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Peer Review and Capacity Building on APEC Infrastructure Development and Investment: Papua New Guinea

APEC Policy Support Unit

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Prepared by:
Stuart Schaefer, Brian Yombon-Copio, Paul Verwoert and Darren Morgan
Johnstaff International Development Pty Ltd

Akhmad Bayhaqi, Emmanuel A. San Andres and Satvinderjit Kaur Singh
Asia-Pacific Economic Cooperation Policy Support Unit
Asia-Pacific Economic Cooperation Secretariat
35 Heng Mui Keng Terrace
Singapore 119616
Tel: (65) 6891-9600 Fax: (65) 6891-9690
Email: psugroup@apec.org Website: www.apec.org

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INTRODUCTION

If the ultimate aim of the APEC peer review programme is to support local and regional economic growth by advancing regional connectivity through a series of local infrastructure and investment capacity-building programmes, this report endeavors to provide practical and contextually relevant recommendations to address the issues identified by the review team, and local, international, public and private stakeholders. The review team aimed to achieve the following objectives:

- Conduct peer review on the policies and practices in Papua New Guinea (PNG), including relevant laws, regulations and guidelines relating to the planning, selection and implementation process of infrastructure projects.
- Identify the capacity-building needs of PNG based on the results of the peer review.

Financing, both for the development of new infrastructure and maintenance of existing infrastructure, has been identified as a constraint to PNG realising its infrastructure ambitions. In addition to development partners, the PNG government has identified the private sector as a source of transport infrastructure financing. Private-sector infrastructure funding can take various forms. Government officials in the inception meeting for this project noted to the review team that public–private partnerships (PPPs) in the transport sector are one form of financing that they would be interested to operationalise.

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
AIC	Accident Investigation Commission
AIFFP	Australia Infrastructure Financing Facility for the Pacific
APEC	Asia-Pacific Economic Cooperation
CACC	Central Agencies Coordinating Committee
CADIP	Civil Aviation Development Investment Program (ADB initiative)
CASA	Civil Aviation Safety Act
CTI	Committee on Trade and Investment (APEC)
DFAT	Department of Foreign Affairs and Trade (Australian Government)
DoT	Department of Transport in the Government of Papua New Guinea Ministry of Transport and Infrastructure
DoWI	Department of Works and Implementation, Papua New Guinea
DP	Development Partner
DSIP	District Support Investment Program
GoPNG	Government of Papua New Guinea
GRF	Gateway Review Framework
JIA	Jacksons International Airport
JICA	Japan International Cooperation Agency
LLG	Local Level Government
LTB	Land Transport Board
MAF	Mission Aviation Fellowship
MTDPIII	Medium Term Development Plan III
MTTP2	Medium Term Transport Plan 2
NAC	National Airports Corporation
NRSC	National Road Safety Council (Papua New Guinea)
NTS	National Transport Strategy
PIP	Public Investment Program
PNG	Papua New Guinea
PNGASL	Papua New Guinea Air Services Limited
PNGPCL	PNG Ports Corporation Limited
PPP	Public–private Partnership
PSDI	Pacific Private Sector Development Initiative
PSIP	Provincial Support Investment Program
PSU	Policy Support Unit (APEC)
RAA	Rural Airstrip Agency (run by Mission Aviation Fellowship)
RAC	Road Advisory Committee (Papua New Guinea)
RMRP	Road Maintenance and Rehabilitation Project
RTA	Road Traffic Authority
SOE	State-owned Enterprise
TSCMIC	Transport Sector Coordination, Monitoring and Implementation Committee
TSSP	Transport Sector Support Program (DFAT through AusPNG partnership)

FOREWORD

This report has been prepared by Johnstaff International Development (JID) for the APEC Policy Support Unit (PSU) on behalf of the facilitating economies of Japan, Australia and the United States.

The review team would like to acknowledge inputs from Isidore Sitapai Pasanai. In his role as the representative from Papua New Guinea (PNG) on the APEC Committee for Trade and Investment (CTI), he has played a critical role coordinating with his colleagues in the PNG government and with other stakeholders to facilitate the consultations for this project, and in sourcing and sharing critical literature and policies for the literature review. In addition, the inputs from all who participated in the consultations for this review have provided great insight and value to this report.

The review team would also like to acknowledge the APEC PSU, in particular, Akhmad Bayhaqi, Emmanuel A. San Andres and Satvinderjit Kaur Singh, for their clear direction on APEC processes and objectives. Their experience and professionalism have enabled the review team to move forward with confidence.

EXECUTIVE SUMMARY

The Papua New Guinea (PNG) government works with a range of development partners (DPs) in the transport infrastructure sector, including the World Bank, the Asian Development Bank and the European Union as well as bilateral donors (Australia; China; Japan). India and the United States are also entering the sector. The support provided by DPs is significant in terms of grants and concessional loans, especially for maintenance programmes which attract relatively little public investment.[1]

Policy and regulatory framework review

In general, PNG is equipped with the high-level legal and policy frameworks that enable the development of quality infrastructure.

The PNG constitution sets out a tiered legal framework: constitutional, organic law, and acts of parliament. The constitution also provides for the protection of the law. Institutions exist to operationalise this framework: parliament considers and approves acts, and courts uphold the protection of the law. The laws are accessible on the Internet and through the parliament.

There is a well-defined government budget process. This culminates in the consideration by the parliament of an annual budget appropriation bill. Taxation laws are also in place.

PNG's transport sector policy is situated within a cascading series of publicly available strategy, planning and policy documents. Documents referenced in the National Transport Strategy of May 2013 include:

- PNG Vision 2050
- Development Strategic Plan 2010–2030
- Medium Term Development Plan 2010–2030
- Alotau Accord 2012
- Millennium Development Goals

The National Transport Strategy details an investment planning cycle for the development of a list of transport infrastructure projects. The process appears to largely follow quality principles but could be significantly strengthened with a more rigorous gateway approach. Adding rigour to the process, from project concept to implementation and evaluation, through a Gateway Review Framework is critical to the quality infrastructure process.

If done well, the Gateway Review Framework allows for the capture of all elements of whole-of-life infrastructure planning, including lifecycle costs, economic benefits, social and environmental impacts, lifecycle and asset management planning, and appropriate infrastructure maintenance models. A Gateway Review Framework approach will allow for lifecycle costs such as maintenance to be included in forward budget estimates.

[1] Government of Papua New Guinea (GoPNG), *2021 National Budget*, vols 1–3 (2020).

Public–private partnerships

The Asian Development Bank (ADB) will support PNG to operationalise its Public–Private Partnership (PPP) Act. The government has been slow to operationalise the Act; it was not gazetted until 2018. The point of responsibility for PPPs within the government has bounced between Treasury, Finance, and National Planning and Monitoring, landing most recently in the National Planning and Monitoring department.

With ADB's support, the government will need to consider if the Act can be improved, and the regulations that are needed to operationalise it. The government will also need to resource a unit in National Planning and Monitoring if it is going to drive the development of PPPs in PNG.

Roads

Like other economies, PNG has underinvested in transport infrastructure for many years.[2] Underinvestment has forced planning priorities to be focused on maintenance of major transport assets rather than new investments. Even this limited focus has only been partially successful with some assets. For example, regional airstrips and roads have deteriorated over time, according to the World Bank's PNG Economic Update released in July 2020.[3] During much of this period of underinvestment, the economy and population have grown significantly. The outcome is that many Papua New Guineans are poorly served by transport infrastructure. The same paper further notes that 17 per cent of people have no access to roads and the economy remains without a single economy-wide road transport network.[4]

The PNG Government has signalled the high priority it places on quality infrastructure through the release of its Connect PNG Policy 2020–2040.[5] Implementation of the policy is an opportunity to put quality infrastructure approaches into practice.

The Road (Management and Fund) Act was passed on 14 January 2021, and aims to bring about substantial roads funding reforms. The Act aims to create a coordinated roads management system and establish the PNG Road Management Fund to ensure adequate funding for maintenance and rehabilitation, including of sub-domestic roads.

PNG's domestic development and transport sector strategies and plans outline ambitious goals for the sector to fill the missing links in the National Road Network while reducing the extensive backlog of preventative road maintenance.

Maritime

Maritime transport is crucial for connecting communities across PNG's archipelago and accessing the sea lanes to the north. Some communities travel large distances by water to markets and services risking their safety and security. Much of the rural maritime traffic is serviced by small jetties and wharves in various states of disrepair, and are managed by local and provincial governments that lack

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[2] Department of Works and Implementation, Papua New Guinea, "Connect PNG" (2020).
[3] World Bank, "Papua New Guinea Economic Update – In the Time of COVID-19: From Relief to Recovery" (Washington, DC: World Bank, July 2020).
[4] World Bank, "Papua New Guinea Economic Update, July 2020."
[5] GoPNG, *2021 National Budget*.

the technical capacity to meet maintenance, safety and security requirements. Port developments are also of significant geostrategic and security interest.

The Department of Transport provides the overall policy and regulatory framework for the maritime sector and works with the National Maritime Safety Authority and PNG Ports Corporation Limited to develop and maintain maritime transport infrastructure in PNG. The Department of Transport relies primarily on budget appropriations from GoPNG for its maritime transport revenue.[6]

PNG Ports Corporation continues to grow its revenue and is optimistic that there is significant potential to increase revenues from the 15 ports under its jurisdiction, if investment and the political will can be mobilised to upgrade port facilities. However, there appears to be little planning and public investment support from the responsible central, provincial and local governments for such initiatives.

Aviation

Given PNG's geography, and many inaccessible communities, air travel has been a core mode of transport since early colonial exploration of the highlands region, with PNG once having the most airstrips per capita in the world. PNG has 578 airports and airstrips, 27 of which have paved runways.[7]

The National Airports Corporation is a statutory body under the Civil Aviation Act. The state-owned enterprise was formed in 2010, and operates under the Ministry of Civil Aviation and the Ministry for Finance and Rural Development. The National Airports Corporation manages PNG's 22 identified national airports, while provincial governments are responsible for its 20 secondary airports. The rest are managed by local communities, church missions and businesses.

The National Airports Corporation does not receive recurrent funding from the central government budget and funds its operational activities from fees and charges related to facilities and services provided to operators and businesses at the airports.[8]

Under its 2030 Growth Strategy, the National Airports Corporation plans to deliver 15 smart airports that are compliant with the minimum standards and recommended practices for airport operations specified by the International Civil Aviation Organization (ICAO). This will require significant ongoing investments in airport infrastructure, including airport terminals, runway lengths and runway pavement strengths. There is also a significant need for ongoing upgrading and maintenance of PNG's rural airstrips, as 'without adequate and predictable funding for rural airstrip restoration and maintenance, the condition of PNG's rural airstrips will progressively decline, with the risk of some closures in the medium term'.[9]

[6] PwC, "Transport Sector Funding in PNG: The Current Landscape" (Government of Papua New Guinea's Transport Sector Co-ordination, Monitoring and Implementation Committee, 2019).
[7] David Miles and Mathiue de Marchi, "Post COVID-19 Pacific Short-Term Aviation Strategy – A Scoping Study. Consultants' Final Report" (Sydney: Pacific Region Infrastructure Facility Report, 2020).
[8] PwC, "Transport Sector Funding in PNG: The Current Landscape" (Government of Papua New Guinea's Transport Sector Co-ordination, Monitoring and Implementation Committee, 2019).
[9] World Bank, "Papua New Guinea Economic Update, July 2020."

Recommendations

Within this context, seven areas are recommended as priority areas for capacity building for GoPNG:

- Strengthening adherence to the project cycle, and in particular the front end of the process that allows the development of a suite of bankable projects, all assessed in a more rigorous process, to the same standard and with comparable economic rates of return over their life cycle, that allows them to be considered by the political decision-makers in the budget process.
- Adding rigour to the project review process from project concept to implementation and evaluation through the introduction of an Investment Management Standard and Gateway Review Framework process. Implementation is to be integrated with current GoPNG infrastructure project planning and the establishment of the new PNG PPP Centre.
- Establishing a GoPNG Gateway Review Framework foundation team to undertake a review of several sample projects with support from the APEC economies, with a view to establishing a Gateway Review Framework function within government consistent with international best practice.
- Adding a process to the project cycle to deal with unsolicited bids.
- Further strengthening the incorporation of lifecycle costs into projects.
- Strengthening government procurement so that it is completed in a timely manner, its process is demonstrably consistent, and it is accountable.
- Strengthening the funding aspects of infrastructure, including applying a structured framework for agreeing to a funding model, and systematising the PPP processes.

Building of capacity in these areas will lead to improvements in the quality of infrastructure development as the attractiveness of PNG as a destination for quality PPPs increases, but only if there is political will to do so. In effect, such capacity-building moves the focus of political engagement in infrastructure development from involvement in process to making strategic decisions for the benefit of PNG based on good data.

1. REVIEW PROCESS

1.1 APPROACH

The approach taken by the review team combines consultations and literature review. Consultations with various development, infrastructure and government representatives were triangulated with the literature review to inform key findings against the APEC Quality Infrastructure Evaluation Criteria. The criteria are based on the 'five principal elements that ensure the quality of infrastructure'[10] defined by APEC as follows:

Alignment with development strategy, openness, transparency and fiscal soundness. Infrastructure projects must be implemented with strict adherence to openness, transparency, economic efficiency in view of lifecycle cost, and fiscal soundness. They must be in line with medium- and long-term development strategies at central and regional levels, and include and incorporate dialogue with stakeholders from the early stages of projects such as project preparation and prioritisation. It is essential that the host economy maintain a transparent, non-discriminatory and predictable environment and greater openness to foreign direct investment (FDI) in local infrastructure.

Economic and financial soundness. In the project identification and preparation stage, it is important to verify the cost-effectiveness of projects to achieve value for money (VFM), including the ability to leverage VFM of public investment; cooperation with multilateral development banks (MDBs) and other development partners (DPs); and mobilisation of private funds through public–private partnerships (PPPs). The government needs to verify the financial sustainability of a project by checking the long-term cash flow of the project and controlling the fiscal status of the agencies in charge of implementation.

Stability, safety and resiliency. Appropriate measures should be taken at each stage of a project, from identification and preparation, to design, construction and operation, to ensure stable, safe, continuous, affordable and reliable access to infrastructure for all people. To that end, reliable organisational and human resources should be secured by the government and/or private enterprises, together with sufficient project funding.

Social and environmental sustainability. Social and environmental standards applied to infrastructure projects must be determined at appropriate levels with objective and quantitative indicators. These targets should be reviewed continuously throughout the project life to ensure sustainability for future generations. It is important to promote environmentally friendly infrastructure to realise a low-carbon society able to react flexibly to global warming and climate change. In terms of existing facilities, proactive rehabilitation and reinforcement are effective in preventing negative climate impacts. Inclusiveness should also be factored in, including gender equality, and equitability for the socially vulnerable.

Local high-quality development. Infrastructure projects, in general, are large in scale and have a significant impact on the development of surrounding regions and economies. To ensure high-quality development and achieve inclusive and sustainable growth through infrastructure projects, it is

[10] Ministry of Economy, Trade and Industry, Japan, "APEC Guidebook on Quality of Infrastructure Development and Investment (Revision)" (Singapore: APEC, 2018).

desirable that projects are operated with local resources with enough local ownership and responsibility and tailored to local conditions.

1.2 PERSPECTIVES FROM THE LITERATURE

Significant research and analysis have been conducted on PNG transport infrastructure by DPs, government agencies, academia and the private sector. The aim of the literature review was to research and understand this existing body of knowledge and to update the Peer Review with recent GoPNG development plans, regulatory, legal, economic and financial information.

To conduct the literature review, the team gained access to a wide array of publicly available documents; infrastructure programme documentation from DPs; planning documents provided by GoPNG stakeholders; and research conducted by accounting firms and industry associations. The bibliography of the report includes:

- High-level policy and planning documents such as the Medium Term Development Plan, the National Transport Strategy, Medium Term Transport Plan and specific policy documents such as Connect PNG
- Central government-level procurement policy, legislation and operational documents, including PPP legislation and recent updates
- General transport sector policy, legislation, operationalisation and DP documents
- Specific land, maritime and air transport plans, policies, annual reports and other documents
- DP programme reports and analysis from the Asian Development Bank (ADB), Asia-Pacific Economic Cooperation (APEC), Australian Department of Foreign Affairs and Trade (DFAT), International Finance Corporation (IFC), International Monetary Fund (IMF) and the World Bank
- Academic research
- Analysis by accounting, business and industry associations.

1.3 CONSULTATIONS

The consultations aimed to collect data from a diverse range of individuals and organisations identified through various means, including the literature review process and recommendations from DPs, GoPNG agencies and the professional networks of the review team.

Due to COVID-19, international travel to PNG for consultations, scoping, infrastructure analysis and presentations was heavily restricted. The review team had a member permanently based in Port Moresby and two team members conducted face-to-face consultations in early February 2021 with the following organisations:

- PNG APEC Secretariat; Infrastructure and Transport Branch of the Department of Prime Minister & National Executive Council
- Department of Transport and Infrastructure (Secretary Roy Mumu)
- Department of Works and Implementation
- Transport Sector Support Program team; DFAT
- National Airports Corporation
- PNG Ports Corporation Limited

2. PEER REVIEW FINDINGS

2.1 SUMMARY OF FINDINGS

Key findings from the analysis done for this report are highlighted in Table 2.1. The analysis uses a matrix adopted from the APEC Quality Infrastructure Evaluation Criteria[11] (refer to Appendix A).

Table 2.1 Key findings of the peer review on Papua New Guinea

Criteria	Key findings relevant to Papua New Guinea (PNG)
Legal system	• PNG has a working legal system that allows for tendering and contract management. • Need to move the focus of political engagement in infrastructure development from involvement in process to strategic decision-making.
Financial transparency	• PNG has a well-articulated budget process and investment opportunities are available for foreign companies. • There is a lack of clarity regarding budget responsibility. • Need to improve corporate governance, including transparency of financial management and procurement.
Infrastructure strategy	• Strategy is well defined but impacted in its execution by shortfalls in funding and limited ability to enact existing strategies and plans.
Resources and capacity to plan	• A strategy to strengthen the capacity of government employees and other stakeholders to oversee, manage and operate transport operations is required.
Project planning	• Unsolicited projects receive significant public funds. • Users and beneficiaries are funding sources for the transport (sub)sector(s) but they have limited ability to affect projects. • The main contributors to transport investment are the government of PNG (GoPNG) and international development partners (DPs). Most DPs place a strong emphasis on sector and community engagement. • Unsolicited projects consume over 40% of the central government infrastructure budget.
Environmental considerations	• The Conservation and Environmental Protection Authority (CEPA) is established and operating under a strong framework. • Environmental issues are key go or no go criteria for DP funding. • There remains a risk that unsolicited projects and privately delivered projects will operate outside of the in-place framework.
Gender Equality and Social Inclusion, Prevention of Sexual Exploitation and Harassment, Disability Inclusion and Child Safeguarding	• Inclusiveness, including landowner engagement, gender equality and equitability for the socially vulnerable, has and will continue to play an important role in informing DP and GoPNG investments in transport infrastructure in PNG.
Economic and financial soundness	• An International Monetary Fund (IMF) programme is underway to address shortcomings in economic and financial soundness. • There are known delays in servicing loans, and limited capacity to service contract overruns.

[11] Committee on Trade and Investment, “Reference Guide for Peer Review and Capacity Building on APEC Infrastructure Development and Investment”, (Singapore: APEC, 2019).

	• Fiscal pressure is forcing GoPNG to turn to external sources to share in the cost of financing transport projects.
Medium-term fiscal and expenditure framework	• The Road (Management and Fund) Act passed on 14 January 2021 aims to bring about substantial roads funding reforms. • There is a reliance on DP grants and loans to fund elements of the PNG Transport Sector Funding Framework.
Infrastructure pipeline	• The PNG Transport Sector Funding Framework 2019 proposes a funding framework and improved decision-making process. It is not yet implemented.
Project evaluation	• There is limited capability to determine the appropriate funding and delivery method of projects, including limited consideration of whole-of-life costs. • A Gateway Review Framework approach will inform funding and procurement methods inclusive of whole-of-life costs.
Budget provision	• The majority of transport sector funding from DPs is provided in the form of loans, which contributes to GoPNG budgetary pressure. • Unsolicited funding and a lack of capacity masks the true extent of identified funding gaps.
Sustainability of funding	• There is growing deficit and debt. • There is limited budget for new work and DPs fund maintenance programmes. • The transport infrastructure funding framework provides an actionable plan and repeatable decision-making process to guide PNG toward more sustainable funding for transport infrastructure.
PPP engagement process	• The planned Public–Private Partnership (PPP) Centre is yet to be implemented. • From 1990 to 2019, six PPP projects reached financial closure with there being no notable transport infrastructure project delivered under a PPP model. No transport infrastructure PPP projects have been successfully financed in PNG.
Lifecycle value for money	• Over-issuance of unsolicited projects has resulted in projects with the greatest value-for-money and economic impact, and which are implementation ready, being systematically underfunded.
Guidelines for assessments	• Documentation for assessments are clearly stipulated and communicated when delivered under DP-funded projects.
Safety	• Execution is inhibited by both capability and capacity shortfalls within government and the public sector.
Social and environmental sustainability	• There is a strong framework in place. • With limited capability and capacity to self-regulate, the ongoing involvement of DPs will be critical to ensuring PNG shows continual improvement in the areas of social and environmental sustainability.
Job creation and upskilling	• Under the National Reservations and Restrictions clause, the procurement process favours local companies.
Protection of marginalised groups	• For DP-funded projects, there is a strong emphasis placed on safeguarding.

