



PAPUA NEW GUINEA DEVELOPMENT STRATEGIC PLAN 2010-2030

“Our guide to success”

Department of National Planning and Monitoring

**Port Moresby
March 2010**

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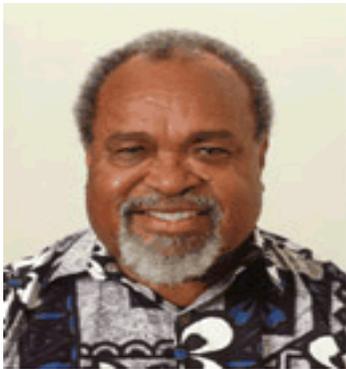
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Foreword



On 16th September 1975 Papua New Guinea (PNG) took a big step in entering into an unknown territory as an independent sovereign nation. Transition of a people of many languages and cultures to a global economy within three decades is in itself an achievement and testimony of the resilience of the people of PNG.

PNG has progressed and is now at the crossroad of economic development. The next 20 years will be most crucial. Therefore, what matters now is not what we would have liked being done but what we must be able to do together as a nation. The people of PNG rightfully expect a policy that has the courage to change the future, and the strength to change and transform things. I challenge Papua New Guineans to stop spending time thinking about what is not possible. Instead, let us ask ourselves what each of us can contribute to make things possible in the future ahead. Together we can shape our destiny and that of our future generation.

Many challenges lie ahead for our young and vibrant democratic nation. And these challenges are increasing domestically, regionally and globally. At the same time the opportunities that lie ahead also look brighter for our country to achieve sustained growth and economic development in the next 10-20 years. However, these opportunities and the challenges that face us cannot be harnessed and appropriately addressed in future without a long term strategic action plan to guide our development pathways. Having realised this scenario, the Government under my leadership directed the Department of National Planning & Monitoring as the mandated central planning agency of the nation in early 2008 to undertake formulation of a 20-year long term development blueprint for the country, the *Papua New Guinea Development Strategic Plan, 2010-2030 (PNGDSP)*.

This *PNGDSP* document now for the first time attempts to translate the dreams of the founding fathers as contained in the directive principles of our National Constitution into workable plans. At the same time it maps out the 'how to get PNG to where our Papua New Guinea Vision 2050 wants us to be'. It therefore sets out the broad framework, targets, and strategies to achieve the vision of the Government. The *PNGDSP* is designed to quadruple the national income which should give all Papua New Guineans an improved quality of life by exploiting the available opportunities and enable them to become key players in the overall socioeconomic development of this country. It is designed to strategically inform and guide Papua New Guineans in all walks of life to engage in the development process of our country.

We have, for far too long, been swindling on the back of rhetoric and ad-hoc decision making processes which do not reflect Government policy objectives. These in turn reflect badly on PNG's development goals and priorities thus leaving our rural majority

population with minimal or no economic options to become key players in the socio-economic advancement of our country. The *PNGDSP* is also designed to change this practice.

I am proud to say that the *PNGDSP* 2010-2030 is a fully homegrown document taking into account concerns and aspirations of the Government, non-Government, private sector and most importantly the people of this nation. I take this opportunity to ask every Papua New Guinean importantly to take full ownership of this important development strategy which will guide the continued progress of our nation in the next 20 years. *It is yours, Em bilong Yu, Oi Emu.*



Rt. Honourable Grand Chief Sir Michael T. Somare, GCL, GCMG, CH, CF, KStJ

Prime Minister

Independent State of Papua New Guinea

Remarks



Papua New Guinea's (PNG) current Medium Term Development Strategy (MTDS) 2005-2010 expires at the end of 2010. As such the Government has again, under the leadership of our nation's founding father and Prime Minister Grand Chief Sir Michael Somare, directed my Ministry and Department in 2008 to undertake formulation of a development strategic plan.

Hence, the *Papua New Guinea Development Strategic Plan, 2010-2030* (PNGDSP) document is the final outcome of this important direction from the National Executive Council. It is a testimony of the Government's continued vision and commitment towards improving the livelihoods of the people of PNG. It reflects the determination of the government's willingness to direct the bureaucratic systems to come up with a comprehensive long-range plan to direct the path for PNG's development. Failing to plan is a recipe for failing and PNG must avoid this at all cost.

I commend the Department of National Planning & Monitoring and all other Government departments and agencies, churches and civil society organisations, private sector, international friends and development partners, and the wider community throughout PNG for responding positively in the formulation of this important strategy of our country. Individuals directly or indirectly involved in putting together the *PNGDSP* document must also be commended for their commitment and effort. The *PNGDSP* will now provide the strategic guidance for our country's development aspirations in the next 20-years.

At a time when our country enters a critical phase of its development progress after three decades as a sovereign nation, the *PNGDSP* is critical in charting us forward. Taking stock of our past mistakes, meaningfully gaining the rewards out of the opportunities ahead, and taking new approaches to the development process in view of rapid globalisation are central to the strategy that the *PNGDSP* document tries to pronounce.

All Papua New Guineans should work together towards realising the vision and objectives spelled out in the *PNGDSP*. Let's take pride and ownership of it and become central players to the development process of our nation as we continue to move forward.

Thank you and God bless Papua New Guinea.

A handwritten signature in black ink, appearing to be 'Paul Tiensten', written in a cursive style.

Hon. Paul Tiensten, LLM, MP

Minister for National Planning & District Development

Introducing the *Papua New Guinea Development Strategic Plan, 2010-2030*



Not so long ago, Papua New Guinea witnessed the launching of the Papua New Guinea Vision 2050 which describes a day in the future where the welfare of every Papua New Guineans will be well looked after.

The challenge is to achieve this Vision within 40 years, by 2050. It is a tough call, but a call nonetheless and this call should bring all Papua New Guineans together, both present and future, to contribute to the development of their country and to do greater things in the years ahead.

I call on the public service at the national and sub-national level, the Donor Partners, Churches and Civil Society Organizations to align their sector plans and strategies to achieve the targets that are being set forth in the *Papua New Guinea Development Strategic Plan, 2010-2030*. These targets are fully modeled using the PNG General Equilibrium Model, thus implying that the Plan is truly an integrated one and the dynamic structure of the model has enabled long range planning to be possible.

All sector policies, plans and strategies must be reviewed to create closer alignment with the *Papua New Guinea Development Strategic Plan, 2010-2030* so that resources can be mobilized and directed on sector- activities that will enable the 20 year targets to be achieved. The Department of National Planning and Monitoring will continue to coordinate and assist all agencies of Government to achieve the targets that have been set out in the *Papua New Guinea Development Strategic Plan, 2010-2030*.

The *Papua New Guinea Development Strategic Plan, 2010-2030* is truly a remarkable Plan that has moved away from the past traditional planning approaches and sets forth new directions and parameters for development planning in this country. It has finally translated the Five Directive Principles of the National Constitution, the Eight Point Improvement Plan and the Vision 2050 so that the aspirations of our leaders can be achieved through the annual planning, programming and budgetary processes.

It would be amiss of me not to acknowledge the hardworking staff of the Department of National Planning for producing this fully home-grown *Papua New Guinea Development Strategic Plan, 2010-2030*, a task that has taken 10 months to complete.

I also acknowledge the Hon. Paul Tiensten, LL.M, MP, Minister for National Planning & District Development who has provided solid and consistent political direction and leadership during the formulation of this Strategic Plan.

It is therefore with much humbleness that I commend the *Papua New Guinea Development Strategic Plan, 2010-2030* as a guide to a successful future for Papua New Guinea.

A handwritten signature in dark ink, appearing to read 'Joseph Lelang', written in a cursive style.

JOSEPH LELANG
Secretary

GOAL

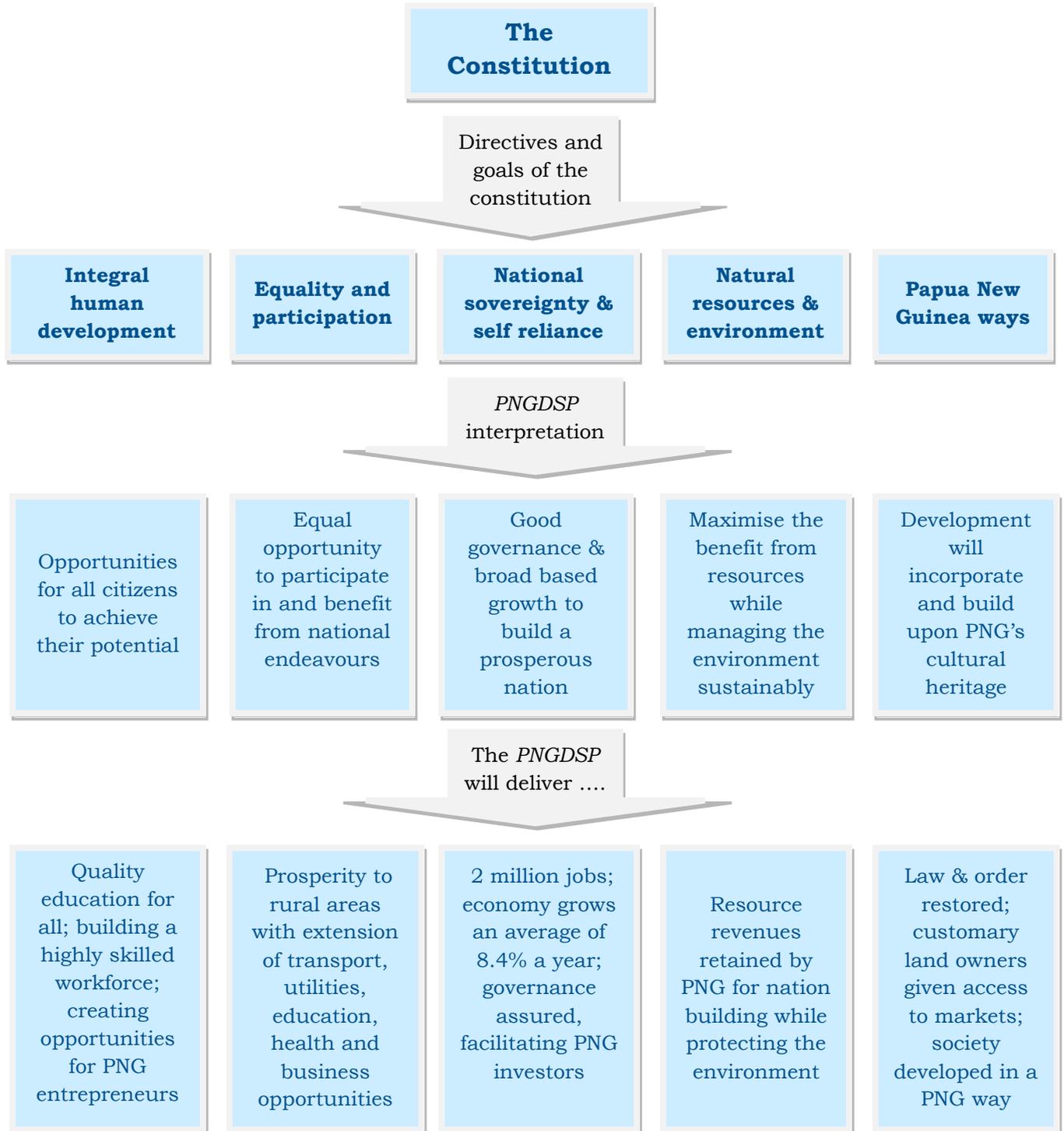
**A high quality of life
for all Papua New
Guineans**

