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ANZ insight

Bold Thinking:
Imagining PNG in the Asian Century

ISSUE 4, OCTOBER 2013

FOREWORD

ANZ insight is a series of client reports commissioned by ANZ. The aim of the series is to explore the opportunities arising from Asia's economic growth and the increasingly interconnected nature of business and economic activity in the Asia Pacific region.

This reflects the importance ANZ attaches to building common ground within business and among a diverse range of stakeholders in order to advance economic relationships and growth in the region.

The series has been developed from ANZ's outward-looking orientation, as Australia, New Zealand and the Pacific's international bank. We believe this allows us to make a unique contribution to a conversation on issues relating to the region's economies.

'Bold Thinking: Imagining PNG in the Asian Century' is the fourth report in the *ANZ insight* series. The report was researched in Papua New Guinea (PNG) and Australia, and completed by Port Jackson Partners during 2013.

The aim of the report is to quantify the size of the opportunity open to PNG as a result of the shift in global economic growth to Asia and the increasing demand for natural resources and agricultural commodities. It also seeks to explore the possible policy conversations needed in PNG to fully capture this opportunity.

The findings in this report are significant and demonstrate the need for bold thinking to secure PNG's enormous potential. Above all, this will require a strategic response by all stakeholders in a way that sees PNG's future through the lens of the Asian Century. Recent developments in the PNG-Australia relationship also provide further impetus for this new national development conversation.

Pleasingly though there is no shortage of good ideas that might make a difference and there is significant common ground among all stakeholders about what issues are important in order to realise PNG's potential. Together with recent government initiatives and major resources projects, there is cause for considerable optimism about the country's future. This report aims to examine and to prioritise these ideas in order to drive forward a vision of a vibrant, dynamic PNG.

This report is by its nature high-level and does not claim to hold all the answers. It does, however, provide a framework to advance a discussion with a wide range of stakeholders to help realise the significant opportunities for PNG and its people in the Asian Century.

Mike Smith

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Chief Executive Officer
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1.0 EXECUTIVE SUMMARY

KEY THEMES:

- *Asia's urbanisation and industrialisation present PNG with a new, enduring paradigm for balanced national development.*
- *The resources sector has a pre-eminent initial role in generating the wealth needed to invest in infrastructure and hence support agricultural development. Agriculture will be a longer-term opportunity and can drive long-lasting growth.*
- *PNG's resources sector export revenues could grow at least fourfold to US$23 billion per annum by 2030, and could kick-start broader economic activity, if the estimated US$112 billion in required capital investment to 2030 can be attracted.*
- *Essential infrastructure improvement can be achieved through a fresh approach to delivery, with prioritisation, private sector involvement and improved governance.*
- *Facilitating agribusiness entrepreneurship and business scale will help capture agriculture's potential.*
- *A national, strategic focus on coordination policies and PNG's place in Asia will produce an enduring, long-term framework for PNG's discussion about development in the 21st century.*

1.1 BALANCED DEVELOPMENT WILL ASSIST PNG TO BENEFIT FROM ASIAN CENTURY OPPORTUNITIES

Papua New Guinea's unique resource endowment and location adjacent to Asia underpin a positive outlook for national wealth generation over the coming decades. As the Asian Century unfolds, demand for the commodities that PNG already produces – energy, metals, wood products and quality foodstuffs – is set to grow, creating significant opportunities.

Asia's urbanisation and industrialisation are already supporting PNG's development; exports and investment are growing and the opportunities are significant for PNG. The challenge is twofold: firstly to grasp the opportunities, for instance to convert PNG's current resource project pipeline into real projects, and secondly to pursue the balanced economic development that has characterised success stories elsewhere, including in Africa, and in the process contribute to managing the risk of the 'resources curse'[1].

In this new paradigm for PNG, the task is to ensure that the critical economic sectors of resources, infrastructure and agriculture all play their role in a national response to the Asian opportunity. Coordination of project development and infrastructure and strategically maximising the spillover effects from sector to sector can lead to high-quality and sustainable growth. National policy directions that support each sector can also contribute, as can well-targeted actions by stakeholders willing to assist PNG's development.

Finally, while the pursuit of balanced growth requires an element of bold thinking, it is crucial that this thinking is also directed towards implementation. For instance, the costs of institutional weakness are clear and mounting but they have been recognised for some time. The benefits of privatising government businesses have been demonstrated globally – for PNG the agenda requires renewed attention. Infrastructure's importance is unquestionable, but infrastructure that supports the opportunities coming from Asia's growth and that supports sustainable growth should have fundamental priority.

1 Where rapid growth in capital-intensive natural resources sectors crowds out other sectors (particularly manufacturing) and risks the creation of a two-speed economy with disproportionate benefits accruing to capital rather than labour.

To re-imagine PNG is to frame the development task around the new and genuine opportunities of the 21st century. This challenge applies to stakeholders outside PNG as much as it does to those within – and it has the potential to redefine aid and other programs in the process.

1.1.1 PNG's resource opportunity has multiplied owing to strong Asian demand

PNG has the opportunity to grow resource sector export revenues to four to six times current levels, or US$23 billion to US$36 billion by 2030. This would require ongoing and substantial capital investment of US$112–$170 billion in the sector to 2030. This growth will have broader benefits through the creation of a skilled workforce, cross-sector infrastructure, and opportunities for local entrepreneurs to serve resource projects and their supporting communities.

Realising this opportunity begins with ensuring the success of the current project pipeline. In a challenging global environment the success of these potential projects is by no means assured.

While securing the entire current project pipeline will be challenging, the PNG Liquefied Natural Gas (PNG LNG) project shows it is possible. A continuation of this project's 'can do' approach is required.

1.1.2 Improving delivery can help achieve infrastructure ambitions that enable growth

All observers including the PNG government recognise that national infrastructure is in need of significant improvement. Achieving this would bring increased economic growth and development, as has been the experience in other developing countries.

PNG has set itself ambitious targets for infrastructure improvement and improved delivery will be needed if these are to be achieved at a manageable cost and within a reasonable time. Actions to achieve this include:

- Focusing infrastructure activity on building assets that yield the maximum economic benefit at the lowest cost. More infrastructure is not always better; effective analysis is needed to identify priority projects, as well as to set targets needed for execution discipline.
- Embracing private sector delivery within well-designed and predictable boundaries. Experience in the Pacific and elsewhere suggests the private sector can contribute to improved performance in some types of infrastructure.
- Examining the privatisation of state-owned enterprises (SOEs) to improve performance.
- Establishing a strong and independent Infrastructure Development Authority to improve planning, execution and accountability. This Authority is currently in its planning stages, and actions now could ensure it is appropriately shaped.

1.1.3 Supporting agribusiness entrepreneurs to create stable, broad-based development

PNG's soft commodities sector faces many opportunities due to increased demand for food throughout Asia. PNG has an underutilised water supply and land that could be readily converted from less productive forms of agriculture to export cropping.

Recognising this position, the government has set demanding growth targets for the sector, particularly for coffee and cocoa. These volume targets imply export revenues for palm oil, coffee and cocoa of US$3.5 billion in 2030, a fivefold increase from 2010 export levels at long-term price.

Agribusiness entrepreneurs have the potential to transform the sector given the right conditions. Entrepreneurial businesses can support the move from subsistence to cash cropping in coffee and cocoa, and to develop a sustainable growth model for forestry.

A flourishing agribusiness sector is linked to achieving three goals in PNG's agriculture sector:

1. Achieving greater scale to facilitate improved performance and lower costs.
2. Improving transport infrastructure and logistics to form the backbone of successful agribusinesses, provide market access, lower inbound and outbound costs, and support quality by reducing time to export.
3. Setting quality and yield targets that are linked to market needs to provide a focus for all participants in PNG's agricultural sectors, including the supporting extension and R&D service providers.

Specific policy actions will help to achieve these goals. These include:

- Encouraging the emergence of regional value chain coordinators that, through aligning the actions of farmers, processors, exporters and marketers, could deliver some of the benefits of scale, guide logistics planning and aid communication of quality and yield targets.
- Strengthening the capability of current landholding systems to create flexibility and certainty over land use, helping to create larger or more coordinated landholdings, as well as a path to bring new land into production.
- Reforming financing to combine traditional and not-for-profit capital, especially to fund investment in new processing capacity that is critical to achieving yield and quality improvements.
- Reorienting and possibly extending aid, extending research and industry-body activities.

1.2 A CONVERSATION ABOUT HOW BEST TO RESPOND IS NEEDED

Sector-specific improvements can be most effective when combined with national policies that support broad-based development. A national conversation might address questions including how PNG can coordinate and create spillover benefits among resources, infrastructure and agriculture and into new sectors such as tourism; how national-level actions can support the resources sector as the initial impetus for growth; and the extent to which government and institutional focus can move to include new markets in Asia, while maintaining existing close ties.

While policy and planning coordination is critical, continuing to improve the quality of PNG's regulatory, legal and law enforcement institutions ranks perhaps as highly, with progress fundamental for PNG to maximise the benefits it stands to gain from the Asian Century.

Over the next several years, PNG has an opportunity to establish a basis for wealth-building over decades to come. But awareness of PNG's potential is not enough. As ambition has grown, the need for a clear path to achieving the government's targets has become more pressing. Debate on the issues and the practical initiatives described in this report represent an important, early step to establishing this path.

2.0 UNPRECEDENTED ASIAN CENTURY OPPORTUNITIES INVITE A RE-IMAGINING OF PNG'S POTENTIAL

KEY THEMES:

- ***Demand for energy, metals, wood products and high-quality foodstuffs will increase as the Asian Century unfolds. Starting from a relatively low base, PNG is already experiencing effects from this growth in demand.***
- ***Successfully developing African economies such as Ghana and Botswana can provide inspiration for PNG's development.***
- ***A broad-based, strategic response relies on simultaneous development of resources, infrastructure and agriculture in order to avoid the 'resources curse'.***
- ***Triggered by current investment and securing the projects in its pipeline, the resources sector will drive development into the rest of the economy.***

2.1 DEVELOPING WORLD GROWTH IS ALREADY SUPPORTING PNG'S DEVELOPMENT

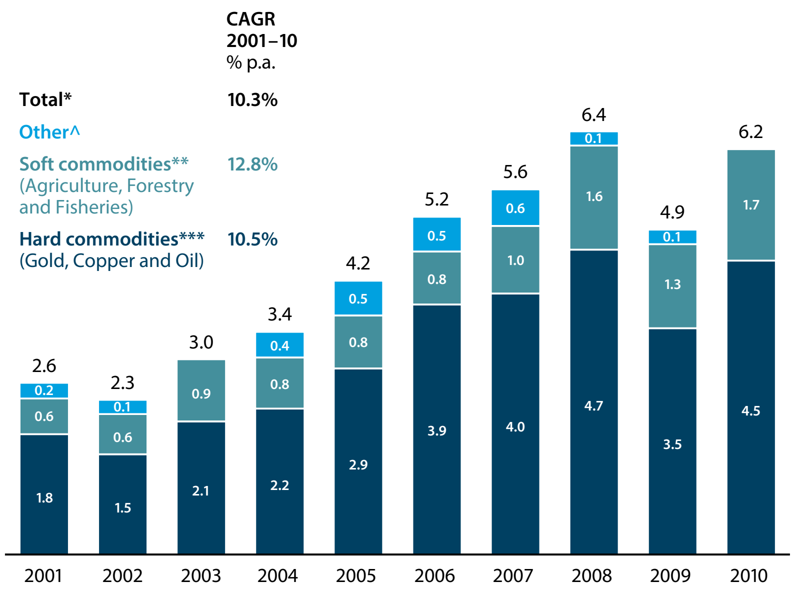
The Asian Century will create long-term demand growth for many commodities. A new middle class in Asia, as well as South America and Africa, is demanding improved infrastructure, advanced manufactured products, protein and previously 'exotic' foodstuffs such as coffee and chocolate.

PNG's development is already being supported by these trends. Between 2001 and 2010, PNG's hard and soft commodity exports grew 10.5% and 12.8% respectively per annum by value[2] (Exhibit 2.1).

Exhibit 2.1

TOTAL EXPORTS

Real 2013 US$ Billion p.a.



* World Bank.
** FAOstat, FAO Fisheries and Aquaculture Department statistics database.
*** Bank of PNG.
^ Balancing item.
Source: FAOstat, World Bank, Bank of PNG.

2 Unless otherwise noted, all figures in this report are in real terms.

Growth in exports and investment in long lead-time resource projects are bringing significant economic rewards. Measured in constant 2005 US dollars, from 2007 to 2012 real gross domestic product (GDP) grew at 7.4% per annum, or 5.0% in per capita terms[3].

There is the potential to further improve PNG's trajectory. Resource and agriculture sector exports have recently grown strongly in value, but only modestly in volume terms. Private sector investment still has some way to go before it matches the contribution of government. PNG has an impressive pipeline of potential resource projects, but they must be secured. Investment in agriculture, in particular, is yet to take off. Finally, many of PNG's exporters are yet to reorient themselves to Asia as Australia and Europe still attract the majority of PNG exports.

PNG's current momentum and ambitious government targets reflect the potential of its resource endowment and agricultural base to support broad-based development across the economy.

2.2 AFRICAN SUCCESSES CAN INSPIRE PNG

Africa has experienced a decade of historically strong economic growth. Sub-Saharan Africa's average GDP growth was 4.7% per annum from 2000 to 2011, while GDP per capita grew at 2.2% per annum over the same period[4]. This strong growth occurred despite the global financial crisis, and it stands in contrast to long periods of disappointing post-Colonial economic development.

While there is great variation between growth outcomes and development challenges in African countries, typically fast-growing African economies have achieved balanced growth. Sector balances vary significantly from country to country, but most high-growth countries develop and rely on multiple sectors at once (Exhibit 2.2). This broad-based development is particularly beneficial for countries with growing populations, like PNG, where it can provide more secure employment opportunities than an economy otherwise dominated by the low labour-intensity resources sector[5].

No single country's experience can provide a path to prosperity, but successful development stories including Botswana and Ghana can serve as an inspiration and a guide for PNG.

3 World Bank DataBank.

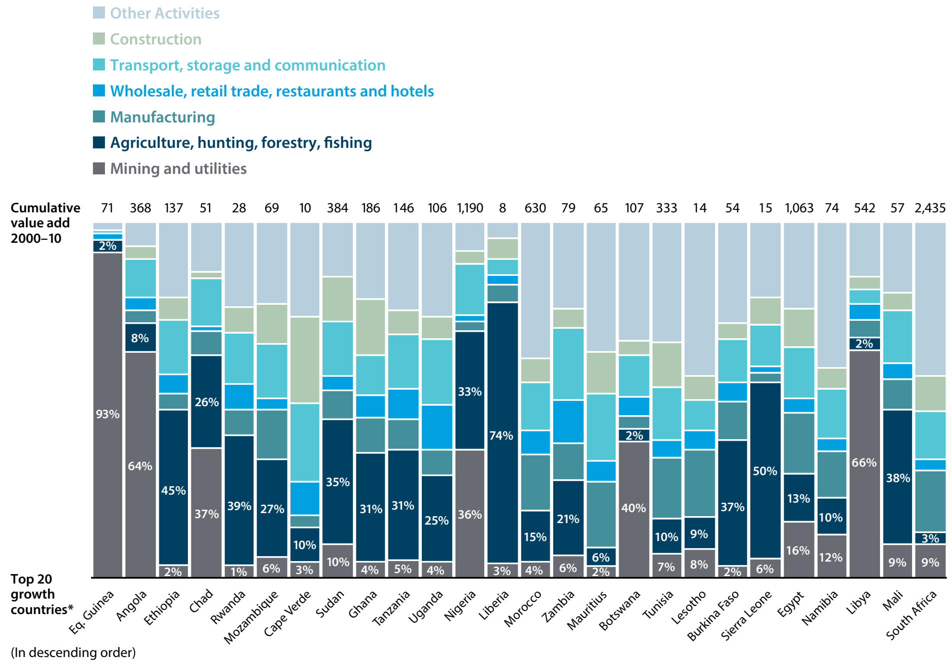
4 World Bank DataBank.

