai toll road	***Weaknesses*** • Timeliness in the construction of the Medan-Binjai toll road construction • Medan-Binjai toll road fees • The degree of harmony of toll road constrcution with enviromental sustainability
External	***Opportunities*** • The level of mobility of goods, services and people • The level of smooth flow of the Medan-Aceh provincial road after the existence of the Medan-Binjai toll road • Accessibility level to the northern part of Sumatra	***Threats*** • The level of potential for disputes or lawsuits in the land acquisition process • Interest level of investors/operators • Level of community support
	Positive	**Negative**

Source: Authors, 2023.

1.4.5.1. Main Challenges

External and internal factors identified as challenges in the construction of the Medan–Binjai toll road include:

a. Land Acquisition Process
   The construction of the Medan–Binjai toll road faced external challenges, including problems with land availability and the feasibility of toll road projects that are not fully commercial (Zuna and Retapradana, 2017). In accordance with PT Hutama Karya's report (2018), most of the toll road sections had challenges in the land acquisition process, such as land ownership disputes and disagreements overcompensation payments so that freed land tended to be spot-to-spot, not completed in one area so that the mobilisation of work was constrained.

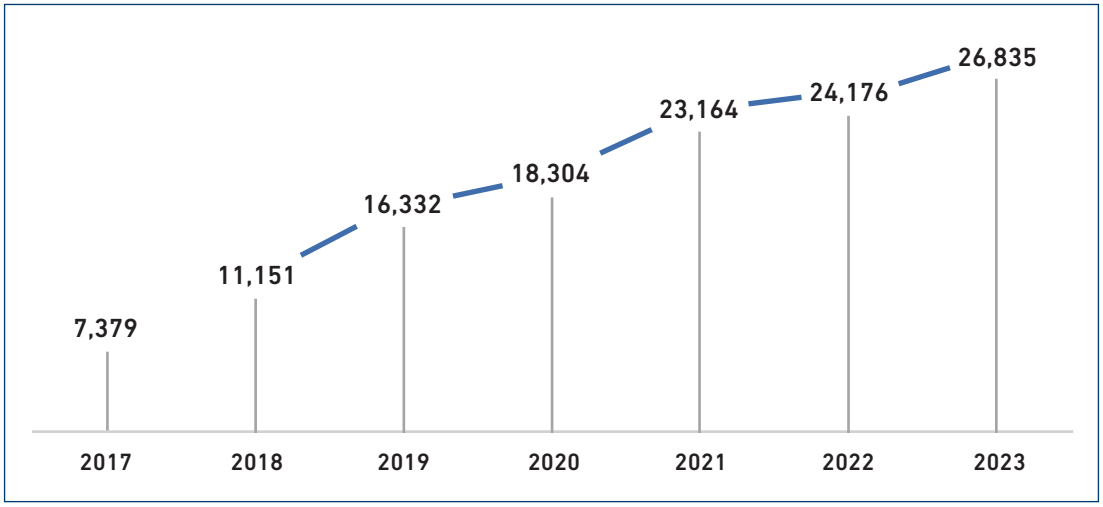
b. Toll Tariff
   Calculation of toll rates takes into account the ability of toll road users, so that it is not burdensome if calculated economically (Article 66 PP No. 15 of 2005; Riajaya, Orlando, and Samputra, 2019; Rangkuty, and Tarigan, 2022). The Medan–Binjai toll for sections 2 and 3 were set by the government at the time of operation in 2017 for class 1 vehicles an average of Rp971/km (processed from PUPR Ministerial Decree No. 804/KPTS/M/2017 of 2017). Based on the results of Panjaitan's research (2013), the public's ability to pay the toll rates (ATP) is Rp753.52/km (2013), if converted in 2017 taking into account the Medan City inflation rate in 2014–2017 (5.34%) (BPS, 2014–2017), then the ATP is Rp926.87/km. Based on these calculations, it shows that the toll road users' ability to pay is slightly below the toll rates set by the government.

c. Various geotechnical conditions
   JTTS has various geotechnical conditions ranging from soft soil, sand, peat, and rock so that special handling was required to be able to carry out construction (Hutama Karya, 2018). The development process passed through many special areas such as settlements, industrial forest areas, plantations, mines, and others so that special treatment and special communication procedures were needed that involved many stakeholders related to the acceleration of the construction of JTTS sections.

1.4.5.2. Main Benefits

Based on survey results and some research literature, the construction of the Medan–Binjai toll road as one of the infrastructure development areas for the urban area of Mebidangro, provides benefits to the people of Medan City, Binjai City, and the surrounding cities.

Figure 3.15. Daily Traffic Data for the Medan-Binjai Toll Road Year 2017-2023



Source: Tabulated from Ministry of Public Works and Housing, 2023.

a. Increase and accelerate the mobility of people and goods
   The use of the Medan–Binjai toll road can accelerate the mobility of people, goods, and services for the people of Binjai City, Medan City, and other communities. The travel time from Medan City to Binjai City and vice versa, which originally took 1 to 2 hours via the Medan–Aceh provincial road (Jalan Gatot Subroto), by utilising the Medan–Binjai toll road can be reached in approximately 25 minutes. The Medan–Binjai toll road also increases the mobility of people and goods. At the beginning of its operation in October 2017, the number of vehicles using the toll road was still 7,379 vehicles per day and in 2023 it will reach 26,835 vehicles per day, as shown in Figure 3.15. Since the start of operation, the number of vehicles using the toll road shows an average increase of 25.26% per year.

b. Improve accessibility
   The construction of the Medan–Binjai toll road is part of infrastructure development to support the metropolitan area known as Mebidangro. The results of research conducted by Lase (2019), the areas that experienced the greatest changes in the accessibility index due to the Medan–Binjai toll road were Binjai City (49%) and Deli Serdang Regency (29%).

c. Becoming an alternative to the Medan–Binjai vehicle route and vice versa, so as to reduce the burden on the existing lanes and reduce congestion on the Medan–Binjai arterial road (vice versa). Utilising the Medan–Binjai toll road as an alternative for Medan City residents who travel to Banda Aceh and vice versa can reduce congestion on the Medan–Binjai arterial road and vice versa. Girsang's research (2020) states that the traffic jams that occur in Medan City cause harm to road users, both in terms of time and wasted use of fuel. In terms of time, the loss of time due to traffic jams for motorcycles is 35.6 minutes per day, while the time loss for cars is 48.5 minutes per day. From the point of view of using fuel, wasteful fuel consumption for motorbike vehicles due to traffic jams every day is 0.189 litres/1,000 km/vehicle, whilst the amount of fuel wasted for cars is 0.95677 litres/1,000 km/vehicle. In absolute terms, congestion on several roads in Medan City, according to research results from Susanti and Magdalena (2017), the total cost of congestion on several roads in Medan City is around Rp85.36 million/day and Rp22.54 billion/year.

Table 3.3. National Economic Growth Rate, Province, City of Binjai, and East Coast Region from 2017–2020

Regency/City per Year	2017	2018	2019	2020
Langkat Regency	5.05	5.02	5.07	–0.86
Deli Serdang Regency	5.10	5.15	5.18	–1.78
Serdang Bedagai Regency	5.16	5.17	5.28	–0.44
Batu Bara Regency	4.11	4.38	4.35	–0.31
Asahan Regency	5.48	5.61	5.64	0.21
Lebuhanbatu Regency	5.00	5.06	5.07	0.09
North Lebuhanbatu Regency	5.11	5.20	5.15	0.27
South Lebuhanbatu Regency	5.09	5.27	5.35	0.80
Tanjung Balai City	5.51	5.25	5.20	–1.36
Tebing Tinggi City	5.14	5.27	5.15	–0.70
Medan City	5.81	5.92	5.93	–1.98
Binjai City	5.39	5.46	5.52	–1.83
Average East Coast Region	**5.16**	**5.22**	**5.24**	**–0.66**
Province of North Sumatra	**5.12**	**5.18**	**5.22**	**–1.07**

Source: BPS North Sumatra Province (2021).

d. The construction of the Medan–Binjai toll road will have an impact on the growth of economic activity in the areas through which the toll road passes. Tarigan's research (2021), shows that the construction of the Medan–Binjai toll road has changed economic conditions after the construction of the toll road including increased income, increased expenditure, ease of mobility, efficiency of travel time from home to work and increased employment. BPS data for North Sumatra Province in the RPJMD for Binjai City for 2021–2026, shows that the economic growth for Binjai City and Medan City in 2016–2019 is always higher than nationally and North Sumatra Province, as shown in Table 3.3.

Conclusion

The construction of the Medan–Binjai toll road began in 2015 and was fully completed in 2021 The Medan–Binjai toll road is part of the JTTS, not only connecting the cities of Medan and Binjai but also cities in North Sumatra Province and Aceh Province.

The construction of the Medan–Binjai toll road provides significant benefits for the people of Binjai City, Medan City, and the people of North Sumatra in general.

The SWOT analysis shows that factors that support the success of development include regulations to support the implementation of the Medan-Binjai Toll Road Development; compatibility with regional spatial planning and land use; and increased accessibility and the mobility of goods, services, and people. The inhibiting factors are the existence of disputes or legal claims in the land acquisition process and the accuracy of the completion time target for toll road construction.

The construction of the Medan–Binjai toll road has been able to increase and accelerate the mobility of people and goods from Medan City to Binjai City and vice versa, becoming an alternative access route from Medan City to Binjai City (and vice versa), thereby reducing the level of congestion on Medan–Aceh provincial roads, increasing the accessibility of the city of Binjai, and relatively higher economic growth for the City of Binjai and the City of Medan compared to surrounding cities.

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1.5. Manado–Gorontalo Connecting Road

1.5.1. Project Profile

The construction of the Manado–Gorontalo connecting road was part of a road infrastructure development programme that aimed to improve connectivity between the cities of Manado and Gorontalo. In addition, the construction of the connecting road was also expected to increase economic growth in northern Sulawesi by opening access to areas that were previously difficult to reach. By addressing disconnected road sections (dirt roads) and challenging elevation conditions that hinder smooth vehicle movement, it primarily targeted facilitating access to isolated areas like agricultural regions (cloves, paddy fields, nutmeg, corn, coconut plantations), fisheries, and tourism spots including Kema Beach, Abadi Beach, Tanjung Silar (North Sulawesi Province), Batu Barani Beach (Gorontalo Province) and Pulisan Beach as shown in Figure 3.16 The goal was to improve infrastructure to support business investments and overall accessibility in these areas and open new opportunities for economic and tourism development in the region.

Figure 3.16. Pulisan Beach Road Improvement

Source: Ministry of Public Works and Housing (MPWH), 2023.

Its status as a PSN is mandated from Presidential Regulation Number 3 of 2016 concerning the Acceleration of Implementation of PSNs, Presidential Regulation Number 58 of 2017 concerning Amendments to Presidential Regulation Number 3 of 2016 concerning Acceleration of Implementation of PSNs and Presidential Regulation Number 56 of 2018 Second amendment to Presidential Regulation Number 3 of 2016 concerning the Acceleration of Implementation of PSNs.

The Manado–Gorontalo national strategic project for the connecting road is a project under the Ministry of Public Works and Housing. The project is carried out by the National Road Implementation Agency for North Sulawesi Region (KPPIP, n.d.). The project is executed during the period from 2016 to 2022. The Manado–Gorontalo connecting road project has a different nature compared to Toll Roads. In the case of Toll Roads, cost calculations start from scratch, from the time the project doesn't exist yet until it is ready for use. For the connecting road project, prior to 2016, the road already existed, and costs had certainly been incurred for its construction. However, in terms of width and quality, improvements will be made. The cost calculation for the National Strategic Project (PSN) is calculated from 2016 to 2022.

1.5.2. Project Objectives

The objective of this project was to increase growth and equity in development in the context of community welfare and regional development (Ministry of Public Works and Public Housing, 2021). A well-constructed and smooth connecting road will improve efficiency, reduce logistic costs, and travel expenses, thereby contributing to the economic and social growth of both regions. It will create new investment opportunities and enhance the tourism potential of the area, particularly for the Likupang Special Economic Zone (KEK Likupang).

Figure 3.17. Widening of the Likupang Tourism Access Road

Source: National Road Implementation Agency for North Sulawesi Region (2023).

Referring to Figure 3.17 for the Likupang tourism access road that is located in North Minahasa Regency, technical specifications of the project involve road preservation and widening of a 6-kilometre stretch. The construction of the project started in 2019, which was also the year of its selection for construction. The areas affected by the project include Manado City, North Minahasa Regency, and Bitung City. As seen in the image, the access road prior to expansion appears rough, narrow, and lacks road signs and safety features. In contrast, after the expansion and being granted PSN status, the widened road is supported by facilities as per PSN standards, resulting in a faster and improved expansion process, as depicted in the image. With the completion of this road expansion, transportation and connectivity in the area improved significantly, offering enhanced access for tourists and investors to the KEK Likupang. Consequently, Likupang tourism can drive economic development, creating opportunities for socio-economic growth and well-being in the impacted regions.

1.5.3. Project Cost and Source of Fund

The implementing agency of the Manado–Gorontalo connecting road is a working unit of the National Road Implementation Agency for North Sulawesi Region, the Ministry of Public Works and Housing. Based on information obtained from Ministry of Public Works and Housing and the National Road Implementation Agency for North Sulawesi Region, the cost of constructing the Manado–Gorontalo connecting road was around Rp1.22 trillion, which came from APBN sources (see Table 3.4).

Table 3.4. PSN Manado–Gorontalo Connecting Road Cost

No	PSN support/works package	Unit	Length	Contract Value (Rp thousand)	Year	
					Start	Finish
	Manado – Gorontalo Connecting Road			1,219,737,915		
1	Preservation of Preventive Routine Maintenance for Jalan Girian-likupang-wori-manado	km	100.02	6,149,600	2016	2016
2	Widening of Girian-kema-rumbi Road (Continued MYC)	km	129.61	63,465,864	2015	2016
3	Preservation of Minor Rehabilitation for Airmadidi-bitung-girian-kema-rumbia-buyat Road	km	157.25	20,193,825	2016	2016
4	Preservation of Buyat-Molobog-Ongunoi Road	km	84.27	23,143,425	2016	2016
5	Preservation of Routine Maintenance of Ongunoi-Pinolosian, Matali-Torosik Road	km	133.33	5,661,750	2016	2016
6	Preservation of Kotamobagu-doloduo-molibagu-mamalia-taludaa Road	km	100.95	26,764,250	2016	2016
7	Routine Maintenance of Likupang – Wori Road	km	58.11	5,522,176	2017	2017
8	Preservation of Reconstruction of Rumbia - Buyat, Kema – Rumbia	km	129.61	7,314,019	2017	2017
9	Rumbia – Buyat Road Reconstruction	km		26,901,065	2017	2017
10	Preservation of the Buyat-Molobog-Ongunoi Road Rehabilitation	km	84	6,380,228	2017	2017
11	Preservation of the Ongunoi-pinolosian-molibagu Road Reconstruction	km	133	34,162,019	2017	2017
12	Maintenance of Mammalia-taludaa Roads and Bridges (Bts. Prov. Gorontalo)	km	58.88	6,657,384	2017	2017

No	PSN support/works package	Unit	Length	Contract Value (Rp thousand)	Year	
					Start	Finish
13	Preservation of Routine Maintenance of Wori - Bts.Kota Manado Road, Girian – Likupang	km	59.43	4,274,988	2018	2018
14	Preservation of Routine Maintenance of Likupang - Wori Road	km	58.11	7,576,303	2018	2018
15	Preservation and Rehabilitation of Kema - Rumbia – Buyat Road	km	129	4,811,002	2018	2018
16	Maintenance and Rehabilitation of PPK 09 Road	km		4,600,191	2018	2018
17	Replacement of Tumpaan Bridge	m	35	11,333,397	2018	2018
18	Preservation and Reconstruction of Buyat-molobog-onggunoi Road	km	84.27	25,773,430	2018	2018
19	Handling of Landslides in Buyat-molobog, Molobog-onggunoi	m		32,915,526	2018	2018
20	Replacement of Kayumoyondi Bridge	m	12	4,942,616	2018	2018
21	Preservation and Reconstruction of Onggunoi-pinolosian-molibagu-matali-torosik Road	km	133.33	47,795,326	2018	2018
22	Preservation, Rehabilitation, and Widening of Molibagu-mamalia-taludaa-doloduo Road	km	100.95	38,433,134	2018	2018
23	Replacement of Pakuku II Bridge	m		7,755,647	2018	2018
25	Preservation of Bts. Kota Manado - Wori – Likupang Road	km	72.56	10,300,352	2019	2019
26	Preservation of Girian - Kema - Rumbia – Buyat Road	km	129.61	16,486,666	2019	2019
27	Replacement of Maen I Bridge	m	10	2,464,280	2019	2019
28	Preservation of Girian (Bitung) - Likupang Road	km	44.98	58,211,985	2019	2019
29	Widening of Likupang Tourism Access Road	km	6	45,850,854	2019	2019
30	Preservation of Buyat - Molobog – Onggunoi Road	km	84.77	26,202,916	2019	2019
31	Preservation of Onggunoi - Pinolosian - Molibagu - Matali – Torosik Road	km	133.3	30,151,599	2019	2019
32	Preservation of Molibagu - Mamalia - Taludaa - Doloduo Road	km	100.95	31,500,000	2019	2019
33	Handling of Mamalia - Taludaa Landslide (Bts. Gorontalo Province)	m	85	3,619,146	2019	2019
34	Preservation of Manado City Border - Wori - Likupang Road	km	75.01	4,971,638	2020	2020

No	PSN support/works package	Unit	Length	Contract Value (Rp thousand)	Year	
					Start	Finish
35	Preservation of Girian Road (Bitung) - Likupang	km	42.92	20,524,050	2020	2020
36	Marinsow Bridge Replacement	m	13	4,477,700	2020	2020
37	Pulisan beach road improvement	km	2.8	35,860,921	2020	2020
38	Preservation of Girian - Kema - Rumbia - Buyat Road	km	129,64	13,581,502	2020	2020
39	Kaliakel Bridge Replacement	m	25	6,872,891	2020	2021
40	Preservation of Buyat - Molobog - Onggunoi Road	km	82.06	19,439,289	2020	2020
41	Tutuyan Bridge Replacement	m	20	3,934,576	2020	2021
42	Handling of Buyat-Molobog Landslide	m	120	1,087,687	2020	2020
43	Preservation of Onggunoi - Pinolosian - Molibagu - Matali - Torosik Road	km	130.38	14,997,884	2020	2020
44	Handling of Matali-Torosik and Onggunoi-Pinolosian Landslides	m	603	830,481	2020	2020
45	Preservation of Doloduo - Molibagu - Mamalia - Taludaa Road (Bts. Gorontalo Province)	km	98.34	12,764,394	2020	2020
46	Handling of Doloduo-Molibagu-Mamalia Landslide	m	1955	1,066,947	2020	2020
47	Handling of Sinandaka I, Sinandaka II Bridge Approaches and Pakuku I Bridge	m	110	1,669,968	2020	2020
48	Preservation of Roads Within Manado City, Kairagi - Mapanget, Manado City Border - Wori - Likupang, Access Road to Liwas Terminal	km	257.59	10,459,539	2021	2021
49	Road Preservation Jln. Girian (Bitung) - Likupang, City Border Manado, Ring Road, Kairagi - Airmadidi - Kauditan - City Border Bitung, Within Bitung City	km	117.33	31,063,880	2021	2021
50	Road Preservation Jln. Maesa (access to Liwas Terminal) (Manado), City Border Manado, Ring Road, Kairagi - Airmadidi - Kauditan - City Border Bitung, Within Bitung City (MYC Extension)	km	2.89	10,152,307	2020	2021
51	Road Preservation Girian - Kema - Rumbia - Buyat	km	129	8,287,637	2021	2021
52	Road Preservation Buyat - Molobog - Onggunoi	km	80.26	5,742,696	2021	2021

No	PSN support/works package	Unit	Length	Contract Value (Rp thousand)	Year	
					Start	Finish
53	Road Preservation Buyat - Molobog - Onggunoi (MYC Extension)	km	4.3	14,511,820	2020	2021
54	Road Preservation Onggunoi - Pinolosian - Molibagu - Matali - Torosik	km		19,082,000	2021	2021
55	Landslide Onggunoi - Pinolosian; Matali - Torosik	m	220	53,010,556	2021	2021
56	Road Preservation Doloduo - Molibagu - Mamalia - Taludaa (Border of Gorontalo Province)	km	98	30,592,397	2021	2021
57	Permanent Natural Disaster Handling of Sinandaka CS Bridge (MYC)	m	130	32,392,890	2021	2022
58	Road Preservation Within Manado City, Kairagi - Mapanget, City Border Manado - Wori - Likupang, Access Road to Liwas Terminal	km	25.92	10,831,152	2022	2022
59	Road Preservation Jln. Girian (Bitung) - Likupang, City Border Manado, Ring Road, Kairagi - Airmadidi - Kauditan - City Border Bitung, Within Bitung City	km	15.10	7,079,018	2022	2022
60	Road Preservation Wori-Likupang-Girian Road, W. Monginsidi Bitung (SBSN)	km	112	106,522,316	2022	2024
61	Road Preservation Girian - Kema - Rumbia - Buyat	km	57.82	13,720,097	2022	2022
62	Preventive Treatment of Rumbia - Buyat Road (Slurry Seal) (E-catalog)	km	5.79	2,970,938	2022	2022
63	Road Preservation Buyat - Molobog - Onggunoi	km	13.40	15,020,445	2022	2022
64	Slope Protection with Stone Embankment on Buyat-Molobog-Onggunoi Road (Self-managed)	km	1.5	1,350,000	2022	2022
65	Road Preservation Onggunoi - Pinolosian - Molibagu - Matali - Torosik	km	38.30	12,857,810	2022	2022
66	Road Rehabilitation Onggunoi-Pinolosian; Matali-Torosik; Buyat-Molobog-Onggunoi (E-catalog)	km	5.75	16,968,400	2022	2022
67	Road Preservation Doloduo - Molibagu - Mamalia - Taludaa Road (Border of Gorontalo Province))	km	35.48	27,727,126	2022	2022

km = kilometre; m = metre.

Source: Ministry of Public Works and Housing (2023).

Based on information obtained from the Ministry of Public Works and Housing and the National Road Implementation Agency for North Sulawesi Region, for the Manado–Gorontalo connecting road spanning 566 km, from 2016 to 2022, there were 67 projects with a total funding value of Rp1.219 trillion. The funding source for these 67 projects came from the APBN.

1.5.4. External and Internal Factors

In order to ascertain the perception regarding the development of the PSN, a survey was conducted amongst individuals from within and outside the organisation. We collected data from stakeholders to measure respondents' perspectives. The participants include the central and local governments, GCA, IBE, and the local community. The internal party respondent is the project manager, namely the working unit of the North Sulawesi National Road Implementing Agency. Respondents were from external parties, such as academics from Sam Ratulangi University in Manado, business actors from the city of Manado, and the Manado–Gorontalo connecting road users.

1.5.4.1. External Factors

The external challenges encompass non-compliance with the agreement's absorption terms (as stipulated in the cooperation agreement between GCA and IBE) and a lack of commitment from the offtaker in establishing a funding distribution network (downstream). Additionally, several road sections and segments that had extremely elevated contours required extra attention and there were land problems in several locations.

The identified external factors are the level of support from the local community for the PSN; the level of interest of entrepreneurs and/or the community in the utilisation of the project; level of opportunities for private and/or community businesses to become more advanced with the development of this National Strategic Project; opportunities in job creation; the impact level of the National Strategic Project on the opening of access for other areas around the project location; opportunities to boost tourism; opportunities for increasing state and regional revenues; reduction in the level of congestion and travel time from Manado to Gorontalo; reduction in the level of fuel consumption required to reach the destination; the increased level of risk of traffic accidents; acceleration in the rate of mobility of goods, services, and people; the opportunity to increase land prices in the area traversed and its surroundings; the level of impact of the National Strategic Project on the emergence of new businesses for the community; the timely disbursement of funding from investors in providing funds for the project; and the level of potential disputes or lawsuits in the implementation process.

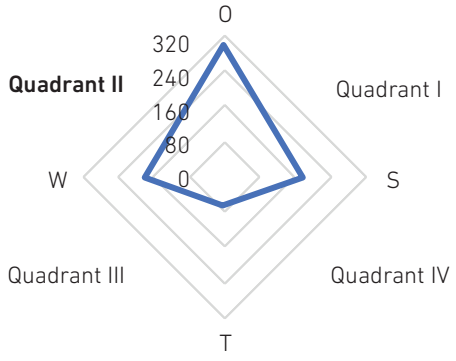
1.5.4.2. Internal Factors

The identified internal factors are the suitability of the location for a connecting road; financial support from central and/or regional governments for the implementation of the National Strategic Project; level of use of modern technology in the development of the project; level of concern of the National Strategic Project toward environmental sustainability; deregulation and/or issuance of regulations to support the implementation of the project; compatibility of the development of the project with regional spatial planning and land use; availability of infrastructure to supported the National Strategic Project, such as connecting roads; the level of ease of licensing in the process of preparing for the National Strategic Project implementation; level of technical ease of construction; timeliness of the National Strategic Project development; the physical quality level of the National Strategic Project; adequacy of supporting facilities for the project (signage, markings, rest areas, etc.); and increased felling of trees, thereby affecting the production of oxygen and increasing pollution.

1.5.5. SWOT Results and Analysis

To complete the writing related to the Manado–Gorontalo connecting road, we present a SWOT analysis of the project (Figure 3.18).

Figure 3.18. PSN Manado–Gorontalo Connecting Road SWOT Analysis Results



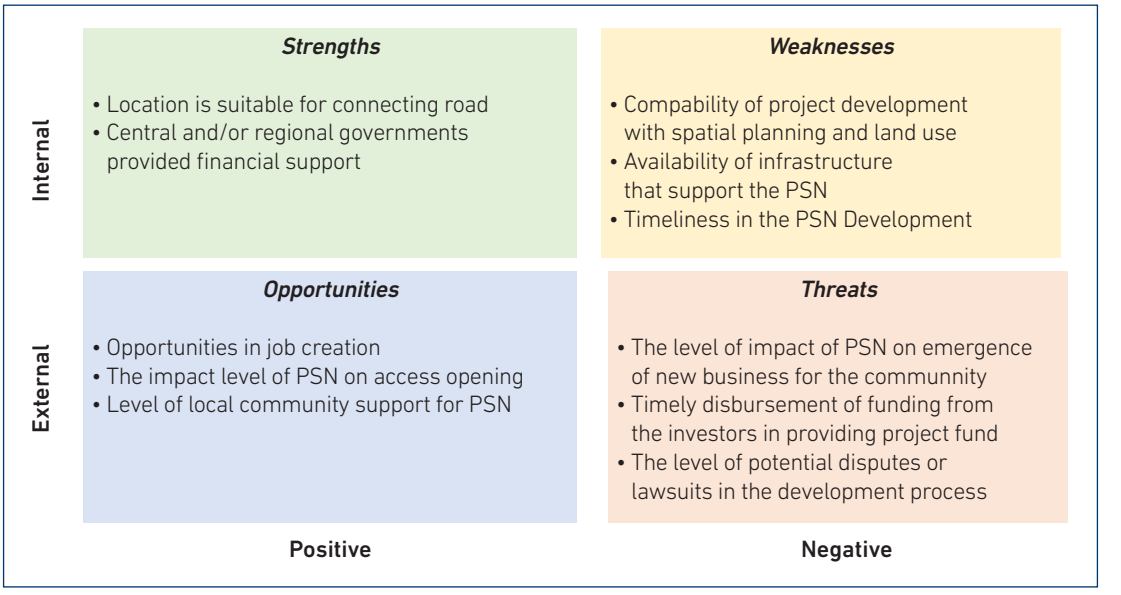
	Categories	Values
S	Strengths	179.25
W	**Weaknesses**	**193.08**
O	**Opportunities**	**313.75**
T	Threats	65.92

Source: Authors, 2023.

Based on the results of the SWOT analysis in Figure 3.18, the Manado–Gorontalo Connecting Road is in quadrant II, for which the value of the weaknesses is greater than the value of the strengths, and the value of the opportunities/potential is greater than the value of the threats/challenges. In this case, the weakness–opportunity (W–O) strategy that can be applied to support this condition is supporting internal weaknesses to take advantage of external opportunities. From the SWOT analysis, it is evident that the suitable strategy for the Manado–Gorontalo connecting road is the weakness–opportunity strategy. This strategy can be implemented by capitalising on existing opportunities whilst addressing existing weaknesses.

A summary of the three factors with the highest scores identified as the strengths, weaknesses, opportunities and threats are presented in Figure 3.19. The observed factors are sorted based on the highest value of the average perceived reality and the importance of the respondents. The higher the score obtained, the better the respondent's perception of the factor.

Figure 3.19. SWOT Analysis Priority Matrix



Source: Authors, 2023.

1.5.5.1. Main Challenges

The challenges of this project include the availability of supporting infrastructure for the PSN, such as connecting roads as access to the PSN, adequacy of supporting facilities for the PSN project (signage, markings, and rest areas), alignment of PSN development with regional spatial planning and land use, and the level of physical quality of the PSN.

There are two optional routes to access Gorontalo from Manado. One is via the northern route and the other is through the southern route. The northern route is an old route, and it is also an old distribution route as it passes through cities or areas with large populations. Unlike the northern route, the southern route is less familiar and passes through an area that is still only slightly populated. Therefore, it is rare for people from Manado to go to Gorontalo via the southern route. Moreover, the southern route is longer in length than the northern route. Hopefully, since this PSN has opened the southern access route from Manado to Gorontalo, the cities or settlements that are passed through will become more populated and there will be an even distribution of the development process.

The existence of the PSN, which passes through the southern route, is part of the process of equitable development and opens up opportunities for the community to increase their business. Agricultural and fishery products will find it easier to transport goods with the opening of this access road. Tourism destinations, such as Likupang Beach and Tomini Bay, will gain tourist traffic. Of course, support from the central and regional governments is needed so that these tourist areas can develop better and catch up with the long-known fame of Bunaken. Tourism areas require supporting facilities in order to develop properly. Tourism is also a locomotive in the development process and is able to increase the level of people's welfare.

1.5.5.2. Main Benefits

The external factors presenting opportunities for this PSN include the level of support from the local community; interest of entrepreneurs and the community in utilising the PSN; the private sector and/or the community's potential to advance with the development of the PSN; employment generation opportunities through the PSN; impact of the PSN on opening access to other surrounding areas; potential increase in tourism due to the PSN; contribution of the PSN to national and/or regional revenue enhancement; reduction in traffic congestion and the travel time between Manado and Gorontalo; decreased fuel consumption required to reach the destination; acceleration of goods, services, and people mobility; and the potential for increasing land prices in the areas traversed and nearby. The combination of weaknesses and opportunities, or the weakness–opportunity strategy, focuses on addressing internal weaknesses to take advantage of external opportunities.

As a corridor across the middle of the island of Sulawesi, the Manado–Gorontalo connecting road, which previously had several unconnected segments (dirt roads), is well connected and the surface layer is asphalt. This means that there is a significant difference – where before the southern route could not be accessed because some roads were still dirt roads, with this project, there is an alternative from Manado to Gorontalo via the southern route.

There are several bridges that had an initial width of only 4.5 metres and now are 7 metres in width (Tutuyan Bridge, Kaliakel Bridge, and Marinsow Bridge). This adds comfort to road users so that they can still pass each other when crossing the bridge without having to take turns, which can hold up the pace of travel.

Initially, there were frequent landslides at several points on the road, but now there will not be any as they have been handled. This condition adds comfort to users of the Manado–Gorontalo connecting road.

Improving connectivity with better and more efficient connecting roads, accessibility between Manado, Gorontalo, and surrounding areas can be sped up and facilitated. This will facilitate the mobility of people and goods, as well as open up new opportunities for business and industrial development. The benefits of National Strategic Projects are felt by the community. The following is the opinion of Liny, head of the Manado City Bapelitbangda regarding the National Strategic Project for Manado–Gorontalo connecting road:

> 'In my opinion it is equal access. Equal distribution of access because if we look at the distance traveled and time saved, with the toll road from Manado to Gorontalo it will actually be really fast via Bitung. If you go from Bitung to the good beaches, Kora 2, Ranowangko – that is pretty good. In my opinion, this is equal access. Access will be open because there is Likupang, Likupang National Strategic Project. It is faster if you go through the middle. In fact, there are already wide open roads, right? From North Minahasa, the access routes to Likupang are wide. The benefits of connecting roads can increase economic growth. The Manado–Gorontalo Connecting road can be a catalyst for economic growth in the region. The construction of connecting roads can open up access to areas that were previously difficult to reach, thereby opening up new opportunities for business and industrial development. In addition, connecting roads can accelerate the distribution of goods and services, by reducing costs or logistics, and increasing product competitiveness.'

One of the attractions of Northern Sulawesi is its tourist destinations. A tourism spot in northern Sulawesi which is famous is Bunaken. However, besides Bunaken there are several other destinations that are easy to reach with very good views, such as Likupang Beach. The route from Manado to Likupang with the existence of this PSNt will be much more comfortable with wide roads that are easy for cars to pass by. Around the beach area there are many guest houses with the same design. It seems that this is also assistance from the government so that tourists get the choice of where to stay if they want to enjoy Likupang Beach tourism. Likupang Beach can be reached in about 90 minutes from the city of Manado. There are not many hotel options around the location, but tourists can stay in guest houses managed by local residents. Tourists can enjoy the beautiful beach from the hills around the beach and interact with residents around the guest houses.

The Manado–Gorontalo connecting road project is a connectivity project, which aims to link two provincial capitals. This project seeks to maintain or even enhance economic growth, with the hope of boosting the gross regional domestic product (GRDP). The explanation in Table 3.5. is related to the GRDP of Manado City.

Table 3.5. GRDP and Per Capita GRDP of Manado City, 2018–2022

Details	2018	2019	2020	2021	2022
GDRP (Rp billion)					
At current price	34,200.43	37,386.74	36,618.40	39,531.00	43,920.44
At constant price 2010	24,126.54	25,585.61	24,778.18	26,053.89	27,523.56
Per Capita GRDP (Rp Thousand)	78,189.66	86,217.08	81,029.99	87,229.86	96,612.09
At constant price 2010 (%)	55,863.99	59,002.65	54,829.16	57,491.02	60,543.76
Growth					
Per Capita GRDP at constant price 2010	6.22	5.62	-7.07	4.85	5.31
Total population (person)	431,880	433,635	451,916	453,182	454,606
Growth (%)	0.41	0.41	4.22	0.28	0.37

GRDP = gross regional domestic product.

Source: Manado City Central Statistics Agency (2023).

GDRP can be used as a measure of 'productivity' because it demonstrates the region's ability to generate domestic products, which are calculated through three approaches: value-added, expenditure, and income approaches. From the GRDP expenditure data series, several measures related to GDRP and other supporting variables (such as households and the labour force) can be derived. For instance, to assess the level of equality, the per capita GRDP data can be examined (BPS Manado City Central Statistics Agency, 2023).

Conclusion

Roads as part of the national transportation system have an important role, especially in supporting the economy, social, and cultural development, as well as the environment. They are developed through a regional development approach to achieve balance and equal development amongst regions, to form and strengthen national unity for defence and national security, and to establish spatial structures to realise national development goals. The Government of the Republic of Indonesia, through the Ministry of Public Works and Housing, is constructing several infrastructure projects in the provinces of Gorontalo and North Sulawesi to support the improvement of local communities' welfare. The availability of infrastructure serves as a fundamental means of providing services to the community in supporting decent, productive, and sustainable development. The direction of infrastructure development policy aims to accelerate national economic recovery. Essentially, whatever the government does, its main goal is to create job opportunities to reduce unemployment and poverty rates. The 566-kilometre connecting road between Manado and Gorontalo is part of a national strategic project. This project connects the two provincial capital cities through the southern route. Previously, the flow of goods mainly passed through the northern route, and with the opening of the southern route, it provides additional options for the flow of goods. Moreover, this project provides access to the population living along this connecting road. Based on the SWOT analysis, the suitable strategy for the Manado–Gorontalo connecting road is the weakness–opportunity strategy. This strategy focuses on weaknesses and opportunities, which means the organisation concentrates on improving internal weaknesses to capitalise on external opportunities.

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1.6. Kalibaru Terminal

1.6.1. Project Profile

The Kalibaru Terminal project at Tanjung Priok Port, also known as the New Priok Container Terminal (NPCT), is a development project for the port. It is located at Jalan Terminal Kalibaru Raya, Cilincing, North Jakarta, Jakarta. This project was triggered by the capacity limitation of Tanjung Priok Port to accommodate the growth of logistics cargo flow, leading to congestion. The demand for container services at the port is continuously increasing, in line with Indonesia's economic growth. This demand includes cargoes originating from and destined for Jakarta, West Java, and Banten.

Recognising the needs and opportunities, PT Pelindo II initiated the expansion of container terminals in the Tanjung Priok Port area. As a result, the government, through Presidential Regulation No. 36 of 2012, assigned PT Pelabuhan Indonesia II (Persero) to construct and operate the Kalibaru Terminal at the port (Duffield, 2019). PT Pelabuhan Indonesia II (Persero), commonly referred to as PT Pelindo II, is a state-owned enterprise with a specialised focus on port operations and management. As one of the leading port operators in Indonesia, PT Pelindo II has played a pivotal role in facilitating the nation's maritime trade and logistics landscape. On 1 October 2021, PT Pelabuhan Indonesia I (Persero), PT Pelabuhan Indonesia III (Persero) and PT Pelabuhan Indonesia IV (Persero) were merged into PT Pelabuhan Indonesia II (Persero) concurrently accompanied by a name transformation to PT Pelabuhan Indonesia (Persero), abbreviated as Pelindo (PT Pelabuhan Indonesia [Persero], 2021).

Subsequently, based on Presidential Regulation No. 3 of 2016 regarding the Acceleration of National Strategic Project Implementation, the Kalibaru Terminal project was designated as one of the National Strategic Projects (PSN). The Kalibaru Terminal's PSN designation holds immense importance due to its strategic position along global trade routes and pivotal role in international trade. The PSN status accelerates its development, enhancing capacity, efficiency, and connectivity. The PSN status validates the Kalibaru Terminal's role in trade, economic growth, sustainable infrastructure, and operational efficiency, aligning with national and regional goals.

Starting in 2012, the construction and operation of the project were carried out in accordance with the provisions of laws and regulations, the Master Plan of the Tanjung Priok Port, and the technical design specified by the Ministry of Transportation. The Long-Term Master Plan for the Development of the Kalibaru Terminal accommodates the construction of the following terminals stated in Table 3.6.

Table 3.6. Terminals Accommodated in the Long-Term Master Plan

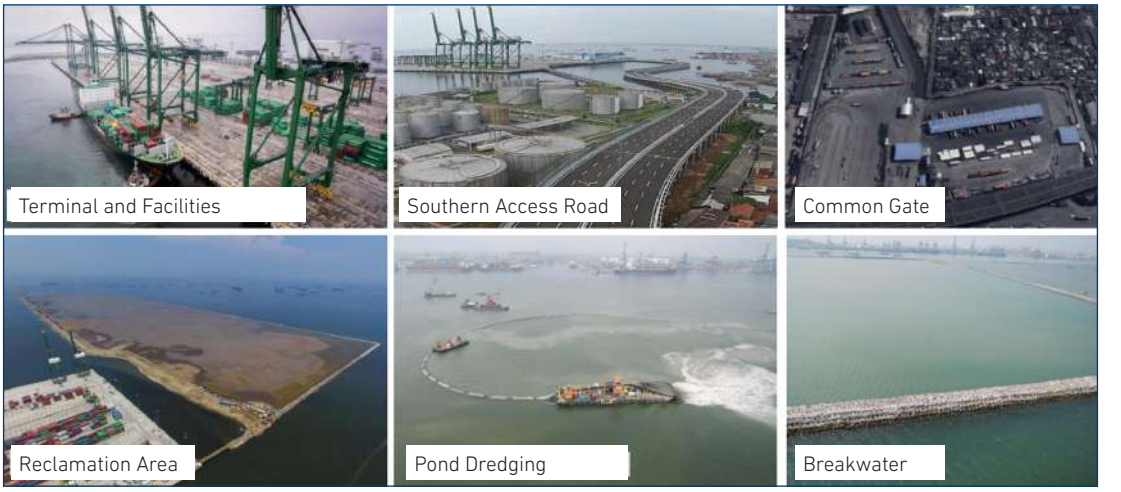
Terminal	Type of Product	Capacity	Draft	Terminal Length
Container Terminal 1	Container	1,500,000 TEU/year	16.0 m	800 m
Container Terminal 2	Container	1,500,000 TEU/year	16.0 m	800 m
Container Terminal 3	Container	1,500,000 TEU/year	16.0 m	800 m
Container Terminal 4	Container	1,500,000 TEU/year	16.0 m	800 m
Container Terminal 5	Container	1,500,000 TEU/year	16.0 m	800 m
Container Terminal 6	Container	1,500,000 TEU/year	16.0 m	800 m
Container Terminal 7	Container	1,500,000 TEU/year	16.0 m	800 m
Product Terminal 1	Oil Product	500,000 m^3	19.0 m	800 m
Product Terminal 2	Oil Product	500,000 m^3	19.0 m	800 m

m = metre, m^3 = cubic metre, TEU = twenty foot equivalent unit.

Source: PT Pelabuhan Indonesia (Persero) (2023).

From the Long-Term Master Plan, it is noteworthy that only Phase 1 of the project has been designated as part of the PSN. This project was undertaken to accommodate Container Terminal 1, Counter Terminal 2, Counter Terminal 3, Product Terminal 1, and Product Terminal 2. The development of Phase 1 was carried out in two stages, Phase 1A and Phase 1B. The construction of Phase 1A aimed to build Container Terminal 1 (CT 1), currently known as NPCT 1, as depicted in Figure 3.20. The Phase 1A project commenced in December 2012 and has been in operation since August 2016. According to data from Pelindo, the completed construction of Kalibaru Terminal Phase IA, NPCT1, includes a land area of approximately 32 hectares and a capacity of 1.5 million twenty-foot equivalent units (TEU) per year. The total quay length is 850 metres with a draft of 16 metres lowest water springs (LWS). The Phase 1B project is still ongoing. Upon the completion of Phase 1A and 1B development, the capacity of the container terminal in Tanjung Priok is expected to increase by 4.5 million TEUs per year, and the capacity of the product terminal is expected to increase by 10 million m^3 per year.

Figure 3.20. Terminals Accommodated in Development Phase 1



Source: PT Pelabuhan Indonesia (Persero), 2023.

The Long-Term Master Plan also includes the development of supporting infrastructure, such as toll roads to provide access from the eastern side of the port, as well as ensuring the supply of electricity, drinking water, and other water resources, and guaranteeing the disposal of wastewater and waste, which are appropriate to support and facilitate the expansion of the port.

As conveyed in the Press Release by the Coordinating Ministry for Economic Affairs of The Republic Of Indonesia, dated 8 December 2016, a total of 16 PSNs were officially announced as completed and subsequently removed from the list of designated PSNs. The Kalibaru Terminal was included in this group.

1.6.2. Project Objectives

Congestion, as defined by Widiyati and Ridwan (2014), refers to a situation where cargo or ships cannot enter or exit from warehouses or ports smoothly due to an unbalanced flow of goods. This congestion disrupts the national economy as it hinders the flow of goods. The Kalibaru Terminal project is aimed at enhancing the capacity of Tanjung Priok Port to support national logistics distribution. The development of the Kalibaru Terminal is expected to accommodate the growth in container throughput and cargo traffic in Tanjung Priok, catering to vessels with capacities exceeding 10,000 TEUs (PT Pelabuhan Indonesia II [Persero], 2016). This project also intends to address the demand for goods movement in the western part of Java, unlock the capacity of Tanjung Priok Port, attract foreign and domestic investments, and reduce the logistic costs associated with port services by minimising waiting time for cargo vessels.

The Kalibaru Terminal project represents the largest port construction project in Indonesia aimed at significantly strengthening the country's logistics chain. During the inauguration of the Kalibaru Container Terminal on Tuesday, 13 September 2016, President Joko Widodo of the Republic of Indonesia expressed the hope that the dwelling time at Tanjung Priok Port could be reduced to 2.5 days or even 2.2 days. The President aspired for this achievement to match that of neighbouring Singapore, which achieved a dwelling time of 1.5 days in early 2016 (Anita and Asmadewa, 2017). Dwelling time is the duration calculated from the unloading of imported container goods from the transport facility until the goods leave the port. When compared to several countries in Asia, the dwelling time at Tanjung Priok Port remains high. Based on data collected from March to September 2014, the average dwelling time at Tanjung Priok reached 6 days, while at Leam Chabang (Thailand) it was 5 days, and at Tanjung Lepas (Malaysia) it was 3 days, whereas Hong Kong and Singapore had already achieved less than two days (Ginting et al., 2015).

According to sources from Pelindo, the designation of the Terminal Kalibaru project as a National Strategic Project (PSN) has propelled the acceleration of its completion. This is attributed to the assurance of resolving both permit-related and non-permit-related obstacles, as well as political security guarantees.

1.6.3. Project Cost and Source of Fund

According to data from Pelindo, the overall construction of the Kalibaru Terminal Phase IA incurred a cost of Rp9.09 trillion. This funding was allocated for the construction of the quay, infrastructure, supporting access roads, and dredging of the basin. In accordance with the provisions of Presidential Regulation No. 36 of 2012, the funding for the construction and land acquisition of the Kalibaru Terminal was fully sourced and facilitated by Pelindo, without involving the state budget (APBN). To meet the financial need, Pelindo II utilised the mechanism of global bonds (Duffield, 2019). A global bond instrument was chosen as financial sources since it provides the issuer with access to a larger investor from various countries or regions.

1.6.4. External and Internal Factors

To assess the expected benefits and to identify the challenges and opportunities for future development, a survey was conducted through a questionnaire with various stakeholders. The total number of respondents was nine, consisting of (i) government and project implementers from the Tanjung Priok Customs Office and Pelindo, (ii) academics, (iii) the private sector and entrepreneurs, and (iv) the local community directly affected by the terminal's construction. Perceptions were examined from two perspectives: importance and reality, using a scoring system ranging from 1 to 6. The importance perception represents the significance of each

assessed factor, with a score of 1 indicating a perception of insignificance, whilst a score of 6 indicates a perception of high importance. The reality perception reflects respondents' views on observed or perceived facts, with a score of 1 indicating a perception of very poor, whilst a score of 6 indicates a perception of excellent.

The questionnaire addressed specific factors related to the development of Kalibaru Terminal, categorised into internal and external factors. These factors were obtained from prior research and secondary data related to the terminal development. Factors within the government's control were classified as internal factors, whilst factors beyond the government's control were categorised as external factors.

1.6.4.1. External Factors

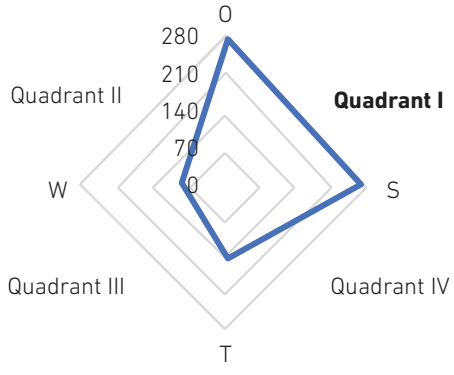
Based on the initial research conducted on secondary data, the external factors include: community support for project development (E_1); investor interest in the project (E_2); road accessibility between the terminal and industrial areas (E_3); impact on increasing port capacity (E_4); impact on operational cost savings in port operations (E_5); impact on smooth flow of goods in the port (E_6); impact on reducing dwelling time (E_7); impact on increasing land value around the port (E_8); impact on smooth traffic flow around the port (E_9); increase in export and import activities (E_{10}); impact on job creation (E_{11}); impact on improving community welfare (E_{12}); impact on increasing national and/or regional income (E_{13}); timely disbursement of financing from investors (E_{14}); availability of land for project development (E_{15}); and potential disputes or legal claims related to the project (E_{16}).