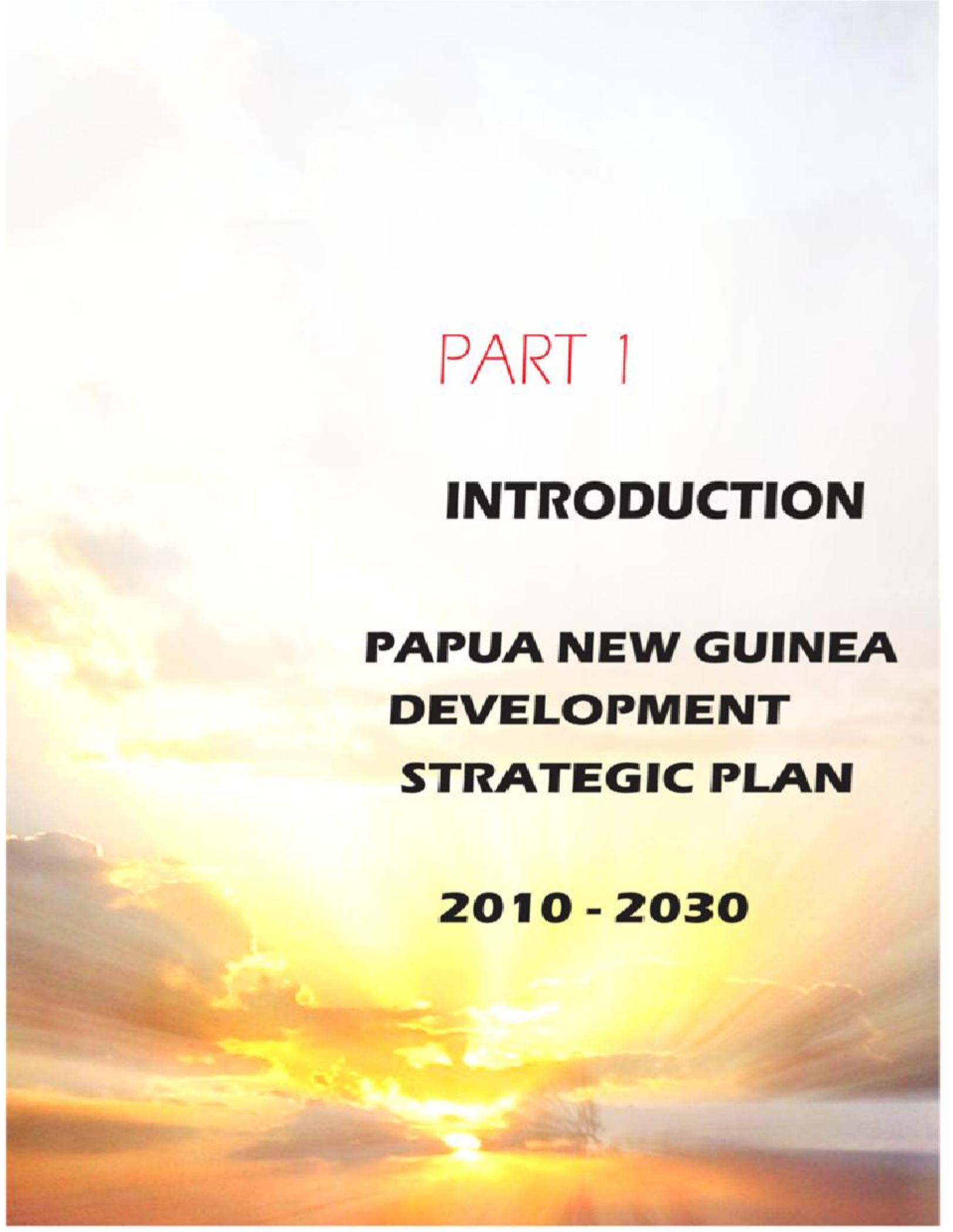
VISION

**Papua New Guinea
will be a prosperous
middle-income
country by 2030**

Building the PNGDSP from the guiding principles of the Constitution

The PNGDSP embodies the principles of the Constitution of PNG and reinforces the fundamental directives required to advance PNG into a middle-income country by 2030.



A background image of a sunset over a landscape. The sun is low on the horizon, casting a bright orange and yellow glow across the sky and reflecting on a body of water in the foreground. The sky is filled with soft, wispy clouds, and the overall atmosphere is warm and serene.

PART 1

INTRODUCTION

**PAPUA NEW GUINEA
DEVELOPMENT
STRATEGIC PLAN**

2010 - 2030

1.1. The broad objectives of the *PNGDSP, 2010-2030*

Guided by the directives and goals of the National Constitution, the *Papua New Guinea Development Strategic Plan (PNGDSP)* elaborates how PNG can become a prosperous, middle income country by 2030. The directives and goals of the Constitution form the broad objectives of Papua New Guinea's Development Strategic Plan in the following ways.

Integral human development

Integral human development is essential to provide all citizens with the opportunity to achieve their potential. Quality education for all and a world class health system are key elements of the *PNGDSP* for human development, helping to develop a highly skilled workforce and equipping PNG's entrepreneurs with the skills they need to grow their businesses.

Equality and participation

All citizens should have equal opportunity to participate in and benefit from the nation's development. Prosperity in rural areas of PNG is a major emphasis of the *PNGDSP*, because the vast majority of citizens live in rural PNG. The *PNGDSP* specifies how service delivery to rural PNG will be achieved, including transport services, electricity, education, health and business assistance.

National sovereignty and self reliance

PNG's national sovereignty will be strengthened by PNG's economic and political success. Good governance and broad based growth will help build PNG into a prosperous nation including by facilitating PNG investors. Among other things, PNG's prosperity will alleviate the country's reliance on aid.

Natural resources and environment

PNG is well endowed with a wealth of natural resources. These resources must be managed sustainably to ensure they benefit both future and current generations. In particular, resource revenues need to be focused on nation building, while at the same time protecting the environment.

Papua New Guinea ways

PNG has a rich heritage of traditional wisdom and knowledge, reflecting the greatest cultural diversity of any nation of the world. PNG's development will be fostered in ways that learn from and build upon PNG's cultural heritage. The *PNGDSP* policy measures for law and order, land, education and health, for example, draw on PNG ways to improve the effectiveness of service delivery in these sectors.

The *PNGDSP* also translates the focus areas of the Papua New Guinea Vision 2050 into concise directions for economic policies, public policies and sector interventions with clear objectives, quantitative targets, and baseline indicators. It is envisaged that Papua New Guinea will have two Development Strategic Plans under the Vision 2050, each covering a 20 year period.

The *PNGDSP* strategises the aspirations of the PNG Vision 2050 in line with the following core objectives:

i. Strategic planning

- The *PNGDSP* is a strategic planning document, which articulates long-term national goals and formulates strategies that provide guidelines for action plans and resources programming. If applicable, the goals are quantitatively targeted and scenarios derived, using the PNG Government's computerised general equilibrium model (PNGGEM).
- A strategic plan acts as a road map for achieving long-term results. Strategic planning anticipates changes in the environment that implicitly suggest radical moves away from current practices.
- Four five-year Medium Term Development Plans (MTDPs) are envisaged to be aligned to the *PNGDSP* 2010-2030. This implies that an MTDP's action plans, objectives, resources programming and implementation protocols should be in conformity with the strategic direction of the *PNGDSP*. Similarly, other statutory plans, such as the lower-level government plans, line departments and agencies plans and corporate plans, as well as the annual budgets, must be aligned to the MTDP.

ii. Systems and institutions

- The *PNGDSP* dedicates a section to ensuring that good governance principles are upheld and that current institutions become more effective.
- The *PNGDSP* outlines exactly how development stakeholders will partner and cooperate with the Government to enable achievement of the expected outcomes.

iii. Human development

- The *PNGDSP* is heavily focused on how investment in human resources can accelerate the development process. It considers the development of human resources to be an issue which cuts across all sectors.

iv. Wealth creation

- The *PNGDSP* sets the direction for the economy to move from an economy heavily dependent on non-renewable natural resources to one which has a broader base with dynamically developed industries in both secondary and tertiary sectors and with well connected and vibrant markets. The *PNGDSP* specifically addresses the manufacturing and tourism industries.

v. Security and international relations

- The *PNGDSP* contains specific directions for defence and security, and states the broad objectives and strategies for foreign policy and foreign aid.

vi. Environment and climate change

- The *PNGDSP* will be pursued with consideration to environmental issues such that the health of the environment will not be compromised. Strategies under the extractive sectors as well as energy sectors are designed to be pursued with clear consideration

for environment sustainability as well as addressing the issues of climate change in ways that best suit PNG's developmental needs.

vii. Partnership with churches for integral human development

- The *PNGDSP* recognises churches and other organisations as important partners in development and will rely on them to work towards achieving the *PNGDSP* goal of a quality life for all Papua New Guineans. Churches play an important role in meeting the spiritual needs of the people.

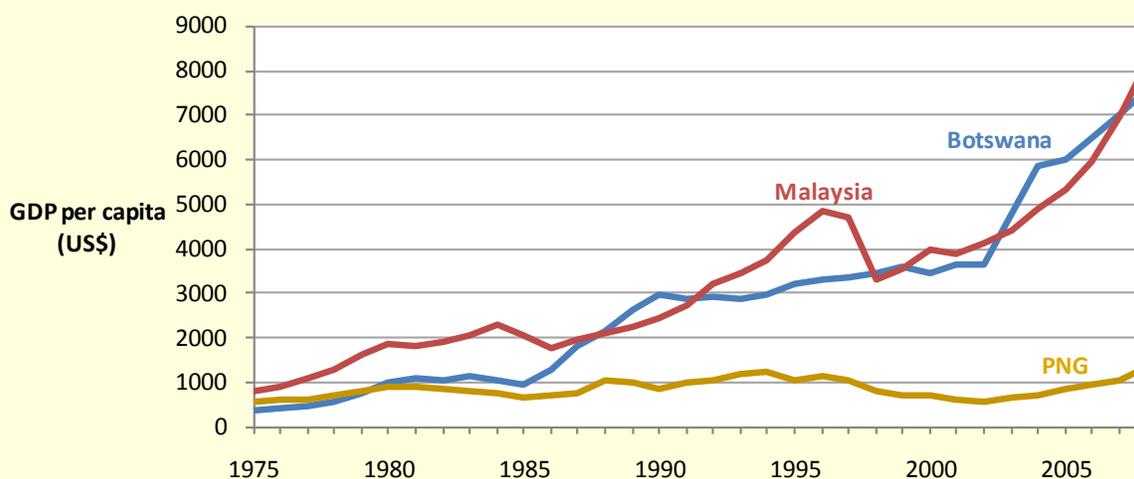
1.2. An overview of development planning in PNG

The formulation of *Papua New Guinea Development Strategic Plan, 2010-2030 (PNGDSP)* is the initiative of the Somare Government. This long term development framework is intended to promote and guide PNG onto a path of sustainable economic growth, achieving economic prosperity and a high quality of life for all Papua New Guineans.

Growth and development in PNG has been sporadic and does not reflect the progress made by many countries within the region and elsewhere. Botswana and Malaysia, for instance, are resource rich countries like PNG and in fact were at a similar stage of development to PNG in 1975. But Botswana and Malaysia have now become prosperous middle-income countries, lifting their GDP per person more than ten-fold, while PNG has been left behind (figure 1A).

PNG can draw inspiration and guidance from the experiences of countries such as Malaysia and Botswana. They demonstrate to PNG that high ambitions and aspirations are achievable. Importantly, both countries are currently implementing long term plans with shorter 5 year plans built around these. The *PNGDSP* is influenced by what these countries have done.

1A Historical economic performance of PNG
Comparison with Malaysia and Botswana, 1975-2008



Prior to 1996, development planning was guided by the annual budget process. Planning was therefore short term in line with the annual budget cycle. This created the tendency for development outcomes to be dictated by expenditure considerations and by revenue constraints. In the 1980s, attempts at some form of cohesive planning resulted in the creation

of the National Public Expenditure Plan. Rural development was a key focus of the National Public Expenditure Plan, which was implemented through various integrated development programmes in the provinces. The National Public Expenditure Plan paved the way for the Public Investment Plan. The Public Investment Plan was essentially a list of programmes and projects rather than being a plan for development.

The separation of the Department of Finance and Planning in 1996 into the Department of Finance and the National Planning Office represents the first attempt by the PNG Government to address the problem of “short term budget-driven” planning.

The Medium Term Development Strategy (1997-2002) was PNG’s first medium term plan. However the annual budget remained an overriding factor as evidenced by the emphasis on expenditure priorities instead of on development policy priorities.

The Medium Term Development Strategy (2005-2010) is the plan that precedes the *PNGDSP*. It provides strategies to guide other planning processes including the annual budget. However it lacks an economic development framework that would enable policy proposals to be prioritised and properly sequenced. It also lacks quantifiable objectives or performance indicators that would make it easier to monitor progress.

In contrast, the *PNGDSP* 2010-2030 is an integrated policy document that considers all objectives and strategies in terms of how they will contribute to the vision of PNG’s prosperity. The *PNGDSP* 2010-2030 will thereby guide development by guiding how best to utilise scarce resources and by focusing development efforts on policy areas with the greatest potential.

1.3. PNG’s 20 year development plan

The 20 year development strategy sets long term goals and targets that will guide development planning and importantly, will set the priorities for development expenditure. In so doing, it dismantles the dominance of short term, annual budgets over the allocation of resources. Its formulation is therefore a historic moment in PNG’s development.

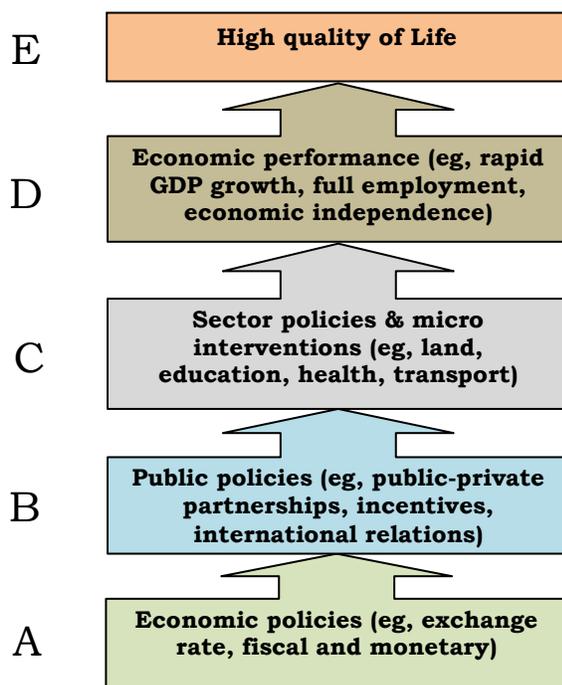
In short, the *PNGDSP* does three things. First, it outlines where PNG is at now; second, it provides targets of where PNG will be at in 2030; and third, it outlines how PNG will get to its 2030 targets.