5 Resources sector here refers to the extraction and processing of ores, not the associated services sector. As described in *ANZ insight* issue 1, these associated services can offer substantial additional opportunities.

Exhibit 2.2

CUMULATIVE CONTRIBUTION TO VALUE ADD BY SECTOR 2000–10

Percentage of total value added, Constant 2005 $US Billion



* Real GDP per capita growth 2000–11.

Source: UN National Accounts Main Aggregates Database, December 2011.

African successes provide evidence that infrastructure improvement in developing countries, when done well, is rewarded with increased growth. For the period from 2001 to 2005, Botswana's infrastructure program added 1.6% per annum to per capita economic growth compared to the period from 1991 to 1995, particularly driven by telecommunications (Exhibit 2.3). Other African countries, including Mauritius and Malawi, have also experienced growth benefits from improved infrastructure in the same period. Other countries, including South Africa, Angola and Guinea-Bissau, have received lower rewards for infrastructure efforts that were poorly designed or executed.

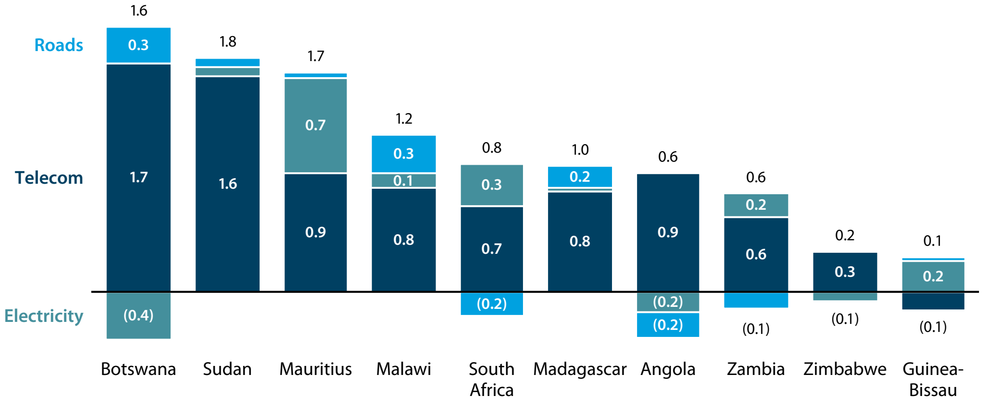
Africa's recent economic growth has also been assisted by improved political and macroeconomic stability, and microeconomic reforms. In particular, steps such as privatising SOEs, reducing trade barriers, cutting corporate taxes and strengthening regulatory and legal systems are attributed to enabling self-sustaining private enterprise to emerge[6].

6 McKinsey Global Institute, 'Lions on the move: the progress and potential of African economies', June 2010.

Exhibit 2.3

CONTRIBUTION OF INFRASTRUCTURE IMPROVEMENT TO GROWTH 2001–05 vs 1991–95

Additional annual per capita GDP growth; percentage



Source: World Bank, Policy Research Working Paper 5887, 'Botswana's Infrastructure: A Continental Perspective', 2011.

2.3 PNG CAN BEST RESPOND TO ASIA WITH BALANCED GROWTH

Balanced growth across resources, infrastructure and agriculture is needed to ensure the ongoing and robust development of a resilient PNG economy which captures the benefits of the Asian Century.

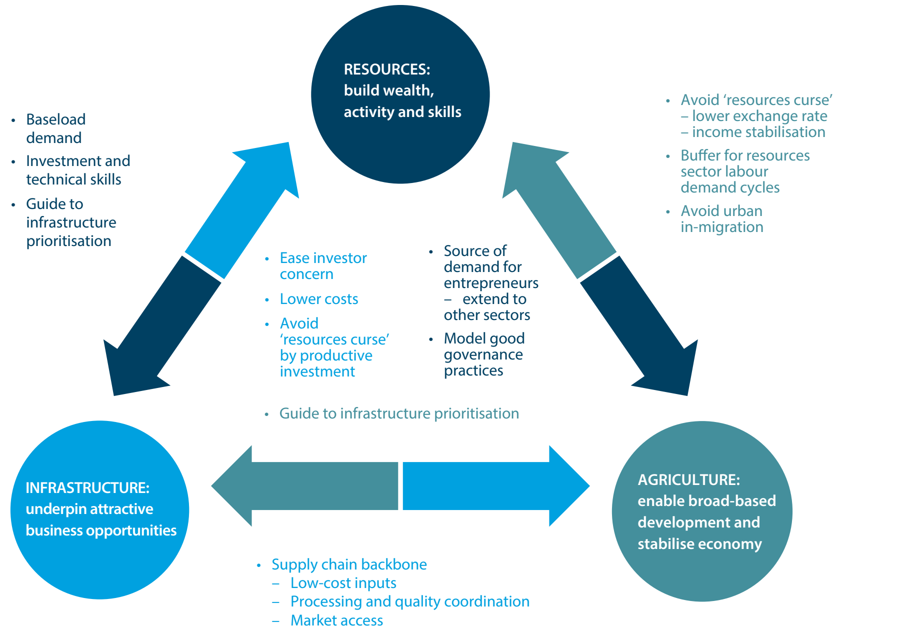
Linkages among major sectors encourage and reward simultaneous growth (Exhibit 2.4). The resources sector in PNG will have a pre-eminent initial role in generating the wealth needed to invest in infrastructure and hence support agricultural development in the future. As a result, agriculture will be a long-term driver of economic activity, and can drive long-lasting employment growth. It is important that steps are taken now to develop this sector while profits made in the resources sector can fund infrastructure, tax receipts and national savings.

This model of growth will directly address concerns regarding the 'resources curse'. Investment of resources sector earnings in productive infrastructure will build cost-effective capacity, facilitating growth of other sectors. Building a productive, export-oriented agriculture sector will help to ease the exchange rate pressures associated with ongoing resources sector investment. By creating alternative sources of revenue, it can buffer government programs against resource price cycles.

Considering resources sector growth in the context of furthering the growth of related sectors, encourages recognition of the pivotal role it plays in the overall development of PNG.

Exhibit 2.4

LINKS BETWEEN SECTORS



Achieving the balanced growth PNG requires will not only call for specific sectoral action but policies that will address cross-sector imperatives. Actively identifying and promoting spillover benefits among and beyond these three sectors will bring substantial benefits to local communities and entrepreneurs, as described in Exhibit 2.4. Encouraging spillovers into new sectors such as tourism could also bring benefits to the economy. All stakeholders have a role to play to support these objectives.

2.4 BOLD THINKING CAN CAPTURE PNG'S POTENTIAL

The PNG government has the ability to implement reforms that could allow PNG to grow strongly over the coming decades. The next five years will be critical to set up the foundations for attracting investment. However, some bold thinking is first required in order to evaluate and prioritise these actions. The Asian opportunity provides an overarching framework for prioritisation, and putting resources where they count most. It is the right time for a frank national discussion about the quality of PNG's institutions and actions to overcome the problems that have inhibited its development in the past. PNG's 21st century outlook can be about opportunity, regional integration and growth – but it needs to seize the opportunity and take steps to move forward.

3.0 RESOURCES – BUILDING WEALTH, ACTIVITY AND SKILLS TO APPLY TO THE BROADER ECONOMY

KEY THEMES:

- *Resource endowment and growth in demand could allow PNG's resources sector revenues to increase at least fourfold to US$23 billion per annum by 2030.*
- *Supporting this growth requires mobilising up to US$112 billion of new investment.*
- *PNG must first ensure successfully competing for capital against global competitors.*
- *Additional benefits will follow from installed infrastructure, newfound skills and improved relationships between project proponents, government and local communities.*

3.1 THE ASIAN CENTURY PROVIDES ENORMOUS RESOURCES SECTOR OPPORTUNITIES

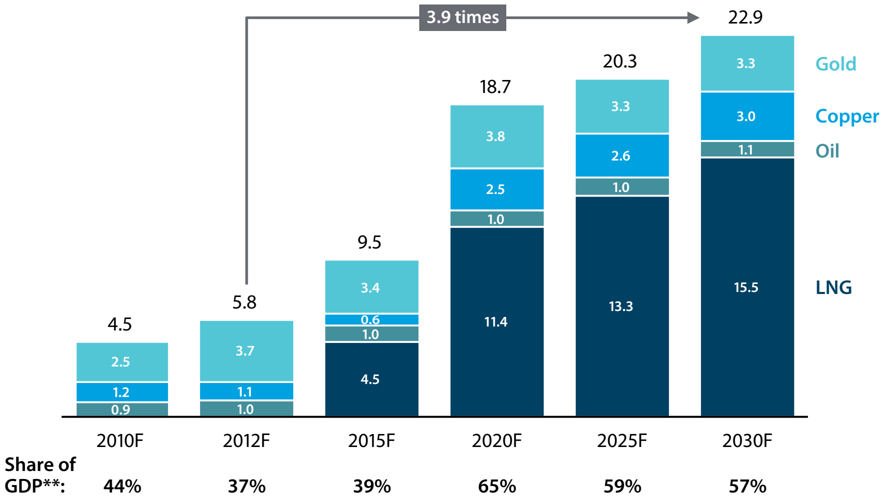
The Asian Century will feature strong and sustained minerals and energy-demand growth.

PNG's share of this opportunity can be large and long lasting. If PNG can deliver its current projects then build upon them to maintain market share, minerals export revenues could reach US$23 billion by 2030, or four times their current size (Exhibit 3.1). This growth can be achieved despite the price declines built into most commodity forecasts.

Exhibit 3.1

CENTRAL CASE EXPORT REVENUE IN COMMODITY MARKETS*

Real 2013 US$ Billion p.a.



* Export revenue is total export value, free-on-board.
** GDP: IMF figures used from 2005–17, USDA GDP growth rates used from 2017 onwards.
Source: Bank PNG (historicals); USDA; IMF; PJP analysis.

This central case would also change the mix of commodities and projects. By 2015, LNG would be the largest source of export income and would grow to around half of sector revenue. Copper exports would triple from US$1.1 billion today to US$3.0 billion in 2030. As a result, Ok Tedi's contribution would decrease from around 26% of today's export revenues to 4% by 2020.

PNG's resources sector trajectory is in its own hands. PNG's current global share of major mineral commodities is small. Given strong and sustained demand, PNG is likely to find markets for all of the output that its high-quality projects can produce. However, major resource project investors do not support projects that cannot offer attractive rates of return. Creating these projects is technically challenging work, and long-term rewards are dependent upon ongoing confidence and persistence by investors, governments and employees.

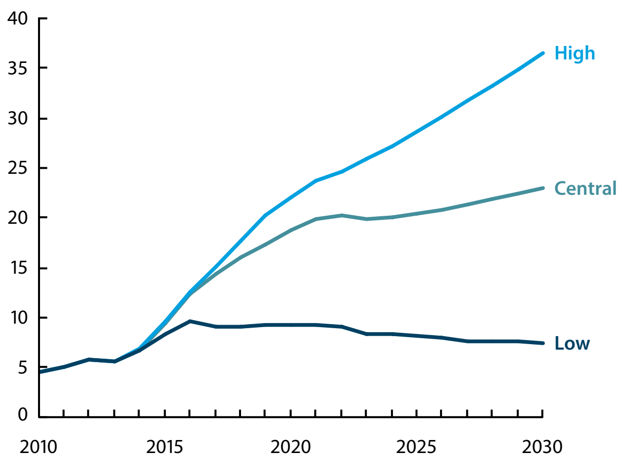
To illustrate the possible scenarios available to PNG, the central case has been compared to two other cases (Exhibit 3.2).

- Under the high case, PNG would achieve higher growth rates for most commodities than under the central case, and the entire current project pipeline would be developed. Export revenues would grow to US$36 billion in real 2013 dollar terms, or more than six times their current value.
- Under the low case, no new projects would be developed beyond the PNG LNG project currently under construction and the Ok Tedi extension. Export revenues would not rise substantially beyond their current level, and would peak in 2016 at US$9.7 billion.

Exhibit 3.2

RANGE OF POSSIBLE EXPORT REVENUE* OUTCOMES IN COMMODITY MARKETS

Real 2013 US$ Billion p.a.



Case	Change between 2012–30 $ Billion	Total exports 2012–30 $ Billion
High	31	412
Central	17	316
Low	1.3	154

* Export revenue is total export value, free-on-board.
Source: Bank PNG (historicals); PJP analysis.

Achieving the central or high case will bring substantial rewards to PNG. Between 2012 and 2030, the difference in total export revenue compared to the low case is around $160 billion for the central case, and $260 billion for the high case.

There is more than export revenue at stake. Strong growth can build on broader contributions already being made by the resources sector. These include:

- The injection of thousands of skilled employees into the economy. Many PNG LNG project construction workers are trained personnel, well prepared for the next round of projects. Local employment on the project peaked at 9,000 people in 2012. In addition, training facilities installed to serve resource projects contribute critical skills for the entire economy. Initiatives established by PNG LNG had trained more than 10,000 people by the end of 2012[7]. With suitable help, participating institutions including the Port Moresby Construction Training Facility, the Juni Construction Training Facility and the Australian TAFE system can continue to provide support for the broader economy.
- Demand for investment in infrastructure that can support all sectors of the economy. New ports, electricity networks and roads are made more economic when consistent demand is expected over the long term, and when demand is sufficient to allow 'at-scale' infrastructure to be installed.
- Opportunities for local entrepreneurs to serve resource projects, and then build businesses beyond that initial demand. Landowner companies including Trans Wonderland, Anitua, the iPi Group, National Catering and Star Mountain have built businesses that now extend far beyond serving the initial demand from mining (see Box 3.1). These businesses now offer a range of transport, logistics, catering and many other services[8].

Box 3.1 Anitua's diversified services business[9]

Anitua Group is a landholder company that represents six groups from the Lihir group of islands. It was established in 1989 to provide a way for local landowners to participate in the economic benefits of the Lihir Gold project.

Anitua's first company, NCS, was set up to provide camp management and catering services to the Lihir gold mine. Anitua has since grown substantially and diversified. The group now operates 12 different business units across a broad range of sectors including mining, security, retail, property and construction, hospitality and hotels, shipping, automotive services, information technology and agribusiness. Many operations work with local PNG people and businesses delivering broad-based benefits to the community. For example, Anitua's Integrated Livestock Limited supplies produce to NCS for use in their camp-catering operations. As well as sourcing from their own farms, the company has an outgrower fodder program with local Lihirians.

Anitua employs around 1,500 people directly, and an additional 2,000 outside Lihir. It also facilitates local employment with larger mining companies by providing training courses.