1.6.4.2. Internal Factors

Meanwhile, the identified internal factors include supportive regulations for project implementation (I_1); project location alignment with regional spatial planning and land use (I_2); availability of infrastructure supporting the project (I_3); appropriate appointment of project executor (I_4); support from the central and/or regional government in project financing (I_5); opportunities for private or public participation as project investors ($_6$); ease of gaining permit for project implementation (I_7); smooth technical construction of the project (I_8); utilisation of modern technology (I_9); timely project completion (I_{10}); physical project quality (I_{11}); project's commitment to environmental sustainability (I_{12}); and sufficiency of supporting facilities for the terminal (I_{13}).

1.6.5. SWOT Results and Analysis

Figure 3.21. SWOT Analysis Result



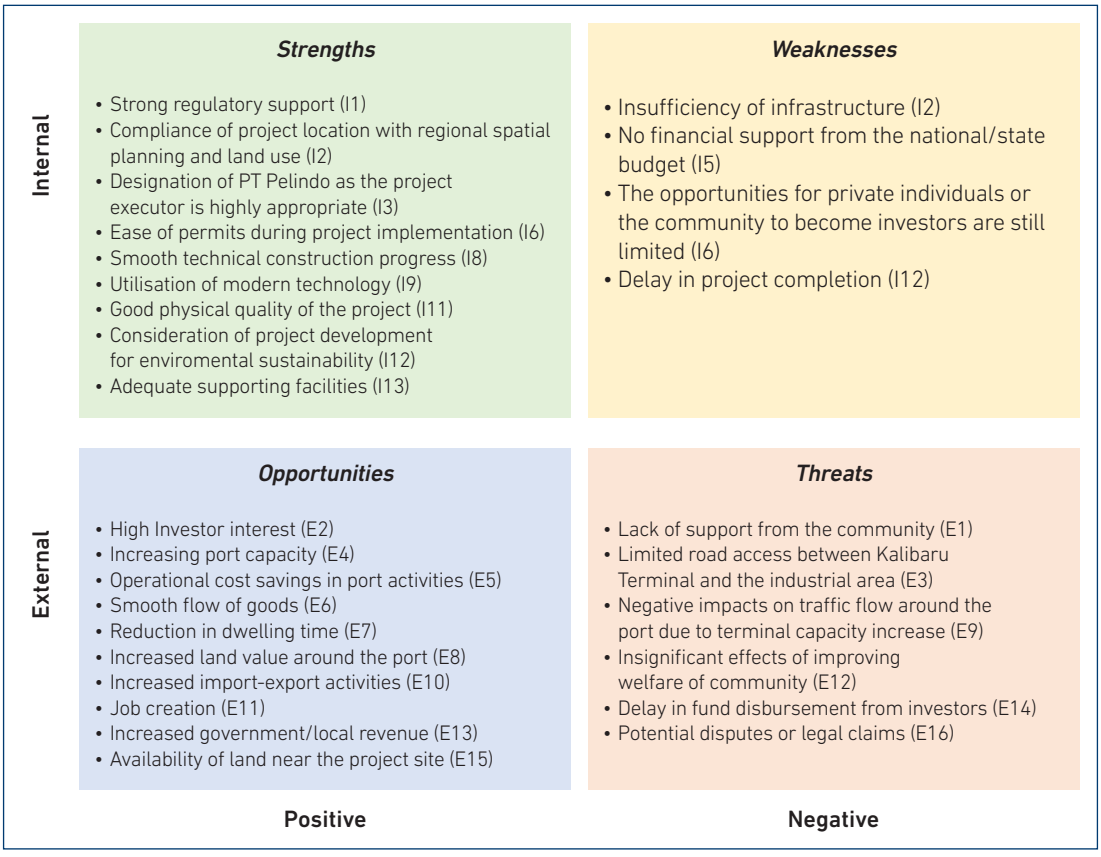
Categories		Values
S	**Strengths**	**248.408**
W	Weaknesses	89.222
O	**Opportunities**	**266.710**
T	Threats	144.358

Source: Authors, 2023.

The initial data obtained from respondents' perceptions regarding the internal and external factors mentioned above were subsequently subjected to analysis using the SWOT analysis method. This analysis was conducted to clearly map out the strengths, weaknesses, opportunities, and threats inherent in this project. By multiplying the scores obtained from the perceptions of importance and reality for each factor, a score was derived, indicating which factors are dominant in the development of this project. The outcome of the SWOT analysis revealed that the PSN Kalibaru Terminal development project falls within Quadrant 1, as it exhibits a greater dominance of opportunities (O) and strengths (S) in comparison to threats (T) and weaknesses (W). The results of this analysis are depicted in Figure 3.21.

To provide a clearer overview, Figure 3.22 presents a matrix illustrating the mapping of factors identified as strengths, weaknesses, opportunities, and threats.

Figure 3.22. SWOT Analysis Matrix



Source: Authors, 2023.

1.6.5.1. Main Challenges

Amongst the 16 external factors, six are identified as challenges (T), whilst the remaining are opportunities (O). The six challenges include the support from the surrounding community regarding the construction of the terminal. Initially, local fishers were concerned that the development would impact their livelihoods along the coastline of the port. Another challenge is the insufficient road access connecting the terminal to industrial areas (E3), resulting in traffic congestion around the port (E9). Currently, the entrance road to NPCT1 only has one access point, namely the southern access road. This road is still connected to the common gate access road, which serves as the entrance to several other terminals in the port area. This is the main factor contributing to congestion. However, this challenge has been mitigated with the construction of the new eastern access road (NPEA), as shown in Figure 3.23. NPEA will be connected to the Cilincing–Cibitung toll road, linking the Cikarang industrial area with Tanjung Priok Port, which

has been operational since 2023. With the NPEA, which is targeted to be operational by the end of 2024, the access road to Kalibaru Terminal will no longer have to pass through the main entrance of the port, thus alleviating congestion.

FIgure 3.23. Tanjung Priok Port with NPEA Development

NPEA = new eastern access road.

Source: Map data ©2021 Google in Source: PT Pelabuhan Indonesia (Persero) (2023).

Behind these challenges, Kalibaru Terminal still possesses numerous opportunities to function in line with its development objectives. Amongst the opportunities it holds is the high interest from investors (E2), particularly in meeting the supra-structural operational needs of the terminal. Currently, the terminal's operations are managed by PT NPCT1, a company owned by four shareholders: Pelindo, Mitsui & Co., Ltd., PSA International Pte Ltd, and Nippon Yusen Kabushiki Kaisha (NYK Line).

Several other opportunities include the increasing port capacity (E4), cost-saving in port operational expenses (E5), reduction in dwelling time (E7) leading to the smooth flow of goods (E6), and a boost in import–export activities (E10). Prior to 2016, the container throughput volume at Tanjung Priok Port was approximately 7,000,000 TEU per year. With the completion of the Kalibaru Terminal NPCT1 construction, the capacity of the port has risen to 8,500,000 TEU per year. This capacity enhancement is expected to mitigate the risk of congestion due to the high growth of container traffic at the port. Moreover, the port is presently capable of accommodating

large vessels above 10,000–15,000 TEU with a draft of 16 metres LWS, eliminating the need for export–import vessels to make stopovers in Singapore (Padliansyah, 2019). This improvement positions the terminal as the 'Port of Choice' for international and regional liner vessels. Once Phase 1B construction is completed, a dedicated terminal with a capacity of 10,000,000 cubic metres will be available for product terminals such as oil and gas. This will also serve as a national 'buffer stock' for the supply of petroleum and gas in western Indonesia. The existence of Kalibaru Terminal significantly benefits maritime transport, as vessels no longer need to endure long waiting times for entry into the port, thereby enhancing efficiency. Additionally, Kalibaru Terminal plays a vital role in reducing logistics costs by up to 30% (Kompas, 26 May 2016 cited in Padliansyah, 2019).

Another opportunity lies in the increase of national and/or regional revenue (E13) derived from government revenue sources, including taxes and non-tax revenue (PNBP). Under the concession agreement between the government and Pelindo II, Pelindo has been granted the right to manage Kalibaru Terminal for a duration of 70 years. As part of this concession right, Pelindo is obligated to pay an annual concession fee to the government, amounting to 0.5% of the gross revenue generated by Kalibaru Terminal, as a form of PNBP.

1.6.5.2. Main Benefits

The strong points of the project come from the government's support through regulatory measures (I1) and the ease of obtaining permits during the construction process (I5). Presidential Regulation 36/2012 serves as the legitimacy for the project and serves as the basis for the appointment of Pelindo as the project implementer.

Other strengths of the project derive from the appropriate selection of the project executor, resulting in good physical quality of the project (I11), smooth technical construction progress (I8), the use of modern technology in construction and port operation (I9), and sufficient supporting facilities (I13). The terminal is equipped with state-of-the-art information and communication technology (ICT) using the Cosmos System. The implemented ICT at the terminal is considered the most advanced and modern at the time (Padliansyah, 2019).

Another strength of the project stems from the project's location compliance with spatial planning and land use regulations (I2), as the project is an expansion of Tanjung Priok Port. Despite the compliance, the project development still considers the preservation of the surrounding coastal environment (I12). To maintain the coastline, the construction of the project (NPCT1) utilises the deck-on-pile foundation system, which is embedded into the seabed. The use of the deck-on-pile method aims to preserve the water circulation system around the Tanjung Priok Port basin. The construction of a new coastal reclamation method will be implemented in Phase 1B, which is still under construction.

However, the project's strengths still require the support of infrastructure availability (I2), such as highways and/or toll roads connecting the terminal to industrial areas, to prevent new traffic congestion around the Tanjung Priok Port. Respondents perceive this congestion as a challenge (E9). Another weakness arises from the project's funding provision, which is restricted from using state or regional budget funds (non-APBN) (I5). Pelindo is obligated to secure the project's funding, including land acquisition funds, on its own. In this project, Pelindo employs financing mechanisms through global bonds. The lack of government support in financing and the complexity of the building construction might contribute to delays in completing the project within the designated timeframe (I12).

Conclusion

The Terminal Kalibaru project is carried out under the government's assignment to the state-owned enterprise Pelindo, as stipulated in Presidential Regulation of the Republic of Indonesia Number 36 of 2012 concerning the Assignment to PT Pelabuhan Indonesia II (Persero) to Build and Operate Terminal Kalibaru. Phase 1 of the project was designated as part of the PSN according to Presidential Regulation Number 3 of 2016, aimed at accelerating the implementation of national strategic projects. Despite being a PSN, the project's funding did not use the state budget, but instead was sourced from global bonds. Currently, Phase 1B of the project is in the process of construction, involving coastal reclamation to build the dock. The project's accomplishments have yielded tangible benefits, including reduced dwelling time, increased capacity of Tanjung Priok Port, improved national logistic efficiency, and cost-saving in port operational expenses. Based on the SWOT analysis of respondent perceptions, the project received dominant perceptions regarding its strengths and opportunities. Consequently, the future strategy to adopt is the SO Strategy, which entails leveraging strengths to capitalise on existing opportunities. Several actions can be taken, including:

1. Maintaining investor confidence, especially to support the provision of operational terminal supra-structures such as container terminal equipment, product terminal equipment, electrical mechanical, and information communications technology.
2. Optimising the use of modern technology to expedite container handling activities, reducing dwelling time, and enhancing the flow of goods.
3. Accelerating the completion of Phase 1B while maintaining the good physical quality of Phase 1A to further increase port capacity. Currently, Pelindo data show that the utilisation of NPTC1 capacity, Phase 1A, has reached 90%, making the acceleration of overall Phase 1 construction a necessity.
4. Continuously considering environmental conservation factors, as well as the livelihoods of fishers and residents around the coast during the completion of Phase 1B, which involves coastal reclamation. This approach aims not only to address environmental concerns but also to mitigate potential legal risks in the future.

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1.7. Palu Ports Development

1.7.1. Project Profile

The Makassar Strait is one of the busiest straits in Indonesia due to its strategic location in the middle of Indonesian waters. It is an important chokepoint in Indonesia and is included in the Indonesian Archipelagic Sea Lanes (ALKI) II, which is the second alternative route in Indonesia after the Malacca Strait, connecting the Pacific and Indian Oceans. Tanker ships weighing over 200,000 tonnes from and to East Asia, Australia, and New Zealand prefer to use ALKI II instead of the Malacca Strait due to its shorter distance and the depth of the Makassar Strait, which reaches 6,200 metres, resulting in lower navigation safety risks such as shipwrecks (Anam and Wahyudin, 2020). One of the important ports in the Makassar Strait is Pantoloan Port in Palu. The port is the largest and busiest port in Central Sulawesi, designated as a national logistics and goods centre in 2014. Given its designation as a National Strategic Project (PSN), Pantoloan Port, supported by Donggala and Wani Ports plays a crucial role as a trading hub in the central Indonesian region, along with the traditionally established Donggala and Wani ports. Subsequently, Donggala and Wani ports were designated for local shipping, agricultural and livestock products, while Pantoloan Port focused on logistics transportation.

Figure 3.24. Pantoloan, Wani and Donggala Port Aftershock and Tsunami Wave

Source: Antara, 2018.

The development of Pantoloan, Donggala, and Wani ports was initiated in 2018 through the National Strategic Project scheme announced by President Jokowi, following the 7.5 Richter Scale earthquake that devastated Palu and its surroundings. The earthquake was accompanied by a 3.8 metre-high tsunami wave (Benazir and Luthfi, 2020), which destroyed the coastal areas of Palu Bay, including its vital ports of Pantoloan, Donggala, and Wani (Figure 3.23).
In detail, the initiative of the Palu Ports Development project aims to revitalise the main facilities of the Pantoloan cargo terminal, the Donggala Port pier, and the Wani Multipurpose Terminal, including the repair of damaged structures such as piers and quay container cranes. Simultaneously, the project aims to enhance the terminal's operational capacity from 300,000 twenty-foot equivalent units (TEU) to 5 million TEUs by expanding the container yard to a total area of 46,135 square metres. Additionally, the project involves extending the length of the pier by 522 metres and adding supporting infrastructure such as warehouses, tugboats, pilot vessels, container cranes, three rubber-tyred gantry cranes, reach stackers, terminal tractors, head trucks, and forklifts. The increased capability of the container terminal will effectively address the issue of long dwelling time. With a larger container yard and the availability of multiple cranes, combined with an integrated cargo management system, the loading and unloading activities can be carried out in parallel, resulting in a tenfold increase in efficiency compared to the previous conditions.

Figure 3.25. Pantoloan, Wani, and Donggala Ports After Development

Sources: Dewan Nasional Kawasan Ekonomi Khusus Republik Indonesia (2023), Pelindo (2023), Antara (2021).

The government has undertaken comprehensive efforts for revitalisation and improvement to stimulate economic circulation in Palu and its surrounding areas, which were previously disrupted by the earthquake on 28 September 2018. Figure 3.24 shows the development of the ports. Furthermore, the Palu Ports Development project is carried out to support the Palu Special Economic Zone (SEZ), which is divided into three zones: export zone, logistics processing zone, and industrial zone.

The status of the National Strategic Project (PSN) is highly essential, given the urgency to revitalize the Palu Bay ports as a critical gateway for aid and the sustained supply of essential goods to the local community. Simultaneously, this state of emergency is extended to harness the potential of the Palu Bay ports, aiming to enhance trade traffic in the Central Indonesia region.

1.7.2. Project Objectives

As a maritime nation, Indonesia seeks to enhance the effectiveness of logistics distribution by improving the functions and capacities of its national ports, including those in the central region. Sea ports play a vital role in facilitating more economical and competitive supply chain logistics compared to air transportation, which incurs higher costs (Elentably, 2015). The Indonesian government, through the National Medium-Term Development Plan (RPJMN), has planned policies and strategies for maritime economic development and port development, guided by Presidential Regulation Number 16 of 2017 on Indonesian Maritime Policy. The aim is to enhance the domestic transportation capacity that supports supply chain capabilities, including ports like Pantoloan, Donggala, and Wani, which are earmarked for development to achieve these objectives.

The revitalisation and capacity enhancement of the Pantoloan, Donggala, and Wani ports, as depicted in Figure 3.25, are expected to improve connectivity and fulfil the infrastructure requirements for logistics. Then, connectivity and supporting infrastructure are essential foundations for meeting the logistics needs of society and achieving the mission of equitable economic growth. Additionally, Indonesia's maritime shipping routes account for approximately 70% of cargo transportation between Europe and South Asia towards the Pacific region, and vice versa (Lis, 2021). As a result, Indonesia holds a strategic position in global trade, where the role of developing countries has become increasingly significant in the global market (UNCTAD, 2014). Furthermore, developing countries like Indonesia are attractive for development due to their high domestic consumption and manufacturing activities (Wiradanti et al., 2016).

However, Indonesia still faces significant challenges in achieving an efficient maritime logistics system. The Logistics Performance Index (LPI), the World Bank report for 2023 ranks Indonesia 61st in logistics performance globally (lpi.worldbank.org, 2023), placing it fourth in ASEAN, behind Singapore, Thailand, and Malaysia. Moreover, the high logistics costs, accounting for

26.03% of gross domestic product (GDP), are attributed to inefficiencies in the maritime logistics system (Amin et al., 2021). These inefficiencies result from factors such as underdeveloped port management systems for container handling, inter-port connectivity, and port access to land transport. These issues continue to impede efficient loading and unloading processes, weaken supply chains, increase product prices, and hinder local economic development (Jansen, Tulder, and Afrianto, 2018). To address and confront these challenges, Indonesia continues to optimise its geographical advantages by incorporating port development plans through the PSN scheme to elevate its ports into international trading hubs – one such PSN is the Palu Ports Development project.

Figure 3.26. Facility Works of Donggala, Wani, and Pantoloan Ports

Source: Komite Percepatan Penyediaan Infrastruktur Prioritas (2023).

The hub-and-spoke concept, utilised in the logistics industry since the 1970s (Nam and Song, 2011), encourages cargo shipping companies to consolidate shipments on a large scale at main hubs (e.g. Tanjung Priok in Jakarta and Tanjung Perak in Surabaya) and redistribute them on a smaller scale to ports on major islands in Indonesia, such as Pantoloan, Wani, and Donggala in Palu Bay, through spoke routes. Subsequently, these ports are encouraged to become branch hubs for other ports in the Sulawesi corridor and small ports in central, northern, and eastern regions of Indonesia. Currently, the spoke routes in Indonesia are reinforced through the Nusantara Belt Ships programme, managed by the Ministry of Transportation and PT PELNI since 2016.

The Ministry of Finance, as an integral component of the government, seeks to ensure the availability of funding for the port development. Given its status as a National Strategic Project, this infrastructure initiative is regarded as strategically pivotal and carries a high urgency for completion. Consequently, the project necessitates a funding framework that is swift yet maintains meticulous control over its utilisation. Therefore, a foreign loan arrangement has been chosen to expedite the project's implementation, recognising the pivotal role of port facilities in post-disaster recovery. In this context, the Ministry of Finance operates as a catalyst, entrusted with ensuring the provision of sufficient financing to ensure the successful revitalisation of the ports. Concurrently, the Ministry of Transportation contributes to upholding efficiency, effectiveness, and accountability throughout the project implementation process. As a result, the Pantoloan Port in Palu was reinstated for evacuation procedures and humanitarian aid cargo reception on 1 October 2018, a mere 3 days following the occurrence of the earthquake and tsunami. Furthermore, the gradual development of the capacity and capabilities of Pantoloan Port is an ongoing endeavour, alongside the simultaneous revitalisation and development of Donggala and Wani ports, collectively serving to foster enhanced logistics distribution within the central and eastern regions of Indonesia.

To achieve national self-sufficiency by 2025, the Indonesian government continues to accelerate economic transformation, with Sulawesi designated as an economic corridor in Indonesia under the Masterplan for the Acceleration and Expansion of Indonesian Economic Development (MP3EI). This plan focuses on meeting the demand for agricultural, plantation, fishery, oil and gas, and mining commodities (Martini et al., 2012). Palu, as one of the regions producing agricultural commodities, fisheries, forestry products, mining products, and their processed industries, as well as being the largest trading gateway in Central Sulawesi, plays a crucial role in ensuring the achievement of economic development targets in the Sulawesi, Central Indonesia, and eastern regions.

1.7.3. Project Cost and Source of Fund

In accordance with the directive of the President through Presidential Instruction Number 10 of 2018 concerning the Acceleration of Post-Disaster Earthquake and Tsunami Rehabilitation and Reconstruction in Central Sulawesi Province and Affected Regions, as well as the Regulation of the Coordinating Minister for Economic Affairs Number 7 of 2021 Regarding the Amendment to the List of National Strategic Projects, serving as the legal foundation and operational guideline for the implementation and financing support of the National Strategic Project (PSN) for the Development of Palu Ports. The financing of the implementation of the Palu Ports Development, designated as one of the National Strategic Projects, is acquired through the foreign loan scheme known as the Emergency Assistance for Rehabilitation and Reconstruction from the Asian Development Bank. The total investment, stipulated in the loan agreement, amounts to Rp957 billion, which is allocated for both the comprehensive rehabilitation and augmentation of the core terminal facilities of Pantoloan, Donggala, and the Multipurpose Terminal Wani. This multi-year undertaking commenced in September 2018, with the intended completion planned for the year 2024.

1.7.4. Internal and External Factors

The Palu Ports Development Project aims to revitalise the ports in Palu Bay, which were affected by the earthquake and tsunami, and prepare the necessary capacity to support the acceleration of economic growth in Palu, Sulawesi, and Central Indonesia. To assess the likelihood of achieving these objectives, a SWOT analysis was conducted to identify the strengths and weaknesses of internal factors and the opportunities and challenges posed by external factors. This analysis involved collecting perceptions from the local government, academics, entrepreneurs, and the community through a questionnaire.

The questionnaire addressed specific factors related to the development of Pantoloan, Donggala, and Wani Ports, categorised into internal and external factors. These factors were obtained from prior research and secondary data related to the terminal development. Factors within the government's control were classified as internal factors, whilst factors beyond the government's control were categorised as external factors.

1.7.4.1. External Factors

Based on the initial research conducted on secondary data, the external factors include community support for project development (E1); investor interest in the project (E2); road accessibility between the terminal and industrial areas (E3); impact on increasing port capacity (E4); impact on operational cost savings in port operations (E5); impact on the smooth flow of goods at the port (E6); impact on reducing dwelling time (E7); impact on increasing land value around the port (E8); impact on smooth traffic flow around the port (E9); increase in export and import activities (E10); impact on job creation (E11); impact on improving community welfare (E12); impact on increasing national and/or regional income (E13); timely disbursement of financing from investors (E14); availability of land for project development (E15); and potential disputes or legal claims related to the project (E16).

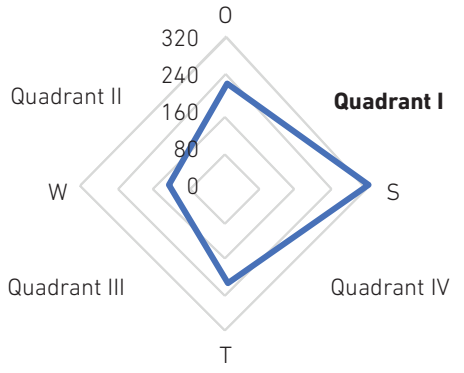
1.7.4.2. Internal Factors

Meanwhile, the identified internal factors include supportive regulations for project implementation (I1); project location alignment with regional spatial planning and land use (I2); availability of infrastructure supporting the project (I3); appropriate appointment of a project executor (I4); support from the government in project financing (I5); opportunities for private or public participation as project investors (I6); ease of gaining permits for project implementation (I7); smooth technical construction of the project (I8); utilisation of modern technology (I9); timely project completion (I10); physical project quality (I11); the project's commitment to environmental sustainability (I12); and the sufficiency of supporting facilities for the terminal (I13).

1.7.5. SWOT Results and Analysis

Perceptions were examined from two perspectives, importance and reality, using a scoring system ranging from 1 to 6. The importance perception represents the significance of each assessed factor, with a score of 1 indicating a perception of insignificance, whilst a score of 6 indicates a perception of high importance. The reality perception reflects respondents' views on observed or perceived facts, with a score of 1 indicating a perception of very poor, whilst a score of 6 indicates a perception of excellent.

Figure 3.27. SWOT Analysis the Palu Port Development Project



	Categories	Values
S	**Strengths**	**310.0021**
W	Weaknesses	122.4939
O	**Opportunities**	**218.1721**
T	Threats	20.0150

Source: Authors, 2023.

The results of the SWOT analysis indicate that the Palu Ports Development Project has more dominant strengths and opportunities than weaknesses and challenges, as shown in Figure 3.27.

To provide a deeper overview, a SWOT matrix are mapped in Figure 3.28.

Figure 3.28. SWOT Analysis Matrix

	Positive	Negative
Internal	***Strengths*** • The implementation of PSN is based on comprehensive regulatory support (I1) • Compliance of project location with trade zones, regional spatial planning and land use (I2) • Designation of PT Pelindo IV as the project executor is highly appropriate (I3) • Ease of permits during project implementation (I6) • Utilization of modern technology (I9) • Consideration of project development is based on the urgency of high demands and for enviromental sustainability (I12) • Adequate supporting facilities such as Special Economic Zone and access road (I13)	***Weaknesses*** • Low utilization of infrastructure (I12) • No financial support from the national/state budget (I5) • The opportunities for private individuals or the community to become investors are still limited (I16) • Delay in project completion (I12)
External	***Opportunities*** • High Investor interest (E2) • Increasing port capacity (E4) • Operational cost savings in port activities (E5) • Smooth flow of goods (E6) • Reduction in dwelling time (E7) • Increased land value around the port (E8) • Increased trading activities (E10) • Job creation (E11) • Availability of land near the project site (E15)	***Threats*** • Natural disaster risks such as earthquake, tsunami and storm (E3) • Negative impacts on traffic flow around the port due to terminal capacity increase (E9) • Negative environment impacts including air and water pollutions from ships, and fisheries habitat damage (E9) • Insignificant effects on improving welfare of community (E12) • Potential disputes or legal claims (E16)

Source: Authors, 2023.

1.7.5.1. Main Challenges

Opportunities are external factors that can drive the achievement of goals, while challenges are external factors that can hinder goal attainment. If these opportunities and challenges are effectively managed, they can become strengths for the Palu Ports Development project. The survey results identified factors perceived as opportunities, with perception scores ≥5.42 out of the highest score of 6. Nevertheless, the challenge factors require greater attention as they significantly influence the current project implementation and long-term run.

Within the context of the 16 external factors under consideration, it is notable that six of these factors are categorized as challenges (denoted as T"), while the rest are characterized as opportunities (denoted as "O"). These challenges encompass a spectrum of concerns, including the vulnerabilities posed by natural disasters such as storms, earthquakes, and tsunamis. Environmental issues represent another facet of these challenges, with a specific focus on potential damage to fisheries habitats (E9) and the prospect of disputes and legal claims (E16). Furthermore, the challenge of traffic congestion around of ports (E9) is identified as a significant concern, though it is important to note that effective measures have been implemented to tackle this issue, primarily through the expansion of access roads.

1.7.5.2. Main Benefits

The survey sampling indicates that the Palu community fully supports the Palu Ports Development project. During the earthquake and tsunami in Palu, those ports ceased operations as the tsunami waves destroyed port facilities, especially piers and cranes. This disruption hindered the distribution of aid and regular cargo shipments. The rapid revitalisation of the port was key to the post-disaster recovery and revitalising the local economy in Palu and its surrounding areas. The Palu Ports Development project also opens opportunities for the community to establish supporting businesses such as cargo transportation services, shipping agents, and trading with more affordable shipping costs.

The development of Pantoloan, Donggala, and Wani ports also contributes to job creation, both directly and indirectly. Directly, there is employment absorption during the construction of main physical facilities, supporting port facilities, and the need for additional operator and cargo handling personnel due to increased port capacity. Indirectly, the Palu Ports Development project will support the Palu Special Economic Zone (SEZ), which is expected to create additional job opportunities in the three zones of the SEZ: industrial zone, export processing zone, and logistics zone, projected to employ 97,500 workers by 2025 (kek.go.id, 2023). The impact of the Palu Ports development has accelerated the economic recovery and trade in Central Sulawesi Province, as evidenced in Table 3.7.

The direct output of the implementation of the Palu Ports development can be measured in terms of job creation, increased economic opportunities, and infrastructure development. Meanwhile, the outcomes include positive impacts such as the establishment of new businesses, increased trade, and improved connectivity between regions in Palu, Central Sulawesi, and its surroundings, which have revived the economic pulse that was once halted by the earthquake and tsunami.

Table 3.7. The average annual growth rate of Gross Regional Domestic Product (GRDP) at constant 2010 prices in Central Sulawesi from 2017 to 2021

	Regencies/Muncipalities	2017	2018	2019	2020*	2021**
	(1)	(2)	(3)	(4)	(5)	(6)
01	Banggai Kepulauan	6.00	4.11	4.02	-2.36	5.07
02	Banggai	8.71	6.17	5.94	-4.79	1.86
03	Morowali	14.08	112.20	20.26	28.51	25.31
04	Poso	6.10	6.16	6.20	-3.94	4.86
05	Donggala	5.31	2.56	4.45	-4.26	4.64
06	Tolitoli	5.08	5.28	4.79	-3.39	4.36
07	Buol	4.00	2.89	2.14	-2.89	4.88
08	Parigi Moutong	5.27	2.52	2.21	-4.95	4.72
09	Tojo Una-una	5.62	2.71	4.74	-3.17	4.25
10	Sigi	6.13	3.87	3.62	-1.50	5.05
11	Banggai Laut	6.26	4.85	3.50	-3.97	4.37
12	Morowali Utara	6.02	16.92	5.18	-0.23	10.47
13	Palu	5.53	5.00	5.65	-4.43	5.97
Sum of 13 Regencies/Municipalities		**7.16**	**19.82**	**8.42**	**4.83**	**11.51**
Central Sulawesi [1)]		**7.13**	**20.56**	**8.83**	**4.86**	**11.70**

* = provisional figures, ** = preliminary figures, GRDP = Gross regional domestic product.

Notes: [1)]. The variation in GRDP figures amongst regencies/municipalities is attributed to statistical discrepancies.

Source: Central Sulawesi BPS (2022).

The development of Pantoloan, Donggala, and Wani ports has made positive contributions to society, starting from the construction process, which involved gender-sensitive civil workers' recruitment and equal payment practices as required by the Asian Development Bank's Gender Action Plan (Ministry of Transportation, 2021). After Pantoloan Port resumed operations, the project was able to stimulate industrial and trade activities through an 80,000 TEUs cargo handling capacity for inbound and outbound shipments in Central Sulawesi throughout the

year. Additionally, over 100,000 jobs were created for the people of Palu and its surrounding areas, which is indicated by the increased gross regional domestic product (GRDP) of Palu city from Rp20.4 million in 2017 to Rp26.1 million in 2021. Overall, the GRDP growth rate of Central Sulawesi reached 11.70% year-on-year in 2021 (Central Sulawesi BPS, 2022).

Although the development of the Palu ports offers significant investment opportunities within the port area, the Palu SEZ, and Palu City, as well as Central Sulawesi in general, the commitment from investors, particularly foreign direct investment data, has not shown an increase. On the contrary, domestic investment recorded a significant increase of 571.5% compared to the previous year, reaching Rp12.69 trillion in 2018 (Tobondo, Nurdin, and Jokolelono, 2021). Another challenge is that until 2023, the container port capacity of 5 million TEUs has not been optimally utilised, necessitating breakthroughs from PT Pelindo IV and government policy support to optimise all port facilities to ensure the sustainability of the ports in Palu Bay, especially Pantoloan Port as a trading hub in the central region of Indonesia.

From the SWOT analysis, it can be concluded that the Palu Ports Development project is a highly strategic project dominated by strengths and future utilisation opportunities. Therefore, the Ministry of Transportation, PT Pelindo IV, and/or the government can employ an expansion strategy to utilise the available capacity and capitalise on external opportunities by remaining focused on completing the Palu Ports Development process in 2023 according to the plan. This should be complemented by leveraging government support to encourage synergy amongst shipping entrepreneurs, cargo services, and investors with the local community in various sectors such as local industries, essential commodity trade, and commodity exports and imports, handicrafts, and natural resources. Furthermore, the support of entrepreneurs and investors can be utilised to cover the financial aspects that cannot be solely addressed by the government. Effective communication and collaboration amongst port operators, local government, the community, and entrepreneurs are crucial to establish a shared perception and prepare Palu Bay as an international trading hub in Indonesia.

Conclusion

In conclusion, the Palu Ports Development Project stands as a crucial initiative with the primary objective of revitalising the Palu Bay ports, as stipulated in Presidential Instruction Number 10 of 2018 as the legal foundation for the implementation and financing support of the National Strategic Project (PSN) for the Development of Palu Ports. This endeavour is part of Indonesia's broader strategy to enhance its maritime logistics capabilities, thus supporting economic growth and trade in the central region. Through comprehensive efforts and strategic planning, the project has demonstrated a dominance of strengths and opportunities, outweighing weaknesses and challenges, as revealed by the SWOT analysis.

The significance of the project lies in its ability to stimulate economic growth, create job opportunities, and bolster infrastructure development in Palu and its surroundings. The rapid restoration of the ports following the natural disaster played a pivotal role in post-disaster recovery and local economic revitalisation. It has not only reinvigorated economic activities in the region but also facilitated the establishment of various supporting businesses, further enhancing community welfare and trade. The positive impact on the gross regional domestic product (GRDP) growth rate in Central Sulawesi is a testament to the project's far-reaching effects. Nonetheless, there remain challenges to be addressed, including the need to attract foreign direct investment (FDI) and fully optimise the increased container port capacity. Collaboration and communication amongst various stakeholders, including government authorities, port operators, entrepreneurs, investors, and the local community, will be instrumental in ensuring the project's long-term success.

In light of the overwhelmingly positive strengths and opportunities identified, it is imperative for the project's stakeholders to remain committed to its completion, capitalising on the available capacity and external opportunities. Leveraging government support and encouraging synergy amongst various sectors will be essential in positioning Palu Bay as an international trading hub in Indonesia. Ultimately, the Palu Ports Development Project represents a significant step towards enhancing Indonesia's maritime logistics system and fostering economic growth in the central region.

The Palu Ports Development Project is expected to expedite the economic recovery process of Palu post-earthquake, whilst simultaneously serving as a conduit between supply and demand for goods, trade commodities, and natural resources in the Sulawesi region and the covered area, aligning with the government's development agenda aimed at fostering a competitive natural resources market. Thus, the Pantoloan, Donggala, and Wani ports are envisaged to constitute a pivotal solution to bridge the missing link in logistics distribution within the central and eastern regions of Indonesia, simultaneously ensuring the availability of cargo handling capacities for the long term. The tripartite collaboration amongst the government, private sector, and the community holds paramount significance in preserving the sustainability of the strategic national project for the development of Pantoloan, Wani, and Donggala ports, which in turn provides a solution for economic stabilisation and growth. Through a robust economic landscape, the enhanced economic activities are poised to elevate societal well-being, ultimately maintaining social stability across Sulawesi and its surroundings.

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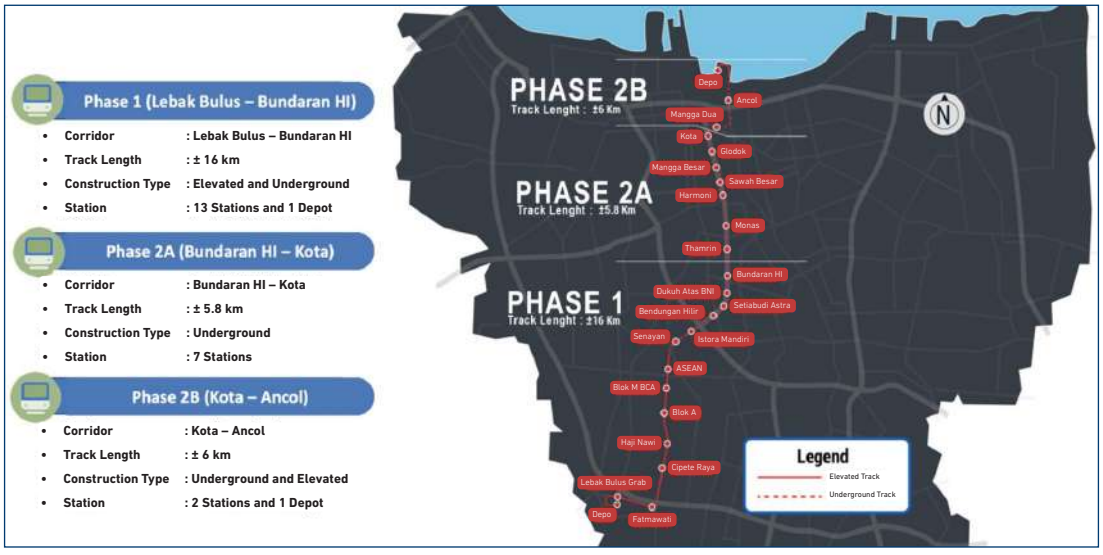
1.8. Ratangga, Jakarta Mass Rapid Transportation

1.8.1. Project Profile

This showcase discusses and analyses the challenges and benefits of Mass Rapid Transportation (MRT) Jakarta, which is based on a survey from the perspective of respondents, and stakeholders from MRT Jakarta. The findings obtained from the results of the discussion and analysis can be used as general input and evaluation material in the construction of MRT Jakarta in general.

Figure 3.29. MRT Jakarta Development Plan



Source: PT MRT Jakarta (2023).

The MRT Jakarta north–south corridor project has a total route length of 27.8 kilometres (km) (PT MRT Jakarta, 2023), stretching from Lebak Bulus where the first train depot is located, and to Ancol Barat where the second depot is planed (Figure 3.29). It has 16 train sets consisting of 96 cars (PT MRT Jakarta, 2017) and is named Ratangga, derived from Kakawin Arjunawijaya and Sutasoma, symbolising a strong and dynamic horse-drawn carriage. It provides a total of 142 daily round trips from Lebak Bulus to Bundaran Hotel Indonesia (HI), the current operational route, and vice versa. Ratangga can carry around 332 passengers in each coach, or approximately 1,950 passengers each trip and reduces travel time from Lebak Bulus to Bundaran HI to 30 minutes.

The first phase spans approximately 16 km from Lebak Bulus to Bundaran HI (PT MRT Jakarta, 2013). Around 10 km consists of elevated tracks passing through seven MRT stations (PT MRT Jakarta, 2015). The remaining 6 km passes through six underground stations and used four tunnel boring machines (TBM) (PT MRT Jakarta, 2016). It should be noted that this is the first time Indonesia is using the TBM technology in its infrastructure projects (KPPIP, 2019). The technology minimises disruptions to the soil as it avoids vibrations and cracks on the roads above. It also produces smooth tunnel walls, which reduces the cost of tunnel lining and is suitable for use in urban areas.

The second phase, from Bundaran HI to Ancol Barat, began construction in 2019 and should be completed in 2029 (Coordinating Ministry of Economic Affairs, 2023). With a length of about 11.8 km, the second phase of the MRT is further divided into Stage 2A (Bundaran HI–Kota) and Stage 2B (Kota–Ancol Barat). Unlike the first phase, stations for the second phase will be completely underground.

Table 3.8. MRT Jakarta Phase 2A Development

Contract Package	Contractor	Work Details	Contract Value[1] (Excluding VAT)		Realisation		
			Yen	Rp	Weight	Plan	Realised
CP 200	PT Trocon Indah Perkasa	• Diapraghm Wall and RSS in Taman Monas		± 21.77 B[2]		100,00%	100.00%
CP 201	Shimizu–Adhi Karya Joint Venture Corporation	• Bundaran HI – Harmoni, Tunnel Construction 2,7 km length • Thamrin and Monas Station Construction	± 3.74 B[2]	± 4.04 T[2]	23.82%	46,66%	49.41%
CP 202	Shimizu–Adhi Karya Joint Venture Corporation	• Harmoni – Mangga Besar, Tunnel Construction, 1,8 km length • Harmoni, Sawah Besar, and Mangga Besar Station Construction	± 8.34 B[3]	± 7.15 T[3]	21.54%	8,15%	8.44%
CP 203	Sumitomo Mitsui Construction Co. Ltd – Hutama Karya Joint Operation	• Mangga Besar – Kota Tunnel Construction, 1,3 km length • Glodok and Kota Station Construction	± 8.96 B[2]	± 3.40 T[2]	19.24%	22,89%	23.39%

Contract Package	Contractor	Work Details	Contract Value[1] (Excluding VAT)		Realisation		
			Yen	Rp	Weight	Plan	Realised
CP 205	To be announced	• Railways and Tracks			16.96%	-	-
CP 206	To be announced	• Rolling Stock			15.93%	-	-
CP 207	To be announced	• Automatic Fare Ticketing			2.50%	-	-
Realisation			**± 21.04 B**	**± 14.60 T**	**100%**	**17.28%**	**18.09%**

B = billion, km = kilometre, T = trillion.

[1] The contract consists of financing using yen and rupiah currencies.

[2] Inclusive of taxes.

[3] Exclusive of VAT.

Sources: Data tabulated from PT MRT Jakarta Annual Report (2019–2022).

Spanning 5.8 km, Stage 2A is expected to be operational by 2027, and passes through seven stations. The contract package, contractor, job details, contract value, and completion are illustrated in Table 3.8. Stage 2B of the north–south corridor is the continuation of the construction towards the final station, Ancol Barat, with a length of 6 km, is expected to be completed by 2029 (Coordinating Ministry of Economic Affairs, 2023). The construction of the route has yet to begin and is in the process of funding application to the Japan International Cooperation Agency (JICA). At the same time, PT MRT Jakarta is processing environmental permits, preparing the necessary documentation, and planning for stage 2B land clearance (PT MRT Jakarta, 2022a).

1.8.2. Project Objectives

The proposal for the MRT Jakarta was based on several infrastructure-related studies, and it was believed to be an alternative solution to alleviate congestion and address the mobility challenges of Jakarta's population (Pambudi and Hidayati, 2020). One of the main causes of congestion in Jakarta is the preference of the population to use private transportation over public transportation (Tamin, 2000). The unreliability of travel time and the inadequacy of public transportation options have led people to choose private vehicles (Mukti and Prambudia, 2018). The development of mass public transportation systems like the MRT is expected to support the provision of efficient, environmentally friendly urban transportation and reflect an advanced civilisation (DJKA, 2018).

The general objectives of implementing the MRT system are to enhance current mass transportation services, provide a dedicated rail line with high carrying capacity, ensure scheduled and predictable travel time, and improve the comfort, safety, and security of public transportation users (DKI Jakarta, 2008). According to a study from Khorunnurrofik, et. al (2021), it is estimated that during peak hours, the availability of the MRT allows an increase of 3% in driving speed, and the economic value from the congestion savings amounts to about Rp1.9 billion per year over the lifespan of the project. The same study also reports that on average an MRT commuter would save around 17.8 minutes of travel time. Figure 3.30 illustrates the Ratangga car in operation.

Figure 3.30. Ratangga, Jakarta MRT Train

Source: Performance Report of Government Agencies, DJKA (2019).

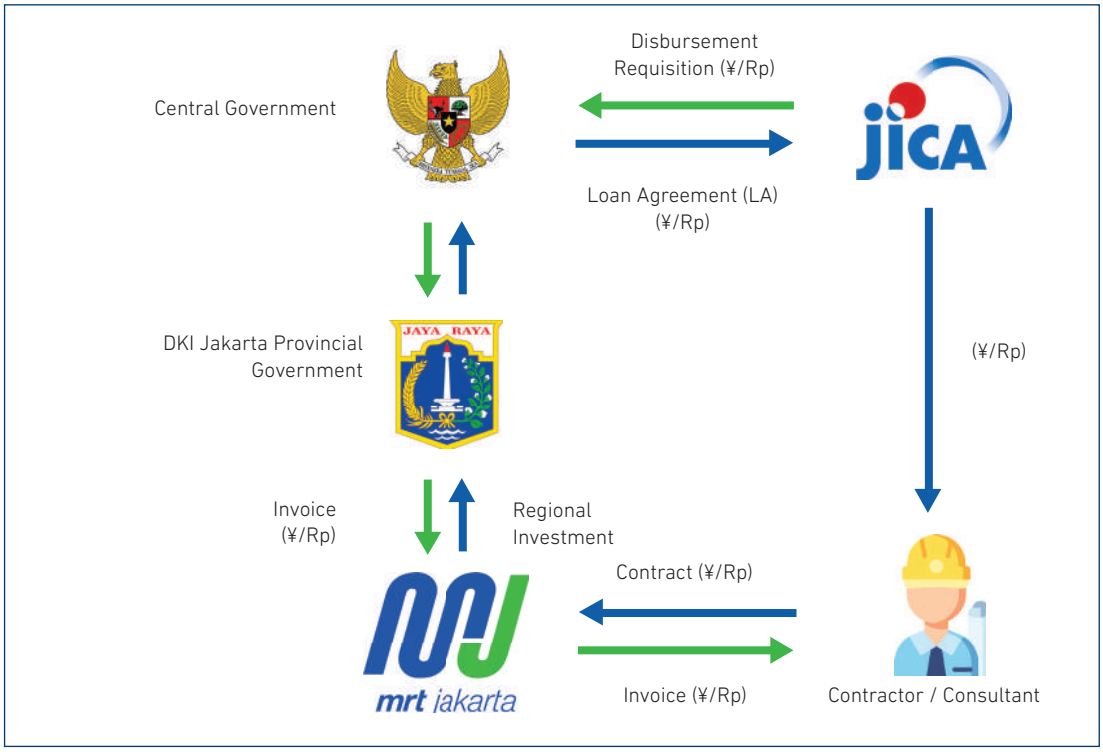
By holding the status of a PSN, MRT Jakarta has reaped many benefits (KPPIP, 2020). In 2015, the KPPIP accelerated the exchange notes through intensive coordination between the Ministry of Finance, National Development Planning Agency (Bappenas), and the Ministry of Foreign Affairs, which was needed for the signing of the project loan agreements. Furthermore, in 2016, the KPPIP facilitated a discussion on the Land Acquisition and Resettlement Action Plan for 27 land plots and debottlenecks the challenges of relocating gas pipes that cross over with the MRT routes. Next, in 2017 the committee mediated the allocation of repayments for the financing loan for the project, resulting in a repayment scheme shared between the DKI Jakarta provincial government (51%) and the central government (49%). Finally, in 2019, the KPPIP facilitated the relocation of the final station and depot previously planned in Kampung Bandan to Ancol Barat.

1.8.3. Project Cost and Funding

The total investment required to build the north–south corridor is Rp45.4 trillion (KPPIP, 2022), with Rp17 trillion allocated for the first phase (KPPIP, 2020). It is financed through the state budget (APBN), the regional budget (APBD) of DKI Jakarta Province, and foreign loans sourced from the Japan International Cooperation Agency's (JICA) official development assistance (PT MRT Jakarta, 2014).

The financing has a tenor of 40 years from the contract date, with a 10-year grace period. Repayment begins after 10 years from the signing of the contract with an interest rate of 0.02%, significantly lower than the commercial rates ranging from 3% to 4% (Rahayu, 2019). The financing from JICA is disbursed gradually, not all at once, as a control measure to ensure the seriousness of the Indonesian Government in implementing the construction. To date, five disbursements have been made, consisting of four packages for the first phase (¥197.04 billion) and one package for additional financing for the first phase (¥21.5 billion) and the commencement of the second phase (¥48.5 billion).

Figure 3.31. MRT Jakarta Financing Scheme



JICA = Japan International Cooperation Agency, MRT = mass rapid transportation.

Source: PT MRT Jakarta (2022a).

The financing scheme is a three-tier sub-loan agreement, the first of its kind in Indonesia (PT MRT Jakarta, 2022). It involves the lender (JICA) along with the central government, the regional government, and the regional state-owned enterprise (PT MRT Jakarta). After receiving funds from JICA, the central government transfers them to the Directorate General of Railways (Direktorat Jenderal Perkeretapian, DJKA) as the executing agency of the central government and to the DKI Jakarta provincial government as the implementing agency. The construction is then carried out by PT MRT Jakarta as the sub-implementing agency for the project. The flow of the financing scheme for MRT Jakarta can be seen in Figure 3.31.