The *PNGDSP* 2010-2030 will be implemented through four five year Medium Term Development Plans. The *PNGDSP* and the four Medium Term Development Plans will mobilise domestic resources, dictate expenditure priorities, spell out intended outcomes and will provide clear targets. The priorities and directions provided in the *PNGDSP* will guide the development of sector policies, plans and strategies. The *PNGDSP* framework will thereby provide policy clarity, cohesiveness and certainty, including to development partners who require such predictability for aligning their country strategies to support PNG’s development priorities and goals.

1.4. Conceptual Framework for the PNGDSP

The PNGDSP is formulated with a conceptual framework that is comprehensive and realistic with clear establishment of forward and backward linkages within the economy, of policies and of whole of government operations. Figure 1B illustrates the PNGDSP Framework with five stages. The first stage (A) begins with the consideration of the economic environment and existing economic policies including the Government's fiscal and debt management strategies. This recognises that the Government cannot develop its PNGDSP framework in isolation of the economic environment (eg, development of LNG Gas) or current policies (eg, fiscal, exchange rate and monetary policies).

1B PNGDSP Conceptual framework



The second stage (B) considers the existing public policies like foreign and immigration policies, privatisation, work permits, investment incentives, public private partnership policy and associated regulations and legislations. Such public policies affect the environment in which the PNGDSP is expected to function and are important to the implementation of the public investment programs and public service delivery system in PNG. Relevant agencies of government are responsible for implementing these policies and the way their respective mandates and actions affect or are affected by interventions in the PNGDSP needs to be monitored so as to improve coordination of efforts and avoid wastages and inconsistencies.

The third stage (C) is the most important stage and highlights the areas of key interventions by the Government through the different sectors. This is the area in which the Department of National Planning and Monitoring (DNPM) plays a pivotal role to ensure:

- the priorities of the Government are clearly outlined in the PNGDSP;

- targets and measurable indicators consistent with local priorities and international obligations are captured;
- concise sector priorities and strategies are clearly outlined and analysed with economic modelling;
- concise sector policies and plans are developed for each sector for implementation through the MTDPs;
- appropriate monitoring of all project activities, project spending and donor activities across the country;
- development of new policies and sector strategies including legislation (where necessary) to align all sector plans and strategies to the *PNGDSP*;
- the *PNGDSP* and all relevant sector interventions are legislated to achieve the outcomes anticipated under the *PNGDSP*; and
- mechanisms to provide regular reporting to the National Executive Council and Parliament on the implementation status of the *PNGDSP*.

The development of the *PNGDSP* must be done by the agency that has the responsibility and mandate over the development affairs and planning of the country. This is important because of the need to institutionalise the necessary mechanisms to account for and report on the implementation progress of the *PNGDSP*. DNPM is the relevant agency of the Government responsible for this function as established in 2005 through NEC Decision No. 251/2005.

The fourth stage (D) is the end result of development efforts by all government agencies. It is the culmination of efforts by Treasury and the Central Bank in managing the economy through manipulation of economic policies (exchange rate, fiscal, and monetary), implementation of public policies by relevant Government agencies, and DNPM's efforts to coordinate implementation of sector policies through public investments and coordinate effective utilisation of donor funding towards government priorities. Through these interventions (policy and sector strategies), the Government can influence economic growth and development in PNG. This is the focus and core of the *PNGDSP* framework which is inclusive of the entire business of Government and directs all stakeholders toward common objectives.

The fifth stage (E) represents the primary vision of the Government. This is the ultimate aim of the *PNGDSP* which is to provide a high quality of life for all Papua New Guineans.

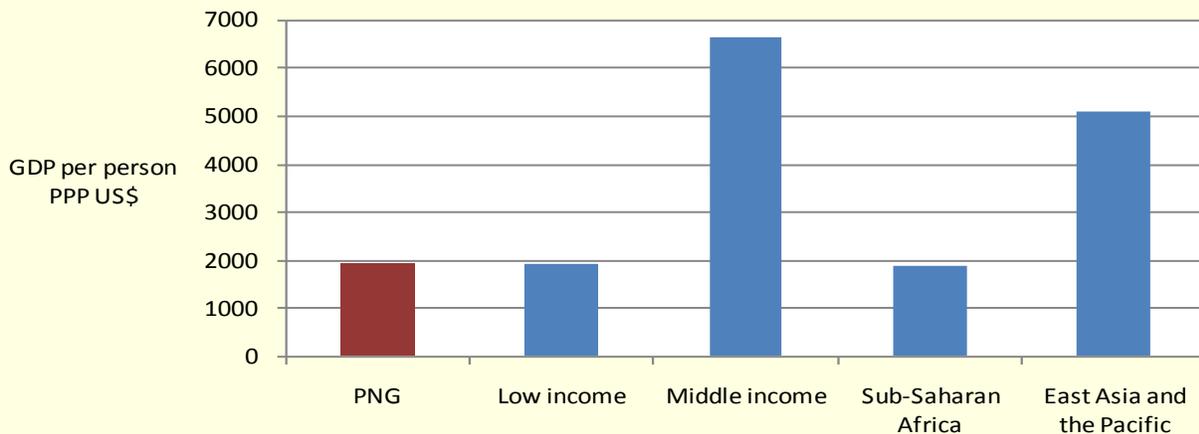
1.5. PNG's state of development

PNG is poised at a critical juncture in the nation's history. While PNG is gifted with natural resources, most people are without formal employment and face considerable hardship. In 2008-09 the developed economies confronted the most serious downturn since the Great Depression. However, the PNG economy continued to grow, benefiting from a number of prudent reforms and policy decisions. PNG is now in a good position to prosper from implementing the *PNGDSP* and to benefit from the PNG LNG Project.

Although a young country – attaining independence in 1975 – PNG’s political system is growing in stability. Prior to the introduction of the Integrity of Political Parties Bill in 2000, PNG’s national government was often destabilised by frequent votes of no confidence and changes of Government. As a result of the law, for the first time since independence the elected Government of 2002 was able to serve its full five year term.

PNG’s total economic output measured in Gross Domestic Product (GDP) is estimated to be around K21.5 billion in 2008. This translates to approximately K3,500 per person (US\$1,300 per person) and places PNG among the world’s lowest income countries and much less than the regional average (figure 1C).

1C International comparison of GDP per person
2006, purchasing power parity US\$*



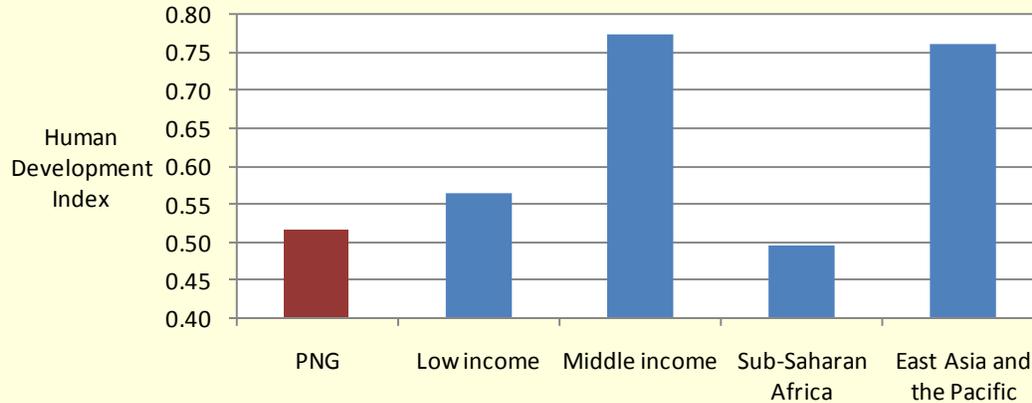
*This figure reports GDP in purchasing power parity dollars which is an adjusted amount based on the cost of living in each country.

Other development indicators reinforce this view. A few examples suffice. Consumption poverty, or an inadequate intake of calories, is widespread, affecting as many as 38.8 per cent of the population living in the Momase region, and at least 16.3 per cent of the population living in the National Capital District. In terms of health, child mortality rates are high, with 75 children dying by the age of five for every 1,000 live births. Maternal mortality rates are also high, four times higher than the average among Pacific islands. At the same time literacy and numeracy levels are poor and have not improved since 1990.

The UN combines indicators such as these into the Human Development Index, providing a way to compare development in PNG against that of other countries. The Human Development Index ranks PNG as 149th out of 179 countries. Its score is only slightly above the average for sub-Saharan Africa and below the average for low income countries (figure 1D). The average Human Development Index amongst countries of East Asia and the Pacific is much higher than in PNG, as is the average for middle income countries. The Human Development Index comparison resembles the above comparison of GDP per capita. This is not surprising as it is higher income that drives improved living conditions.

1D Human Development Index comparison

The performance of PNG on the international stage, 2006

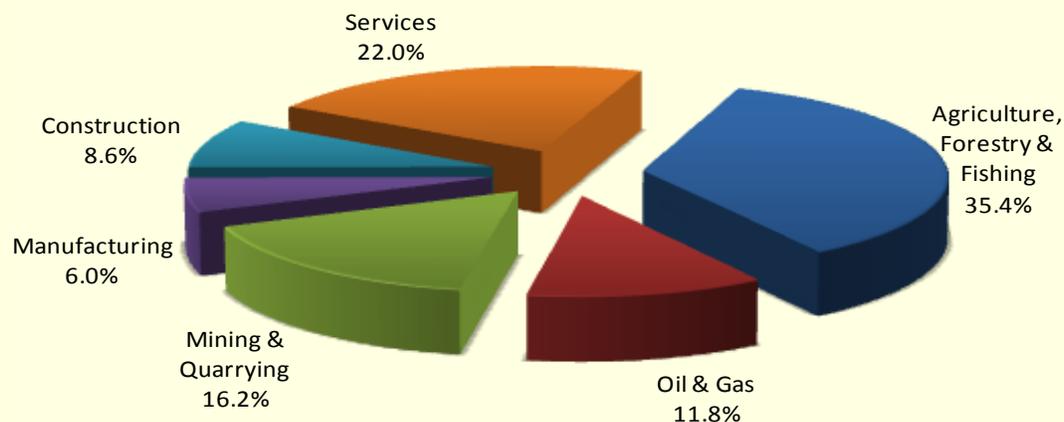


PNG's economy is dominated by primary production. Primary sectors, comprising agriculture, forestry, fisheries, oil, gas and mining, contribute 63.4 per cent of GDP (figure 1E). Of these key sectors, agriculture, including subsistence agriculture, provides the livelihood for close to 85 per cent of Papua New Guineans. The oil, gas and mining sectors, on the other hand, are also important, but not for generating jobs. Rather, they provide an important source of revenue to the Government for nation building.

PNG has an open economy with exports in 2008 reaching K15.4 billion which is 71 per cent of GDP. This marks a rise from 59 per cent of GDP in 2003 as a result of a global commodity price boom from 2003 to 2008.