7 PNG LNG, Project and Environmental and Social Report, Q3 2012 and Q4 2012.

8 World Bank, 'Jobs: World Development Report 2013'.

9 Box 3.1 Anitua's diversified services business. Source: http://www.anitua.com.au/; Business Advantage International, Papua New Guinea 2012–2013 p. 16.

3.2 WITH POLICY IMPROVEMENTS PNG CAN COMPETE SUCCESSFULLY FOR INVESTMENT

Ongoing resources sector growth will not happen for PNG unless it can out-compete other nations for international investment flows.

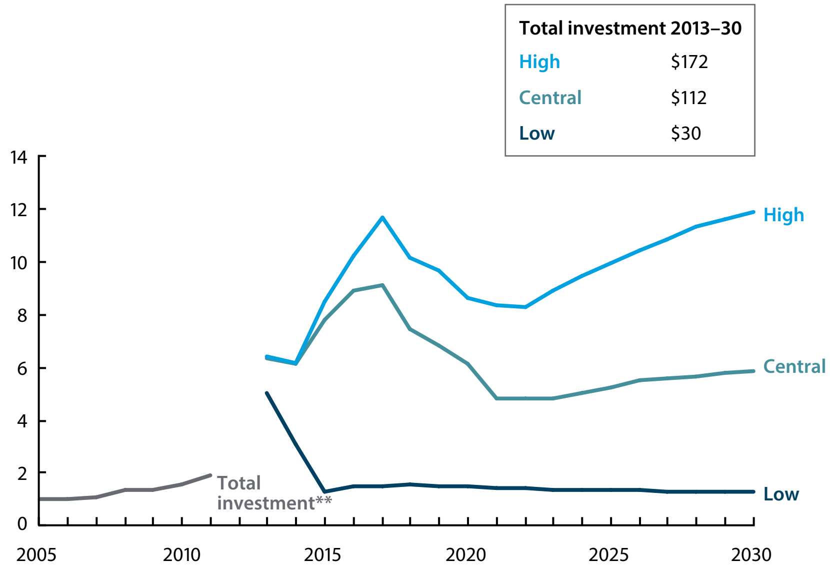
Under the central case, resources sector growth would require an additional US$112 billion of investment until 2030 (Exhibit 3.3). Under this scenario, investment would peak in the next five to 10 years, as the current project pipeline rapidly builds capacity. Although the pace of investment would ease over time, a new and growing need for asset replacement ensures that activity does not return to previous levels. Under the high case, total investment of US$170 billion is required. Even under the low case, an additional US$30 billion would be required to finish current projects and for ongoing plant and equipment replacement.

Funding for this unprecedented level of activity must come predominantly from global capital markets. Central case investment to 2030 is almost three times the size of the Port Moresby Stock Exchange in 2012[10].

Exhibit 3.3

RANGE OF POSSIBLE INVESTMENT* OUTCOMES IN COMMODITY MARKETS

Real 2013 US$ Billion p.a.



* Gross investment, not net of imports.
** Calculated by multiplying IMF figures for Total Investment as share of GDP by GDP.
Source: PJP analysis.

At present, resources sector investors are supportive of only the highest-quality projects worldwide, creating challenges for emerging global resource players including PNG. Investment risks associated with operating in developing countries are attracting high levels of concern. As well as cost overruns that have become commonplace in resource and energy project construction everywhere, investors are concerned about the need to build infrastructure where none exists, the sovereign risks that arise from governments changing taxation or operating rules once project construction is underway and the lack of local, skilled personnel. Managing and then delivering on community expectations regarding the benefits of project exploration and development are now seen as a critical and highly demanding challenge[11].

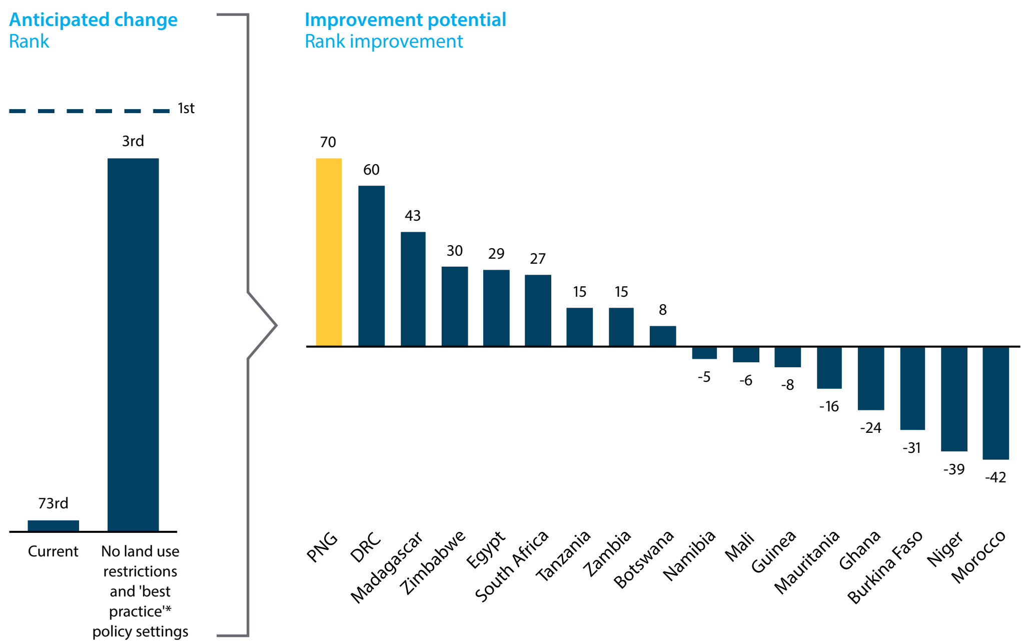
10 Port Moresby Stock Exchange market capitalisation was K87 billion in 2012; http://www.postcourier.com.pg/20130301/business03.htm

11 Investors have these concerns about many developed nations as well, but they are heightened in developing countries.

Some mining industry leaders are indicating a limited appetite for greenfields investments, including those in developing nations[12]. Shareholders in resource companies have been rewarding management decisions to cancel or defer projects whose returns do not clearly outweigh associated risks. Woodside Petroleum, for example, saw its share price rise considerably in response to a decision to substantially rework its Australian Browse LNG project.

Nonetheless, sensible actions could position PNG much closer to the 'head of the queue' for global capital. At present, resources sector investors rank the potential of PNG's resources sector 73rd globally. This position suggests it may be challenging to secure high levels of ongoing investment activity, notwithstanding PNG's resource endowment. Yet when resources sector survey respondents were asked to assume no land use restrictions and 'best practice' policy settings[13], PNG's rank jumps to third in the world behind Mongolia and Yukon in Canada (Exhibit 3.4). This shows that under improved policy settings, PNG would be much more attractive to investors.

Exhibit 3.4
PNG IMPROVEMENT POTENTIAL



* Best practices: World-class regulatory environment, highly competitive taxation, no political risk or uncertainty, and a fully stable mining regime.
Source: Fraser Institute Annual Survey of Mining Companies 2012/2013.

12 See, for example, comments by Xstrata's chief executive Ivan Glasenberg in P Manning, 'Xstrata chooses brown over green', *Sydney Morning Herald* website, 7 March 2013, http://www.smh.com.au/business/xstrata-chooses-brown-over-green-20130306-2flnl.html

13 The Fraser Institute defines these as a world-class regulatory environment, with highly competitive taxation regimes, no political risk/uncertainty and a fully stable mining regime.

3.3 ACTION TO MITIGATE THE MAJOR CONCERNS OF INVESTORS IS TIMELY AND CRITICAL

PNG can maximise the opportunities arising from Asian growth by addressing the risks holding back investor confidence. This is possible – but will require frank assessments of the issues at hand and the appropriate actions.

3.3.1 Deliver the current pipeline of projects

The success of current projects – especially at this time of increasing pressure on global resources sector investment – can help to establish PNG as a credible investment destination, paving the way for future growth. Profitable established operations and successful new projects can give confidence to investors, including those considering support for brownfield expansions. Building this confidence now when established competitors, including Australia, are struggling to bring projects on stream is especially critical.

The PNG LNG project demonstrates that government and industry can work together to deliver a world-class, technically challenging project extending over a wide geographic area. This 'can do' attitude, arising in part from the relatively small size of government in PNG, gives confidence to resource investors and supports project development.

Offering maximum support to current projects involves examining the following issues:

- How can development and approval processes be made as fast, straightforward and responsive as possible? For particularly significant projects, should approvals and migration processes be compressed to avoid frustrating efficient execution? How can an appropriate balance be struck between accelerated processes and transparency?
- Should government's role as an investor in resource projects be more clearly separated from its regulatory and approvals role? Project delays could be avoided if financing decisions are separated from approval processes.
- How can PNG actively monitor and manage perceptions of political and/or sovereign risk, including the potential impact of changes in government policy?

3.3.2 Increase use of multi-user infrastructure

Lower-cost infrastructure will help make current and future resource projects more attractive. As is well known, the lack of infrastructure in PNG is the biggest reason why investors are unwilling to invest in its resources sector[14].

Within a broader need for infrastructure improvement, current resources sector projects face specific challenges. New projects in PNG require transport, water and power capacity many times that of existing infrastructure. The need to build additional infrastructure will add costs and risks for investors. Because projects are often geographically dispersed, there are few immediate opportunities for infrastructure sharing. This creates substantial 'first mover disadvantages' for many projects.

14 Fraser Institute annual survey of mining companies 2012–2013.

Infrastructure risks and costs can be lowered substantially by moving to multi-user models common in resources sectors elsewhere[15]. Multi-user infrastructure, such as those Australia maintains in electricity and ports, lowers costs by eliminating unnecessary duplication. It facilitates private investment by diversifying customer risks, providing incentives to encourage demand growth, and in turn encourages the new capacity to meet that demand. Importantly, this multi-user infrastructure can serve users in sectors outside resources, providing important spillover benefits.

Considerations to address support for resources sector infrastructure development include:

- Early identification of likely infrastructure needs for projects and new resource basins. Achieving this might require a new model of cooperation between government and both resource and infrastructure sector project proponents. This could facilitate the planning of allowances for upgrade paths, matched to eventual resource basin needs, in initial infrastructure development.
- Government support for infrastructure projects suffering from coordination problems. At times, even highly motivated infrastructure investors require assistance to serve projects with different timelines. For example, government involvement to solve this type of problem has been successful in Queensland, Australia (see Box 3.2).
- Special incentives for infrastructure investment with clear spillover benefits for adjacent sectors. For example, electricity generation, training, accommodation and transport infrastructure can be used by agriculture, resource projects, general manufacturing and tourism alike.

Box 3.2 The Mount Isa electricity transmission line[16]

In Australia, the Queensland Government intervened successfully to facilitate the development of new electricity generation capacity for the mineral-rich Mount Isa region by the private sector.

In 2009, the Mount Isa region urgently needed new electricity supply to support growing resources sector activity. However, despite ample demand, there was a range of reasons why mining companies and infrastructure project proponents had not been able to agree on a way forward:

- Competing solutions, with different exposures to gas and electricity prices, made the choice of project difficult.
- Design features and capital costs of projects were uncertain, but the necessary studies could not be funded without greater certainty that projects would actually go ahead.
- Electricity consumers were reluctant to share detailed demand forecasts with project proponents, yet these forecasts were needed to finalise project proposals.
- Although a long-term solution was needed, demand growth meant any installed capacity might be initially underutilised, potentially placing an undue burden on early users.
- All solutions would need to be incorporated within the Queensland Government's regulatory framework, and some needed modest changes to existing regulations.

The Queensland Government facilitated a process by which customers collectively arrived at a preferred solution. The government managed permitting, approvals and the regulatory arrangements for infrastructure, while the customers participated in a competitive process, underpinned by a regulated asset model. In addition, the government created an option whereby the unsuccessful project proponents could be reimbursed some of their bidding costs, ensuring a real contest to provide a solution at the expense of relatively modest potential payments.

The result of this coordinated process was that the consortium of customers chose the Diamantina Power Station and associated transmission line, which is expected to be operational in 2014.

15 An important exception to this principle is where transport links are critical to the production of final products. This is the circumstance in the Pilbara region of Australia, for example, where dedicated transport links are needed to combine the output from many iron ore mines into specific iron ore blends.

16 Source: Department of Energy and Water Supply, Queensland Government; R Sims, 'Providing a circuit breaker to meet North West Queensland's future electricity needs', Queensland Resources Council and the Queensland Government, 2009.

3.3.3 Improve relationships between landowners, government and project proponents

Established legal frameworks in PNG already guide the distribution of project benefits. These frameworks define how income earned through taxes, royalties and government equity ownership is divided between different levels of government. They can extend to establishing special-purpose funds, or commitments to direct service delivery instead of cash income.

These agreements are broadly seen as solid commitments. If implemented well, they can provide substantial benefits to local communities and accelerate local development, as well as providing certainty for project participants.

When these commitments are not met, real and perceived project risk can rise sharply. For example, in April 2013 concerns regarding benefit delivery led the Hela Provincial government to call for PNG LNG to be shut down[17]. A petition presented by Hela landowners raised concerns about breaches to agreements including road building and maintenance, new bridges, and new water services which had not been delivered. Incidents like these increase investors' estimates of the chance of project disruption.

As well as outright disruption, inadequate delivery of agreed local services such as water, education or medical care can cause long-term damage. At times, rising local dissatisfaction leads project owners to deliver services themselves where it would usually be the responsibility of government. While this may improve community concerns, 'double payments' are deadweight losses that benefit neither projects nor communities in the long run. Repeated failures in delivering on agreements erode trust in the resources sector, making already sensitive negotiations concerning future projects more difficult.

PNG has the opportunity to improve relationships with investors and reinforce the trust all parties must share in project agreements. Doing so involves addressing questions including:

- How can the execution of project agreements be made more certain? This is of particular concern if new infrastructure is needed to deliver agreed services.
- Is there a role for special-purpose funds with representative boards in the execution of resources sector agreements?

17 This dispute has occurred despite extensive multilateral efforts that led to the negotiation of an Umbrella Benefits Sharing Agreement, and six Licence Based Benefits Sharing Agreements.

3.3.4 Coordinate and support current training and education practices to leave a continuing source of skilled people and training capacity

Resources sector growth requires the development of a skilled local workforce. While temporary skills gaps caused by rapid increases in investment are appropriately filled by overseas workers, building a local skilled workforce must be a priority for PNG. In addition to the obvious social benefits, this lowers costs and builds capabilities that benefit the broader economy, including the infrastructure and agriculture sectors.

Significant progress has been made on this already. Training partnerships formed by current projects have developed the nucleus of a local workforce and technical institutions targeted at resources sector needs. Fundamental, longer-term reforms in education and vocational training are also underway.

Maintaining momentum, especially while PNG LNG moves from construction into operation, is now the priority. Doing so will require addressing the following questions:

- Can greater use of partnerships between project proponents, specialist training providers and local institutions further accelerate skills delivery for the current pipeline of projects?
- What additional actions are needed to transform current cooperative training institutes into a permanent network of high-standard institutions?
- Even before systemic reforms begin to take effect, how can the broader tertiary and technical education system better focus on the skills needed to support the resources sector in the longer term? In particular, is there scope to increase the number of technical graduates?