Note: Analysis based on analysis of APEC Quality Infrastructure Criteria relevant to Papua New Guinea.

2.2 LANDSCAPE

2.2.1 Challenges for infrastructure planning and development in PNG

Like many other economies, Papua New Guinea (PNG) faces difficult transport infrastructure challenges. The topography is varied with peaks up to 4,500 metres, active volcanoes, 600 islands, dense rainforests, and massive river systems.

PNG is located across an area of significant seismic activity and vulnerable to natural disasters (earthquakes, floods and droughts) which impact the design, affordability and sustainability of transport infrastructure.[12] Extreme weather also affects transport infrastructure and, with climate change, PNG is likely to face increasingly extreme weather events and higher precipitation.[13]

Again, like other economies, PNG has underinvested in transport infrastructure for many years.[14] While there is no shortage of projects in the transport infrastructure pipeline, PNG is hindered by limited financing supply with low public revenues, and a large proportion of project funding being reallocated to unsolicited projects. Funding from development partners (DPs) and multilateral development banks (MDBs) along with contributions from the government of Papua New Guinea (GoPNG) are projected to meet only 28 percent of the funding requirements.[15] Underinvestment has forced planning priorities to be focused on maintenance of major transport assets rather than new investments. Even this limited focus has only been partially successful, with some assets, for example, regional airstrips and roads, having deteriorated over time according to the World Bank PNG Economic Update in July 2020.[16] During much of this period of underinvestment, the economy and population have grown significantly. The outcome is that many Papua New Guineans are poorly served by the transport infrastructure. The same paper further notes that 17 percent of people have no access to roads and the economy remains without a single economy-wide road transport network.[17]

The PNG Transport Sector Funding Framework 2019, prepared by the Australian High Commission for GoPNG, proposes a funding framework that provides an actionable plan and repeatable decision-making process to guide GoPNG to more sustainable funding options across the transport sector. It highlights the following insights as being particularly important when considering the form and function of a PNG funding framework for transport:

- There is an urgent need for investment in transport infrastructure.
- The main contributors to transport investment are GoPNG and international DPs.
- The majority of transport sector funding from DPs is provided in the form of loans (76 percent), which means that the GoPNG is committed to the repayment of these funds over the medium to long term, an obligation that contributes to budgetary pressure on GoPNG.

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[12] PwC, "Transport Sector Funding in PNG: Funding Framework" (Government of Papua New Guinea's Transport Sector Co-ordination, Monitoring and Implementation Committee, 2019).
[13] PwC, "Transport Sector Funding in PNG: Funding Framework"; PwC, "Transport Sector Funding in PNG: The Current Landscape"; PwC, "Transport Sector Funding in PNG: Economic Projections and Scenario Analysis" (Government of Papua New Guinea's Transport Sector Co-ordination, Monitoring and Implementation Committee, 2019).
[14] Department of Works and Implementation, Papua New Guinea, "Connect PNG."
[15] PwC, "Transport Sector Funding in PNG: Economic Projections and Scenario Analysis."
[16] PwC, "Transport Sector Funding in PNG: Funding Framework."
[17] World Bank, "Papua New Guinea Economic Update, July 2020."

- Transportation users and beneficiaries are funding sources for the transport (sub)sector(s) but are currently under-represented in the funding mix (i.e., revenue from these groups is low).
- Unsolicited projects receive significant public funds, which limits GoPNG's ability to deliver on priority transport projects in the Medium Term Development Plan III and the Medium Term Transport Plan 2.[18]

Continued population and economic growth provide impetus for increasing spending on transport infrastructure and more consistent funding levels. Even if the government significantly increased transport funding, the overall funding needed to fulfil the transport requirements of the economy is unlikely to be met. Private and other investment in bankable projects will be required.

The PNG government has signalled the high priority it places on quality infrastructure through the release of its Connect PNG Policy 2020–2040. [19] Implementation of the policy is an opportunity to put quality infrastructure approaches into practice.

2.2.2 Role of other stakeholders

The challenges faced by the PNG economy are not the domain of Papua New Guineans alone. GoPNG works with a range of DPs in the sector, including the Asian Development Bank (ADB), the European Union and the World Bank, and with bilateral donors (Australia; China; Japan). India and the United States are also entering the sector. The support provided by DPs is significant in terms of grants and concessional loans, especially for maintenance programmes which attract relatively little public investment.[20]

While the GoPNG system outlines thorough and appropriate budgeting, record-keeping of transactions, and a procurement decision process that meets international norms, the majority of MDBs and DPs will default to their systems in lieu of using PNG processes for loans and procurement.

According to the PNG government budget, development grants will total close to 8 percent of total government revenue in 2021, and 46.6 percent of total 2021 capital expenditure.[21] The Australian Department of Foreign Affairs and Trade (DFAT) provides the largest share of the grants. The PNG 2021 Budget Papers show a total of PGK 2,149.4 million allocated for the transport sector in the 2021 budget, of which PGK 200.4 million is for operational expenditures and PGK 1,948.9 million for capital expenditures. The total capital budget consists of direct financing from GoPNG (PGK 1,024.0 million), DP grants (PGK 59.6 million) and DP loans (PGK 865.4 million). A large proportion of the DP funding is in the form of concessional loans from ADB, the Australian government, the World Bank, Japan International Cooperation Agency (JICA) and China Exim Bank.[22]

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[18] PwC, "Transport Sector Funding in PNG: Funding Framework."
[19] GoPNG, *2021 National Budget*.
[20] GoPNG, *2021 National Budget*.
[21] Asian Development Bank (ADB), "Public-Private Partnership Monitor: Papua New Guinea" (Manila: ADB, December 2020), Ch. 11; Bettina Beer and Willem Church, "Roads to Inequality: Infrastructure and Historically Grown Regional Differences in the Markham Valley, Papua New Guinea." *Oceania* 89, no. 1 (2019): 2–19; PwC, "Transport Sector Funding in PNG: Funding Framework."
[22] World Bank, "Papua New Guinea Economic Update, July 2020."

DPs have worked in PNG for many years, with the major part of their efforts focused on supporting needed maintenance of existing assets. In addition to material support, donors have provided capacity-building assistance through advisers, although COVID-19 related travel restrictions had curtailed such efforts in 2020. For example, implementation of recommendations on capacity building made in a 2019 report by PricewaterhouseCoopers (PwC) which was sponsored by Australia has been limited in part due to the COVID-19 pandemic.[23]

Although capacity-building efforts slowed in 2020, the issues affecting the sector are well known and well documented by DPs and the government alike. There is much scope for capacity building, and DPs are poised to increase their efforts as conditions allow.

Resource companies also have played a role in transport infrastructure in PNG since the 1930s. Their efforts to build mines and support them have led to greater access to transport more generally. Most transport investment by resource companies has taken the form of roads, but it also includes airfields and port infrastructure. Taxation credits available to resource companies have encouraged the development and maintenance of roads, generally in the areas surrounding mine sites, but are not necessarily aligned with government priorities or wider network planning.

An additional feature of the PNG transport infrastructure landscape is the high proportion of unsolicited proposals considered by the government. The proposals are from various stakeholders, including local politicians, the private sector and DPs.[24]

The number of different stakeholders involved in the development of the transport infrastructure presents PNG with a coordination challenge. Australia has funded a body that works within the transport sector to support the coordination. The Transport Sector Coordination, Monitoring and Implementation Committee is a whole-of-sector decision-making body. It includes representatives from all PNG agencies involved in the transport sector as well as DPs active in the sector.

2.2.3 Environmental and social impact

Social and environmental impacts need to be carefully assessed as part of project feasibility analysis, with appropriate remediation measures designed into all new development projects.

PNG has strong legislation in place through the Environment Act 2000 and the Conservation and Environmental Protection Authority (CEPA). CEPA was established in 1985 to ensure natural and physical resources are managed adequately to sustain environmental quality and human wellbeing. Their responsibilities include:

- environment management policy development
- biodiversity protection policy development
- pollution control and the regulation of hazardous substances
- management of water resources
- environmental impact assessments of major projects
- biodiversity assessment and data management
- hydrological investigation, data collection and analysis

[23] PwC, "Transport Sector Funding in PNG: Funding Framework."
[24] World Bank, "Papua New Guinea Economic Update, July 2020."

- coordination of donor-funded programmes
- education and awareness

Furthermore, the Medium Term Development Plan III (2018–2022) places a strong emphasis on sustainable and disaster-resilient infrastructure that meet both social and environmental criteria. This is important for projects in PNG where the people have a strong association to land and water and ownership issues can be complex.

It is worth noting that while GoPNG and DPs have invested heavily in infrastructure planning and delivery, the capability and capacity of GoPNG to plan and deliver projects consistent with DP, MDB and private-sector best practice remains a challenge. Also, the development timelines for major projects (inclusive of land acquisition and Environmental Impact Statement development) are often longer than the budgetary timelines.

Inclusiveness, including landowner engagement, gender equality, and equitability for the socially vulnerable, has and will continue to play an important role when informing investments by DPs and GoPNG in transport infrastructure. Given GoPNG's limited capability and capacity to self-regulate, the ongoing involvement of DPs will be critical to ensuring that PNG shows continual improvement in the areas of social and environmental sustainability, including the safeguarding of health and safety, environmental management, and climate and natural disaster resilience. Without DP-driven adherence to the Medium Term Development Plan III, the Environment Act 2000 and CEPA, the projects run the risk of never coming to fruition and/or being more harmful than beneficial.

2.2.4 Local high-quality development

The activities associated with infrastructure projects make them a focus for local development and serve to improve local economies. The use of local labour and materials is an important economic benefit that should inform procurement strategies and infrastructure delivery modalities. Local high-quality infrastructure development is a major contributor to inclusive and sustainable growth and it is generally preferred those projects be delivered with local resources and are tailored to local conditions.

Within the context of PNG, local capacity and capability is generally structured around a local market dominated by small- to medium-sized infrastructure projects. For projects of this size, there is a competitive local market and a strong local capacity. For large-scale and complex projects, local capacity is limited and there are few local companies with the capability, capacity and equity to deliver without partnering with international companies.

Under the National Procurement Act, all procurement is undertaken in accordance with a process generally consistent with that used by MDBs and the government is proactive in procuring local suppliers where appropriate. Limitations in GoPNG's design and construct capability and capacity create an environment where partnering with larger international companies on complex large-scale projects is common for both design and construction. This delivery model is common for both government and DP-funded projects. Ideally, over time, the international partnering strategy should result in improved local capacity to deliver large-scale infrastructure projects.

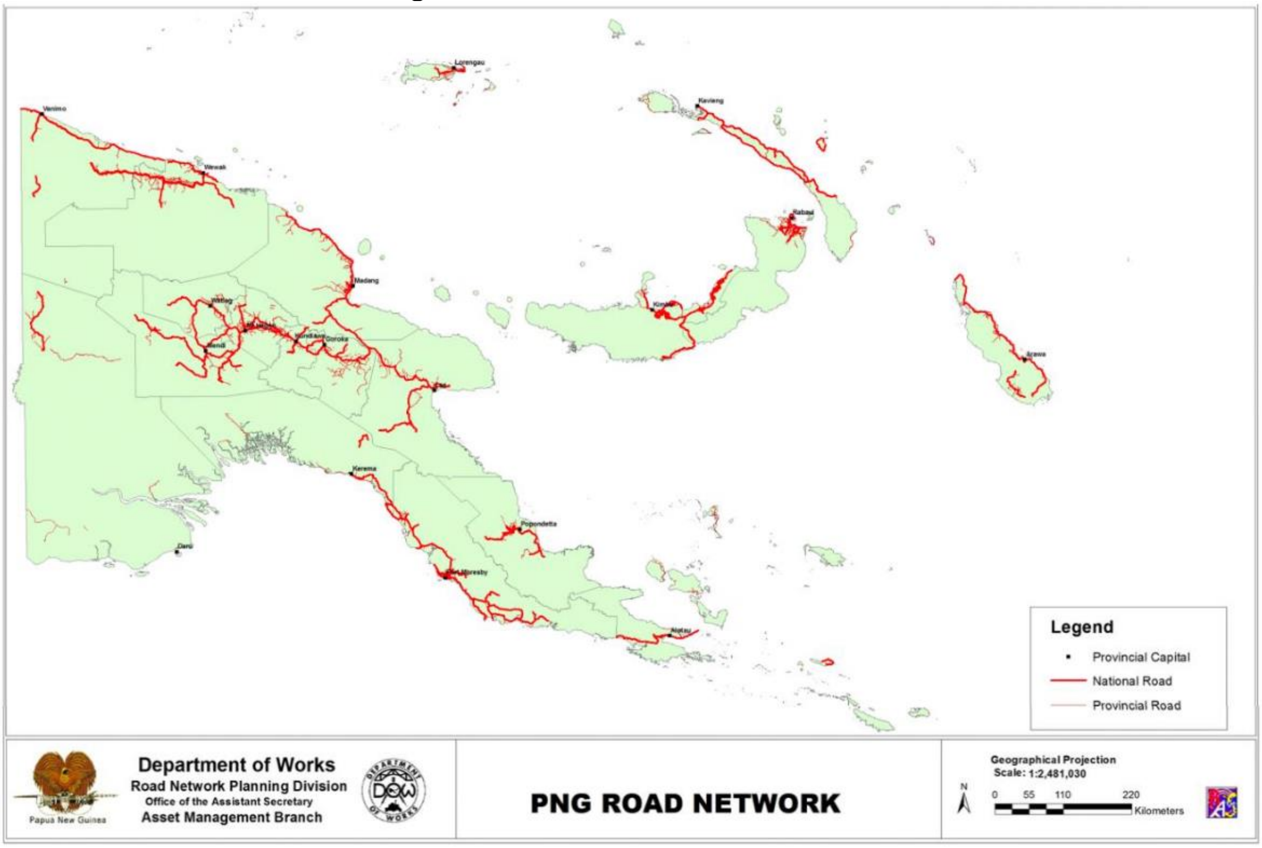
Currently, there is limited local capacity outside of large organisations in the areas of construction management, safety, and environmental management. The future sustainability of local supply options is directly dependent on a known and consistent pipeline of projects of scale. A reliable pipeline of infrastructure projects will enable local suppliers to better plan and equip for larger projects. If these opportunities are tied to improved governance and better quality and Work Health, Safety and Environment (WHSE) systems as required by those projects funded and/or delivered by DPs and MDBs, then the drivers for improved systems and an upskilled local workforce will be in place.

2.3 ROADS

Road infrastructure is critical for access to markets and services, and has a significant impact on improving rural livelihoods and contributing to inclusive economic growth. As the World Bank puts it:

> Without roads, airports, and ports, people are not able to access schools, health services, markets and other economic opportunities, or international and regional exchanges: poor connectivity drives up costs for service delivery, especially for businesses and the private sector, and generally fosters poverty.[25]

Figure 2.1 PNG's domestic road network



Source: World Bank, "Papua New Guinea Economic Update – In the Time of COVID-19: From Relief to Recovery" (Washington, DC: World Bank, July 2020), Fig. 20.

PNG has a total road network of approximately 29,700km. The National Road Network spans 8,738km, of which about 39 percent (3,393km) is sealed, and 61 percent (5,345km) unsealed.[26] The

[25] World Bank, "Papua New Guinea Economic Update, July 2020."
[26] ADB, "Public-Private Partnership Monitor: Papua New Guinea."

focus of most road planning is the 4,256km of priority roads in 16 separate alignments. The Department of Transport has noted in a discussion for this Peer Review that with the exception of 200km of new roads funded by donors, PNG's road network has not been extended since the days of the colonial administration (or since 1975) and most of the infrastructure dates back to that period.[27]

PNG's geography and sparsely populated rural areas create significant technical, logistical and cost issues for the design, construction and maintenance of road infrastructure. PNG's rainfall renders more than 75 percent of national, provincial and district roads impassable at some point in the year.[28] Road transport is the dominant mode of transportation in PNG; however, about 35 percent of the population live more than 10km from a national road, and 17 percent have no road access at all.[29] About 80 percent of PNG's bridges are structurally deficient, having been built 50–60 years ago, and being poorly maintained.[30]

2.3.1 Rural roads

Since the passing of the 1995 Organic Law on Provincial and Local Level Governments, the responsibility for the management of rural secondary roads has been assigned to provincial and local level governments.[31] PNG's sub-domestic road network is 21,000km in length and the central government provides funding for these roads through the Provincial Support Investment Program and the District Support Investment Program.

There is a lack of clarity regarding responsibility for maintenance and a large proportion of the funding goes through local members of the parliament who are free to use it for other purposes. In addition, there are issues of technical and engineering capacity, resourcing, prioritisation, standards and accountability for the funds allocated.[32]

2.3.2 Road condition

PNG's poorly maintained and underdeveloped transport infrastructure is a major impediment to social and economic development. Most PNG road assets are in very poor condition and deteriorating rapidly. This stifles access to markets and economic activity, and increases the cost of transport, wear and tear on vehicles, and travel times.[33]

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[27] Paul Verwoert and Brian Tombon-Copio., Discussion with Department of Transport, date (see Appendix B).
[28] ADB, "Public-Private Partnership Monitor: Papua New Guinea."
[29] PwC, "Transport Sector Funding in PNG: Funding Framework"; PwC, "Transport Sector Funding in PNG: The Current Landscape."
[30] Department of Justice, Papua New Guinea, "Index of PNG Laws," Updated 5 April 2019; World Bank, "Papua New Guinea Economic Update, July 2020."
[31] ADB, "Public-Private Partnership Monitor: Papua New Guinea"; PwC, "Transport Sector Funding in PNG: Funding Framework"; World Bank, "Papua New Guinea Economic Update, July 2020."
[32] David Slattery, Matthew Dornan, and John Lee, "Road Management in Papua New Guinea: An Evaluation of a Decade of Australian Support 2007–2017" (Canberra: Department of Foreign Affairs and Trade, 2018).
[33] Department of Works and Implementation, Papua New Guinea, "2018–2037 National Road Network Strategy" (Department of Works and Implementation, 2018).

2.3.3 Road maintenance

In terms of cost–benefit, road maintenance achieves substantially better value for money than investing in new assets.[34] The PNG Department of Works and Implementation estimates that every dollar spent on routine maintenance saves four to five in rehabilitation costs.[35] Investing in new infrastructure when existing assets are not being adequately maintained results in poor economic return and contributes to the stock of neglected and non-performing assets requiring rehabilitation. A Road Condition Survey in 2014 found that 80 percent of roads were ‘poor’ or ‘very poor’, highlighting the size of the investment required for road rehabilitation, let alone new construction (see Table 2.2). A key strategic aim of DPs in their financial and technical assistance in the sector is to avoid the expensive build–neglect–rebuild cycle through a regime of regular road maintenance (to date, this has been almost completely funded by donor agencies).[36]

Table 2.2 Road conditions in Papua New Guinea as of 2014

	Good	Fair	Poor	Very Poor	Total km
Priority roads	15%	9%	9%	67%	4,296
Non-priority roads	10%	5%	33%	53%	4,399
Overall	13%	7%	21%	59%	8,695

Source: Transport Sector Support Program (TSSP) Road Condition Survey 2014.

2.3.4 Environmental and social impact

The environmental cost of developing new roads in PNG needs to be considered in project analyses and at the economy-wide policy level. The planned National Road Network will open up swathes of native forest to logging, palm oil plantations, and cut through high conservation value ecosystems and habitats.[37] A high proportion, 97 percent, of PNG’s land is customary[38] and cannot be bought; and leases and resettlement agreements must be negotiated with landowners for the construction of new roads or for upgrading existing assets.

Land tenure and the use of traditionally owned land for building road projects will continue to require detailed engagement with local communities who will be directly and indirectly impacted. The environmental impact of works needs to be clearly understood and mitigated with lenses applied for conservation of natural assets, climate change adaptation, and cultural significance. The exposure to local peoples specifically applies to large-scale public road infrastructure projects where the local impact is significant. Local objection or international focus on impacts to the environment are complex risks that need to be carefully managed as part of a comprehensive response to infrastructure planning and delivery. Given the capability and capacity shortfalls within the government, DP oversight continues to be an important mechanism, as DPs can tie the appropriate use of laws and safeguards to their grants and loans.

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[34] Tara Davda and Grant Walton, “Mind Your P’s: Public Private Partnership Dilemmas in Remote PNG,” DevPolicy Blog, 11 December 2017, https://devpolicy.org/public-private-partnership-png-20171211/
[35] ADB, “Public-Private Partnership Monitor: Papua New Guinea.”
[36] Slattery, Dornan, and Lee, “Road Management in Papua New Guinea.”
[37] PwC, “Transport Sector Funding in PNG: Funding Framework”; PwC, “Transport Sector Funding in PNG: The Current Landscape.”
[38] ADB, “Public-Private Partnership Monitor: Papua New Guinea.”

2.3.5 Institutional arrangements

The Road (Management and Fund) Act 2020. The Act was passed on 14 January 2021, and aims to bring about substantial road funding reforms. The Act repeals the Road Maintenance Act and the Road Traffic Authority Act, and merges the National Roads Authority with the Department of Works and Implementation. The new Act aims to create a coordinated roads management system and PNG Road Management Fund that ensures adequate funding with regard to maintenance and rehabilitation, including sub-domestic roads. The Act establishes a number of important reforms in the sector including:

- Providing for the planning and management of public roads and road infrastructure.
- Establishing procedures for the declaring, decommissioning and classification of roads.
- Regulating the carrying out of works and associated activities.
- Enabling the Minister to establish special purpose companies (roads authorities).
- Establishing the PNG Road Fund governed by a Board.
- Establishing the PNG Road Maintenance Trust Fund.