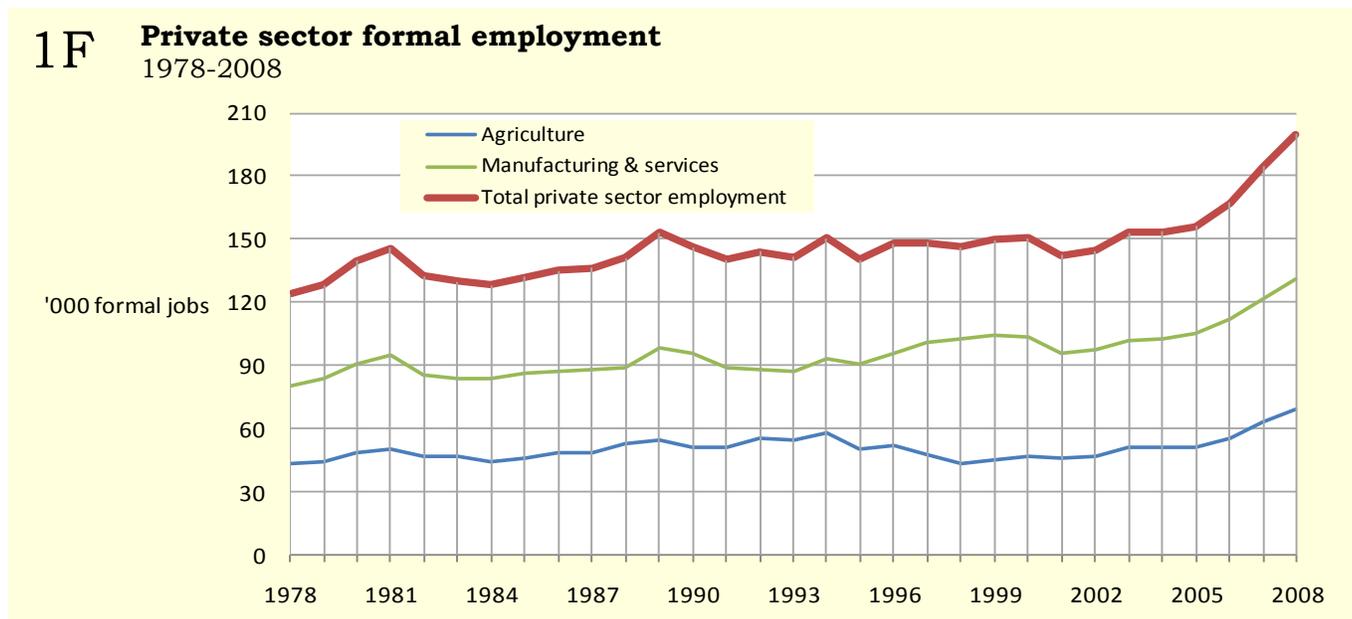
1E The composition of the PNG economy

GDP share by major sector, 2006



Until 2004, fiscal mismanagement and monetary instability typified PNG's economy, constraining development. Large and persistent fiscal deficits led to gross underfunding of public investment in developing and maintaining infrastructure. The exchange rate was volatile which fed into high and volatile inflation and interest rates. Commercial lending rates often exceeded 20 per cent, depressing private sector investment.

Since 2004, there have been significant improvements in macroeconomic management as outlined in part 3. PNG has entered into a new era of fiscal surpluses, low inflation, a stable exchange rate and low interest rates. As a result, the private sector has responded with a new confidence to invest. The economy has grown more rapidly and there has been a new impetus in the formal labour market with private sector jobs rising 6.6 per cent a year since 2005, or by about 15,000 jobs a year (figure 1F). Growth has occurred in all sectors, including agriculture.



1.6. Projected impacts of the PNGDSP 2010-2030

Formulation of the *PNGDSP* is being supported by quantitative analysis using the PNG Government’s general equilibrium model (PNGGEM). It is projected that through the Government implementing the *PNGDSP* 2010-2030, approximately 2 million jobs will be created. This is equivalent to 20 per cent of the country’s projected population at 2030.

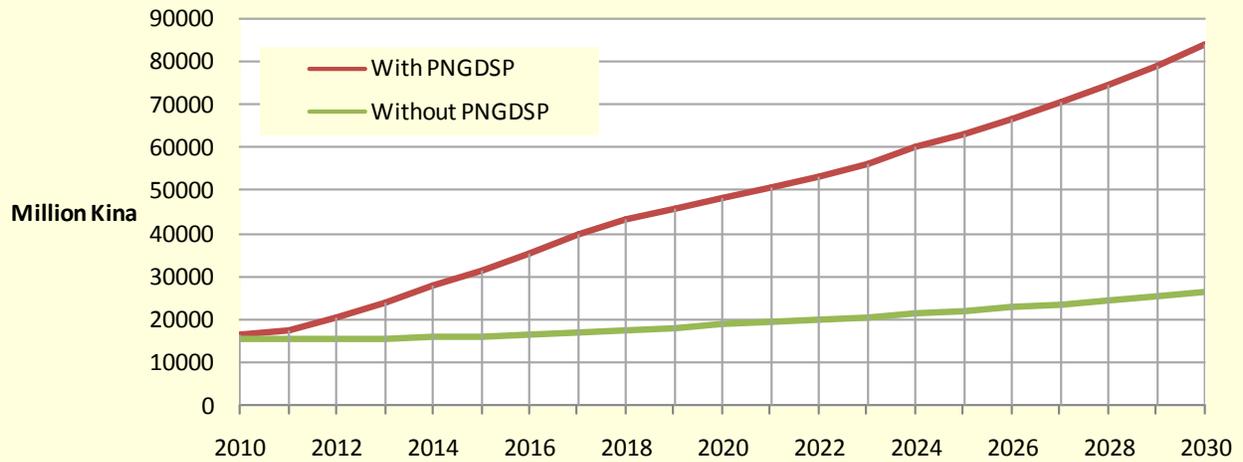
National income will be more than five times higher by 2030 under the *PNGDSP*.

National income is expected to grow five-fold, with PNG’s growth rate projected at 8.4 per cent a year on average. Figures 1G and 1H show that without deliberate intervention by the Government through the *PNGDSP*, the PNG economy would continue to grow at just under 3 per cent a year, as it has done since independence. This is barely enough to keep up with population growth.

Economic development under the *PNGDSP* will be broad based, facilitating entrepreneurial enterprise both in rural and urban PNG. An expansion in agricultural businesses under the *PNGDSP* is expected to generate over 800,000 full-time equivalent rural jobs in the next 20 years. Importantly, over two-thirds of these new jobs will be in formal agriculture, as *PNGDSP* strategies provide small scale enterprises with the opportunity to expand. In urban areas, entrepreneurship will be encouraged, helping to create an estimated 49,000 informal jobs in urban areas, and thereby resulting in a decline in the number of people engaged in crime.

1G Impact of the PNGDSP on national income

Growth in national income with and without implementation of PNGDSP, 2010-2030



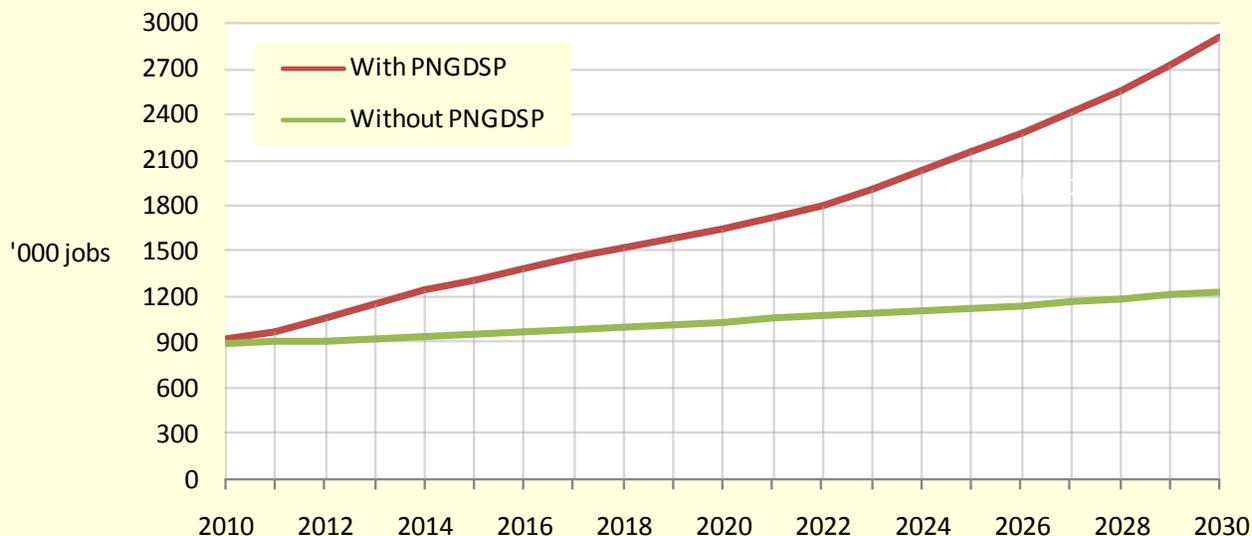
	Average annual growth		Total growth from 2010-2030	
	No PNGDSP	With PNGDSP	No PNGDSP	With PNGDSP
GNI	2.6%	8.4%	70%	446%
GDP	2.6%	8.4%	70%	448%

GNI is gross national income and measures the economic welfare of PNG.

GDP is gross domestic product and measures production in PNG

1H Impact of the PNGDSP on employment

Growth in full-time equivalent jobs, with and without the PNGDSP, 2010-2030



	Annual job creation		Total job growth 2010-2030	
	No PNGDSP	With PNGDSP	No PNGDSP	With PNGDSP
Formal jobs in agriculture	2,140	28,230	44,800	592,900
Other formal jobs	7,980	53,730	167,500	1,128,300
Informal sector jobs	260	2,320	5,400	48,800
Village employment	6,890	12,680	144,800	266,300
Total jobs created	17,270	96,960	362,500	2,036,300

1.7. Impacts of sectoral strategies

The PNGDSP outlines strategies and targets for every sector of the economy. PNGGEM is used to generate the quantitative analysis contained in this document, the results of which are summarised in tables 1.1 and 1.2. The impacts on GDP (economic output) are generally higher in Kina terms than the impacts on GNI (national income). The difference between the two measures are mostly explained by the benefits from economic output that accrue to foreign labour and foreign companies operating in PNG. The GNI results are a more accurate measure of the benefits of the sectoral strategies that accrue to PNG.

The economic achievements of the PNGDSP will be based on key sectoral strategies.

It is clear from the national income and employment impacts in tables 1.1 and 1.2 that the key platforms for the future prosperity of PNG will be strategies to sharply reduce the law and order problems and the implementation of land reforms that will empower landowners to make the most of their land. It is important to note that the results for many other sectors, for example agriculture and tourism, are premised on the success of law and order and land reforms.

1.1 Economic impacts of individual sectoral strategies by 2030

Sector	2030 Target	Increase in GNI (national income)		Increase in GDP (economic output)		Increase in tax revenue
		per cent	K'million	per cent	K'million	K'million
Land reform	Effective land reform	52.2	12,701	57.3	18,361	9,322
Law & order	55% fall in crime	61.7	15,027	48.2	15,450	6,230
Education	Quality education	7.2	1,910	9.6	3,520	960
Higher education	265,000 graduates	16.7	4,070	20.0	6,410	720
Road transport	Triple road network	8.9	2,170	8.9	2,850	770
Water transport	Triple capacity	4.2	1,030	3.7	1,200	390
Electricity	70% access	12.0	2,920	10.1	3,250	1,190
Agriculture	Internationally competitive	29.9	7,230	25.4	8,090	2,110
Fisheries	Double tuna revenues	0.3	80	0.1	23	60
Forestry	80% of exports processed	1.3	300	1.2	370	60
Oil	Maintain 2009 production	3.3	800	4.7	1,500	480
Gas	2 large projects	39.7	9,670	60.2	19,310	5,130
Mining	Double mining exports	8.0	1,930	10.9	3,480	790
Manufacturing	Triple production	23.8	5,760	22.9	7,300	2,200
Tourism	1.5 million tourists	30.0	7,320	21.2	6,810	2,440

Note: These results are for individual sector specific scenarios. The results in figure 1G are not simple additions of the results in this table. Rather, they are for a scenario that includes all strategies and will include the interdependencies between strategies that the individual scenarios will not pick up.

In 2030, GNI is estimated to be K12.7 billion higher than it would have been without land reforms and the boost in economic activity would lead to an additional K9.3 billion in tax revenue. Strategies to sharply reduce law and order problems is estimated to result in an even higher K15.0 billion gain in GNI in 2030.

An additional 600,000 jobs are estimated to be generated by 2030 as a result of strategies to reduce law and order and 680,000 jobs due to the implementation of land reforms. In addition to the economic benefits to PNG, reductions in law and order problems will bring considerable social benefits which are not measured.

Of the sectoral strategies, the next biggest impact will be due to the *PNGDSP* target of two major gas projects. An additional K5.1 billion in revenues are expected in 2030 and GNI is estimated to be K9.7 billion higher. The gas projects will be capital intensive rather than labour intensive and as a result, the estimated gain in jobs of 56,000 is less than for many of the other sectors. The high degree of foreign capital will mean that the GNI impact will be about half the GDP impact. As these results refer to two large scale gas projects, they may be viewed as conservative given the potential for further development of natural gas resources.

1.2 Employment impacts of individual sectoral strategies by 2030

Sector	2030 Target	Increase in formal jobs		Increase in informal jobs		TOTAL
		Rural	Urban	Rural	Urban	
Land reform	Effective land reform	320,200	113,800	246,300	2,200	682,500
Law & order	55% fall in crime	46,700	373,600	173,200	6,300	599,800
Education	Quality education	9,600	5,800	2,300	-1,600	16,100
Higher education	265,000 graduates	33,200	143,800	29,900	1,400	208,300
Road transport	Triple road network	13,100	45,200	59,600	1,300	119,200
Water transport	Triple capacity	5,800	19,700	28,000	600	54,100
Electricity	70% access	22,000	49,200	30,300	-800	100,700
Agriculture	Internationally competitive	155,700	68,600	38,200	4,900	267,400
Forestry	80% of exports processed	-1,400	9,900	1,800	200	10,500
Fisheries	Double tuna revenues	-100	700	100	0	700
Oil	Maintain 2009 production	-2,400	5,500	-900	100	2,300
Gas	2 large projects	-20,200	79,900	-4,600	1,200	56,300
Mining	Double mining exports	1,100	30,800	7,800	400	40,100
Manufacturing	Triple production	28,800	74,000	71,500	3,200	177,500
Tourism	1.5 million tourists	-36,800	286,700	17,700	42,900	310,500

Note: These results are for individual sector specific scenarios. The results in figure 1H are not simple additions of the results in this table. Rather, they are for a scenario that includes all strategies and will include the interdependencies between strategies that the individual scenarios will not pick up.