4.0 INFRASTRUCTURE – THE KEY TO BALANCED DEVELOPMENT

KEY THEMES:

- ***Delivering priority infrastructure will be rewarded with strong economic growth.***
- ***Better delivery of infrastructure can be transformative for PNG.***
- ***Prioritisation, private sector involvement and improved governance can underpin improved delivery.***

4.1 INFRASTRUCTURE REFORM WILL SUPPORT STRONG GROWTH

Improved infrastructure is the key to translating resources sector wealth into broader economic growth. In PNG Prime Minister Peter O'Neill's words are frequently quoted: "You cannot grow an economy in a first-rate way with third-rate infrastructure"[18].

Improved infrastructure would make doing business in PNG less complex and less costly. Regional and agricultural entrepreneurs would experience particular benefits.

PNG's popular telecommunication reforms in 2006 introduced competition in the mobile market. The reforms encouraged an innovative business approach, tailored to PNG's conditions. The reforms allowed Digicel to grow volumes while lowering costs to consumers. Importantly, this growth has occurred by creating new regional markets as well as capturing market share in regions already served by mobile communications. As in other developing nations, this network is delivering other valuable services, including data on commodity prices and mobile banking services. The government estimated that the introduction of competition led to an average GDP growth benefit of 2.5 percentage points in the years immediately following Digicel's entry[19]. Reforms like these in other sectors could deliver similar benefits.

For example, within the transport sector reforms include:

- A superior road network could give a substantial boost to economic development in all sectors[20]. PNG's current road densities – at levels of 0.065 kilometres of road per square kilometre of land[21] – are extremely low even by developing country comparisons. Benefits would also flow from improved road quality. In 2010, one third of the national road network was of good quality, or passable in all conditions, already a substantial increase from 10% in 2003[22]. Although similar statistics for provincial roads are not available, only 10% of these roads are sealed[23].
- Volume growth has left PNG's key ports in Lae, Port Moresby and Madang at or close to capacity. Although all ports have room to improve efficiency (port turnaround times at Lae and Port Moresby of three days are almost three times higher than container ports in Australia which average 29 hours[24]), new investment will also be needed. Container export costs are also much higher than other Asian and Pacific nations. Maintenance on ports has been around 20% of what is ideally required[25].

18 S Jacob, 'Papua New Guinea prepares for an Asian Century', East Asia Forum, 16 January 2013, http://www.eastasiaforum.org/2013/01/16/papua-new-guinea-prepares-for-an-asian-century
19 Asian Development Bank, 'Papua New Guinea critical development constraints', 2012, p. 28.
20 The particular importance of transport, including road transport, is discussed in more detail in the next chapter.
21 PNG Development Strategic Plan 2010–2030, p. 66; PJP analysis.
22 PNG Department of Works, 'PNG Road Statistics', 2010, pp. 5–6; Asian Development Bank, 'Papua New Guinea critical development constraints', 2012, p. 30.
23 Oxford Business Group, 'Paving the way: Transforming the nation's land, sea and air infrastructure', 2012.
24 PNG Development Strategic Plan 2010–2030, March 2010; BITRE, 'Australian container ports in an international context', Information paper 65, 2009.
25 PNG National Transport Strategy, Vol. 1, July 2012, p. 55.

– Air transport's role is so critical that reforms to lower air transport costs should be a priority. Measured per kilometre, flights between major centres in PNG are around twice the cost of those in Australia. Travelling internationally from PNG to key Asian destinations can be 10 times as expensive as from Australia[26]. The quality of airports also needs attention. Only 12 of 22 major airports meet international safety standards and many remote airstrips need significant repair to be adequately usable[27].

Given the cost of road construction in PNG, optimising the mix between road, air and sea infrastructure can also help PNG arrive at its most efficient transport solution.

Development of the electricity system has also struggled to match growth in demand. The electricity system is less developed and reliable than necessary, and tariffs are high compared to other countries. Many businesses bear the cost of relying on back-up generators to manage power interruptions[28], and the costs of large new projects often include developing new power supplies. At 12%, PNG also has one of the lowest levels of electricity access by households in the Pacific[29].

4.2 IMPROVED DELIVERY CAN MAKE INFRASTRUCTURE AMBITIONS ACHIEVABLE

The government's infrastructure targets recognise both the need and the opportunity described above, and achieving these targets would be transformative for PNG.

They include[30]:

– Delivering roads of vastly improved length and quality. Current government plans aim to triple the national road network to 25,000 kilometres by 2030, with all roads upgraded to 'good' condition (Exhibit 4.1). At completion, 16 priority national roads would be upgraded. Sixteen 'missing link' roads and four new 'economic corridor' roads would be constructed. Provincial and local roads would be improved.

– Increasing the role of maintenance, which is up to 100 times cheaper than rehabilitation and rebuilding. Maintenance expenditure could also be increased from its current level, which was only 36% of that required in 2010[31].

– Delivering electricity access to 70% of the population by 2030 and having all major cities and towns on the national grid.

– Upgrading 10 airports to accommodate larger jets as currently only Port Moresby can service such aircraft. Fifty rural airstrips currently in disrepair would be rehabilitated.

– Increasing the proportion of the population with access to the internet from 2.3% to 70% by 2030. The government aims to increase mobile penetration from 15% mobile subscribers in 2010 to 80% in 2030, and increase access to radio and television to 100%.

26 PJP analysis of domestic and international air travel in PNG and Australia.
27 PNG Medium Term Development Plan 2011–2015, p. 52.
28 Asian Development Bank, 'Finding balance: benchmarking the performance of state-owned enterprises in PNG', 2012, p. 11.
29 Asian Development Bank, 'Papua New Guinea critical development constraints', 2012, p. 36.
30 PNG Development Strategic Plan 2010–2030; PNG Medium Term Development Plan 2011–2015.
31 National Economic and Fiscal Commission, Provincial Expenditure Review, 2010, p. 70.

Box 4.1 Botswana's infrastructure approach

Botswana is widely considered an instructive example of how a large resource endowment can lead to strong economic development outcomes. Following the discovery of diamonds in 1969, real GDP per capita grew at 9.3% from 1969 to 1990 and averaged 3.4% from 1990 to 2011[32]. Poverty rates were reduced from 50% in 1966 to 21% today[33].

Key to Botswana's success in fostering growth in productive sectors as well as achieving broad-based development was the provision of infrastructure. Investment in infrastructure increased GDP growth per capita by about 2% from 2003 to 2007.

Botswana focused on roads, water provision and sanitation and power infrastructure. Paved road coverage totalled 12 kilometres upon independence in 1966 and grew to 7,892 kilometres by 2008. Between 2006 and 2008 household access to electricity doubled from 22% to 50%. Access to piped water increased from 43% in 2000 to 65% in 2006.

Botswana's infrastructure delivery relied on long-term plans, private sector involvement in execution, opening up markets to competition and the efficient functioning of SOEs.

National development plans have consistently emphasised infrastructure. Successive budgets have directed significant resources towards social infrastructure and these have been supported by well-designed spending programs. The average spending on infrastructure from 2001 to 2007 was US$815 million, or 7.8% of GDP. Infrastructure projects are chosen carefully, making sufficient provision for long-term recurrent and maintenance costs. From 2001 to 2007, on average 47% of the $815 million infrastructure spend was on operating costs. This focus has resulted in significant improvements in the quality of Botswana's roads. In 2008, 80% of the main road network was in good or fair condition and 73% of rural roads were in good or fair condition[34].

Botswana engages the private sector to deliver a large portion of infrastructure through the independent Public Procurement and Asset Disposal Board (PPADB). Large-scale projects executed privately include the renovation of the Khama International Airport and the expansion of Morupule, a large electricity generation and transmission project. Botswana has been able to secure contracts at the lowest possible prices using global public tenders. Recent interest from Chinese construction companies, which operate on significantly lower margins than European and South African competitors, has further driven down prices[35].

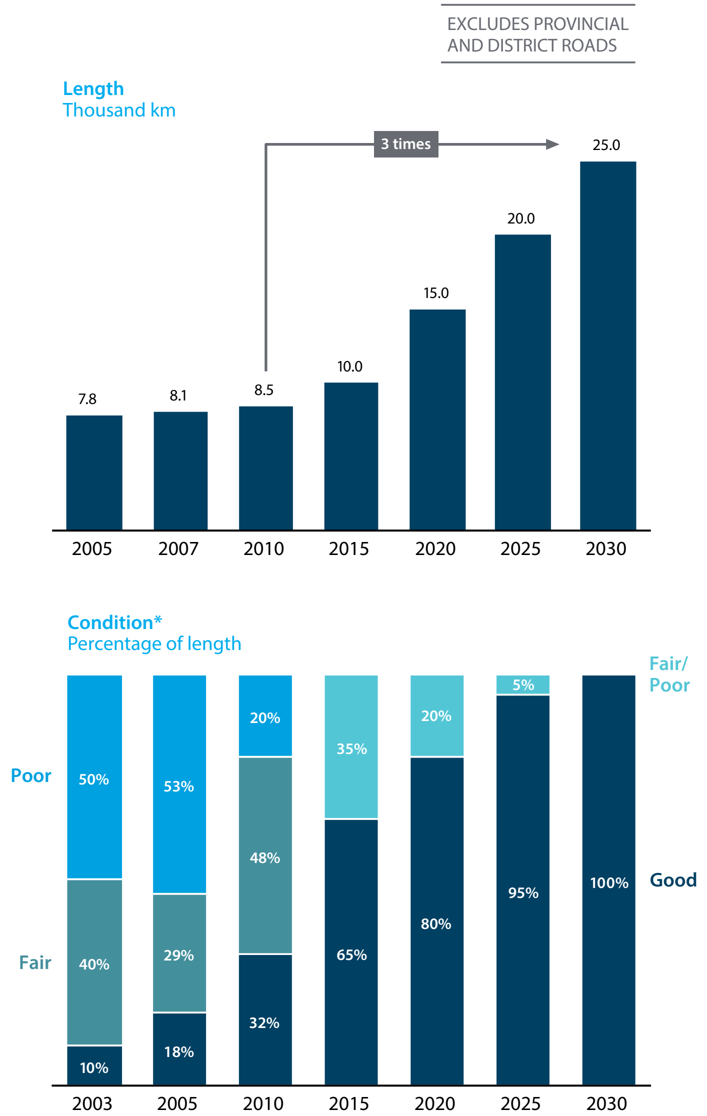
Competition has helped accelerate infrastructure delivery. Following the liberalisation of the mobile market in 1998, mobile phone subscription penetration increased from 12.9% in 2000 to over 100% by 2010. Prices fell by 30% between 2005 and 2010[36]. The market carefully combines private and public involvement. The government provides subsidies to extend mobile coverage to rural communities where it is otherwise uneconomical for private providers to do so.

The effective and efficient management of SOEs has played a key role in infrastructure delivery. SOEs have relatively market-orientated governance structures. Government interference in day-to-day management is kept to a minimum, especially in the area of pricing policies. There is also a large degree of accountability within SOEs. Government board members report directly to relative line ministers and require approval from the Ministry of Finance for any public loans or funding[37].

32 World Bank DataBank.
33 World Bank country profile.
34 C Briceno-Garmendia & N Pushak, 'Botswana's infrastructure: A continental perspective', The World Bank Africa Region Development Unit, 2011, pp. 3–33.
35 A Chen, 'China's role in infrastructure development in Botswana', SAIIA, Paper No. 44, 2009.
36 C Briceno-Garmendia & N Pushak, 'Botswana's infrastructure: A continental perspective', The World Bank Africa Region Development Unit, 2011, p. 28.
37 A Cricuolo, 'Briefing note: Botswana', World Bank, 2008, p. 6.

Exhibit 4.1

NATIONAL ROAD NETWORK IMPROVEMENT TARGETS



* A good road allows all-weather access for all vehicles, fair roads allow dry-weather access for all vehicles and wet-weather access for 4WD vehicles, and poor roads allow dry-weather access for 4WD vehicles and little or no wet-weather access.
Source: PNG Department of Works, 'PNG Road Statistics' 2010, pp. 5–6; Asian Development Bank, 'Papua New Guinea critical development constraints', 2012, p. 30; PNG Medium Term Development Plan 2011–2015, p. 52.

For government targets to be achieved, PNG must improve its ability to deliver – that is, to fund, design, construct, maintain and operate – infrastructure assets. This improvement must span government as well as SOEs that provide infrastructure.

Examples of the need for this improvement include:

- Improving road network cost efficiency so planned improvements in the national road network are affordable. If the trend of increasing costs continues, targeted improvements to national roads alone could absorb 15–30% of GDP by 2016[38] and require further financial commitments.
- Improving construction and construction management capacity. In 2011 the PNG Medium Term Development Plan anticipated expenditure of K1.6 billion on road upgrades and construction. Public accounts make it difficult to determine exactly how much was spent in total, but total transport spending was K282 million[39], or around 7% of planned spending[40].
- Improving SOE capabilities. The quality of power, telecommunications, and sea and air transport infrastructure is directly linked to the performance of PNG Power, Telikom PNG, PNG Ports Corporation and Air Niugini. Improving SOE performance would lower costs for users while ensuring any new investment is cost effective. The government made equity contributions of K697 million between FY02 and FY10[41]. As a group, in FY10 these four organisations returned 1.7%[42] on their current asset base despite high user charges described above. A dollar of capital invested in PNG's private sector contributes seven times more to GDP than one invested in SOEs[43].

Examples of high-quality infrastructure development exist in PNG. For example, the Gazelle Restoration Authority, an independent authority formed in 1995, led widely praised efforts to resettle affected communities after the Rabaul volcano eruption. Strong governance under the Gazelle Restoration Authority Act, dedicated funds and a focus on a concrete outcome were key ingredients for success. There is no reason why these outcomes can't be replicated elsewhere.

38 PJP analysis based on Medium Term Development Plan 2011–2015 targets and build and maintenance costs from PNG Department of Works 'Road statistics' 2010.
39 PNG 2013 National Budget p. 52.
40 PNG Medium Term Development Plan 2011–2015, p. 48.
41 Asian Development Bank, 'Finding balance: benchmarking the performance of state-owned enterprises in Papua New Guinea', 2012.
42 PJP analysis and Asian Development Bank, 'Finding balance: benchmarking the performance of state-owned enterprises in Papua New Guinea', 2012.
43 ibid. p. 3.

4.3 BUILD AND DEPLOY WORLD-CLASS CAPABILITY AS A PRIORITY

To help ensure that infrastructure improvement is achievable, there are four key areas in which PNG could consider reforms.

4.3.1 Focus on delivering maximum economic benefit at lowest cost

More infrastructure investment is not always better. As discussed previously, a poorly executed electricity build program in Botswana was a drag on economic development, and in other African countries infrastructure investment has reduced, not grown GDP[44].

Private sector capital expenditure is subject to rigorous cost–benefit analysis. Analysing government infrastructure plans in this way would allow debate over the appropriate level of infrastructure spending, and open discussion about the order in which infrastructure should be built. Referring to this initial work would also impose disciplines on the pace and cost of individual projects.

To maximise the benefits from such an analysis, the following questions could be considered:

- What changes to existing infrastructure planning processes are needed to incorporate cost–benefit analyses?
- How can performance across national and provincial governments be monitored to ensure targets are met and performance improves? What remedial actions might be taken to assist poor-performing agencies within government, or poor-performing provincial governments?
- What is the appropriate balance between maintenance and construction activity? This debate could be assisted by including both maintenance projects and construction of new assets in cost–benefit comparisons.