The regulations for the Act are now under development with support from DFAT through advisers from the AusPNG Partnership's Transport Sector Support Program (the advisers also supported the drafting of the legislation).

The Act establishes a new Road Advisory Committee consisting of secretaries of relevant departments, including the Department of Transport, Department of Works and Implementation, lands, provincial and local government. The Road Advisory Committee will advise the Minister on the classification, declassification and decommissioning of roads, giving the central government the authority to re-classify provincial roads as principal roads and bringing them under the mandate of the Department of Works and Implementation. The Act provides for the establishment of a Register of Public Roads and mandates the formation of a new state-owned enterprise under the Companies Act to implement the Designated Strategic Roads Development Programme as part of Connect PNG.

Department of Transport (in the Ministry of Transport and Infrastructure). This is the lead transport agency responsible for transport infrastructure policy, planning and regulation, and for the compilation of the annual development budget from the submissions of the modal transport agencies. The Department of Transport chairs the Transport Sector Coordination, Monitoring, and Implementation Committee, established in 2006 to coordinate and facilitate planning across the 12 transport sector agencies. Meetings are held quarterly and are also attended by DPs active in the sector. The Transport Sector Coordination, Monitoring and Implementation Committee has not met for over a year and there is a sense by those consulted that it requires reinvigoration and an agenda aligned more closely with the planning and budget cycle to maximise inter-agency collaboration.

Department of Works and Implementation. This department manages the principal road network. Its responsibilities include:

- Taking ownership of the PNG road network on behalf of GoPNG.
- Planning the management and maintenance of the road network and implementing maintenance activities on the road network.
- Establishing and enforcing standards for engineering and maintenance of roads and bridges.
- Ensuring that quality standards are maintained for the road network, including undertaking technical audits for road construction projects.

- Providing technical assistance to provincial, district and local level governments to develop infrastructure.

National Roads Authority. Until 2020, the National Roads Authority acted as both a road fund and agency. It was responsible for routine maintenance of 2,200km of the principal road network. However, there was duplication and ambiguity of roles with the Department of Works and Implementation, and the two entities were merged under the new Roads Act.

> [T]here is now a single point of accountability for road network management, with the NRA [National Roads Authority] subsumed within the DoWI [Department of Works and Implementation] institutional structure. However, further reforms are required so that DoWI can optimize the [economy's] scarce resources and effectively manage its existing assets to a maintainable standard while delivering the nation's aspirations of road network connectivity (Connect PNG 2020–40) through capital development. [39]

Road Traffic Authority. Established by the Road Traffic Act (2014), the Road Traffic Authority administers the regulation, safety and use of land transport throughout PNG. It took on all the functions of the previous National Road Safety Council and Land Transport Board, and the land transport regulatory functions of the Department of Transport. Functions include licensing of public motor vehicles, taxis and heavy freight transport, vehicle inspection and registration, and driver licensing.[40]

2.3.6 Needs and projected needs

PNG's domestic development and transport sector strategies and plans outline ambitious steps for the sector to fill the missing links in the principal roads network while reducing the extensive backlog of preventative road maintenance.

National Road Network Strategy 2018–2037. This provides an honest appraisal of the financial and political issues that the Department of Works and Implementation faces regarding the construction and maintenance of PNG's national and provincial road networks. It espouses a 'maintenance first' policy, focusing on preserving the core priority roads or the backbone of the National Road Network (17 key corridors of about 2,309km) by upgrading them to 'good to fair condition'.[41] The National Road Network Strategy is realistic about the lack of funding for road maintenance historically and aims to calibrate its maintenance plans with the available budget using a phased approach with a total cost of PGK 21 billion over 20 years. Core roads are defined as those that link urban centres and those that link airports, airstrips, ports, and wharves. The National Road Network Strategy outlines other core objectives such as improving road safety and more effective asset management. Road connectivity and the development of economic corridors is a secondary priority for later years (Phase 4 of the National Road Network Strategy), costing PGK 5.5 billion over 20 years. The National Road Network Strategy points out that funding of the Department of Works and Implementation is unpredictable and insufficient and there is a need for more budget certainty in order to plan and implement road works. It further states that the fuel levy is inadequate and donor support will be crucial but that donor investments are not always aligned with the plans of the Department of Works

[39] World Bank, "Papua New Guinea Economic Update, July 2020."
[40] Road Transport Authority, "Website," accessed February 2021, http://www.rta.gov.pg/
[41] Department of Works and Implementation, Papua New Guinea, "National Road Network Strategy."

and Implementation.[42] It backs the introduction of a road user charge to be accumulated off-budget in a road maintenance fund (established by the new Roads Act referenced above).

Connect PNG 2020–2040. Connect PNG flips the 'maintenance first' message of the National Road Network Strategy and focusses on the construction of the new missing links to connect PNG's roads into a single network along key economic corridors. A focus of most of the planning is construction of a road link between Port Moresby and Lae (the second largest city with the largest port and access to the highland provinces).

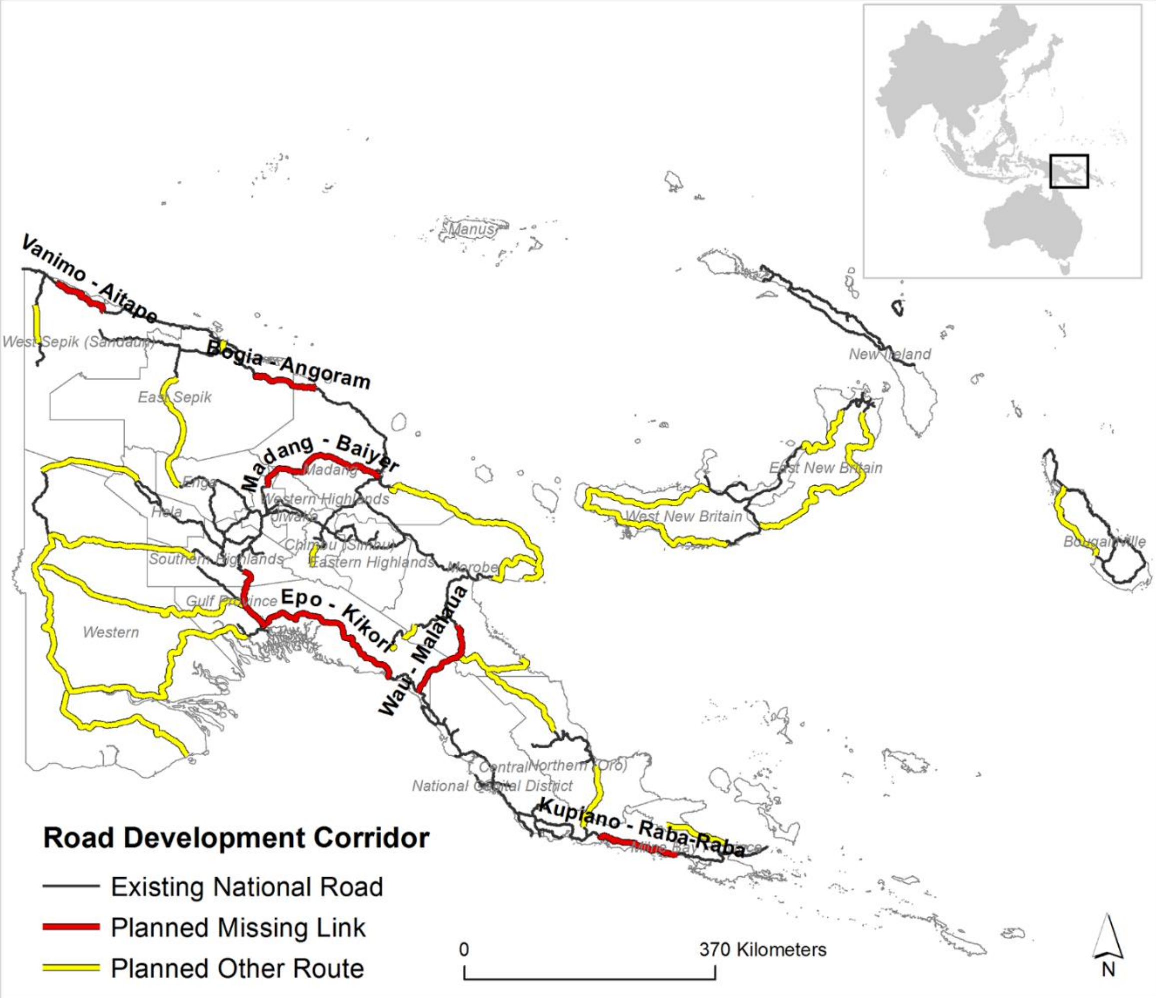
The government's Connect PNG plan seeks to distil the 20-year National Road Network Strategy into a series of five-year projects that will result in a more connected island economy. Connect PNG will deliver 16,200km of strategic roads over 20 years at a cost of PGK 20 billion.

Connect PNG Phase 1 (PGK 6.5 billion over five years). During the first of the three phases (2020–2026), the priority will be linking inter-regional and intra-regional roads with a focus on:

- Trans-Island Highway between Bulolo (Morobe) and Malalaua (Gulf)
- Madang-Bayiar Highway
- Highlands Highway
- Major sections of the Momase Highway (Madang-Sepik)

[42] Department of Works and Implementation, Papua New Guinea, "National Road Network Strategy."

Figure 2.2 Road development corridor



Source: M. Alamgir, et al., "Infrastructure Expansion Challenges Sustainable Development in Papua New Guinea," *PLoS ONE* 14, no. 7 (2019): e0219408, https://doi.org/10.1371/journal.pone.0219408

Connect PNG Phase 2 focuses on new development in Momase, the Sandaun border and the Northern and Gulf-Madang corridors. A Phase 2 priority is the construction of the missing link between Bogia in Madang Province and Angoram in East Sepik Province, which will effectively establish a road link between PNG and the border with Indonesia, opening up an important trade route.

Connect PNG Phase 3. Under this phase, there are plans to connect Gulf Province to Madang Province through Chimbu Province and plans to improve and maintain 3,000km of provincial and district roads in all 21 provinces bringing the total of roads in good condition to 9,000km.[43] In 2019, Secretary David Wereh of the Department of Works and Implementation explained the plans:

[43] Department of Works and Implementation, Papua New Guinea, "Connect PNG"; Paul Chai, "'Economic Lifelines': Connect PNG Outlines Key Road Projects to Help Boost Papua New Guinea's COVID Recovery," *Business Advantage PNG*, 30 September 2020, https://www.businessadvantagepng.com/economic-lifelines-connect-png-outlines-key-road-projects-to-help-boost-papua-new-guineas-covid-recovery/; PwC, "Transport Sector Funding in PNG: Funding Framework"; PwC, "Transport Sector Funding in PNG: The Current Landscape."

> 'In the first five years we are looking at the Trans-Island Highway, that is the number one priority,' says Wereh. 'This would come across the [economy], it starts from Nine Mile Junction in Lae and finishes in Malalaua in the Gulf Province so you have to upgrade the existing roads to standard two lanes as well as opening up 302 kilometres of new road.'[44]

The case for a quality infrastructure process is very clear when the roads under Connect PNG are analysed. Some of the new link roads run through remote, swampy, or sparsely populated areas. It is unclear if they all are economically feasible, as noted by the Office of Development Effectiveness (DFAT) in 2018:

> [T]he 16 'missing link' [domestic] roads (2,280 km) and four economic corridor roads included in the MTDP [Medium Term Development Plan III] and DSP [Development Strategic Plan] are not deemed economically viable by the Transport Investment Prioritisation Study (TIPS 2010) conducted to inform it. TIPS concluded only six of the 16 'missing links' were likely to be viable. These links nevertheless have benefit-cost ratios considerably below that of maintaining existing roads.[45]

New feasibility studies will be needed for the links given the last ones were conducted over 10 years ago. It is imperative that the underlying analysis of the new studies is comprehensive and rigorous. The economy cannot afford to develop new transport infrastructure that does not have a positive economic rate of return.

2.3.7 Financing needs and opportunities including for PPPs

In Budget 2021,[46] the Marape government has vowed 'consolidation for growth' and to chart a course of fiscal responsibility by reducing the deficit. The transport sector will receive PGK 2,149.4 million in 2021, or 11 per cent of the total spend – up from 7 per cent in 2020 – with significant support from DPs.

There is a significant and growing gap between the PNG Transport Infrastructure Plans and the funding available from all sources to fund them. The reductions in government expenditure over the last five years have hit the transport infrastructure sector hard. In 2019 PwC assessed that as a proportion of GDP, 'transport expenditure [was] expected to fall from 2.6 per cent in 2015 to 0.8 per cent in 2022 with a downward trajectory likely thereafter.'[47]

> Connect PNG recognises that PNG's budget alone will not be sufficient to fund the new construction and maintenance works envisaged:The budget revenue has been insufficient to maintain existing roads and evidently does not have the capacity to guarantee certainty and continuity of multiyear rolling capital works programs under the planned program. Relying on the budget creates a huge gap of PGK600 million per year which will only build up the backlog of unachieved programs and targets. GoPNG plans to fund PNG

[44] Chai, "'Economic Lifelines'."
[45] Department of Works and Implementation, Papua New Guinea, "Connect PNG"; Slattery, Dornan, and Lee, "Road Management in Papua New Guinea."
[46] GoPNG, *2021 National Budget*.
[47] PwC, "Transport Sector Funding in PNG: Funding Framework."

> Connect with concessional loans from bodies such as the Australian Infrastructure Financing Facility for the Pacific (AIFFP) and the Asian Development Bank (ADB).[48]

In 2021, Connect PNG requires expenditure of PGK 1,095,708,035. However, the 2021 Budget Papers have allocated only PGK 300 million, consisting of a DFAT concessional loan under the Australian Infrastructure Financing Facility for the Pacific. DFAT is also providing a PGK 16 million grant under the Australian Infrastructure Financing Facility for the Pacific for works on the Bulolo–Central Highway. Budget 2021 includes a PGK 75 million loan by the ADB which is Tranche 2 of the Sustainable Highland Highway Investment Program, a ten-year USD 900 million programme to restore, upgrade and maintain a 430km section of the Highlands Highway between Lae and Mount Hagen.[49]

2.3.8 Road user charges and fuel levies

Road user charges are relatively low in PNG leading to substantial shortfalls in available revenue and budget for maintenance and new projects. Despite an increase in road user charges from PGK 0.13 to PGK 0.23 per litre, the National Roads Authority received only PGK 0.04 per litre for maintenance, while the Department of Treasury absorbs the balance of PGK 0.19 per litre.[50]

The ADB has been advocating for road user tolls (in the form of licence fees, a diesel fuel levy, or based on weight carried). It considered weigh stations as part of the Land and Maritime Project, in part because of the relationship between weight and road damage, but the concept did not get political traction. Road user tolls of some form, however, will need to be included in the future and weigh bridges are part of the Sustainable Highlands Highway Improvement Program design.[51]

Road (Management and Fund) Act 2020. In January 2021, GoPNG passed the Act which brings to force substantial road management reform, particularly in road funding arrangements (see also Section 2.3.5). The Act establishes the PNG Road Management Fund, which replaces the National Road Fund managed by the National Roads Authority (which is subsumed into the Department of Works and Implementation by the Act).

The PNG Road Fund has the mandate to consolidate all road charges, licencing fees, levies and taxes from all sources into one fund exclusively for road maintenance. The fund will be governed by a Board of senior officials from relevant government agencies, the Road Traffic Authority and road users' groups (Road Users Association, Chamber of Mines and Petroleum). The PNG Road Fund will include the PNG Road Maintenance Trust Fund with a provision in the Act that:

> all amounts collected by a public or statutory body in respect of the following charges shall be paid or remitted without deduction to the PNG Road Maintenance Trust Fund:
> (a) Driver licence fees
> (b) Vehicle registration fees
> (c) Fuel levies imposed in respect of road users

[48] Department of Works and Implementation, Papua New Guinea, "Connect PNG"; Slattery, Dornan, and Lee, "Road Management in Papua New Guinea."
[49] ADB, "Public-Private Partnership Monitor: Papua New Guinea."
[50] World Bank, "Papua New Guinea Economic Update, July 2020."
[51] David Hill, Andrew Cooper, Darren Morgan, and Stuart Schaefer, ADB Interview, 13 Feb 2021.

(d) Road user charges including road damage charges[52]

Tax credit scheme. PNG's resource companies can access a tax credit scheme for the building and maintenance of roads. However, resource companies and the government alike appear to be less inclined to use the scheme. Resource companies spend resources negotiating issues outside of their direct interest and the government reduces its direct tax take.[53]

Development assistance grants and loan. Donor agencies and MDBs contribute significant funding through concessional loans and grants to upgrade and maintain key road links and they are funding construction of some of the new road links. Connect PNG and the Transport Sector Coordination, Monitoring and Implementation Committee provide a planning framework and forum for DPs to coordinate funding in line with GoPNG's priorities and budget development process.

DFAT. The Transport Sector Support Program funded by the Australian government has provided technical assistance since 2007, and it has given grants for road maintenance for 17 years totalling over AUD 700 million. DFAT is providing loans and grants to the value of PGK 300 million over five years via the Australian Infrastructure Financing Facility for the Pacific to fund Connect PNG, including the maintenance and upgrade of the Transnational Highway from 9 Mile in Lae to the Highlands. The Transport Sector Support Program will establish a project management office in the Department of Works and Implementation to deliver the works. The loan is complemented by grants for project preparation and will apply the stringent feasibility, maintenance, climate change, gender and social safeguard policies specified by the Australian Infrastructure Financing Facility for the Pacific.

ADB. The ADB provides the largest quantum of concessional loans to PNG's roads sector. In 2017, it implemented a 10-year USD 1 billion investment programme to support a performance-based maintenance approach for the Highlands Highway.[54] The ADB is also scoping the construction of the missing links in Connect PNG.[55]

Under its Land and Maritime Project, the ADB is conducting feasibility studies for the following roads projects:

- Northern Region corridor from Wutung to Angora
- Northern Region road corridor from Lae to Malalaua
- Highlands Region Road Improvement Investment Program, Phase 2

The ADB's Country Partnership Strategy considers these projects to be 'vital links in developing economically strategic transport corridors'.[56] The projects include a future rehabilitation of a national highway; connecting Wutung at the Indonesian border with Madang (USD 210 million); and the future construction and rehabilitation of a highway connecting Lae, PNG's commercial hub, to Malalaua on the southern coast, which would be the first time that Port Moresby would be connected

[52] GoPNG, *Road (Management and Fund) Act 2020.*
[53] GoPNG, *2021 National Budget.*
[54] World Bank, "Papua New Guinea Economic Update, July 2020."
[55] Roger Bednall, Stuart Schaefer, and Paul Verwoert, Meeting with TSSP, via Zoom, 3 February 2021 (see Appendix B).
[56] ADB, "Public-Private Partnership Monitor: Papua New Guinea."

with Lae and the Highlands Region. The Highlands Region Road Improvement Program will connect highland communities with the Highlands Highway.[57]

ADB's Highlands Region Road Improvement Program. The ADB's Country Partnership Strategy released in 2020 continues funding of the Highlands Region Road Improvement Program which, under Phase 1, covered second-tier national roads and important provincial roads in the five Highlands Provinces. Phase 2 of the Highlands Region Road Improvement Investment Program (USD 305 million) will improve about 465km of roads of the Highlands core road network as well as address capacity, governance, climate change and maintenance-related issues.[58]

The People's Republic of China. China, mostly through China Exim Bank, is the second-largest lender to PNG after ADB, and is active in financing roads and other infrastructure, including in the National Capital District.

The World Bank. The World Bank has had for some years a project management office in the Department of Works and Implementation providing loans for road maintenance and technical assistance through the Road Maintenance and Rehabilitation Project in six provinces with a contribution of around PGK 10–15 million per year, or 11 per cent of the external assistance to the sector.[59] It is providing a loan for the upgrade of the Wewak to Vanamo link and for the rehabilitation of the Hiritano Highway.

Public–private partnerships (PPPs). These are generally not regarded as a viable funding option for funding PNG road maintenance and construction. Traffic on PNG's rural roads is not high enough to have the economies of scale and sufficient revenue from tolls and other sources to attract private investment. To be viable, roads require traffic of around 10,000 vehicles per day and PNG's rural highways get roughly one quarter of that at best.[60] PPPs are likely more expensive and carry higher risk for GoPNG than concessional loans from DPs.[61] It is likely that the road sector will continue to rely heavily on DPs for maintenance funding and for the construction of some of the missing links.

2.4 MARITIME

Approximately 60 per cent of the population resides on 6,500km of coastline and waterways, often without access to roads.[62] Communities without access to road and air travel rely on riverine and littoral maritime transport.[63] Maritime transport is crucial for connecting communities across PNG's archipelago and accessing the sea lanes of the north. Some communities travel large distances by water to markets and services risking their safety and security. Much of the rural maritime traffic is serviced by small jetties and wharves in various states of disrepair, and are managed by local and provincial governments that lack the technical capacity to meet maintenance, safety and security requirements. Port developments are also of significant geostrategic and security interest.