Agriculture, tourism and manufacturing will be the economic sectors driving broad based economic growth. Strategies associated with each of these sectors will result in estimated gains in GNI of over K5 billion in 2030 and in tax revenue of over K2 billion. These sectors in turn depend on the successful implementation of the education and infrastructure strategies.

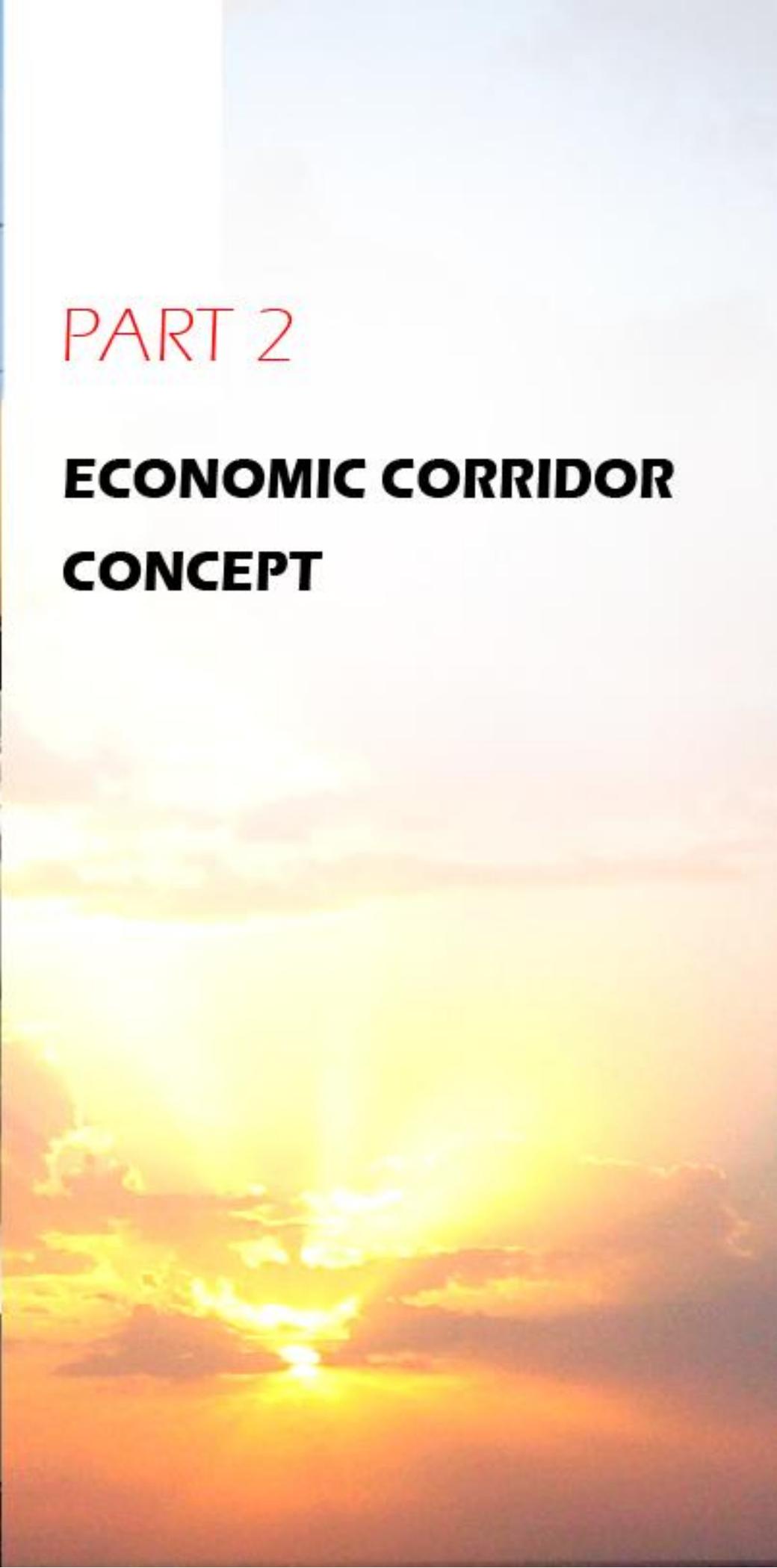
Significantly, the tourism target is one of the most important initiatives for delivering jobs in PNG, creating 310,000 jobs by 2030. This increase in jobs is much higher than for manufacturing as tourism is a labour intensive sector. Agriculture is also labour intensive and as a result 267,000 jobs will be created in this sector.

Strategies to significantly upgrade higher education will lead to an estimated gain in GNI of K4.1 billion in 2030 and more than 200,000 new jobs. Much of this gain is attributable to skilled jobs being occupied by Papua New Guineans rather than foreigners who remit most of their income abroad. The estimated economic impact of the strategies for primary and secondary education are conservative in that they do not fully account for the benefits. In addition there are substantial social benefits that are not quantified. Similarly, the benefits of health strategies are mainly social and no attempt was made to measure the economic benefits. Strategies for transport and electricity infrastructure will also provide important social benefits that are not measured. The combined gains in GNI of transport and electricity strategies is over K6 billion in 2030 with more than 270,000 additional jobs. These gains mainly relate to the stimulus to economic activity in rural areas.



PART 2

ECONOMIC CORRIDOR CONCEPT



2.1 Economic corridors for integrated development and broad based growth.

Economic corridors are proposed to alleviate poverty. Corridors of poverty will be transformed into economic corridors. Without the corridor system people in poverty will not be integrated into the mainstream economy.

An economic corridor is a region in which the Government provides a well planned zoning system, a comprehensive and effective network of transport and utilities, and quality education and health services. Within this region, businesses are able to operate at low cost and under well designed incentives, thereby encouraging foreign and domestic private sector investments. By concentrating the construction of essential infrastructure within certain regions the economic corridor approach takes advantage of the substantial economies of scale and scope associated with large service sector infrastructure. This reduces the cost to state owned enterprises and other providers of essential infrastructure, while raising their returns. Building on this infrastructure, effective sequential and spatial planning will help to expand economic activities like agriculture, tourism and manufacturing.

The economic corridor concept has been applied between countries with common borders, such as the Mekong Economic Corridor, to promote development and integration. It has also been applied within a single country, including China, to attract investment and thereby promote economic development.

Economic corridors will be located in the poorest regions of PNG with the aim of extending the benefits of development to the most disadvantaged regions. They will be located where the gains are likely to be greatest, particularly where land is fertile or where the three modes of transport – air, sea and land – are able to come together to provide efficient trade hubs. The selection of regions is therefore independent of provincial or district borders.

2.2 The economic corridors

The Government has identified ten regions of PNG to be categorised as economic corridors for the purpose of development (map 1A). These are:

1. Petroleum Resource Area Economic Corridor (PRAEC): Southern Highlands, parts of Enga, Gulf, and Central provinces. The PRAEC was approved by Cabinet in May 2009
2. Border Corridor (Western, Southern Highlands and Sandaun provinces)
3. Central Corridor (Central, Milne Bay, Oro and Morobe)
4. Madang-Baiyer-Karamui-Gulf Corridor (Madang, Simbu, Gulf and Western Highlands)
5. Morobe-Madang Corridor
6. Enga-Sepiks Corridor (Enga and East & West Sepik Provinces)
7. South Coast Corridor (East New Britain and West New Britain)

8. Momase Corridor (Madang, East Sepik, and West Sepik provinces)
9. Solomons Corridor (Autonomous Region of Bougainville)
10. Free Zone Corridor (Manus, New Ireland, East and West Sepik)

2.3 Economic corridor development features

The *PNGDSP* in large part will be implemented through the economic corridor concept, accounting for half the Development Budget in future years. The Government has already established the Border Development Authority, which will have responsibility for coordinating the development of the border corridors (the Border Corridor, the South Coast Corridor, the Solomons Corridor and the Free Zone Corridor). The Government will enact further legislation to establish an Economic Corridor Implementation Authority (ECIA) over each of the remaining economic zones. Legislation will set out the powers, functions and responsibilities of an ECIA in mobilising, planning and managing development in the economic corridor.

Corridor authorities will play a unique role that goes beyond provincial boundaries. They will work closely with provincial, district and town authorities to harmonise development initiatives, coordinating efforts in order to bring about greater results in the corridors. Economic corridor authorities will only initiate flagship projects of national interest in their various corridors, specifically in economic infrastructure (transportation, energy, telecommunication), social infrastructure (health, education and research and development), and projects for economic pursuit (agriculture, fisheries, forestry, downstream processing, and small-medium enterprise development). This will require corridor authorities to work closely with state owned enterprises and other major investors in economic and social infrastructure, coordinating all investment activities. Corridor authorities will not implement development initiatives at provincial and local levels, instead leaving this to the provincial and lower level authorities.

Legislation will allow ECIA's to operate as corporate entities with specific operational functions for running their own budgetary resources. Finance for corridor development will come through the Border Development Authority and ECIA's from both the public and private sector and include foreign direct investment, foreign aid, government loan financing, grants from companies, public enterprises through dividend policy, and from the Development Budget as outlined in figure 8C of part 8.

Legislation could provide for economic corridor authorities to retain a portion of revenue raised in the corridor areas and provide for other financing means in order to secure a budget for the purposes of maintenance and organisational operations. This could include mechanisms such as levies and fees and revenue from leasing land. Also, once the governance structure of corridor authorities is finalised, the process of resource mobilisation for investment in the three areas (economic infrastructure, social infrastructure, and economic pursuit) will be clearly distinguished so that all efforts will be harmonised and integrated under the leadership of each corridor authority. This includes, for instance, ensuring that investment undertaken by state owned enterprises, such as PNG Power Limited, are harmonised with the operation and activities of the economic corridor authority.

The economic corridor approach will integrate all aspects of development through spatial planning and proper sequencing of developments. Service delivery will be improved by providing basic social, transport, electricity and communication infrastructure. The supply of infrastructure will encourage private sector investment, as will the use of incentives such as the provision of market places with social amenities. Government financed investments will all take into account population growth and population density, together with the suitability of areas for agriculture, tourism and other industries.

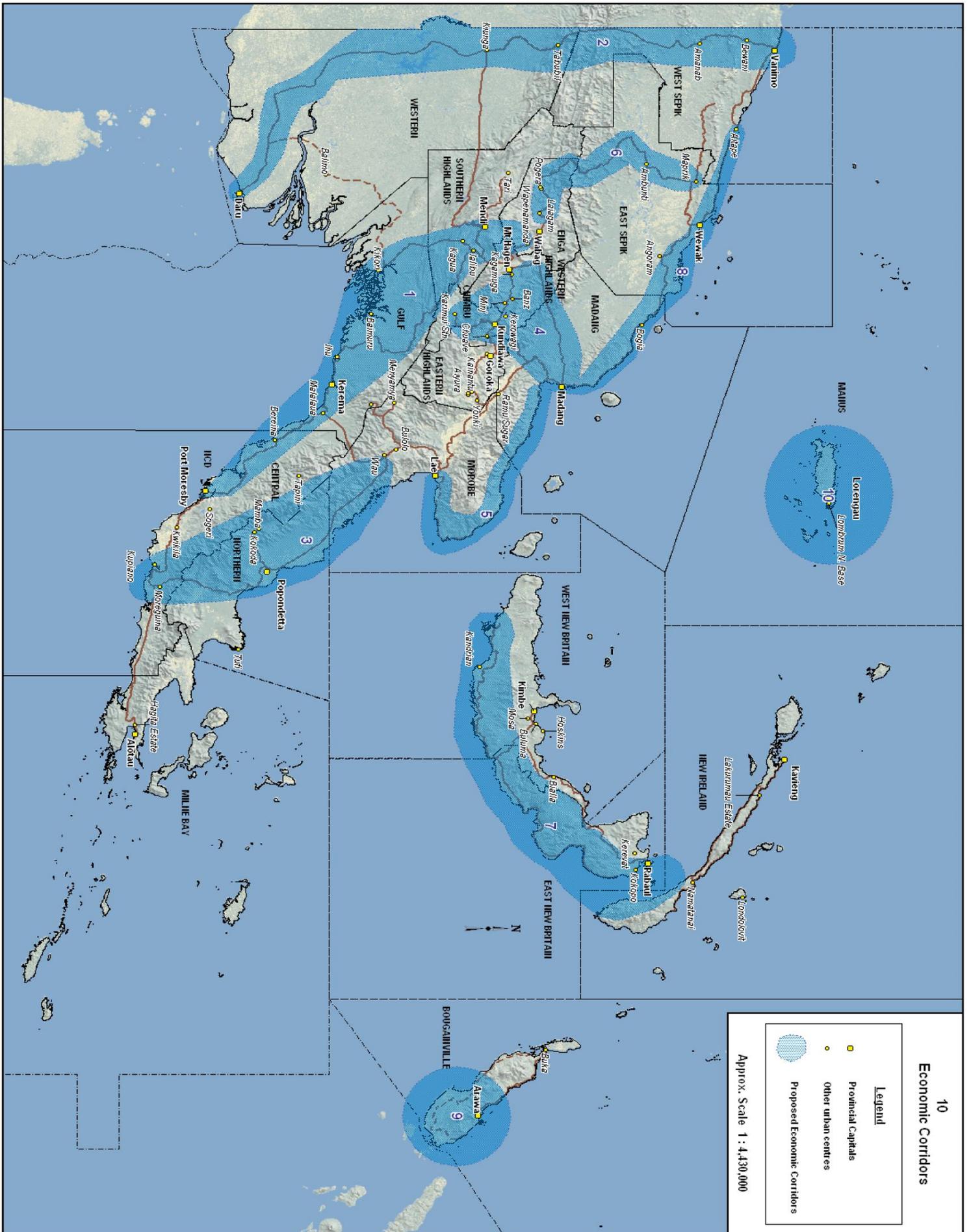
2.4 The Petroleum Resource Area Economic Corridor (PRAEC)