1.8.4. External and Internal Factors

We collected data from stakeholders to measure respondents' perspectives. The participants include the central and local governments, academia, the business community, and users of MRT Jakarta services. Next, their perception of various internal and external factors – the perceived reality and the perceived importance was collected and analysed. Perceived reality measures the stakeholders' perception of the facts observed, whilst the perceived level of importance scores factors that respondents feel are important to the success of the project. Both are scored on a scale of 1 to 6 where 1 indicates a very negative perception, whilst a score of 6 is a very positive reception.

1.8.4.1. External Factors

The identified external factors are the level of support from the local community for the project (E_1); the level of investor interest in the development of MRT Jakarta (E_2); the level of opportunity for the private sector/community to become investors for supporting facilities in the project area (E_3); opportunities in job creation (E_4); level of impact of the project on road congestion around project locations (E_5); project impact in new business creation for the community (E_6); the potential increase of passengers (E_7); MRT Jakarta can be used by the community as a mode of transportation to and from the city centre (E_8); opportunities of the project in improving people's welfare (E_9); opportunities for the project in increasing state and/or regional revenues (E_{10}); availability of land for project development (E_{11}); timely disbursement of funding from investors (E_{12}); potential for disputes or lawsuits in the implementation process (E_{13}); and ease of obtaining business licenses at project locations (E_{14}).

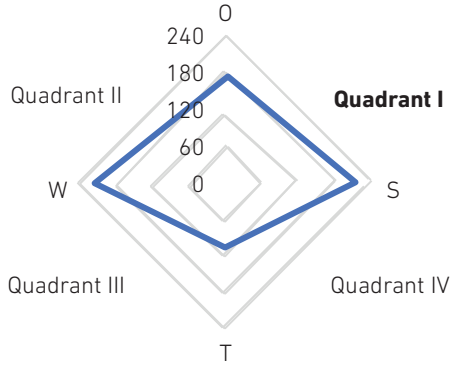
1.8.4.2. Internal Factors

The identified internal factors are deregulation or enactment of regulations (I_1); access to public transportation (I_2); compatibility of project development with regional spatial planning and land use (I_3); access to infrastructure that supports the project (I_4); appropriateness of PT MRT Jakarta appointment as the project operator (I_5); support from central and/or regional government in project financing (I_6); ease of licensing in project preparation and implementation process (I_7); level of technical smoothness of project construction (I_8); level of use of modern technology in project development (I_9); timeliness in construction (I_{10}); project physical quality level (I_{11}); suitability of project development results (I_{12}); level of concern for the development of the project for environmental sustainability (I_{13}); adequacy of supporting facilities (I_{14}); reasonableness of the price of MRT tickets (I_{15}); and number of stations or stops on the route traversed by the MRT Jakarta for transits (I_{16}).

1.8.5. SWOT Results and Analysis

The survey results were analysed using a SWOT approach to illustrate the perceived challenges and benefits. The SWOT analysis findings were then presented in a radar chart, as shown in Figure 3.32.

Figure 3.32. MRT Jakarta SWOT Analysis Results



Categories		Values
S	**Strengths**	**248.408**
W	Weaknesses	89.222
O	**Opportunities**	**266.710**
T	Threats	144.358

Source: Authors , 2023.

From Figure 3.32, it can be observed that the SWOT analysis of the MRT Jakarta project falls into Quadrant I. Although there is a slight difference in value between the strength and weakness axis, the strength category dominates the internal factors. On the other hand, the external factors are represented by the opportunity and threat axis, where the value of opportunities is higher. The SWOT position in Quadrant I indicates the strategies that can be adopted by the government to optimise the existing conditions, which is an aggressive growth policy. This policy emphasises the optimisation of strengths to maximise opportunities.

A summary of the three factors with the highest values identified as strengths, weaknesses, opportunities, and threats is presented in Figure 3.33. The observed factors are ranked based on the highest values of the average perceived reality and importance by the respondents. The higher the score obtained, the better the perception of respondents for the factor.

Figure 3.33. SWOT Analysis Priority Matrix

	Positive	Negative
Internal	***Strengths*** • Deregulation or enactment of regulation • Support from central and regional government in financing • Ease of permission in PSN preparation and implementation process	***Weaknesses*** • Suitability of PSN development • Access of public transportation such as train station • Access of infrastructure to support MRT
External	***Opportunities*** • PSN Impact in new business creation • Timely disbursment of fundings • Potential Increase of passangers	***Threats*** • Ease of doing business in PSN location • Potential increase of revenue for central regional government from PSN • Potential congestion from PSN construction

Source: Authors, 2023.

1.8.5.1. Main Challenges

Survey results show that the ease of business permits in the PSN location needs to be improved. Kompas (2023) reported that there are currently 16 micro, small, and medium-sized enterprise (MSMEs) stalls in three stations offering various products. Nevertheless, only selected tenants that have passed the selection process are allowed to open and operate a shop in the MRT stations. Shops that sell culinary, fashion, and handicraft products are encouraged to apply in the selection. However, applicants are notified that they are not allowed to franchise the operation and do not have a shop branch in a class A shopping mall (UKMIndonesia.id, 2021). Although PT MRT Jakarta continues to provide opportunities for MSME enthusiasts to participate in the MRT station locations, these prerequisites limit the number of potential tenants to participate in the location.

The next factor is related to a potential increase in revenue for the central and regional governments from the MRT. Due to COVID-19, revenue from MRT Jakarta passengers' farebox declined drastically from Rp191.6 billion in 2019, to Rp82.03 billion in 2020. It again dropped around 25% to Rp60.37 billion in 2021. It should be noted that non-farebox revenue contributes higher revenue than farebox revenue. The revenue from non-farebox continued to grow from Rp207.61 billion in 2019 to Rp503.17 in 2022. However, the main part of the revenue of PSN MRT Jakarta is from subsidy revenue, which amounted to Rp808.20 billion in 2022. Nevertheless, the considerable amount of subsidies for the MRT should be taken with caution.

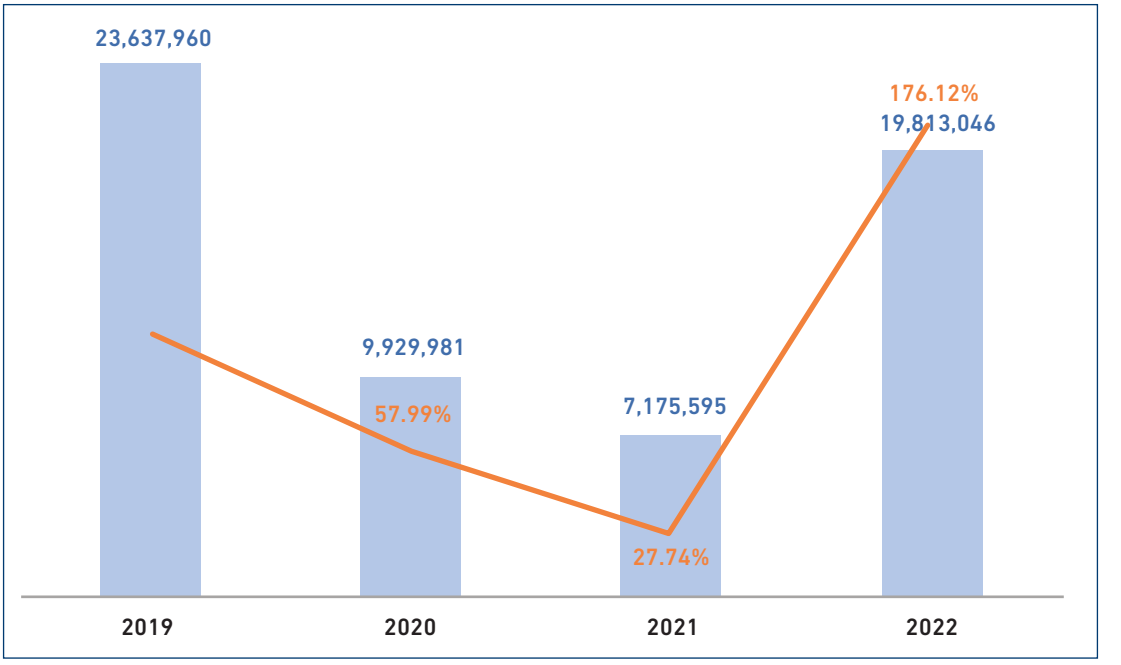
Currently, MRT Jakarta's operational route is limited to the Lebak Bulus–Bundaran HI, which means passenger mobilisation is dominated by commuters from the mentioned area. At present, residents from the northern, eastern, and western areas of Jakarta have limited access to the mode of transport. This aligns with the factors of PSN location and supporting infrastructure to access MRT Jakarta. Albeit connected to the busway network and the Soekarno–Hatta Airport express train, the interconnectivity and the number of MRT stations are currently limited to the operational route.

1.8.5.2. Main Benefits

The survey pointed out several benefits of MRT Jakarta's existence, such as the potential increase in passengers, the suitability of MRT outcomes, and its impact on new business creation. These benefits are in line with the objectives of MRT Jakarta, which are to provide a dedicated rail line with high carrying capacity and ensure scheduled and predictable travel time.

The maximum capacity of one MRT is around 1,950 people per trip, comparable to commuter lines' maximum passengers of 2,000 per trip. Moreover, at full capacity, the MRT should be able to carry 173,400 passengers daily. However, due to the pandemic, the daily passenger realisation has yet to reach its full potential. This is in line with the survey results where participants highlight the passenger growth opportunities. Nevertheless, the number of passengers is still massive. Despite being relatively new, the average number of users in 2019 has reached approximately 89,000, exceeding the target of 65,000 passengers. Data from DJKA show in 2019 passengers reached 23.84 million and this drastically dropped to 7.18 million in 2021 due to the pandemic. However, with the relaxation of the Community Activity Restrictions Enforcement (Pemberlakuan Pembatasan Kegiatan Masyarakat, PPKM) policy in 2022, there has been a significant increase in users to 19.81 million (DJKA, 2022). The massive number of passengers helps reduce the number of people using private transportation. Figure 3.34 illustrates Ratangga passengers growth from 2019 to 2022 according to DJKA.

Figure 3.34. Ratangga's Passenger Growth, 2019–2022



Source: Data tabulated from Performance Report of Government Agencies, DJKA (2019–2022).

For the past 4 years, Ratangga has reliably served its passengers by creating scheduled and predictable travel times. The MRT passenger service performance in 2022 which measures arrival, dwelling, and travel time is close to perfect with a score of 99.95%, 99.98%, and 99.94%, respectively (PT MRT Jakarta, 2022a). It also has an index of 88.32% on its customer satisfaction index, which indicates high passenger satisfaction with the mode of transportation. This is further supported by a survey done in 2021, by LPEM UI.

The construction of the MRT is accompanied by the development of transit-oriented development (TOD) areas, which are part of urban revitalisation efforts integrating transit area functions with individuals, buildings, and public spaces. The TOD area creates around 10 million m2 of new mixed development area and potentially increases property value around MRT stations to Rp242 trillion (PT MRT Jakarta, 2018). The rejuvenation of public facilities through TOD revitalises economic development in the impacted areas. Currently, there are six TOD areas managed by PT MRT Jakarta located in the first phase of the north–south corridor, including providing affordable housing, revitalising the Blok M Plaza area, and developing the Martha Tiahahu Literacy Park (PT MRT Jakarta, 2022a).

Conclusions

The project aims to improve public transportation facilities, reduce traffic congestion, enhance population mobility, decrease carbon emissions, and create new job opportunities in Jakarta. With TOD aimed at revitalising and rejuvenating transit areas, the PSN accommodates job creation in Jakarta. Furthermore, by holding the status of PSN, MRT Jakarta has reaped benefits such as loan facilities, land acquisition, and project debottlenecking with the assistance of the KPPIP. As shown in the analysis, the government may opt for an aggressive growth policy emphasising the optimisation of strengths to maximise opportunities. Despite the challenges in the construction of MRT Jakarta's PSN and its relatively young age, the benefits of the development are already being felt.

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1.9. Skouw Integrated Cross-Border Post

1.9.1. Project Profile

The Skouw Integrated Cross-Border Post (the Skouw PLBN), as shown in Figure 3.35, is a land border marker between the Republic of Indonesia and Papua New Guinea (PNG). The Skouw PLBN is situated in Muara Tami District, Jayapura, Papua Province. The distance is about 48 kilometres from Jayapura City, Indonesia, or 66 kilometres from Vanimo, the nearest city in PNG. After the construction of the Youtefa Bridge, the travel time from Jayapura City to the Skouw PLBN was shortened to around 1 hour from the previous 2.5 hours.

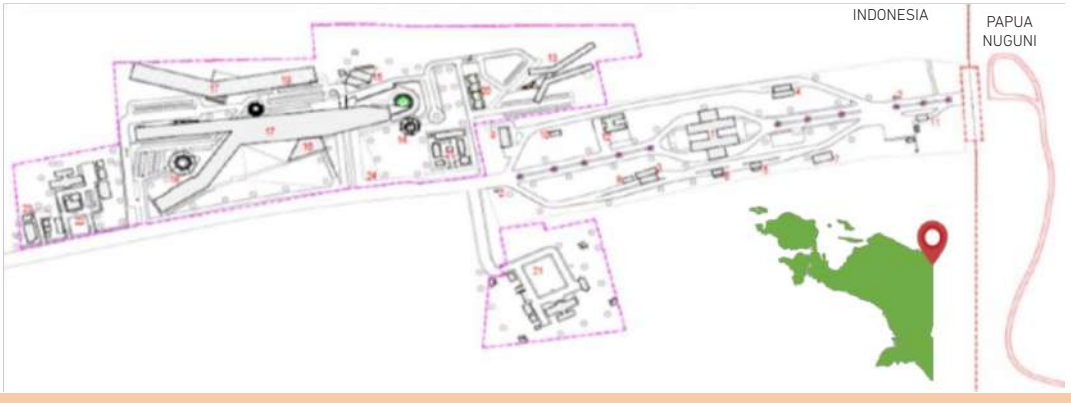
Figure 3.35. Skouw Integrated PLBN

Sources: (a) Directorate General of Cipta Karya (2019), (b) BNPP (2022), and (c) authors (2023).

Muara Tami District is the largest and farthest district from Jayapura City but has the lowest population compared to other districts. The number of poor people in Jayapura City is one of the highest amongst other regencies and cities in Papua Province, but the Human Development Index is the highest (BPS, 2020). Muara Tami District has several basic service facilities, but it still lags in terms of numbers compared to other districts.

Aligned with global geo-political and geo-economic shifts, border area developments are now more economically driven, focusing on productive endeavours to enhance the living standards of border residents. This also supports the enduring effort to bolster national defence and security. This new approach laid the foundation for the Skouw PLBN construction in the Muara Tami District through a cooperation contract between the government (Ministry of Public Works and Public Housing) and PT Nindya Karya. Initiated in December 2015, the construction of the Skouw border project received a significant boost when it was classified as one of the PSN projects in 2016, under the directive of Presidential Regulation No. 3 of 2016 on the Acceleration of the Implementation of National Strategic Projects. This project reached its completion in 2016 and was officially launched by President Joko Widodo on 9 May 2017. Its purpose is multifaceted: a transit point for people and goods, an economic hub, and a tourist attraction. These intentions are in line with the implementation of duties and functions at the PLBN: (C) customs, (I) immigration, (Q) quarantine, which includes fish quarantine, agriculture quarantine, and health quarantine, and (S) security, which includes the Indonesian Army, the Indonesian National Police, and civil security from members of the National Border Management Agency (BNPP).

Figure 3.36. Skouw PLBN Master Plan



Legend:

- National Borders
- Fence Around the PLBN Area
- Road
- Supporting Zone Borders

Core Zone:

1. PLBN Main Building
2. Check Point Post/Integrated Security Post
3. Integrated Arrival Inspection Building
4. Integrated Departure Inspection Building
5. Weight Bridge Building
6. Truck Scanner Building
7. Ground Water Tank
8. Consfiscated Warehouse
9. Utility Building
10. Kennel
11. Car Wash Building
12. Clinic Building

Supporting Zone:

13. Employee Mess
14. Church
15. Mosque
16. Food Court
17. Market
18. Function Room
19. Power House
20. Service House
21. Indonesian Army Post
22. Police Post
23. DANINTEL
24. Statue of Soekarno

Source: Directorate General of Cipta Karya (2019).

To realise the Skouw border area as a new growth centre based on the development of food clusters and the border tourism belt, the President instructed 10 ministries and agencies to implement programmes to accelerate economic development in the Skouw border area through Presidential Instruction (*Inpres*) Number 1 of 2021. To encourage the development of the agricultural, fisheries, and tourism sectors in the Skouw border area, it needs support for electricity infrastructure, development of trade centres, and arrangement of tourism areas. Thus, 19 main programmes were instructed, as quoted from the Deputy for Coordination of Regional Development and Spatial Planning (2021), which can be grouped into several programmes as follows:

(i) Development of rice warehouses and revitalisation of the agribusiness sub-terminal
(ii) Rehabilitation of ponds for cultivator groups
(iii) Revitalisation of people's markets
(iv) Facilitating the provision of Floating Village Homes Stay
(v) Arrangement of traditional villages (Skouw Yambe, Skouw Mabo, Skouw Sae) as a supporter of 'border tourism'
(vi) Increasing access to electricity, internet, and drinking water
(vii) Road capacity and quality improvement

1.9.2. Project Objectives

The Skouw border is a border area at the eastern end of Indonesia that was initially synonymous with the image of being scary, vulnerable, and insecure. Indonesia's border areas have long been neglected and received little attention, many of which are deplorable (Directorate General of Cipta Karya, 2019). Those conditions cause the condition of Indonesia's border areas to be far behind compared to the border areas of neighbouring countries. This backwardness is not only in terms of infrastructure but also in the socio-economic aspects of the people, which triggers the emergence of various problems and social vulnerabilities to security. Therefore, the Skouw PLBN was built to answer this challenge. Based on the (Directorate General of Cipta Karya, 2019), the two main objectives of developing the Skouw PLBN are (i) maintaining the territorial integrity of the Republic of Indonesia through the establishment of the sovereign rights of the Republic of Indonesia, which are guaranteed by international law; and (ii) improving the welfare of the local community by exploring economic, social and cultural potential, and utilising a very strategic geographical location to connect with neighbouring countries.

The Skouw PLBN is a critical and strategic infrastructure not only in the field of politics and sovereignty as a gateway for connecting Indonesia with neighbouring countries that gives a first impression about the Republic of Indonesia, but also as an embryo centre for regional economic growth in border areas. The Skouw PLBN was also built to create a new economic growth centre whose impact can be immediately felt by border communities in improving their welfare and

standard of living. The development of supporting zones in the PLBN area is expected to provide economic benefits for the surrounding community and bring the business world (micro and small and medium-sized enterprises, MSMEs) closer to consumers to promote local products. Due to its designation as a PSN, the government provided extensive support, including expedited development, quick land allocation, political stability assurances, and access to facilities that simplified project execution, ensuring the Skouw Border project progressed on target.

The government's commitment to advancing border areas is a manifestation of one of President Joko Widodo's nine priority programmes known as 'Nawacita'. The third point of Nawacita: developing Indonesia from the periphery by strengthening regions and villages within the framework of a unitary state, is realised one way through the development of infrastructure in the country's border areas simultaneously and in an integrated manner. This programme began with the construction of seven integrated PLBNs (Seven Borders of Indonesia), one of which is the Skouw PLBN in Papua, which was built based on the mandate of Presidential Instruction (*Inpres*) Number of 2015 concerning the Acceleration of Development of Seven Integrated State Cross-Border Posts and Supporting Infrastructure in Border Areas. The Skouw border area is of concern to the government for constructing a Type-A Integrated PLBN due to the relatively high number of border crossings from PNG (Directorate General of Cipta Karya, 2019). This condition creates opportunities to trigger regional economic growth and improve the welfare of border communities.

1.9.3. Project Cost and Source of Fund

Project financing comes from the State Budget (Directorate General of Cipta Karya, 2019). The Skouw PLBN development process and its funding are divided into three stages as shown in Figure 3.37. The cost of construction of each phase are Rp165.94 billion, Rp246.59 billion and Rp129.17 billion.

Figure 3.37. Stages of Development and Financing of the Skouw Integrated PLBN

PHASE I: CORE ZONE Land Area: 10.7 Ha Building Area: 7,619 m^2 Work Duration: 23 December 2015 – 16 December 2016 (360 days of work + 720 days of maintenance) Project Costs: Rp165,944,300,000	1. Main Building 2. Arrival Cargo Inspection Building 3. Clinic Building 4. Carwash/Disinfectant Building 5. Weight Bridge Building 6. Truck Scanner Building 7. Departure Cargo Inspecion Building 8. Confiscated Warehouse Building 9. Kennels 10. Utility Buildings 11. Check Point Building 12. Tasbara Monument
PHASE II: CORE AND SUPPORTING ZONE Land Area: 5.43 Ha Building Area: 9,921 m^2 Work Duration: 16 December 2016 – 15 December 2018 (729 days of work + 360 days of maintenance) Project Costs: Rp246,585,600,000	1. Office House 2. Wisma Indonesia 3. Multipurpose Building 4. Mosque 5. Church 6. Market Building 7. Rest Area 8. Army Pamtas Post 9. Police Post
PHASE III: FACILITIES AND SUPPORTING INFRASTRUCTURE Work Duration: 13 August 2019 – July 2020 Project Costs: Initial Contract: Rp117,564,030,000 Addendum: Rp129,168,089,000	1. Infrastructure and Regional Arrangement 2. Employee Mass 3. Market Building 4. Management Office 5. Mosque Renovation 6. Multipurpose Building Renovation 7. Link Bridge 8. Statue of Soekarno 9. Gate Ornament 10. Videotron 11. Signage, Sclupture, and Sitting Group

Source: Directorate General of Cipta Karya (2020).

1.9.4. External and Internal Factors

As a gateway to guarding the Republic of Indonesia's sovereignty and as an embryo of regional economic growth in border areas, the Skouw PLBN has various benefits, potentials, and opportunities, and challenges in the development and management process. This analysis was carried out descriptively based on perceptions of internal factors (strengths and weaknesses) and external factors (opportunities and threats), which were viewed from two perspectives: the reality and the important aspects of the observed factors related to the Skouw PLBN. Perception data were obtained from questionnaires and interviews with all elements who were part of the development process or felt the impact of the Skouw PLBN development: the government (BNPP and CIQS elements), academics, entrepreneurs, and the surrounding community.

1.9.4.1. External Factors

External factors that can be identified consist of: (E_1) the level of support from the local community for the PLBN; (E_2) the level of public and/or investor interest in construction and/or development activities in the PLBN area; (E_3) the level of opportunity for the public and/or private sector to become investors in construction and/or development activities in the PLBN area; (E_4) PLBN opportunities in job creation; (E_5) the level of PLBN impact on open access and connectivity for other areas around the PLBN location; (E_6) the level of PLBN impact on the emergence of new businesses for the community; (E_7) the opportunities to increase tourists with the existence of the PLBN; (E_8) opportunities for the PLBN to be recognised by other countries and internationally with the existence of facilities or national and/or international activities held in the PLBN area; (E_9) opportunities for the PLBN in improving people's welfare; (E_{10}) PLBN opportunities in increasing state and regional incomes; (E_{11}) PLBN land availability; (E_{12}) the level of potential disputes or lawsuits in the PLBN implementation process; (E_{13}) the level of convenience in obtaining business permits at the PLBN locations; (E_{14}) the current level of security in the PLBN area; and (E_{15}) closing the unofficial roads access (rat routes) in the border area that connects Indonesia–PNG in the PLBN area.

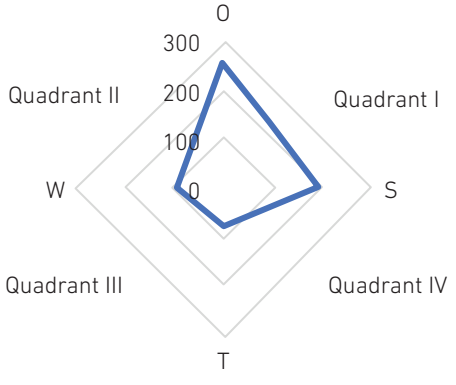
1.9.4.2. Internal Factors

Internal factors that can be identified consist of: (I_1) the existence of deregulation and/or issuance of regulations to support the PLBN project; (I_2) the suitability of the location of the PLBN for a national border cross post area; (I_3) conformity of the PLBN development with spatial planning and land use; (I_4) availability of infrastructure that supports the PLBN, such as roads, bridges, electrical installations, clean water installations; (I_5) the accuracy of the appointment of PT Nindya Karya as the executor of the PLBN project; (I_6) central and/or regional government support in financing the PLBN project; (I_7) the ease of licensing in the process of preparing PLBN project; (I_8) level of technical smoothness of the PLBN construction; (I_9) the level of use of modern technology in the PLBN construction; (I_{10}) timeliness in the PLBN construction; (I_{11}) the PLBN physical quality level; (I_{12}) the level of suitability of the designation of the PLBN development results; (I_{13}) the level of concern for the PLBN development towards environmental sustainability; and (I_{14}) adequacy of the PLBN supporting facilities.

1.9.5. SWOT Results and Analysis

A SWOT analysis is used to analyse survey results and identify strengths and weaknesses from the internal factors as well as opportunities and challenges from the external factors. Furthermore, the survey was assessed using the Internal Factors Analysis Summary (IFAS) and External Factors Analysis Summary (EFAS). The IFAS and EFAS assessments are then grouped into four quadrants based on the assessment results of each SWOT component.

Figure 3.38. SWOT Analysis Results



Categories		Values
O	Opportunities	250.80
S	Strengths	194.27
T	Threats	77.91
W	Weaknesses	98.37

Source: Authors, 2023.

Based on the results of the SWOT analysis in Figure 3.38, the Skouw PLBN is in quadrant I, on which the value of strengths is greater than the value of weaknesses, and the value of opportunities/potential is greater than the value of threats/challenges. Quadrant I is a very favourable condition because the Skouw PLBN area has more dominant opportunities and strengths, which can be utilised for further development of the border area. In this case, the strength–opportunity (S–O) strategy that can be applied to support this condition is growth-oriented strategy.

Figure 3.39. SWOT Analysis Priority Matrix

	Positive	Negative
Internal	***Strengths*** • Availability of infrastructure (roads, bridges, electricity, clean water) • Location suitability for PLBN area • Suitability of the designation of PLBN development results	***Weaknesses*** • Adequacy of PLBN supporting facilities • The level of concern for PLBN development towards environmental sustainability
External	***Opportunities*** • Job creation • Increase in tourists • The emergence of new business for the community	***Threats*** • Increase in state/regional income • Unofficial roads access (rat routes) in the border area

Source: Authors.

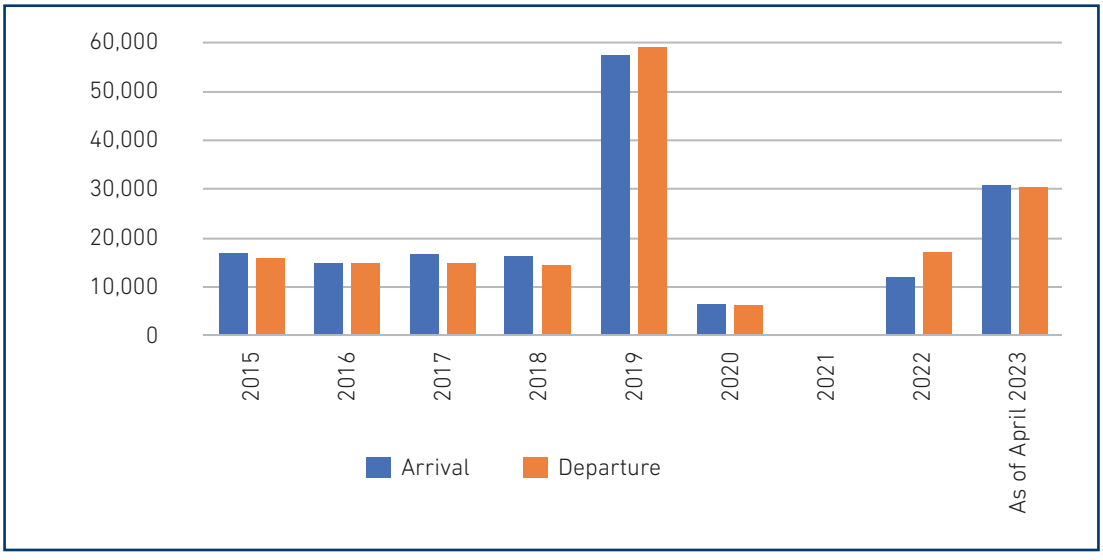
In Figure 3.39 it can be seen the priority factors for each SWOT element. The priority factors are the highest score from the survey results, which indicates that respondents perceive this factor as more dominant than other factors. The explanation of the SWOT priority analysis matrix is outlined in the form of challenges and benefits for the Skouw PLBN project, which are explained in the following section with a focus on a growth-oriented strategy.

1.9.5.1. Main Challenges

Based on the IFSA and EFSA assessment results, the Skouw PLBN has potential opportunities from an economic and social welfare standpoint. The Skouw PLBN has the potential to create jobs, increase the number of tourists, and create new businesses for the community. The presence of the PLBN is expected to optimise all the potential in the border area through the significance of developing Priority Locations in Muara Tami District.

Based on BNPP (2022), the Skouw border area has several potentials, including (i) agricultural potential as a rice-producing area; (ii) livestock potential is mostly in the form of purebred chickens; (iii) potential handicraft products in the form of *Noken Bags* produced by Papuan women and recognised by UNESCO as world heritage, as well as bead crafts in the form of necklaces, earrings, bracelets, brooches; and (iv) tourism potentials such as bird-of-paradise breeding, cuscus breeding, Papuan orchid cultivation, sea cliff tourism, and Mosso hot springs. The Skouw border area's development also provides an economic attraction that can be a driving force for job creation. The construction of the Skouw PLBN involved the surrounding community by recruiting 62 workers from Papua (18.2%) out of a total of 340 workers, with details of five experts, 18 skilled workers, and 39 workers (Public Communication Bureau of the Ministry of Public Works and Public Housing, 2017).

Figure 3.40. Number of Passers



Source: Class I Immigration Office TPI Jayapura (2023).

The number of tourist visits to Skouw increased dramatically after the Skouw PLBN was inaugurated (KPPIP, 2023). Every day, 300–500 people cross the Skouw PLBN, border crossers and tourists, local and foreign. Meanwhile, on holidays or weekends, more city residents come for a tour to see the border. This number increases 100% when there are celebrations or market days every Tuesday, Thursday, and Saturday, where visitors can reach 1000–1500 people daily (Directorate General of Cipta Karya, 2019). Of the 116,000 border crossers recorded in 2019 (see Figure 3.40), almost 90% were PNG citizens who came to shop at the Skouw PLBN market (Class I Immigration Office TPI Jayapura, 2023), as shown in Figure 3.41.

Figure 3.41. Trading Activities at the Skouw Integrated PLBN

Sources: (a) Directorate General of Cipta Karya (2020), and (b) authors (2023).

The border crossing visit has a positive impact on the surrounding community's economy, especially for traders, as well as being a magnet for the emergence of food stalls and souvenirs in the Skouw PLBN area. Economic transactions at the Skouw market could reach Rp3 billion–Rp5 billion monthly (KPPIP, 2023). Export and import activities (see Table 3.9) are also active through the Skouw PLBN daily and increase on market days (Directorate General of Cipta Karya, 2019). The Ministry of Tourism and Creative Economy is also paying attention to the potential and development of tourism in the Skouw border area and promoting the border area with its integrated PLBN through a routine agenda in the form of the Wonderful Indonesia Cross Border Festival, which is expected to increase tourist visits to Indonesia.

Table 3.9. Trade Between Indonesia and Papua New Guinea Through the Skouw PLBN

Year	Export Foreign Exchange (Rp)	Import Levies (Rp)	Export Commodities (PEB)	Import Commodities (PIBK)
2018	40,807,824,733	66,493,901,000	Grocery goods, food, spare parts, electronics, building materials, office stationery, caskets, medical devices	Vanilla, masohi bark, coffee beans, human remains, foodstuffs, snacks, processed meat, batteries, food
2019	29,946,353,934	56,780,171,000		
2020	2,059,492,050	7,262,985,000		
2021	590,524,964	8,414,165,411		
2022	949,780,629,415	7,061,082,000		
As of March 2023	3,663,511,162	405,589,000		

Source: KPPBC Type Madya Pabean C Jayapura (2023).

However, several challenges need attention, including increasing awareness of goods smuggling as well as outreach and enforcement of cross-border regulations for border residents with many unofficial roads access (rat routes) to enter and leave Indonesian territory, which can be detrimental to the state and affect the opportunities of PLBN in increasing state and regional revenue (Directorate General of Cipta Karya, 2019). In addition, another challenge is in terms of management and maintenance of the Skouw PLBN area in connection with the transfer of management status of the Skouw PLBN Market from the BNPP to the Provincial Government of Papua since 10 September 2020.

1.9.5.2. Main Benefits

The development of the Skouw border area brings benefits in terms of increased connectivity and infrastructure provision. The road to the border has been paved and is in excellent condition, and the need for electricity and clean water facilities has also been fulfilled, although it is still relatively limited (Directorate General of Cipta Karya, 2019). The border road was also developed for approximately 1,100 kilometres (km) from Jayapura to Merauke. Until 2016, 886 km of border roads had been connected, and in 2017 the construction of a new border road was continued. The remaining 204 km of border road were completed in 2019 (Public Communication Bureau of the Ministry of Public Works and Public Housing, 2017). In addition, the construction of good communication infrastructure can also help people in border areas to gain access to good information or to get convenience in trading their local commodities (KPPIP, 2023).

The Skouw border community now has an integrated PLBN, which is not only magnificent in its construction, but also equipped with various complete immigration service facilities under one roof. With the Skouw PLBN, the flow of people and goods at the border, which was previously without orderly rules, is now slowly being regulated through the correct procedures so that people who cross borders and carry goods will feel comfortable and at the same time be able to contribute to the country. This improvement aligns with the increasing number of Skouw PLBN crossers, especially since the Indonesia–PNG border reopened in October 2022 after being closed for 2 years due to the COVID-19 pandemic.

The Skouw border area is suitable for PLBN construction because it has affordable accessibility, there are customs, immigration, quarantine, and security (CIQS) activities, as well as potential crossing counterpart points in neighbouring countries (Directorate General of Cipta Karya, 2020). The Indonesia–PNG border area in Skouw is the only border area within the administrative area of the provincial capital in Indonesia, namely Jayapura City, so it is strategic for development as an interstate trade area. This can be seen from the existence of the Skouw PLBN market as a PLBN supporting facility that is a magnet for visitors and border crossers, as well as being a centre for cross-border trade between Indonesia and PNG. A total of 304 kiosks (blocks A, B, C), 152 kiosks (block D), and 50 stalls for Papuan women (*mama-mama Papua*) are available for use by traders in the Skouw border area (BNPP, 2022).

However, several issues of the adequacy of PLBN supporting facilities still need attention. Stable and adequate provision of electricity, clean water, and communication infrastructure are necessary to maintain activities at the Skouw PLBN. In addition, optimising the utilisation of various facilities at the Skouw PLBN is also influenced by bilateral regulations with the government of PNG. Several facilities in the core zone of the Skouw PLBN, such as arrival and departure cargo inspection, carwash/disinfectant, weighbridge, truck scanners, and checkpoints, are still pending operationalisation due to the lack of readiness on the PNG side.

Conclusions

With its status as a PSN, a project that is considered critical and strategic, the construction of the Skouw PLBN gains several advantages in accelerated development, accelerated time for land provision, political security guarantees, and obtaining facilities for ease of project implementation. This is as mandated in Presidential Instruction (Inpres) Number 6 of 2015 and Presidential Regulation Number 3 of 2016. The construction of the Skouw PLBN provides hope and opens the way for the people at the easternmost gate of Indonesia to improve their quality of life and achieve prosperity. The gateway to a bright future is wide open for Skouw to free himself from remoteness, alienations, backwardness, and other limitations that have shackled and hindered the progress of potential development in Skouw.

The SWOT analysis shows that there are several challenges and benefits of the Skouw PLBN. Certain pressing issues require immediate focus. These include raising awareness about illicit goods trafficking and enhancing the dissemination and enforcement of rules for border that not only pose risks to the nation but also hamper the potential revenue generation for PLBN (Directorate General of Cipta Karya, 2019). The various strengths that create benefits in the Skouw PLBN need to be accompanied by excellent and effective border management and governance to be able to take advantage of the opportunities or potentials, as well as respond to challenges that arise in the management and development of the Skouw border area.

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1.10. Palapa Ring

1.10.1. Project Profile

The Palapa Ring Project is the construction of a national-scale fibre optic backbone network infrastructure, which is one of the national strategic projects regulated in Presidential Regulation Number 3 of 2016 concerning the Acceleration of Implementing National Strategic Projects (PSN). The choice of the name Palapa on the 'Palapa Ring' was inspired by the Palapa Oath delivered by Patih Gajah Mada who was determined to unite the archipelago of Indonesia. This spirit was adopted by the Palapa Ring to connect Sabang to Merauke and Miangas Island to Rote Island by building digital connectivity (Ministry of Communication and Information Technology, 2019). The project, initiated in 1997, only gained traction in 2016 after it was designated as a PSN. In the presidential regulation, the Palapa Ring Project was divided into two major projects: Palapa Ring Broadband in 457 districts and/or cities and Palapa Ring Broadband (eastern part) in 57 districts and/or cities.

The Palapa Ring Broadband in 457 districts and/or cities was successfully completed in 2018. PT Telekomunikasi Indonesia (Tbk), as the executor, has completed all construction of this project in 457 districts and/or cities, with the details shown in Table 3.10.

Table 3.10. Total Number of Palapa Ring Broadband Projects and Location

Number	Region	Number of Points
1.	Sumatra	150 Districts/Cities
2.	Java	119 Districts/Cities
3.	Bali	9 Districts/Cities
4.	West Nusa Tenggara	10 Districts/Cities
5.	East Nusa Tenggara	20 Districts/Cities
6.	Kalimantan	54 Districts/Cities
7.	Sulawesi	68 Districts/Cities
8.	Maluku	8 Districts/Cities
9.	North Maluku	7 Districts/Cities
10.	Papua	5 Districts/Cities
11.	West Papua	7 Districts/Cities
TOTAL		**457 Districts/Cities**

Source: Indonesia Baik, 2018b.

In addition to the construction in 457 districts and/or cities, the Palapa Ring Project also continues to reach every area of Indonesia, especially the Terdepan, Terluar, and Tertinggal (3T) areas. The Palapa Ring Broadband (eastern part) project connects 57 districts in the 3T areas using a 12,148 kilometre (km) fibre optic network. The implementation of this project is divided into three work packages: West Palapa Ring (5 districts), Central Palapa Ring (17 districts), and East Palapa Ring (35 districts) (BAKTI, 2021). The locations for the construction of the Palapa Ring network are in the 3T areas, which are not financially feasible due to their low population, low per capita income, purchasing power, and challenging geographical environment for development.

Overall, the Palapa Ring Broadband (eastern part) project is divided into 17 projects with the details shown in Table 3.11.

Table 3.11. Section of The Palapa Ring Broadband (Eastern Part)

WEST PALAPA RING	
Project 1	Dumai, Siak, Bengkalis, Tebing Tinggi, Karimun , Batam
Project 2	Batam, Tarempa, Ranai, Singkawang
Project 3	Kuala Tungkal, Daik Lingga, Batam
CENTRAL PALAPA RING	
Project 4	Sendawar, Long Bangun
Project 5	Kendari, Wanggudu, Petasia, Tentena
Project 6	Kendari, Wawoni, Raha, Sawerigadi, Lakudo, Raha, Buranga, Baubau
Project 7	Luwuk, Salakan, Banggai, Taliabu, Sanana
Project 8	Manado, Ondong Siau, Tahuna, Melonguane, Morotai Selatan, Tobelo
Project 8A	Ternate, Tidore, Sofifi
CENTRAL PALAPA RING	
Project 9	Waingapu, Sabu, Baa, Kupang
Project 10	Alor, Wetar, Tiakur, Saumlaki, Tual, Dobo, Timika
Project 11	Manokwari, Ransiki, Rasiei, Nabire, Botowa, Serui, Biak, Sorendiweri, Numfor, Manokwari
Project 12	Tangguh, Teminabuan, Aifat, Sorong, Fef
Project 13	Tangguh, Bintuni, Ransiki, Anggi, Manokwari
Project 15A	Timika, Tiga, Enarotali, Kigamani, Nabire, Raisei, Manokwari
Project 15B	Timika, Tiga, Enarotali, Kigamani, Nabire, Botowa, Serui, Biak
Project 16	Jayapura, Waris
Project 17	Merauke, Tanah Merah, Waropko

Source: Telecommunication and Information Accessibility Agency (BAKTI), 2021.

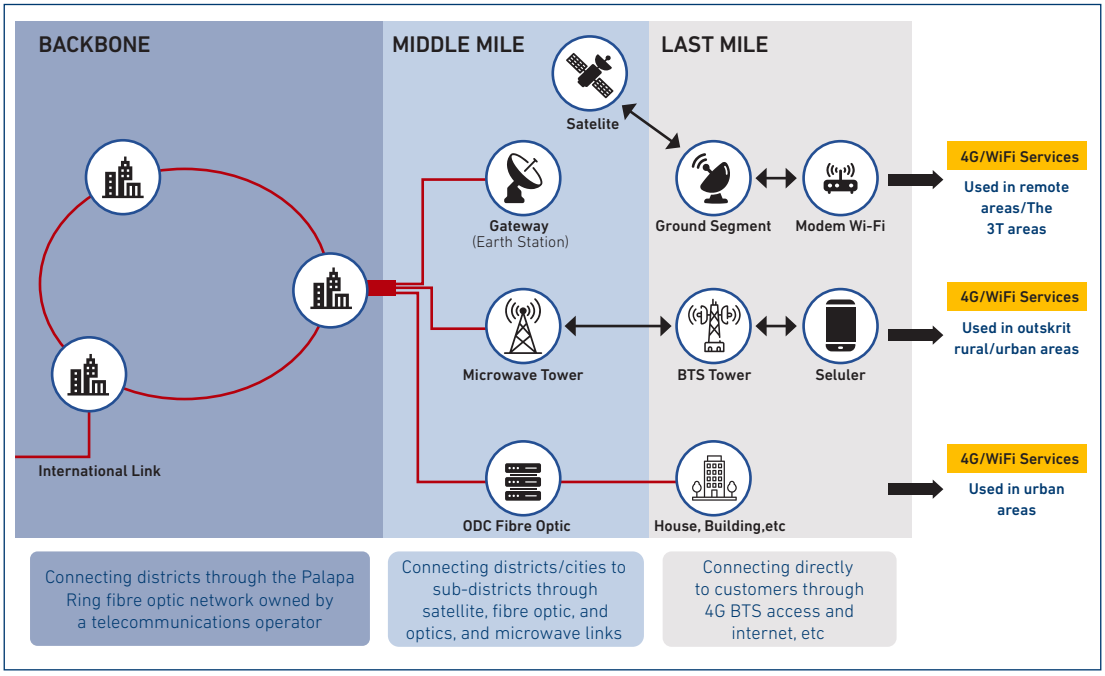
1.10.2. Project Objectives

Indonesia is an archipelagic country consisting of 17,499 islands with an area of 5,180,053 km^2 (Alfari, 2022), with these geographical conditions, providing infrastructure becomes a challenge in terms of both technical aspects and costs. The 3T areas are often the last priority for development. As a result, these areas are often isolated from access to information, making them susceptible to potential geopolitical and economic issues. In response, the government is committed to unifying all of Indonesia's regions through digital connectivity as outlined in the National Medium Term Development Plan (RPJMN) 2015–2019 and Presidential Regulation Number 96 of 2014 concerning the Indonesian Broadband Plan 2014–2019. This commitment aims to provide quality and equitable broadband access across the country. The government's efforts are manifested in the Palapa Ring Project, which serves as the backbone infrastructure for information and communication technology and is integrated with telecommunication operator networks.

The Palapa Ring Project started with the Nusantara-21 project that was inaugurated in 1997, which was a long-term programme promoted by the government to prepare for the development of communication technology in Indonesia. However, the project did not progress due to the economic crisis that Indonesia experienced in 1998. At the Infrastructure Summit I, for the first time the idea of the National Fibre Optic Ring (CSO-N), which is a ring-shaped submarine cable network containing integrated broadband frequency bands throughout the Indonesian region. This plan was chosen so that telecommunication operators with similar networks can play a more significant role in extending this backbone network to the middle mile and last mile, which are the end users (Figure 3.42).

After being delayed for 2 decades, the Palapa Ring Project, initiated in 1997, finally experienced significant progress after being designated as one of the National Strategic Projects (PSN). Gradually, from 2016 to 2019, the project successfully connected all regions of Indonesia. Government support in various forms of regulation and financing through a public–private partnership (PPP) financing scheme serves as evidence of the government's commitment to providing affordable internet access throughout Indonesia. Palapa Ring Project serves as backbone telecommunication network which connects the middle mile and last mile network, integrated with satellite project as middle mile network (also National Strategic Projects) especially for the distant area in Indonesia (see Figure 3.42).

Figure 3.42. The Telecommunication Infrastructure Layers in Indonesia



3T = *Terdepan, Terluar, and Tertinggal*, BTS = Base Transceiver Station, NOC = Network Operations Centre, ODC = Outdoor Connector.

Source: N. Christian (personal communication, 2 August 2023).

With the completion of the Palapa Ring Project, it is expected that all areas of Indonesia will have affordable internet access, enhancing digital literacy, reducing digital divides and information access gaps, opening opportunities for internet-based businesses and job opportunities, boosting economic growth, and enabling competitiveness in the global market (Indonesia Baik, 2018a).

1.10.3. Project Cost and Source of Fund

The funding sources for the implementation of the Palapa Ring Project are divided into two schemes: the Palapa Ring Broadband in 457 districts and/or cities, carried out by PT Telekomunikasi Indonesia (Telkom) with a private financing scheme and Palapa Ring Broadband (Eastern Part) in 57 districts and/or cities executed by Badan Aksesibilitas Telekomunikasi dan Informasi (Telecommunication and Information Accessibility Agency, Ministry of Communication and Information) as the responsible party for project implementation, using the PPP financing scheme.

The West Palapa Ring project was the first project in the communications sector that utilises the PPP financing scheme (CNN, 2019), with a total financing of Rp1.2 trillion for this project. Meanwhile, for the Central Palapa Ring Project total financing for the project reaches Rp1.3 trillion and for the East Palapa Ring Project, the total is Rp5.13 trillion. The concession period for all three projects is 15 years. The Palapa Ring project serves as evidence of the collaboration between the government and the private sector to achieve the interconnection of telecommunication networks in 514 regencies and/or cities across Indonesia.

1.10.4. External and Internal Factors

We collected data from stakeholders to measure respondents' perspectives. The participants are categorised into four categories: government and/or project implementers, academics, communities, and entrepreneurs. All participants who filled out the survey were those directly impacted by the Palapa Ring Project. Next, their perceptions of various internal and external factors – the perceived reality and the perceived importance – were collected and analysed. Perceived reality measures the stakeholders' perception of the facts observed, whilst the perceived level of importance scores factors that respondents feel are important to the success of the project. Both are scored on a scale of 1 to 6, where 1 indicates a very negative perception, whilst a score of 6 is a very positive reception.