4.3.2 Embrace world-class private sector delivery within appropriate boundaries

PNG has a history of reliance on government at all levels. Thinking boldly will help to imagine a different PNG, where private businesses play the dynamic, nation-building roles they do elsewhere in the Asian region.

Other experiences across the Pacific support private sector involvement: for example, Fiji, Samoa and Tonga have opened their air transport, road maintenance and shipping operations to private involvement. In Fiji's case, this is part of an ongoing privatisation agenda[45] that has included, for example, the sale of part shares in Air Pacific and Amalgamated Telecom Holdings, and plans to privatise Food Processors Fiji and Post Fiji. The result of private provision of public services has been productivity gains of between 20% and 400%. The Asian Development Bank's view is that "experience demonstrates that these services can be provided effectively by the private sector, even when the services are subsidised; and that direct contracting with the private sector can be more cost-effective than working through an SOE"[46]. Involvement of the private sector in more capital-intensive infrastructure is commonplace in many other economies.

44 C Briceno-Garmendia & N Pushak, 'Botswana's infrastructure: A continental perspective', The World Bank Africa Region Development Unit, 2011, p. 4.

45 This broad program has been supported by the Asian Development Bank.

46 Asian Development Bank, 'Finding balance: Benchmarking the performance of state-owned enterprises in Papua New Guinea', 2012, p. 8.

PNG's own experience also supports increased involvement of the private sector. As well as mobile telecommunications, PNG has already developed parallel privatised networks in key infrastructure sectors, including duplicate ports in Port Moresby, privately constructed roads within resource project borders, and substantial private electricity-generation capacity. Capitalising on the private infrastructure capacity already in PNG, through coordination and further expansion, could provide an immediate boost to economic growth.

Involving private sector infrastructure specialists would allow PNG to deliver infrastructure at world-class standards while domestic capability is built in parallel. Private sector involvement at world-class standards would also make available financing arrangements that could help to ease demand for up-front government spending.

Government action will be needed to stimulate this private sector involvement. Initially, it will be crucial to define the role for the private sector across different types of infrastructure before any work begins. This will require consideration of issues such as the potential for competition in infrastructure services, the ability to 're-bid' franchises, and the ability to regulate prices appropriately for natural monopolies. Markets may have to be redesigned. In some cases, procurement and contracting approaches can be changed to remove biases, allowing world-class firms to enter the market and provide genuine competition to existing players. This would include striking an appropriate and transparent balance between the benefits of low-cost and readily available capital, including that from Chinese infrastructure firms, lower whole-of-life costs associated with higher-quality initial construction, and local skills development.

For PNG, embracing private sector delivery will require addressing issues including:

- How should PNG design and then implement a policy and legislative framework for private sector participation? In particular, what should be the contribution of the yet to be released Public Private Partnership framework currently under Cabinet deliberation?
- Should PNG build on the successful introduction of competition in telecommunications by liberalising other markets, including air travel and electricity?
- Should the current Infrastructure Tax Credit Scheme (see Box 4.2) be expanded? What other incentive programs might be appropriate?
- Could a small number of flagship public private infrastructure projects (for example, the currently planned Purari hydroelectric scheme being promoted by PNG Sustainable Development Program and Origin Energy) serve as a template for high-standard private sector involvement?
- Should procurement approaches, including the use of whole-of-life cost evaluations, be reviewed to avoid unintended biases? For large road projects, for example, should the size of tendered contracts be increased to appeal to larger, more capable contractor firms?

4.3.3 Privatise state-owned enterprises to improve performance

Privatised SOEs benefit from capital market disciplines and are most likely to be able to compete with new private competitors in liberalised markets.

PNG's privatisation agenda has started and stopped a number of times. The pace of needed reform as well as the improvement potential of current SOEs argue for this agenda to be restarted and maintained.

This means answering questions including:

- How quickly should PNG move towards the privatisation of SOEs, and in which order should this occur?
- How should this process be aligned with market liberalisation and other policy changes suggested above?
- In the immediate term, how can SOEs and their key executives be made more accountable for improving performance? Should executives and board members have individual performance targets, and should these be publicly disclosed?
- Should SOEs remain under the oversight of the Auditor General until they move into wholly private ownership?

4.3.4 Establish a strong and independent Infrastructure Development Authority

The establishment of the planned Infrastructure Development Authority could bring a new era of infrastructure planning, execution and accountability. While this Authority is in its planning stages, it is important to think about the future scope of its role and how it might relate to, or replace, existing infrastructure agencies.

Key questions to examine include:

- Should it have an advisory role or a decision-making role about the infrastructure to be invested in?
- Should it have any funding, investment or ownership responsibility for infrastructure?
- What is the best way to establish it? Does it need a separate Act of Parliament?
- How should its governance be managed? What board composition does it need? Which minister should be responsible for it?

Box 4.2 Tax credit funded infrastructure[47]

The use of a range of tax credit schemes in PNG has incentivised the private sector to participate in infrastructure delivery. Companies can undertake infrastructure development or maintenance of state-owned assets with pre-approval from the appropriate government department, and gain tax concessions for doing so. Prescribed infrastructure includes roads, schools, aid posts, hospitals and other capital assets.

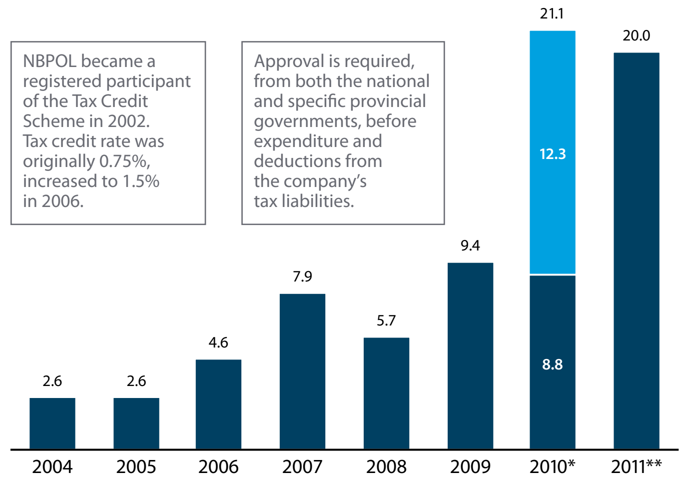
As an example, since 2004, New Britain Palm Oil has spent K74 million via this scheme on projects including road maintenance, emergency repairs to bridges and upgrade and expansions plans for ports (Exhibit 4.2). This infrastructure spending is targeted to improve market access for smallholders.

Companies in primary production and tourism can claim a tax credit of up to 1.5% of assessable income a year and those in resources sectors can claim up to 0.75% in a year. There are requests with government for the tax credit to be increased to 2% for the resources sectors. There is evidence, however, that allowances under the current scheme are underspent.

Exhibit 4.2

TAX CREDIT FUNDED INFRASTRUCTURE – NEW BRITAIN PALM OIL LTD (NBPOL)

Tax credit funded infrastructure
Million Kina



Project spending

2011 Roads as well as assistance with the upgrade and expansions plans for the Kimbe Port and Hoskins airports

2010 29 separate road projects, specifically on emergency repairs, bridge repairs and feeder roads enabling all-weather road access to smallholders

2009 Repairs to the national highway, bridges and feeder road networks within the province

* 12.3m awaiting approval.
** Anticipate tax credit of over K20m.

47 Source: New Britain Palm Oil Ltd annual reports 2004–2010.

5.0 AGRICULTURE – FUNDAMENTAL TO STABLE BROAD-BASED DEVELOPMENT

KEY THEMES:

- ***Ambitious agricultural growth targets reflect PNG's potential to benefit from Asia-led demand growth.***
- ***Creating attractive commercial opportunities for agribusiness entrepreneurs will facilitate growth in the sector.***
- ***Meeting three key goals will improve performance:***
  - ***Creating the scale needed to compete globally***
  - ***Improving transport infrastructure and logistics***
  - ***Setting and achieving quality and yield targets linked to global market needs.***

5.1 ASIAN ENGAGEMENT PROVIDES PNG AGRICULTURE WITH ENORMOUS POTENTIAL

The Asian Century will bring many opportunities for PNG agriculture. From 2006 to 2030, it is estimated that half of global growth in food demand will come from Asia (Exhibit 5.1). This growth will create attractive conditions for PNG commodities. Consumption of chocolate, for example, could increase by nearly 30% over the next 10 years, creating a supply gap of up to 25% of the current global supply of cocoa by 2020[48]. More broadly, PNG has ample latent water and land capacity. PNG's annual renewable water supply is 119.5 million litres per capita, almost five times as much as Australia[49], and only around 3% of currently cultivated land is used for export cash cropping[50].

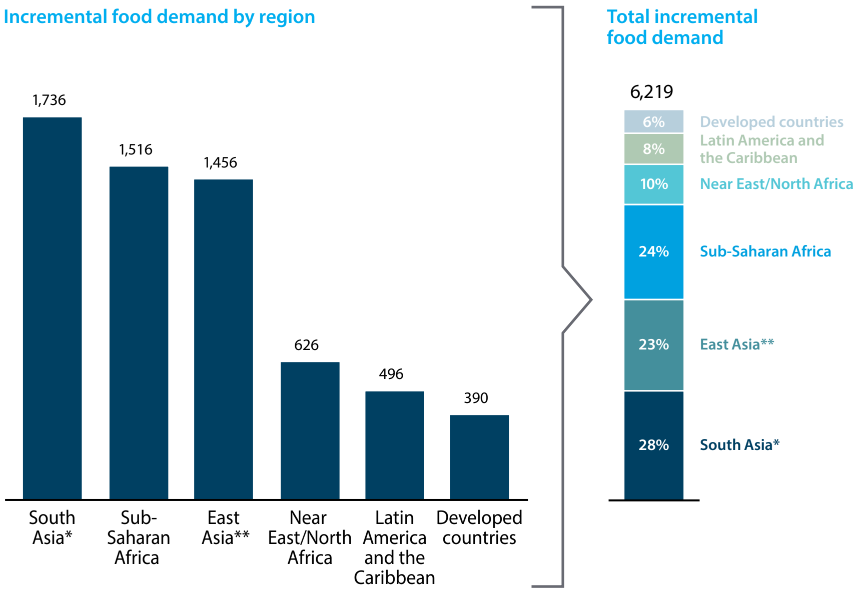
Supported by these favourable conditions, growth is underway in key agriculture sectors. Soft commodity exports have grown at 12.8% p.a.[51] from 2001 to 2010, faster than GDP at 10.8% p.a. over the same period. Strong volumes and prices have produced double-digit export growth rates in palm oil, cocoa and forestry in particular (Exhibit 5.2). In 2010 soft commodity exports reached almost K4 billion for the first time[52].

48 DELMAS Commodity-watch, Issue 13, June 2012, p. 8 (Bloomberg 9 May 2012).
49 Aquastat, FAO.
50 R M Bourke & T Harwood, 'Food and agriculture in Papua New Guinea', ANU ePress, 2009.
51 World Bank DataBank. Analyses in this section are expressed in real terms, and are based on The World Bank long-term prices, in 2013 dollars, for relevant commodities.
52 FAOstat, FAO Fisheries and Aquaculture Department statistics database.

Exhibit 5.1

INCREMENTAL FOOD DEMAND BY REGION 2006–30

Teracalories/day

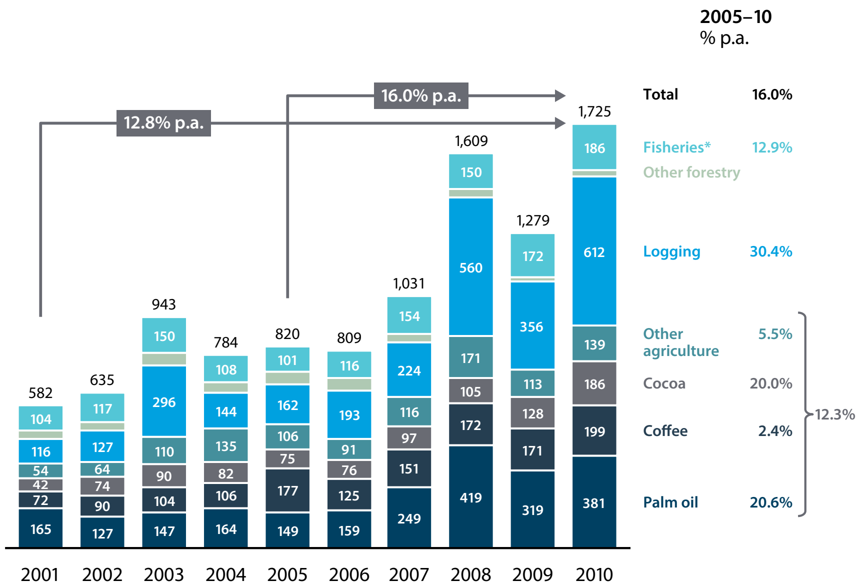


* Includes India.
** Includes China.
Source: FAO report 'World agriculture towards 2030/2050 – The 2012 Revision'; PJP analysis.

Exhibit 5.2

SOFT COMMODITY EXPORTS

Real 2013 US$ Million p.a.



* Excludes licence revenues.
Source: FAOstat, FAO Fisheries and Aquaculture Department statistics database.

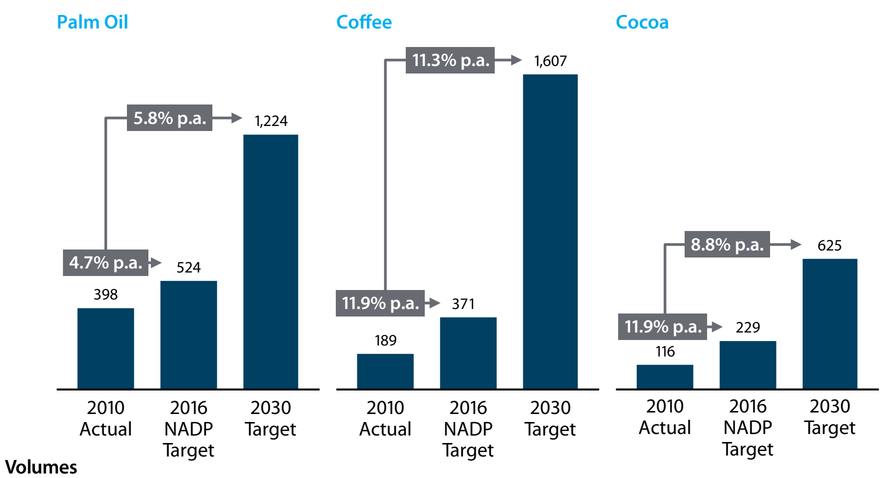
The PNG government's plans reflect this potential. The Development Strategic Plan's 2030 volume targets imply export revenues for palm oil, coffee and cocoa of US$3.5 billion in 2030, a five-fold increase from 2010 export levels at long-term prices.

These are ambitious plans. Targets for coffee and cocoa imply export growth of 11.9% per annum to 2016 from current levels, and 11.3% and 8.8% per annum growth respectively to 2030 (Exhibit 5.3). For palm oil, coffee and cocoa, the plan implies achieving yields close to world's best practice and a more than doubling of land used for cash cropping. Local trials and experience elsewhere suggest this demanding performance is achievable[53] but it represents a sharp change from recent trends. For tuna, the plan anticipates extracting further value from the 700,000 tonnes of sustainable annual catch, implying a rapid expansion of PNG's small tuna canning industry. The plan aims to double the income received from tuna licence fees to K120 million and triple the value of processed exports to K567 million by 2030. In timber, the goal is to transition completely to sustainable forestry practices and increase the share of processed timber exports to 80% from 21% in 2007.