The PNG Liquefied Natural Gas (LNG) project will be one of the big impact projects for PNG during the *PNGDSP* period. The Petroleum Resource Area Economic Corridor (PRAEC) will extend the benefits of the LNG project beyond the gas site to the nation as a whole. The PRAEC will direct LNG revenues into a network of transport, utilities and services in the PRAEC area that is fully integrated with the national network. The PRAEC will be one of the first economic corridors implemented under the *PNGDSP*, together with the border corridors.

Building on the previous discussion of the objectives and benefits of the economic corridor concept, the PRAEC will deliver the following:

- improve the quality of life for people in the PRAEC zone by investing in the zone;
- improve the quality of life for people throughout PNG by integrating infrastructure and services in the PRAEC with the national network;
- ensure that gas revenues bring about tangible and sustainable improvements to the living standards of PNG's people;
- develop sources of investment funds that are independent of the national Government Budget, in order to sustain investment and maintenance expenditures;
- replace cash hand outs with a well managed and well coordinated system of investment to the benefit of affected communities;
- instill high standards for the scoping, design and costing of projects;
- guide the investments of state owned enterprises; and
- coordinate all stakeholders that provide funds or otherwise invest in the development of the PRAEC zone.

Map 2A – Proposed 10 economic corridors



2.5 Operationalising the PRAEC

Initially, the PRAEC will be administered by DNPM. However legislation and regulations will be put in place to establish an ECIA to oversee the PRAEC. The legislation and regulations setting up the Border Development Authority will guide the creation of the ECIA legislation. The establishment of the PRAEC's ECIA is critical because it will be the benchmark for establishing the other ECIA's.

The DNPM will put in place appropriate governance and organisation structures for the PRAEC ECIA. The PRAEC ECIA will coordinate resources and will manage the implementation of projects. The PRAEC ECIA may therefore involve representatives from affected provinces and districts, national Government agencies and other stakeholders engaged in investments or development activities in the PRAEC area.

2.6 A model of an economic corridor

When fully developed, a corridor will have a combination of the following development features:

- an electricity grid powered mainly by hydro and other renewables and connected to the national grid where feasible;
- utilities such as water and sewerage, telecommunications, broadband internet, and post office;
- transport infrastructure comprising a network of roads, marine facilities and air that is integrated with the national network;
- social infrastructure including health and education programs;
- agricultural, forestry and/or fishery based industries, for example sago, livestock, fish processing and plantation forests; and
- industrial estates and well serviced residential housing estates.

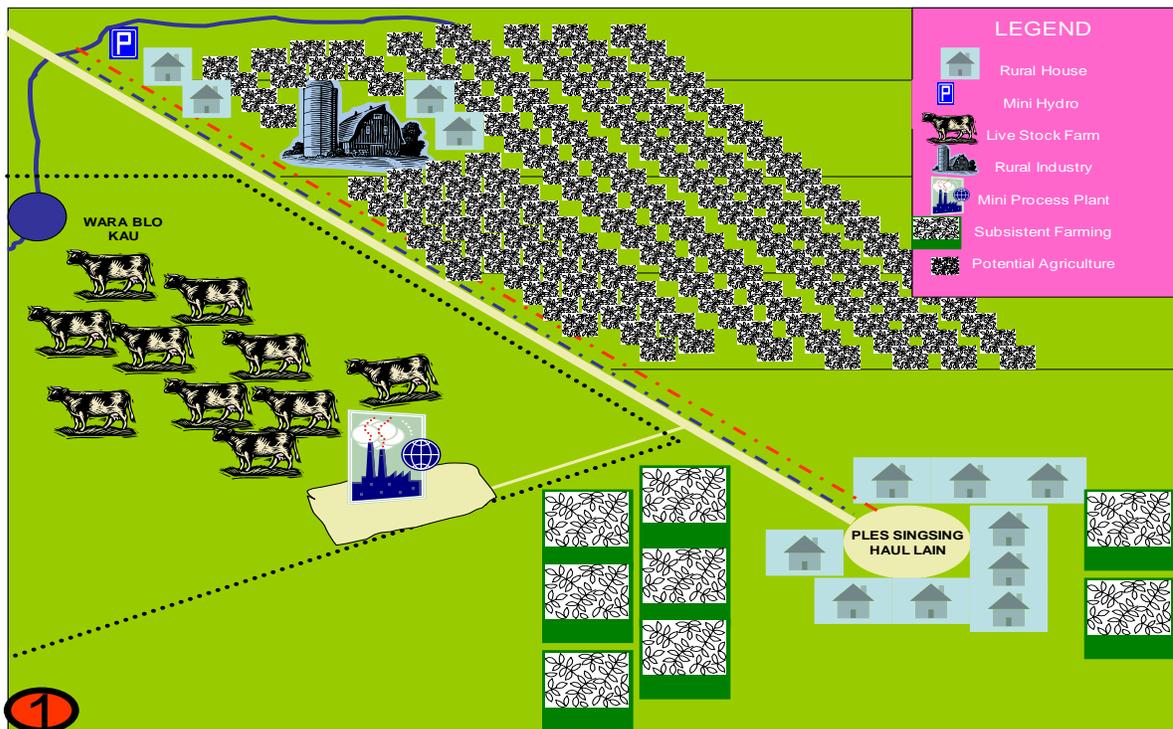
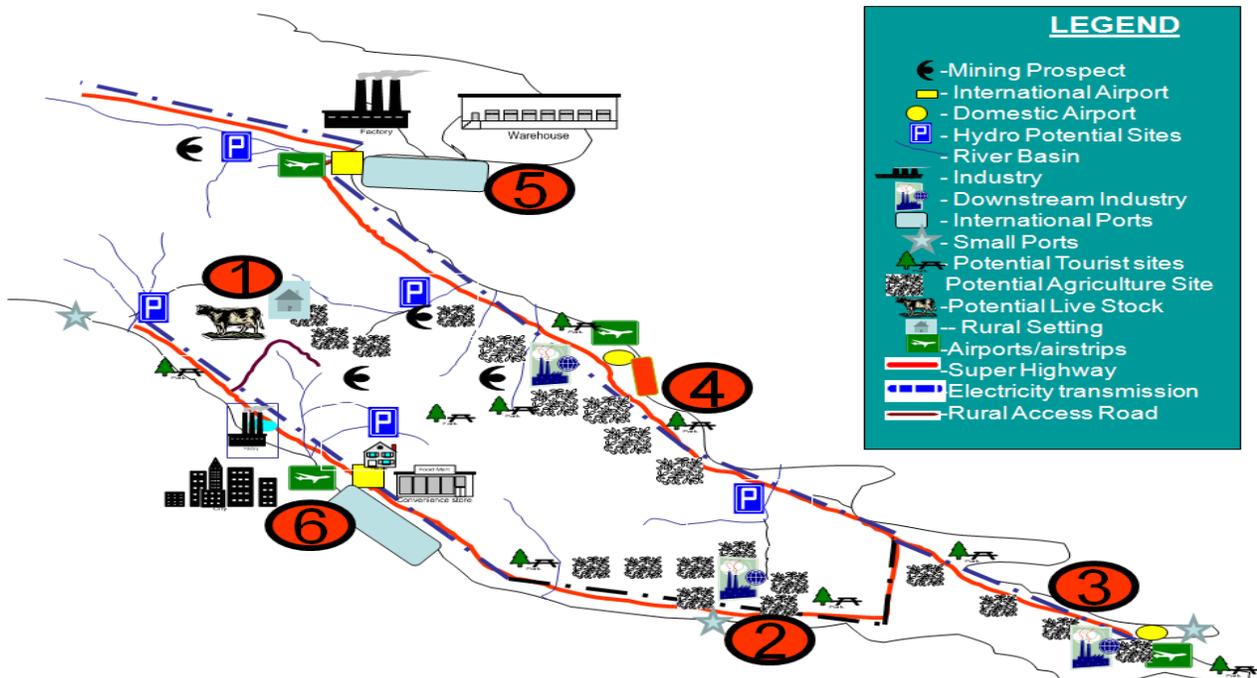
The strategies of the *PNGDSP* are aimed at providing the above infrastructure and services, especially those strategies outlined in parts 4, 5 and 6.

Figure 2A shows a hypothetical economic corridor, providing an illustration of how a corridor will be developed. The following features are demonstrated in figure 2A:

- an efficient road network that connects four urban centres and two rural developments. The road network opens up areas with considerable economic potential;
- electricity supply is generated and distributed along transmission lines that are connected to a national grid system;
- industries of various scope and scale that have been developed by the private sector in response to the conditions and infrastructure put in place by Government. Industries include:
 - area 1 – livestock, crops and an agricultural processing plant;

- areas 2 and 3 – downstream processing facilities and agricultural farms;
 - area 4 – tourism, service centre and downstream processing;
 - area 5 – heavy industries and international trading zones; and
 - area 6 – light industries and international service and trading zones.
- utilities and services that are developed to world standards in the four urban centres with the rural village in area 1 well connected to services; and
 - the four urban centres serviced by airports and ports of international standards.

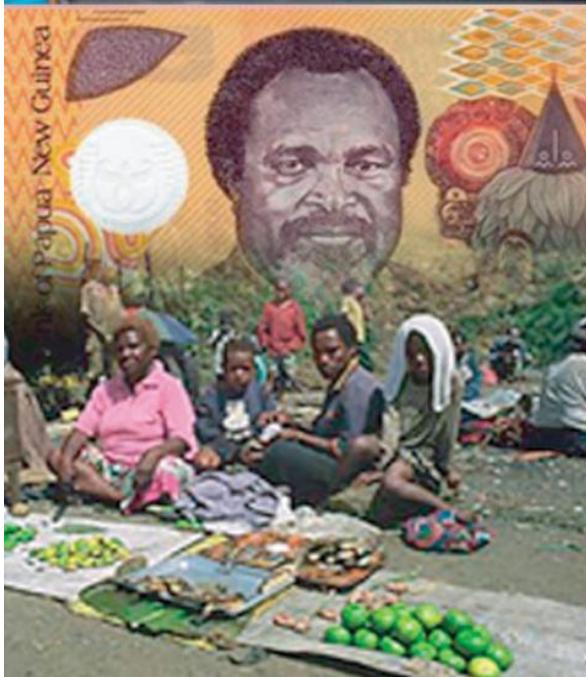
2A A depiction of an Economic Corridor for PNG