[57] ADB, "Public-Private Partnership Monitor: Papua New Guinea."
[58] ADB, "Public-Private Partnership Monitor: Papua New Guinea."
[59] Slattery, Dornan, and Lee, "Road Management in Papua New Guinea."
[60] Paul Verwoert and Brian Yombon-Copio, Meeting with Department of Transport, Port Moresby, 8 February 2021 (see Appendix B).
[61] World Bank, "Papua New Guinea Economic Update, July 2020."
[62] ADB, "Public-Private Partnership Monitor: Papua New Guinea."
[63] World Bank, "Papua New Guinea Economic Update, July 2020."

Of the 15 ports under the jurisdiction of the PNG Ports Corporation, Lae Port in Morobe Province is the busiest, handling nearly half PNG's maritime freight. Port Moresby, Kimbe and Rabaul are the next largest. These four ports operate on a cost-recovery basis and the remaining 11 incur losses.[64] PNG Ports Corporation cross-subsidises these with the revenues from the four viable ports to fund maintenance and operations as part of the PNG Ports Community Service Obligations programme.

2.4.1 Institutional arrangements

The Department of Transport provides the overall policy and regulatory framework for the maritime sector and works with the National Maritime Safety Authority and PNG Ports Corporation to develop and maintain maritime transport infrastructure in PNG. The Department of Transport relies primarily on budget appropriations from GoPNG for its maritime transport revenue.[65]

PNG Ports Corporation Limited. PNG Ports Corporation is a state-owned enterprise registered under the PNG Companies Act and comes under Kumul Consolidated Holdings on behalf of GoPNG. PNG Ports Corporation has authority to maintain maritime compliance responsibilities at all water and land interfaces, including declared and non-declared ports, and it is in charge of harbour management. Its main enabling legislation includes the Harbours Act Chapter 240 and the Kumul Consolidated Holdings Act 2002.

The National Transport Strategy notes that the National Maritime Safety Authority Act will be reviewed to remove ambiguity and transfer regulatory powers currently exercised by the Secretary for Transport. The review team also heard anecdotally that ambiguity in responsibility between the Department of Transport and PNG Ports Corporation was inhibiting port planning and development.

PNG Ports Corporation is PNG's primary domestic port facilities provider and manages 15 out of the 23 ports in PNG with sole authority over all ports. Four of the ports are operated through concession agreements, with PNG Ports Corporation outsourcing its terminal operations to the Philippines-based International Container Terminal Services, Inc. The PNG-based subsidiaries of International Container Terminal Services signed 25-year terminal operating agreements to operate Motukea and Lae Ports, covering the operation, management and development of the two ports.[66] Other than the declared ports, there are a number of private port facilities on the PNG coast, mainly established to support specific industries, such as mining, oil palm and logging. Important privately operated ports include Kiunga (Ok Tedi Mining Limited), Bialla (Hargy Oil Palm), Basamuk (Ramu Nickel), Lihir (gold mining) and several forestry ventures.[67]

PNG Ports Corporation's essential port services include berthage and wharfage. Additional services include the provision of marine pilots and administration of stevedoring licences.

PNG Ports Corporation is also regulated by the Independent Competition and Consumer Commission, which sets prices and minimum service standards over a five-year period based on forecast revenue requirements. PNG Ports Corporation and the Independent Competition and Consumer Commission have agreed prices for the 2020–2024 regulatory period. According to the

[64] Paul Verwoert and Brian Yombon-Copio, Meeting with PNG Ports Corporation, Port Moresby, 9 February 2021 (see Appendix B).
[65] PwC, "Transport Sector Funding in PNG: The Current Landscape."
[66] World Bank, "Papua New Guinea Economic Update, July 2020."
[67] Department of Transport, Papua New Guinea, "Website," accessed date, insert URL.

2019 port services tariff schedule, PNG Ports Corporation collects tariffs for wharfage services, transhipments, berthing services, passenger fees and other services (mainly provision of passes for vehicles).[68] The Independent Competition and Consumer Commission tends to keep price increases to a minimum, allowing for consumer price index increases and an additional small nominal percentage increase.

There are some issues around delineation of responsibilities between PNG Ports Corporation and the Department of Transport, with both agencies undertaking master planning and feasibility analysis on the upgrade of the same ports. Kumul Consolidated Holdings Limited (KCHL) is also undertaking a review of the Ports Master Plan and planned reforms aim to increase KCHL supervision of the state-owned enterprises under its jurisdiction. Funding arrangements for PNG Ports Corporation also appear to be uncertain as proposals to GoPNG sometimes result in payments by the Treasury to the Department of Transport. A sector review has been recommended to examine the roles and funding arrangements of each of the agencies to ensure that there is no duplication and that GoPNG's funding arrangements for PNG Ports Corporation are clarified.

National Maritime Safety Authority. This is a statutory authority responsible for all maritime safety initiatives for maritime transport industries, their stakeholders, isolated coastal communities and the general public. The National Maritime Safety Authority regulates maritime safety standards, controls pollution and conducts rescue operations. It is mandated to enforce the economy's merchant shipping laws, and ensure that such enforcement is consistent with both domestic legislation and international standards. The National Maritime Safety Authority reports to its Board and the Minister for Transport.

The National Maritime Safety Authority has not been able to receive full funding from GoPNG for capital projects and operations. Its operational funding is primarily funded through fee collection from vessel owners/agents. Its 2014 annual report (the latest available annual report) illustrates that its revenue sources include levies, central government grants, donor funding, an oil pollution levy, vessel registration and 'other income'.

The National Maritime Safety Authority is the only transport agency reported to have transferred monies back to consolidated revenue in 2018. [69]

[68] PwC, "Transport Sector Funding in PNG: The Current Landscape."
[69] PwC, "Transport Sector Funding in PNG: The Current Landscape."

Photo 2.1 Rabaul Port

Credit: Paul Verwoert 2021

2.4.2 Needs and projected needs

The second Medium Term Transport Plan suggests that an estimated PGK 675 million will be required for the period 2019 to 2022 across 31 maritime transport projects (assuming the upper funding envelope of PGK 4.6 billion is reached). Nine projects (seven managed by the Department of Transport and two by the National Maritime Safety Authority) have been allocated funding for 2019 with another 22 projects commencing in 2020.

The third Medium Term Transport Plan specifies the following priority projects in the maritime sector:

- National Wharves Development – PGK 150 million (GoPNG)
- National Ports Development (Wewak, Kikori, Vanimo, Manus) – PGK 70 million (GoPNG)
- Jetty Development and Maintenance Program – PGK 75 million (GoPNG)
- National Shipping Service – PGK40 million (GoPNG)

There has not been a recent review of the institutional, funding and policy arrangements in the maritime transport sector. PNG Ports Corporation has received assistance from the Transport Sector Support Program to develop a master plan with a 30-year horizon for the upgrade of PNG's ports and is seeking GoPNG and DP funding. Given that PNG Ports Corporation has not received Public Investment Program funding from the budget since 2012, DPs are the most likely funding option, with potential for private investment. In addition, PNG Ports Corporation has received loans from China Exim Bank to fund projects such as the Lae Tidal Basin development project.

2.4.3 Financing needs and opportunities including for PPPs

The maritime transport subsector is largely funded outside of budget appropriations, and comprise a small part of overall transport sector funding.[70]

In the Budget 2021 papers, GoPNG gives priority to investments to develop jetties and wharves, to allow for safe operations for passengers and cargo and provide access for the most vulnerable people

[70] PwC, "Transport Sector Funding in PNG: The Current Landscape."

who do not have year-round road access. The priority programmes/projects in the 2021 Budget include:

- Wharves Development Program (PGK 8 million)
- Maritime and Waterway Navigational Safety System (PGK 16 million)

PNG Ports Corporation continues to grow its revenue and is optimistic that there is significant potential to increase revenues from the 15 ports under its jurisdiction, if investment and the political will can be mobilised to upgrade the port facilities. However, there appears to be little planning and public investment support from the responsible central, provincial and local governments for such initiatives.

2.4.4 Development partners

The ADB has been providing loan assistance in the maritime space. DFAT's Transport Sector Support Program has been providing grant assistance for basic port infrastructure, including lighting and fencing; and JICA has had discussions with PNG Ports Corporation to conduct a feasibility study for the Rabaul Port expansion as well as plans to provide capacity-building assistance.

2.4.5 Private investment and PPPs – Ports

The ADB's Private Sector Development Initiative has encouraged PPPs in the ports sector, for example in Lae and Motukea. Preparations and a business case by Kumul Consolidated Holdings for a PPP at Lae Port connected to an ADB sovereign loan did not proceed when PNG Ports Corporation intervened with a separate tender process for concessional arrangements that are now in place. The private sector participates in the ports sector through concessional arrangements with PNG Ports Corporation; notably, the container terminal manager, International Container Terminal Services, Inc. (ICTSI), secured 25-year terminal operating agreements to operate Motukea and Lae Ports.

The Department of Transport is establishing the new National Shipping Service with the aim of involving private shipping companies in operations. Ships are being procured to provide passenger and freight services; however, the lack of a regulatory framework means that private shipping companies have not been able to participate in the scheme yet.

2.4.6 Environmental and social impact – Maritime

In the context of ports, the Medium Term Transport Plan 2 identifies duplication and incompatibility in the provisions of ports management regulation, administration and safety regulation. For example, the establishment of standards in the construction of ports is performed by PNG Ports Corporation while the establishment of standards in construction of pipelines is carried out by the National Maritime Safety Authority.

The Medium Term Transport Plan 2 recommends establishing construction standards, supported by regulation to ensure appropriate maritime environmental considerations and the capture of both the social impact and benefits of the investment, with consultations to endorse these recommendations.

With the anticipated growth in major port infrastructure and increased potential for PPP investments, a strong and clear regulatory framework is needed to ensure the safe, environmentally appropriate and socially responsible operation of ports into the future. A first step for DPs could be to strongly support alignment with and adherence to existing legislation.

Sustainability. GoPNG recognises the need to protect transport corridors for future development, to ensure that access to the land, water or underwater area required for transport infrastructure is not compromised by development, and to give the owners and occupiers of land certainty regarding the government's future intentions. To this end, the government has enacted the Protection of Transport Infrastructure Act which will ensure that area required for transport infrastructure is (1) available to be used for economy-wide, provincial and local-level transport; (2) secure and protected; and (3) free from encroachment, deliberate damage and excessive and unjustified land compensation demands. The legislation applies to any port, harbour, haven, roadstead, channel, navigable river or creek where transport infrastructure may be located, and to all publicly owned maritime infrastructure and infrastructure created under a PPP.[71]

Resilience. Marine infrastructure is potentially threatened by the effects of climate change, including increased severity and area of effect of tropical storms, and sea-level rise. When designing new wharves and jetties, access roads and other coastal transport infrastructure, it is critical that sufficient provision is made for future sea-level rise and that the structures and seawalls can withstand all but the most exceptional storm conditions.

Under the National Transport Strategy, responsibility for ensuring engineering standards, environmental impact assessments and shoreline management for the purposes of establishing and maintaining port facilities sits with the PNG Ports Corporation. These standards will ensure that climate change risks are taken into account in the relevant design and construction codes in matters such as allowances for sea level rise and storm surge.[72]

2.5 AVIATION

Given PNG's geography, and many inaccessible communities, air travel has been a core mode of transport since early colonial exploration of the highlands region, with PNG once having the most airstrips per capita in the world. PNG has 578 airports and airstrips, 27 of which have paved runways.[73]

The demand for air transport is largely driven by business and tourism, Air travel on domestic as well as international routes is very expensive, meaning it is out of the reach for most PNG citizens. Unit costs (per passenger per nautical mile) on flights from Port Moresby to Australia – the primary international route – are the most expensive in the Pacific.[74]

The negative impact of COVID-19 on the aviation industry globally has been significant with flagship domestic carriers requiring significant government financial support to remain operational. Air Niugini and PNG Air (partly owned by Nasfund) were already loss-making entities prior to COVID-19, but the pandemic has made their plight much worse and they are dependent on significant GoPNG funding to continue operations. The Independent Competition and Consumer Commission rejected a takeover of PNG Air by LinkPNG (an Air Niugini company), which would have created a monopoly for all domestic routes, hence decreasing price competition.

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[71] GoPNG, *National Transport Strategy*, May 2013.
[72] GoPNG, *National Transport Strategy*, May 2013.
[73] Miles and de Marchi, "Post COVID-19 Pacific Short-Term Aviation Strategy."
[74] Craig Lawrence, "Infrastructure Challenges for Papua New Guinea," Lowy Institute, 2017, https://interactives.lowyinstitute.org/archive/png-in-2017/png-in-2017-infrastructure-challenges-for-papua-new-guineas-future.html

Photo 2.2 Tokua Airport

Credit: Paul Verwoert 2021

2.5.1 Institutional arrangements

As in the maritime sector, a review of the aviation subsector as a whole has not been undertaken and there is a need for alignment across the subsector agencies to better inform an overarching strategy to inform longer term financing/funding arrangements.[75]

***National Airports Corporation*.** This is a statutory body under the Civil Aviation Act. It is a state-owned enterprise that operates PNG's 22 domestically declared, large-scale airports and was formed in 2010. It operates under the Ministry of Civil Aviation and the Ministry for Finance and Rural Development. (Provincial governments are responsible for the management of secondary airports, of which there are 20. The rest are managed by local communities, church missions and businesses.)

The National Airports Corporation does not receive recurrent funding from the central government budget, and funds its operational activities from fees and charges for facilities and services provided to operators and businesses at the airports.[76] Most of its revenue comes from aeronautical revenue – fees included in the price of passenger tickets. The revenue covers the cost of airport maintenance, safety and security measures. Given the reliance on passenger traffic, COVID-19 has had a major impact on its revenue with Air Niugini and other airlines not remitting passenger fee revenues. COVID-19 has also impacted the planned ADB sponsored PPP for Jacksons International Airport with the feasibility study yet to be released.

Similar to the maritime sector, the National Airports Corporation uses the revenue from its seven profitable airports to cross-subsidise the less viable airports under its Community Service Obligations. Mission Aviation Fellowship, for example, uses its facilities at no cost.

The National Airports Corporation is looking to develop other sources of revenue, through commercial activities and through exploiting property development opportunities on government-held lands adjacent to Jacksons International Airport, for example. Significant loans from DPs such as the ADB and JICA (discussed below) have helped the National Airports Corporation to upgrade

[75] Roger Bednall, Stuart Schaefer, and Paul Verwoert, Meeting with the Transport Sector Support Program, via Zoom, 3 February 2021 (see Appendix B).

[76] PwC, "Transport Sector Funding in PNG: The Current Landscape."

airport infrastructure and build the capacity of airport maintenance engineers. For example, it obtained a commercial loan from the Australia and New Zealand Banking Group Limited (ANZ) to upgrade the terminal building at Jacksons International Airport in preparation for the APEC Leader's Summit in 2018.[77] In the longer term, it plans to drive revenue growth by positioning Jacksons International Airport as a transit hub and attracting heavier traffic, and is seeking GoPNG's assistance to implement this strategy.

***Civil Aviation Safety Authority*.** This is the aviation safety and regulatory body charged with ensuring International Civil Aviation Organization (ICAO) standards are maintained, and air safety systems and equipment upgraded. The Civil Aviation Safety Authority is totally government-funded and receives some DP assistance, for example, from DFAT.

NiuSky Pacific Limited. Air traffic services are provided by NiuSky Pacific**,** formerly PNG Air Services Limited. NiuSky Pacific is a state aviation entity and is responsible for the provision of air traffic management and air navigation services to the aviation industry in PNG and to the domestic and international airline operators who use PNG air space, with the vision 'to be a world class Air Navigation Service Provider'.[78]

NiuSky Pacific receives funding and technical assistance from the DFAT Transport Sector Support Program and through a memorandum of understanding with Air Services Australia. The assistance has allowed it to upgrade a range of navigational and traffic management systems and infrastructure accompanied by training. Other funding sources include the ADB's Civil Aviation Development Investment Program and the Public Investment Program under the central government budget.

Rural Airstrip Agency. This is a non-governmental organisation (NGO) run by Mission Aviation Fellowship. It maintains 97 rural airstrips with funding from the Department of Transport. Mission Aviation Fellowship also surveys and maintains remote airstrips as part of its health and medevac services to remote communities. Mission Aviation Fellowship has had to reduce its operations due to the poor and deteriorating condition of many of the remote airstrips as well as the COVID-19 pandemic.

Accident Investigation Commission. Established in 2010 as an independent agency of the government under Section 218 of the Civil Aviation Act 2000, the Commission collaborates closely with the Australian Transport Safety Bureau.

Air Niugini. As PNG's flagship carrier, Air Niugini has always been heavily subsidised by the government but due to COVID-19 travel restrictions, it is under further financial stress and is undergoing restructuring, including 'immediate cost savings, outsourcing of some services, re-fleeting options, an urgent injection of working capital, further financial support from international partners, and cooperation with other government agencies to reduce regulatory and debt payment pressures'.[79]

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[77] Paul Verwoert and Brian Yombon-Copio, Meeting with National Airports Corporation and Johnstaff International Development, Port Moresby, 9 February 2021 (see Appendix B).
[78] NiuSky Pacific Limited, "Website," April 2021 https://www.niuskypacific.com.pg/company-profile/
[79] Kumul Consolidated Holdings, "Air Niugini Reform a Matter of Urgency, Says Muthuvel," 2019, https://www.kch.com.pg/air-niugini-reform-a-matter-of-urgency-says-muthuvel/

PNG Air. PNG's second airline, PNG Air, is currently operating domestic services at just over 30 percent of its usual operations. Nasfund owns 39.29 per cent of PNG Air.[80]

2.5.2 Needs and projected needs

The Medium Term Development Plan III proposes the following priority projects in the aviation sector:

- National Airport Upgrading and Development Program – PGK 254.03 million (GoPNG/DP)
- Nadzab Airport Redevelopment – PGK 255.90 million (GoPNG/DP)
- Air Transport Safety Program – PGK 50.82 million (GoPNG/DP)
- Rural Airstrip Rehabilitation Program – PGK 66.00 million (GoPNG/DP)
- Airport Development (Kupiano) – PGK 100 million (GoPNG)

While aviation transport projects are a priority for PNG, there is significant discrepancy between the required funding under the second Medium Term Development Plan (PGK 1.56 billion) and the budgeted amount for the aviation sector (PGK 613 million), though some of the gap could be reduced with the use of PPPs. It should be noted that the aviation sector has been unable to meet the costs of maintaining and operating its airports and air navigation infrastructure through cost recovery and user charges.[81]

The 2030 Growth Strategy for the National Airports Corporation includes plans to deliver 15 smart airports that are compliant with the minimum ICAO standards and recommended practices for airport operations. This will require significant ongoing investments in airport infrastructure, including airport terminals, runway lengths and runway pavement strengths. There is also a significant need for the ongoing upgrading and maintenance of PNG's rural airstrips, as:

> without adequate and predictable funding for rural airstrip restoration and maintenance, the condition of PNG's rural airstrips will progressively decline, with the risk of some closures in the medium term.[82]

The impact of COVID-19 on PNG's airlines and on revenue collected by the National Airports Corporation has been substantial and DPs are already providing a team of advisers to assist with restructuring the aviation sector and identifying new and diversified revenue opportunities.[83]

2.5.3 Financing needs and opportunities including for PPPs

Development partners. The ADB's Civil Aviation Development Investment Program has been the flagship programme for DP loans in the aviation sector for over 10 years. The first phase of the programme involved a PGK 1.6 billion loan that ends in November 2021. The funding for the second phase, a further USD 500 million, is currently under negotiation. The programme supports the National Airports Corporation to strengthen and lengthen runways, build and expand airport

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[80] Nasfund, "Nasfund 2019 Annual Report: Ready for Tomorrow", 2019, https://nasfund.com.pg/wp-content/uploads/2020/06/nasfund-Annual-Report-2019-1.pdf
[81] PwC, "Transport Sector Funding in PNG: The Current Landscape."
[82] World Bank, "Papua New Guinea Economic Update, July 2020."
[83] Paul Verwoert, Meeting with National Airports Corporation, Port Moresby, 9 February 2021 (see Appendix B).

terminals and enhance security at about 16 airports, improving air traffic safety, and developing institutional and workforce capacity.

JICA. JICA has provided significant loan funding for the upgrade of the Lae and Nadzab airports (from 2015 to 2022) and Jacksons International Airport at Port of Moresby (2001). JICA is also in the process of formulating a loan for the redevelopment of Tokua Airport (also known as Rabaul Airport, see Photo 2.2) with a loan agreement target for 2021.

Private investment and PPPs – Airfields. The most prominent example of a PPP in the aviation sector is the current feasibility study for a PPP to upgrade and expand Jacksons International Airport. The aim is for the private sector to design, build, finance, operate and maintain the airport facilities. Early feasibility work by the ADB shows sufficient air traffic to make the project viable. However, the study has not been released and the project has stalled. Since then, the impact of the COVID-19 pandemic has significantly reduced air traffic, no doubt changing the calculations, and the project remains on hold.

In rural areas, low traffic levels make PPPs challenging as potential revenue for private partners is modest. With PPPs requiring sufficient traffic and economies of scale to be viable, PNG's rural airports and airstrips is set to remain dependent on GoPNG budget and DP funding.

Environmental and social impact – Airfields. Air travel in PNG has evolved into a well-developed network of 578 airports and airstrips, 27 of which have paved runways.