Exhibit 5.3

HISTORIC AND TARGET VALUES FOR KEY COMMODITY EXPORTS*

Real 2013 US$ Million p.a.; % per annum



	Palm Oil 2010 Actual	Palm Oil 2016 NADP Target	Palm Oil 2030 Target	Coffee 2010 Actual	Coffee 2016 NADP Target	Coffee 2030 Target	Cocoa 2010 Actual	Cocoa 2016 NADP Target	Cocoa 2030 Target
Volumes Thousand tonnes	520	685	1,600	59	115	500	58	114	310

* At long-term prices (2014–2025 average World Bank price forecasts).
Source: FAOstat; PNG National Budget; PNG National Agriculture Development Plan 2006–2016; Development Strategic Plan 2010–2030; PJP analysis.

PNG's ability to increase production and productivity in agriculture, forestry and fisheries will partly determine how much PNG can protect its economy from the challenges of over-dependence on natural resources. This provides additional motivation to increase output beyond the obvious benefits of increased export and production revenue.

53 FAOstat; The World Bank Productive Partnership in Agriculture Project; New Britain Palm Oil 2011 annual report; P N Nelson et al., 'Nutritional status of cocoa in Papua New Guinea', ACIAR, 2011, p. 14; R M Bourke & T Harwood, 'Food and agriculture in Papua New Guinea', ANU ePress, 2009, p. 169; personal communication.

5.2 GROWTH MEANS CREATING THE CONDITIONS FOR AGRIBUSINESSES TO THRIVE

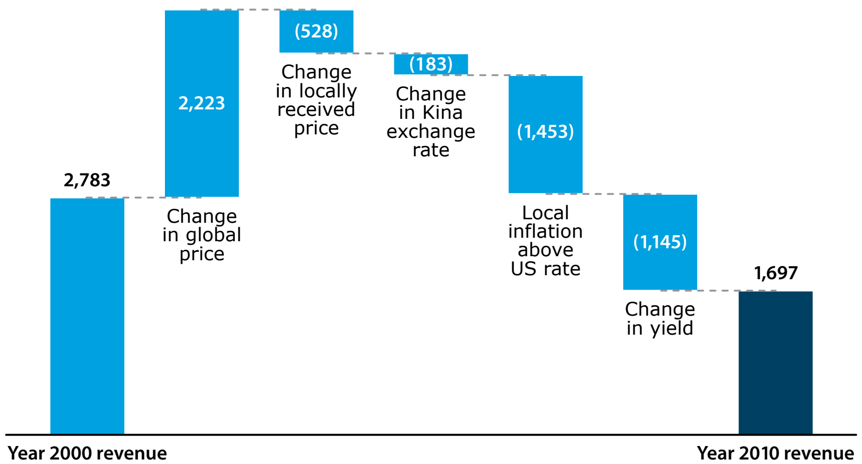
Broad growth in agriculture will be encouraged if agribusiness entrepreneurs, investors and farmers can see attractive opportunities. Unless farmers can deliver an appropriate surplus for themselves and potential investors, the investment needed to improve quality management and processing, and replace rapidly ageing tree stock (e.g. in coffee and cocoa), will not flow into the sector.

Analysis of returns available in cash cropping suggests these opportunities do not yet exist in sufficient quantity. In the decade to 2010, real revenue in coffee and cocoa declined although global coffee prices rose strongly (Exhibit 5.4). Coffee and cocoa growers experienced high cost inflation, declining yields and a reduction in locally received prices versus benchmark. Earnings for PNG coffee and cocoa smallholder farmers often failed to meet the minimum wage, let alone match the returns that palm oil farmers received[54]. This lack of quality opportunities is reflected in the modest rates of land used for cash cropping.

Exhibit 5.4

ESTIMATED CHANGES IN REVENUE, 2000–10 – COFFEE

Real 2010 Kina per hectare



Source: FAOstat, World Bank, CapitalIQ, PJP analysis.

Analysis undertaken in line with this report suggests that PNG needs to seek out three goals in order to encourage attractive investment opportunities.

54 World Bank, 'Project appraisal document on a proposed credit in the amount of SDR 16.4 million to the independent state of Papua New Guinea for a productive partnership in agriculture project', 2010.

5.2.1 Create the scale effects needed to improve performance and compete globally

It is well known that achieving scale of production will better enable globally competitive agriculture as it drives down the costs of production[55]. Scale benefits can be achieved in logistics and transport, supporting infrastructure such as electricity and post-harvest processing, provision of inputs, and marketing.

PNG has previously benefited from increases in scale. PNG's legacy plantations in coffee and cocoa out-performed the current smallholder farmer model in terms of both yield and the quality of produce. For palm oil, the current at-scale plantations underpin the higher profitability of the sector in PNG. Two-thirds of production in palm oil still originates from plantations, and most other production comes from smallholders aligned to a plantation. This scale, and the stable relationships associated with it, facilitate quality management, including consistent post-harvest processing, extension services and supply chain improvements.

5.2.2 Improve transport infrastructure and logistics

Transport infrastructure and logistics underpin a successful agricultural sector. Low-cost transport is needed to improve market access, lower the cost of outbound transport from farms to export ports, allow input delivery or lower the costs of delivered inputs and reduce the time taken to export to preserve quality.

Weaknesses in the PNG transport system hamper and in some cases deny market access completely. These weaknesses also undermine efforts to improve quality. The poor quality of the roads increases the risk of theft during transport, and delays in transportation contribute to product degradation and reduced quality. Inadequate transport also hampers the delivery of necessary inputs and extension services. For example, an estimated 30 to 50% of coffee crops do not even make it to market[56]. Bags of coffee can be carried up to five hours to get to a road to meet a buyer[57]. Slight improvements in the provision of transport infrastructure can therefore have significant benefits to the industry, without increasing production.

5.2.3 Set and achieve quality and yield targets linked to global market needs

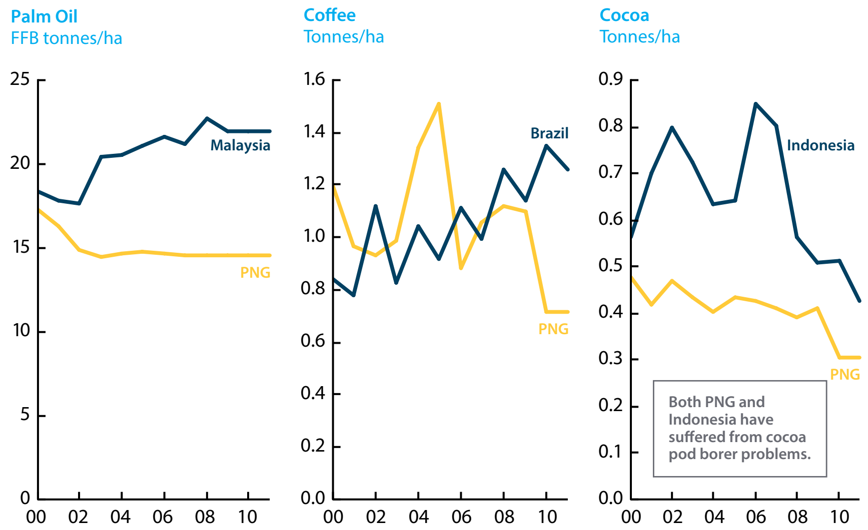
Quality and yield targets that are agreed on and shared by industry bodies, farmers and government can focus activity in PNG's agricultural sectors, including extension activities and skills improvement. To be most effective, however, these targets must be linked to global market requirements.

In coffee, for example, there appears little evidence of an industry-wide movement – ideally guided by market intelligence – to embrace either a high or low-quality position in the global coffee market. Most of PNG's coffee is sold as bulk Y-grade, predominantly for instant coffee. Little production secures a price close to the maximum price premium due to poor quality control and post-harvest processing. The share of coffee qualifying for Organic, Fair-trade or Fair-trade Organic status with associated price premiums is increasing but still low. There is also ample opportunity to improve yields, which are currently well below benchmark levels in palm oil, coffee and cocoa[58] (Exhibit 5.5). While palm oil yields from smallholders are below world average benchmarks, plantation yields are close to the global average[59].

55 AgDevCo, 'Agricultural growth and poverty reduction in Africa: the case for patient capital', Briefing Paper, March 2010.
56 M Manning, 'Papua New Guinea's Strategic Plan for Agriculture', Pacific Economic Bulletin, Vol. 22, No. 3, October 2007, p. 167.
57 Personal communication.
58 FAOstat.
59 FAOstat, New Britain Palm Oil.

Exhibit 5.5

PNG COMMODITY YIELDS VERSUS REGIONAL BENCHMARK COUNTRY



Source: FAOstat.

Producing goods of consistent quality at consistent yields would allow PNG to establish longer-term supply arrangements with global buyers and, by aligning quality to market demands, contribute to attracting consistent price premiums. This would help to buffer the agricultural sectors against global price fluctuations, which currently have a significant effect on smallholder agricultural harvests[60].

Consistent quality and yield results would also help develop a sustainable competitive advantage for PNG's agricultural sectors. Once these improvements are well established, they could also form the basis of value-adding within PNG.

5.2.4 Specific reforms needed for tuna and forestry

Forestry growth requires the development of a broadly applicable and sustainable path for bringing new land into use, and investment in high-quality processing to extract the maximum value possible from existing and new production. Like coffee and cocoa, forestry also needs to establish consistent supply arrangements to better enable investment in the processing of timber products and quality improvement. The East New Britain balsa wood operations benefit from secure landholding systems, a legacy of old coconut plantations, that enable smallholders and plantations to enter into reliable supply arrangements. Such a model should be encouraged across all producers.

For tuna, ongoing growth will require better access to low-cost inputs. PNG canneries are currently competitive with those in Thailand and the Philippines only through tariff-free access to key markets, which is not a sustainable basis for cost competitiveness in the long run. Tuna catches are additionally at the limit of sustainable output, so growth cannot come from increasing volumes. The sector will require ongoing and coordinated regional action to ensure that other Pacific nations resist pressures to increase catches beyond these levels. It is crucial that PNG maintains its reputation as a sustainable supplier in order to guarantee market access and demand.

60 Copra and coffee farmers' production appears to be particularly responsive to changes in global prices. World Bank, 'From the last days of the boom to the lasting improvement in living standards', Papua New Guinea Economic Briefing, Vol. 1, 2013.

5.3 AGRICULTURE WILL BENEFIT FROM COORDINATED REFORM

These goals described previously cannot be achieved by individual reforms. Coordinated initiatives are required (Exhibit 5.6).

Exhibit 5.6

KEY AGRICULTURAL GOALS

	Goals		
Initiatives	**Create the scale needed to compete globally**	**Improve transport infrastructure and logistics**	**Set and achieve quality and yield targets linked to global market needs**
Encourage regional value chain coordinators	• Effective horizontal and vertical coordination can bring some of the benefits of scale.	• Guides evolution of logistics investment.	• Aids communication of targets and creation of mechanisms to meet them.
Reform landholding systems	• Allows creation of larger holdings via either: – outright purchase, or – lease plus salary.		• Provides path to bring new land into production or shift from lower to higher value production while retaining sustainable production access privileges.
Reshape financing to combine traditional and not-for-profit capital, especially in processing	• At-scale farming and processing need ample new investment.		• Processing underpins quality improvement but is now a barrier to entry due to lack of funding.
Reorient and possibly extend aid, research, extension and industry-body activities		• Role to influence infrastructure planning.	• Quality and yield should be principal focus; enables rationalisation of industry-body activities and targeting of extension services. • Increases skill levels and labour productivity.

5.3.1 Leaders are needed who are able to create and capitalise on improved coordination within a regional value chain.

The World Bank has identified a generalised model described as a Value Chain Participant Council (Box 5.1), which may serve as a template for PNG-specific solutions[61]. Although the exact form of these solutions in PNG needs to be determined, it is possible that coordination can occur through attracting users to supply chains that are particularly reliable or cost efficient, or high-quality processing infrastructure, or financing arrangements that are particularly attractive.

This type of coordination can be government led, but private agribusinesses are also capable of playing a leading role. Agmark, for example, is PNG's largest exporter of cocoa with over 60% of all exports and connects with smallholders in its supply chain. Agmark works with small groups of around 100 smallholders at a time, providing education and skills to assist them to improve yield and manage the devastating impact of the Cocoa Pod Borer. As a result, Agmark has built lasting relationships with its suppliers by providing extension services, credit for inputs such as herbicides and tools.

Questions that need to be addressed to improve regional coordination include:

- What type of coordination, through which mechanisms, can best bring the benefits of scale to PNG agriculture?
- How can entrepreneurs help guide investment in transport infrastructure and logistics? Will the benefits of transport investment be able to be captured by a larger group as coordination grows within a region and transport needs become clearer?
- How can value chain coordinators work with industry bodies to help meet new yield and quality targets? Is there a role in communicating targets to groups of farmers, or more importantly, facilitating new mechanisms to meet these targets?

Box 5.1 Value Chain Participant Councils[62]

Research undertaken by The World Bank identified a need for a mechanism to create horizontal and vertical coordination within smallholder-dominated agricultural sectors.

As a result of this research, the Bank suggested the establishment of Value Chain Participant Councils (VCPCs). These councils would be voluntary groupings of a broad spectrum of industry participants, typically formed to respond to a threat or opportunity that individual actors cannot address on their own. At their most effective – owing to their ability to gather information throughout a sector, reconcile competing interests, and create workable solutions to a sector's most pressing concerns – they can evolve into permanent bodies. Over time, they identify and create a range of public goods essential for agricultural development. They bring a coordinated approach to new products, an agreed set of quality standards, or assist in creating access to new markets that individual actors cannot achieve on their own.

VCPCs represent neither state-dominated, top-down control, nor purely private coordination of an entire vertical chain. VCPCs can be organised by either a public or private sector actor, motivated by either a specific mandate or the possibility of private gain through overall sector development.

61 K K Yumkella et al. (Eds.), 'Agribusiness for Africa's prosperity', UNIDO, 2011, pp. 83–86.

62 Source: K K Yumkella et al. (Eds.), 'Agribusiness for Africa's prosperity', UNIDO, 2011, pp. 83–86.

5.3.2 The case for stronger landholding arrangements in countries with traditional customary tenure systems is strong[63]

Stronger landholding arrangements provide for greater agricultural productivity in many developing countries[64]. Potential benefits for PNG agribusinesses and entrepreneurs include:

- Creating the scale needed to compete globally. Within stronger arrangements, larger holdings could be created by outright purchase of land, or by leasing land to new users. Giving existing landowners security of tenure can encourage land-related investment and enable land rental markets.
- Providing a path to bring new land into production or shift land from lower to higher value uses to improve productivity. This would help meet new quality and yield targets for agricultural production.

Within PNG there have been some informal land transactions to allow transfers from customary landowners to others wanting access to land for agriculture. While these informal transactions have had some success, one proposed Land User Agreement[65] would formalise these arrangements so that all parties involved are more satisfied with the result. The proposed Land User Agreement does not rely on fundamental reform to the land tenure system but works within it.

The key issue to resolve is how to strengthen current landholding systems to create flexibility and certainty over land use.