1.10.4.1. External Factors

The identified external factors are the level of support from the local community for the Palapa Ring Project (E_1); the opportunity for private individuals/communities to become development investors (E_2); the potential of the Palapa Ring Project in job creation (E_3); the impact of the Palapa Ring Project on opening up access to the surrounding areas (E_4); the impact of the Palapa Ring Project on the emergence of new businesses for the community (E_5); the impact of the Palapa Ring Project on improving the welfare of the community (E_6); the impact of the Palapa Ring Project on increasing regional income (E_7); the availability of land for the Palapa Ring Project (E_8); timeliness of the funding disbursement for the Palapa Ring Project to investors (E_9); and the level of potential disputes in the implementation of the Palapa Ring Project (E_{10})

1.10.4.2. Internal Factors

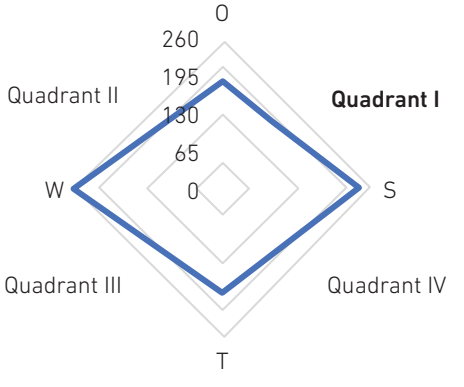
The identified internal factors are the deregulation or enactment of regulations (I_1); the availability of infrastructure supporting the Palapa Ring Project (I_2); the accuracy of the appointment of the Palapa Ring Project implementer (I_3); government support in financing (I_4); the level of ease of licensing for the Palapa Ring Project (I_5); the level of modern technology utilisation in the Palapa Ring Project (I_6); timeliness in the construction of the Palapa Ring Project (I_7); appropriateness of the allocation of the results of the Palapa Ring Project (I_8); and the availability of supporting facilities for the Palapa Ring Project (I_9).

1.10.5. SWOT Results and Analysis

Building digital connectivity in an archipelagic country like Indonesia presents its own challenges for the implementation of the Palapa Ring Project. In addition, Indonesia's geography, which consists of mountains and oceans, added to the challenges in implementing the construction of the Palapa Ring Project.

To evaluate the implementation of the Palapa Ring Project, as well as to analyse the strengths and weaknesses including analysing the opportunities and threats that might be faced from the Palapa Ring Project, a SWOT analysis was carried out on the Palapa Ring Project. The SWOT analysis was carried out by distributing questionnaires to four category groups: government and/or project implementers, academics, communities, and entrepreneurs. Based on the results of the SWOT analysis, the strengths and opportunities are the dominant factors when compared to the weaknesses and threats (Figure 3.43).

Figure 3.43. SWOT Analysis

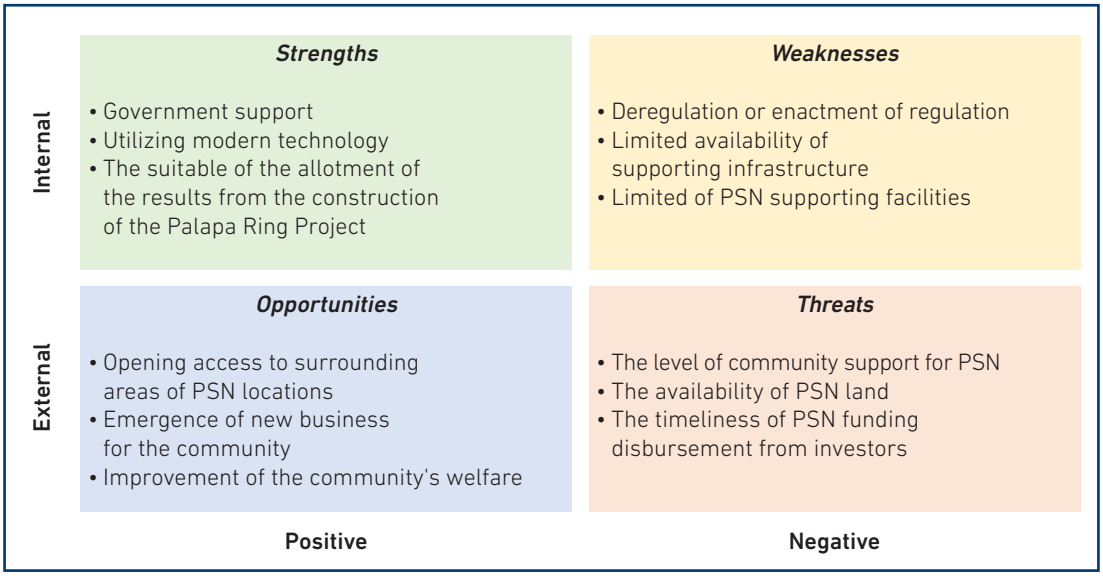


Categories		Values
O	**Opportunities**	**221.17**
S	**Strengths**	**248.31**
T	Threats	170.19
W	Weaknesses	155.64

Source: Authors, 2023.

A summary of the three with the highest values identified as strengths, weaknesses, opportunities, and threat is presented in Figure 3.44.

Figure 3.44. SWOT Analysis Priority Matrix



Source: Authors, 2023

Based on the questionnaire data, the three main factors that are the strengths of the Palapa Ring Project are government support, the use of modern technology in the development of this project, and the suitability of the allotment of the results from the construction of the Palapa Ring Project. Government support can be seen through various actions taken to support the implementation and utilisation of the Palapa Ring Project. During the development phase, the government has provided various facilities for both permit and non-permit activities in crossing marine conservation areas and protected areas. The government also provided support during the operational period.

1.10.5.1. Main Challenges and Benefits

The weaknesses of the Palapa Ring Project include the adequacy of supporting facilities, concern for the development of the Palapa Ring Project for environmental sustainability, as well as the availability of supporting infrastructure for the project. In addition to an analysis of the strengths and weaknesses of the Palapa Ring Project, an analysis of the opportunity and threat factors of the project was also carried out. The opportunities from the Palapa Ring Project include opening access to the area around the project location, creating new businesses for local communities, increasing regional income, and improving the welfare of the people around the project. The threats that must be watched out for include investor interest in the project.

To attract investors who are internet service providers or telecommunications operators to utilise the Palapa Ring, government support is needed to be able to provide convenience in the collaboration process. At present, the permit process is still difficult to grant to the executors of the construction of the Palapa Ring Project. It is hoped that this support will be able to optimise the use of the Palapa Ring to integrate digital connectivity in Indonesia. The existence of the project is proof of the government's commitment to developing Indonesia in a fair and equitable manner. The internet network is not only enjoyed by urban communities but can be enjoyed throughout the country.

1.10.5.1.1. West Palapa Ring

The West Palapa Ring Package was the first package to be built from the entire series of Palapa Ring projects. On 22 January 2016, the Ministry of Communication and Informatics (Kominfo) announced the winner of the West Palapa Ring Package tender, PT Palapa Ring Barat, which is a consortium of Moratel-Ketroden Triasmitra with the composition of PT Moratelematika Indonesia 90% and PT Ketrosden Triasmitra 10%. The signing of the West Palapa Ring Package Project was held at the Office of the Ministry of Finance on 29 February 2016. The agreement signed was a guarantee agreement between PT Penjaminan Infrastruktur Indonesia and PT Palapa Ring Barat. In addition, at that moment a regress agreement was also signed between PT Indonesia Infrastructure Guarantee with the Ministry of Communication and Information (PT Penjaminan dan Infrastruktur Indonesia, 2016).

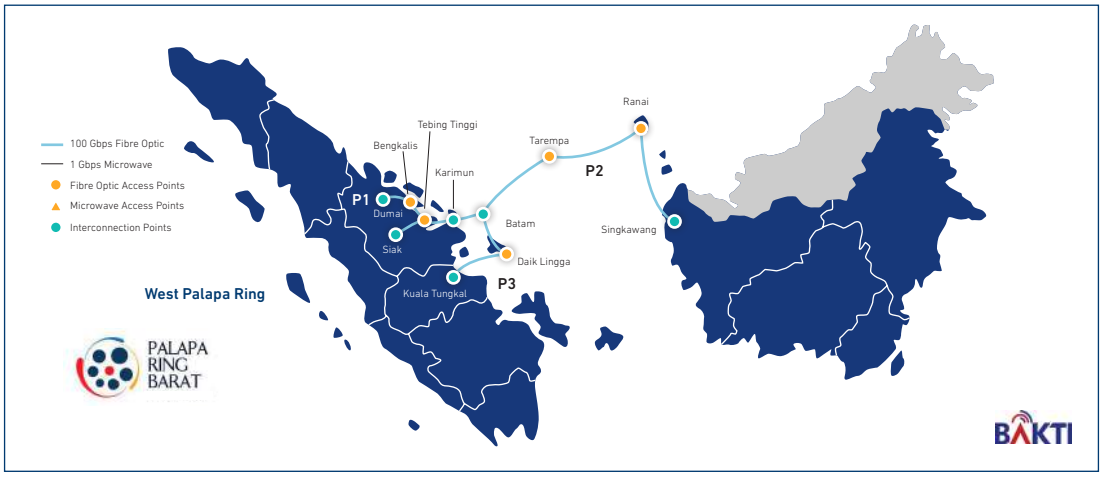
On 17 October 2016, the Palapa Ring West Package project officially started. The start of the project was marked by the ground-breaking by the Minister of Communication and Information (as the person in charge of collaboration projects) at Pasir Panjang Beach, Singkawang, West Kalimantan. In Figure 3.45, it can be seen that the West Palapa Ring Project consisted of three projects connecting Sumatra, Riau Islands, and Kalimantan. The total length of fibre optic cables for the West Palapa Ring Project reaches 2,255 km, consisting of 1,724 km of submarine fibre optic cables and 531 km of terrestrial fibre optic cables.

The West Palapa Ring Project officially started operating on 2 March 2018. The existence of The West Palapa Ring Project can assist internet service providers or telecommunication operators in providing affordable internet services. This is because the project has significantly reduced the investment burden in infrastructure development.

Various benefits have been felt by the community in the West Palapa Ring Project development area. One of the areas affected by the construction of the West Palapa Ring Project is Natuna Regency in the Riau Archipelago Province. Access to quality communication lines is the main thing for Natuna Regency, considering that Natuna Regency is a border area. In addition, the presence of the West Palapa Ring Project has had a positive impact on economic growth in Natuna Regency. Before the West Palapa Ring existed, economic growth in Natuna Regency was only 3%, but after the operation of the West Palapa Ring it increased to 5.8%. Apart from Natuna Regency, Lingga Regency has also felt the positive impact of the West Palapa Ring Project. The tourism sector, education sector, and economic sector in Lingga Regency have developed significantly and provided positive impact on the people of Lingga Regency (PalapaRing.id, 2018).

In 2019, a land fire occurred in Bunguran Selatan District (Natuna Regency), which caused the fibre optic cables of the Palapa Ring Project to catch fire. The impact of the fire resulted in a 9-hour internet disruption in Natuna Regency. To prevent similar incidents, the Department of Communication and Information, Department of Public Works and Spatial Planning, Fire Department, and local authorities have educated the surrounding communities to actively protect national assets (Liputan 6, 2019).

Figure 3.45. Points of the West Palapa Ring



Source: Telecommunication and Information Accessibility Agency (BAKTI), 2021.

1.10.5.1.2. Central Palapa Ring

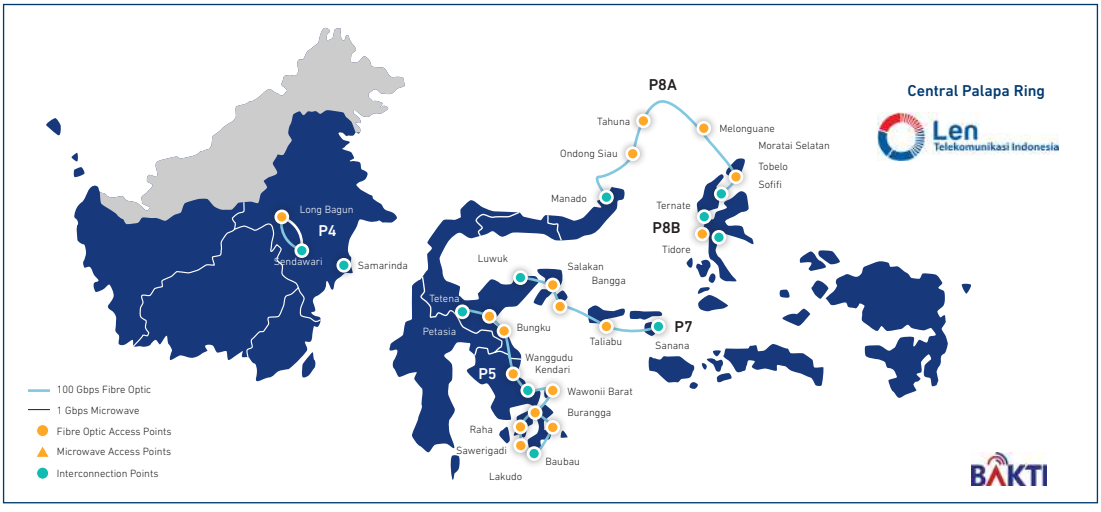
After the West Palapa Ring Project began running, the next stage was the construction of the Central Palapa Ring Project. The announcement of the winning bidder for the Central Palapa Ring Project was delivered simultaneously with the winner of the West Palapa Ring Project, on 22 January 2016. The winning bidder, who was determined as the implementing entity for the Central Palapa Ring Project is the Pandawa Lima Consortium, consisting of (Ministry of Communication and Information Technology, 2016b):

a. PT. LEN Telekomunikasi Indonesia (Ketua Konsorsium), 51%;
b. PT. Teknologi Riset Global Investama (TRG), 34%;
c. PT. Sufia Technologies, 5%;
d. PT. Bina Nusantara Perkara (BNP), 5%; and
e. PT. Multi Kontrol Nusantara, 5%.

The signing of the Cooperation Agreement, Guarantee Agreement, and Regress Agreement was held on 4 March 2016 in Jakarta.

As a milestone in the implementation of the Central Palapa Ring Project, the Minister of Communication and Informatics laid the ground-breaking in South Morotai, North Maluku Province. The Central Palapa Ring Project consists of six projects connecting Kalimantan, Sulawesi, and the Maluku Islands. The total length of fibre optic cables for the Central Palapa Ring Project reaches 3,196 km, consisting of 2,110 km of submarine fibre optic cable and 1,086 km of terrestrial fibre optic cable. The Central Palapa Ring Project officially commenced on 21 December 2018.

Figure 3.46. Points of The Central Palapa Ring Project



Source: Telecommunication and Information Accessibility Agency (BAKTI), 2021.

1.10.5.1.3. East Palapa Ring

The East Palapa Ring Project was the last package of the entire series of the Palapa Ring Project. The auction for the East Palapa Ring Package was separated from the two previous projects due to the complex characteristics of the eastern part of Indonesia, requiring in-depth research. On June 17, 2016, the winner of the East Palapa Ring Project tender was announced: PT Palapa Timur Telematika, which is a consortium of Moratelindi–IBS–Smart Telecom. The signing of the Cooperation Agreement, Guarantee Agreement, and Regress Agreement was held on 29 September 2016 at the Presidential Palace and witnessed by the President of the Republic of Indonesia (Ministry of Communication and Information Technology, 2016a).

The East Palapa Ring Project consisted of 10 projects connecting East Nusa Tenggara, Maluku, West Papua, and Papua. The total length of fibre optic cables for the East Palapa Ring Project reached 7,003 km, consisting of 4,557 km of submarine fibre optic cable and 2,446 km of terrestrial fibre optic cable. In addition, because the geographical conditions in the Papua region are characterised by mountains and highlands, 52 towers and 49 radio microwave hops were also built (as depicted in Figure 3.47).

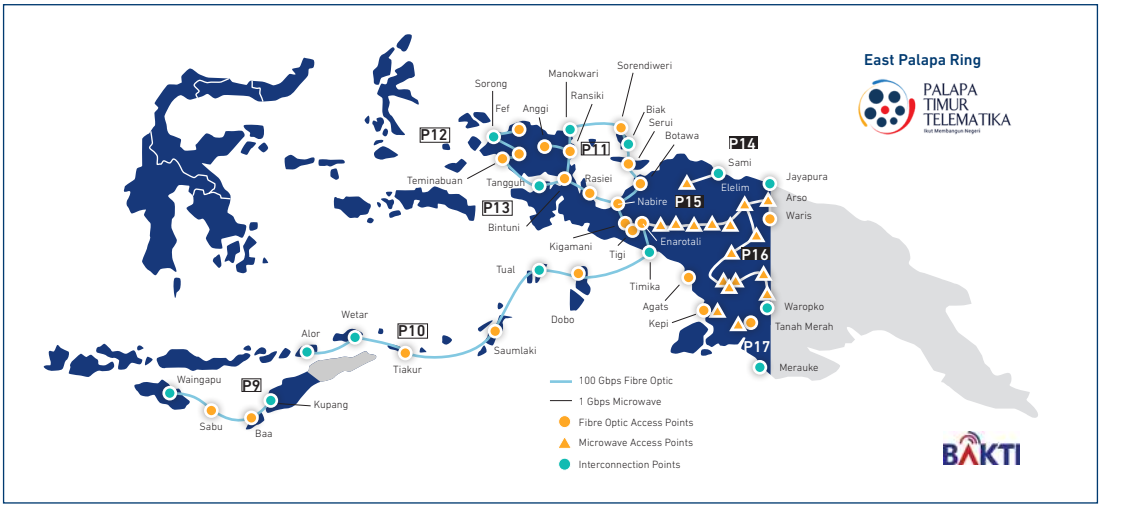
Specifically for the East Palapa Ring Project, there are points that utilise microwave fibre technology including:

a. Project 14, covering Sarmi, Burmeso;
b. Project 15, covering Timika, Tigi, Enarotali, Sugapa, Ilaga, Kota Mulia, Karubaga, Tiom, Kobakma, Elelim, Jayapura;
c. Project 16, covering Jayapura, Elelim, Wamena, Kenyam, Sumohai, Dekai, Oksibil, Waropko; and
d. Project 17, covering Timika, Agats, Kepi, Tanah Merah, Merauke or Timika, Agats, Kepi, Tanah Merah, Waropko.

The East Palapa Ring Project officially started operating on 14 October 2019. The government's commitment to continue to carry out equitable distribution of development throughout the country, is evidenced by the construction of access roads and telecommunications infrastructure in eastern Indonesia. Various benefits have been felt by the people in eastern Indonesia, one of which is South Sorong Regency. The East Palapa Ring Project provides access to quality communications, thus accelerating economic growth in the Regency. This is also felt by the people in Keerom Regency, where 80% of the area can already enjoy the internet network through the East Palapa Ring Project. The hope is that the reach of the East Palapa Ring will be expanded, so that it can reach all areas in Keerom Regency which is directly adjacent to Papua New Guinea.

Apart from natural factors, on 9 January 2021, tower B4-B5 located in Puncak Regency (Papua) was vandalised and set on fire by unknown individuals. To minimise the impact of vandalism, the Ministry of Communication and Information quickly took action by utilising satellite technology (VSAT) as a backup. Additionally, to prevent similar incidents, the Ministry of Communication and Information collaborated with the Indonesian national armed forces, the national police, and local governments to secure the Palapa Ring infrastructure (Liputan 6, 2021). Then, on 2 March 2022, eight workers from the Palapa Ring Project and national armed forces soldiers were shot by an armed criminal group in Papua (Kompas, 2022).

Figure 3.47. Points of The East Palapa Ring Project



Source: Telecommunication and Information Accessibility Agency (BAKTI). 2021.

Conclusions

The completion of the Palapa Ring network construction complements the entire infrastructure layers in Indonesia, in addition to other infrastructure developments such as multi-functional satellites, base transceiver station towers, internet access provision, and ecosystem services carried out by Badan Aksesibilitas Telekomunikasi dan Informasi (Ministry of Communication and Information). The next task is related to its utilisation, considering that the utilisation of the Palapa Ring network can still be improved. This is understandable as the construction of the Palapa Ring network is still in the peripheral and the 3T areas where the user base is not as extensive as in urban areas. Initiated in 1997, the project finally experienced significant progress after being designated as one of the National Strategic Projects (PSN). In addition, government support in various forms of regulation and financing through a PPP financing scheme serves as evidence of the government's commitment to providing affordable internet access throughout Indonesia.

In 2045, coinciding with the 100th anniversary of Indonesia's independence, Indonesia is targeting to become 'Indonesia Emas' (Golden Indonesia). By that year, Indonesia is expected to have become a developed country and on par with superpower countries. One of the pillars in realising this vision is through equitable development and economic transformation based on technology. The government has built the Palapa Ring network as the backbone of information and communication technology infrastructure throughout Indonesia, providing internet connectivity even to remote areas. The government's commitment to accelerate the implementation of the Palapa Ring Project was realised through its designation as one of the National Strategic Projects, as stated in Presidential Regulation Number 3 of 2016 concerning the Acceleration of National Strategic Project Implementation. By being recognised as a National Strategic Project, the stalled Palapa Ring Project was successfully completed within 3 years.

The next task and duty of the people in Indonesia is to safeguard and maintain the built infrastructure. Furthermore, they should maximise the benefits of IT infrastructure for the creative economy, improve productivity, and integrate it with other connectivity infrastructure. The operation of the Palapa Ring Project is a significant milestone in realising Indonesia Emas in 2045.

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1.11. Soekarno–Hatta International Airport Express Train

1.11.1. Project Profile

The Soekarno–Hatta International Airport (SHIA) express train project is considered one of Indonesia's National Strategic Projects. It entails the development of an alternative transportation mode connecting the Soekarno–Hatta International Airport with Manggarai Station, located in the South Jakarta Administrative City. The objective of the SHIA express train project is to improve railway transportation services, particularly for passenger transport to the Soekarno Hatta International Airport via Tangerang, by the mandate of the President of the Republic of Indonesia as stipulated in Presidential Regulation Number 83 of 2011. This regulation assigns PT Kereta Api Indonesia (Persero) the responsibility of managing the infrastructure and facilities of the Soekarno–Hatta International Airport Railway and the Jakarta–Bogor–Depok–Tangerang–Bekasi circular line. PT Kereta Api Indonesia (Persero) prepares and implements the necessary infrastructure and facilities for the SHIA railway. As mentioned, the company is authorised to take the necessary measures to realise the railway infrastructure. The implementation period of this project was from 2015 to 2017, and it was included in the National Strategic Project programme, starting in 2016, based on the Republic of Indonesia Presidential Regulation Number 3 of 2016, which was amended by Republic of Indonesia Presidential Regulation Number 56 of 2018 concerning the Acceleration of National Strategic Project Implementation.

Figure 3.48. Soekarno–Hatta International Airport Train Station and BNI City Station

Sources: Left, PT Angkasa Pura II (Persero) (2018), and right, KAI Bandara (2022).

The SHIA express train project passes through stations within the city that are easily accessible by road and other modes of transportation. These stations are located near commercial centres and densely populated residential areas. Furthermore, they connect with Jakarta's mass raid transit (MRT) system and other railway lines. The airport station expects to be situated near the airport's passenger terminals, allowing travellers to conveniently walk from the train station to the departure terminal or from the baggage claim area to the arrival terminal.

The express train will be a fast and convenient transportation alternative to and from the Soekarno–Hatta International Airport. According to the infographic by Indonesiabaik.id. (2017), this train will consist of 10 carriages and has a capacity of 274 passengers. Initially, the Soekarno–Hatta International Airport express train only served 80 trips per day, but over time, the total number of trips increased to 124 per day. The airport train will operate every 15 minutes, resulting in a total available seating capacity of 33,976 seats daily (Jamil, 2016).

The SHIA express train is located in DKI Jakarta and Banten. The express train departs from Manggarai Station and stops at Sudirman Baru Station (BNI City Station) and Duri Station, located in DKI Jakarta. It then continues to Batu Ceper Station and Soekarno–Hatta International Airport Station in Banten. According to Rahayu (2018), the total length of the train route is 36.3 km, consisting of 24.2 km of existing tracks between Manggarai Station and Batu Ceper Station and 12.1 km of new rails between Batu Ceper Station and Soekarno–Hatta International Airport Station. Both Soekarno–Hatta International Airport Station and Sudirman Baru Station (BNI City Station) are new stations explicitly built for this project. The express airport train passengers benefit from a particular dedicated platform building when boarding or disembarking at Manggarai Station, Duri Station, and Batu Ceper Station. At these three stations, Soekarno–Hatta International Airport express train passengers can transfer to commuter trains at separate platforms to continue their journey.

To ensure the success of the Soekarno–Hatta International Airport express train, the government has undertaken renovation and refurbishment projects at several stations along its route. These stations include Manggarai Station, Sudirman Baru Station (BNI City Station), Duri Station, and Batu Ceper Station. Manggarai Station is being prepared as the most significant transit station, serving as a hub for integrating electric rail line commuter services, long-distance train departures, and the Soekarno–Hatta International Airport express train. The Soekarno–Hatta International Airport express train is anticipated consistently operate on schedule, providing swift transportation to and from Soekarno–Hatta International Airport at competitive ticket prices compared to other ground transportation modes.

1.11.2. Project Objectives

The development activities of the railway system in Jabodetabek are based on the Presidential Regulation of the Republic of Indonesia Number 83 of 2011 concerning the assignment to PT Kereta Api Indonesia (Persero) of the management of the infrastructure and facilities of the SHIA Railway and the Jakarta–Bogor–Depok–Tangerang–Bekasi Loop Line. Planning for the development of the Soekarno-Hatta International Airport railway began in 2013, with the initial route from Soekarno Hatta International Airport to Halim Perdana Kusuma Airport. Subsequently, changes in the transportation landscape, including the development of the LRT, online taxi, and other technical considerations, necessitated adjustments to the project plan. As a result, the route was modified to extend to Manggarai Station without passing through Pluit Station and Angke Station.

In accordance with the Republic of Indonesia Presidential Regulation Number 3 of 2006, which was amended by the Republic of Indonesia Presidential Regulation Number 56 of 2018 regarding the Acceleration of National Strategic Project Implementation, the development of the Soekarno-Hatta International Airport Express Train became one of the National Strategic Projects. The primary goal is to expedite the construction of infrastructure and facilities along the train's route. This involves the creation of a new track segment between Batu Ceper Station and Soekarno-Hatta International Airport Station, spanning 12.1 kilometres, which requires accelerated processes for permits, land acquisition, and physical construction. The expedited development process is a notable feature of the Soekarno-Hatta Airport International Express Train Project compared to projects that are not part of the National Strategic Projects.

This project is carried out with the objective of enhancing railway transportation services to facilitate passenger transport to and from the Soekarno–Hatta International Airport in Tangerang. The project expects to accommodate the access needs to and from the airport, support economic growth in the vicinity, and stimulate local and national economies. The economic benefits of this project include promoting increased commercial and industrial activities along the route and generating employment opportunities for the local population. The operation of the Soekarno–Hatta International Airport express train is expected to bring traffic congestion reduction, and there will be a 30% decrease in the volume of vehicles heading to Soekarno Hatta International Airport (Indonesia baik.id., 2017).

1.11.3. Project Cost and Source of Fund

According to the Committee for the Acceleration of Priority Infrastructure Provision (KPPIP, 2023), the SHIA express train project requires an investment cost of Rp24.5 trillion. The funding sources for this project are derived from state-owned enterprises (BUMN). The construction works of the airport express railway include the development of tracks, construction of bridges, establishment of Sudirman Baru Station (BNI City Station), Duri Station, and Batu Ceper Station, procurement of railway switches, acquisition and installation of railway tracks with concrete supports, installation of digital radio communication devices, procurement and installation of overhead electrification systems and electrical substations along the railway line, construction of telecommunication infrastructure, and signal works on the railway line.

1.11.4. External and Internal Factors

Based on the successful development of the SHIA express train project, there are also benefits for stakeholders and challenges that need to be managed to ensure the success of this railway project. Challenges represent external factors from the central and regional governments that are beyond control (opportunities and threats), while benefits represent internal factors that can be controlled (strengths and weaknesses) and can either support or hinder the achievement of a goal.

We have gathered data from stakeholders, including government and/or project implementers, academics, entrepreneurs, and service users, to gauge respondents' perspectives. The perceptions of internal and external factors from these respondents were collected and analysed. Perceived reality measures stakeholders' perceptions of observed facts, while the perceived importance assesses factors that respondents consider crucial for project success. Both aspects are scored on a scale of 1 to 6, where a score of 1 indicates a highly negative perception, and a score of 6 signifies a highly positive acceptance.

1.11.4.1. External Factor

Several external factors identified include land acquisition issues for the new railway infrastructure (community support level towards the project), investor interest in developing the circuit in the project area, opportunities for private and community investment in the project, potential job creation by the project, the impact on traffic congestion in the project vicinity, emergence of new businesses for the local community, opportunities for increased air passenger usage of the railway transportation mode, public use of the railway as a mode of transport to SHIA, potential enhancement of community welfare, potential revenue generation for the state/region, project land availability, timeliness of project funding disbursement from investors, the likelihood of disputes or legal challenges in the project execution process, and the ease of obtaining permits for the project location.

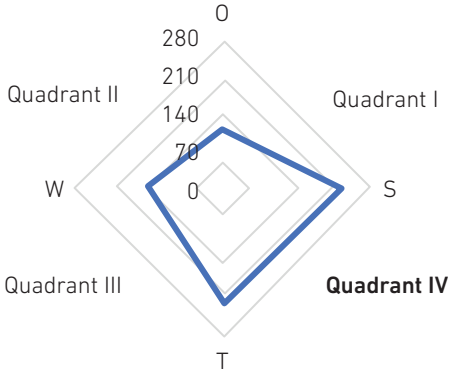
1.11.4.2. Internal Factor

The internal factors identified in this project include the issuance of regulations to support project implementation, the suitability of the project location for the railway line, alignment of the project development with regional spatial planning and land use, availability of supporting infrastructure, the appropriate selection of PT Railink as the project executor, support from the central and/or regional government in project financing, the ease of obtaining permits during the project preparation process, smoothness of technical construction development, utilisation of modern technology in project construction, adherence to project timelines, the quality of physical project outcomes, alignment of project development with intended purposes, consideration of environmental sustainability in project development, adequacy of supporting facilities, reasonable train ticket prices, and the number of stations or stops along the railway line to facilitate passenger boarding and disembarking.

1.11.5. SWOT Results and Analysis

Based on the SWOT analysis results, the SHIA express train project falls within Quadrant four (Figure 3.49) indicating that internal factors, characterised as strengths, have the highest value, whilst external factors, represented as threats, have the second highest value. The SWOT position in Quadrant four signifies strategies that the government can undertake to optimise the prevailing conditions, including ensuring the sufficiency of project support facilities to mitigate existing threats.

Figure 3.49. SHIA Express Train SWOT Analysis Results

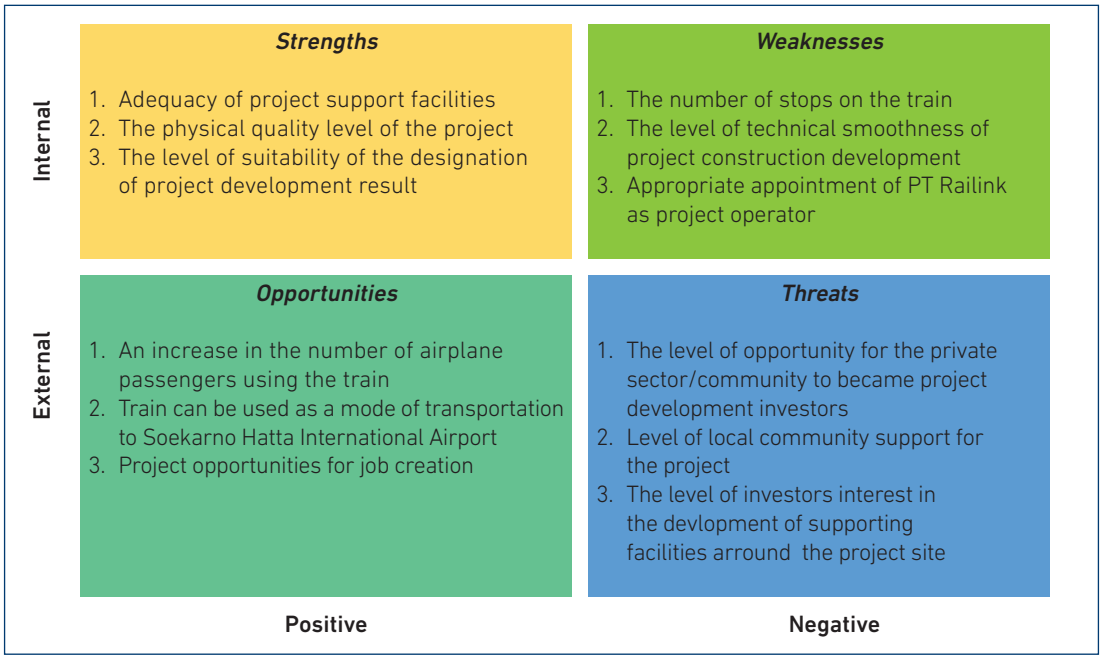


Categories		Values
S	**Strengths**	**240.58**
W	Weaknesses	144.49
O	Opportunities	107.77
T	**Threats**	**234.76**

Source: Authors, 2023.

A summary of the three highest-rated factors identified as strengths, weaknesses, opportunities, and threats is presented in Figure 3.50.

Figure 3.50. Results of SWOT Analysis on the SHIA Express Train



Source: Authors, 2023.

1.11.5.1. Main Challenges

The weaknesses of the SHIA express train project include its limited stops along the route. The train departs from Manggarai Station and only stops at Sudirman Baru (BNI City) Station, Duri Station, Batu Ceper Station, and ends at SHIA Station, and vice versa. It does not stop at all stations along the way, making it a specialised commuter train. Another weakness is related to land acquisition issues for the new 12.1 km railway track between Batu Ceper Station SHIA Station. According to Jamil (2016), land acquisition for this express train project was carried out gradually due to challenges with local residents. PT KAI (2016) mentioned that land acquisition for the construction of infrastructure for the SHIA express train project was accelerated through gradual payments. PT KAI collaborated and coordinated with the National Land Agency in Tangerang City for the issuance of Handover Certificate for the land acquisition. PT KAI also expedited the construction on the lands that were gradually and continuously freed. The construction started on a 6 km stretch of land owned by PT Angkasa Pura II (Persero), followed by other lands that were gradually and continuously released.

Regarding the opportunities of this project, PT Railink, as the initial operator of the express train, aims to carry 33,000 passengers daily. PT Railink operates 10 train sets consisting of 6 to 10 carriages. Initially, the SHIA express train only served 80 trips per day, but over time, the total number of trips increased to 124 per day, with a seating capacity of 274 seats per trip. The airport train will operate every 15 minutes, resulting in a total available seating capacity of 33,976 seats daily (Jamil, 2016). Consequently, the number of passengers transported by the airport express train is expected to increase, leading to more passengers choosing this mode of transportation for air travel. Another opportunity of this project is that the SHIA express train can be utilised by the public as a comfortable and punctual mode of transportation to and from the airport, thus creating job opportunities for the affected communities. As part of their corporate social responsibility, in 2016, the company provided job opportunities for community members affected by the land acquisition for the construction of the SHIA railway. A total of 128 individuals successfully passed the recruitment process and became new employees of PT KAI for the year 2016 (PT KAI, 2016).

As for the threats to this project, they include the level of interest from the private sector and/or community as potential investors in the project, the level of community support for the project, and the level of interest from investors in developing supporting facilities around the project site. The expansion and increased coverage of DAMRI bus services at SHIA also pose a threat to the project. Currently, there are 28 DAMRI bus routes operating at the airport, with a fleet of 180 buses. From January to August 2022, DAMRI buses served a total of 1,650,000 customers at SHIA (DAMRI, 2022). Furthermore, on 23 June 2023, DAMRI added another route for transportation services from SHIA to Mega City Bekasi (DAMRI, 2023).

Another threat comes from PT Transportasi Jakarta (Trans Jakarta), which is planning to expand its services to SHIA in the near future (CNN Indonesia, 2023). Initially, the Trans Jakarta buses to SHIA were intended to serve the mobility needs of employees working in various institutions within the airport area, totalling 40,000 to 50,000 people. According to Sutrisna (2023), Trans Jakarta buses are expected to operate on specific routes to SHIA during certain hours, such as in the morning from 6:00 am to 9:00 am and in the evening from 6:00 pm to 9:00 pm. The Trans Jakarta buses underwent a trial service to SHIA starting in July 2023, with 15 buses operating from Kalideres Terminal in West Jakarta to the airport. There is a high possibility that Trans Jakarta buses will also serve the general public and air passengers. If Trans Jakarta buses cater to the general public and air passengers, it will provide many transportation options for the public and undoubtedly pose a threat to the SHIA express train. Thus, the express train needs to consistently provide top-notch services to avoid losing its customers to competing alternatives.

1.11.5.2. Main Benefits

To address the existing weaknesses and threats, this project also possesses strengths, including the adequacy of supporting facilities, the physical quality level of the project, and the alignment with the designated outcomes of the project. In 2023, the operation of this express train, which was previously managed by PT Railink, was transferred to PT Kereta Commuter Indonesia (PT KCI). There will be an addition of train carriages that will operate to increase the seating capacity and operational efficiency of the train. The express train will make stops at several stations operated by PT KCI, leading to the addition of new stops to accommodate more passengers and facilitate easy boarding and alighting according to the desired locations of the passengers. According to Sandi (2023), the government, through the Ministry of Transportation, has plans to extend the operations of the Soekarno Hatta International Airport express train to Bekasi. The travel route of the Soekarno Hatta International Airport express train from Bekasi to the airport will pass through stations such as Jatinegara, Pasar Senen, Kampung Bandan, Duri, and Batu Ceper, and vice versa. The expansion of the service to include the route from Soekarno Hatta International Airport to Bekasi is possible because the express train is now managed and operated by PT Kereta Commuter Indonesia (PT KCI), allowing for the synchronisation of departure and arrival schedules with the commuter trains. To facilitate air passengers heading to Soekarno Hatta International Airport, counter check-in and baggage services will be provided at each station where the express train stops. Additionally, the carrying capacity of this express train will be increased by adding more train carriages, increasing the total from the current 40 trainsets to 56 trainsets.

Figure 3.51. Soekarno Hatta International Airport (SHIA) Express Train Series

Source : KAI Commuter (2023).

Conclusions

The SHIA express train project is an alternative transportation development project connecting Manggarai Station to SHIA with a track length of 36.3 km, consisting of 24.2 km of existing track between Manggarai Station and Batu Ceper, Station and 12.1 km of new track between Batu Ceper Station and Soekarno Hatta International Airport Station. The project is undertaken with the aim of improving the railway transportation service to cater to passenger transport to and from the Soekarno Hatta International Airport, with the hope of reducing congestion and decreasing the volume of vehicles heading to the airport by 30%. The project's implementation period was from 2015 to 2017, and starting from 2016, this express train project became a part of the National Strategic Project programme. The objective was to expedite the development of the infrastructure and facilities for the Soekarno-Hatta International Airport train and the Jakarta–Bogor–Depok–Tangerang–Bekasi circular rail line, in accordance with the Presidential Regulation of the Republic of Indonesia Number 83 of 2011. In 2023, PT Kereta Commuter Indonesia (PT KCI) took over as the operator of this train, replacing PT Railink. PT KCI will increase the number of trains and train carriages to enhance seating capacity and the operational efficiency of the train. The train will make stops at several stations operated by PT KCI. Continuous improvement of the train service is essential to ensure that railway transportation becomes a preferred choice for passengers traveling to the Soekarno Hatta International Airport.

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Part 2:
Non-connectivity Economic Infrastructure

2.1. JATIGEDE DAM

2.1.1. Profile Project

In the middle of Sumedang Regency flows the Cimanuk River, which originates at the base of Mount Papandayan in the Cisurupan District of Garut Regency. This river travels approximately 130 km to the northeast, passing through Garut, Sumedang, Majalengka, Cirebon, and Indramayu before flowing into the Java Sea (Kementerian PUPR, 2014).

The area traversed by the Cimanuk River falls within a tropical monsoon climate zone, experiencing distinct rainy and dry seasons throughout the year. The region receives abundant rainfall during the rainy season, leading to flooding disasters almost annually. Conversely, during the dry season, the water flow in and around the river is insufficient to meet the irrigation needs of the vast agricultural land spanning approximately 90,000 ha (Siahaan, 2017). The lack of irrigation causes the rice fields surrounding the Cimanuk River to suffer from drought.

To resolve these issues, the government took the initiative to build the Jatigede Dam and utilise the Cimanuk River's stored water. The Jatigede Dam was expected to alleviate irrigation water shortages, meet the demand for natural water supply, and generate hydroelectricity. In addition, the Jatigede Dam was also expected to control the annual floods that inundate areas downstream.

Figure 3.52. The Location of Jatigede Dam Before Construction

Source: Non-Vertical Specific Work Unit for the Development of Jatigede Reservoir, Jatigede Reservoir, personal communication, 16 June 2023.

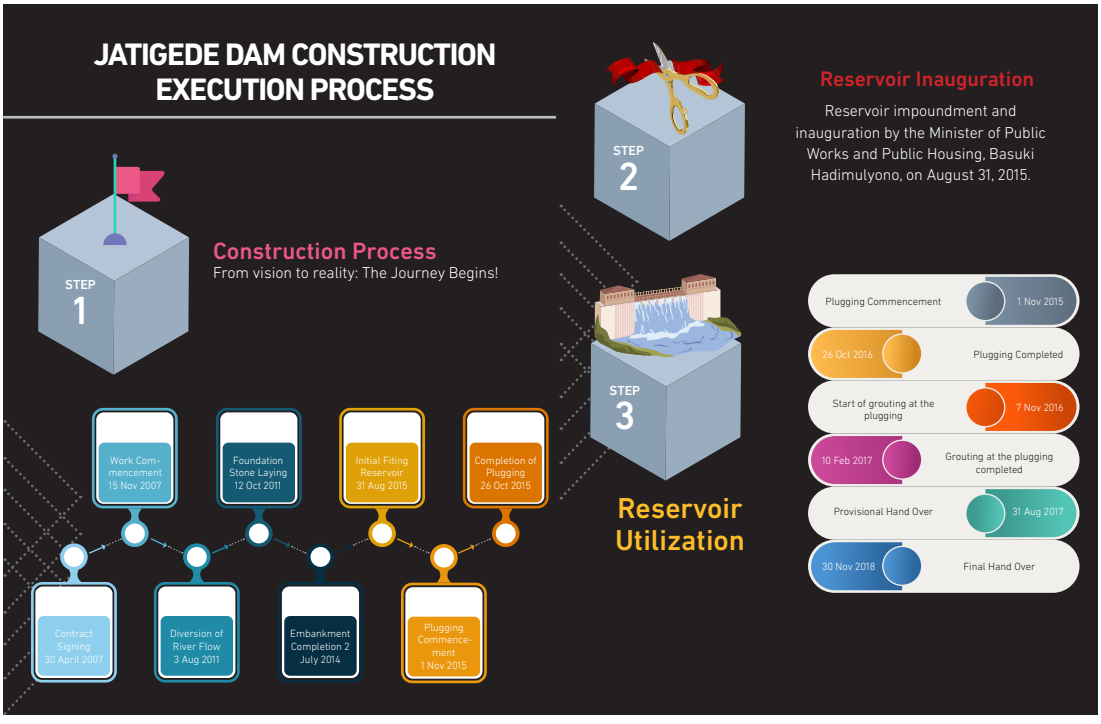
Jatigede Dam is one of the National Strategic Projects (PSN) located in Sumedang, as shown in Figure 3.52. The construction of the Jatigede Dam was listed as a PSN based on Presidential Regulation No.3/2016 regarding the Acceleration of the National Strategic Projects Implementation.

The initial studies of the dam were first conceived in 1963, with land clearance beginning in 1982. The design for the dam's construction was made in 1988, and construction work commenced 20 years later in 2007, taking eight years to complete in 2015 before becoming fully operational in 2017. By holding the status as a PSN in 2016, Jatigede Dam was given higher priority to be completed by the government. This ensured that sufficient resources and attention were allocated to efficiently and effectively complete the project. Furthermore, there was more intense coordination between the central government and local government to complete the Jatigede Dam. For instance, in 2016, the Ministry of Public Works and Housing and the Sumedang Regency Government coordinated efforts to expedite the construction of the access road to Jatigede Dam, specifically a ring road. They also requested the Sumedang Regency Government to promptly resolve the remaining 1 km of land that had not been cleared (Kementerian PUPR, 2016).

The Jatigede Dam construction process, as shown in Figure 3.53, occurred from 2007 to 2015 and was jointly managed by the Ministry of Public Works and Housing, the Cimanuk Cisanggarung River Basin Organization (BBWS Cimancis), the West Java Provincial Government, and the Sumedang Regency Government. In addition, the construction and management of the dam also involved various stakeholders, including the Financial and Development Supervisory Board, the National Land Agency, the Prosecutor's Office, the Police, and the Indonesian National Army.

Despite the challenges faced during the planning and construction process, the dam was completed with the support of various parties. The Jatigede Dam now stands in the heart of Sumedang and provides significant benefits. The Jatigede Dam primarily irrigates farmland, provides raw water, and helps generating hydroelectric power along the Cimanuk River.

Figure 3.53. Jatigede Dam Construction Execution Process



Source: Non-Vertical Specific Work Unit for the Development of Jatigede Reservoir, Jatigede Reservoir, personal communication, 16 June 2023.

Following the construction of the Jatigede Dam, the Jatigede Reservoir was formed. On 31 August 2015, the Minister of Public Works and Housing, Basuki Hadimulyono, inundated and inaugurated the reservoir. The Jatigede Reservoir is currently the second largest in Indonesia. With a capacity of 1.06 billion m^3, the Jatigede Reservoir irrigates 87,820 ha of agricultural land in the northern part of West Java (Kementerian PUPR, 2014).

2.1.2. Project Objectives

The Committee for Acceleration of Priority Infrastructure Delivery (*Komite Percepatan Penyediaan Infrastruktur Prioritas* /KPPIP) occupies a pivotal role in expediting the completion of the Jatigede Dam. Following the dam's classification as a PSN, the government accelerated its construction.

In 2016, the filling of the Jatigede Reservoir was completed in five stages. The initial phase encompassed the secure plugging of the reservoir until it approached its maximum capacity. Subsequently, the second phase entailed the assessment of dam instrumentation, culminating in a stability analysis. Continuation of dam behaviour assessment constituted the third phase. After the dam's activities stabilised, the water elevation level was raised to fill the reservoir in the fourth stage. In 2016, backfill grouting was also done on the cooling, release, and pressure-balancing pipes. In addition, in the same year, there were evaluations of dam readiness, including generator and machinery assessments, along with the installation of lightning protection systems.

One of the primary objectives of the construction is to control the Cimanuk River. During the dry season, the dam regulates the release of water, irrigating the vast agricultural land lining the riverbanks. In the rainy season, the dam holds back the excess flow, preventing catastrophic flooding downstream.

Beyond its role as a guardian of agricultural lands, the Jatigede Dam plays a crucial role as a reliable source of raw water supply. The pristine water held within the dam's reservoir undergoes rigorous treatment processes before cascading into taps and wells, bringing sustenance and vitality to households. The dam's presence, therefore, fosters a sense of community well-being, assuring society of a secure and potable water source.

The Jatigede Dam is expected to stand as a symbol of sustainable energy generation. Embracing innovative technologies, it is designed as a dynamic hydropower plant. The Sumedang Regency Government on its official website also mentioned that water from the Jatigede Reservoir is also planned for a 110 MW Hydro Power Plant (PLTA) (*Dinas Arsip dan Perpustakaan Daerah Kabupaten Sumedang*, 2023), which the State Electricity Company (PLN) will build. In addition to its vital role in water management and energy generation, the Jatigede Dam provides sustainable leisure for recreation seekers.

Lastly, besides its technical advantages, the Jatigede Reservoir is expected to offer natural beauty 'accidentally', resulting from its inundation process. Utilising this attractiveness, the neighbourhood makes an appealing tourist destination.

Given its designation as a PSN, the Jatigede Dam has a pivotal role in advancing sustainable growth and promoting equitable development, thereby enhancing the welfare of the populace, and fostering regional advancement.

2.1.3. Project Cost and Source of Funding

The construction of the Jatigede Dam, as shown in Figure 3.54, required a sizable amount of funds; for that, the Government of Indonesia cooperated with the People's Republic of China (PRC). In this project, the contract format used a unit price contract system, where the contract unit price for each work item was fixed and binding, rendered in Indonesia rupiah and US dollars (US$) (Siahaan, 2017). This contract's unit price includes all cost components, including transportation procurement fees, implementation fees, and all other expenses, including profits and contingencies. In determining the unit price of this contract, a technical analysis and an analysis of the unit price, which includes wages, materials, and instruments, were performed.