The Medium Term Transport Plan 2 identifies that 'the challenge for government is in connecting isolated areas, inaccessible by road, and therefore forms the primary focus on increasing access to, and the flow of goods and services, with the aim of encouraging economic activities'. The plan identifies the 'focus for the aviation subsector in the medium term is linking remote isolated regions based on socio-economic significance, while also providing a safe, secure, reliable cost-effective air transport system to promote tourism and socio-economic growth.[84]

Through the Civil Aviation Development Investment Program, the aviation sector will take on the challenge of moving toward a hub-and-spoke network to make aviation transport more profitable and efficient, in order to improve and advance the aviation industry.

Given PNG's geography, improved access to affordable domestic air travel is critical for long-term socioeconomic growth while reducing impact on natural assets (both land and maritime). Given the large footprint of existing airfields, focusing investment (e.g., paving/redevelopment) on these existing strips will reduce the overall impact on the environment and reduce land ownership issues (which may arise with new airfields).

Resiliency. GoPNG, through its National Transport Strategy, notes that much of their airport infrastructure is built in low-lying coastal areas or on floodplains, and is vulnerable to the effects of climate change. The government's primary response to these threats has been to state that the design of new or upgraded airports needs to factor in the impact of climate change. While the strategy

[84] Government of Papua New Guinea, "The Medium Term Transport Plan 2 (2019-2022)" (Government of Papua New Guinea 2019).

identifies this requirement, there is a cost imposed to improved resilience that will need to be factored into budget planning. [85]

2.6 QUALITY

2.6.1 Policy and regulatory framework review

In general, PNG is well-equipped with the high-level legal and policy frameworks that enable it to pursue the development of quality infrastructure.

2.6.2 Legal framework

The PNG constitution sets out a tiered legal framework: constitutional, organic law, and acts of parliament. The constitution also provides for the protection of the law. Institutions exist to operationalise this framework: parliament considers and approves acts, and courts uphold the protection of the law. The laws are accessible on the Internet and through the parliament.

There is a well-defined government budget process culminating in the consideration by the parliament of an annual budget appropriation bill. Taxation laws are also in place.

The Investment Promotion Act 1992 promotes foreign investment in PNG and provides clarity on how foreign investors need to operate in the economy. Numerous foreign companies operate in PNG and vary in size from small sole operators to large resource companies.

Land tenure adds a challenge to doing business in PNG. Less than 10 percent of the land is titled, and over 90 percent is subject to customary ownership. To work on customary land, businesses face complex and often lengthy negotiations with landowners. As such, new land transport infrastructure development can be very challenging. While DPs defer to the government to deal with land tenure issues, private investors could be deterred by the uncertainty customary land ownership brings.

Until 2018, government procurement was undertaken by, or under the supervision of, the Central Supply and Tenders Board. GoPNG passed the National Procurement Act in 2018, replacing the Board with the National Procurement Commission.[86] The National Procurement Act requires government departments to use different procurement processes for different contract values. For example, the Commission undertakes any procurement above PGK 500,000 on behalf of public and statutory bodies.

Under the Act, all procurement is undertaken in accordance with a process generally consistent with that used by MDBs. Added to that is a National Reservations and Restrictions clause to ensure that the procurement process favours local companies. Joint ventures with PNG companies are penalised and foreign entities are additionally penalised. The contract sizes associated with these restrictions are under review by the government and may be increased. The restrictions do not apply to donor-funded procurements.

State-owned enterprises are important in PNG's transport sector, as they run the international airport and international ports. State-owned enterprises come under the Kumul Consolidated Holdings Act

[85] Government of Papua New Guinea, *National Transport Strategy*, May 2013, 173.
[86] Government of Papua New Guinea, "Government of Papua New Guinea Procurement," May 2021, https://www.procurement.gov.pg

2015. The government is currently reviewing its policies on state-owned enterprises and the Kumul Consolidated Holdings Act with the support of ADB (the reform initiative is linked to a policy loan from ADB). Reforms will continue for the next two years. The reforms seek to strengthen the operation of state-owned enterprises by increasing the separation between political and commercial decision-making. They also seek to improve corporate governance, including the transparency of financial management and procurement.

PNG also has the Public Private Partnership Act 2014 (PPP Act).[87] As part of its support for the reform of PNG's state-owned enterprises, ADB will also help the government operationalise the PPP Act; further strengthen the PPP policy framework; and develop implementing regulations.

The laws applicable to the road, maritime and aviation sectors are described in the respective sections above.

2.6.3 Planning and budgetary processes

PNG's transport sector policy is situated within a cascading series of publicly available strategy, planning and policy documents. Documents referenced in the National Transport Strategy of May 2013 include:

- PNG Vision 2050
- Development Strategic Plan 2010–2030
- Medium Term Development Plan 2010–2030
- Alotau Accord 2012
- Millennium Development Goals

The National Transport Strategy is comprehensive, and makes clear the direction PNG will take with regard to the transport sector. It is operationalised through iterations of the Medium Term Transport Plan (current document 2019–2022) and the Medium Term Development Plan (current document 2018–2022). These lower-level documents provide guidance on projects that will be pursued within their periods.

Over a number of years, a narrative of how transport infrastructure drives and supports economic growth has been developed in PNG policy and strategy documents. In 2020, the government released Connect PNG, which articulates in one document government policy on the relationship between the transport network and economic corridors. The release of the document is recognition by the government that it needs to improve the connection between transport and economic corridors. This is needed. The World Bank PNG Economic Update July 2020 notes that PNG ranks 148 of 160 economies on the quality of trade- and transport-related infrastructure in the World Bank's Logistics Performance Index for 2018.[88]

Successive PNG governments have developed a range of medium- to long-term economy-wide and sectoral development strategies and plans, all of which propose development and maintenance of transport infrastructure. The plans have wrestled with getting right the balance between development of new infrastructure and maintenance of existing infrastructure. Emphasis on each has varied over

[87] Government of Papua New Guinea, *Public Private Partnership (PPP) Act 2014.*
[88] World Bank, "Papua New Guinea Economic Update, July 2020."

the years such that there now is imperfect policy alignment of the different plans. Connect PNG includes the development of new roads to establish a single National Road Network.

Table 2.3 Summary of key transport infrastructure planning

Strategy and planning document	Transport infrastructure goal
Vision 2050	PNG's long-term domestic development strategy contains long-term transport development goals supporting the government's service delivery objectives.
Development Strategic Plan (DSP) 2010–2030	Developed by the Department of National Planning and Monitoring (DNPM), this plan establishes development targets that must be achieved to realise PNG's Vision 2050.
Alotau Accord I & II	National strategic development plans under the O'Neill government on planned investments in PNG's missing road links along key economic corridors.
National Strategy for Sustainable Responsible Development (STARS)	DNPM-led strategy to transform PNG's economy from a brown to a green economy. It does not replace PNG's development plans but elevates within them the principles of responsible sustainable development and strategic planning.
National Transport Strategy (NTS)	Launched July 2013, the NTS is a 20-year strategy with a rolling five-year investment plan that addresses PNG's transport system. It provides an action plan for policy, institutional and infrastructure development together with a process for monitoring implementation
Medium Term Development Plan III (MTDPIII) 2018–2022	Aims to develop quality infrastructure and utilities (Key Requirement Area 2). Operationalises the higher-level DSP 2030 and Vision 2050. Aims to improve infrastructure to achieve sustainable and disaster-resilient quality to provide an enabling environment for economic growth and improvements in service delivery.
Medium Term Transport Plans (MTTPs): **MTTP 1 2014–2018** **MTTP 2 2019–2022**	MTTP 1 was a five-year short-term action plan under the overall structure of the NTS. The MTTP outlines an agenda for the development and implementation of transport policy; institutional development and capacity building; a legislative programme; and transport infrastructure investment over the first five-year period of the NTS. It also includes ongoing policy and institutional initiatives and infrastructure investment already committed or underway. MTTP 2 implements the MTDPIII in the transport sector.
Connect PNG Infrastructure Development Program 2020–2040 (Connect PNG)	This cornerstone document aims bring all PNG's transport plans together under one plan to develop economic corridors and diversify PNG's economy away from an over-reliance on mining and commodities. It will do this by improving key economic road transport network connectivity through linking the four main regions (Momase, Highlands, Southern, and New Guinea islands) by rehabilitating, upgrading and connecting missing links over about 16,000km at an estimated to cost about PGK 21 billion (USD 6.9 billion) over its 20-year implementation.
National Budgets (2021)	Consolidates all agency budget submissions including the Transport Sector Budget from the Department of Transportation, including budget submission from the Department of Works and Implementation.

2.6.4 Budget process

As noted above, PNG has a well-defined annual budget process that is run by the Treasury in conjunction with the Department of National Planning and Monitoring. Annual budgets are informed by the Medium-Term Fiscal Strategy (current one is 2018–2022).[89] The Medium Term Transport Plan 2019–2022[90] and the Medium Term Development Plan 2018–2022[91] identify the expenditure priorities of the government and early costings of large projects.

The specific process and timeline for the development of the budget each year is generally outlined with advice from the Treasury. Ideally line departments have started their budget preparations well before this.

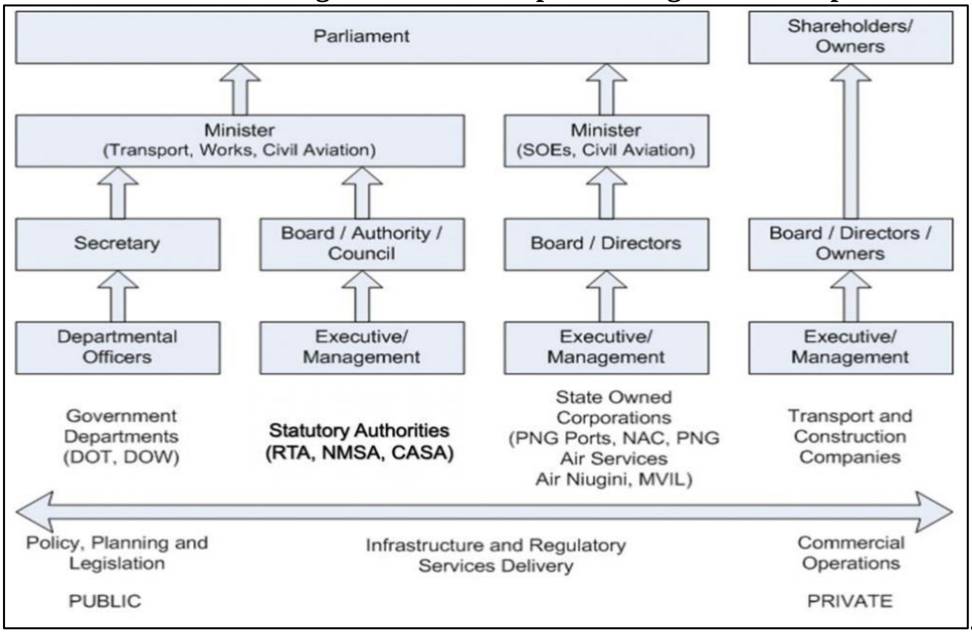
The MTTP outlines the budget process:

- The transport sector budgetary process, which is based on reforms initiated in 2013, follows a Two Stage Budget Process. This process provides for an initial list of projects to be submitted to the Ministerial Economic Committee for consideration. Subject to the Committee's direction, the progression of the projects to the second stage entails the delivery of a detailed submission within a predetermined funding envelope (i.e., capital budget ceilings for the transport sector). The capital budget ceilings for the sector are impacted by donor funding and GoPNG's revenue generation.[5]
- The allocation of GoPNG funding involves considering project readiness (land acquisition, environmental mitigation plans, planning and design studies), industry capacity, and project sequencing and packaging. These practical factors may require some priorities to be shifted forward or back, but not to a loss in integrity of the overall network strategy. Funding of emergency reinstatement, essential compliance projects and maintenance will also take precedence over upgrading and network expansion where funding is a constraint.
- At the completion of the Two Stage Budget Process, annual appropriations and a rolling five-year Budget Investment Plan are released.

Figure 2.3 depicts the government's policy and implementing agencies, as well as state-owned enterprises and private companies involved in the sector. The Department of Transport has policy leadership on transport issues. The Department of Works and Implementation has policy responsibility for road maintenance and road engineering standards. The institutional framework for the transport sector in PNG is complex and multilayered. Beyond the central and line departments at the economy level, there are state-owned enterprises, roads authorities, provincial and district level governments, donor agencies and private-sector service providers (Table 2.4).

[89] Charles Abel, "Medium Term Fiscal Strategy Paper 2018–2022" (Presentation for 2018 National Budget, 28 November 2017).
[90] GoPNG, "Medium Term Transport Plan and National Transport Summary," 2019.
[91] Department of National Planning and Monitoring, Papua New Guinea, "Medium Term Development Plan III 2018–2022" (Port Moresby: Department of National Planning and Monitoring, 2018).

Figure 2.3 Institutional arrangements for transport management in Papua New Guinea



CASA=Civil Aviation Safety Authority; DOT=Department of Transport; DOW=Department of Works and Implementation; MVIL= Motor Vehicles Insurance Limited; NAC=National Airports Corporation; NMSA=National Maritime Safety Authority; PNG=Papua New Guinea; RTA=Road Transport Authority; SOE=state-owned enterprise,
Source: PNG National Transport Strategy 2013

Table 2.4 Policy, planning, regulatory and funding organisation of the PNG government

Agencies	Transport sector role
Department of Prime Minister and National Executive Council (PM&NEC)	Assesses and endorses all transport policy proposals that are submitted to the government of PNG (GoPNG).
Department of Treasury	Screens, approves and coordinates the budget allocations for the transport sector, consistent with GoPNG's fiscal strategy.
Department of National Planning and Monitoring (DNPM)	Responsible for the central government development budget via the public investment program (PIP). Approves all transport sector budget submissions that are part of the PIP. Under the PPP Policy and Act, DNPM is to lead the development of the National PPP Infrastructure Pipeline.
Department of Transport (DoT)	Lead transport agency responsible for transport infrastructure policy, planning and regulation, and for the compilation of the annual development budget from the submissions of the modal transport agencies. DoT chairs the Transport Sector Coordination, Monitoring and Implementation Committee (TSCMIC), established in 2006 to coordinate and facilitate planning across the 12 transport sector agencies.
Department of Works and Implementation (DoWI)	Responsible for managing domestic roads and bridges, including the planning and management of all construction and maintenance works. Lead agency for the implementation of Connect PNG, which aims to construct the missing links in the National Road Network.

Transport Sector Coordination, Monitoring and Implementation Committee (TSCMIC)	The National Executive Council established this decision-making body for the transport sector in 2006. All transport sector agencies are members and meetings are also attended by DPs. TSCMIC aims to improve agency coordination and planning of transport services and is chaired by the Secretary of the Department of Transport, Roy Mumu.
Kumul Consolidated Holdings Limited (KCHL)	KCH is a state-owned enterprise (SOE) that holds in trust the government's non-petroleum and non-mining assets. KCH is the holding company for nine SOEs, including Air Niugini, Motor Vehicles Insurance Limited (MVIL) and PNG Ports Corporation Limited (PNGPCL).
Provincial and local level governments (LLGs)	Responsible for the development of provincial and district development plans, and for some projects (rural roads and airstrips) funded by the central government.

As mentioned above, the Transport Sector Co-ordination, Monitoring and Implementation Committee is the whole-of-transport-sector coordinating body for the government and donors. In the past, the Committee played an important role in improving funding for the sector and coordinating capacity-building efforts. It had been less active in 2020 in part due to the COVID-19 pandemic. Reinvigoration of the Committee is a priority of the Department of Transport leadership team.

The Department of Transport and the Department of Works and Implementation are members of a number of other bodies supporting coordination across the government. At the highest level, the secretaries of Transport and Works are members of the Central Agencies Coordinating Committee, the deliberations of which inform those of the Cabinet. The National Transport Strategy also anticipates that a new intergovernmental service delivery mechanism (ISDM) being developed by the Vision 2050 Development Centre will assist in the harmonisation of the three tiers of planning and service delivery. This will be important for aligning the transport plans of the central government with that of provincial governments.

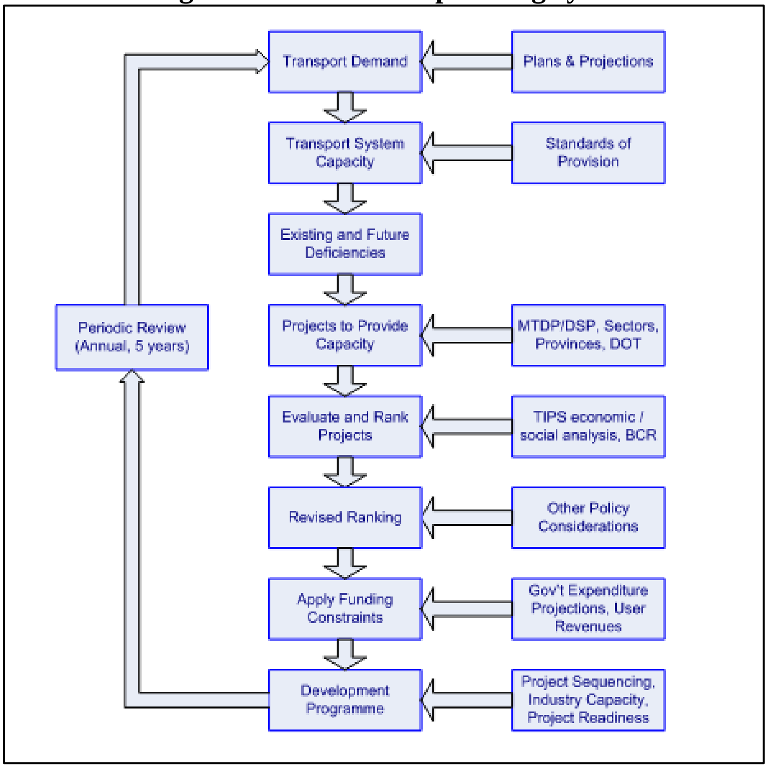
An infrastructure working group has been established by the government, in part to oversee the implementation of Connect PNG. The review team has discussed with GoPNG colleagues the value of this group including DPs.

2.6.5 Policy effectiveness

Policy effectiveness, or the effectiveness of the implementation of policy is variable. Much of the economy's high-level policy needs further definition in the form of process guidelines and regulation in order for it to be effectively implemented.

In terms of planning and process management, the National Transport Strategy details an investment planning cycle for developing the list of transport infrastructure projects to be pursued (see Figure 2.4).

Figure 2.4 Investment planning cycle



BCR=Business Case Review; DOT=Department of Transport; DSP=Development Strategic Plan; TIPS=Transport Investment Prioritisation Study
Source: National Transport Strategy 2013, Fig. 30.

The process appears to largely follow quality principles but could be significantly strengthened with the more rigorous Gateway Review Framework approach. This section of the National Transport Strategy is written in the future tense, making it unclear how much of the process outlined actually occurs. Adding rigour to the process from project concept to implementation and evaluation using an evidence-based Investment Management Standard and the Gateway Review process will improve the quality processes regarding infrastructure investments. The Investment Management Standard arose in the United Kingdom following several major infrastructure investments that failed to deliver the expected benefits to the community. The Standard is grounded on three principles: the best way to pool knowledge is through an informed discussion that brings together those people with the most knowledge of a subject; the investment story is best depicted on a single page using language and concepts that can be understood by a lay person; and, each investment should have clearly defined benefits that align with the outcomes the organisation is seeking.[92]

As part of the Investment Management Standard, the Gateway Review process was introduced to project management. The process has six 'gates', with each gate a stopping point during the lifecycle of a large investment to ensure every element has been considered.

The Investment Management Standard and the Gateway Review process has been adopted by many governments and large investment organisations, such as the International Monetary Fund (IMF). The Gateway Review process can be modified by organisations, but largely follows the format in

[92] State Government of Victoria Department of Treasury and Finance, "Investment Management Standard," accessed July 2021, https://www.dtf.vic.gov.au/infrastructure-investment/investment-management-standard

Table 2.5. For a comprehensive overview of the Gateway Review process as implemented by the Victorian Government Department of Treasury and Finance, refer to Appendix D.

Table 2.5 Summary of the 'gates' in the Gateway Review process

Gate 0	Concept and Feasibility	Defining the concept that the investment is seeking to address
Gate 1	Business Case / Proposal	Does the business case demonstrate the need and a clear pathway for investment?
Gate 2	Readiness for market	Preparation for procurement and deciding upon procurement methodology (e.g., public–private partnership (PPP))
Gate 3	Contract award / tender decision	Outcome of the tender or procurement process and awarding of the contract
Gate 4	Readiness for service	Preparing to commence utilisation of the programme / building, etc.
Gate 5	Benefits analysis	At 12 months post-implementation to ensure the anticipated benefits of the project have been achieved

If done well, the Gateway Review Framework allows for the capture of all of the elements of whole-of-life infrastructure planning including lifecycle costs, economic benefits, social and environmental impacts, lifecycle and asset management planning, and appropriate infrastructure maintenance models. The Gateway Review Framework approach will allow for lifecycle costs such as maintenance to be included in forward budget estimates.

Infrastructure planning has a horizon greater than budget planning. While budget forward estimates look out four years, infrastructure planning goes out to 2050. Long-term infrastructure planning like Connect PNG looks past current budget timelines.