5.3.3 Finance reform could allow a combination of traditional and not-for-profit capital to assist with development in the supply chain, especially at the processing stage

Barriers to entry such as one-off start-up costs or needed experimentation[66] can deter purely commercial investors from investing in agriculture. Innovative finance approaches could bypass the lack of traditional collateral available due to current landholding systems.

Questions to consider in reforming finance include:

- How can new partnerships combine commercial and not-for-profit risk tolerance and investment horizons?
- How can this reform generate the investment needed to undertake large-scale farming? Investment in inputs, extension services and post-harvest processing in particular is needed for scale to be achieved.
- How can changes to financing enable investment in post-harvest processing? PNG can only meet the quality needs of the global market with consistent post-harvest processing.

63 World Bank, 'Supporting smallholder competitiveness through institutional innovations', World Development report, Chapter 6, 2008.

64 ibid.

65 G Koczberski, G N Curry & J Anjen, 'Changing land tenure and informal land markets in the oil palm frontier regions of Papua New Guinea: the challenge for land reform', Australian Geographer, Vol. 43, No. 2, 2012, pp. 181–196.

66 AgDevCo, 'Agricultural growth and poverty reduction in Africa: the case for patient capital', Briefing Paper, March 2010.

5.3.4 *Improving quality and yield should become the main aim of all extension services, both public and private*

If this overarching aim is adopted, the many different strands of aid, research and industry-body activity can be rationalised and scarce resources efficiently reallocated.

Of the US$3.1 billion of aid commitments PNG received between 2007 and 2011[67], agriculture received 4%, or US$120 million. Australian aid to agriculture in PNG is restricted to funding programs through the Australian Centre for International Agricultural Research (ACIAR). The level of aid received seems inconsistent with the vital role agriculture should play in PNG's future. Aid that is specifically directed to agriculture is needed.

Key questions relevant to refocusing agricultural activity include:

- How can reinvigorated and refocused research and development and extension services improve yield and quality, particularly for coffee and cocoa? Research and extension services are currently not providing the support required to improve yield and quality in these sectors[68].
- Can aid and industry-body activities help guide infrastructure planning? Could coordinated action from these bodies provide new insight to urgent transport infrastructure requirements?

Outside agriculture, encouraging continued tuna-processing growth is important. Although PNG's tuna stocks are among the world's richest, PNG's catch has reached the limit of sustainability. Key questions include:

- How can PNG maximise its returns from foreign licensing? Can it maximise its negotiating position with international fishing companies by working with other countries in the region?
- How can PNG establish the competitive canneries vital to the fisheries sector? Despite the market advantages PNG currently possesses, much tuna is still trans-shipped, but not canned, through PNG ports.
- How can canneries currently under construction be guaranteed to start production, and how quickly?

67 This total excludes unallocated aid and is before administrative costs.

68 R M Bourke & T Harwood (Eds.), 'Food and agriculture in Papua New Guinea', ANU ePress, 2009, pp. 452–453.

6.0 LEADERSHIP AND STAKEHOLDER CONVERSATIONS TO SUPPORT PNG'S DEVELOPMENT

KEY THEMES:

- ***The opportunities created by the Asian Century can help focus national discussions on what needs to be done to realise them.***
- ***Reorienting government and institutional focus towards the opportunity being created by Asia while refocusing existing relationships can bring many potential benefits.***
- ***Engagement with Asia implies a new agenda for existing supporters of and stakeholders in PNG's development.***

6.1 REORIENTING GOVERNMENT AND INSTITUTIONAL CONVERSATIONS TO ADDRESS ASIAN CENTURY OPPORTUNITIES

The opportunity and potential policy directions described in this report invite a new type of national conversation. This conversation can form part of the existing wider discussion currently taking place in PNG.

The analysis undertaken as part of this report suggests there are four new areas for discussion.

6.1.1 *Purposeful moves towards the simultaneous growth of resources, infrastructure and agriculture*

This discussion can begin by embracing coordinated growth as a national strategic objective. It could be supported by policies designed to promote coordination between the sectors, as well as to identify and promote economic spillovers.

Many actions that support individual sectors also have coordination benefits. These have already been discussed, but key questions to consider include:

- How can infrastructure costs be reduced by integrating resources sector infrastructure with broader needs?
- How can relationships between landowners, government and project proponents be improved to reduce risks that exist in the development of the resources sector?
- How can current training and education practices be supported and improved to leave a continuing source of skilled people and training capacity?
- What is the best way to focus activity on those pieces of infrastructure with maximum economic benefit at lowest cost?
- How can improved transport infrastructure and logistics best contribute to agricultural sector development?

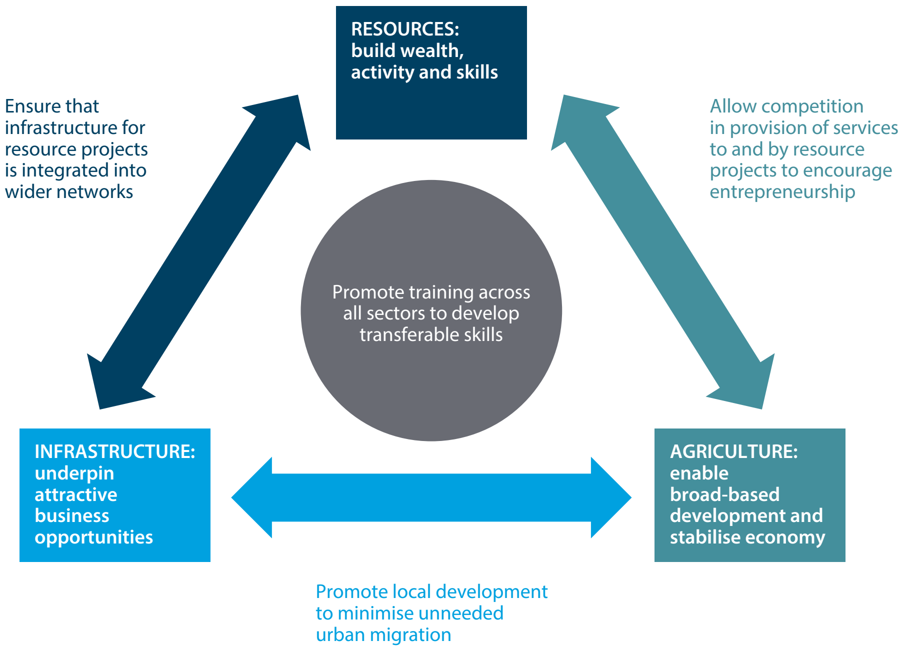
If these areas were all to be substantively addressed, PNG would be well on the way towards promoting broad-based growth.

One of the benefits of this broad-based growth would be alleviating the 'resources curse' where growth in the resources sector effectively crowds out other sectors, stifling overall development. There is already evidence that PNG is suffering from this 'curse'. Against a basket of trading partner currencies, from January 2005 to November 2012 the Kina appreciated by 52%; government spending increased 90% from 2005 to 2013; and there is evidence of rises in property prices and wages for skilled workers[69]. Moreover, the economy will be dominated to an even greater degree by the resources sector if all projects currently in the pipeline are developed.

In addition to coordination policies, a discussion about the need to promote policies that identify and encourage spillovers would be beneficial (Exhibit 6.1). These policies can help to ensure that the benefits of resource, infrastructure and agricultural development are felt as widely as possible across the economy. Encouraging spillovers into new or emerging sectors such as tourism would also be of value.

Exhibit 6.1

PROMOTING SPILLOVERS IN THE ECONOMY



Coordination of sector growth and policies that maximise spillover benefits can be made more effective if entrepreneurship and commercial values become more widely accepted. Within the agricultural sector in particular, growth will come from new entrepreneurs who are able to see new opportunities and invest for growth.

69 World Bank, 'From the last days of the boom to the lasting improvement in living standards', Papua New Guinea Economic Briefing, Vol. 1, 2013, p. 6.

6.1.2 National-level actions to support the resources sector as the impetus for growth in other sectors

With effective coordination, growth of the resources sector can drive development across the economy as whole. It will generate the wealth needed to invest in productive infrastructure, which in turn underpins agricultural sector development to sustain the economy for the long term. There are a number of national-level issues which deserve attention to ensure the resources sector can reach its potential and promote economy-wide development.

One such issue is the need to build strong institutions. The difference between resource-rich countries experiencing high and low growth is explained by the quality of each country's institutions[70]. Institutional quality is measured by: rule of law; bureaucratic quality; the absence of corruption in government; low risk of expropriation and government repudiation of contracts. Only by continuing to improve the quality of PNG's institutions can the resources sector contribute its full potential to the economy.

Without confidence in the integrity of government processes, investors will not pursue resources or infrastructure projects, or invest in the entrepreneurial activity needed in agriculture. The pressure for exemplary governance is increasing as, for example, regulations in the EU over the conduct of many global companies spread from their home countries to their 'branch offices' no matter where they are. An example is the UK *Bribery Act 2010*, which entered into force on 1 July 2011. The Act provides strict penalties for UK businesses and individuals engaging in acts of bribery both within and outside the UK. The Act provides UK courts with a wide jurisdiction, and prosecution can occur whether or not the offence takes place within the UK. PNG needs to continue its efforts to improve in this area to be able to capitalise on the opportunities available to it.

While no country has fully solved its corruption and law and order problems, initiatives in Africa and elsewhere in the Pacific may provide a template for further progress in PNG. For example, Rwanda, Malawi and Ghana have improved their rankings on international corruption indices (Exhibit 6.2), in turn achieving growth in foreign investment. Strong political will combined with powerful institutions and zero tolerance, backed up by independent prosecutions, have been central to reduced corruption.

Exhibit 6.2

CORRUPTION – SAMPLE COUNTRY INITIATIVES AND RESULTS

Rwanda

- Genuine government support to curb corruption, led from the top.
- National anti-corruption strategy with zero tolerance
  - Prosecutions at all levels.
- Strong new institutions:
  - The Office of the Ombudsman
  - The Anti-Corruption Unit in the Rwanda Revenue Authority
  - The Auditor General
  - The National Tender Board.
- International commitments; ratified international conventions.

Malawi

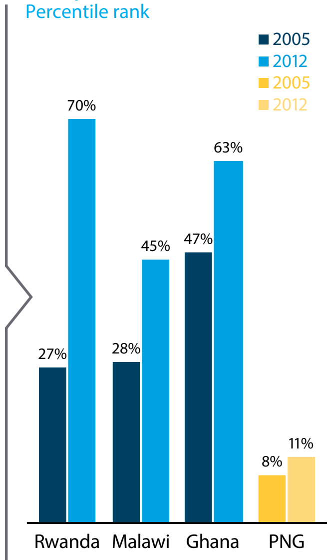
- Anti-corruption has been at the top of the political agenda since 2004.
- Strong new institutions:
  - Anti-corruption Bureau
  - The Office of the Ombudsman
  - Business Action Against Corruption
  - Alternative Disputes Resolution Mechanism within the judiciary.
- National anti-corruption strategy formed in 2009.
- Declaration of Zero Tolerance in 2007.

Ghana

- Recent governments committed to reducing corruption.
- Policies, institutions and international commitments to increase transparency of resources sector including Extractive Industries Transparency Initiative (EITI).
- Institutions:
  - Public Procurement Authority
  - Serious Fraud Office
  - Commission on Human Rights and Administrative Justice has an ombudsman and anti-corruption role.
- International commitments; ratified international conventions.

Corruption index – 2005 vs. 2012

Percentile rank



Source: World Bank, The Worldwide Governance Indicators; Rwanda anti-corruption policy 2012; Anti-corruption Resource Centre; Business anti-corruption portal.

70 H Mehlum, K Moene & R Torvik, 'Institutions and the Resources Curse', Royal Economic Society, The Economic Journal, Vol. 116, 2006.

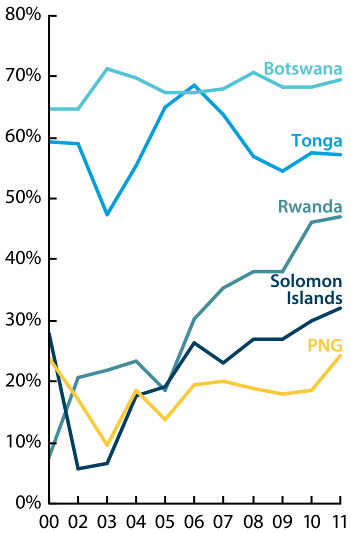
There are further examples both in Africa and in the Pacific of countries that have been able to improve law and order using a range of measures (Exhibit 6.3). Judicial and correctional system reform and improved judicial independence are examples of measures employed to improve standing among international investors.

Exhibit 6.3

LAW AND ORDER – SAMPLE COUNTRY INITIATIVES AND RESULTS

Solomon Islands	Tonga	Rwanda
• Modernisation of correctional system – Correctional system now focuses on prisoner rehabilitation and reintegration – Main prison has been upgraded and two new prisons have been commissioned. • Five prisons now comply with international standards (two in 2009).	• Chief Justice and Justices in the Court of Appeal are chosen from outside of Tonga in order to maintain impartiality in the court. • Usually from other Commonwealth countries.	• Complete reform of judiciary system in 2003 – New legislation – New courts – New procedures and standards including academic and professional qualifications – New regulatory and administrative framework. • Support from donors accelerated reforms.
• 14% drop in prisoner repeat offences.	• Reduced local influence in judicial decisions.	• Law and order rank increased from 19th percentile in 2005 to 47th percentile in 2011.

Rule of Law Index
Percentile rank



Source: World Bank, The Worldwide Governance Index; World Bank, 'Doing business 2013, Economy profile: Rwanda'; RAMSI website.

Another key issue is the use of funds generated from the resources sector. The proposed PNG Sovereign Wealth Fund (SWF), described in Box 6.1, can help minimise the effects of the 'resources curse' and promote balanced economic development. Current proposals include two sub-funds. When implemented, each will have important roles. The Stabilisation Fund will help manage the impact of fluctuating mineral and petroleum revenues on the economy and the Budget. The Development Fund should allow targeted spending on economic development, including on productive infrastructure (see Box 6.1). Using these funds to introduce and maintain separate asset pools will allow investment strategies to be tailored to each purpose. The sub-funds will also make directing earned income (interest and dividends) simpler and more transparent.

Governance of the SWF should be of the highest standard to allow it to contribute to the balanced development of the economy. The current draft organic law is largely consistent with international best practice guidelines. As the SWF governance arrangements are finalised, adherence to these guidelines will promote confidence in the SWF's arrangements.

Box 6.1 PNG Sovereign Wealth Fund[71]

PNG is currently in the process of developing the rules for establishing a Sovereign Wealth Fund (SWF). It is expected that two funds will be established within the SWF: a Stabilisation Fund and a Development Fund. In November 2011 a draft organic law on the SWF was published and provides initial guidance on how the funds will operate. The funds are scheduled to be up and running by 2014, in time to receive the first revenues from the PNG LNG project. There will be a single governance framework covering both the Stabilisation Fund and the Development Fund.

The two new funds will be overseen by an Independent Board leading to greater transparency and accountability with regular audits by both internationally recognised firms and independent probity auditors. There is intended to be regular disclosure of the SWF financials and performance including public release of quarterly and annual reports. The strong governance associated with these two funds will mean better oversight of how funds are spent than has been the case in the past.