Figure 3.54. Construction of the Jatigede Dam

Source: Non-Vertical Specific Work Unit for the Development of Jatigede Reservoir, Jatigede Reservoir, personal communication, 16 June 2023.

The Jatigede Dam was constructed using the Republic of Indonesia's state budget and a loan from the PRC through the Export-Import Bank of China. The Directorate General of Debt Management (now the Directorate General of Financing and Risk Management) signed the loan agreement for the construction of the Jatigede Dam with the Ministry of Finance and the chief executive officer of the Export-Import Bank of China on 25 September 2007. The project payment was made through a monthly instalment system over 12 years with an annual interest rate of 3% (Kementerian PUPR, 2007). The payment amount was adjusted based on the completion of work volumes. Disbursement of payments was made with the agreement of various parties, including contractors, supervising consultants, and the dam's Non-Vertical Work Unit. The Jatigede Dam was constructed with a budget of approximately Rp4.674 trillion (Non-Vertical Work Unit for the Development of Jatigede Reservoir, personal communication, 19 June 2023). The construction contractor for the Jatigede Dam was Shinohydro from the People's Republic of China, working in collaboration with an Indonesian consortium composed of PT. Hutama Karya, PT. Wijaya Karya, PT. Waskita Karya, and PT. Pembangunan Perumahan.

2.1.4. External and Internal Factors

We collected data from stakeholders to measure respondents' perspectives. The collection of the respondents' perceptions was done through a questionnaire. The participants included government and/or project implementers, academics, the community, and business owners. The government and/or project implementers were from the Ministry of Public Works and Housing, the Cimanuk Cisanggarung River Basin Organisation, and Non-Vertical Work Unit of the Jatigede Dam Construction. The academics were from various universities in the surrounding area of Sumedang. Meanwhile, the selected community and business owners were those located around the Jatigede Dam area in the Sumedang region.

Next, their perception of various internal and external factors – their perceived reality and perceived importance – was collected and analysed. Perceived reality measures the stakeholders' perception of the facts observed, whilst the perceived level of importance scores factors that respondents feel are important to the success of the project. Both are scored on a scale of 1 to 6, where 1 indicates a very negative perception and a score of 6 a very positive reception.

2.1.4.1. External Factors

The identified external factors are the level of support from the local community for PSN (E_1); the level of investor interest in supporting facilities in the PSN area (E_2); PSN opportunities in job creation or new business (E_3); opportunities of PSN in improving people's welfare (E_4); opportunities for PSN in increasing state and/or regional revenues (E_5); availability of land for PSN development (E_6); potential for disputes or lawsuits in the PSN implementation process (E_7); alignment of PSN with its purposes (E_8); and the availability of competent human resources to implement the PSN construction (E_9).

2.1.4.2. Internal Factors

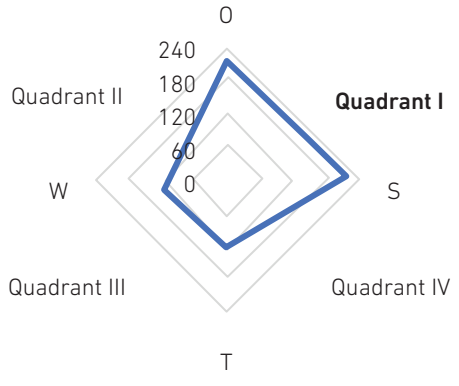
The identified internal factors are the deregulation or enactment of regulations (I_1); compatibility of PSN development with regional spatial planning and land use (I_2); access to infrastructure that supports PSN (I_3); support from the central and/or regional government in PSN financing (I_4); level of technical smoothness of PSN construction (I_5); timeliness in PSN construction (I_6); PSN physical quality level (I_7); level of concern for the development of PSN for environmental sustainability (I_8); adequacy of PSN-supporting facilities (I_9); location suitability of PSN (I_{10}); punctuality of fund disbursement (I_{11}); and ease of licensing in the PSN preparation and implementation process (I_{12}).

2.1.5. SWOT Results and Analysis

The analysis of the challenges and benefits of the Jatigede Dam and Reservoir was conducted using a SWOT analysis based on respondents' perceptions regarding the actual value and importance of each factor in implementing and utilising the Jatigede Dam National Strategic Project (PSN Jatigede Dam). The collection of respondent perceptions was done through a questionnaire.

The results of the SWOT analysis can be seen in Quadrant I of Figure 3.55. Strengths dominate the internal factors, while opportunities dominate the external factors. In this case, the Jatigede Dam is in a very favourable condition. It has opportunities and strengths that can be further maximised according to the dam's purpose. An effective strategy for this situation involves optimizing the utilization of water resources to irrigate 87,830 hectares of agricultural land, mitigate floods in a substantial 14,000-hectare area, and provide clean drinking water for the local population. Additionally, it is imperative to empower the local community to create employment opportunities stemming from the Jatigede Dam and to develop the Jatigede Reservoir as an ecotourism destination.

Figure 3.55. Jatigede Dam SWOT Results

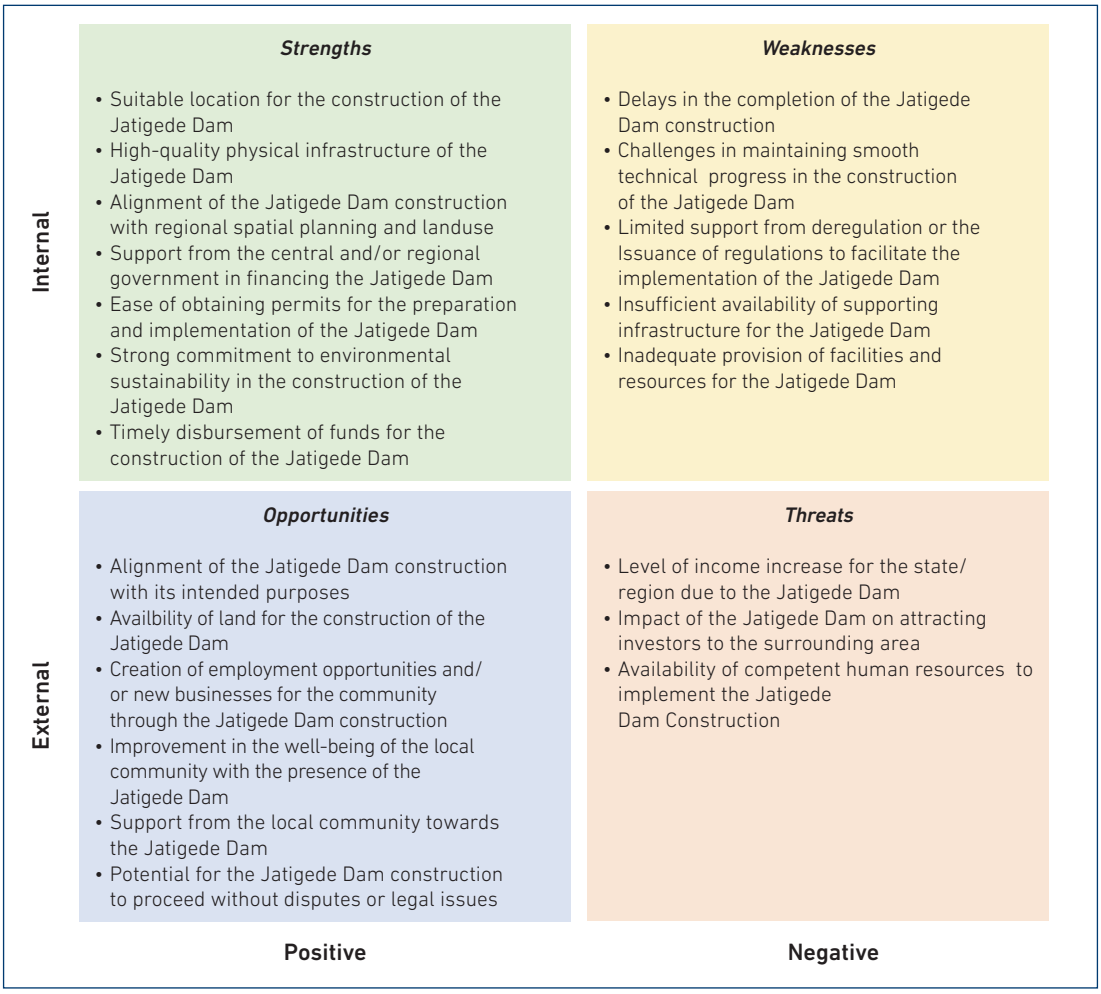


Categories		Values
S	**Strengths**	**210.3358**
W	Weaknesses	128.2271
O	**Opportunities**	**202.8763**
T	Threats	125.9652

SWOT = strenghts-weaknesses-opportunities-threats.
Source: Authors, 2023.

The factors identified in the SWOT analysis are shown in Figure 3.56.

Figure 3.56. Matrix of SWOT Analysis Results Factors



SWOT = strengths-weaknesses-opportunities-threats.

Source: Authors, 2023.

Figure 3.56 presents factors arranged based on respondents' average perception ratings for each aspect. The positive category (strengths and opportunities) ranks factors from highest to lowest average rating, indicating better support for the objectives of the PSN Jatigede Dam. The most crucial internal aspect is the location's suitability, given its role in regulating water flow as it is built on the Cimanuk River. Externally, there are opportunities for the dam's utilisation, making it suitable for its intended purpose.

On the other hand, the negative category (weaknesses and threats) ranks factors from lowest to highest average rating, indicating worse perceptions. Internally, the biggest weakness is the timeliness of the dam's completion, which took several decades due to challenges in land acquisition and construction. Externally, the regional income level has seen minimal improvement, possibly due to changes in the community's livelihoods.

2.1.5.1. Main Challenges

a. The Compensation for Affected Communities

The construction and management of Jatigede Dam faced challenges in compensating affected communities. The process involved multiple government entities, such as the Ministry of Public Works and Housing, BBWS Cimancis, the West Java Regional Government, and the Sumedang District Government. The Minister of Finance determined cash compensation based on proposals from coordination meetings with relevant parties, resulting in approximately Rp750 billion allocated for compensation. (Kementerian PUPR, 2015b).

Affected communities were divided into two categories. The first received cash compensation of Rp122.59 million per household (CNN Indonesia, 2015) for 4,514 households (Kementerian PUPR, 2015a) with released land but no new housing. The second, ineligible for compensation, received resettlement aid of Rp29.36 million for approximately 6,410 households (CNN Indonesia, 2015). Challenges arose as 13,564 households (Kementerian PUPR, 2015a).

Several issues contributed to these challenges, such as delayed payments, confusion about eligibility for deceased relatives, legal constraints, double compensation, disputes, prolonged construction process, document handovers, agreement difficulties, doubts about dam benefits, and unauthorised house claims. In response, Jatigede Dam management ensured prompt payment upon budget execution plan approval, synchronised data amongst institutions via the Affected People Communication Forum, held consultations, prevented conflicts, and conducted public awareness campaigns about the dam's construction.

b The Community Relocation

Initially, the community relocation seemed to progress smoothly, with affected landowners agreeing to move after receiving compensation. The government had even prepared relocation sites in several sub-districts (Jatinunggal, Cisitu, and Buah Dua) for the affected districts. However, the implementation faced unexpected obstacles:

a) The field implementation fell significantly behind schedule due to the prolonged land acquisition process, which hindered the overall construction progress.
b) The number of government-provided houses for community relocation turned out to be insufficient, posing difficulties in resettling everyone affected.
c) Despite receiving compensation, a small portion of the community chose to remain in the area, further complicating the relocation efforts.

To tackle these challenges, the government responded by issuing Presidential Regulation No. 1 of 2015. This regulation aimed to address the social impact of the Jatigede Dam development by stipulating the compensation to be provided for the affected communities.

c. The Change in Community Professions

The loss of livelihoods for the community as farmers necessitates the provision of alternative ways to enhance their quality of life and income. This transition process and its impact on the community should be meticulously planned and implemented systematically to avoid surprises and facilitate smooth adaptation to the changes. Table 3.12 illustrates the shifts in community professions as a result of these changes.

Table 3.12. Types of Work for Affected Communities

No	Work	Before		After	
		Amount	%	Amount	%
1	Farmer	5	8.77%	0	0
2	Farm workers	35	61.40%	6	10.53%
3	Construction workers	4	7.02%	2	3.51%
4	Trader	5	8.77%	6	10.53%
5	Fisherman	0	0.00%	6	10.53%
6	Private employees	2	3.51%	1	1.75%
7	Freelance	5	8.77%	32	56.14%
8	Other	1	1.75%	4	7.02%
Amount		**57**	**100%**	**57**	**100%**

Source: Fadli et al., 2019.

d. Infrastructure Readiness and Cultural Challenges

The Jatigede Dam and Reservoir construction faces challenges related to downstream infrastructure readiness. Ensuring the optimisation of raw water absorption for drinking purposes is crucial.

In addition, within the inundation area of the Jatigede Reservoir, there are numerous historical sites, including remnants from prehistoric times and the Tembong Agung or Sumedanglarang Kingdom era, as well as ancestral village founders' tombs. The government strives to secure and preserve these culturally significant artifacts left behind by ancestors.

The construction of the reservoir also affects Sundanese cultural heritage in Sumedang Regency. Efforts are being made to prevent the disappearance of ancestral heritage (karuhun) by relocating affected communities to new homes near the inundation area, allowing them to continue their customs and traditions alongside people from the same ancestry. Additionally, communities can establish artistic environments or cultural communities to preserve Sundanese ancestral customs and traditions.

2.1.5.2. Main Benefits

Jatigede Dam and Reservoir can be seen in Figure 3.57

Figure 3.57. Jatigede Dam and Reservoir

Source: Non-Vertical Specific Work Unit for the Development of Jatigede Reservoir, personal communication, 16 June 2023.

Through the analysis of the PSN Jatigede Dam and Reservoir construction and the strengths-weaknesses-opportunities-threats (SWOT) analysis, it becomes evident that the project brings about the following significant benefits:

a) **Irrigation Facility**. The Jatigede Reservoir provides irrigation for an extensive agricultural land area, covering 87.830 ha. This irrigation capability enhances agricultural productivity and fosters bountiful harvests for the region.

b) **Flood Control**. As a crucial buffer, the Jatigede Reservoir plays a vital role in mitigating floods for a substantial 14,000-hectare area in West Java (Siahaan, 2017). It significantly reduces the peak flood discharge by 585 m^3/s, contributing to enhanced flood management and protection for downstream communities.

c) **Drinking Water Supply**. Serving as a reliable source of raw water, the Jatigede Reservoir meets the domestic drinking water needs of the Cirebon and Indramayu districts. At an impressive rate of 3,500 L per second or 3.50 m^3/s, it provides a consistent and sufficient supply of clean drinking water for the local population.

d) **Hydropower Generation**. The dam demonstrates its versatility by generating hydropower. With a capacity to produce 2x55 MW, or a total of 110 MW of hydropower, it contributes to the sustainable production of electricity, promoting cleaner energy options for the region (Kementerian PUPR, 2011). The Ministry of Energy and Mineral Resources (ESDM) targets the Jatigede Hydropower Plant of 110 MW to be in commercial operation by 2024, and this hydro power plant is expected to enhance the stable supply of clean energy into the PLN electricity system in the future (Wahyudi, 2023).

e) **Improved Access for the Community**. Apart from its technical advantages, the project also facilitates improved access, particularly in education. Research indicates that the community experiences enhanced ease of access to education, signifying positive social impacts that benefit the population's overall well-being. In addition, the ring road access in the areas surrounding the Jatigede Dam enhances the mobility of the residents. In addition to serving as a public transportation route, the construction of the Ring Road of Jatigede Dam also improves road access for tourism to Jatigede Dam (Ginting, 2019).

f) **The Jatigede Reservoir showcases stunning natural beauty** unintentionally revealed through the inundation process. The Tourism Office of Sumedang Regency actively promotes this attraction using brochures, banners, billboards, and social media platforms. To enhance its appeal as a tourist destination, a higher budget for promotion, increased public awareness, and support for the local cottage industry are essential. Jatigede Dam is now often used as a location for boat rowing competitions (Syahputra, 2023). In addition, the Sumedang Regency Government's efforts to establish the Jatigede Special Economic Zone (SEZ) for tourism have been realized with the signing of a Memorandum of Understanding (MoU) between Regent Dony Ahmad Munir and the President Director of PT Pengembangan Pariwisata Indonesia or ITDC (International Tourism Development Corporation) in July 2019 (Ginting, 2019).

Conclusion

The construction of the Jatigede Dam in Sumedang Regency was an achievement in Indonesia's infrastructure development, spanning over 5 decades from initial studies in 1963 to its completion in 2015, with the reservoir being filled in 2016. The project encountered challenges related to land acquisition, compensating affected communities, and relocating residents. Preserving Sundanese culture and historical sites during construction also posed additional complexities for the government.

However, being incorporated into the PSN list provided the Jatigede Dam project with several benefits that hastened its progression. Any obstacles, whether they were tied to regulations or permissions, were promptly resolved by the relevant ministers, governors, and regents. Additionally, the PSN project benefits from faster land acquisition procedures and guarantees of political stability.

The Jatigede Dam and Reservoir project now stands as a testament to human ingenuity and determination, delivering manifold benefits to the region. As a crucial irrigation facility, it provides water to an extensive agricultural land area of 87,830 ha, boosting agricultural productivity and supporting farmers.

The reservoir has proven its worth as a critical flood control measure, acting as a buffer during peak flood discharges and protecting a vast 14,000-ha area in West Java from potential calamities. Moreover, the project addresses water scarcity concerns in the Cirebon and Indramayu Regencies, serving as a reliable source of raw water and meeting domestic drinking water needs, ensuring public health and well-being. Harnessing hydropower, the dam reduces the region's dependence on fossil fuels and promoting sustainability.

The successful completion of the Jatigede Dam and Reservoir project highlights its multifaceted contributions to agriculture, flood control, water supply, sustainable energy, education, and tourism. It exemplifies the nation's commitment to responsible resource management, cultural preservation, and regional development for a brighter and more sustainable future.

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2.2. RAKNAMO DAM

2.2.1. Project Profile

East Nusa Tenggara Province (NTT) is in the geographical region between Asia and Australia and, bordered by the Indian Ocean and the Flores Sea, is part of the Lesser Sunda Islands cluster. The province spans an area of 47,931.54 km^2 and is home to a population of 5,387,738. There are only two seasons in NTT, rainy and dry. In June–September, wind currents originate from Australia and do not contain much moisture, causing the dry season. On the other hand, the wind flows from Asia and the Pacific Ocean from December to March, causing the rainy season. The transition period occurs in April–May and October–November. Because NTT is closer to Australia, most of which has a desert climate, the conditions in NTT also tend to be dry. Wind currents from Asia and the Pacific Ocean decrease their initially heavy water vapour content when entering the NTT region. As a result, rainfall in NTT is low and makes NTT a relatively dry area. The average number of rainy days in NTT is only 163.5 rainy days/year (BPS, 2022).

Figure 3.58. Raknamo Dam Development

Source: Nusa Tenggara River Basin Office II (nd).

The Raknamo Dam (Table 3.13) was built according to the regional needs of the East Nusa Tenggara province and its designation as a National Strategic Project (PSN) is contained in Presidential Regulation Number 3 of 2016. The Raknamo Dam meets the requirements of a PSN with the following characteristics:

- conforms with the national/regional medium-term development plan and the infrastructure sector strategic plan;
- conforms with spatial and regional layout plans;
- has a strategic role in the economy, social welfare, defence, and security (contribution to gross regional revenue and gross domestic income, employment, socio-economic effects, environmental effects);
- has links between infrastructure and regional sectors (has a complementarity effect);
- cultivates diversity of distribution between islands (balancing between Western Indonesia and Eastern Indonesia).

According to the topographical map, the Raknamo Dam is situated on the Noel Puames River within the administrative boundaries of Dusun IV (Dusun Oepoi), Raknamo Village, Amabi Oefeto District, Kupang Regency, East Nusa Tenggara Province.

Table 3.13. Raknamo Dam Technical Data

WATERSHED	
Name	Noel Puames River
River Length	15.71 km
Watershed area	38.34 km2
RESERVOIR FLOOD AREA	
Inundation area	147.30 ha
Total Storage	14.09 million m^3
Effective Storage	10.26 million m^3
Dead Storage	3.83 million m^3
Max. Water Level	+ 104.00 m
Water Level Min.	+ 93.65 m
Flood MA elevation	Q1000 + 106.30 m
QPMF flood MA elevation	+ 108.21 m
Flood Discharge	Q1000 434.71 m^3/s
PMF Flood Debit	1,076.08 m^3/sec

QPMF = peak flood discharge, MA = mean annual, PMF = probable maximum flood.

Source: Nusa Tenggara River Basin Office II (no date).

Raknamo Dam was solely supervised and built by Ministry of Public Work and Housing. The laying of the first stone of the Raknamo Dam was carried out in 2014 and the dam was inaugurated on 9 January 2018 by President Joko Widodo. With this inaguration, the dam, with a capacity of 14.09 million m3, has been declared completed. On 8 September 2022, an operational certificate was issued so that the Raknamo Dam could be declared completed and properly functioning.

2.2.2. Project Objectives

In the Nusa Tenggara region, there are promising opportunities and potentials for utilising dry land, although it is challenging compared to agricultural land in areas that are not dry land. The Nusa Tenggara region has the most extensive distribution of dry land in Indonesia, with approximately 3,216,173 ha in NTT and 634,876 ha in Nusa Tenggara Barat. Even though there are limited water supplies from surface water sources, the potential for groundwater in this area is quite large. The presence of productive aquifers can exploit it. The Nusa Tenggara Barat region has a groundwater potential of 63,895 L/second, with NTT having 267,282 L/second, which can supplement surface water irrigation, especially during periods of low rainfall.

NTT, as a province with a dry climate, has promising potential for non-paddy agricultural land, namely 3.8 million ha. Providing water for various needs is one of the main priorities in NTT, mainly because of the existence of the agricultural and livestock sectors, which are the people's main livelihood. Drought is also a problem for residents. As outlined in the Master Plan for the Acceleration and Expansion of Indonesian Economic Development 2011–25, the swift development of clean water facilities in Nusa Tenggara is a crucial infrastructure initiative. The primary objective is to bolster the region's economic sectors, particularly aquaculture and livestock, by providing necessary support and resources.

With PSN status, Raknamo Dam has advantages related to guaranteed funding for construction and land acquisition. This infrastructure development is a series of activities of the Ministry of Public Works and Public Housing in supporting the Nawacita programme, namely developing Indonesia by strengthening regions and villages within the framework of the unitary state of the Republic of Indonesia to increase people's productivity.

2.2.3. Project Cost and Source of Fund

The construction of the Raknamo Dam cost around Rp760 billion, sourced entirely from the state budget (Table 3.14).

Table 3.14. Information on Raknamo Dam Project Activities

Location	Raknamo Village, Amabi Oefeto District, Kupang Regency
Service User	Minister For Public Works and Housing, Directorate General of Water Resources, Nusa Tenggara River Regional Office II, SNVT Construction of the BWS Nusa Tenggara II Dam, PPK Dam Activities I
Implementer of Construction Activities	PT. Waskita Karya (Persero) Tbk.
Construction Contract Value	Rp759,400,000,000 (value added tax included)
Construction Implementation Time	1,405 Calendar Days (47 Months)
Contract End Time	11 February 2019
Executor of Supervision Activities	PT. CATURBINA GUNA PERSADA (KSO) – PT. JASAPATRIA GUNATAMA - PT. ARGA POST PLAN - PT. FACILITIES BAGJA EARTH
Supervision Contract Value	Rp21,679,509,000 (value added tax included)
Supervision Contract Number and Date	Number: HK.02.03/SNVT/PJSA- NT.II / PKSDA-I/240/XII/2014 Date: 17 December 2014
Supervision Implementation Time	1,520 Calendar Days (51 Months)
Supervision End Time	11 February 2019
Maintenance period	365 Days Calendar

Source: Nusa Tenggara River Basin Office II (no date).

2.2.4. External and Internal Factors

We collected data from stakeholders to measure respondents' perspectives. Respondents comprised academics, community leaders, local governments, entrepreneurs, and those from communities around the dam.

2.2.4.1. External Factors

The identified external factors are the level of support from the local community for PSN (E_1); the level of investors' interest in the development of Raknamo Dam (E_2); the level of opportunity for the private sector/community to become investors for supporting facilities in the PSN area (E_3); PSN opportunities for job creation (E_4); the level of impact of PSN on opening access around the PSN location (E_5); the PSN impact on new business creation for the community (E_6); the potential increase in tourists (E_7); opportunities for PSN in improving people's welfare (E_8); opportunities for PSN in increasing state and/or regional revenue (E_9); availability of land for PSN development (E_{10}); timely disbursement of PSN funding (E_{11}); potential for disputes or lawsuits in the PSN implementation process (E_{12}); and the ease of obtaining a business at the PSN location (E_{13}).

2.2.4.2. Internal Factors

The identified internal factors are the deregulation or enactment of regulation (I_1); suitability of the PSN location (I_2); compatibility of the PSN development with regional spatial planning and land use (I_3); access to infrastructure that supports PSN (I_4); support from the central and/or regional government in PSN financing (I_5); ease of licensing in the PSN preparation and implementation process (I_6); level of technical smoothness of PSN construction (I_7); level of use of modern technology in PSN development (I_8); timeliness of PSN construction (I_9); PSN physical quality level (I_{10}); suitability of the PSN development result (I_{11}); level of concern for the development of PSN for environmental sustainability; and the adequacy of PSN-supporting facilities (I_{13}).

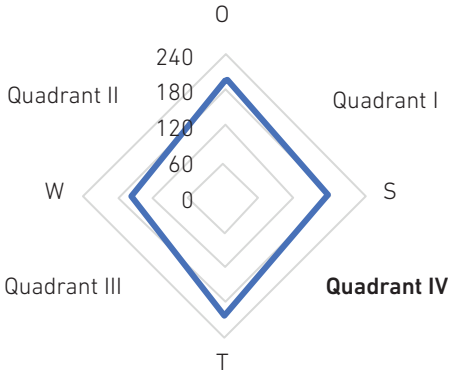
Figure 3.59. The Area around the Raknamo Dam

Source: Ministry of Public Works and Housing, 2018.

2.2.5. SWOT Results and Analysis

The survey result was analysed using a SWOT approach to illustrate the perceived challenges and benefit. The SWOT analysis finding was then presented in a radar chart, as shown in Figure 3.60.

Figure 3.60. SWOT Analysis



Categories		Values
S	**Strengths**	**199.65**
W	Weaknesses	178.64
O	**Opportunities**	**200.94**
T	Threats	156.67

SWOT = strengths-weaknesses-opportunities-threats.

Source: Authors, 2023.

The strength value is greater than the weakness value, and the opportunity value is greater than the threat value. The strategy that must be carried out for SWOT results in quadrant I is aggressive (Aggressive Strategy). How can the strengths of the Raknamo Dam take advantage of the opportunities that exist today?

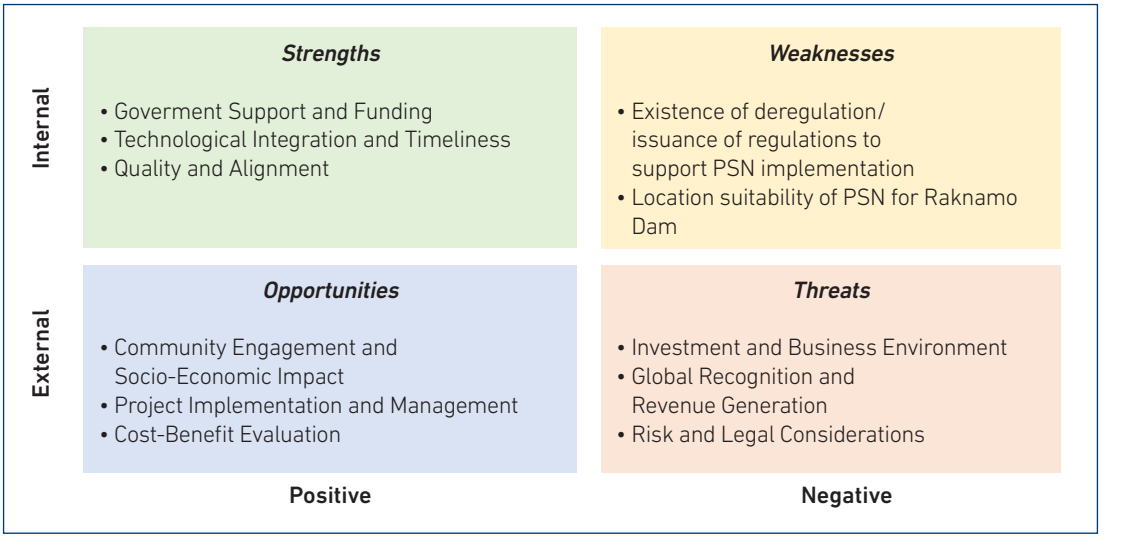
Quadrant I represents a highly favourable condition for the Raknamo Dam, with dominant opportunities and strengths that can be leveraged for further development. The growth-oriented strength-opportunity strategy supports this situation.

To maximise internal strengths, the government can capitalise on its advantages, such as strong support, modern technology adoption, timely development, accurate project implementation, high physical quality, suitable development result allocation, and sufficient supporting facilities. The focus should be on optimising and adding value to the dam's benefits by exploring various possibilities for maximum utilisation.

To make the most of external opportunities, the government can prioritise using the dam to enhance people's welfare and develop the surrounding area. Utilising available water resources can drive growth in agriculture, renewable energy, tourism, and infrastructure around the Dam. Strengthening cooperation with the private sector for investments that support regional development is also crucial.

The government must emphasise environmental management and sustainability to address internal weaknesses and external threats. Responsible environmental management is essential to preserve the ecosystem around the dam long term. Additionally, fostering cooperation with various stakeholders, including local communities, will help handle potential disputes or legal issues related to dam management and utilisation.

Figure 3.61. Factors for SWOT Analysis



SWOT = strengths-weaknesses-opportunities-threats, PSN = national strategic project.

Source: Authors, 2023.

The factors in the SWOT analysis are arranged in order of the average value of the respondent's perception of reality for each factor. Internal categories (strengths and opportunities) are arranged from the highest to the lowest average. The higher the category value, the better the respondent's perception of reality on these factors in supporting the objectives of the Raknamo Dam PSN. Based on the SWOT analysis that has been carried out, Figure 3.61 identifies the factors for the Raknamo Dam PSN.

2.2.5.1. Main Challenges

One of the challenges to construct the Raknamo Dam in Kupang Regency is the need for 249.19 ha of land. For the land to be used as a development project, a change in status is required, which must obtain approval from the Ministry of Environment.

The status change to an 'Area for Other Use' has been implemented based on the Decree of the Minister of Environment and Forestry Number: SK.357/Menlhk/Setjen/PLA.0/5/2016 concerning Changes in Allocation of Forest Areas to Non-Forest Areas, Changes in the Functions of Forest Areas, and Designation of Non-Forest Areas to Become Forest Areas in the Province of NTT, in the context of Reviewing the RTRW of the Province of NTT.

The next challenge is the need for 3.80 ha of land. This was obtained by way of community land acquisition. As with other projects, initially, the community was reluctant to release their land for the dam project. However, with counselling and a persuasive approach, the community finally wanted to give up their land rights for the construction of the dam. Finally, the Regional Government of Kupang Regency released the community land needed to construct a 3.80 ha dam (Figure 3.59).

A challenge for this dam project is also related to the natural conditions in the area. Temperature, potential evapotranspiration, and rainfall affect the ability to replenish water in the Raknamo reservoir. An insufficient amount of rainfall in one period causes the reservoir not to be filled optimally.

2.2.5.2. Main Benefits

The Raknamo Dam provides various benefits for the community, including:

1. Agricultural Sector: The dam meets the water needs of 1,250 ha of irrigated land, accounting for 23.70% of the total irrigated land or 5.89% of the paddy fields in Kupang Regency. This increases the rice planting period and expands agricultural land by 2–3 times, thereby improving the welfare of farmers.
2. Drinking Water Supply: Apart from irrigation, the dam serves as a source of clean water for daily use. The construction of the Raknamo Water Supply System with a capacity of 100 L/second is underway to enhance drinking water services in Kupang Regency. This initiative aligns with Indonesia's commitment to achieving Clean Water and Proper Sanitation, one of the United Nations' Sustainable Development Goals.
3. Flood Control: The dam acts as a flood controller, storing excess water in a reservoir and releasing it based on the river's capacity. This helps in controlling flooding in parts of Kupang Regency.
4. Power Source: The Raknamo Dam enables the construction of a 0.22 MW Micro Hydro Power Plant, utilising water flows to generate electricity for rural areas not covered by PLN electricity. This fulfils the electricity needs of residents around the dam.

5. Tourism: The success of the Raknamo Dam Project has transformed it into a new tourist destination in Kupang Regency, NTT. Its scenic beauty attracts visitors, making it a potential water tourism site. With the completion of the construction of the Raknamo Dam PSN, the strategic value of this project can be felt by the surrounding community and the people of the province of NTT in general.

The Raknamo Dam is a great example of how infrastructure connects regions by generating electricity, improving transportation, and promoting tourism. Developing the areas around the dam aims to bridge the gap in progress between East Nusa Tenggara and the rest of Indonesia, promoting balanced development across the country.

Conclusion

With the official opening of the Raknamo Dam, the PSN can now serve its intended purposes effectively. The previously set goals of having a productive agricultural field, access to clean drinking water, controlled flood management, a reliable power source, and appealing tourism have been successfully achieved. The forthcoming challenge for the management is to optimise the dam's advantages by tapping into internal strengths and external opportunities, all in the pursuit of enhancing the community's well-being. Furthermore, the dam's administrators must also address internal vulnerabilities and external threats, including concerns about environmental stewardship and ecosystem preservation, which should be continually managed and minimised.

As the utilisation of the Raknamo Dam expands, it ushers in fresh prospects for community prosperity. What used to be arid and desolate regions have now transformed into fertile, verdant landscapes. The dam stands as a metaphorical oasis in the midst of a barren wilderness, offering a promising outlook for a better life to anyone residing in or passing through its vicinity.

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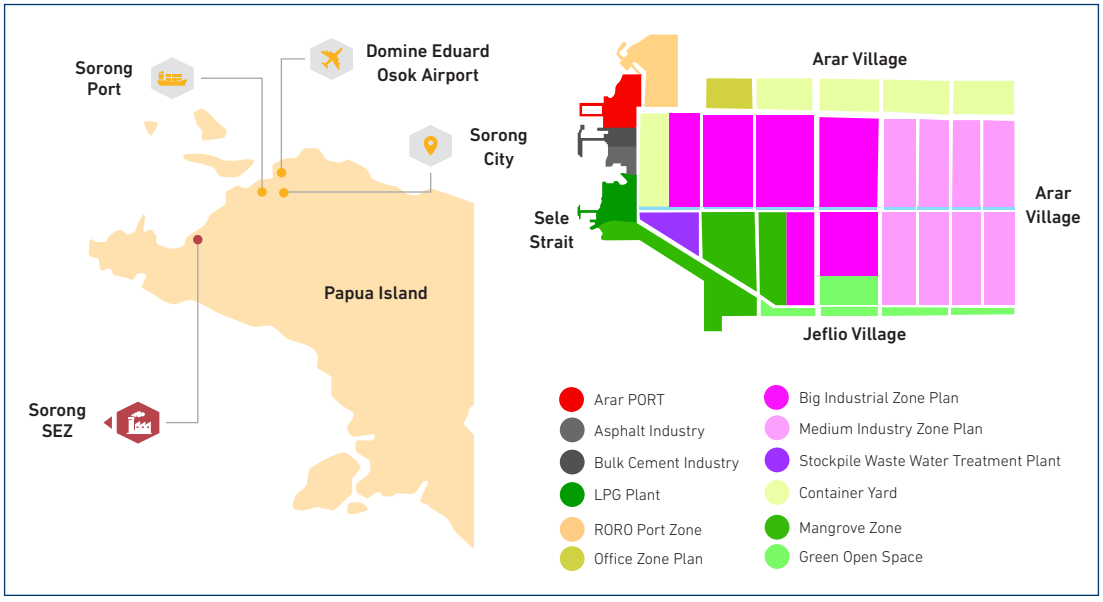
2.3. SORONG SPECIAL ECONOMIC ZONE (SORONG SEZ)

2.3.1. Project Profile

West Papua, one of Indonesia's provinces, encompasses the rugged western peninsulas of the New Guinea island. It extends over the eastern segment of the Bird's Head Peninsula, alternatively known as the Doberai Peninsula, as well as the Bomberai Peninsula, and is surrounded by adjacent smaller islands. The landscape of West Papua closely mirrors that of the neighbouring Papua Province, featuring a terrain characterised by cliffs and sloping surfaces. In terms of its population, as of the 2020 Census, West Papua was inhabited by approximately 1,134,068 individuals. This province also boasts a moderate Human Development Index (HDI) score of 65.89, as reported in 2022 by Statistics Indonesia, indicating the overall well-being and development level of its population. Economically, West Papua demonstrated a robust performance, with a recorded economic growth rate of 7.7% during the year 2018. This growth rate surpassed the national average, highlighting the province's economic vitality and its potential for further development. Based on the policy analysis of the government, they need a comprehensive economic instrument to increase economic growth in West Papua Province. They have initiated the establishment of a Special Economic Zone (SEZ). The Sorong SEZ's geographic position and masterplan can be seen in Figure 3.62.

The determination of the Sorong SEZ as a National Strategic Project (PSN) is stated in Presidential Decree No. 3 of 2016. Construction started in 2016 and it launched in October 2019. Government Regulation No. 31 of 2016 explains that the Sorong SEZ has an area of 523.7 ha. Based on Figure 3.62, The Sorong SEZ is directly adjacent to Kampung Arar to the north and east. To the west, it is directly adjacent to the Sele Strait. While in the south, bordered by Jeflio Village. Initially, the Sorong SEZ was part of the administrative area of West Papua Province. However, with the 2022 law concerning the Formation of the Southwest Papua Province, the Sorong SEZ is part of the Southwest Papua Province area in Sorong Regency in the Mayamuk district.

Figure 3.62. Geographic Position and the Sorong SEZ Masterplan



LPG = liquefied petroleum gas, RORO = roll-on, roll-off, SEZ = special economic zone.
Source: National Council of SEZ, 2023.

The Sorong SEZ is operated by a development and management business entity appointed by the Regent of Sorong based on the regulation No. 500/KEP.302-MOW/XI of 2016, namely PT. Malamoi Olom Wobok (PT. MOW), whose shares are owned by the Government of Sorong Regency (Ministry of Finance, 2021). PT. MOW was mandated to develop the Sorong SEZ to support regional economic activities professionally. Based on the Regulation of the Coordinating Minister for Maritime Affairs No. 7 of 2016, the Sorong SEZ contains three significant zones: export processing, industrial, and logistics. Further explained in the regulation that these zoning arrangements help guarantee and maintain the quality of zones set, minimising land use that is not following the zone's characteristics and minimising disruption and negative impacts on the area.

The government has created a 6.5 km direct access road to the Sorong SEZ from the national road and connects the surrounding agglomeration areas. In addition, the government has built a 3.5 km access road to Arar Port to support the mobility of business, industry, logistics, and transportation through the waters in the Sorong SEZ. A national electricity company powerplant (PLN) supports electricity in the Sorong SEZ with a capacity of 50 MW from two electrical substations (Ministry of Finance, 2022). Regarding water infrastructure, jetty facilities were ready for dry bulk ship transportation and Ro-ro flotsam docks. The Arar Port is also supported, which has an area of 4 ha and is about 50 km from the main port of Sorong. The port has a concrete pier 100 m long, making it easier for ships to dock (Ministry of Finance, 2022). A 4 km canal is ready to anticipate flood, and the supply of raw water in the Sorong SEZ is 5 L/second. Photos of infrastructure can be seen in Figure 3.63.

Figure 3.63. Infrastructure of the Sorong SEZ

SEZ = special economic zone.
Source: National Council of SEZ, 2023.

2.3.2. Project Objectives

Papua is a large island in eastern Indonesia that has yet to be utilised optimally to increase economic growth due to limited facilities and access. Over the past 5 years, West Papua province's economic growth has slowed due to the dependency on West Papua's economy, which is more dominated by the oil and gas and mining sectors, which have experienced a decline in output (Regional Research and Development Agency West Papua, 2019). To accelerate and expand national economic development in eastern Indonesia, the government issued Government Regulation No. 31 of 2016 concerning establishing the Sorong SEZ as the first in Papua.

A strategic goal of Sorong SEZ is to encourage economic development and respond to challenges in eastern Indonesia. One of its main goals is to promote economic growth in the east of Indonesia by increasing the function of the Papua region. The other aim is to encourage economic diversification, create value-added products, and utilise the region's natural resources and geographical advantages to increase economic growth and people's welfare. The concentration of economic activity has increased economic scale, regional competitiveness, investment, business and industrial development, with a positive impact on the social welfare of local communities through increased employment opportunities and access to essential services.

Overall, the development of the Sorong SEZ is a multidimensional initiative with strategic objectives aimed at boosting economic growth, improving people's welfare, and responding to various challenges faced by eastern Indonesia. The Sorong SEZ is expected to be able to obtain an investment of Rp32.2 trillion in 2025 and be able to absorb 15,024 workers (National Council of SEZ, 2018). The government seeks to capitalise on the region's potential and enhance its overall economic and social prospects through the targeted concentration of economic activity and industrial development.

As a designated national strategic project, the Sorong SEZ has yielded substantial benefits. Central and local governments have collaborated to support the funding of the main basic infrastructures of Sorong SEZ. These include the provision of access roads, increasing port capacity, expanding airports, and developing buffer zones aimed at supporting mobility and economic activity in the SEZ. The National Council of SEZ (2018) explained that the government provides special incentives and privileges to investors who carry out their business in the SEZ. These fiscal incentives include exemption from import/investment duties, customs and excise facilities, investment allowance, and tax holidays. Meanwhile, non-fiscal incentives include ease of licensing, land and spatial planning, special rules of employment, and goods traffic. These comprehensive efforts hopefully leverage investors' enthusiasm for developing the maritime and fisheries industry, oil palm plantations, bulk cement, asphalt, plywood, and fishing shipyard facilities. Transforming the region into a thriving hub of economic activity has triggered a ripple effect, giving rise to additional economic nodes in the surrounding area, further bolstering the local economy.

2.3.3. Project Cost and Source of Fund

The government has streamed a total budget of Rp686.6 billion to develop the Sorong SEZ (KPPIP, 2023). As shown in Table 3.15 support from the state budget of Rp631.7 billion is used for constructing main roads and infrastructure outside the area and support from the regional budget of Rp54.9 billion. In 2020–21, the Sorong SEZ realised investment of Rp204.76 billion. In 2022, investment achievements will increase to Rp249.00 billion. Regarding the workforce, the Sorong SEZ has increased the absorption of employed workers from 80 people in 2020 to 111 people in 2022. It has positively impacted overcoming unemployment in the agglomeration area of the Sorong SEZ (Sorong Regency and Sorong City), which is based on Ministry of Finance data for 2021 that previously reached 13,585 people. The complete information is presented in Table 3.16. In the initial planning, the Sorong SEZ was projected to attract investment of up to Rp32.2 trillion and absorb a workforce of 15,024 people in 2025. However, the pandemic and post-pandemic business climate conditions that have not returned to normal are challenges that SEZ managers must face.

Table 3.15. Funding of the Sorong SEZ

Source	Amount (Rp)	Use
State Budget (APBN)	631.7 billion	☑ The main road in the area ☑ Aimas-Arar Port access ☑ Sorong-Arar ring road and bridge ☑ Extension of the Domine Eduard Osok Airport runway
Regional Budget (APBD)	54.9 billion	☑ Basic design ☑ Acquisition and certification of area land, ☑ Office ☑ Main gate ☑ Telecommunication networks ☑ Clean water distribution networks

SEZ = special economic zone.

Source: Committee for Acceleration of Priority Infrastructure Delivery, 2023.

Table 3.16. Realisation of Investment and Labour Absorption of the Sorong SEZ

Year	Realisation of Investments (Rp)	Use
2020	204 billion	80 people
2021	204 billion	91 people
2022	249 billion	111 people

SEZ = special economic zone.

Source: National Council of SEZ (2022).

Investors in the Sorong SEZ include PT. Semen Gresik, PT. Henrison Inti Persada, and PT. Bumi Sarana Utama. PT. Semen Gresik, a pioneer company in this area, has invested Rp162.4 billion to run a cement packaging business in the Sorong SEZ. PT. Henrison Inti Persada has invested Rp37.16 billion to run a wood and palm oil processing company and ship crude palm oil of 500–2,000 mT through Arar Port (National Council of SEZ, 2022). PT. Bumi Sarana Utama, engaged in the bulk asphalt company, has invested Rp8.3 billion. In addition, several potential investors have also committed to investing. They are running their business in the Sorong SEZ, covering various types of companies such as manufacturing agricultural machinery, nickel smelters, logistics, warehousing, ports, fisheries, and others. Table 3.17 contains complete information about the investors.

Table 3.17. Investments in the Sorong SEZ

No.	Investors	Business Type	Investment (Rp)	Status
1.	PT. Semen Gresik	Cement Packaging	162.4 billion	Operates
2.	PT. Henrison Inti Persada	wood and palm processing	37.16 billion	Operates
3.	PT. Bumi Sarana Utama	Bulk asphalt	8.3 billion	Operates
4.	PT. Satu Suku Pertanian	Manufacture of agricultural and plantation machinery and equipment	2.2 billion	On process
5.	PT. GAG Nikel	Smelter nickel, derivative products: ferronickel and stainless steel	8,400 billion	On process
6.	PT. Pelindo IV	Construction of docks, warehousing, logistics, trestle, causeway, and reclamation	428.9 billion	On process
7.	PT. Raja G&G International dan PT Temasek Perikanan	Port and Fisheries Industry	18,000 billion	On process
8.	PT. Perahu Catamaran Papua	Fiberglass Boat/Speed boat workshop	2.2 billion	On process
9.	PT. Royal Anram Industry	Weapons and ammunition industry	840.9 billion	On process

SEZ = special economic zone.

Source: National Council of SEZ, 2022.

2.3.4. External and Internal Factors

The Sorong SEZ is a high-value PSN because it was built in eastern Indonesia and is the first SEZ in Papua. Stakeholders have high hopes that this area can encourage economic activities in an inclusive and integrated manner. In its development and operation, the Sorong SEZ has provided benefits for related stakeholders. However, several dynamics raise challenges that must be appropriately managed.

To elaborate on the challenges and benefits of the Sorong SEZ, a survey was conducted and data were collected from academics, government officials, business actors, and the public. Their perceptions of various internal and external factors, namely their perceived realities and interests, were collected and analysed using a strengths–weaknesses–opportunities–threats (SWOT) method. The perception of reality measures stakeholder perceptions of the observed facts, whereas the perceived importance assesses factors considered essential for the project's success. Both are scored on a scale of 1 to 6, where 1 indicates a very negative perception and a score of 6 a very positive reception.

2.3.4.1. External Factors

The external factors are the level of support from the local community for the PSN; the level of investor interest in the development of the Sorong SEZ; the level of opportunity for the private sector/community to become investors for supporting facilities in the PSN area; PSN opportunities for job creation; the level of impact of PSNs on aglomeracy access; PSN impact on new business creation; potential increase in public welfare; opportunities for the PSN in increasing state/regional revenues; the availability of land for PSN development; timely disbursement of PSN funding from investors; the potential for disputes or lawsuits in the PSN implementation process; and the ease of obtaining business licenses at PSN locations.