The Investment Management Standard and the Gateway Review Framework are appropriate for ensuring projects achieve defined strategic, social, environmental, economic and financial objectives. Its use would help focus decision-makers and ensure projects meet existing rules, regulations and success criteria prior to proceeding to the next stage of planning.

The framework does not seek to replace or replicate existing processes and procedures. Instead, it helps focus decision-makers, provides independent technical appraisal, and strengthens transparency and accountability at key stages of a project. All policies, processes and priorities are assessed along the route, to ensure that a project does not go off-track. In this way, the Gateway Review Framework brings to life existing PNG policies, procedures and priorities in a practical manner. This mirrors many internal approval processes used by DPs. However, it is intended instead to support GoPNG in developing and leading their own project pipeline.

A paper by the IMF Fiscal Affairs Department titled 'Mastering the Risky Business of Public-Private Partnerships in Infrastructure' observes that governments need to strengthen infrastructure governance in the whole public sector, from procuring agencies to monitoring agencies. The critical governance elements that governments should have in place to manage the fiscal costs and risks from PPPs include: (1) a Gateway process governing the preparation and procurement of PPP projects with the Ministry of Finance playing a strong role; (2) a proactive fiscal risk management function (for

PPPs) in the Ministry of Finance; (3) budgeting, accounting and reporting standards and practices that ensure fiscal transparency regarding PPPs; (4) an enabling legal framework that is clear and consistent.[93]

In the context of PNG, an Investment Management Standard and Gateway Review Framework process has been identified as a critical component of a more transparent and sustainable model that directly addresses the challenges PNG experiences in advancing projects through its current internal processes.

The establishment of an Investment Management Standard and Gateway Review Framework process would take time and would need to be implemented and linked to current GoPNG infrastructure project planning and the new PNG PPP Centre as the centre is required to 'review and evaluate proposals for projects and advise the PPP Steering Group on identifying if public private partnership is the most appropriate means of implementing a project'.[94] Since the Gateway Review process is designed to provide an independent assessment of the completeness of project planning at defined decision-making points and to evaluate whether a project can proceed to the next phase, it could potentially be used to trigger the release of GoPNG and donor development and/delivery funding.

There are a number of online training courses available to upskill a core group of individuals that can form the first Gateway Review team in PNG. The Gateway Review team does not need to have individuals with transport or road experience, but they must be experienced in large infrastructure projects and the Gateway Review process (hence the training).

This foundation team could undertake a review of several sample projects with support from the APEC economies. Over time, additional persons could be trained and the APEC economies could support, with technical advice, the establishment of a PNG gateway review capability that could eventually become an established function of government consistent with international best practice.

The process itself is not complex and is structured such that it enhances rather than hinders the project planning process, by providing a framework for independent review of large-scale procurements. An oversight group, similar to the PPP Steering Group, could be the body responsible for qualifying and managing the Gateway Review process and for ensuring that project or programme teams respond to the recommendations. See Appendix D for a list of online resources.

An oversight group, such as the PPP Steering Group, could be the body responsible for the Gateway Review team and for ensuring that the project or programme responds to the recommendations.

Budgeting. Priority projects are included in the multi-year Medium Term Transport Plan and Medium Term Development Plan. Connect PNG lists a subset of these projects. The budget process outlined above anticipates the development of a budget based on data and contestation of ideas within an agreed framework. The Medium Term Transport Plan notes that as a result of the process, transport projects receive less funding in the budget than the amounts submitted. This is not unexpected, and a function of the Treasury and other central agencies needing to balance the total expenditure envelope with government priorities.

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[93] Manal Fouad et al., "Mastering the Risky Business of Public-Private Partnerships in Infrastructure" (International Monetary Fund 2021).
[94] Government of Papua New Guinea, *Public Private Partnership Act* 2014, p. 10, no. 30.

Of greater concern is the finding from a 2019 PwC report for GoPNG on the transport sector and its funding needs. The report found that a large number of unsolicited projects received funding through the budget process. In practice, this means that fewer bankable projects are funded, as projects identified through the transport investment planning cycle receive reduced funding at the expense of projects whose economic internal rates of return (EIRR) or financial internal rate of return (FIRR) have not been rigorously tested. The internal rate of return (IRR) is often used by managers and practitioners to inform investment decisions, in particular, is there an economic and/or financial benefit realised by the investment? The IRR assessment is an appropriate criterion for gateway and executive reviews of projects at the concept, scoping and design stages. It was observed that its use in PNG is currently limited to DP and MDB investments.

Project economic analysis and financial evaluation both involve the identification of project benefits and costs during the years in which they occur and converting all future cash flows to their present value using the technique of discounting. For PNG, the minimum benchmark for EIRR and FIRR is not clear and does not regularly factor into the financial evaluation.

Three issues arise from this:

- The mechanism to validate the long-term viability of an investment for both financial and economic benefit is not in place.
- There is a need to improve buy-in to the transport priorities identified through the detailed Department of Transport process.
- There needs to be government policy and regulations for dealing with unsolicited proposals.

The Medium Term Transport Plan also notes that, in the past, budget allocations have not been fully appropriated to line agencies. Moreover, appropriations are not fully expended by line agencies.

Funding and financing infrastructure. Transport infrastructure financing comes from both internal and external financing sources, including:

- GoPNG budget and general taxation from the Internal Revenue Commission
- Fees, charges, licensing, and other regulatory charges levied by statutory authorities and state-owned enterprises
- PPPs, leveraging private-sector financing to deliver essential services in the transport sector
- Grants and loans from DPs, bilateral, development and commercial banks.

Significantly sized loans for transport infrastructure affect the economy’s domestic debt levels. While not a direct focus for this study, the World Bank recommends in its Update that:

> [a] framework is needed to determine fiscally responsible funding amounts from the government to the transport sector, taking into consideration current and future financial commitments. It is also important to monitor which future revenue streams are used to secure DP loans so that the government does not overcommit to lending that it will be unable to service in the future.

To sum up, government resources are insufficient for the transport infrastructure projects across the economy, even if they were allocated better. DPs have to date focussed on supporting maintenance programmes for good reason. Some DPs may extend beyond maintenance in the future. There may be loans (with appropriate checks in place for them to be deemed fiscally responsible) through the Australian Infrastructure Financing Facility for the Pacific for new roads, and if preparatory programmes work well also possibly through the ADB. Financing from local sources, and in particular PNG superannuation funds, remains a possibility if bankable projects are developed. In the absence of demonstrable improvements of the elements of quality infrastructure, foreign sourced funds remain a possibility only for particularly bankable projects developed with support of organisations like the International Finance Corporation (IFC) and ADB.

Coordination. The need for coordination extends beyond the policy environment. Indeed, it is even more pertinent to effective implementation of policy. For example, better budget outcomes for the transport sector as a whole are achieved when different transport agencies work together for the whole sector and economy. Coordination amongst PNG agencies could also be improved by removing ambiguity in responsibility between different bodies.

Coordination has an added level of complexity as it is also needed between levels of government. Significant transport infrastructure, and particularly roads are not central government assets, and funded largely through the Local Level, District and Provincial Service Improvement Programs. These programs accounted for over 13 per cent of total PNG Government expenditure in 2020. [95]

2.6.6 Public–private partnerships

Private investment and PPPs. The APEC Guidebook on Quality Infrastructure Development and Investment notes that ‘private entities participate and/or finance projects after careful assessment of project profitability and risks associated with the target project. Investment decisions are often made by referring to the following indicators: Financial internal rate of return (FIRR); Equity internal rate of return (EIRR); Net present value (NPV); Payback period.

Private entities require higher margins and a shorter payback period for participating in projects with higher risk. Consequently, government agencies need to carefully consider risk allocation between public and private entities, and the anticipated revenue stream. In particular, economies with higher political/economic risks are required to ensure robust revenue streams and provide significant government support including guarantees.

Similarly, private entities participating in their first PPP project in economies with various uncertainties require higher returns than subsequent projects with proven track records of PPP projects in the economy. A golden rule of risk allocation is that ‘the risks should be allocated to the party that is best able to manage them’.[96]

As mentioned earlier, ADB will support PNG in operationalising the PPP Act. The Act enables the establishment of the PPP Centre to assist in the development, tendering and implementation of PPPs. To date, ADB has provided policy guidance and support in drafting the legislation, which is part of wider reforms to increase private investment in the delivery of infrastructure services. Going forward, ADB will support plans to establish the PPP Centre and develop a PPP project pipeline. ADB’s ongoing assistance is funded partly through its Pacific Private Sector Development Initiative (PSDI),

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[95] Fredrick Guande, “Better Monitoring Needed to Transform Slush Funds into Development Funds in PNG,” Devpolicy Blog, 22 September 2020, https://devpolicy.org/better-monitoring-needed-to-transform-slush-funds-into-development-funds-in-png-20200922/

[96] Ministry of Economy, Trade and Industry, Japan, “APEC Guidebook,” 22.

a regional technical assistance facility co-financed by ADB, the government of Australia and the New Zealand government. The development and passing of the Act took more than five years.[97]

The government has been slow to operationalise the Act. It was not gazetted until 2018. The point of responsibility for PPPs within the government has bounced between Treasury, Finance and National Planning and Monitoring, landing most recently in the latter department. However, the Treasury has asked the government to review the decision. The PPP legal framework was designed to fit into the Treasury's fiscal mandate as the framework seeks to ensure that projects identified for investment are affordable and an appropriate fit for the overall investment envelope within fiscal policy. The government, with the support of ADB, will need to consider if the Act could be improved, and the regulations needed to operationalise it. The government will also need to resource a unit in National Planning and Monitoring if it is going to drive the development of PPPs in PNG.

An important feature of a PPP transaction is the appropriate distribution of risk between public and private partners. Careful risk planning and allocation is critical to highlighting the efficiency benefits of private-sector involvement and is a key value proposition in a PPP arrangement. A significant motivation for government investment in PPPs is the assumption that PPPs deliver greater value for money than a conventional delivery method.

In a conventional delivery model, the long-term risk is retained by government. In a PPP, the government is able transfer appropriate risk to a private partner, whereas private partners enter into PPP arrangements based on the commercial opportunities they present.

Anecdotally, the review team heard that the PPPs negotiated to date have not delivered as much benefit as they could have, in part because of the lack of a process, which has led to ad hoc approaches and low probity. As such, potential PPPs fell short of the vision for a shared risk option.

The ADB Public–Private Partnership Monitor for PNG identifies various PPP projects developed in PNG. They include the Port Moresby diesel-fired plant in 1996 and the potable water treatment plant by PNG Water Limited in 1997, both of which reached financial closure long before the introduction of PNG's PPP Policy and PPP Act. Both projects involve state-owned enterprises and foreign investors.

There are also several proposed PPP projects, including the Ramu II hydroelectric power plant project by PNG Power Limited; the Lae Port Expansion Project; and the Port Moresby (Jacksons) International Airport development. These projects are at various stages of preparation. In late 2017, a PPP contract was signed for the Lae Port Expansion Project (stevedoring services only). In November 2019, the Port Moresby Power Station was commissioned. From 1990 to 2019, six PPP projects have reached financial closure with there being no notable transport infrastructure project delivered under a PPP model.[98]

The Lae Port Expansion Project was to be funded with an ADB loan and was to be procured as a construction upgrade and 25-year concession PPP. In 2017, the ADB's involvement ceased and the project transitioned to PNG Ports Corporation taking on lead procurement of a 25-year terminal

[97] ADB, "ADB Welcomes New Public–Private Partnership Act in PNG," 8 September 2014, https://www.adb.org/news/adb-welcomes-new-public-private-partnership-act-png
[98] ADB, "Public-Private Partnership Monitor: Papua New Guinea," Ch. 11.

operating agreement to operate the Motukea and Lae ports. In 2017, the ADB noted with regard to Phase I of the project:

> [The] project rated less than effective in achieving its outcomes. It did relieve port capacity constraints, and it will eventually catalyse industrial and commercial development in the port area and hinterland. At appraisal, it was envisioned that the new facilities would be operated under a PPP approach, but this has not yet materialized.[99]

Given the difficulties associated with Phase I construction, it is understandable that in 2017 the PPP component was focused on the provision of services rather than the risk associated with construction.

It is unclear in the investment planning cycle at which point projects are considered for further development in partnership with the private sector. Better processes would lead to partnerships that are negotiated for bankable projects, entail properly considered risk and are better procured. The gateway review framework would be a suitable tool to support this, as it could be employed to consider both PPP and non-PPP financing models as a project comes to fruition.

This need not be an unduly difficult exercise. PNG's Department of Transport has considered PPP guidelines in the past. The guidelines could be enhanced with support from the ADB PPP Centre in Manila and the Pacific Private Sector Development Initiative.

There is likely to be a return from improving the PPP process. There is potential for increased private-sector investment, including PPPs, particularly of unsolicited (off-plan) projects. The aviation and maritime sectors have most potential to generate adequate revenues with increased domestic passenger and freight traffic. When the slowdown in air traffic is reversed as the COVID-19 pandemic is brought under control, rising revenues from Jacksons Airport will once again make it a viable PPP option. While this may be a year away, the preparatory work that has been done to date on this project with ADB support should allow it to move forward relatively quickly. PNG has also identified Wewak and Vanimo wharves as potential candidates for PPPs.

There is less potential in road PPPs. Improved private funding for roads, however, is envisaged under the new Road Act through registration and road user charges.

2.6.7 Procurement

Anecdotally, the Central Supply and Tender Board has a record of slow procurement. There were probity questions surrounding a number of procurements that it managed. Civil society has raised concerns over the procurement effectiveness of the government. PNG scores poorly in Transparency International's Corruption Index. It scored 27/100 in 2020 and ranked 142 out of 180 economies. The ranking has improved slightly since 2012.

The review team heard that the National Ports Corporation has been slow to establish itself as an effective organisation. Procurement continues to lag. Lack of timeliness in procurement, contracting and approvals in the transport sector impacts not only project delivery but also on-budget execution.

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[99] ADB, "ADB Completion Report, Papua New Guinea: Lae Port Development" (Manila, ADB: April 2017).

It is not clear to the review team that further revision of legislation will improve the effectiveness of the organisation.

2.6.8 Safeguard management

An effective safeguard policy seeks to minimise and/or mitigate governance, environmental and social risks in projects. The National Transport Strategy and broader PNG legislation recognises the importance of safeguard management in planning, but GoPNG has limited capability and capacity to self-regulate their own transport infrastructure projects.

The DP sector will be critical in assisting GoPNG to improve in this area. DPs working in the transport sector with PNG institutions are generally strong on safeguards management, and projects funded by DPs are generally cognisant of the value of safeguards to improving the quality of infrastructure. Over many years, DPs have worked with GoPNG to develop practice guidelines and it is understood that more will be developed in the coming years. The ongoing involvement of DPs will be critical to ensuring PNG shows continual improvement in the areas of social and environmental sustainability, fraud and corruption, and effective and sustainable PPP delivery.

Given PNG’s limited experience with transport infrastructure sector PPPs, it is difficult to determine how safeguard measures will influence the investment decisions. It is assumed that larger PPP investments will involve MDB and DP partners. Their involvement will contribute to ensuring GoPNG understands how safeguards should be applied to publicly funded projects including PPP.

3. COMPARING AND CONTEXTUALISING RESULTS

There is much to learn from other APEC economies and economies in the region. Two perspectives are considered in this report:

- *What can be learned from benchmarking studies of comparable economies.*
- *What can be learned from a successful public–private partnership (PPP) in an economy in the region that is facing similar issues to PNG.*

Two economies – the Philippines and Timor-Leste – illustrate these two perspectives. The Philippines was selected due to the successful implementation of its PPP Center. Timor-Leste was chosen as a comparable economy with many of the same infrastructure planning and execution issues as PNG. It had also successfully progressed a PPP at Tibar Bay Port as part of its effort to improve its connectivity with its trading partners.

3.1 BENCHMARKING STUDIES

A number of studies exist for measuring how economies compare in terms of the conduciveness of their policy, regulatory and implementation environments for infrastructure and PPP development. The World Bank's Benchmarking Infrastructure Development (2020) and the Infrascope Index by the Economist Intelligence Unit are particularly pertinent here.

3.1.1 Benchmarking Infrastructure Development (World Bank)

The World Bank's Benchmarking Infrastructure Development 2020 assesses the regulatory frameworks for PPPs and traditional public investment, in particular, the ability 'to prepare, procure and manage infrastructure projects'.[100] It relies on the collection of data that allows the benchmarking of the applicable regulatory frameworks. Table 3.1 describes the focus areas for its assessment of PPPs. The indicators used in the assessment could form the basis for regulatory reform.

[100] World Bank, "Benchmarking Infrastructure Development: Public–Private Partnerships Methodology," April 2021, https://bpp.worldbank.org/methodology?survey=PPP

Table 3.1 World Bank assessment: Focus areas

Regulatory Framework and Institutional Arrangements for PPPs	Overall assessment of the regulatory and institutional framework governing PPPs: existence of the specific PPP laws and regulations, role of the PPP units and the Ministry of Finance, etc.
Preparation of PPPs	Assessment of the preparatory activities taking place prior to launching procurement of a PPP project
Procurement of PPPs	Assessment of activities and requirements for the selection of a private partner
PPP Contract Management	Assessment of activities and contractual provisions that have an impact on implementation of a PPP project after contract award
Unsolicited Proposals	Assessment of the specific regulatory issues when dealing with unsolicited proposals for PPPs

Source: World Bank, "Benchmarking Infrastructure Development: Public–Private Partnerships Methodology," April 2021, https://bpp.worldbank.org/methodology?survey=PPP

3.1.2 Infrascope Index (Economist Intelligence Unit)

The Infrascope Index is a benchmarking tool developed by the Economist Intelligence Unit that evaluates the capacity of economies to implement sustainable and efficient PPPs in key infrastructure sectors, principally, transport, electricity, water and solid waste management. It aims to help policymakers identify the challenges to private-sector participation in infrastructure that, if overcome, could unlock the power of PPPs and support the broader development agenda.

The index evaluates readiness and capacity by dividing the PPP project lifecycle into five components (Economist Intelligence Unit, 2018):

- *Enabling laws and regulations*: Policies and guidelines that support government agencies, the sponsor market and financial institutions, and set stable expectations for the PPP implementation process.
- *Institutional framework:* Organisational structures and systems through which regulations and policies are designed and enforced.
- *Operational maturity:* Central and sub-domestic experience delivering PPPs.
- *Investment and business climate*: Measures the business, political and social environment for investment in general, not just PPP projects.
- *Financing*: Factors that affect financing access and risks for PPPs.

3.2 ANALYSIS

The World Bank and Infrascope benchmark use similar indicators and provide consistent assessments of the economies (Tables 3.2 and 3.3). The scores suggest that high-income economies generally do better at the metrics than lower income economies. High-income economies typically have what the Economist Intelligence Unit's scoring scheme deems as 'mature' systems and approaches in place. By contrast, most developing member economies are in the 'developed' category, and PNG is classified as 'emerging'.

More detailed analysis shows that higher income economies get better scores for preparation and dealing with unsolicited bids. The World Bank has also benchmarked traditional procurement indicators. Economies with good ability in traditional procurement are also stronger performers in the more complex space of PPPs.

Table 3.2 Benchmarking using World Bank data and scoring

	Papua New Guinea (PNG) (Lower middle income)	**Timor-Leste** (Lower middle income)	**The Philippines** (Lower middle income)	**Lower middle income average**
Overall	**33**	**40**	**77**	**52**
Preparation	32	20	79	40
Procurement	31	57	58	56
Contract management	36	50	94	63
Unsolicited Proposals	33	33	75	51

Note: Based on PPP Thematic Scoring.
Source: World Bank, "Benchmarking Infrastructure Development," accessed February 2021, https://bpp.worldbank.org/economy/PNG

Table 3.3 Benchmarking using Infrascope (Economist Intelligence Unit) data and scoring

Series	**PNG**	**Timor-Leste**	**The Philippines**
Overall score	**30**	**46**	**75**
(1) Regulations	27	64	85
(2) Institutions	0	73	94
(3) Maturity	31	35	58
(4) Investment & Business Climate	60	36	81
(5) Financing	28	26	68

Note: Score classification: mature (80–100); developed (60–79): emerging (30–59); nascent (0–29).
Source: Economist Intelligence Unit, "Measuring the Enabling Environment for Public–Private Partnerships in Infrastructure," accessed February 2021 https://infrascope.eiu.com/

3.3 SELECTED CASES

3.3.1 Tibar Bay Port in Timor-Leste

At the time of the Benchmarking Infrastructure Development review, Timor-Leste had reached financial closure of one PPP: Tibar Bay Deepwater Port. The port is managed through the Public–Private Infrastructure Advisory Facility, a multi-donor funded organisation established to help developing-economy governments strengthen policies, regulations and institutions that enable sustainable infrastructure with private-sector participation. The Public–Private Infrastructure Advisory Facility had previously worked in PNG providing support to the Private Sector Participation in Sustainable Hydropower Development project. The focus of the project was on moving the PNG government and its power utility toward a low-carbon growth path and on increasing access to electricity through private-sector participation in hydropower development.[101]

The Tibar Bay Port project aims to replace the existing congested and unsafe facilities with a state-of-the-art port built to meet the economy's long-term needs. The winning bidder, the Bolloré Group, a diversified international company focused on transportation and logistics, won a 30-year concession through a transparent international tender.

Bolloré will invest an estimated USD 360 million over the 30-year concession, with the government contributing USD 129 million. IFC was the government's transaction adviser, helping to structure

[101] Public–Private Infrastructure Advisory Facility, "Website," April 2021, https://ppiaf.org/about-us

and bid out the transaction, and then providing post-transaction support for a two-year period through to financial close.