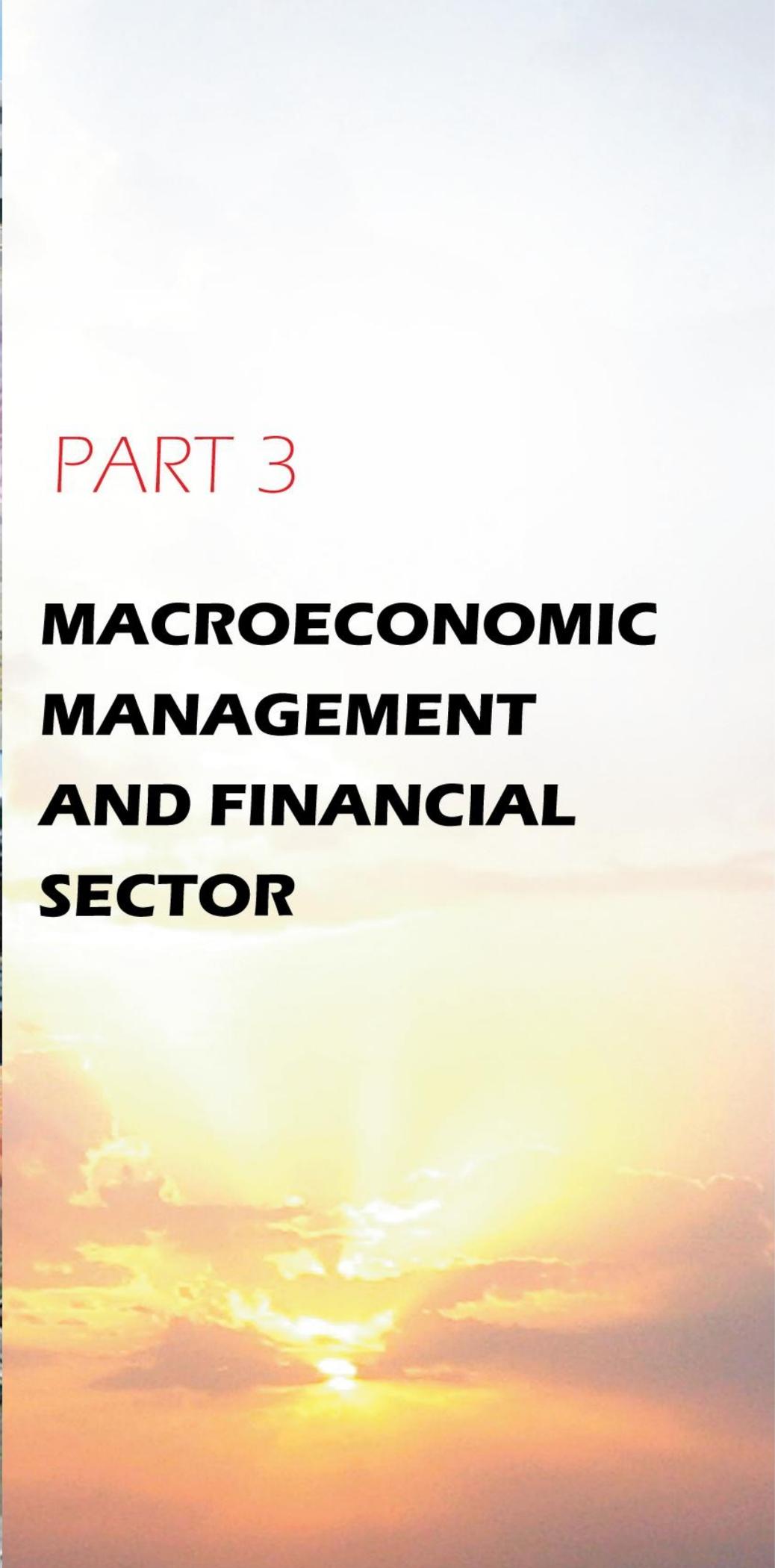
LEGEND

	International Port Facility Zone		Traffic Light
	International Airport Zone		Street Lights
	Super Highway		Recreation Zone
	Highway		High Covenant Residential Zone
	Road Network		Medium Covenant Residential Zone
	City Zone		Low Covenant Residential Zone
	Light Industrial Zone		Pedestrian Crossing
	Bond Storage Zone		Manhole
	Storage Facility		Drainage
	Hospital Zone		Live Stock
	School Zone		Rural Industry (Farm House)
	Shopping Complex		
	Agriculture		
	Public Parks		
	Public Market		
	U/G HV Power Reticulation		
	Water Reticulation		
	Sewer Reticulation		
	Communication Cabling		



PART 3

MACROECONOMIC MANAGEMENT AND FINANCIAL SECTOR



Recent years of macroeconomic stability in PNG have laid the foundation for consistent growth, even through the 2008-09 global financial crisis. Maintaining this record of macroeconomic stability will underpin the success of the *PNGDSP*.

There is also the need for fundamental microeconomic reform to improve the productivity and efficiency of the economy and promote a dynamic and expanding private sector. To this end microeconomic policy reforms will be directed at achieving improvements in economic performance at the sectoral level. This is undertaken through facilitating competition, enhancing the operation of markets, improving the effectiveness of government services relied upon by the private sector and removing impediments.

Key Development Indicators

Key indicators	Baseline	Issues	2030 Target
GDP growth rate	Average since independence of 3%	Negative growth in the three years to 2002 was followed by steady improvement to reach a growth rate above 5% between 2003 and 2008. This was due largely to the commodity prices boom and to macroeconomic stability.	8.4% (figure 1F)
Unemployment	More than 20% in urban areas	There are a lack of jobs and income earning opportunities. Unemployment in urban areas is severe, spilling over into law and order problems.	Below 5%

3.1. Fiscal policy

GOAL

Prudential management of fiscal policy and budgeting discipline

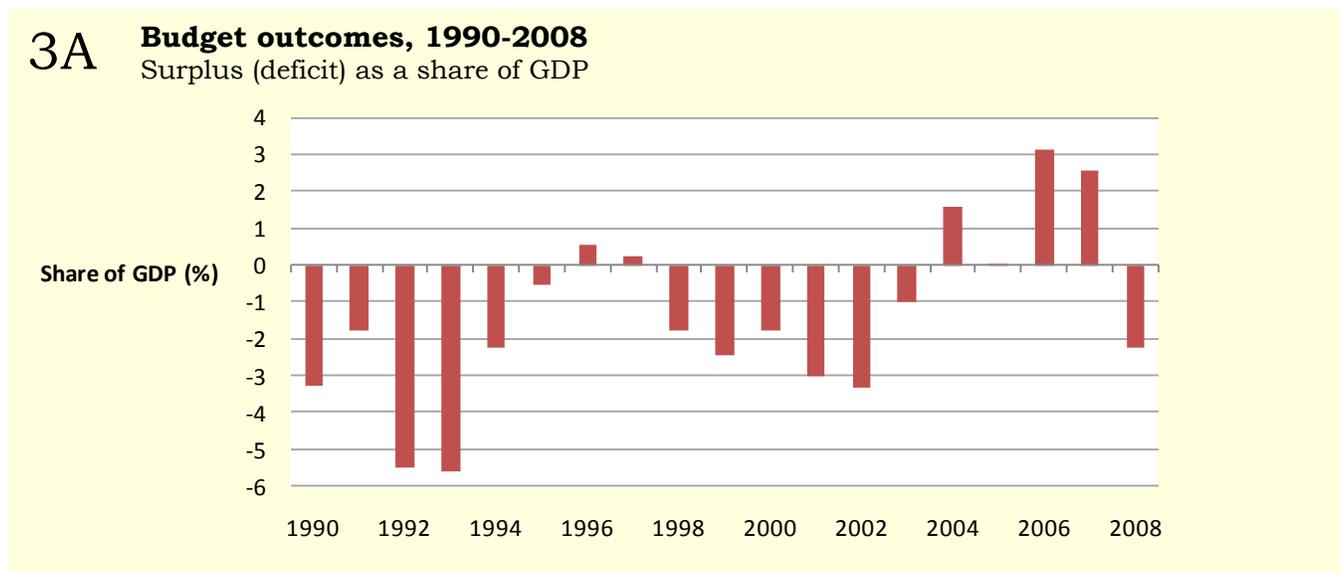
Fiscal performance

Since 2003, the Budget has been well managed, resulting in prevailing budget surpluses. However prior to 2003, fiscal instability and mismanagement were typical. There were periods of large fiscal deficits in the early 1990s and in the period 1998-2002 (figure 3A). The Budget went back in to deficit in 2008 as a result of the global financial crisis which led to a collapse in commodity prices later that year.

A boom in commodity prices between 2003 and 2007 provided a surge in revenues that underpinned the strong budget position in those years. Revenues have risen sharply from around 28 per cent of GDP in the early 2000s to 33 per cent of GDP in 2008. Improved management has resulted in these increases being diverted to development expenditure while recurrent expenditure has held steady at appropriate levels of around 18 per cent of GDP. Public debt has been reduced to 31 per cent of GDP in 2008 compared with an average of 63 per cent of GDP in the three years up to 2003.

Strategies

The Department of Treasury is responsible for managing fiscal policy, including the recurrent budget. The Department of National Planning and Monitoring is responsible for the development budget. Delegation of the Development Budget to the Planning Department demonstrates that the Government places high importance on its public investment program as the primary vehicle for implementing development policies and priorities.



The Medium Term Fiscal Framework, the Medium Term Debt Management Strategy and the Fiscal Responsibility Act (2006) provide the policy framework that guides decisions when formulating annual budgets. The Public Finance (Management) Act (2008) and Financial Instructions guide the management, disbursement and accountability of public funds through the annual budget cycle.

The focus of the fiscal policy framework is to maintain fiscal discipline, maintain low levels of debt and reduce high risk foreign debt. This focus remains a sound fiscal strategy. However the way in which this is pursued needs to account for the changing financial and economic conditions. The 2006 policy of using 30 per cent of windfall revenues to reduce debt is no longer appropriate now that PNG debt levels are sustainable. Such a narrow policy is only appropriate when debt levels are high. The public investment strategy outlined in part 8 is a more prudent approach to managing windfall revenues, encompassing the need to maintain low debt levels while also ensuring revenues contribute to development when debt levels are low. The Government will continue to support fiscal discipline, but through the public finance and investment strategy outlined in part 8. The Fiscal Responsibility Act (2006) will be revised to give effect to this change in emphasis.

The Medium Term Debt Management Strategy also will be revised to ensure it is consistent with economic realities and to accommodate development investment decisions by Government. For instance, in the *PNGDSP* the sequencing principles entail undertaking huge investments in the 'enablers', such as the transport network and electricity grids, which can be financed through State borrowing by leveraging future revenues from the minerals sector.

3.2. Monetary policy

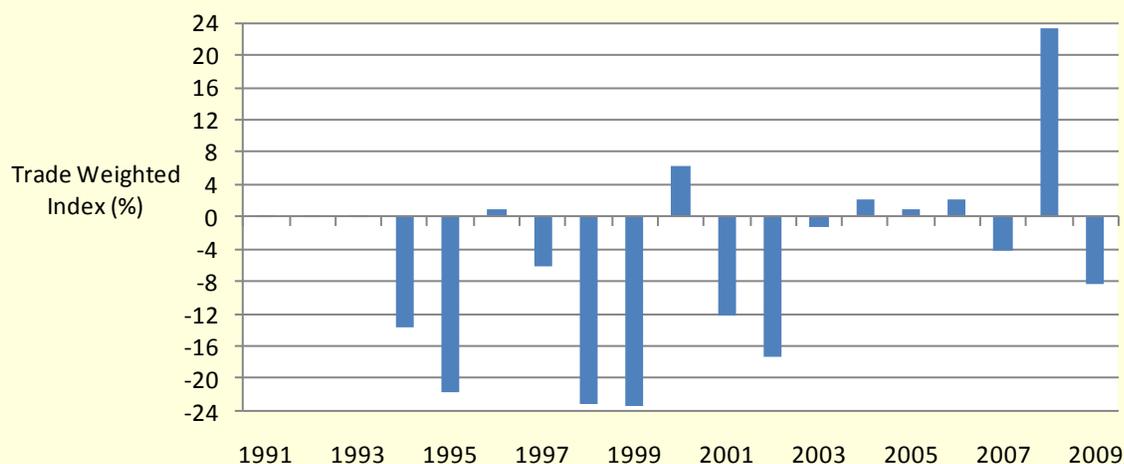
GOAL

Maintain price stability

Recent history

PNG's recent monetary stability follows a period of extreme volatility from 1994 to 2002 (figures 3B, 3C). This was caused by weak monetary and exchange rate policy that followed a crisis triggered by fiscal mismanagement in the early 1990s. The exchange rate was fully floated leading to sharp changes in the exchange rate from week to week and large depreciations that would feed through to high and volatile inflation (figures 3B, 3C). Interest rates were also high and volatile in this period, in large part due to a failed attempt to use interest rates as an instrument to control exchange rate depreciations. Commercial lending rates were unpredictable and often exceeded 20 per cent, placing considerable pressure on the private sector. Investment dried up, underpinning the prolonged recession over this period.