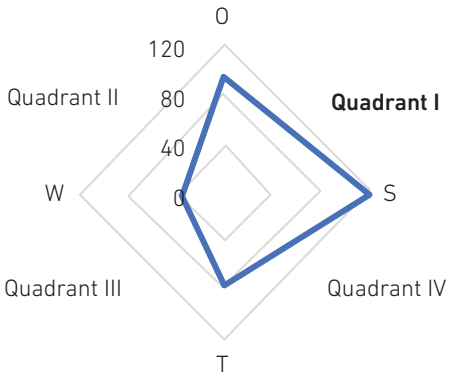
2.3.4.2. Internal Factors

The internal factors are the deregulation or enactment of regulations; PSN location suitability for SEZs; compatibility of PSN development with regional spatial planning and land use; access to infrastructure that supports the PSN; support from central and/or regional government in PSN financing; ease of licensing in the PSN preparation and implementation process; level of technical smoothness of PSN construction; level of use of modern technology in PSN development; timeliness in PSN construction; PSN physical quality level; suitability of PSN development results; level of concern for the development of the PSN for environmental sustainability; and the adequacy of PSN-supporting facilities.

2.3.5. SWOT Results and Analysis

The survey results show that strength is more dominant than weakness as an internal factor affecting the Sorong SEZ. On the other hand, opportunities are more prevalent than threats, as external factors affect the Sorong SEZ. This shows that the Sorong SEZ is located in quadrant I and prompted the government to implement a strategy of optimising strengths to maximise existing opportunities to develop the Sorong SEZ. Figure 3.64 shows the comprehensive result of SWOT analysis.

Figure 3.64. Sorong SEZ SWOT Results



Categories		Values
S	**Strengths**	**117.7564**
W	Weaknesses	37.2333
O	**Opportunities**	**98.3919**
T	Threats	78.6636

SEZ = special economic zone.
Source: Authors, 2023.

A summary of the three factors with the highest values identified as strengths, weaknesses, opportunities, and threats is presented in Figure 3.65. The observed factors are ranked based on the highest values of the average perceived reality and importance by the respondents. The higher the score obtained, the better the perception of respondents for the factor.

Figure 3.65. SWOT Analysis

Internal	***Strengths*** • Access of infrastructure that supports PSN • Suitability of PSN development results • Level of concern for the development of PSN for environmental sustainability	***Weaknesses*** • Timeliness in PSN construction • Level of technical smoothness of PSN construction • Level of use of modern technology in PSN development
External	***Opportunities*** • PSN impact in new business creation for community • Opportunities for PSN in increasing state/ regional revenues • Level of impact of PSN on aglomeracy access around PSN	***Threats*** • Timely disbursement of PSN funding from investors • Potential for disputes or lawsuits in the PSN implementation process • Availability of land for PSN development
	Positive	**Negative**

PSN = national strategic project.
Source: Authors, 2023.

2.3.5.1. Main Challenges

Based on the results of a survey of stakeholders in the Sorong SEZ in 2023, the government and stakeholders need to address several internal weaknesses. The ease of licensing services must be increased to accelerate investment, which is currently affected by the administrative change in regional expansion in West Papua Province to become Southwest Papua. In addition, obstacles in the use of modern technology that impact the timeliness of project completion need to be addressed immediately.

As an external factor, the main challenge is increasing investor interest and private involvement in infrastructure and industrial development in the Sorong SEZ. To accelerate regional investment, the government must ensure investment commitments from investors who have expressed interest. In addition, the issue of land availability, which can potentially cause disputes or lawsuits related to customary rights and land use rights by indigenous peoples, also needs to be addressed.

The National Council of SEZ (2021) said there are labour challenges due to the coronavirus disease (COVID-19) pandemic. The pandemic has resulted in smaller investments than projected, along with delays in investor visitations and direct promotions and failure to participate in investment exhibitions.

Based on the research results of Wahid et al. (2022), the Sorong SEZ negatively impacts the surrounding community due to environmental pollution, inequality and social conflict. In line with this, the Ministry of Finance (2021) presents the results of its study that social issues related to the lack of involvement of indigenous Papuans need to be anticipated so as not to cause disturbances to the security and operations of the Sorong SEZ. In addition, the government and managers of the Sorong SEZ must anticipate natural risks, such as earthquakes and tsunami waves, due to the presence of the Sorong Fault under the SEZ. Areas with a high risk of being affected by earthquakes include the Regencies of South Sorong, Sorong, Raja Ampat, and the City of Sorong. Meanwhile, Sorong Regency is an area with a high risk of being affected by a tsunami.

2.3.5.2. Main Benefits

The 2023 survey shows the strengths of the Sorong SEZ that need to be optimised, such as government support in the form of regulations, selection of suitable locations in Sorong Regency and suitability with spatial planning and land use, and financial support from the central and regional governments. Facilities and infrastructure such as airports, ports, access roads, electricity installations and water support the Sorong SEZ. Based on the survey, the development of the Sorong SEZ has paid attention to environmental sustainability aspects.

The same survey found that there were things that could maximise the opportunity to develop the Sorong SEZ. Easing business licensing will further increase the opportunities for receiving state and regional revenues. Based on the survey, the surrounding community believes the Sorong SEZ provides opportunities for residents to grow supporting businesses, especially those related to meeting the needs of clothing, food and housing. Another effect is that the Sorong SEZ provides more opportunities to open access to the surrounding buffer zones, increasing job creation opportunities for residents.

The National Council of SEZ (2021) reports that the Sorong SEZ has provided both economic and social benefits. The SEZ has opened up new jobs for indigenous Papuan workers, most of whom are currently cleaning and security personnel. Regional development is increasing the accessibility and mobility of the surrounding community. This has impacted the property business, especially housing, which is increasingly expanding in the buffer zones of the Sorong SEZ. In addition, micro, small and medium-sized enterprises and cooperatives have also developed to support people's lives, especially in the form of food stalls and grocery stores. Hence, people's purchasing power and welfare increased because economic activity grew and bank branches and financial institutions emerged.

The report of the SEZ National Council is in line with research conducted by Syali et al. (2020), which explained that the Sorong SEZ had a positive impact on the economic growth of West Papua Province. Regarding social impacts, Wahid et al. (2022) explained that the local community benefits by opening new jobs, increasing income, and improving facilities and infrastructure.

Conclusion

The Sorong Special Economic Zone (SEZ) serves as a generator of prosperity, with far-reaching impacts spanning from regional development in Papua to national growth in Indonesia and international recognition within the broader Asia-Pacific region. Both central and local governments have collaborated to foster the development of the Sorong SEZ, resulting in the establishment of various essential facilities and infrastructure. These endeavours are aimed at not only bolstering industrial growth within the SEZ but also at enhancing the well-being of related parties, particularly the local community and indigenous Papuans. In 2022, the Sorong SEZ achieved significant milestones, attracting investments amounting to Rp249 billion and providing employment to 111 individuals. This success has enticed several investors who have made commitments to inject capital and establish their businesses within the Sorong SEZ. The government plays a pivotal role in this process by offering a range of incentives and privileges, including infrastructure improvements in the form of enhanced road networks, air and seaports, and designated buffer zones. Additionally, the government extends both fiscal and non-fiscal incentives to entice investors. To gain insights into the dynamics of the Sorong SEZ, a comprehensive survey was conducted to identify its challenges and benefits. According to the survey results, the Sorong SEZ boasts a series of strengths, including its financial backing, regulatory framework, and robust infrastructure. However, the SEZ also faces a set of challenges that necessitate government foresight. These challenges encompass ensuring project completion, embracing modern technology, facilitating private sector involvement, resolving land disputes, and sustaining investor commitment.

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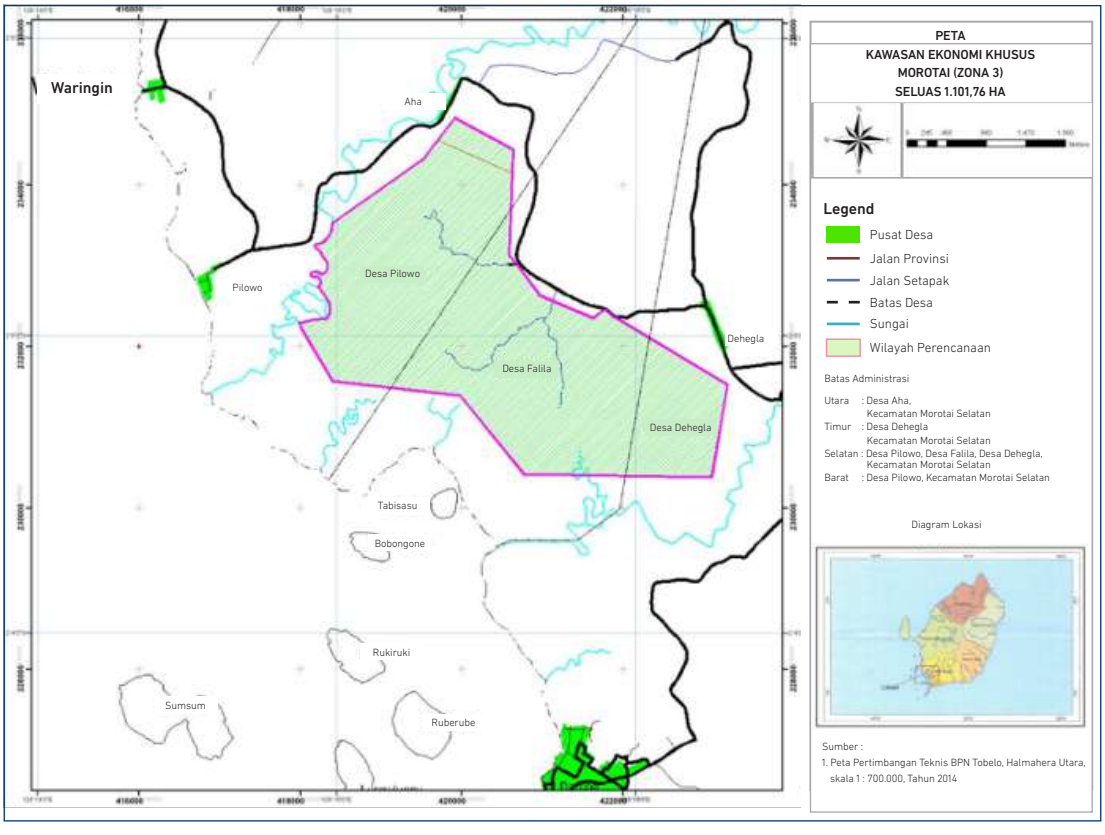
2.4. MOROTAI SPECIAL ECONOMIC ZONE

2.4.1. Project Profile

The Morotai Special Economic Zone (SEZ) is located within the South Morotai District, Morotai Island Regency, North Maluku Province. Geographically, the Morotai Island Regency is one of the regencies located in the Maluku Islands and is part of the Maluku Province. In 2008, Morotai Island separated from North Halmahera Regency and became the Morotai Island Regency through Law No. 53 of 2008. Being situated in the northernmost region of Eastern Indonesia, this SEZ covers an area of 1,101.76 ha (Figure 3.66).

The Morotai SEZ, on its north edge, borders with Aha, South Morotai District, Morotai Island Regency, while at its eastern edge it borders Dehegila Village, South Morotai District, Morotai Island Regency. Next, on the south, it borders Pilowo, Falilah and Dehegila Village, South Morotai District, Morotai Island Regency, while in the west it borders with Pilowo Village, South Morotai District, Morotai Island Regency.

Figure 3.66. Map of Morotai Special Economic Zone



Source: Government Regulation Number 50, 2014.

The designation of the Morotai region as an SEZ has fulfilled the criteria as stated in Law Number 39 of 2009 concerning Special Economic Zones, and which are in accordance with the Spatial Planning Plan:

- it does not potentially disrupt protected areas;
- the respective provincial/regency/municipal government supports the SEZ;
- it is in a position close to international trade routes or near international shipping routes in Indonesia or located in an area with potential superior resources; and
- it has clear boundaries.

The establishment of the Morotai SEZ is one of the government's strategies to promote investment in the Morotai region. Generally, the process of establishing the Morotai SEZ begins with the identification of key criteria for selecting a location that meets the requirements for SEZ development. This is followed by the formulation of policies that support the development of the SEZ area and the provision of internationally standardised investment services and institutions.

2.4.2. Project Objectives

Based on data from the National Single Window Institution, the realisation of investment in the Maluku Islands, including the provinces of Maluku and North Maluku, during 2010–13 was amongst the lowest compared to other regions in Indonesia, particularly in terms of foreign direct investment flows. Japan, as one of the biggest investors during that period (Table 3.18), concentrated its investment in Java island. In addition, referring to Presidential Regulation No. 131 of 2015 concerning the Determination of Underdeveloped Areas for 2015–19, the Morotai Island Regency was designated as one of the underdeveloped regions that need to be developed. Therefore, Morotai SEZ is expected to accelerate the pace of economic development in the Morotai Island Regency, North Maluku Province, and support the acceleration and equitable development of the national economy.

Table 3.18. Japan's Investment in Indonesia by Location in 1st Semester 2014
(US$ million)

Rank	Economic Corridor	2009	2010	2011	2012	2013	S1 2014
1	Java	675	689	1,450	2,205	4,643	1,503
2	Kalimantan	-	2	0.05	154	45	32
3	Sumatra	0.4	14	17	95	11	3
4	Bali & Nusa Tenggara	5	8	45	4	8	0.7
5	Sulawesi	4	-	1	1	5	1
6	Maluku & Papua	-	-	3	-	-	-
Total (All Location)		**685**	**713**	**1,516**	**2,457**	**4,713**	**1,542**

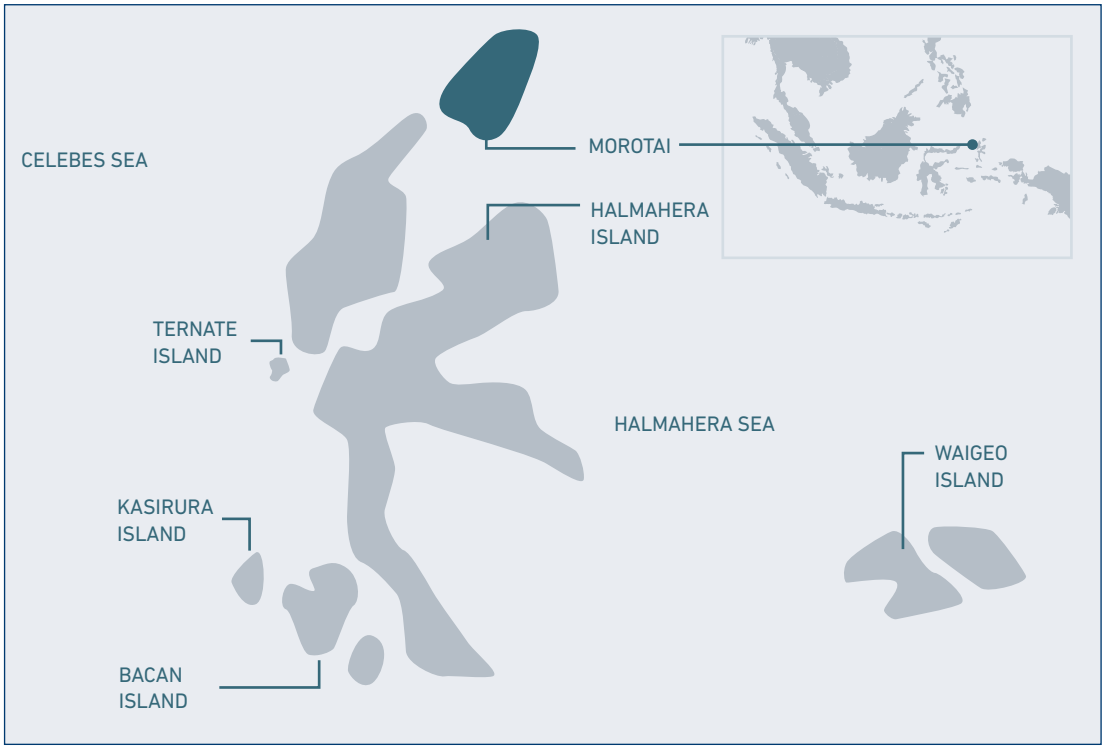
Source: The Investment Coordinating Board of the Republic of Indonesia, 2014.

Morotai SEZ (Figure 3.67) is one of the National Strategic Projects meant to promote equitable development in the eastern region of Indonesia. This is stated in the medium-term development plan for 2020–24. The eastern region of Indonesia is considered to have significant potential, but it lacks the quality and quantity of basic services, resulting in the underdevelopment of the commodity value chain. Morotai SEZ is expected to contribute to the national economy, particularly in the tourism and fisheries industries.

The tourism sector is one of the sectors that play a strategic role in supporting the national economy because it not only absorbs labour but also stimulates investment. This is supported by the natural wealth with diverse types of world-class natural tourist attractions, as well as high cultural richness and diversity. To support the development of the tourism sector, the government has established several tourism SEZs.

One of the leading tourist destinations in the Eastern region of Indonesia designated as a tourism SEZ is Morotai Island. Pulau Morotai is one of the 10 priority tourism destinations in Indonesia and is projected to become a new Bali in the eastern part of Indonesia. Being located on the northernmost island in Eastern Indonesia, Morotai SEZ offers a different marine tourism destination compared to other marine tourism destinations.

Figure 3.67. Morotai Special Economic Zone



Source: PT Jababeka.

The Morotai SEZ was developed due to its potential and advantages in terms of geo-economic and geo-strategic aspects. From a geo-economic perspective, Morotai is an outer island in the northeastern part of Indonesia, close to Japan and Taiwan. The waters of Morotai are also a migration route for tuna fish, which is a source of raw materials for the fishing industry. In addition, Morotai also has world-scale historical tourism potential in the form of World War II relics. From a geostrategic perspective, the presence of Leo Wattimena Airport with a large runway is a supporting factor for increasing the role of Morotai as an international hub in the eastern part of Indonesia.

In the Master Plan for the Acceleration and Expansion of Indonesia's Economic Development for 2011–25, which was established through Presidential Regulation of the Republic of Indonesia Number 32 of 2011, the economic corridor development for the Papua and Maluku Islands regions is projected to become the centre for national food, fisheries, energy, and mining development. In the Maluku economic corridor, the focus of economic activities is on fisheries due to the enormous potential in Maluku waters, which can serve as a reserve for national fisheries. In addition, the development direction for the waters in North Maluku province will also be focused on as a production and distribution location for fisheries products.

Based on the guidance of the National Medium-Term Development Plan for 2015–19, the development of Morotai SEZ is directed toward optimising its potential in the fisheries and fish-processing sectors, as well as international marine tourism. This is in line with the zoning of Morotai SEZ as stipulated in Presidential Regulation NO.50 of 2014 regarding the Moratai Special Economic Zones, which is divided into 4 main zones: export processing zone, logistics zone, industrial zone, and tourism zone.

The Ministry of Marine Affairs and Fisheries has implemented the Integrated Marine and Fisheries Development Programme (SKPT) as stated in the Regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia Number 48/PERMEN-KP/2015 concerning the General Guidelines for Integrated Marine and Fisheries Development Centers in Small Islands and Border Areas. The focus of SKPT development is increasing added value, competitiveness, modernisation and corporatisation of businesses, as well as strengthening production and productivity of the main players and fisheries industry (KKP, 2017). Morotai Island is one of the locations for SKPT according to Ministerial Decree No. 51 of 2016. Through these efforts, the government aims to achieve a significant increase in the national production and export value of capture fisheries from Morotai Island.

The SEZ is expected to diversify production and forms of economic activities (Ilmar, 2004). If diversification is realised, it will create more job opportunities, thereby improving employment prospects and indirectly enhancing the welfare of the community in the Morotai region and its surroundings.

2.4.3. Project Cost and Source of Funding

The financing for an SEZ may come from the government, private sector, or a collaboration between the government and other sources. For the Morotai SEZ, Indonesia collaborated with other sources for infrastructure development. Since its operation began on 1 April 2019, the Morotai SEZ is projected to attract investments worth Rp30.44 trillion and is expected to create job opportunities for 30,000 workers until 2025. The realisation of investments until March 2023, reached Rp497.40 billion (based on data from the Secretariat of the National Council for Special Economic Zone, 2023).

In general, the financing source for the Morotai SEZ comes from the private sector, namely PT. Jababeka Morotai, a business entity involved in tourism, industry, logistics, and export processing in the Morotai Island Regency, North Maluku Province.

2.4.4. External and Internal Factors

The Morotai SEZ was built with the aim of encouraging the acceleration of economic development in the Morotai region, in particular, as well as the acceleration and expansion of national economic development. In order to assess the feasibility of achieving this objective, it is essential to conduct a strengths–weaknesses–opportunities–threats (SWOT) analysis. This analysis aims to identify the internal strengths and weaknesses, as well as the external opportunities and challenges. This can be accomplished by administering a questionnaire to gather insights from various stakeholders, including local governments, academics, entrepreneurs, and the general public. The responses obtained will be evaluated from two perspectives: the actual state of affairs and the level of significance. Each perspective will be measured on a scale from 1 to 6. The 'actual state' refers to how respondents perceive the observed or perceived facts, with a score of 1 indicating a very negative perception and a score of 6 indicating a highly positive perception of the project. The 'level of significance' gauges the importance of each evaluated factor, with a score of 1 denoting a very low level of importance and a score of 6 representing a highly significant perception of the project.

2.4.4.1. External Factors

The external factors are the level of support from the surrounding community for the project; the level of investor interest in the development of SEZs; the level of opportunities for private individuals or the community to become investors in the supporting facilities within the project area; opportunities for the project in creating employment opportunities; the impact level of

the project for opening up access to other areas around the project location; the impact level of the project on the emergence of new business developments for the community; opportunities for the project in improving the welfare of the community; opportunities for the project in increasing national or regional income; the availability of the project land; timeliness of funding disbursement for the project from investors; the potential for disputes or legal claims in the project implementation process; and the level of ease of obtaining business permits at the project location.

2.4.4.2. Internal Factors

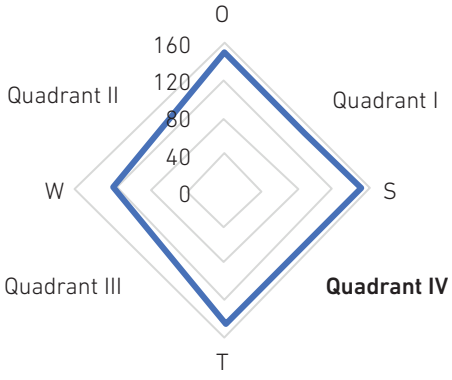
The internal factors identified are the deregulation or issuance of regulations to support the implementation of the project; compliance of the project development with spatial planning and land use; compatibility of the project development with spatial planning and land use; availability of infrastructure supporting the project, such as international airports, strategic national road access, power installations, and clean water installations; central and/or local government support in financing the implementation of the project; the ease of permitting in the project implementation preparation process; the technical smoothness of the project construction development; the level of modern technology utilisation in the project development; timeliness in the project development; the physical quality level of the project; the compliance level of the results of the project development; the environmental sustainability awareness of the project development; and the adequacy of the supporting facilities for the project.

2.4.5. SWOT Results and Analysis

To identify the strengths, weaknesses, opportunities, and challenges arising from the implementation of the development of Morotai SEZ, the author conducted a strengths-weaknesses-opportunities-threats (SWOT) analysis. The analysis was carried out through a survey of stakeholders, including academics, government officials and/or project implementers, entrepreneurs and/or business operators, and the general public. The survey aimed to gather the stakeholders' perceptions of the Morotai SEZ project.

From the analysis, it is obtained that the strengths have a more dominant value than the weaknesses as internal factors influencing Morotai SEZ. On the other hand, in terms of external factors, the opportunities are smaller than the threats. The resulting SWOT results shows that Morotai SEZ is located in the second quadrant and should mainly focus on the strength to overcome external threats (Figure 3.68). This encourages the government to implement various policies and strategies to optimise the existing opportunities and overcome the challenges that arise in the development of Morotai SEZ.

Figure 3.68. SEZ Morotai SWOT Results



Categories		Values
S	Strengths	146.33
W	Weaknesses	120.29
O	**Opportunities**	**145.76**
T	Threats	147.20

SEZ = Special Economic Zone.

Source: Authors, 2023.

The internal and external factors identified as strengths, weaknesses, opportunities and threats, are mapped in Figure 3.69.

Figure 3.69. Matrix of SWOT Analysis Results Factors

Internal	***Strengths*** • Clear regulation • Project location • Availability of infrastructure • Government support • Project development result compliance • Adequacy of supporting facilities	***Weaknesses*** • Compability with spatial planning and land use • The ease of project permission • Project construction development • Modern technology utilization • Project development timelines • Enviromental sustainability • Physical quality of project
External	***Opportunities*** • Community support • Investor interest • Job opportunities • New business developments • Community welfare improvement • Growth of national/regional income	***Threats*** • Investor interest in supporting facilities within the project area • Open up access to other areas around the project location possibilities • Availability of the project land • Timeliness of funding disbursement for the project from investors • Potential disputes or legal claims • Business permits
	Positive	**Negative**

Source: Authors, 2023.

2.4.5.1. Main Challenges

Although the survey results generally indicate that Morotai SEZ has various benefits that have been felt by the community, there are still some weaknesses that need attention from the government or area managers to drive the progress of KEK. One of the weaknesses that needs to be addressed promptly is the low level of investment in Morotai SEZ. Out of the projected total investment of 30.44 trillion in 2025, only 497.40 million has been achieved by the first semester of 2023 (Secretariat of the National Council for Special Economic Zones, 2023).

One of the factors causing the low investment, based on the survey results, is related to the Morotai SEZ investor permits. This is in line with the statement from the Director of Planning Services and Zones at the Ministry of Investment, Noor Fuad Fitrianto (Kompas, 2023), that KEK has not been able to attract investors to invest. So far, investments have flowed more into sectors that are not part of the Morotai SEZ sector. Respondents believe that a scheme should be created to facilitate permits for potential investors who want to invest in Morotai SEZ, either through deregulation or offering other fiscal facilities. Another step that the government can take is to offer project-based investment packages to stimulate the development of priority sectors in KEK. In addition, the alignment of NSP development with spatial planning and land use, as well as the utilisation of modern technology in NSP development, is still considered suboptimal. If not addressed appropriately, this can result in delays in project completion.

The survey results also indicate that respondents are concerned that the development of the Morotai SEZ project may have negative impacts on environmental sustainability. The development of the tourism sector is always accompanied by threats to the ecosystem/ environmental sustainability in the area. This also appears to be a concern of the respondents, which should be balanced with education and government policies to ensure that the KEK project does not pose a threat to the ecosystem in the Morotai region.

Another factor that was the focus of the survey is the external factors that are perceived to affect the success of the development of Morotai SEZ. The first challenge comes from the support from the surrounding community, which is considered to be suboptimal. This can be seen from the land acquisition process, which has encountered obstacles. The Morotai Special Economic Zone (KEK) is planned to be developed on a land area measuring 1,101.76 hectares. Currently, the KEK Morotai management has achieved control over approximately 50% of the planned land area (Secretariat of the National Council for Special Economic Zones, 2023). In addition, respondents also expressed concerns about potential issues that could lead to disputes during the project implementation, as evidenced by the low scores obtained for that factor.

2.4.5.2. Main Benefits

The survey results indicate that the development of Morotai SEZ is expected to contribute to the improvement of development and economic growth, particularly in the eastern regions of Indonesia, as evidenced by the respondents' hopes for improved business permits. The focus on business permits suggests the interest of entrepreneurs to invest in Morotai SEZ.

The interest of entrepreneurs is also perceived to be supported by ongoing infrastructure development. According to the National Economic Council report in 2021, at least a 3 km main road, 106 kVA electricity, administration office, telecommunications network, and water storage with a flow rate of 9.25 L/second have been provided. With these various facilities and conveniences, as stated in the National Council report, there has been an increase in Gross Regional Domestic Product (PDRB) in Morotai Regency in the last 3 years (2018–20), amounting to 7.38%.

The designation of Morotai as an SEZ in 2014, followed by its operation in 2019, has had an impact on the economy of North Maluku Province, particularly the Morotai Island area. The local own-source revenue (PAD) of Morotai has experienced an increase year by year (Akbar, 2021). The detailed increase in PAD can be seen in Table 3.19 below.

Table 3.19. Morotai Local Own-Source Revenue (PAD) 2015–2019

No	Indicator	Year				
		2015	2016	2017	2018	2019
1	PAD	10.4	7.5	20.9	31.7	32.3

Source: BPS.

At the same time, the SEZ has provided multiplier effects (Annual Report of the National Council of Special Economic Zones, 2019), including the following:

- addition of new job opportunities in the hospitality sector;
- support for tourism vocational schools in terms of infrastructure and practical training;
- improvement of infrastructure around the SEZ, such as airport renovation, Morotai Island ring road, and telecommunications network;
- increase in the number of cooperatives in the areas surrounding the Morotai SEZ;
- increase in the Human Development Index in Morotai;
- increase in the number of tourists.

Another positive aspect that can be observed is the development of tourism in Morotai. Morotai has even been dubbed 'The Maldives of Indonesia' due to its incredible tourism potential. The availability of various tourism options, including marine and historical tourism, becomes a unique attraction for tourists to visit Morotai. With the development of the tourism sector, another benefit is the increase in job opportunities for the local community. This aligns with the survey results indicating that respondents feel that with the presence of Morotai SEZ, there are broader job options and improved access to other areas around KEK that were previously difficult to reach quickly.

Conclusion

The National Strategic Project Morotai SEZ is a highly important project as it is projected to contribute to the growth of the local economy, which indirectly also contributes to the national economic growth. Various facilities and infrastructure have been built to support industrial growth in Morotai SEZ. These facilities and infrastructure have had a positive impact on the local community. Based on the survey results, it is known that the factors that serve as strengths of Morotai SEZ need to be optimised (such as easy regulations, suitable location, adequate infrastructure, and sustainable project development) to maximise the opportunities available (such as community support, business expansion, and improved welfare of the people). By taking these steps, it is expected that investment and economic activities in Morotai SEZ will further increase, thereby providing greater contributions to the prosperity of the community. However, both the government and Morotai SEZ managers also need to anticipate weaknesses and challenges that could hinder the development of the area (such as timely project completion, use of modern technology, investor commitment, and land acquisition).

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2.5. MANDALIKA SPECIAL ECONOMIC ZONE

2.5.1. Project Profile

The vast expanse of Indonesia encompasses the westernmost island of Pulau Weh where the city of Sabang is located on the easternmost island of Pulau Liki, which is part of Sarmi Regency, Papua Province. As an archipelagic country, Indonesia has tens of thousands of beaches; it also has beautiful marine parks with diverse and amazing marine biodiversity. The beauty of the beaches and marine parks is a valuable natural resource, surpassing gold mines because it can provide endless benefits if managed well as tourist attractions.

The Mandalika Special Economic Zone (SEZ) is built and managed by PT. Pengembangan Pariwisata Indonesia or the Indonesian Tourism Development Corporation (ITDC). The Mandalika Special Economic Zone (SEZ) is currently spread over an area of 1,173.29 ha and is located in the Pujut District of Lombok Tengah Regency, Nusa Tenggara Barat. It is bordered by the villages of Kuta, Sukadana, Mertak, Sengkol, Rembitan, and Prabu. Some of the infrastructure built in the Mandalika SEZ can be seen in Figure 3.70.

Figure 3.70. Mandalika Infrastructure

Source: Mandalika SEZ documentation from ITDC Mandalika.

For the availability of land in the area, the total land in accordance with the Economic Strategic Area designation document is 1,322.02 ha, but in the course of project development there is land whose ownership is still outside Indonesian ITDC, namely 148.73 ha which is gradually being acquired. Of the 1,173.29 ha of land owned by ITDC, 1,164.18 ha has a land title certificate, and the remaining 9.1076 ha are still in the application process to obtain land management rights.

The Mandalika SEZ is situated in a hilly area, with its front side facing a 16 km stretch of coastline. The beaches along this stretch include Kuta Beach, Seger Beach, Serenting Beach, Tanjung Aan Beach, and Gerupuk Beach. It takes approximately 15 minutes to travel from Lombok International Airport to Mandalika via the BIL-Mandalika Bypass Road. From Bali, Mandalika can be reached by fast boat through the Sanur – Nusa Penida – Kuta Portlane corridor, with a travel time of approximately 2.5 hours.

The development and management of the Mandalika SEZ are carried out by PT. Pengembangan Pariwisata Indonesia or the ITDC. The implementation of the Mandalika SEZ development can be described as follows:

1) The construction of the Nurul Bilad Mosque and basic infrastructure in the western area, including road infrastructure and other facilities, was financed through state capital investment in 2015, completed in 2018.
2) The construction of the ITDC office building, located under the Nurul Bilad Mosque, was also completed in 2018.
3) The construction of Mandalika Bazaar and Kuta Lane, with Mandalika Bazaar having 330 stalls, began construction in 2018 and was completed in 2019 with ITDC internal financing, and continued with the beautification of Mandalika bazaar area and Kuta Lane using National Interest Account (NIA) financing from the Indonesia Export Financing Agency in 2020-23. The stalls at the Mandalika Bazaar are prioritised to relocate traders from micro, small, and medium-sized enterprises from the surrounding community who previously unofficially occupied the coast of the area.
4) The involvement of the Asian Infrastructure Investment Bank (AIIB) in the Mandalika Urban and Tourism Infrastructure Project (MUTIP) programme is in the form of work packages, namely for (1) road infrastructure and complementary works, such as roads, road drainage (swale), public street lighting, landscape, pedestrians, utility boxes, parking areas, gates, temporary evacuation shelters, including road body for main track and service road circuit, (2) electricity network, (3) telecommunication network, (4) clean water network, (5) ground water tank, (6) dirty water network, (7) solid waste treatment plant, (8) waste water treatment plant, and (9) perimeter fence. All projects from AIIB financing are targeted to be completed by September 2024.
5) The construction of Pullman Hotel from the NIA programme, which is a 5-star hotel that has 230 regular rooms, 27 villas (beach villas and garden villas) and has been operating since August 2022.
6) The construction of basic circuit infrastructure (road body formation) and construction of non-circuit roads in the form of regional support roads outside the Special Area Road (SAR) in 2019-2020 with NIA programme financing.

7) The construction of SAR, which is a circuit path, from state capital investment in 2020 and Himbara (Association of State-Owned Banks), namely for paving the circuit path, both main track and circuit service road. According to ITDC's explanation, the circuit is built with world-class quality, such as in Buriram, Thailand and Sepang, Malaysia, using a mixture of Upgraded Stone Mastic Asphalt combined with Asphalt Concrete-Wearing Course. Upgraded Stone Mastic Asphalt technology is widely used in subtropical countries that experience snow seasons, while Asphalt Concrete-Wearing Course is an Indonesian National Standard asphalt that is widely used on highways or airport runways. SAR was completed in 2021 and began to be used at the MotoGP event in March 2022. The circuit has a track length of 4.31 km with 17 bends. This circuit is also referred to as SAR where the circuit will be used as an access road for the area if it is not holding a race, especially on the outer service road.

2.5.2. Project Objectives

The tourism sector can be a strategic source of revenue for Indonesia because it can drive the development of other economic sectors. The success of Bali as a tourist destination has encouraged other islands. Through Regulation No. 52 of 2014, the government designated the Mandalika area as an SEZ for Tourism. With the designation as a special economic zone, the development of the Mandalika area received support from both the central government and the local government, including facilities for land acquisition and certification of regional land and the development of supporting infrastructure in the form of roads connecting the airport directly to the Mandalika SEZ with a shorter distance. While support from the local government, among others, is in the form of moving the airport to the Central Lombok Regency area near Mandalika SEZ.

The concept of Mandalika SEZ is to combine nature tourism with sports tourism. This area is expected to encourage the acceleration of economic development in the Central Lombok Regency area, especially West Nusa Tenggara and the acceleration and expansion of national economic development.

The development of the Mandalika SEZ is based on two advantages: geo-economic advantage and geo-strategic advantage. The geo-economic advantage lies in its marine tourist attractions, including white sandy beaches with exotic panoramas, stunning marine parks, steep hills that enhance its beauty, and its proximity to Bali Island. On the other hand, the geo-strategic advantage of Mandalika's tourism development is the concept of environmentally friendly tourism (ecotourism), where visitors can not only admire nature but also witness the local ethnic culture of the Sasak people as a way to preserve their heritage.

Therefore, in Indonesia's tourism development strategic plan, Mandalika SEZ was designated as one of the 10 Priority Tourism Destinations, which was then focused as a Super Priority Tourism Destination. These five Super Priority Tourism Destinations then became part of the National

Strategic Project which was stipulated through Presidential Regulation Number 109 of 2020 and finally by the Coordinating Minister for Economic Affairs Regulation Number 21 of 2022.

2.5.3. Project Cost and Source of Fund

The development of the Mandalika SEZ by ITDC is finance from several sources, including:

1) State capital investment in 2015 amounted to Rp250 billion, used for the development of the western area, including the construction of mosques and roads along Kuta Mandalika Beach and several other roads in the western area.
2) ITDC internal financing of Rp64 billion, used to build the Mandalika Bazaar.
3) Financing in the form of a loan from the Asian Infrastructure Investment Bank (AIIB) of US$248.4 million or equivalent to Rp3.60 trillion to build basic infrastructure and supporting facilities for the area packaged in the MUTIP programme.
4) Financing in the form of a loan from the Indonesian Export Financing Agency in the NIA programme of Rp1.19 trillion, used to build the Pullman Hotel, basic circuit and non-circuit infrastructure, and for the beautification of Mandalika Bazaar and Kuta Lane.
5) State Capital Investment in 2020 and financing from Himbara amounting to Rp899 billion, used to build Special Area Roads.

2.5.4. External dan Internal Factors

The Mandalika SEZ was built with the aim of encouraging the acceleration of economic development in the Central Lombok Regency, West Nusa Tenggara, in particular, as well as the acceleration and expansion of national economic development. To measure the possibility of achieving these goals, it is necessary to identify the opportunities and challenges from the external factors as well as the strengths and weaknesses of the internal factors.

2.5.4.1. External Factors

The internal factors can be identified as the support from the community for the Mandalika SEZ; significant opportunities for private/large-scale investment; the creation of job opportunities; emergence of new businesses in the Mandalika area; hesitancy to invest in the Mandalika SEZ; the low number of tourists outside of circuit events; increased regional income; Mandalika Circuit's enhancement of the global recognition of Lombok; adequate land availability; the disbursement of funds from the AIIB, which must be guaranteed with no issues/disputes with the community; and limited flight schedules to Lombok and transportation from the airport to Mandalika.

2.5.4.2. Internal Factors

The internal factors can be identified as the Mandalika SEZ's creation based on clear regulations; the location of the Mandalika SEZ suitable for tourism zones; the location of the Mandalika SEZ in accordance with spatial planning and land use; supporting infrastructure available for the Mandalika SEZ; the licensing process being not as fast as expected; locations affected by floods during the project construction phase; the ITDC, a state-owned enterprise specialising in tourism, as the implementing body for the development and management of the Mandalika SEZ; government capital participation in the development of the Mandalika SEZ; and the physical construction completed according to set targets, with the project having very good physical quality but the supporting tourism facilities being currently insufficient.

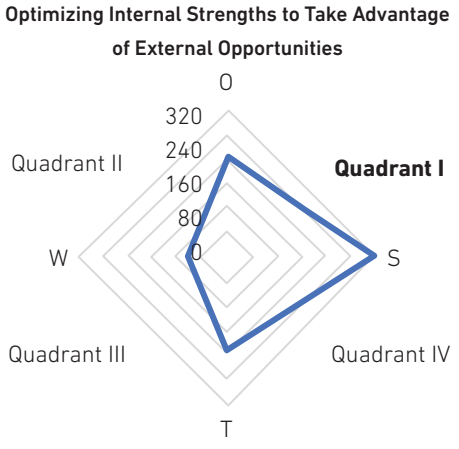
2.5.5. SWOT Analysis

This section will discuss the challenges and benefits of Mandalika SEZ based on a survey conducted with stakeholders, namely ITDC as the executor of the construction and development of the area, the Regional Government of Nusa Tenggara Barat and Lombok Tengah Regency Government, academics, entrepreneurs in Mandalika SEZ and the surrounding community.

To measure the challenges and benefits of developing Mandalika SEZ, a strengths-weaknesses-opportunities-threats (SWOT) analysis was conducted through a questionnaire to obtain perceptions from respondents. Perception is seen from two points of view, namely reality and importance, using a score of 1 to 6. Reality describes the respondent's perception of the facts observed or felt, where a score of 1 indicates a very unfavourable perception while a score of 6 indicates a very good perception of the project. Importance describes how important each of the factors assessed is, where a score of 1 indicates a perception of very unimportant while a score of 6 indicates a perception of very important to the project.

The results of the SWOT analysis show that Mandalika SEZ has strengths and opportunities that are more dominant than weaknesses and challenges, and falls to the first quadrant as shown in Figure 3.71.

Figure 3.71. SWOT Analysis on Mandalika SEZ



Categories		Values
S	**Strengths**	**317.00**
W	Weaknesses	115.85
O	**Opportunities**	**220.13**
T	Threats	208.28

SEZ = special economic zone.

Source: Authors, 2023.

The internal factors mapped to determine strengths and weaknesses and the external factors identified as opportunities and challenges are shown in Figure 3.72. Factors included as strengths are those from the questionnaire results with a perception score of ≥5.38 out of the highest score of 6, while factors assessed as weaknesses have a perception score of <5.38. Those assessed as opportunities are factors with a perception score ≥5.42, while those assessed as challenges have a perception score <5.42.

Figure 3.72. Strengths, Weaknesses, Opportunities, and Challenges (SWOT) of Mandalika SEZ

	Positive	Negative
Internal	***Strengths*** • The Mandalika SEZ creation is based on clear regulations. • The location of the Mandalika SEZ is suitable for tourism zones. • The location of the Mandalika SEZ is in accordance with spatial planning and land use. • There is supporting infrastructure available for the Mandalika SEZ. • ITDC, as the implementing body for the development and management of the Mandalika SEZ, is a state-owned enterprise specialising in tourism. • There is government capital participation in the development of the Mandalika SEZ. • The physical construction is completed according to the set targets. • The project has a very good physical quality.	***Weaknesses*** • The licensing process is not as fast as expected. • There are locations affected by floods during the project construction phase. • The supporting tourism facilities are currently insufficient.
External	***Opportunities*** • Support from the community for Mandalika Special Economic Zone • Significant opportunities for private/massive investment • Creation of job opportunities • Emergence of new businesses in the Mandalika area • Increased regional income • Mandalika Circuit enhances the global recognition of Lombok • Adequate land availability	***Threats*** • Investors are still hesitant to invest in Mandalika Special Economic Zone • The number of tourists is still low outside of circuit events • Disbursement of funds from AIIB must be guaranteed with no issues/ disputes with the community • Limited flight schedules to Lombok and transportation from the airport to Mandalika

SEZ = special economic zone.

Source: Authors, 2023.

2.5.5.1. Main Challenges

The challenge of regional development appears in the fact that it takes a long time from land acquisition since the old order to the establishment of Mandalika SEZ based on Government Regulation Number: 52 of 2014, which later became a Super Priority Tourism Destination and National Strategic Project.

A factor that needs attention is the impact of the Mandalika SEZ project development on the environment. In December 2022, there was a flood that submerged the streets and several houses in front of the circuit. Based on ITDC's explanation, this was because, at that time, the drainage construction was still in the process of being completed. Then there was no more flooding after the drainage was completed.

Tourism support facilities are considered inadequate and can be seen during the 2022 MotoGP event, where the need for accommodation facilities in the form of lodging, transportation facilities, and restaurants has not been met. Hotels in the area are still very limited and cannot accommodate all spectators, so many stay around Mandalika during the 2022 MotoGP.

Another fact is that there are several investors who have committed to the construction of tourist facilities but have not yet realised it. Through the end of 2022, a total of 16 investment project lots have been made, with a total commitment contract value of around Rp1.92 trillion. Of these, six lots have been completed and are operating, and three lots are in progress.

Another challenge is the low number of tourists outside of circuit events. In addition to the unfinished development of the area, the gap will remain even if the area is completed. The gap is natural, but ITDC must strive to keep the difference in visitor numbers before and after the event to a minimum. ITDC needs to devise a strategy to continue to maintain the sustainability of the circuit and optimise it with various activities.

Another challenge is AIIB's stipulation regarding the terms of disbursement that can be done for projects with zero conflict. On the one hand, this guarantees a dispute-free project; on the other hand, it can have an impact on delaying the project completion schedule if there are problems in the middle of construction, such as obstruction by residents or claims to land.

2.5.5.2. Main Benefits

Mandalika SEZ as a tourism area can match Bali. Almost the entire area is surrounded by 16 km of beach with a view that is full of charm. Another tourist attraction is the international street circuit. The Mandalika Circuit has pocketed a 10-year contract from Dorna Sport as the MotoGP promoter, which began with the MotoGP international event on March 18–20, 2022. Research conducted by Litbang Kompas (2022) shows that Indonesians and other countries are enthusiastic about watching MotoGP 2022. This was reflected in the sale of 67,689 tickets, which exceeded the target of 60,000 spectators. According to MotoGP riders and observers, the Mandalika circuit has world-level quality and is in a beautiful location.

Mandalika SEZ is also supported by various infrastructures, such as Lombok International Airport which is 18 km away, Lembar Port which is 46 km away, 17.36 km BIL – Mandalika Bypass road, Batu Jai Praya clean water treatment plant with a capacity of 200 L/sec, solar power centre, Mujur Dam 21 km away and Kuta Substation with a capacity of 150 kV.

The survey results show that the community around Mandalika fully supports Mandalika SEZ. Prior to construction, the community traded illegally along the beach and some occupied the area's land as a place to live. During construction, ITDC built the Mandalika Bazaar to relocate the traders. People who occupied the land were also moved to residential complexes built by the government. In addition, there are also opportunities to open new businesses, such as villas, homestays, restaurants, mini markets, souvenir shops, gas stations, transportation businesses, and art performances.

Mandalika SEZ also has an impact on job creation in the form of employment during physical development and implementation of the MotoGP event. According to the Dinas Ketenagakerjaan of Lombok Tengah Regency, until 2025, the absorbed workforce is estimated at 58,700 people. Research data by Litbang Kompas (2022) show that the 2022 MotoGP event absorbs as many as 4,600 workers including cleaning management, security, Marshall, shuttle buses, MSMEs, parking attendants, control, help desk, and event support.

The indirect impact is the opening of jobs for the construction of tourist facilities by entrepreneurs or communities outside the area, such as lodging, restaurants, transportation facilities, room rental services in private homes, motorcycle taxi services, food and beverage trading, souvenirs, massage services and even guide services for MotoGP riders.

The 2022 MotoGP event, which was covered by domestic and foreign media, became a means of publicising Mandalika tourist destinations. After the event, the number of tourists increased to travel and see the circuit area directly. According to the results of research by Libang Kompas, the 2022 MotoGP contributed to Central Lombok's Regional Original Revenue of Rp12.18 billion. During the event, transactions for accommodation reached Rp40.72 billion, bus and private vehicle rental Rp29.17 billion, empowering as many as 800 traders from micro, small and medium-sized enterprises (240 from inside the circuit and 560 from outside the circuit), with an eating and drinking transaction value for 3 days of Rp23.08 billion, and spectator merchandise of Rp12.93 billion. According to the study, the 3 days of MotoGP had an impact on money circulation of Rp697.88 billion.

Research conducted by the Directorate of Strategic Studies of the Ministry of Tourism and Creative Economy / Tourism and Creative Economy Agency in 2022 also shows that MotoGP 2022 in Mandalika contributes to gross regional domestic product growth by 3.3% where the realisation of Nusa Tenggara Barat economic growth in the first quarter of 2022 recorded a growth of 7.76%. Some of the beautiful scenery in Mandalika SEZ can be seen in Figure 3.73.

Figure 3.73. Tanjung Aan Beach, Mandalika

Source: Mandalika SEZ documentation from ITDC Mandalika.

Conclusion

From the SWOT analysis, it can be concluded that Mandalika SEZ is a strategic project because it has strengths and opportunities that are more dominant than weaknesses and threats. The strategy that can be applied in this condition is to carry out an aggressive growth policy by optimising internal strengths and taking advantage of external opportunities. For this reason, ITDC, while remaining focused on completing the area in accordance with the grand design, also needs to aggressively optimise objects that have been completed and are ready to be harvested, such as circuits, beach tourism areas, and Pullman Hotels.