PROPOSED SOVEREIGN WEALTH FUNDS

SWF constituent funds	Purpose	Deposits	Withdrawals
Stabilisation Fund	• Manage the impact of fluctuating mineral and petroleum revenues on the PNG economy and on the PNG Budget. • All funds invested off-shore to reduce currency pressures and reduce local liquidity.	• All mineral and petroleum revenues, from PNG LNG initially, then other projects as they are developed. • PNG LNG expected to contribute up to K50 billion over life of the project – Revenues start at K1.7–K2.2 billion p.a., rising to K4.5 billion p.a. next decade.	• Draw-downs made through the Budget. • May not exceed the 15-year long-term moving average of the mineral and petroleum revenues as a share of non-mining revenue. • Fund not likely to accumulate funds until after 2020, but funds will flow in and out.
Development Fund	• Provide ongoing funding for economic and social development in accordance with the development plans of government. • All funds invested off-shore.	• Dividends from government's stake in PNG LNG project. • Earnings from the investments of the Development Fund. • Other amounts the government contributes.	• When the fund is in credit, those funds may be used in accordance with the Development Fund's objectives.

71 Source: PNG Organic Law on the Sovereign Wealth Fund, November 2011, pp. 5–6; PNG National Budget 2012, Vol. 1; World Bank, Papua New Guinea Economic Briefing, 2013, p. 3.

PNG's fiscal position also requires careful consideration. The decision to enter a period of government deficit-financing has attracted significant attention, albeit with an acknowledgement that it is appropriate to invest future resources sector earnings in highly productive infrastructure today. It is important, however, that the Budget can deliver needed capacity even if commodity prices fall unexpectedly. Commodity price forecasts in the Budget appear to be at consensus levels, and therefore could imply downside revenue risk if, as is common, consensus prices lag actual prices in commodity cycles[72].

6.1.3 Funding investment in infrastructure as well as equity stakes in future resource projects

The PNG government has demonstrated that it prefers to have equity stakes in all resource projects. Taking a 30% equity stake in all pipeline projects could require investment to 2030 of around US$9.6 billion in the central case or US$16.5 billion in the high case[73]. Over the next five years, required investment could be between US$1.8 and US$2.1 billion. These figures are substantial – equivalent to up to 70% of planned Budget spending classified as Nation Building Infrastructure Program spending over the same period[74].

A discussion is needed to determine the best way for PNG to match the risk profiles of various funding mechanisms and expected returns on investments. Issuing debt incurs a fixed commitment to repay, while returns on equity investments are more variable in timing as well as earnings. Questions to consider include:

- Are there more sophisticated approaches to funding equity stakes in projects rather than funding them upfront? Examples from other countries include:
  - Project financing, where repayments are linked to project earnings
  - Borrowing from project proponents and repaying loans from deferred dividends
  - Purchasing options over equity investment, to be exercised over time, rather than all upfront.
- Would deferred payment of equity stakes from future dividends be consistent with Sovereign Wealth Fund requirements that all dividends flow into the fund?

As discussed in Chapter 4, new funding options might also be used for infrastructure. Rather than paying for all infrastructure upfront and borrowing to do so, other approaches may be possible, including jointly funding infrastructure with industry or expanding the infrastructure tax credit scheme.

PNG's investment requirements for both resource projects and infrastructure are significant over the next two decades. Finding new funding mechanisms that match the risks and returns could help meet these needs.

72 In the recent price upswing, commodity price forecasts lagged actual realised prices for almost the entire cycle.

73 Assumes 60% debt for all future resource project capital requirements and 30% PNG government share of equity.

74 PNG Government 2013 Budget, Vol. 1.

6.1.4 Moving government and institutional focus to Asia while maintaining existing close ties

PNG's natural resource endowment, soft commodity base and location near Asia position it well to benefit from Asian-led demand growth in the Asian Century. Questions to consider include:

- How quickly can PNG secure new markets for its exports into Asia? PNG's export focus is not yet on Asia for agriculture in particular. Around one third of total exports went to Asia in 2012. Agriculture and fisheries export primarily to Europe, Australia and the United States with minimal exports to Asia. Forestry is the only exception, with 98% of exports destined for East and South Asia.
- Could PNG's current preferred market access into Europe for sustainable soft commodities be replicated in new export markets as Asian countries become more discerning in their requirements?
- Can PNG source new foreign investment from Asia to develop its economy? Global capital markets are shifting towards Asia as a source of new and attractive investment. Global foreign investment from developing Asia was 22% of all investment in 2012, or more than US$300 billion, driven in particular by Chinese investment (Table 6.1).
- Can agreements be structured so that new capital linked to new market access provides mutual benefits for both PNG and partner countries?
- What is the best way for PNG to build new contracting and investment relationships which will further its long-term development agenda? Asian firms can offer, for example, highly cost-effective infrastructure construction and other services. These contracts are often undertaken with limited local involvement. If PNG can negotiate these relationships to provide a skilled workforce legacy within PNG they will provide longer-term benefits.

Table 6.1

GLOBAL FDI BY CONTRIBUTING REGION

US$ Billion*

Year	China**	Developing Asia excluding China	Other developing economies	Developed and transition economies	Total
1980	0	1	2	48	52
1990	3	8	1	230	241
2000	71	24	52	1,094	1,240
2005	46	47	47	764	904
2006	69	86	89	1,183	1,427
2007	94	144	91	1,942	2,272
2008	113	122	109	1,661	2,005
2009	114	97	62	876	1,150
2010	167	117	129	1,092	1,505
2011	171	140	111	1,256	1,678
2012	168	140	118	965	1,391
Compound annual growth rate					
1980–2005	29%	16%	13%	12%	12%
2005–2012	20%	17%	14%	3%	6%

Year	Per cent	Per cent	Per cent	Per cent
1980	0.2%	2%	4%	94%
1990	1%	3%	0%	95%
2000	6%	2%	4%	88%
2005	5%	5%	5%	85%
2006	5%	6%	6%	83%
2007	4%	6%	4%	85%
2008	6%	6%	5%	83%
2009	10%	8%	5%	76%
2010	11%	8%	9%	73%
2011	10%	8%	7%	75%
2012	12%	10%	8%	69%

Note the percentages may not add due to rounding.
* Based on $US dollars at current prices and current exchange rates.
** Includes Hong Kong Special Administrative Region and Macau Special Administrative Region.
Source: United Nations Conference on Trade and Development Statistics.

Turning more towards Asia does not mean PNG should turn away from Australia and other traditional partners. Rather, it means redefining those relationships so that PNG can benefit more from the strengths of countries such as Australia. Australia's leadership in resources and agriculture sector technology, research and training are all areas where PNG can benefit from closer, more specific relationships. PNG can also look towards Australia in implementing broader, transferable skills development programs.

6.2 IMPLICATIONS FOR STAKEHOLDERS SEEKING TO SUPPORT PNG'S DEVELOPMENT

Engagement with Asia implies a new agenda for existing supporters of and stakeholders in PNG's development.

6.2.1 Regional governments and NGOs – policy leadership and targeted capability building

Close and productive engagement with Asia offers PNG the most prospective path to achieve balanced development. In turn, facilitating productive engagement with Asia can provide PNG's neighbours and supporters with a new framework for cooperation that captures the reality of PNG's 21st century opportunities. In this way, the task of re-imagining PNG and its prospects in the Asian Century could supersede the nation-building preoccupations of the post-Independence era, helping to forge a new consensus on implementation.

The Australian and New Zealand governments, as well as others in the region, have made important contributions to PNG's development to date. These contributions have been made through: direct financial transfers focusing on education, governance, infrastructure and health; significant efforts to provide and then build capability within the PNG public service and by funding agricultural research programs. AusAID withdrew other direct support for PNG's agricultural sector in 2011.

NGOs also play an important role in building understanding of PNG's challenges and addressing those challenges at a range of levels. NGO involvement extends from the highest levels of government to local assistance at the smallholder-farmer level.

The commitment of these stakeholders shows no sign of waning, but the nature of the opportunities and challenges now before PNG argue for a recalibration of priorities. There are three areas that deserve increased consideration:

– Assistance with focused policy reforms vital to progress in resources, agriculture and infrastructure. In resources, this means addressing the policy changes needed to improve the transparency and robustness of agreements between projects, governments and local communities. In agriculture, efforts to reform landholding systems will require ongoing guidance, as will the construction of an overarching framework to guide the reinvigoration of R&D and extension services. Finally, both Australia and New Zealand have substantial policy experience in reshaping infrastructure from conception through funding and construction and into operation. There is no need for PNG to start from scratch in this regard.

– Increase aid for PNG's agricultural sector and direct this increased funding towards programs that seek to combine the best of the commercial and not-for-profit world. Agricultural aid contributions can be a direct and highly effective lever to improve agricultural development. There is an opportunity to ensure alignment between aid programs and the priorities described in this report. Australian and New Zealand aid for agriculture form a negligibly small proportion of current aid programs to PNG.

  The agriculture challenge is essentially commercial: make embracing cash cropping highly attractive for all concerned. Methods to increase yield and quality are known; determining how best to create the coordination and investment needed to bring those methods to bear at scale is now an urgent priority for aid and research programs.

– Augment existing efforts to provide and build capabilities with high leverage contributions in key areas. At present, filling skill gaps in infrastructure assessment and management and agriculture policy reform are of particular value. More fundamentally, improving the quality of PNG's institutions stands out. Institutional probity, judicial system building, legal and criminal compliance and related areas are obvious areas for joint action and international collaboration.

6.2.2 Resource businesses and investors – contribute to improved investment attractiveness

Resources sector participants are entitled to make realistic assessments of the challenges involved in investing in PNG. Ample investment opportunities exist throughout the world, in developed and developing countries alike.

If PNG can't successfully develop its resources endowment this would represent a missed opportunity for investors and for the people of PNG. Resources sector participants should take the opportunity to contribute to making PNG a more attractive investment environment. This means:

– Facilitating improvements to arrangements concerning landowner agreements. Resource companies should embrace increased transparency concerning the sources and uses of income from resources sector projects.

– Making clear the implications of government actions on perceptions of investment risk. This open conversation should embrace the short-term actions of decisions (good and bad) as well as how best to foster the type of stable investment environment that would separate PNG from other, more risky developing economies.

– Continuing to take opportunities to integrate resource projects into schemes for broader economic development. Farsighted resources sector participants should recognise that broad-based economic growth makes for more sustainable, lower-cost projects in the long run. In addition, intelligent sharing of infrastructure has the potential to improve upfront costs.

6.2.3 Infrastructure investors and constructors – help create rewards for investors and customers

PNG's infrastructure development agenda, coupled with a needed shift towards private sector provision, should represent an attractive environment for infrastructure providers.

Concrete investment opportunities will only appear after a substantial body of underpinning policy reform has occurred.

Infrastructure providers can contribute to PNG and their own commercial interests by working to accelerate this reform, while making it as effective and appropriate as possible. This means:

– Supporting efforts to build the case for policy reform. Infrastructure providers can make distinctive contributions in this area by sharing best practice from across their existing portfolio, including being open about lessons learnt from less successful projects.

– Collaborating with key customers of infrastructure projects, including with government. Private delivery of key projects may be a short-cut to more widespread reform, particularly if a transparent approach builds confidence with government.

– Craft an on-the-ground approach that fits local requirements. The PNG government is already using a range of infrastructure contractors to provide road and building construction and financing packages at highly competitive upfront costs. Providers looking to serve clients in PNG will require commercial proposals able to compete with the best in the world.

6.2.4 Agribusinesses and agricultural investors – partner for growth

The tailwinds at the back of PNG's agriculture sector translate into a clear opportunity for agribusinesses to capitalise on substantial growth. Even partial achievement of government targets represents an attractive prize. Moreover, agribusinesses able to deploy improved supply chain and post-harvest processing capabilities are likely to benefit from increased quality premiums as well as volume growth, adding to the attraction for investors.

Success will come to those who can best adapt to local conditions, and in the process deliver an attractive outcome for subsistence farmers turned smallholder croppers.

For agribusinesses willing to accept this challenge at least four actions seem vital:

1. Find a local partner or partners with a deep understanding of local communities. In the absence of formal contracts, building and maintaining effective relationships with landowner groups and smallholders is crucial. Supporting farmers to increase productivity, and sharing the rewards of doing so, will build significant momentum over time.
2. Form effective linkages with patient capital providers, including but not limited to NGO agencies. Not-for-profit investors will participate in enterprises that deliver sustainable and material benefits to smallholders, and can contribute risk-tolerant capital and, ideally, long-standing and strong community relationships.
3. Review and adapt proven business models from other countries. The challenges faced by PNG's agriculture sector are not unique. They share sufficient common factors and much can be learnt from experience elsewhere. This effort can be assisted enormously by NGOs and other researchers in the sector, who already have a large body of research available.
4. Work closely with existing research and aid agencies, if necessary without established industry bodies. Most of the methods needed to dramatically improve yield and quality are well known and not technically difficult. In addition, these agencies possess practical experience in how best to train smallholder farmers in the required techniques, and the type of post-harvest processing most suited to local needs.

6.2.5 Agriculture industry bodies – reform to focus on strategic priorities

Embracing needed agricultural reforms will allow industry bodies including the Coffee Industry Corporation and the Cocoa and Coconut Institute to make a material contribution to the welfare of their constituents. However, doing so is likely to mean change for the organisations themselves. These organisations should consider three priorities:

1. Delivering extension services focused on the critical levers of yield and quality. This may include activities including ownership of farms for profit and building PNG product awareness.
2. Promoting efforts by emerging agribusinesses and NGOs to coordinate smallholder activities, while appropriately arguing for smallholder interests. This includes sharing successful experiences between regions and across commodities.
3. Representing the interests of participants in their agricultural sectors to government. This includes encouraging infrastructure and other types of fundamental reform. This may require governance arrangements completely independent of government, and securing funding (except for specific research projects) exclusively by levies on production.

7.0 CONCLUSION

The Asian Century enables PNG to see itself through a very different lens. It can't erase the dilemmas and frustrations of the challenging post-Independence period – but it will reward bold thinking that cuts through to new opportunities and action.

PNG can secure its share of resource projects if it moves resolutely to do so – global competition for capital notwithstanding. Bold thinking about coordinating infrastructure and maximising spillovers to the wider economy will promise broader growth, especially in agriculture, to sustain the economy long into the future.

Revisiting the privatisation agenda is important. It can contribute to quality of institutions and to taking pressure off government. A more commercial approach promises to target the most cost-effective and productive infrastructure, and will allow PNG to respond to the incentives the Asian Century generates. Striking the right balance between government participation in projects as an equity partner and coordinating the priority provision of infrastructure will demand new, delineated responsibilities and planning.

Asia promises to become the world's major supplier of capital during the 21st century, and a virtuous circle of trade and investment will converge for PNG. Encouraging a natural orientation towards Asia, while conserving the best of PNG's long-standing neighbourly relationships, will be critical.

Now is the time to begin a national conversation about clear and obvious threshold issues. If PNG can create an attractive and sought-after place for investors to do business, it can also contribute to the elements of civil society to flourish, to the benefit of the people of PNG in the Asian Century.

ABOUT PORT JACKSON PARTNERS

Port Jackson Partners is a consulting firm providing advice to CEOs, boards and senior managers to help set corporate direction, define business strategies and develop their organisations. The firm was founded in 1991 by two former directors of McKinsey & Company and has grown over the past two decades into one of Australia's most respected strategy consulting firms.

HOLLY WALES

The illustrations in this report are the work of illustrator Holly Wales.

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