Several factors have contributed to the success of this transaction. The government of Timor-Leste was serious about executing a world-class project. It provided strong political leadership and set up the institutional mechanisms needed to follow through on this commitment. It established a PPP Unit within the Ministry of Finance that has a clear mandate to facilitate PPPs in the economy as well as a Project Management Unit. In addition, legislative changes made the environment more hospitable toward PPPs, and the port specifically.

The government also recognised that it lacked capacity in key institutions, and worked closely with IFC to address this. IFC worked with multiple government structures, from line ministries through to the Cabinet. This strengthened the government's ability to manage the complex PPP development process.

In a low-capacity environment, results may take more time than usual and capacity development needs to be part of the solution. IFC adapted its advisory tools to provide support over an extended seven-year timeframe, covering multiple phases of concept development, transaction structuring, tendering and financial close.

Effective strategic communication helped to build awareness and understanding of the project with local communities, civil society and parliament. Communication provided transparency and maintained support for the deal.

The project structure was carefully designed to balance the interests of the government and potential private-sector investors. Issues such as exclusivity, termination and handover after the 30-year period required careful consideration.

Key lessons for PNG include the value of having a high-profile successful PPP associated with its economy, the need for strong and ongoing political will to progress the PPP, that these types of projects take significant amounts of time, and how to make the most of organisations like the IFC to achieve the aim.

3.3.2 PPP Center in the Philippines

The Philippines economy is presented here as an example for other economies, having come a long way in a relatively short period of time. When PNG passed its PPP legislation in 2014, the Philippines PPP Center was new, with just a few projects in its pipeline. Seven years later, it has a significant portfolio of projects under consideration, being procured, or having been procured; and it is well positioned to further strengthen its processes across the elements of quality infrastructure.

The success of the Philippines PPP Center is in part due to DP investment in a technical assistance (TA) programme. The benefits of investing in long-term capacity building in the Philippines has been acknowledged by the ADB. According to Mr Kelly Bird, Country Director of the ADB Philippine Country Office,

> The TA has been hugely successful. And if we look at some of the results, we know that the PPP Center assisted over 20 [awarded] projects worth USD 21 billion. The Project Development and Monitoring Facility (PDMF) has assisted 12 [awarded] projects worth over USD 2.9 billion. And on anyone's calculation, that's a huge rate of return on this

> technical assistance. It helped to improve/contribute to addressing the infrastructure gap. It also created incomes and employment for hundreds of thousands of Filipinos …[102]

The success of the TA investment is highlighted by a comparison of the improved Philippine performance as reported in Infrascope. A comparison of the index scores for PNG; the Philippines; and Timor-Leste highlights the benefits of long-term investment in capacity building (Table 3.4). Between 2011 and 2018, the Philippines' score improved even as PNG's regressed. Timor-Leste was newly assessed in 2018 with mixed results. [103] The results suggest that there is benefit to sustained investment in capacity building so long as the partner economy is interested in improving their performance.

Table 3.4 Infrascope index for PNG; the Philippines; Timor-Leste, 2011, 2014 and 2018

	PNG		**Philippines**		**Timor-Leste**	
	Score (/100)	**Rank**	**Score (/100)**	**Rank**	**Score (/100)**	**Rank**
2011	20.8	16/16	47.1	8/21	No assessment	No assessment
2014	33.5	17/21	64.6	7/21	No assessment	No assessment
2018	28	19/19	81	2/19	44	17/19

3.4 LESSONS FOR PNG

For the PNG economy, there are a number of takeaways. The bedrock of good infrastructure development is quality processes from concept through to planning, procurement, operationalisation and evaluation. Economies with quality practices along the entire infrastructure development process are in the best position to pursue PPPs.

Preparation processes are important for establishing a pipeline of bankable projects, which is a pipeline of projects that provide real economic returns, and which may be traditionally procured or result in a PPP.

The World Bank suggests that PNG needs to deal rigorously with unsolicited proposals:

> [P]roper regulation of unsolicited proposals is required to ensure that they are pursued transparently and for the right reasons … [d]uring preparation, sound project appraisal is key to bringing quality projects to the market. …. For more PPP-specific assessments (such as fiscal affordability, risk analysis, value for money, etc.) around three quarters of the economies require them but only half of the economies have the methodologies to ensure effective and consistent evaluation.[104]

There would be value in PNG operationalising a PPP centre. PPP centres can have a variety of functions. Most are advisory and are not directly involved in procurement. PPP centres may, however, provide advice on procurement options beyond traditional procurement techniques. Use of more sophisticated procurement approaches demands a mature procurement system.

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[102] Public-Private Partnership Center, the Philippines, "Successful 10-year Australian PPP Assistance to the Philippines Completed," 25 March 2021, https://ppp.gov.ph/press_releases/successful-10-year-australian-ppp-assistance-to-the-philippine-completed-2/
[103] Economist Intelligence Unit, "Evaluating the Environment for Public-private Partnerships in Asia: The 2014 Infrascope" (Economist Intelligence Unit, 2014); Economist Intelligence Unit, "Evaluating the Environment for Public-private Partnerships in Asia: The 2018 Infrascope" (Economist Intelligence Unit, 2018).
[104] World Bank, "Papua New Guinea Economic Update, July 2020."

Comparing PNG with the Philippines and Timor-Leste using the Economist Intelligence Unit database, PNG is weak with regard to its regulatory environment, including in terms of procurement, particularly with the absence of a PPP centre. Pursuing and successfully implementing a small number of PPPs will give it experience and demonstrably indicate its readiness to move forward in this space.

4. PAPUA NEW GUINEA: CONTEXTUAL CHALLENGES

4.1 PNG BUDGET 2021

PNG's mining boom doubled government revenue from 2004 to 2014, but PNG is now in a post-boom environment.[105] The PNG budget has been hit hard by a range of factors, and revenue has dropped substantially. Factors impacting the PNG Budget include:

- Decline in PNG's terms of trade (fall in oil and gas prices, increase in gold prices)
- High and increasing expenditure on public service personnel emolument
- Impact of the COVID-19 pandemic on tax revenues and the diversion of scarce resources to expenditure on response and remediation
- 2018 Highlands Earthquake recovery expenditure
- Closure of the Porgera Gold Mine, temporary closure of Ok Tedi, low output from Lihir Gold Mine and delays to the Wafi-Golpu Mine

As a result, Deloitte forecasts that PNG's economy will contract by 3.8 percent in 2020.[106] The Transport Sector Support Program notes thus:

> In the budget papers for Budget 2021, the government has vowed 'consolidation for growth' and to chart a course of fiscal responsibility going forward by reducing the deficit. The transport sector will receive PGK2,149.4 million in 2021, or 11 per cent of the total spend up from 7 per cent in 2020 with significant support from developing partners (refer below). This good news is tempered with the need to catch up from years of underinvestment. When considered as a proportion of GDP, transport expenditure has fallen from 2.6 per cent in 2015 to 0.8 per cent in 2022.[107]

4.2 COVID-19 IMPACT

Beyond the government budget, the COVID-19 pandemic has had a big impact on parts of the PNG economy, debt levels and budget revenue. In the transport sector, Air Niugini and PNG Air are experiencing significant, worsening and unsustainable financial arrears and difficulties and need substantial financial support from the government and donors.

In short, the current economic environment faced by PNG limits its ability to invest and increases the need to pursue only those projects that deliver the highest economic rates of return. Where there is strong and consistent political will, a small number of PPPs will be in the mix if the projects pursued are all bankable.

4.3 LESSONS FROM THE POLICY FRAMEWORK

The framework for delivering quality infrastructure is largely in place. High-level policy is generally clear and well-argued and PNG has a working legal system that allows for tender and contract

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[105] GoPNG, *2021 National Budget*.
[106] GoPNG, *2021 National Budget*.
[107] PwC, "Transport Sector Funding in PNG: The Current Landscape" (Government of Papua New Guinea's Transport Sector Co-ordination, Monitoring and Implementation Committee, 2019).

management. PNG has a well-articulated budget process and investment opportunities are available for foreign companies.

However, in places, policy is inconsistent. For example, foreign exchange movement is difficult in an economy that relies on foreign direct investment (FDI) but also places barriers to FDI. The US Department of State in their 2020 Investment Climate Statements on PNG observes that 'PNG reaffirmed its openness to trade and investment, [and] is stepping up reforms to recover from high debt levels, and seeks to attract more foreign direct investments (FDIs) to stimulate its economy.' It goes on the say that while 'PNG does not have any specific policy or law that promotes discrimination against foreign investors … the Foreign Investment Regulatory Authority Bill 2018 (FIRA Bill) prompted serious concern from businesses that foreign investments would be disadvantaged'. [108]

The legal, policy and budgetary framework is, however, insufficient to allow the transport sector to deliver quality transport infrastructure. PNG faces a number of challenges in addressing this. In essence, PNG has too much flexibility. On the one hand, it has flexibility that inhibits long-term planning and the efficient progression of projects, and on the other, it has flexibility that allows leaders to make decisions without full information.

Broken down, the issues are as follows;

- Policy and legal frameworks are not supported sufficiently with regulation to guide, strengthen and make consistent processes.
- Application of rigour along the infrastructure development process is inconsistent.
    - Rigour is particularly needed in the appraisal of projects and their procurement.
    - The infrastructure development process needs to incorporate unsolicited proposals, such that only projects with demonstrable economic return are advanced and in open and transparent ways.
- Once they are prioritised by government (in one list), projects which meet the needs of PNG require the support of the whole of government. This includes officials and political leaders inside and outside of the transport sector. This support must extend to budgetary support.

Addressing these issues needs to be a priority. This will require a combination of political will, capacity building, and as opportunities allow, the development of additional legal and regulatory tools to strengthen accountability relative to political direction. DPs have provided and continue to provide support and capacity building in these areas, and this will hopefully lead to improvements in the quality of infrastructure development, thereby improving the attractiveness of PNG's PPPs. Measures of success will be:

- Development of a single list of bankable projects
- Prioritisation of funding through the budget process
- Planning and procurement of projects through a process and institution that gives confidence to stakeholders.

At the same time, PNG faces particular challenges to make itself 'PPP ready'. It needs to establish a PPP centre, and develop the specific regulations and processes necessary to allow for the efficient

[108] US Department of State, "2020 Investment Climate Statements: Papua New Guinea," 2020, https://www.state.gov/reports/2020-investment-climate-statements/papua-new-guinea/

and consistent development of PPPs that deliver for the people of PNG and the investors alike. Donor support for this is available and needs to be fully owned by GoPNG.

The transnational highway project provides an ideal opportunity to improve the quality of the infrastructure process. Individual projects as part of the programme can be used to drive legal and regulatory needs, and to improve the rigour of the gateway review framework.

5. RECOMMENDATIONS FOR CAPACITY BUILDING

In considering recommendations for capacity building, the significant and long history of support from development partners (DPs) needs to be recognised. The support continues today, inside the transport sector and across the government more broadly.

The depth and breadth of capacity-building opportunities in improving the quality of infrastructure planning and delivery do, however, remain extensive. Many relate to more general governance and public policy issues that are being tackled by the government with donor support, and will not be addressed by this review. Nevertheless, should opportunities arise in the transport sector to support the strengthening of the public policy process more generally, they should be taken. For example, if DPs support the Treasury in strengthening its budget process, Transport as a big-spending line agency, would be a good candidate for inclusion.

That capacity-building opportunities remain extensive today is not a reflection of lack of effort. Capacity building, rather than being a quick fix, needs to be maintained over a long period. The Australian Department of Foreign Affairs and Trade (DFAT) Office of Development Effectiveness Impact Evaluation of 10 years of the Transport Sector Support Program characterises effective capacity building:

- It is focused on tasks that are on the critical path to practical delivery of outcomes, where the incentives to improve performance are greatest.
- It results in documented guidelines, systems and procedures that can be adopted and followed by partner agencies.
- It acknowledges that some tasks will be done more reliably by external advisers and consultants for some time.

5.1 PRIORITISING CAPACITY-BUILDING ACTIVITIES

Within this context, there are seven recommended priority areas for capacity building for the government of PNG (GoPNG):

- Strengthening adherence to the project cycle, and in particular the front end of the process that allows the development of a suite of bankable projects, all assessed in a more rigorous process, to the same standard and with comparable economic rates of return over their life cycle, that allows them to be considered by the political decision-makers in the budget process.
- Adding rigour to the project review process from project concept to implementation and evaluation through the introduction of an Investment Management Standard and Gateway Review Framework process. Implementation is to be integrated with current GoPNG infrastructure project planning and the establishment of the new PNG PPP Centre.
- Establishing a GoPNG Gateway Review Framework foundation team to undertake a review of several sample projects with support from the APEC economies, with a view to establishing a Gateway Review Framework function within the government consistent with international best practice.
- Adding a process to the project cycle to deal with unsolicited bids.
- Further strengthening the incorporation of life cycle costs into projects.

- Strengthening government procurement so that it is completed in a timely manner, its process is a demonstrably consistent, and it is accountable.
- Strengthening the funding aspects of infrastructure, including applying a structured framework for agreeing on a funding model, and systematising the PPP processes.

Building capacity in these areas will lead to improvements in the quality of infrastructure development as the attractiveness of PNG as a destination for quality PPPs increases, but only if there is political will to do so. In effect they move the focus of political engagement in infrastructure development from involvement in process to strategic decision-making for the benefit of PNG based on good data and policy adherence.

5.2 WORKING WITH DEVELOPMENT PARTNERS

The current pipeline of works with DPs suggests that much of the capacity building that is needed will be or can be incorporated into existing programmes. The most obvious examples are:

- ADB's and Australia's support to state-owned enterprises, and for the development of the PPP Centre and its operationalisation
- ADB's support for the PPP for Jacksons International Airport, which could be a demonstration of PNG's readiness for more private investment in its transport infrastructure
- Australia's Transport Sector Support Program, which has helped strengthen the infrastructure development process for many years
- The World Bank's work on incorporating maintenance into project lifecycle planning and budgeting
- ADB's and the Australia Infrastructure Financing Facility for the Pacific's support for road and maritime programmes, which also strengthen the quality of the infrastructure project cycle.

Table 5.1 indicates areas in which different DPs has worked, or might work, with PNG.

Table 5.1 Capacity-building focus areas

Capacity-building focus	PNG agencies	Donors already working on building capacity in this area
Business cases • Strengthen the business case process so that all business cases are rigorous, are to the same standard, and are comparable in terms of rates of return	Transport agencies	Australia (TSSP and AIFFP) World Bank (roads programme) ADB (roads and SOE programme, with Australian support)
Unsolicited proposals • Process for dealing with unsolicited proposals in place and working consistently	Treasury, Planning, Transport agencies Department of Prime Minister and National Executive Council Central Agencies Coordinating Committee	Australia (economic governance)
Procurement • Structured framework for agreeing the procurement type (including structured PPP planning)	National Procurement Commission	Possibly ADB

• Procurement is timely, accountable and consistent in approach		
Maintenance • Lifecycle costs calculated, incorporated into business cases and budgeted for over the forward estimates	Treasury, Planning and Transport agencies	Australia (TSSP) All donors providing support on transport infrastructure
Funding, including of PPPs • Structured framework for agreeing the funding model (including structured PPP planning) • Government project funding budgeted for over the forward estimates • PPP processes systematised • Structured market engagement	Treasury, Planning and Transport agencies	Australia (TSSP and economic governance) ADB

ADB=Asian Development Bank; AIFFP=Australia Infrastructure Financing Facility for the Pacific; PPP=public–private partnership; SOE=state-owned enterprise; TSSP=Transport Sector Support Program

Sponsoring economies could develop a framework for the measurement of progress in these five areas that is aligned with one of the sets of benchmarks used to compare different economies for being PPP ready. This would provide PNG with a pathway to improving its processes and systems relative to other economies like the Philippines. The Transport Sector Coordination, Monitoring and Implementation Committee could provide the forum to discuss the progress. One of the sponsoring economies could supplement the resources of Committee with a programme manager.

Alternatively, sponsoring economies could choose to support the inclusion of the gateway approach (see Section 2.6.5) into different aspects of the public service. For example, a sponsoring economy could support the introduction of an independent peer review into each stage of the project cycle to lift the quality of projects, for all projects under the oversight of the Ministry of Transport, or more narrowly on projects associated with Connect PNG.

5.3 FUNDING MODALITIES

Funding modalities should only be considered in the context of bankable projects. Where they exist, all funding modalities should be considered. This is sometimes hard when projects are a political priority or the priority of a particular DP.

Another sponsoring economy could build the capacity of Treasury officials to consider project funding modalities systematically. The PwC-recommended (Department of Transport / Transport Sector Support Program / PwC) Infrastructure Funding Framework endorsed by the Cabinet is a good basis for capacity building in this area. In addition, capacity building for potential involvement in PPPs by local investors, such as through superannuation funds, should be considered.

APPENDICES

APPENDIX A. EVALUATION MATRIX WITH NOTES: APEC QUALITY INFRASTRUCTURE EVALUATION CRITERIA

Refer to list on page iv for abbreviations used in this section.

Quality Area	Criteria	Evaluation	Sector Regulation, Policy and Literature	Special Issues related to Roads	Special Issues related to Aviation	Special Issues related to Maritime
Alignment with Development Principles	Is there a legal system in place for public procurement?	PNG has a working legal system that allows for tendering and contract management.	National Procurement Act 2018 Public Finances (Management) Act 2018	DoWI, through the National Procurement Commission	SOEs do own procurement	SOEs do own procurement
	Does this system safeguard against fraud and corruption?	Need to build knowledge and capacity in this area. Need to move the focus of political engagement in infrastructure development from involvement in process to strategic decision-making.	Organic Law on the Independent Commission against Corruption 2019 Establishes the ICAC National Procurement Act 2018 Public Finances (Management) Act 2018	ICAC National Procurement Act 2018	ICAC National Procurement Act 2018	ICAC National Procurement Act 2018
	Does this system outline thorough and appropriate budgeting, record-keeping of transactions, procurement decisions based on international norms such as from MDBs?	While the system outlines thorough and appropriate budgeting, record-keeping of transactions, a procurement decision process that meets international norms, the majority of MDBs and DPs will default to their systems in lieu of using PNG processes for grants loans and procurement. As such, the PNG system is underutilised.	National Procurement Act 2018 National Planning Process Budget process National Transport Strategy; MTDPIII 2018– 2022 MTTP2 2019–2022 Connect PNG Public Finances (Management) Act 2018			
	Does the current regulatory environment allow for openness to	No local equity restrictions but limited regulatory framework and high risk. PPP Act not yet implemented and/or regulated.	Investment Promotion Act 1992 PPP Act 2014			Concessional arrangements for 4 ports with private sector

	private investment in local infrastructure?	PNG has a well-articulated budget process, and investment opportunities are available for foreign companies. In places policy is inconsistent, for example foreign exchange movement is difficult in an economy that relies on (FDI but also places barriers to FDI.				
	How else does the sector demonstrate its financial transparency?	PNG scores poorly in Transparency International's Corruption Index. It scored 27/100 in 2020 and ranked 142 out of 180 economies. The ranking has improved slightly since 2012. SOE reforms seek to: strengthen SOE operation by increasing separation between political and commercial decision-making. Improve corporate governance including transparency of financial management and procurement.	Budget process Government Gazette, National Procurement Commission website			Annual reports
	Openly sharing decision-making documents and budgets to locals, investors and stakeholders?	Lack of clarity regarding budget responsibility. A large proportion of GoPNG funding goes through members of parliament who are able to use it for other purposes.			Fees and charges opaque	Annual reports
	Is there an infrastructure strategy?	Yes, there is a strategy. Strategy is well-defined but impacted in its execution by shortfalls in funding and limited ability to enact existing strategies and plans. Strategy to strengthen the capacity of government employees and other stakeholders to oversee, manage and operate transport operations is required.	National Transport Strategy; MTDPIII MTTP2	National Transport Strategy MTDP III MTTP 2 Connect PNG	National Transport Strategy MTDP III MTTP 2	National Transport Strategy MTDP III MTTP 2 Ports Master Plan
	If so, is the strategy medium or long term?	The number of different stakeholders involved in the development of the transport infrastructure provide PNG with a coordination challenge. The government of Australia funds the Transport Sector Coordination, Monitoring and Implementation Committee. This is a whole-of-sector decision-making body and includes representatives from all PNG agencies involved in the transport sector as well as DPs active in the sector.	National Transport Strategy, MTDPIII MTTP2 Connect PNG	Both	Both	Both