An active strategy needs to be carried out utilising community support and entrepreneurs/investors. Empowerment of buffer village communities is very important to meet labour needs, agricultural and livestock products to serve the needs of hotels and restaurants, as well as the introduction of local arts and culture. For this reason, an empowerment programme is needed in the form of education and competency building in the tourism sector, as well as the implementation of cleanliness, health, safety, and environment sustainability protocols. The support of entrepreneurs/investors can be utilised to cover the empty side of tourist facilities that have not or cannot be fulfilled by ITDC and the government. Coordination, collaboration, and common perception between ITDC, local governments, communities, and entrepreneurs will be an extraordinary force in its role as a tourist host.

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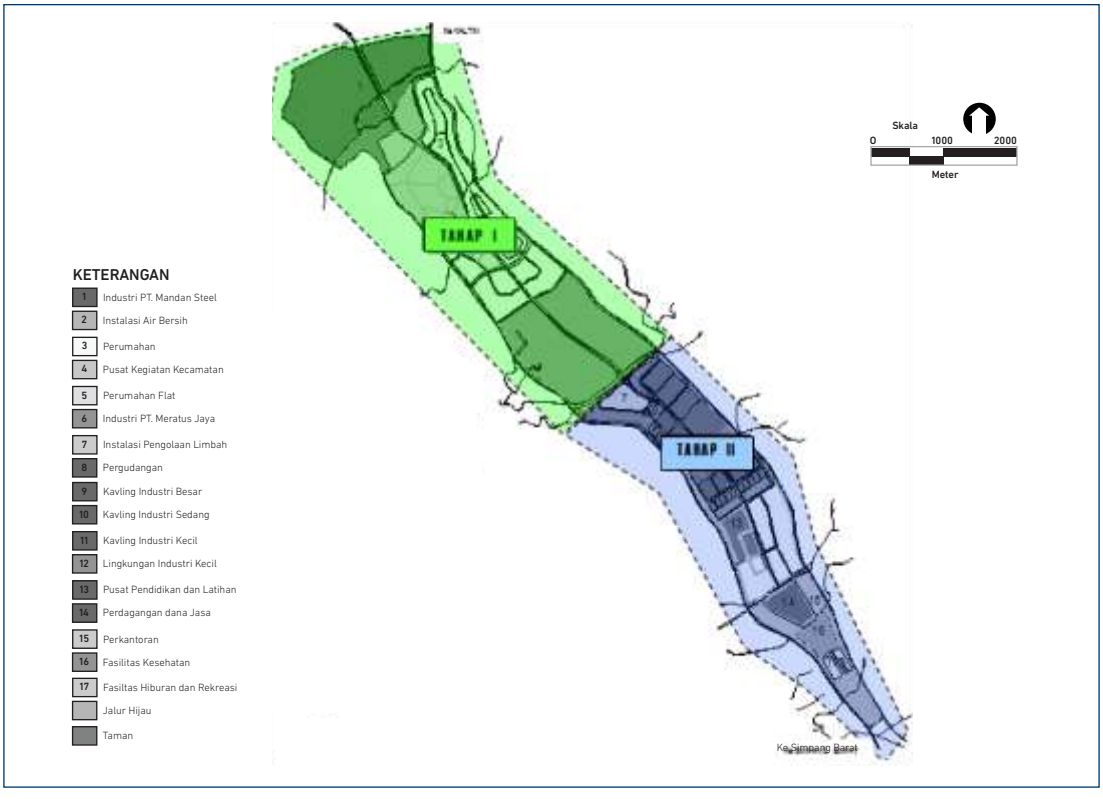
2.6. BATULICIN INDUSTRIAL PARK

2.6.1. Project Profile

The Batulicin Industrial Park has been designated as a National Strategic Project (PSN) since Presidential Regulation No. 3 of 2016 concerning the Acceleration of National Strategic Project Implementation. This area has developed rapidly and currently has many industries within it. Therefore, based on Presidential Regulation Number 109 of 2020 concerning the Third Amendment to Presidential Regulation Number 3 of 2016 concerning the Acceleration of National Strategic Project Implementation, the Batulicin Industrial Park is no longer included in the PSN list since 2020 because it is considered to have succeeded and capable of carrying out industrial activities. However, it still is a major project in the National Medium-Term Development Plan (Figure 3.74).

Figure 3.74. Batulicin Industrial Park Development Plan



Source: Direktorat Jenderal Pengembangan Perwilayahan Industri, 2015.

Batulicin Industrial Park is a thriving hub of economic activity located in the Tanah Bumbu regency of South Kalimantan province in Indonesia. This region is characterised by its vast reserves of coal and its strategic location near the major shipping routes of the Java Sea, which has made it a vital transportation and logistics hub for Indonesia's coal industry (Wikipedia, 2021). Based on data from the Project Management Officer Monitoring of Priority Industrial Area Development Plans for National Medium-Term Development and National Strategic Projects in 2023, the area of the Batulicin Industrial Park is 2,650 ha based on the Batulicin Industrial Park Location Map contained in the Appendix to the Regent's Regulation. The zones that will be developed in the Batulicin Industrial Park are Industrial Zone, Supporting Facility Zone, Regional Infrastructure Zone, Green Open Space Zone, and Education Zone.

The development of the Batulicin Industrial Park in Tanah Bumbu Regency is divided into two blocs, namely the 950-hectare Sarigadung Bloc (Bloc 1) and the 1,700-hectare Sungai Dua Bloc (Bloc 2). Bloc 1 is managed by Batulicin Jaya Utama (BJU), a regional government-owned enterprise (Maskuriah, 2018).

The operational capacity of BJU is limited due to its dependence on the regional budget, while the development of infrastructure and facilities requires significant funding. This limitation has resulted in slow progress in the development of facilities and completeness of the industrial zone. The process of land acquisition for the industrial zone is also slow due to resistance from landowners regarding prices. Infrastructure within the industrial zone is also constrained, including electricity, water and gas supply, as well as slow development of other infrastructure. In addition, there is a lack of connecting roads and deep-sea levels for export transportation purposes. Promotion of the industrial zone is also minimal, resulting in limited awareness about its existence.

Meanwhile, the Sungai Dua Block is managed by the Jhonlin Next Development Group. In August 2021, a biodiesel plant in this block was inaugurated by the President of Indonesia, Joko Widodo (Trihusodo, 2021). In this industrial zone, there are several industries operating in the fields of iron and steel, biodiesel, and others. Politeknik Batulicin aims to prepare skilled and professional human resources in the field of industry. It is expected to produce a young generation that is ready to use and contribute to the development of the Batulicin Industrial Park.

The plant processes crude palm oil into 1,500 tons of biodiesel per day and was built with an investment of Rp2 trillion. The industry could create many job opportunities. Moreover, the downstream industry could maintain the stability of palm oil prices both in domestic and international markets. Politeknik Batulicin was also built in this area to support the development of the Batulicin Industrial Park.

2.6.2. Project Objectives

Kalimantan is the largest territory in Indonesia, yet its economic development has a small contribution to national economic growth. With an area of about 544,150 km2, the island has a lot of potential for economic development. One of them is the potential for natural and beach tourism, cultural tourism parks, shopping tourism, and culinary tourism. In addition, Kalimantan also has abundant natural resources such as oil, gas, and coal. The agricultural sector, especially plantations, is also one of the main sectors supporting the economy of the Kalimantan region. Kalimantan is one of the regions in Indonesia that has received several national strategic projects. One of these projects is the Batulicin Industrial Park. It is located in Tanah Bumbu, South Kalimantan and is the only industrial zone in South Kalimantan. The Batulicin Industrial Park is being developed to support and improve the economy and welfare of the people in Tanah Bumbu Regency, South Kalimantan. This project is supported by the central government, province, and regency, as well as various interested private parties. The Batulicin Industrial Park will become a centre for processing and marketing agricultural, plantation, livestock, fisheries, and mining products in the region (Trihusodo, 2021). It will also attract investment and create jobs for local people.

The development of the Batulicin Industrial Park requires synergy between the government, the community and the private sector. The government needs to support infrastructure that determines investment, such as toll roads, airports, seaports, clean water resources, and electricity. The community needs to support this programme by providing land, labour, and active participation. The private sector needs to carry out downstreaming and industrialisation more broadly to provide added value for raw commodities.

Thus, the development of the Batulicin Industrial Park is a step forward in improving Indonesia's economy, especially in South Kalimantan. This area has great potential to become a maritime axis and economic centre in the region. This area also has positive social and environmental benefits for the surrounding community.

2.6.3. Project Cost and Source of Funding

According to the Regulation of the Regent of Tanah Bumbu Regency Number 31 of 2015 concerning the Batulicin Industrial Park, the funding sources are as follows:

a) regional government budget;
b) state budget funds through sectoral agencies;
c) private sector through domestic investment or foreign investment;
d) loan funds, including domestic and foreign loans; and
e) other legitimate funds.

There are two data related to the Batulicin Industrial Park construction cost:

a) Rp2.12 trillion from the state budget for Bloc 1; and
b) approximately Rp2 trillion of investment from the private sector for Bloc 2 (KPPIP, n.d.; Trihusodo, 2021).

2.6.4. External and Internal Factors

The Batulicin Industrial Park was built with the aim of supporting and improving the economy and welfare of the people in the Tanah Bumbu Regency. To measure the possibility of achieving this goal, a strengths-weaknesses-opportunities-threats (SWOT) analysis needs to be conducted to identify the strengths and weaknesses of internal factors as well as opportunities and challenges from external factors. This can be done through a questionnaire to obtain perceptions from local governments, academics, entrepreneurs, and the public. Perceptions are viewed from two perspectives: reality and the level of importance, using scores ranging from 1 to 6. 'Reality' describes respondents' perceptions of the observed or perceived facts, where a score of 1 indicates a very poor perception and a score of 6 indicates a very good perception of the project. 'Importance' describes how important each of the assessed factors is, where a score of 1 indicates a very unimportant perception, and a score of 6 indicates a very important perception of the project.

2.6.4.1. External Factors

The identified external factors are community support for the project development (E_1); investor interest in the project (E_2); opportunities for private or public participation as investors in supporting facilities in the project's area (E_3); opportunities for job creation (E_4); the impact of opening access to other areas around the project's location (E_5); impact on the emergence of new businesses for the community (E_6); opportunities in improving community welfare (E_7); opportunities in increasing state/regional income (E_8); availability of land for project development (E_9); timeliness of disbursement of the project's funding from investors (E_{10}); potential disputes or legal claims related to the project (E_{11}); and ease of obtaining business permits at PSN locations (E_{12}).

2.6.4.2. Internal Factors

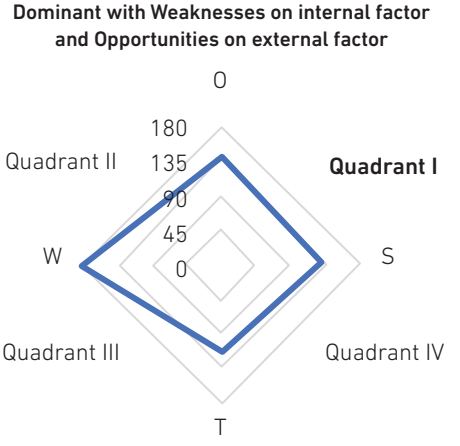
The identified internal factors are supportive regulations for project implementation (I_1); suitability of the project location for industrial areas (I_2); project development alignment with regional spatial planning and land use (I_3); availability of infrastructure supporting the project (I_4); support from the government in project financing (I_5); ease of gaining permits

for project implementation (I_6); smooth technical construction of the project (I_7); utilisation of modern technology in project development (I_8); timeliness of project completion (I_9); physical project quality (I_{10}); suitability of the intended use of project development results (I_{11}); project's commitment to environmental sustainability (I_{12}); and the sufficiency of supporting facilities for the project (I_{13}).

2.6.5. SWOT Results and Analysis

The results of the SWOT analysis show that the Batulicin Industrial Park is in the second quadrant and is more dominant weaknesses and opportunities than strengths and challenges, as shown in Figure 3.75.

Figure 3.75. The SWOT Analysis Results of the Batulicin Industrial Park



	Categories	Values
S	Strengths	125.10
W	**Weaknesses**	**172.75**
O	**Opportunities**	**137.59**
T	Threats	114.70

Source: Authors, 2023.

The total points obtained from each category of Strengths, Weaknesses, Opportunities, and Threats are shown in figure 3.75. Next, the internal and external factors identified as strengths, weaknesses, opportunities and threats are mapped in Figure 3.76.

Figure 3.76. Strengths and Weaknesses of Batulicin Industrial Park

Strengths	Weaknesses
✓ Batulicin Industrial Zone has been supported by clear regulations ✓ The location of Batulicin Industrial Zone is suitable for industrial zones ✓ Batulicin Industrial Zone has been supported by supporting facilities and infrastructure available in the vicinity ✓ The central and local governments have provided financial support in the development of Batulicin Industrial Zone ✓ The construction of Batulicin Industrial Zone has used modern technology	✓ In the development of Batulicin Industrial Zone, it is necessary to pay more attention to regional spatial planning and land use ✓ The ease of deep licensing services needs to be improved to encourage the development of Batulicin Industrial Zone ✓ There are technical obstacles in the construction of Batulicin Industrial Zone construction ✓ The completion of Batulicin Industrial Zone construction takes longer than predetermined ✓ The physical quality of Batulicin Industrial Zone infrastructure needs attention ✓ The infrastructure built at Batulicin Industrial Zone has not been fully used in accordance with its designation ✓ The development of Batulicin Industrial Zone still needs to pay attention to environmental sustainability aspects ✓ Supporting facilities in Batulicin Industrial Zone need to be improved
Opportunitie	**Threats**
✓ The surrounding community strongly supports the development of Batulicin Industrial Zone ✓ The project can attract investors to invest in Batulicin Industrial Zone ✓ The existence of Batulicin Industrial Zone increases job creation opportunities for the surrounding community ✓ Access to other areas around Batulicin Industrial Zone has become more open with the development of Batulicin Industrial Zone ✓ The existence of Batulicin Industrial Zone is able to grow new businesses for the surrounding community. ✓ Batulicin Industrial Zone has very adequate land availability to accommodate industrial needs as expected	✓ Private sector involvement in Batulicin Industrial Zone development needs to be increased ✓ The opportunity for Batulicin Industrial Zone in encouraging the improvement of the welfare of the surrounding community still needs to be the government's attention ✓ Batulicin Industrial Zone is still considered to have little influence in driving an increase in state/regional revenues ✓ The commitment to disburse Batulicin Industrial Zone funding from investors needs to be a concern for the Government ✓ There are potential disputes and lawsuits that need to be anticipated at Batulicin Industrial Zone ✓ The ease of business licenses in Batulicin Industrial Zone needs special attention from the government

Source: Authors, 2023.

2.6.5.1. Main Challenges

One of the main challenges related to the development of Batulicin Industrial Park is land occupation problems by the community (Saheriyanto et al., 2019). This issue arises because the government has allowed the land to remain unused for decades, leading to its occupation by the community. Another challenge is related to the value of compensation which has not yet been agreed upon, socio-economic impacts after the clear and clean process, and double documents which were found.

According to Saheriyanto et al. (2019), the most effective approaches and strategies for resolving land issues between government and society are comprehensive solution methods in the form of: integrated team formation, distribution of compensation based on length of stay, socio-cultural approach through community and integrated team meetings, science and technology approaches through transparency of development plans, religious approach through socialisation by religious leaders, and forming cooperation between government and social services.

2.6.5.2. Main Benefits

The development of Batulicin Industrial Park can bring several benefits, both for the government, and for entrepreneurs and the community. Batulicin Industrial Park aims to integrate natural and artificial resources while taking into account human resources and the orderly physical components both within and outside the area. This will have a positive impact on the economy of the community by reducing unemployment, especially in areas around the zone, improving community welfare, increasing macroeconomic growth in the region, and opening economic growth in local villages (Purwandani, 2018).

For the government, the Batulicin Industrial Park can increase regional income from the tax, user fee, and royalty sectors. In addition, this area can also support government programmes in developing downstream industries, especially biodiesel from crude palm oil, which can save foreign exchange and reduce dependence on imported fuel oil (Trihusodo, 2021).

For entrepreneurs, the Batulicin Industrial Park offers various facilities and incentives, such as the availability of land, infrastructure, licensing, and government support. This area also has a large market potential, both domestic and international, because it is located on a maritime trade route. Some industries that are already operating in this area include PT Jhonlin Agro Raya which produces biodiesel, PT Meratus Jaya Iron & Steel which produces iron and steel, and PT Aneka Tambang which produces nickel (Trihusodo, 2021).

For the community, the Batulicin Industrial Park can improve welfare and the economy through educational and training facilities, such as Politeknik Batulicin which is one of the leading polytechnics in South Kalimantan (Purwandani, 2018).

Thus, the Batulicin Industrial Park is an example of an integrated industrial zone that successfully combines economic, social, and environmental interests. This area is also proof that Indonesia can process its natural resources into high value-added products that can compete in the global market.

Conclusion

The Batulicin Industrial Park is the only industrial zone in South Kalimantan and hosts emerging enterprises reliant on natural resources. However, since 2020, it is no longer included in the PSN list as it is considered to have succeeded and can carry out industrial activities.

The Batulicin Industrial Park aims to integrate natural and artificial resources, human resources, and physical components of the area. It can bring benefits for the government, entrepreneurs, and community by improving the economy, providing new employment opportunities, reducing unemployment, improving community welfare, and increasing macroeconomic growth in the region. Moreover, it can increase regional income and support government programmes in developing downstream industries such as biodiesel from crude palm oil. Entrepreneurs can benefit from the availability of land, infrastructure, licensing, and government support. The area also has significant market potential both domestically and internationally due to its location on a maritime trade route.

Thus, the Batulicin Industrial Park is an example of an integrated industrial zone that successfully combines economic, social, and environmental interests. It demonstrates Indonesia's ability to process its natural resources into high-value-added products that can compete in the global market.

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Part 3: Social Infrastructure

3.1. BUILD TOURISM HOUSING FACILITIES (SARHUNTA)

3.1.1. Project Profile

The Self-Help Housing Stimulus Assistance (BSPS) development was first included in the list of National Strategic Projects (PSNs) in 2016 and as of the end of 2022, the BSPS is still included in the list, as regulated by the Minister of Economic Affairs' Regulation Number 21 of 2022 (Ministry of Economic Affairs, 2022). During 2016–21, BSPS has been implemented nationwide with three themes: Sail Karimata, Wonderful Indonesia, and BSPS Tourism Housing Facilities (Sarhunta), which has spent Rp739.91 billion and upgraded 25,385 houses (Directorate of Self-Help Housing, 2023b). Details of the achievements of BSPS are presented in Table 3.20.

Table 3.20. Achievements of BSPS 2016–2021

	2016	2017	2018	2019	2020	2021
Theme	Sail Karimata	Wonderful Indonesia	Wonderful Indonesia	Wonderful Indonesia	Sarhunta	Sarhunta
Project Location	West Kalimantan	North Sumatera, Central Java, East Java, West Nusa Tenggara, East Nusa Tenggara	North Sumatera, West Sumatera, Banten, Central Java, East Java, West Nusa Tenggara, East Nusa Tenggara, South Sulawesi, Southeast Sulawesi, North Maluku	North Sumatera, West Sumatera, Central Java, East Java, West Nusa Tenggara, East Nusa Tenggara, South Sulawesi, Southeast Sulawesi, North Maluku	Lake Toba KSPN, Borobudur KSPN, Mandalika KSPN, Labuan Bajo KSPN, Likupang KSPN	Tanjung Kelayang KSPN, Bromo-Tengger-Semeru KSPN, Wakatobi KSPN, Morotai KSPN, Raja Ampat KSPN

	2016	2017	2018	2019	2020	2021
Unit	298	2,107	4,619	12,785	4,679	897
Budget (billion Rp)	4.47	30.55	69.29	228.4	353.27	53.93

BSPS = Self-Help Housing Stimulus Assistance, KSPN = National Tourism Strategic Areas.
Source: Adapted from Directorate of Self-Help Housing, 2023b.

BSPS adopted the theme of Sarhunta in 2020 and 2021 to support the development of 10 key National Tourism Strategic Areas (KSPN) as could be seen in Figure 3.77. In 2020, BSPS Sarhunta focused on five super-priority KSPNs: Danau Toba, Borobudur, Mandalika, Labuan Bajo, and Likupang. Then, in 2021, it continued in five other priority KSPNs: Tanjung Kelayang, Bromo-Tengger-Semeru, Wakatobi, Morotai, and Raja Ampat. Based on data from Directorate of Self-Help Housing, BSPS Sarhunta spread across 21 districts/cities and 227 villages within those 10 KSPNs.

Figure 3.77. Distribution Map of BSPS Sarhunta

BSPS = Self-Help Housing Stimulus Assistance, KSPN = National Tourism Strategic Areas.
Source: Adapted from the Directorate of Self-Help Housing, 2023b.

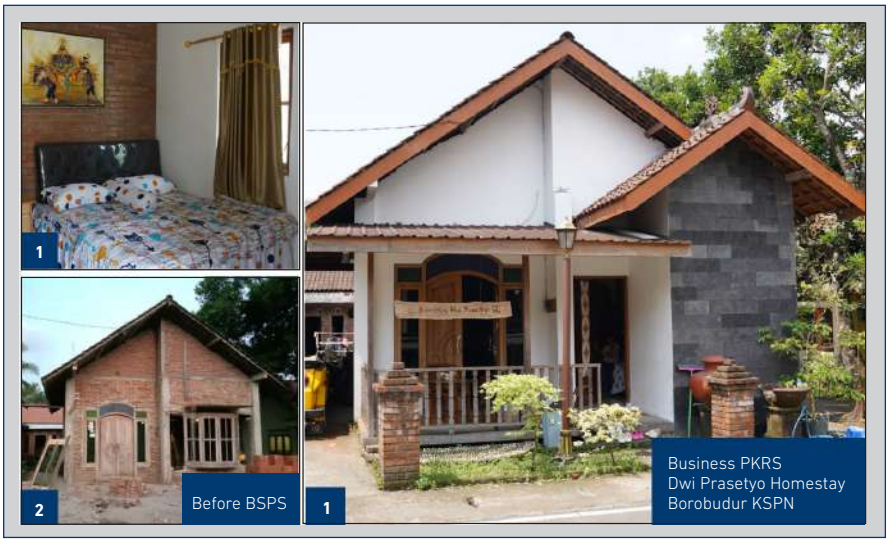
BSPS Sarhunta included improving the quality of self-help houses (PKRS) with or without business functions, as well as environmental management. PKRS business addressed repairing or adding to housing space for businesses' functions, such as homestays, creative production galleries, souvenir shops, culinary services, transportation rentals, and others. PKRS businesses were dominated by homestays, i.e., 2,029 units, or 88.41% of the total PKRS business units (Directorate of Self-Help Housing, 2023b).

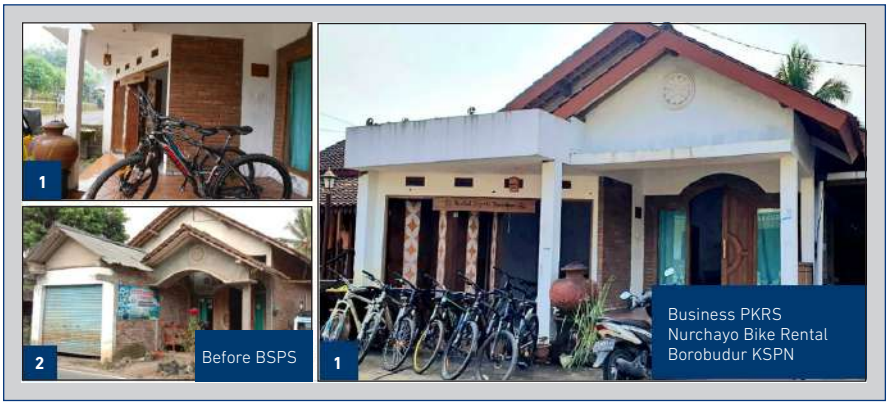
Meanwhile, non-business PKRS addressed repairing residential houses to make them liveable, including the façade to represent the local traditional house design. This activity was prioritised for residential houses that were in the main corridor to create the distinctive atmosphere of a cultured tourism area (BP2P Jawa III, 2021). Environmental management addresses developing public tourism infrastructure and facilities, amongst others. Some documentation of PKRS-unit results is presented in Figure 3.77.

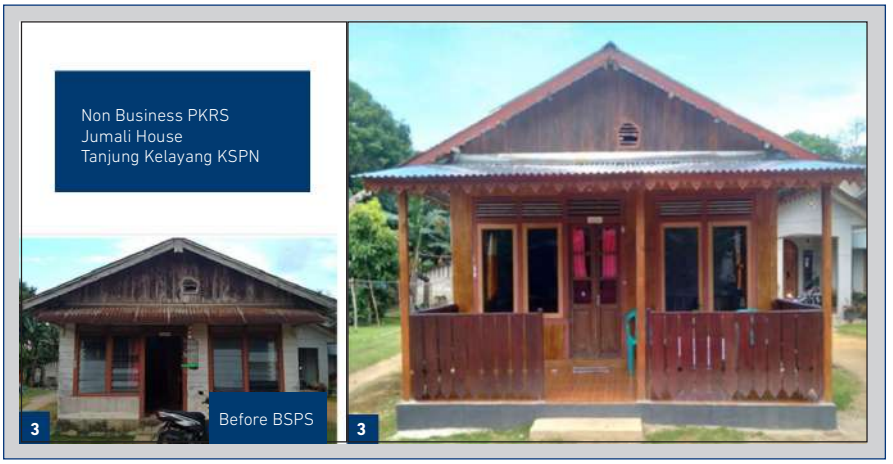
The recipients of BSPS Sarhunta were selected based on the following criteria:

a. Married Indonesian citizens;
b. Have legal possession of land with valid proof;
c. Own and occupy the proposed house;
d. Meet the income limit for assistance recipients (maximum of Rp6.5 million in Raja Ampat KSPN and Rp6 million in KSPN other than Raja Ampat);
e. Commitment to support tourism activities, including:
    1) Pledge to utilise the building for the chosen business function for the next 10 years;
    2) Adhere to the document proposal and advice/guidance of the support staff;
    3) Willingness to contribute self-help efforts;
    4) Form a group and collectively take responsibility;
    5) Participate in tourism business management training.

Figure 3.78. Documentation of PKRS-Unit Results







PKRS = quality improvement of self-help houses, KSPN = National Tourism Strategic Areas.

Source: [1]Authors, 2023; [2]Nurcahyo, 2021; [3]Housing Provision Unit of Bangka Belitung Islands Province, 2023.

The Directorate of Self-Help Housing under Directorate General of Housing, Ministry of Public Works and Housing, who acted as the main executor of the BSPS Sarhunta, was assisted by the Housing Provision Implementation Office (BP2P) and the Provincial Housing Provision Unit at regional level. BSPS Sarhunta also involved community, housing-related agencies, district-level authorities, and village authorities, in the potential survey process. In addition, a facilitation team was involved in the planning and physical implementation stages. Lastly, utilisation efforts were carried out in stages, from the village to the central government level.

3.1.2. Project Objectives

Tourism development has a multiplier effect on other sectors, so it is quite effective in efforts to increase foreign exchange (Sulaiman et al., 2022). Government Regulation Number 50 of 2011 concerning the National Tourism Development Master Plan regulates the 2010–25 national tourism development, which includes the construction of 88 KSPNs.

In Presidential Regulation No. 18 of 2020 concerning the 2020–24 National Medium-Term Development Plan, Indonesia prioritised tourism on 10 KSPNs: Lake Toba, Borobudur and its surroundings, Lombok-Mandalika, Labuan Bajo, Manado-Likupang, Tanjung Kelayang, Bromo-Tengger-Semeru, Wakatobi, Morotai, and Raja Ampat. The development must be accompanied by integrated infrastructure, including planning, roads, water supply, waste management, sanitation, and housing.

Hence, having the status of PSN, the 2020–21 BSPS adopted Sarhunta theme. BSPS Sarhunta has a strategic role in supporting tourism as well as improving community welfare and regional development. The objectives of BSPS Sarhunta are as follows:

a. encouraging and increasing community self-sufficiency in achieving liveable houses;
b. improving the people's welfare through the provision of accommodation and other tourism businesses;
c. optimising the housing function and cultivating connectivity through environmental management using community empowerment; and
d. facilitating self-help housing initiatives to support KSPN development.

3.1.3. Project Cost and Source of Fund

BSPS Sarhunta was allocated Rp428.4 billion by the state (KPPIP, 2022). The realisation amounted to Rp407.20 billion with an output goal of 5,576 units (Directorate of Self-Help Housing, 2023b). The details are presented in Table 3.21.

Realisation of the budget consists of assistance for PKRS activities, environmental management, and supporting activities. The maximum value of the 2020 BSPS Sarhunta assistance was Rp115 million for business PKRS, Rp35 million for non-business PKRS, and Rp10 million multiplied by the number of recipients of environmental planning assistance. In 2021, there was a change in the maximum assistance limit to:

a. Raja Ampat KSPN: Rp125 million for business PKRS and Rp45 million for non-business PKRS;
b. KSPN Tanjung Kelayang, Bromo-Tengger Semeru, Wakatobi, Morotai: Rp100 million for business PKRS and Rp35 million for non-business PKRS;
c. Environmental arrangement was calculated based on real needs and budget availability.

Apart from being funded by the state budget, the construction of the BSPS Sarhunta also involved community self-help from the beneficiaries, in the form of land, money, building materials, labour, and/or furniture.

Table 3.21. Details of Output and Budget Realisation of BSPS Sarhunta

KSPN	Business PKRS		Non-Business PKRS		Supporting	Total	
	Unit	Budget (in billion Rp)	Unit	Budget (in billion Rp)	Budget (in billion Rp)	Unit	Budget (in billion Rp)
Year 2020							
Danau Toba	607	68.44	1,192	41.72	10.96	1,799	121.12
Borobudur	382	36.79	439	13.61	7.53	821	57.93
Mandalika	398	44.13	517	18.10	7.10	915	69.33
Labuan Bajo	445	48.99	211	7.39	6.04	656	62.42
Likupang	263	28.73	225	7.87	5.87	488	42.47
Total 2020	**2,095**	**227.08**	**2,548**	**88.69**	**37.50**	**4,679**	**353.27**
Year 2021							
Tanjung Kelayang	20	2.00	70	2.45	1.25	90	5.70
Bromo-Tengger-Semeru	120	11.81	307	10.75	3.13	427	25.69
Wakatobi	20	2.00	100	3.50	1.27	120	6.77
Morotai	20	2.00	150	5.25	1.50	170	8.75
Raja Ampat	20	2.50	70	3.15	1.37	90	7.02
Total 2021	**200**	**20.31**	**697**	**25.10**	**8.52**	**897**	**53.93**
Total 2020–2021	**2,295**	**247.39**	**3,245**	**113.79**	**46.02**	**5,576**	**407.20**

BSPS = Self-Help Housing Stimulus Assistance, PKRS = quality improvement of self-help houses, KSPN = National Tourism Strategic Area.

Source: Adapted from Directorate of Self-Help Housing, 2023b.

3.1.4. External and Internal Factors

A survey was conducted to measure stakeholders' perspectives. The survey respondents included the central government, local government, village apparatus, academics, entrepreneurs, and the community. However, due to time and resource constraints, respondents other than those from the central government only came from two KSPN regions. The first area was Sarhunta KSPN Borobudur, reflecting project implementation in 2020 with a relatively large number of units. The second area was Sarhunta KSPN Tanjung Kelayang, representing project implementation in 2021 with a relatively small number of units.

Then, their perception of various external and internal factors – the perceived reality and the perceived importance – was analysed. Perceived reality measures the stakeholders' perception of the facts observed, whilst the perceived level of importance scores factors that respondents feel are important to the success of the project. Both are scored on a scale of 1 to 6, where 1 indicates a very negative perception and a score of 6 a very positive perception.

3.1.4.1. External Factors

The identified external factors are the level of smoothness in the process of determining and validating recipients of Sarhunta PSN assistance (E_1); availability of competent human resources to implement Sarhunta PSN housing development (E_2); availability of land for Sarhunta PSN development (E_3); the level of support from the surrounding community for Sarhunta PSN (E_4); the level of fairness of accommodation rates in Sarhunta PSN homestays (E_5); the organisation of national and/or international-scale activities in the area of the Sarhunta PSN location to attract visitors (E_6); the level of suitability of the functionality of Sarhunta PSN results (E_7); the level of ability of Sarhunta PSN homestay managers in managing tourist accommodations (hospitality, cleanliness, communication, and publicity) (E_8); the level of job creation and/or new business opportunities for the community through Sarhunta PSN development (E_9); the level of impact of Sarhunta PSN on attracting investors to the surrounding area (E_{10}); the level of increase in tourists to the KSPN location with the presence of Sarhunta PSN (E_{11}); the level of improvement in the welfare of the surrounding community through Sarhunta PSN (E_{12}); the level of increase in national/regional revenue with the presence of Sarhunta PSN (E_{13}); and the level of potential for Sarhunta PSN implementation to be free from disputes or legal constraints (E_{14}).

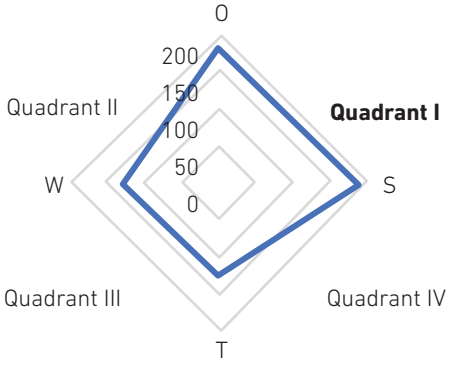
3.1.4.2. Internal Factors

The identified internal factors are the deregulation/issuance of regulations to support Sarhunta PSN implementation (I_1); suitability of the location for the development of Sarhunta PSN (I_2); compatibility of Sarhunta PSN development with spatial planning and land use (I_3); availability of infrastructure that supports Sarhunta PSN, such as road access, transportation, electricity installation, and clean water installation (I_4); support from the central and/or regional governments in financing Sarhunta PSN (I_5); ease of the permitting process in preparing for Sarhunta PSN implementation (I_6); the level of technical smoothness in the construction of Sarhunta PSN (I_7); the level of utilisation of local architectural components or elements in Sarhunta PSN development (I_8); timeliness in the completion of Sarhunta PSN (I_9); adequacy of supporting facilities for Sarhunta PSN homestays according to tourism housing standards (furniture, bathroom equipment, Wi-Fi, parking area, garden area, and restaurants) (I_{10}); compliance with regulations in the procurement process of goods/services (PBJ) for Sarhunta PSN (I_{11}); the level of concern for environmental sustainability in Sarhunta PSN development (I_{12}); timeliness of fund disbursement for Sarhunta PSN construction (I_{13}); and the level of physical quality of Sarhunta PSN outcomes (I_{14}).

3.1.5. SWOT Results and Analysis

The survey results were analysed employing Strength-Weakness-Opportunity-Threat (SWOT) analysis to depict the perceived strengths, weaknesses, opportunities, and threats of BSPS Sarhunta Programme. Next, the findings of SWOT analysis were illustrated in a radar chart, as shown in Figure 3.79.

Figure 3.79. BSPS Sarhunta SWOT Analysis Results



	Categories	Values
S	**Strengths**	**189.819**
W	Weaknesses	129.846
O	**Opportunities**	**184.498**
T	Threats	121.899

BSPS = Self-Help Housing Stimulus Assistance.
SWOT = strength-weakness-opportunity-threat.
Source: Authors, 2023.

Figure 3.79 shows that the SWOT analysis of BSPS Sarhunta is in Quadrant I, where strength values dominate internal factors while opportunity values dominate external factors. Thus, the strategy that must be implemented in this condition is to support an aggressive growth policy (growth-oriented strategy), which emphasises the optimisation of strengths to maximise opportunities.

The matrices of factors resulted by BSPS Sarhunta SWOT analysis survey can be seen in Figure 3.80. The factors are arranged in order of the average value of the respondents' perception of reality.

Figure 3.80. BSPS Sarhunta SWOT Analysis Survey Results Matrices

	Positive	Negative
Internal	***Strengths*** • Suitability of location for the development of Sarhunta PSN. • Compatibility of Sarhunta PSN development with spatial planning and land use. • Support from the central and/or regional government in financing Sarhunta PSN. • Level of concern for environmental sustainability in Sarhunta PSN development. • Timeliness of fund disbursement for Sarhunta PSN construction. • Level of utilisation of local architectural components or elements in Sarhunta PSN development. • Level of physical quality of Sarhunta PSN outcomes. • Ease of permitting process in preparing for Sarhunta PSN implementation.	***Weaknesses*** • Adequacy of supporting facilities for Sarhunta PSN homestay according to tourism housing standards (furniture, bathroom equipment, Wi-Fi, parking area, garden area, restaurant). • Deregulation/issuance of regulations to support Sarhunta PSN implementation. • Level of technical smoothness in the construction of Sarhunta PSN. • Timeliness in the completion of Sarhunta PSN. • Availability of infrastructure that supports Sarhunta PSN, such as road access, transportation, electricity installation, clean water installation. • Compliance with regulations in the procurement process of goods/ services (PBJ) for Sarhunta PSN.
External	***Opportunities*** • Level of suitability of the functionality of Sarhunta PSN results. • Level of support from the surrounding community for Sarhunta PSN. • Level of potential for Sarhunta PSN implementation to be free from disputes or legal constraints. • Level of fairness of accommodation rates in Sarhunta PSN homestays. • Level of job creation and/or new business opportunities for the community through Sarhunta PSN development. • Availability of land for Sarhunta PSN development. • Organisation of national and/or international-scale activities in the area of the Sarhunta PSN location to attract visitors. • Level of improvement in the welfare of the surrounding community through Sarhunta PSN.	***Threats*** • Level of ability of Sarhunta PSN homestay managers in managing tourist accommodations (hospitality, cleanliness, communication, publicity). • Level of impact of Sarhunta PSN on attracting investors to the surrounding area Level of increase in national/regional revenue with the presence of Sarhunta PSN. • Level of increase in tourists to the KSPN location with the presence of Sarhunta PSN. • Availability of competent human resources to implement Sarhunta PSN housing development. • Level of smoothness in the process of determining and validating recipients of Sarhunta PSN assistance.

KSPN = National Tourism Strategic Area, PSN = National Strategic Project, SWOT = strength-weakness-opportunity-threat.
Source: Authors, 2023.

Factors in the strength and opportunity categories are sorted based on the highest average perceived value, which indicates a good reality level of the factor in supporting the success of BSPS Sarhunta goals. The location of the BSPS Sarhunta development is perceived as the strongest internal factor in achieving the goals of this project, while, assessing the external factors, the level of BSPS Sarhunta results' functional suitability is the biggest opportunity. In addition, reasonable homestay price is an opportunity to attract tourists.

In the weakness and threat categories, the factors are sorted based on the lowest average value of perception, which indicates an unfavourable level of reality. The adequacy factor of homestay supporting facilities is perceived as the weakest internal factor. From external factors, respondents identified the biggest threat, namely the inability of BSPS Sarhunta homestay managers to manage tourist accommodation properly.

3.1.5.1. Main Challenges

The results of the SWOT analysis are reinforced by the results of interviews with stakeholders and literature studies; the main challenges are the following:

i. The inability of the beneficiaries to manage tourism businesses

The SWOT analysis survey shows that the ability of homestay managers needs to be improved. Many do not understand the importance of amenities, hospitality, hygiene standards, and promotions. This condition is a challenge to the sustainability of the management of the BSPS Sarhunta business function (Directorate of Self-Help Housing, 2023a).

This obstacle resulted in the level of tourist visits to the BSPS Sarhunta, as well as the influx of investors and the indirect impact on the state/regional revenue, not being optimal, as shown by the SWOT analysis. The results of the BP2P Jawa III survey in early 2023 found that only around 40% (152 units) of the total business PKRS units in the Borobudur area had ever been visited by tourists. In the Tanjung Kelayang area, more than 50% of the 20 homestays resulting from PKRS efforts have received visitors, but the frequency is still low.

Various trainings related to accommodation management have been conducted, but the Department of Tourism, Youth, and Sports (Disparpora) for Magelang Regency recognised that the number is still minimal and not evenly distributed due to budget constraints. In addition, several areas have formed homestay management groups, with one in Tanjung Kelayang, KSPN Tanjung Tinggi Village, agreeing on the homestay rate and to manage marketing through an online travel application.

As those efforts have not yielded optimal results, creative breakthroughs are still needed so that BSPS Sarhunta's business management can continue. The first innovation is the establishment of centralised BSPS Sarhunta business management, namely through village-owned enterprises (Kemenparekraf, 2022). Second, the training should be focused on the young generation of the BSPS Sarhunta owners who are technologically literate.

ii. The inadequate supporting facilities for homestays

BSPS Sarhunta assistance was focused on improving the physical quality of the buildings, whereas funds for supporting facilities were allocated based what was left over. As a result, beneficiaries must rely on their own self-help to complete the supporting facilities at their homestays. The condition of the different financial capabilities of the beneficiaries leads to the various completeness level of supporting facilities in each homestay, and the average is still below the standard.

The monitoring results of the BP2P Jawa III survey in the Borobudur KSPN area showed that there are still many Sarhunta homestays that have not met the standards of tourist housing facilities, including the availability of amenities, furniture, and wi-fi. In fact, even though furniture for the Tanjung Kelayang KSPN homestay was provided uniformly in the aid package, there is still a shortage of facilities such as air conditioners and water reservoirs. In both the Borobudur and Tanjung Kelayang areas, beneficiaries revealed that most tourists were looking for homestays that provided air conditioning, but only a few Sarhunta homestays were able to provide it due to financial constraints.

iii. The inadequate infrastructure in the surroundings of BSPS Sarhunta

In several BSPS Sarhunta areas, there are still some deficiencies in supporting infrastructure, such as road access, public transportation, and clean water. The Directorate of Self-Help Housing (2023a) stated that several Sarhunta were located in remote areas or with extreme conditions, such as the Raja Ampat KSPN and Morotai KSPN. Meanwhile, Sarhunta Tanjung Kelayang has transportation problems. The village of Tanjong Tinggi is located quite far from the district capital, making it difficult to find public transportation to and from the village. According to Ichsan (2022), most local people prefer to use private vehicles, causing a lack of public transportation, forcing tourists to rent vehicles. These conditions need to be addressed to assure visitors' convenience.

iv. Limited availability of competent human resources in BSPS Sarhunta development

The implementation of Sarhunta development prioritised the empowerment of local communities, including construction workers. BSPS Sarhunta in one area was constructed at the same time, so a large building workforce was needed. To overcome these obstacles, BP2P Jawa III held a

briefing and certification, which was attended by 170 construction workers at the Borobudur KSPN (Ministry of PUPR, 2020). While, in Tanjong Tinggi Village, the shortage of construction workers was covered by seeking workers from other villages or sub-districts in the KSPN area.

v. Different cultural characteristics of local communities

The character of the people in each KSPN region is very diverse and becomes a challenge in determining aid recipients and development. The people of Tanjung Kelayang, who work daily as fishermen, traders, and miners, had refused to be given BSPS Sarhunta because they felt that the tourism business was not their field. Also, the Department of Public Works and Housing for Belitung Regency said that the beneficiaries had left the BSPS Sarhunta construction work to mine tin and catch jellyfish, which were the residents' routines. These aspects demand skills from the field support team to ensure that all stages proceed smoothly and in a timely fashion, without causing social issues (Directorate of Self-Help Housing, 2023a).

3.1.5.2. Main Benefits

Based on the SWOT analysis, enhanced by interviews and literature, several benefits of BSPS Sarhunta can be summarised as follows:

i. Sarhunta homestays provide affordable accommodation options in strategic locations

BSPS Sarhunta offers additional accommodation options for tourists. Affordable lodging rates, strategic location close to tourist destinations, and authentic local wisdom provide added values. In the Borobudur KSPN area, homestay rates range from Rp150,000 to Rp400,000 per night, according to the facilities provided. In the Tanjung Kelayang KSPN area, the normal rate is Rp150,000 per night with fan facilities and Rp250,000 per night with air conditioning. This pocket-friendly price is a solution for travellers with a limited budget. Moreover, not only incorporating local architectural ornaments, BSPS Sarhunta homestays also offer ways travellers can interact directly with owners to build social hospitality.

> *'I am glad to stay at Homestay Dwi Prasetyo. The price is affordable during the Eid holiday season like this, Mr. Dwi and his wife are also friendly. We were provided with breakfast according to the children's preferences. This morning, we were also taken to Puntuk Setumbu to enjoy the sunrise.'*
> (Baskara, visitor of Sarhunta in Karangrejo Village, Borobudur, 2023)

ii. Assisting the community in accessing decent housing and organised environments

BSPS Sarhunta, as its functional objective, helps both business-owners and non-business-owners to realise their dream of having decent and comfortable housing. BSPS Sarhunta also contributes to creating well-organised settlements, which has a positive impact on the entire surrounding environment. Liveable housing and a good environment can improve people's quality of life.

'Now my family and I can sleep in a decent room with proper bathroom facilities. My hope is that the government will always pay attention to low-income communities, and I promise to take good care of this homestay.' (Epriyono, beneficiary of BSPS Sarhunta in Sengkol Village, Mandalika KSPN, as quoted in Antoro, 2020)

iii. Stimulating the local economy around the Sarhunta area

'In the past, there were hardly any tourists, both local and international, who visited this place. This had a significant impact on the income of the local community and the tourism sector, which used to be quite high. Now, more and more tourists are coming to visit and stay at Sarhunta. We express our gratitude to the Ministry of Public Works and Housing for the assistance provided through Sarhunta.'
(Arif Rahman, Sarhunta beneficiary in Labuan Bajo, Ministry of Public Works and Housing, 2021)

BSPS Sarhunta has created new job and business opportunities. Business PKRS results opened up new businesses for beneficiaries, whereas the surrounding community got jobs as construction workers during Sarhunta construction. After that, they could also open a homestay supporting business such as food stalls, laundry, vehicle rental, or tour packages. Thus, BSPS Sarhunta has contributed to driving the community's economy.

iv. Increasing community awareness of the potential for tourism business development in their region

Following the construction of BSPS Sarhunta and arrival of visitors, the local community's awareness of the tourism business potential in their area has increased. An officer of Borobudur Village stated that one of the recipients of Sarhunta Borobudur assistance had even succeeded to add the number of rooms for his homestay. The inspiration for BSPS Sarhunta's success has also encouraged other communities to open similar tourism businesses after seeing opportunities of additional income. The growing tourism business will provide sustainable economic benefits.

'They (the local community) are motivated to create homestays as well. So, the term 'Sarhunta-KW' started to emerge. I have a house, I have rooms that can be a source of income, like that.'
(Galih Reza, Sarhunta facilitator in Borobudur KSPN, 2023)

Conclusion

BSPS Sarhunta provides hope and opens opportunities for people in KSPNs to benefit from tourism development. This assistance not only provides liveable housing and an organised environment, but also plays a role in driving the economy of the surrounding community, both beneficiaries and non-beneficiaries of BSPS, through a growing tourism business sector.

However, to maximise the benefits of the BSPS Sarhunta, it is necessary to strengthen the supporting factors. This includes centralised management of businesses, intensive promotional activities, improvement of supporting facilities, and fulfilment of supporting infrastructure. By strengthening these aspects, it is hoped that BSPS Sarhunta can become a real driver of sustainable tourism and have a positive impact on the local community and environment.

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3.2. THE UMBULAN DRINKING WATER SUPPLY SYSTEM (SPAM UMBULAN)

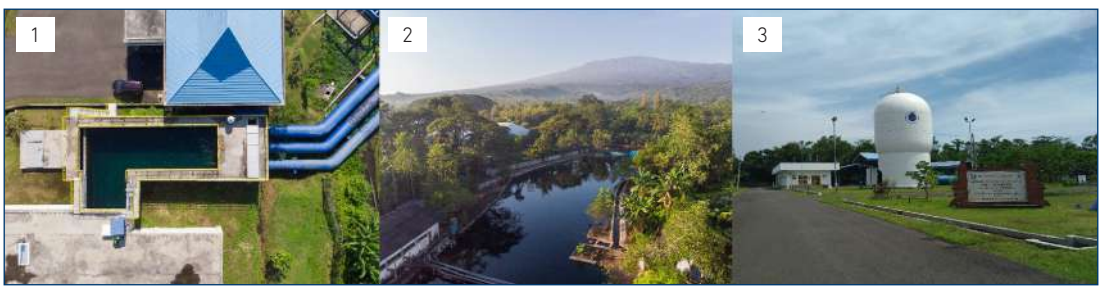
3.2.1. Project Profile

Located in East Java Province, the drinking water supply system (SPAM) Umbulan consists of a raw water unit at the Umbulan spring, a production unit in Umbulan Village, Pasuruan Regency, and transmission pipelines spanning 97.32 km with diameters ranging from 1,000 mm to 1,900 mm for bulk water distribution to 5 local water utilities (PDAM). The system distributes SPAM Umbulan water through 16 off-take points, covering areas in Pasuruan Regency, Pasuruan City, Sidoarjo Regency, Surabaya City, and Gresik Regency.

As a showcase project for public-private partnerships (PPPs), SPAM Umbulan project was delivered under a PPP contract between the East Java Provincial Government's contracting agency and PT. Meta Adhya Tirta Umbulan (PT. Meta) as the project company. The development of the SPAM Umbulan marked a significant milestone in meeting the demand for high-quality drinking water in East Java.

The project's construction commenced in 2017 and was officially inaugurated by the President on 22 March 2021. As a result of the SPAM Umbulan, the local community gained enhanced access to clean and safe drinking water, leading to improved public health and well-being by reducing the prevalence of waterborne diseases (Figure 3.81).

Figure 3.81. Meta Pond, Umbulan Spring, and Meta Area



Source: Ministry of Public Works and Housing (1 and 2), and Ali Mashduqi (3), 2023.

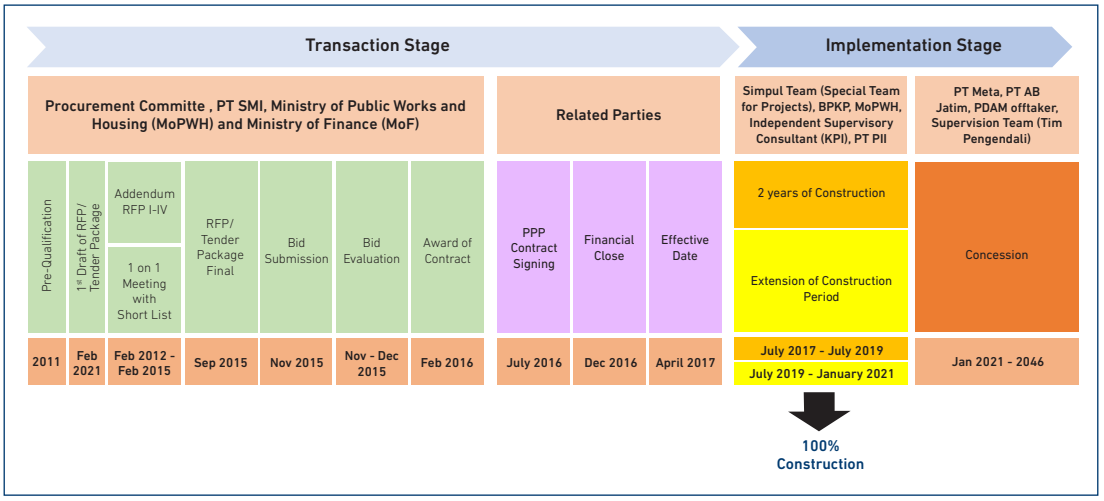
The comprehensive SPAM Umbulan project includes the development of raw water intake units, production units, a 97.32 km transmission pipeline, pumping stations, and 16 off-take points spread across the five regencies and cities. To ensure compliance with the Ministry of Health's Regulation No. 492 of 2010 regarding drinking water quality requirements, the system employs disinfection facilities using the chlorination method. The treated water is then stored in reservoirs before being distributed to consumers through a pipeline network.

The scope of the SPAM Umbulan PPP project includes the following components:

- Raw Water Units: head pond, turbine overflow, spring area.
- Production Units: reservoir, surge tank, chlorination (disinfection) unit, and pump house with a capacity of 4,000 lps.
- Transmission System: procurement and installation of raw water transmission pipes ranging from 1,000–1,800 mm, with a total length of approximately 97.32 km, including two pump houses with a capacity of 4,000 lps along with their equipment, and a meter house.
- Offtake System: construction of 16 off-take units in the five regencies/cities served as off-takers.

SPAM Umbulan project entered the transaction phase and the implementation phase, with a construction period requiring a total of 3 years and 6 months (including any construction time extensions), and a concession period of 25 years and 9 months (Figure 3.82).

Figure 3.82. The SPAM Umbulan Project Timeline



Note : RFP = request for proposal, PPP = public–private partnership, MoF = Ministry of Finance, MoPWH = Ministry of Public Works and Housing, PT SMI = PT Sarana Multi Infrastruktur (Special Mission Vehicle (SMV) under the coordination of the Ministry of Finance), PT PII = PT Penjaminan Infrastruktur Indonesia (Indonesia Infrastructure Guarantee Fund), BPKP = Badan Pengawasan Keuangan dan Pembangunan (Indonesia's National Government Internal Auditor), KPI = Konsultan Pengawas Independen (Independent Supervisory Consultant).

Source: East Java Provincial Government, 2023.

As a regional SPAM Project, the SPAM Umbulan caters to the clean water needs of multiple areas, including Sidoarjo Regency, Gresik Regency, Surabaya City, Pasuruan City, and Pasuruan Regency. The water from the Umbulan spring undergoes treatment at a production facility managed by PT. Meta before being distributed to PT East Java Clean Water. From there, the water is further distributed to the respective PDAMs and the PIER Industrial Area.

3.2.2. Project Objective

Access to clean and safe drinking water is a fundamental human right, essential for individuals' well-being and daily needs. However, not all regions in Indonesia have easy access to such water sources. One promising solution to address this issue is the development of an efficient and affordable SPAM. An exemplary implementation of such a system can be found in the SPAM Umbulan project in East Java, Indonesia.

The implementation of the SPAM Umbulan was driven by the government's obligation to provide drinking water for the community. The Umbulan water source, with its potential discharge of approximately 5,000 lps and suitable water quality for drinking purposes, had remained underutilised until this project. As a National Strategic Project (PSN), SPAM Umbulan was prioritised to address critical water supply issues. Its legal basis includes Presidential Instruction Number 1 of 2016 and Presidential Regulation Number 56 of 2018, which guide the rapid implementation of strategic initiatives necessary for such projects.

Before the implementation of the SPAM Umbulan project, the residents of Umbulan Village and its vicinity faced numerous challenges in accessing safe and high-quality drinking water. Despite the presence of the Umbulan spring, which offered a high-quality water source, difficulties in water extraction made it nearly impossible for the community to access potable water. The Umbulan spring had the potential to address the region's water supply challenges, but substantial investments and collaborative efforts from various stakeholders were required to make this a reality.

The provision of water services through the SPAM Umbulan is prioritised to meet the needs of the community utilising 4,000 lps of spring water. With the implementation of the SPAM Umbulan, it is expected that the community will have access to continuous, quality, and affordable drinking water facilities, available 24 hours a day, to improve public health. The establishment of the production system, transmission pipeline system, and off-take points in the five regencies/cities in East Java is anticipated to enhance the drinking water services for their respective PDAMs.

The Umbulan project stands as an example of how a well-planned and implemented SPAM can transform the lives of communities by providing easy access to clean and safe drinking water. By optimising existing water resources and establishing robust infrastructure, the SPAM Umbulan

has significantly improved public health and the overall quality of life for the served population in East Java. As other regions in Indonesia face similar water supply challenges, the SPAM Umbulan serves as a promising model.

As one of the PSN Project , the SPAM Umbulan receives support from the central, provincial, and local governments. The central government, represented by the Ministry of Public Works and Housing, provides construction support through the state budget. Meanwhile the project's financial viability is supported by the Ministry of Finance through a Viability Gap Fund (VGF) amounting to Rp818 billion. The VGF provides partial construction cost coverage in cash to PPPs that possess economic viability but lack financial viability.

To address the challenges in the development of the SPAM Umbulan as a PSN Project, KPPIP or the Coordinating Ministry for Economic Affairs is actively involved in implementing strategies to address bottlenecks. These measures encompass issues like obtaining construction permits, expediting the VGF process, extending the target for the commercial operation date, and more. The initiative involves intensive coordination among various stakeholders, including ministries, local governments, PT. Sarana Multi Infrastruktur (PT SMI) MI, PT. Penjaminan Infrastruktur Indonesia (PT PII), and private parties. Notably, in 2019, the SPAM Umbulan project achieved a significant milestone with the waiver of land fees granted by the Highway Regulatory Agency under the Ministry of Public Works and Housing.

3.2.3. Project Cost and Source of Fund

Based on the 2021 First Semester Report of the Committee for Acceleration of Priority Infrastructure Provision (KPPIP), the implementation of the SPAM Umbulan PPP requires a total investment of Rp3.718 trillion. In this PPP sheme, the East Java Provincial Government acting as Government Contracting's Agency (PJPK) and PT. Meta Adhya Tirta Umbulan as the Project Company (SPV). As one of the PSN Project, the SPAM Umbulan receives support from the central, provincial, and local governments. The central government, represented by the Ministry of Public Works and Housing, provides construction support through the State Budget (APBN), and the project's financial viability is supported by the Ministry of Finance through a Viability Gap Fund (VGF) amounting to IDR 818 billion. The VGF, provides partial construction cost coverage in cash to PPP projects that possess economic viability but lack financial viability.

3.2.4. External and Internal Factors

In order to identify the challenges and opportunities, as well as to determine the benefits of the project, a survey was conducted through questionnaires and interviews with various stakeholders, both internal and external. The internal respondents included representatives from the project's

management, namely the East Java Provincial Government and PT. Meta. The external respondents consisted of academics from the University of Brawijaya Malang, business actors, and members of the community residing near the project site. The number of questionnaire respondents was nine, and the number of interviewees was seven, comprising government representatives, PPP partner representatives, academics, those from local communities, and entrepreneurs.

3.2.4.1. External Factors

Based on the initial research, the external factors include the level of local community support for the PSN (E_1); the level of investor interest in development in the PSN area (E_2); availability of PSN land (E_3); timeliness of disbursement of PSN funding from investors (E_4); the level of potential for disputes or legal demands in the PSN implementation process (E_5); the level of reasonableness of the cost of visits/tours to PSN locations (E_6); and the level of ease in obtaining business permits at PSN locations (E_7).

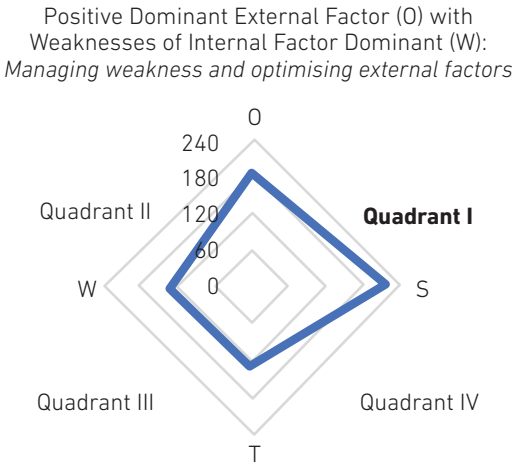
3.2.4.2. Internal Factors

The internal factors as benefits identified include the deregulation/issuance of regulations to support the implementation of the PSN (I_1); the suitability of PSN location for SPAM Umbulan (I_2); compatibility of PSN development with regional spatial planning and land use (I_3); availability of infrastructure that supports PSN, filtration technology, electrical installations, and clean water installations (I_4); the accuracy of the appointment of PT Meta Adhya Tirta Umbulan as the Implementing Business Entity (BUP) of the PSN project (I_5); central and/or regional government support in financing the implementation of the PSN (I_6); level of ease of licensing in the process of preparing PSN implementation (I_7); and the level of technical smoothness of PSN construction development (I_8).

3.2.5. SWOT Results Analysis

A SWOT analysis of the survey shows that the dominant factor was in quadrant I and indicated that external factors, especially opportunities, were more dominant compared to weaknesses (Figure 3.83). Hence, strategies need to be developed to address existing weaknesses and optimise external factors that represent opportunities.

Figure 3.83. SWOT Results

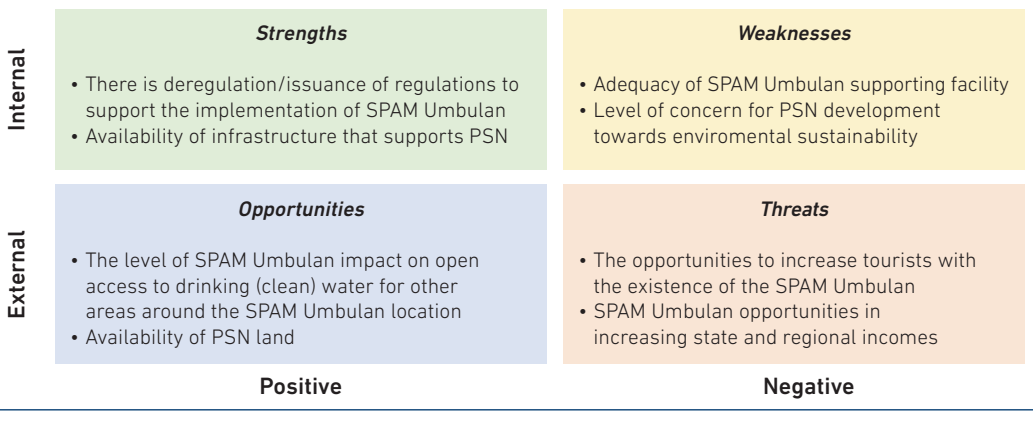


	Categories	Values
S	**Strengths**	**212.784**
W	Weaknesses	125.513
O	**Opportunities**	**179.939**
T	Threats	129.835

Source: Authors, 2023.

In Figure 3.84 it can be seen the priority factors for each SWOT element. The priority factors are the highest score from the survey results, which indicates that respondents perceive this factor as more dominant than other factors.

Figure 3.84. SWOT Analysis Priority Matrix



Source: Authors, 2023.

3.2.5.1. Main Challenges

One key factor in the success of the SPAM Umbulan is the availability of abundant spring water. Through the production units, water from the Umbulan springs consistently meets the established drinking water quality standards (Table 3.21).

According to the Progress Report of the SPAM Umbulan PPP (2023), the drinking water quality in terms of parameters such as pH, total dissolved solids, residual chlorine, and turbidity at all supply points (Rumah Meter) 'complies with the provisions of the Cooperation Agreement (PKS) and the Minister of Health Regulation No. 492 of 2010' (Table 3.22).

Table 3.22. Quality of bulk drinking water March 2023

No	Location	pH	Turbidity (NTU)	residual chlorine (mg/L)	TDS (mg/L)
1.	Umbulan (Headpond)	7.25	0.11	0.67	118
2.	RM Winongan	7.26	0.27	0.54	119
3.	RM Gempol	7.17	0.28	0.52	116
4.	RM Buduran	6.99	0.35	0.40	122
5.	RM Giri	7.08	0.74	0.35	119

NTU = nephelometric turbidity units, RM = *Rumah Meter* (*Offtake*), TDS = total dissolved solids.

Source: East Java Provincial Government, March 2023.

During its implementation, the SPAM Umbulan Project encountered several challenges as follows:

- **Challenges during construction.** During construction, land acquisition and pipeline installation permit issues resulted in construction time extensions.
- **Challenges in water distribution.** Distribution of clean water from the Umbulan source to household connections was hampered by budget availability and the capacity of the local government in developing the distribution network.
- **Challenges in ensuring the continuity.** Based on the study conducted by the Directorate of Cooperation and Business Management at Sepuluh November Institute of Technology, the Umbulan spring headpond was measured to provide raw water at a rate of 3,000 lpd, which is below the initial capacity of 4,000 lpd. To meet the contracted capacity of 4,000 lpd, the East Java Provincial Government plans to tap into a new water source, Kalirejoso, which requires a treatment process unlike the clean water from the Umbulan spring. Therefore, it is crucial to carefully monitor and manage the Umbulan water source in terms of both its quality and quantity to ensure the continuous operation of the SPAM Umbulan.

The significant capital investment required can be a challenge in its implementation and may restrict its expansion and development. The high dependence of the project financing needs to be considered. Moreover, the absence of downstream infrastructure from the SPAM Umbulan can lead to unabsorbed water, consequently affecting the project's revenue continuity.

The SPAM Umbulan project can be expanded to reach more households, contributing to the health and well-being of the community and promoting social justice. This project can serve as a model for similar projects in Indonesia and other countries, promoting sustainable development and enhancing access to basic services. It presents opportunities for collaboration and partnerships with local stakeholders, including governments, businesses, and non-governmental organisations. Additionally, the SPAM Umbulan project may encounter political and regulatory challenges related to water provision, which can impact the implementation and operation of the project. Additionally, the SPAM Umbulan faces economic challenges concerning the affordability of clean water for low-income households, which may influence consumer demand.

Low community involvement and participation can also influence the operational sustainability of the SPAM Umbulan. Community engagement plays a crucial role in the success of the SPAM Umbulan project. Maintaining the quality of its spring water through community participation will have a direct impact on the sustainability of SPAM Umbulan's operation. Additionally, the community is encouraged to participate in maintaining the infrastructure, promptly report any issues or damages, and consistently pay water bills.

Climate change and environmental degradation can affect the availability of water resources and the quality of drinking water in Umbulan. The availability and quality of water pose challenges for the SPAM Umbulan concerning environmental issues that can impact the reliability and sustainability of water supply. The threat of damage caused by natural disasters or human activities can hinder the operation of the SPAM Umbulan and disrupt the provision of drinking water.

3.2.5.2. Main Benefits

SPAM Umbulan provides various important benefits to the community in the service area. 'With the operation of the SPAM Umbulan, it will bring significant benefits to 1.6 million people or 320,000 household connections in m Regencies/Cities in East Java Province, namely Surabaya City, Pasuruan Regency, Pasuruan City, Sidoarjo Regency, and Gresik Regency,' said Minister Basuki (Ministry of Public Works of the Republic of Indonesia, 2021). Some of the main benefits of the PSN SPAM Umbulan include:

- SPAM Umbulan ensures that the community in the service area has easy and affordable access to safe and quality drinking water.
- With improved access to safe drinking water, public health can significantly improve.
- With adequate drinking water supply, the community no longer needs to spend time and effort searching for clean water from unsafe or distant sources. Additionally, there is an expected increase in productivity and social development in the area.
- SPAM Umbulan can also contribute to local economic development. With adequate drinking water supply, the tourism and industrial sectors can thrive.

SPAM Umbulan can provide clean and safe drinking water access to the community, contributing to the health and well-being of the population. The abundant source in Umbulan can be treated to produce quality drinking water. This project can promote social justice by facilitating easier access to clean water for individuals who were previously underserved. Moreover, the project supports environmentally friendly utilisation of natural resources, social equity, and economic viability. The facilities of SPAM Umbulan can be seen in Figure 3.85.

Figure 3.85. SPAM Umbulan Facilities

Sources: Ministry of Public Works and Housing.

The SPAM Umbulan project involves the construction of adequate infrastructure and technology, such as water distribution pipelines, reservoirs, and water treatment facilities to support the provision of easy and affordable drinking water. The central and local governments collaborate actively to support the development and operation of the SPAM Umbulan, including efforts in socialisation and monitoring. It also presents an opportunity to establish partnerships with private entities. Water supply companies or water technology firms can manage the project. Such collaborations can bring benefits such as enhanced technical capabilities, access to financial resources, and improved operational efficiency.

The implementation of the project provides opportunities for the development and application of technological innovations in water treatment, management, and distribution. By adopting cutting-edge technologies, such as sensor-based water monitoring and management systems or environmentally friendly water treatment systems, this project can serve as a platform to

introduce and test new technologies that may be applied more extensively in the future. At the same time, it can enhance local knowledge and expertise in water resource management and water infrastructure. Through training, education, and participation in the project, the local community can develop valuable skills and expertise, including water management, infrastructure maintenance, and equipment operation. This can provide local employment opportunities and capacity building in the water management sector.

Umbulan is in an area with natural beauty and significant tourism potential, opportunities arise for the development of water tourism, water sports, and water recreation. This will open up new possibilities for local economic growth, increased income, and job creation in the tourism sector. Through the SPAM Umbulan project, the government conveys essential messages of the importance in using safe drinking water and practicing good sanitation. With adequate awareness about the significance of drinking water quality, it is hoped that the community can take better care of their health and improve sanitation in their surroundings.

Conclusion

The SPAM Umbulan represents a significant initiative in addressing the increasing demand for drinking water in its served region. As a crucial infrastructure project, the SPAM Umbulan plays a vital role in ensuring the availability of clean and safe drinking water for the community. This project serves as an example of a PSN in the field of providing access to drinking water/clean water that has been operational in several regions covered by the project in East Java.

The SPAM Umbulan is a well-designed infrastructure, including water intake, treatment, storage, and distribution. The water source utilised by the SPAM Umbulan meets the drinking water quality standards satisfactorily. Moreover, the implementation of advanced treatment processes ensures the removal of contaminants and the provision of safe drinking water for consumers. The distribution network is efficiently designed, minimising losses and optimising water delivery to targeted areas. However, challenges and specific areas for improvement need to be identified, such as the need for routine maintenance, continuous water quality monitoring, and increased stakeholder engagement.

The significant investment required for this project can be addressed through collaboration amongst various stakeholders, including the local and central governments partnering with the private sector through the PPP scheme. Coordination of work programs amongst each stakeholder is necessary to ensure that the positive impacts of this project can be immediately felt by the broader community. A comprehensive strategy is needed to optimise the existing opportunities and address the weaknesses of the SPAM Umbulan project through collaborative efforts involving the government (central/provincial/regional) and private partners, as well as engaging the local community.

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3.3. BENOWO WASTE-TO-ENERGY PLANT

3.3.1. Project Profile

Located at the Benowo Final Disposal Site (TPA), this project is the Benowo environmentally friendly waste-to-energy (WTE) Plant (Figure 3.86). This first-of-its-kind WTE plant in Indonesia was inaugurated on 6 May 2021, by the President of Indonesia and is managed by PT. Sumber Organik under a build-operate-transfer (BOT) scheme for 20 years in cooperation with the Surabaya City Government, starting from 2012 until 2032. The Benowo WTE Plant operates 24 hours a day and provides employment for around 250 people.

Figure 3.86. The location of WTE Plant at the Benowo Final Disposal Site on the Surabaya City Map

WTE = waste-to-energy.

Source: Surabaya City Environment Agency, personal communication, 10 May 2023.

The WTE Plant is situated in the West Surabaya area, covering the Romo Kalisari Village in the Benowo sub-district and the Sumber Rejo Village in the Pakal sub-district. Out of the 12 cities that have been designated by Presidential Regulation No. 35 of 2018, Surabaya is the first to successfully operate a WTE Plant. The Benowo WTE Plant project originated from the need to develop waste infrastructure at the Benowo Final Disposal Site, which is the only disposal site in Surabaya. However, the funding from the local budget was insufficient. Consequently, the Surabaya City Government decided to collaborate with a private partner, PT Sumber Organik, in the form of a BOT public-private partnership.

From the above collaboration, power plant facilities have been established, namely a landfill gas power plant with a capacity of 2 MW for methane capture from the waste pile, which obtained its commercial operation date on 30 November 2015. Additionally, a gasification power plant with a capacity of 9 MW was built to process 1,000 tons per day of waste, obtaining its commercial operation date on 10 March 2021 (Figure 3.87) (Surabaya City Environment Agency, personal communication, 10 May 2023).

Figure 3.87. Gasification Power Plant at the Benowo WTE Plant

Source: PT Sumber Organik, personal communication, 11 May 2023.

3.3.2. Project Objectives

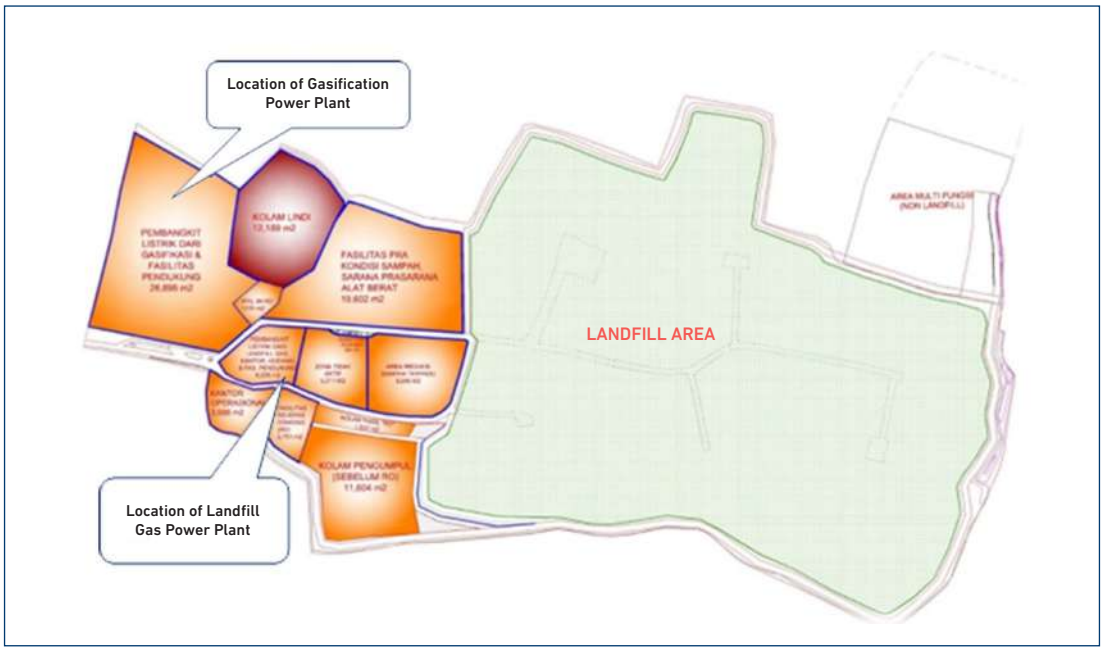
The WTE Plant can reduce the volume of waste, is environmentally friendly, and produces a by-product in the form of electrical energy. The purpose of this project is to fulfil the mandate of the regulations in Presidential Regulation Number 35 of 2018, where waste management aims to improve public health and environmental quality, reduce waste volume, and consider waste as a resource. The term 'resource' here means that waste management is carried out to obtain added value by converting waste into electrical energy. Therefore, waste management is done in an integrated manner, from upstream to downstream, through waste reduction and waste handling.

High population growth and urbanisation, while beneficial for the urban economic sector, together pose many challenges, particularly in meeting the increasing services, including waste infrastructure. Hence, sustainable waste management policies are highly necessary because the previous waste management practices required vast land and had negative social impacts. To implement these policies, the government designated the WTE Plant as one of the National Strategic Projects (PSNs) since technological interventions are crucial to reduce waste volume, especially in areas with limited TPAs (Coordinating Ministry for Economic Affairs, 2021).

According to data from the Surabaya City Environment Agency in 2022, the daily average volume of waste generated by 2.9 million residents of Surabaya is 1,792 tonnes, totalling around 654,341 tonnes per year. However, Surabaya City only has one TPA (Benowo), thus requiring its continuity. As a result, the Benowo WTE Plant can reduce 1,000 tonnes of waste every day by converting it into electrical energy, from the total 1,700–1,800 tonnes of waste that enters TPA Benowo (KPPIP, personal communication, 5 July 2023).

The Surabaya City Government pays a tipping fee to the contracting agency that increases annually. In addition, it also provides a waste management service fee (BLPS) assistance in accordance with Article 15 Paragraph (2) of Presidential Regulation Number 35 of 2018. The allocation of this BLPS Support was received by the Surabaya City Government starting in 2021. Concerns from local governments regarding their ability to pay the tipping fee or BLPS to their working partners are common hurdles and affect the continuity of WTE plant development, including the Benowo WTE Plant (Figure 3.88).

Figure 3.88. Location of Landfill Gas Power Plant and Gasification Power Plant at the Benowo WTE Plant



WTE = waste-to-energy.

Source: Surabaya City Environment Agency, personal communication, 10 May 2023.

3.3.3. Project Cost and Source of Fund

Based on the 2022 Semester I Committee for Acceleration of Priority Infrastructure Delivery (KPPIP) Report, the cost of implementing this project is Rp718 billion with a fully funded scheme from the private sector (PT. Sumber Organik). In this project, the Mayor of Surabaya acts as the Government Contracting Agency of the project. Collaboration with PT. Sumber Organik comprises several features including the following (Kurniawan, 2016):

a. There is a party that has exclusive rights, namely the City Government of Surabaya, in terms of the Sanitation and Green Open Space Service (formerly known as the Sanitation and Landscaping Service).
b. There is an exclusive right to the land, namely the land where the TPA Benowo is located.
c. Partners must build waste processing infrastructure, sanitary landfills, gasification, wastewater treatment plants, and a WTE Plant.
d. The budget used to develop the infrastructure mentioned above does not come from the government but from the cooperation partners (investors).

e. The partner (investor) who won the tender for this cooperation is PT. Sumber Organik. The tender auction was attended by four participants, namely Phoenix (Singapore), Medco (Malaysia), PT. Sumber Organik (Indonesia), and Imantata (France), as based on the minutes of the Determination of the Winner of the Auction Number 510/13799/1436.6.512011 dated 22 August 2011 (Sucahyo et al., 2021).
f. As stated in the agreement, PT. Sumber Organik obtained the right and authority to utilise and manage the TPA Benowo from 2012 to 2032.
g. It will return of land assets and built infrastructure to the Surabaya City Government after the end of the 20-year cooperation period.

3.3.4. External and Internal Factors

Besides providing benefits for stakeholders, there are also challenges that need to be managed to ensure the successful implementation of the Benowo WTE Plant. These challenges are external factors from both the central and local governments that cannot be controlled, whilst the benefits are internal factors that can support or hinder the achievement of a goal.

We collected data from stakeholders to measure their perspectives. The participants included representatives from the Surabaya City Government, academics from Institut Teknologi Sepuluh Nopember Surabaya, PT. Sumber Organik, and the local community around the Benowo WTE Plant site. Next, their perceptions of various internal and external factors, namely perceived realities and perceived interests, were collected and analysed. Perceived realities measure stakeholders' perceptions of observed facts, whilst the level of perceived importance assesses factors that respondents consider crucial for the success of the Benowo WTE Plant. Both are given scores on a scale of 1 to 6, where 1 indicates very negative perceptions, and 6 indicates very positive acceptance.

3.3.4.1. External Factors

The external factors include the level of community support (E_1), the level of investor interest in the project (E_2), the potential for the private/community to become investors (E_3), the opportunity for the Benowo WTE Plant to create employment opportunities (E_4), the timeliness of funding disbursement from investors (E_5), the potential for disputes or legal demands during the implementation process (E_6), the supply of waste from the community (E_7), the level of support from relevant community components for the sustainability of the Benowo WTE Plant (E_8), the opportunity for the Benowo WTE Plant to create new business opportunities for the community (E_9), land availability (E_{10}), the potential for the Benowo WTE Plant to improve community welfare (E_{11}), the level of environmental comfort in the surrounding area (E_{12}), the level of environmental aesthetics in the surrounding area (E_{13}), the level of air, water, and soil pollution around the location (E_{14}), and the quality of public health in the vicinity (E_{15}).

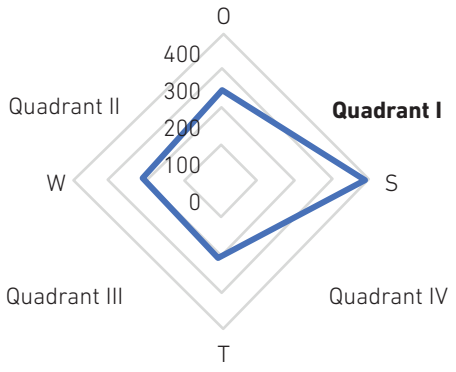
3.3.4.2. Internal Factors

Meanwhile, the Internal factors include location suitability (I_1), compatibility of development with regional spatial planning and land use (I_2), availability of supporting infrastructure (I_3), support from the central and/or local governments in financing (I_4), the level of use of modern technology (I_5), physical quality level (I_6), suitability of designation (I_7), handling of air, water, and soil pollution from the project (I_8), adequacy of supporting facilities (I_9), vehicle traffic management (I_{10}), mechanism for reporting electricity generation results (I_{11}), implementation of activities and utilisation of BLPS assistance from year to year (I_{12}), existence of deregulation/issuance of supporting regulations (I_{13}), accuracy of appointing business entities as project implementers (I_{14}), ease of permitting in the project preparation process (I_{15}), technical smoothness in construction development (I_{16}), timeliness in construction (I_{17}), monitoring and supervision by relevant parties for pollution originating from the project (I_{18}), and ease of access to services (I_{19}).

3.3.5. SWOT Results and Analysis

The survey results were analysed using a Strengths-Weakness-Opportunities-Threats (SWOT) approach to depict the challenges and benefits perceived by the respondents. The SWOT analysis results were then presented in a radar chart, as shown in Figure 3.89.

Figure 3.89. The Benowo WTE Plant SWOT Analysis Results



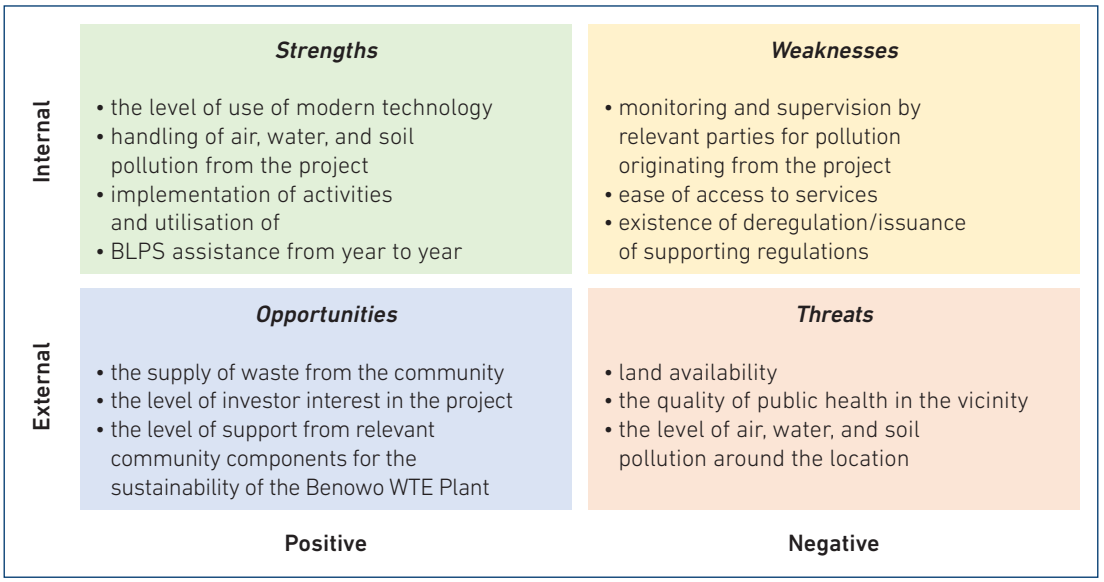
	Categories	Values
S	**Strengths**	**382.62**
W	Weaknesses	204.95
O	**Opportunities**	**253.59**
T	Threats	209.48

WTE = waste-to-energy, SWOT = Strengths-Weakness-Opportunities-Threats.

Source: Authors, 2023.

The summary of the three factors with the highest scores, identified as strengths, weaknesses, opportunities, and threats, is presented in Figure 3.90. The observed factors are ranked based on the highest average scores of perceived realities and importance by the respondents. The higher the score obtained, the better the respondents' perception of that particular factor.

Figure 3.90. SWOT Analysis Priority Matrices



BLPS = waste management service fee, SWOT = Strengths-Weakness-Opportunities-Threats, WTE = waste-to-energy.
Source: Authors, 2023.

3.3.5.1. Main Challenges

Based on the survey responses, the main threats related to the Benowo WTE Plant are land availability, the quality of public health in the surrounding area, and the level of local air, water, and soil pollution. Regarding land availability, Benowo is the only TPA in Surabaya. Originally opened in 2001, this TPA was initially planned to last for only 10 years. However, due to the limited available land for construction, the government made efforts to optimise the existing land, resulting in the idea of establishing WTE Plant in collaboration with the private sector. As a result, at least TPA Benowo can function until the end of the agreement with PT. Sumber Organik in 2032.

Regarding the quality of public health around the TPA, this issue is closely related to the pollution level from TPA Benowo itself. Environmental pollution has always been a major concern of the Surabaya City Government since the initiation of this project, and it is consistently monitored and managed by PT Sumber Organik. To address air or odour pollution from the TPA, regular spraying of sixth-generation microorganisms is carried out, geomembranes are installed on the waste piles, and bamboo trees are planted around the TPA as a buffer zone. These measures are the responsibility of PT. Sumber Organik and are supervised by the Surabaya City Government. Additionally, there is direct social control from the community due to the presence of the Gelora Bung Tomo Stadium, which is located approximately 500 m from TPA Benowo.

The Surabaya City Government is highly committed to minimising the environmental impact of waste management at TPA Benowo. Therefore, the government is currently focused on establishing a green belt as a buffer zone covering an area of 40.4 hectares around TPA Benowo. The comparison between the green belt, the position of the Gelora Bung Tomo Stadium, the TPA Benowo area can be seen in Figure 3.91.

Figure 3.91. Position of the Green Belt, the Gelora Bung Tomo Stadium

TPA = final disposal site.

Source: Surabaya City Environment Agency, personal communication, 10 May 2023.

3.3.5.2. Main Benefits

The Benowo WTE Plant was built to reduce the TPA Benowo area waste. The project aims to extend the lifespan of TPA and contribute to the increase of renewable energy generation. According to the Surabaya City Government's report in 2022, the electricity generated was 4.81 MWh from the planned 7.20 MWh, with a stable waste supply of approximately 1,700–1,800 tonnes per day. The disparity between the planned and actual electricity generation is mainly due to variations in the amount of household waste received and the lower calorific value of the waste. In terms of waste management, the operator has been able to operate the WTE Plant in accordance with environmental quality standards. For instance, the Gelora Bung Tomo Stadium, located adjacent to the TPA and the Benowo WTE Plant, was selected as a venue for the International Federation of Association Football U-20 World Cup.

From the perspective of investor interest, the Surabaya City Government provides revenue certainty to the business entities partnering with them. This certainty comes in the form of a tipping fee clause. The tipping fee clause is an innovative approach that emphasises the government's commitment to pay investors a fixed cost for waste processing at a predetermined value. This is a way to boost investment climate in specific infrastructure sectors, including the waste management sector. The Surabaya City Government pays a tipping fee of Rp119,000 per tonne of waste for the first year, and then increases by approximately 7% each year. In addition, the central government also provides BLPS assistance in accordance with Article 15 Paragraph (2) of Presidential Regulation Number 35. The allocation of this BLPS assistance was received by the Surabaya City Government starting in 2021 (Table 3.23).

Table 3.23. BPLS Assistance Allocation for the Benowo WTEP

No	Budget Year	Allocation	Realisation	Percentage Realisation
1.	2021	Rp53,095,000,000	Rp51,039,050,000	96.13%
2.	2022	Rp60,417,301,494	Rp55,658,240,000	99.99%

BLPS = waste management service fee, WTE = waste-to-energy.

Source: 2021 Audited LKBUN and 2022 Surabaya City BPLS Assistance Report (processed).

PT. Sumber Organik mentioned that changing the community's mindset regarding jobs related to waste management poses its own challenge and requires extra effort to change it. However, once the community becomes aware that the jobs at the TPA are not just scavenging but also technology-based work with a good, modern, and clean working environment, it strongly supports the WTE Plant and actively participates in its sustainability.

Conclusion

The Benowo WTE Plant, which was inaugurated on May 6th 2021, is the first WTE Plant in Indonesia. This WTE Plant is implemented with a Build–Operate–Transfer (BOT) scheme for 20 years which is valid from 2012 to 2032 and the selected partner is PT. Sumber Organik. Surabaya is the first city to successfully operate WTE Plant out of 12 cities planned in accordance with Presidential Regulation Number 35 of 2018. The Benowo WTE Plant can reduce the volume of waste significantly, the process is also environmentally friendly, and can also produce electricity as a by-product.

The Benowo WTE Plant costs Rp718 billion, all of which is borne by the private sector, namely PT. Sumber Organik as the BOT partner. The Benowo WTE Plant currently has waste processing infrastructure, sanitary landfill, gasification, treatment plants, and a WTE Plant in accordance with the agreement and this will fully belong to the Surabaya City Government after the cooperation period ends. The Surabaya City Government also received technology, competency and expertise transfer from PT. Sumber Organik that is concerned with processing waste into electrical energy, considering that this field is still not generally owned and mastered by government agencies.

The Benowo WTE Plant proves that the government can manage waste to achieve sustainable urban development. Additionally, the utilization of the landfill has become more effective, and its lifespan has been extended since it is now managed by the private sector. The strengths of the Benowo WTE Plant need to be further reinforced with adequate government regulations and consistent monitoring of pollution originating from the landfill. The high level of support from the community, both investors and the general public in Surabaya, should always be optimised as an opportunity and maximised to overcome challenges that arise in managing the Benowo WTE Plant.[1]

[1] The existence of refuse-derived fuel plants, which are built in several areas, should not be compared with WTE Plants because they serve different purposes. A WTE Plant is suitable for urban areas and large cities with waste production exceeding 1,000 tonnes per day, whereas a refuse-derived fuel plant is more suitable for smaller scales, such as cities with waste production below 500 tonnes per day.

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Chapter 4

APPENDICES

1. National Strategic Project Clusterisation

The National Strategic Projects (PSNs) are listed in the annex of Perpres Number 109 of 2020 concerning the Third Amendment to Perpres Number 3 of 2016. Since 2022, changes to the list of PSNs are included in the annex which is an integral part of the Permenko Number 21 of 2022 concerning the Second Amendment to the Permenko Number 7 of 2021 concerning Changes to the List of PSNs.

In accordance with the Attachment to the Permenko Number 21 of 2022, the list of PSNs can be grouped into 14 PSN Sectors and 12 National Strategic Programmes. The 14 PSN sectors can be classified into three types of infrastructure groups as follows:

1.1. Connectivity Economic Infrastructure

This connectivity economic infrastructure includes road, sea, air, and rail transport, such as:

a. The Road and Bridge Sector, with 53 toll road projects, including fly overs to and from Teluk Lamong terminal, and the New Priok Eastern Access Port Access Road;
b. Port Sector, with 16 PSN projects, covering the construction and development of 15 ports in 14 Provinces, and the construction of the Labuan Bajo Multipurpose Terminal;
c. Airport Sector, with six PSN projects including the construction of five new airport projects in five provinces, and the development of Lombok Praya International Airport in West Nusa Tenggara;
d. The Railway Sector, with 14 PSNs, includes the construction of six railroad projects, mass rapid transit, light rail transit, high speed railway, double track in South Java.

1.2. Non-Connectivity Economic Infrastructure

This non-connectivity economic infrastructure includes dams and irrigation, coastal embankments, energy, technology, tourism, plantation, and economic and industrial zones as follows:

a. Dam and Irrigation Sector, with 56 projects spread across various provinces, including the construction of 40 weirs in various provinces, construction of regional irrigation networks in four provinces, construction of weirs and irrigation networks in the Baliase area in South Sulawesi, and rehabilitation of regional irrigation networks in three provinces;
b. Coastal Embankment Sector, with one project in DKI Jakarta, West Java and Banten;

c. Energy Sector, with 16 projects, including expansion and upgrading of oil refineries through the Refinery Development Master Plan, construction of fuel and liquefied petroleum gas storage, development of perpetual gas field in Masela, the development of Gendalo, Maha Gandang, Gehem, and Bangka gas fields under the auspices of Indonesia Deepwater Development Project, construction of city gas networks, gas pipeline transmission, coal to methanol, and green fuel;
d. Technological Sector, with six national projects, namely the acceleration of technopark development, the multi-function satellite project, the development of combat drones, palm oil fuel research and development, salt industry development, and the integrated Palapa Ring Project;
e. Tourism Sector, with one PSN: Thousand Islands tourism project in DKI Jakarta;
f. Plantation Sector, with one project: development of deep coconut and its derivatives in West Papua;
g. Economic and industrial zones, with 24 such zones in various provinces.

1.3. Social Infrastructure

This Social infrastructure includes drinking water and sanitation, housing, and education, as follows:

a. Drinking Water and Sanitation Sector, with 13 projects, including 10 construction projects for drinking water supply systems (SPAM) and regional SPAMs in eight provinces, two raw water supply systems in two provinces, and the Jakarta Sewerage System;
b. Housing Sector, with two projects: construction of flats in DKI Jakarta, and construction of national self-help housing assistance;
c. Educational Sector: construction of an Indonesian international Islamic university campus in West Java.

Meanwhile, the 12 PSNs include:

1. The Electricity Programme, which includes the construction of electricity infrastructure, the development of solar power plants (*Pembangkit Listrik Tenaga Surya*), and the development of hydroelectric power plants (*Pembangkit Listrik Tenaga Air*);
2. Economic Equality Programme, accelerating the completion of gazettement of forest areas, social forestry, agrarian reform, vocational education and training, and rejuvenation of people's gardens;
3. The Border Area Development Programme, which includes 10 cross-border posts, the East Kalimantan border road, the North Kalimantan border parallel road, and the North Kalimantan border access road;
4. Road Development Programme at 58 toll road exit locations in 10 provinces;

5. National Tourism Strategic Area Development Programme, with a focus on locations in the Lake Toba; Borobudur, Mandalika, Labuhan Bajo, and Likupang;
6. The Waste-to-Electrical Energy Installation Development Programme, with a list of projects regulated in the Presidential Regulation on the Acceleration of the Development of Waste-to-Electrical Energy-Based Environmentally Friendly Technology Installations;
7. The Construction of Smelter Development Programme, including eight nickel commodity processing and refining facilities, two bauxite processing and refining facilities, two copper processing and refining facilities, one iron sand and vanadium processing and refining facility, one processing and refining facility nickel commodity integrated with mining in two smelters, as well as nickel commodity processing and refining facilities integrated with mining and industrial areas;
8. National Food Supply Improvement Programme/Food Estate, with a list of projects regulated in the Presidential Regulation concerning the National Food Supply Improvement Programme through the Development of Food Estate Areas;
9. The Superhub Development Programme consists of Bali - Nusa Tenggara, East Kalimantan, North Sulawesi, and PT. Pelindo I, PT. Pelindo II, PT. Pelindo III, and PT. Pelindo IV into PT. Pelindo II;
10. The Programme for the Acceleration of Regional Development, consists of: (a) Acceleration of the Development of National Strategic Areas and Supporting Infrastructure of IKN; (b) Acceleration of Economic Development for the Kendal Region – Semarang–Salatiga–Demak–Grobogan, Purworejo–Wonosobo–Magelang – Temanggung Region, and Brebes–Tegal-Pemalang Region; (c) Acceleration of Economic Development in Gresik–Bangkalan–Mojokerto–Surabaya–Sidoarjo–Lamongan Region, Bromo–Tengger–Semeru Region, and Selingkar-Wilis and Southern Cross Areas; (d) Accelerating the Development of the Tambourine Area and the Southern Part of West Java; and (e) Accelerating the Development of Other Areas as stipulated in laws and regulations;
11. Programme for Development of Special Economic Zones, including Special Economic Zones determined by the President;
12. Programme for Revitalising the National Sugar Industry and Downstreaming the Palm Oil Industry, including the Integration Group of PT. Nusantara Plantation through the formation of SugarCo, PalmCo, and SupportingCo.