	Does the Department of Infrastructure and sector have the resources and capacity to plan and support the strategy including a comprehensive and reliable approach to projects that encompasses the whole life of a project?	Challenges include: • Budget gap, debt and balance of payments issues (International Monetary Fund). • Reliance on DP loans for construction, upgrades and maintenance. There is an urgent need for investment in transport infrastructure. The main contributors to transport investment are GoPNG and international DPs. The majority of transport sector funding from DPs is provided in the form of loans, which contributes to GoPNG budgetary pressure. Unsolicited projects receive significant public funds.	National Planning Process Budget process National Transport Strategy; MTDPIII MTTP2 Connect PNG	No. Reliant on DPs for upgrades and maintenance	SOEs with some resources and capacity but reliant on DPs for upgrades and maintenance	SOEs with some resources and capacity but reliant on DPs for upgrades and maintenance
	Is the strategy based on long-term multisector demand?	There is no shortage of demand for new and upgraded infrastructure but sporadic front-end planning and funding shortfalls identified in this report results in expenditure not being aligned with medium- to long-term strategies Economic corridors and transport-connectivity aims drive planning. The demand for air transport is largely driven by business and tourism and air transport is expensive.	National Transport Strategy; MTDPIII MTTP2	Connectivity aims, Social and economic benefits – access to markets, trade.	Yes	Yes
	Does project planning incorporate dialogues with stakeholders from the sectors and communities affected by the projects?	High-level and influential stakeholders only. Users and beneficiaries are funding sources for the transport (sub)sector(s) but they have limited ability to affect projects. The main contributors to transport investment are GoPNG and international DPs. The majority of DPs place strong emphasis on sector and community engagement. They must be in line with medium- and long-term development strategies at central and regional levels, and include and incorporate dialogue with relevant stakeholders from the early stages of projects such as project preparation and prioritisation.		Some socialisation of NTS	High-level stakeholders	High-level stakeholders

	Does the government and private sector mitigate environmental impacts of the project including impacts on ecosystems?	CEPA is established and operating under a strong framework. Environmental issues are key go or no go criteria for DP funding. Planned projects funded through established programmes consider this area in detail. There remains a risk that unsolicited projects and privately delivered projects will operate outside of the in-place framework. The planned National Road Network will open up swathes of native forest to logging and oil palm plantations, and cut through high conservation value ecosystems and habitats.	At a high level: National Strategy for Sustainable Responsible Development (STARS) CEPA Conservation and Environment Protection Authority Act 2014 Environment Act 2000 Conservation Areas Act 1978	Limited to no expansion of the road network since Independence		ADB Climate Change Program in Port Design
	Does the infrastructure sector and projects advocate for Gender, Equality and Social Inclusion, Preventing Sexual Exploitation and Harassment, Disability Inclusion and Child Safeguarding?	Inclusiveness, including landowner engagement, gender equality and equitability for the socially vulnerable, has and will continue to play an important role in informing DP and GoPNG investments in transport infrastructure in PNG. This is key criteria for DP funding. Planned projects funded through established programmes consider this area in detail. There is risk that unsolicited projects and privately delivered projects will operate outside of the in-place framework.	In development plans	DP projects	DP projects	DP projects
Economic and Financial Soundness	Does the GoPNG observe debt-related fiscal targets?	No. An International Monetary Fund programme is underway to address this. However, COVID-19 has stalled this and its impact. There are known delays in servicing loans, and limited capacity to service contract overruns. There is also fiscal pressure, which is forcing GoPNG to turn to external sources to share in the cost of financing transport projects.				
	Is there a medium-term fiscal and expenditure framework that considers capital and recurrent spending to identify surplus for new projects?	The Road (Management and Fund) Act passed on 14 January 2021 aims to bring about substantial roads funding reforms. A framework was agreed upon in 2019 but there is a large budget gap between planned and realised capital and recurrent expenditure. There is a reliance on DP grants and loans to fund elements of the framework.	National Planning Process Budget process Road (Management and Fund) Act 2020 PwC, "Transport Sector Funding in PNG: Economic Projections and Scenario Analysis" (Sept 2019) PwC, "Transport Sector Funding in PNG: Funding Framework" (Sept 2019)			

			Medium Term Revenue Strategy Budget process			
	Does the economy currently have a pipeline of projects?	The majority of pipeline planning and implementation is GoPNG supported by respective DPs. For example: • ADB and the Government of Australia with their support for SOEs and PPP Centre • ADB's support for PPP in Jackson's airport • the Government of Australia's TSSP • WB's work on incorporating maintenance into project life cycle planning and budgeting ADB's and the Government of Australia's AIFFP support for road and maritime programs.	National Planning Process National Transport Strategy; MTDPIII MTTP2	Connect PNG MTDPIII Vol. 2	MTDPIII Vol. 2 DP Projects	MTDPIII Vol. 2 Ports Master Plan
	Does the economy have a process maintaining a pipeline and managing its progression?	The PNG Transport Sector Funding Framework 2019 prepared by the Australian High Commission for the use of the Government of PNG proposes a funding framework and improved decision-making process – not yet implemented. Five areas identified for capacity building. • Strengthening of adherence to the project cycle • introduction of a Gateway Review Framework (GRF). • Better managing unsolicited bids. • Further strengthening the incorporation of life cycle costs into projects. • Strengthening government procurement.	National Planning Process National Transport Strategy, MTDPIII MTTP2 PwC, "Transport Sector Funding in PNG: Economic Projections and Scenario Analysis" (Sept 2019) PwC, "Transport Sector Funding in PNG: Funding Framework" (Sept 2019) Road (Management and Fund) Act 2020			
	Is there a plan or procedure used to evaluate the most appropriate funding methods for each project and asset?	There is limited capability to determine the appropriate funding and delivery method of projects including limited consideration of whole-of-life costs. A Gateway Review Framework (GRF) approach will inform funding and procurement methods inclusive of whole of life costs. Infrastructure planning needs to have a horizon greater that budget planning to be able to inform future budgets.	National Planning Process Budget Process National Transport Strategy; MTDPIII MTTP2 PwC, "Transport Sector Funding in PNG: Economic Projections and Scenario Analysis" (Sept 2019)			

		GoPNG needs capacity building support to implement transport funding framework.	PwC, "Transport Sector Funding in PNG: Funding Framework" (Sept 2019)			
	Does the GoPNG make budget provision to ensure that the costs over the life of the asset will be available before engaging in projects?	No. Mostly DP-funded. There is limited capability to determine the appropriate funding and delivery method of projects including limited consideration of whole-of-life costs.	Budget process	No. DP-funded	Some recurrent funding from SOE revenues, DP funding	Some recurrent funding from SOE revenues, DP funding
	Is there a stipulated process for identifying investment and funding sources?	The PNG Transport Sector Funding Framework 2019 prepared by the Australian High Commission for the use of GoPNG proposes a funding framework and improved decision-making process. GoPNG needs capacity building support to implement this transport funding framework.	National Transport Strategy, MTDPIII MTTP2 PwC, "Transport Sector Funding in PNG: Economic Projections and Scenario Analysis" (Sept 2019) PwC, "Transport Sector Funding in PNG: Funding Framework" (Sept 2019)			
	Does it address responses to unsolicited proposals?	A feature of the PNG transport infrastructure landscape is the high proportion of unsolicited proposals considered by government. Unsolicited funding and a lack of capacity masks the true extent of identified funding gaps. Proper regulation of unsolicited proposals is required to ensure that they are pursued transparently and for the right reasons. Unsolicited projects receive significant public funds, which limits GoPNG's ability to deliver on priority transport projects in MTDPIII and MTTP2.	National Transport Strategy, MTDPIII MTTP2 PwC, "Transport Sector Funding in PNG: Economic Projections and Scenario Analysis" (Sept 2019) PwC, "Transport Sector Funding in PNG: Funding Framework" (Sept 2019)			
	Sustainability of funding?	There is growing deficit and debt. There is limited budget for new work and DPs fund maintenance programmes. The transport infrastructure funding framework provides an actionable plan and repeatable decision-making process to guide PNG toward more sustainable funding for transport infrastructure across three subsectors: land, maritime and aviation transport.	National Transport Strategy, MTDPIII MTTP2 PwC, "Transport Sector Funding in PNG: Economic Projections and Scenario Analysis" (Sept 2019)	New Road Management and Funding Act, dependent on DP loans and grants	NAC revenues from main airports cross-subsidise smaller airports, COVID-19	Ports makes profit through concession arrangements at main ports, DP loans

		GoPNG needs capacity-building support to implement transport funding framework.	PwC, "Transport Sector Funding in PNG: Funding Framework" (Sept 2019)		impact, DP loans/grants.	
	PPP engagement process?	The planned PPP Centre is yet to be implemented. From 1990 to 2019, six PPP projects have reached financial closure with there being no notable transport infrastructure project delivered under a PPP model. No transport infrastructure PPP projects have been successfully financed in PNG. DP support with PPP procurement is substantial.	PPP Policy, Act	No	PPP for Jacksons Airport on hold	Concessions only. Full PPP for Lae Port derailed
	Are PPPs held to the same social and environmental safeguarding standards as publicly funded or development projects?	Yes. When supported through DP framework.	PPP Policy, PPP Act, PPP Centre			
	Are there clear guidelines and policies which address common issues on implementing PPPs such as? - Risk sharing - Is the law consistent and clear? - Does the PPP centre have the resources and skill to support	The framework for delivering quality infrastructure is largely in place. High-level policy is generally clear and well-argued. PNG has a working legal system which allows for tendering and contract management. Investment opportunities are available for foreign companies PNG does not have a PPP Centre.	PPP Policy & PPP Act but no regulations in place. PPP Centre governance yet to be greed			
Stability Safety Resiliency	Project Planning: Is the project aligned with the infrastructure strategy, sector strategies and development goals?	Unsolicited projects consume over 40% of the central government infrastructure budget. Unsolicited projects receive significant public funds, which limits the GoPNG's ability to deliver MTDPIII and MTTP2.		PNG Connect is informing investments in roads	MTTP2 SOEs tend to develop their own plans	SOEs tend to develop their own plans (Ports Master Plan)

		Infrastructure development processes need to incorporate unsolicited proposals, such that only projects with transparency and demonstrable economic return are progressed.				
	Does the GovPNG demonstrate value for money of a project during its life cycle?	Over issuance of unsolicited projects has resulted in projects with the greatest value-for-money, economic impact and which are implementation ready, being systematically underfunded.	No	No		Yes
	Are guidelines for assessments and their documentation clearly stipulated and communicated?	Primarily through DP-funded projects. Shortfalls in GoPNG capability and capacity creates an environment where guidelines for assessment are not well understood or managed within the existing governance framework. For those projects planned and delivered through DP-funded projects, guidelines for assessments are well managed through a TA framework.		DP-funded projects	DP-funded projects	DP-funded projects
	Does GoPNG specify a comprehensive feasibility study guide?	No. A guide to provide practical assistance on undertaking a feasibly study for major infrastructure projects has not yet been developed.				
	Are the following considered in terms of safety? -Appropriate construction management and maintenance & operation management -Safety control for users and residents in neighbouring area -Resilience against disasters	There is a strong framework in place. Execution is inhibited by both capability and capacity limitations within the government and the public sector. Those projects funded by DPs and foreign contractors or delivered by DPs and MDBs have mature WHSE in place There is limited local capacity locally outside of large organisations in the areas of construction management, safety and environmental management Ability to respond to disasters and emergencies is limited and not scalable.	PNG Climate Change and Development Authority (CCDA) established. Disaster Management Act (1984) National Disaster Committee	Road Maintenance Act 1971 Road Maintenance Regulations 1973 National Road Safety Council Act 1997 DP-funded projects (e.g., TSSP – Road Safety)	Civil Aviation Act 2000 Civil Aviation Safety Authority ADB CADIP DFAT assistance to aviation sector	Merchant Sipping Safety Regulations 1976 PNG Ports working with CCDA and ADB on Climate Change Program National Maritime Safety Authority

	-Response in times of disaster or emergency -Safety control for terrorism -Safety control for cyber-attacks -Secure measures to promote recovery/restart of services in case of occurrence of unexpected incidents -Use of quality building materials					
Social and environmental sustainability	Are there laws and safeguards in place which protect local peoples and the environment?	There is a strong framework in place. With limited capability and capacity to self-regulate, the ongoing involvement of DP will be critical to ensuring PNG shows continual improvement in the areas of social and environmental sustainability. Execution is inhibited by both capability and capacity shortfalls within government and the public sector. For DP funded projects, a strong emphasis is placed on safeguarding.	Environment Act 2000 Conservation and Environmental Protection Authority			
	Including assessments of land for environmental and social harm before starting infrastructure planning?	There is a strong framework in place. Execution is inhibited by both capability and capacity shortfalls within government and the public sector. For DP funded projects a strong emphasis is placed on environmental and social harm safeguards.	Environment Act 2000 CEPA			National Maritime Pollution Committee
	Does the GoPNG promote low carbon infrastructure projects?	For DP funded projects, there is a strong emphasis is placed on low carbon projects.	PNG Climate Change and Development Authority (CCDA)			
	Do infrastructure projects take into consideration adaption to climate and natural disasters?	For DP-funded projects, there is strong emphasis on resilience against climate impact and natural disasters.	CCDA			

Local High-quality development: job creation and upskill	Are there policies in place that ensure that the local labour force benefits from job creation?	Under the National Procurement Act, all procurement is undertaken in accordance with a process that is generally consistent with that used by MDBs. Procurement process favours local companies under the National Reservations and Restrictions clause. Joint ventures with PNG companies are penalised in the procurement process and foreign entities are additionally penalised. The contract sizes associated with these restrictions are under review by government and may be increased. Restrictions do not apply to DP-funded procurements.	National Procurement Act 2018 'Take Back PNG' in development planning			
	Are education or professional training opportunities available to develop a skilled workforce?	Yes. This is an area that has been a longstanding focus of DPs and MDBs. For DP- and MDB-funded projects, there is a strong emphasis on safeguarding in particular the protection of marginalised groups.	Education: University of Papua New Guinea, Papua New Guinea University of Technology (Unitech). Under DP-funded projects.		ADB CADIP	Papua New Guinea Maritime College
	Are there policies in place that protect marginalised groups from exploitation?	This is an area that has been a longstanding focus of DPs and MDBs. For DP- and MDB-funded projects, there is a strong emphasis placed on safeguarding. in particular the protection of marginalised groups.	Various lands acts and regulations		Aerodrome Act 2000	
	Are there guidelines in place for fair renumeration standards?	Yes. GoPNG has an established renumeration framework and a Salaries and Remuneration Commission.	Industrial relations regulations Department of Labour and Industrial Relations			

APPENDIX B. CONSULTATIONS

Consultation: Local informal consultations
Interviewer: Ambassador Brian Yombon-Copio
Date: Various dates between October and December 2020
Location: Various locations in Port Moresby

Consultation: Asian Development Bank (ADB) – David Hill and Andrew Cooper
Interviewer: Stuart Schaefer, Darren Morgan
Date: 13 January 2021
Location: Zoom meeting

Consultation: Department of Foreign Affairs and Trade, Australia (DFAT) – Simon King and Jodie Buchanan
Interviewer: Stuart Schaefer, Paul Verwoert
Date: 21 January 2021
Location: Zoom meeting
Discussed: (1) PwC study; (2) Transnational Highway: role of the Australian Infrastructure Financing Facility for the Pacific (AIFFP) in funding and emphasis on quality infrastructure (maintenance and climate change); (3) ADB and state-owned enterprises (regarding unsolicited projects, maritime projects, and funding information); (4) Department of Works and Implementation (regarding roads); (5) Transport Sector Coordination, Monitoring and Implementation Committee (TSCMIC).

Consultation: Pacific Private Sector Development Initiative (PSDI) – Laure Darcy, William Hamilton
Interviewer: Stuart Schaefer, Paul Verwoert
Date: 28 January 2021
Location: Zoom meeting
Discussed: (1) State-owned enterprises; (2) Public–private partnerships (PPPs); (3) Regulatory framework

Consultation: Transport Sector Support Program (TSSP) – Roger Bednall
Interviewer: Stuart Schaefer, Paul Verwoert
Date: 3 February 2021
Location: Zoom meeting
Discussed: (1) Current financing for Connect PNG; (2) Transnational Highway (donors, project management); (3) Other TSSP support (national shipping strategy, ports, National Maritime Safety Authority, Niu Sky, Transport Sector Coordination, Monitoring and Implementation Committee (TSCMIC))

Consultation: TSSP Office
Interviewer: Brian Yombon-Copio, Paul Verwoert
Date: 8 February 2021
Location: Level 2 Stratos Towers, Savannah Heights

Consultation: Roger Bottrall
Interviewer: Brian Yombon-Copio, Paul Verwoert
Date: 8 February 2021
Location: Holiday Inn, Port Moresby

Consultation: PNG APEC Secretariat, Department of Prime Minister & National Executive Council
Interviewer: Brian Yombon-Copio, Paul Verwoert
Date: 9 February 2021
Location: Port Moresby

Consultation: PNG Ports Corporation
Interviewer: Brian Yombon-Copio, Paul Verwoert
Date: 9 February 2021
Location: Port Moresby

Consultation: National Airports Corporation
Interviewer: Brian Yombon-Copio, Paul Verwoert
Date: 9 February 2021
Location: Jacksons, Port Moresby

Consultation: Department of Transport – Secretary Roy Mumu
Interviewer: Brian Yombon-Copio, Paul Verwoert
Date: 9 February 2021
Location: Port Moresby

Consultation: Department of Works and Implementation – Secretary David Wereh
Interviewer: Brian Yombon-Copio and Paul Verwoert
Date: 9 February 2021
Location: Port Moresby

Consultation: International Finance Corporation (IFC) – Chris Bleakley, Senior Operations Officer,
Interviewer: Stuart Schaefer
Date: 12 February 2021
Location: Sydney

APPENDIX C. KEY RECOMMENDATIONS FROM THE LITERATURE

1. **Establishing a transport sector reform strategy**

According to the World Bank, a 'strategy to strengthen the capacity of government employees and other stakeholders to oversee, manage, and operate transport operations is urgently needed'.[109]

2. **Improving interagency collaboration and coordination**

Strengthening coordinating mechanisms is vital to improving interagency collaboration and coordination. Key among these are the relevant project steering committees and the Transport Sector Coordination, Monitoring and Implementation Committee (TSCMIC). In particular, the agenda of the TSCMIC should align with the budget cycle and act as a mechanism for the relevant agencies to coordinate planning and budget submissions.

However, the TSCMIC did not meet in 2020 and there appears to be little ownership of its agenda. PNG members of the TSCMIC need to show more interest in it rather than, for example, acting in silos and protecting their own perceived interests during the budgeting process. The TSCMIC needs to become more of a technical forum again, and discuss planning, budget and policy questions.

3. **Creating an infrastructure development authority**

Under the Alatau Accord of 2012, the O'Neil government proposed the establishment of an infrastructure development authority. This has yet to be implemented.

To address planning, political economy and budget issues, governments (in Australia, UK and elsewhere) have established independent infrastructure development authorities. These authorities develop long-term strategies and project pipelines based on rigorous, independent project appraisal, prioritisation and preparation processes. Through such rigorous gateway review processes, the most strategic and economically viable projects will be prioritised in government planning and budgets.

PNG commenced the process of establishing an infrastructure development authority but this stalled due to lack of a political will and a supporting legal and regulatory framework.

4. **Strengthening transport-sector strategic planning**

The Transport Sector Support Program and PwC have identified several areas of improvement as outlined below.[110]

Strategic planning documents for the transport sector and actual budget appropriations should take into account forecast government revenues as well as fiscal deficits, the ability of the government of Papua New Guinea (GoPNG) to pay back loans from development partners (DPs), and debts held by PNG's transport entities.[111]

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[109] World Bank Group, "Papua New Guinea Economic Update: Dealing with a Triple Crisis" (Washington, DC: World Bank, 2021).

[110] PwC, "Transport Sector Funding in PNG: Funding Framework"; PwC, "Transport Sector Funding in PNG: The Current Landscape"; PwC, "Transport Sector Funding in PNG: Economic Projections and Scenario Analysis" (Government of Papua New Guinea's Transport Sector Co-ordination, Monitoring and Implementation Committee, 2019).

[111] The strategic planning documents involving transport initiatives include the Medium Term Transport Plan 2 (MTTP2), the Medium Term Development Plan III (MTDPIII) and the National Transport Strategy Vol. 3 (NTS3).

All projects receiving GoPNG funding should be taken through the prioritisation process under the Medium Term Transport Plan 2 so that funds are directed to projects with the highest yield for PNG's economy and communities.

Discrepancies between amounts required for projects identified in strategic development documents versus amounts actually appropriated should be rectified over time (e.g., through stronger communication between central agencies and transport-sector agencies)

Project costing estimates should be consistent across the various strategic development documents.

Agreement across stakeholders about the overarching transport sector plan (against which achievements will be considered) is important, as is the subsequent alignment of processes (planning, prioritising, budgeting, financing) to support effective implementation.

A number of preliminary requirements including institutional, stakeholder engagement, technical and financial for both individual subsectors (aviation, maritime, road), but also more broadly, need to be in place before revenue optimisation strategies can be effectively deployed.

APPENDIX D. Gateway Review process resources

- Gateway key decision points, guidance and templates provided by the Department of Treasury and Finance Victoria. Available at: https://www.dtf.vic.gov.au/gateway-review-process/gateway-key-decision-points-guidance-and-templates [Accessed August 2021]

- Gateway reviews for project assessments framework (assurance) provided by Queensland Treasury. Available at: https://www.treasury.qld.gov.au/programs-and-policies/project-assessment-framework/gateway-reviews/ [Accessed August 2021]

- Gateway review process workbooks provided by Infrastructure and Projects Authority of the UK. Available at: https://www.gov.uk/government/publications/ogc-gateway-review-0-strategic-assessment-guidance-and-templates [Accessed August 2021]

- Gateway reviews guide provided by New Zealand Treasury. Available at: https://www.treasury.govt.nz/information-and-services/state-sector-leadership/investment-management/review-investment-reviews/gateway-reviews#:~:text=It%20is%20an%20independent%20and,Gateway%20review%20takes%20one%20week [Accessed August 2021]

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