3B The exchange rate, 1991-2009
Annual change in the trade weighted exchange rate index*



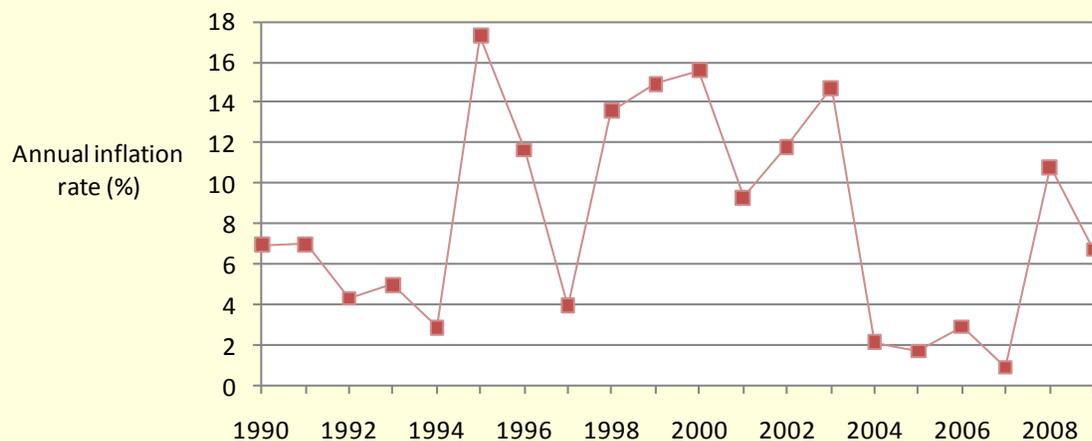
*The trade weighted exchange rate index is a measure of the average exchange rate of the PNG Kina against the currencies of its main trading partners. The data for 2009 refers to the annual change to June.

The health of the PNG economy since 2002 can in large part be traced to reform in monetary and exchange rate policy. Reform was underpinned by the Central Bank Act of 2000 which granted full independence to the Bank of PNG. Importantly, the Bank has been successful in managing the exchange rate with an emphasis on stability and preventing the sharp fluctuations that prevailed prior to 2002 (figure 3C). As a result, inflation since 2003 has been low and stable, apart from 2008 when global fuel prices surged – a factor outside the control of PNG. Similarly, interest rates have become stable.

During the 2008-09 global financial crisis, the Bank has tended to allow the Kina to move with the US dollar, rather than providing stability against a mix of currencies. This is the cause of the greater exchange rate volatility experienced since the second half of 2008 (figure 3B).

3C PNG's annual inflation rate

1990 to 2009*



*The data point for 2009 refers to the inflation rate to June.

Strategies

The key to sound monetary and exchange rate policy will be stability. The recent performance points the way forward, however, the Bank should revert to stability of the exchange rate against a trade weighted mix of currencies rather than against the US dollar alone. Importantly, the Bank of PNG should retain autonomy over monetary instruments and continue as the sole agency responsible for price stability and the exchange rate. As part of maintaining macroeconomic stability the Bank of PNG will continue to develop safeguards against factors that destabilise the banking sector, external accounts, and other important areas in its responsibilities.

3.3. Developing the financial sector

GOAL

Strengthen financial and banking services in PNG

PNG's growing financial sector

The financial and banking sector in PNG uses cash and paper as the main instruments for financial transactions. The Bank of PNG has supervisory and regulatory responsibility of the sector and oversees the payments and settlements system in PNG. The regulatory strength of the financial and banking sector has helped protect PNG from the global financial crisis of 2008-09.

Credit to the private sector has grown substantially from around 12 per cent of GDP in 2002 to 22 per cent of GDP in 2008. This is a reflection of a strengthening financial and banking system with stable interest rates and an increasing depth of services. Most of the commercial lending has been extended to established large corporate businesses and construction industries. Small enterprises and newcomers have difficulty securing investment funds from commercial banks due to higher risk premium.

The depth of services remains thin and underdeveloped in rural areas where the financial sector has failed to reach the majority of the population. Microfinance has been growing

rapidly to bridge this gap, but there remains a long way to go. The capital markets, including the Port Moresby Stock Exchange, remain small but are growing.

Strategies

Facilitating competition in the financial sector will improve service delivery. Under competition, market participants will need to put greater effort into customer care, providing timely service, making better use of technological innovations such as electronic banking, offering a greater range of financial services, and otherwise improving the quality of service at a lower cost. Prudential controls will remain the responsibility of the Bank of PNG, however the Bank of PNG and the ICCC will need to work together to engender a competitive and efficient financial sector.

PNG's progress depends on the depth, transparency and resilience of the country's capital markets. Key institutions such as the stock exchange and the market in Government bonds need to be developed accordingly. A comprehensive review of the finance sector is required to guide the development of capital markets and of the operations of the finance sector. The Bank of PNG should progressively guide the development of the capital market to ensure it achieves the desirable standards in terms of depth, buoyancy and elasticity to facilitate community development and to enable investment by the private sector. At the same time, commercial and investment banks should be encouraged to diversify their financial products to competitively meet the demands of local entrepreneurs and small businesses.

Significant progress is needed in extending the availability of low cost financial services to the general population. Informal financial institutions – such as informal microfinance societies – that operate savings, credit and other financial services will be relied upon to extend financial services to the grassroots economy. To this end, a suitable regulatory framework will need to be designed and implemented.

3.4. Business and investment

GOAL

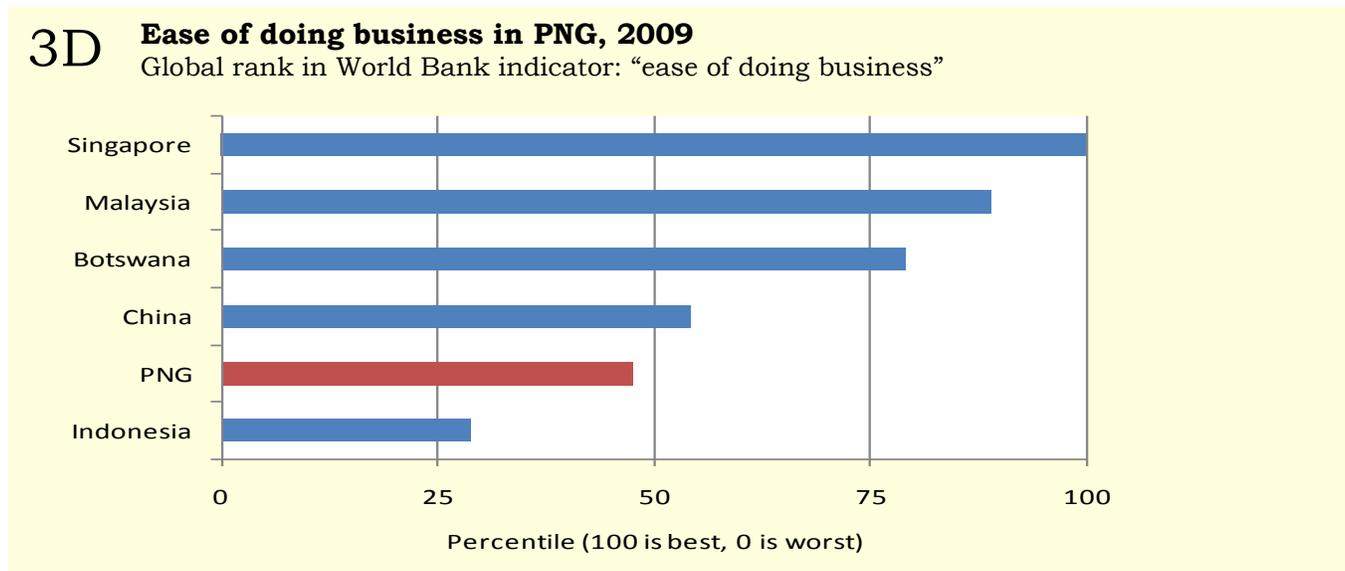
PNG will be an attractive destination for business and investment

It is business investment that will generate the income growth and jobs projected in the *PNGDSP* for agriculture, tourism, manufacturing and other sectors. The Government has a key role in providing the right conditions that make it attractive for the private sector, particularly local businesses, to establish and expand. In this environment, Papua New Guineans will become actively involved in overall development, including as both land owners and entrepreneurs. On the same token, necessary conditions will be created to encourage foreign investment through venture finance, joint-ventures businesses, and direct investment.

Foreign finance has been an important source of investment for PNG in the past, and will continue to support growth into the future. Foreign equity investment in 2007, for example, was almost K4.2 billion. While 73.6 per cent of this foreign equity investment was accounted for by the large mineral sector, the manufacturing sector also benefited substantially from foreign investment amounting to K383 million.

Key development areas

Each year, the World Bank measures the “ease of doing business” for many countries. While the indicators are only an approximation, they are currently the best available gauge of PNG’s ability to attract investment. PNG is currently ranked just outside the top 50 per cent out of 181 countries (figure 3D). By comparison, Singapore is the top ranked country for doing business, and Malaysia and Botswana are ranked amongst the top 25 per cent.



Ten separate criteria are used to estimate an overall “ease of doing business” indicator and PNG performs well on two criteria: “protecting investors” and “employing workers”, with a ranking among the top 25 per cent in the world (figure 3E). To attract higher levels of business investment, PNG needs to improve on other criteria. In “enforcing contracts”, PNG ranks in the lowest 10 per cent. “Getting credit” and “dealing with construction permits” are areas where PNG ranks among the lowest 30 per cent of countries in the world. Real progress against each of these criteria will help to attract the investment that PNG needs to develop into a middle income country. The 2030 target is for PNG to be among the top 25 per cent of countries for each of the ten criteria.

Strategies to attract private investment

Lowering transaction costs and reducing risks are two important elements for attracting both local and overseas investors. Recognising this, the Government will provide, among other things:

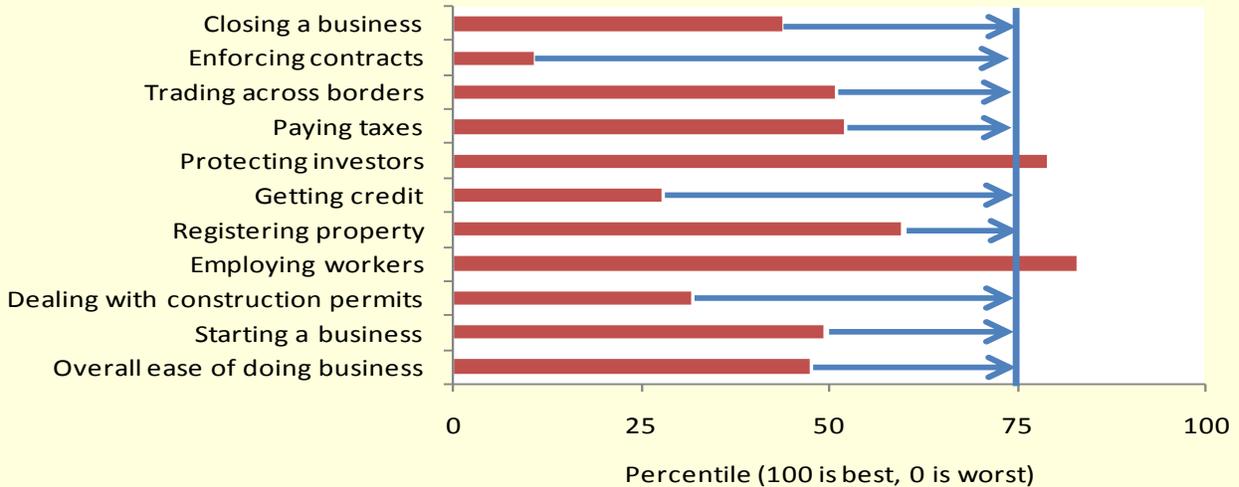
- a sound legal system;
- well-defined and protected property rights;
- a transparent and mature property market;
- a reliable and competitive financial system; and
- low transaction costs in setting up and running businesses.

Foreign direct investment will be a critical source of the finance and technology PNG will need for rapid development, including to invest in essential infrastructure. However it is also

important that PNG learns from foreign investors, thereby improving how PNG enterprises do business. For this purpose, foreign direct investors will be encouraged to invest in joint ventures with local businesses. In this way, foreign direct investment will support local entrepreneurship.

3E Targeted progress in ease of doing business, 2009-2030

Ranking in 2009 by criteria and the progress required to reach the top 25 per cent by 2030



Note: The full definition of these indicators is given in the World Bank's Ease of Doing Business Indicators website.

3.5. Competition and consumer protection

GOAL

Promote competition that benefits PNG and protects consumers

Competition between businesses needs to be harnessed to benefit consumers. When businesses compete to sell a similar product, they work hard to innovate, to lower prices, to lift quality and to provide a larger range of options to consumers. With this competition, PNG consumers will gain. However rules are required to ensure businesses focus on serving customers rather than on undermining competitors. To promote this type of competition, Government regulations must establish rules that treat all businesses the same, that prevent anti-competitive behaviour and that direct business efforts towards improving the well being of consumers.

PNG's success in implementing telecommunications competition illustrates this well. Following the introduction of Digicel into the mobile phone market, mobile phone prices have dropped, the quality of service has improved and access to mobile phones has soared. In 2009 more than one million Papua New Guineans subscribed to a mobile network.

Competition is lacking in several other sectors, including cement and processed food products, resulting in high costs to PNG consumers and businesses. This is a result of a number of factors including protection being granted to incumbent operators through monopoly rights as

well as other structural impediments to doing business. This lack of competition results in poor service and high prices for Papua New Guineans, because a monopolist of an essential service does not have to work hard to attract and retain customers.

Strategies

Competition needs to be promoted across the economy, including in key service sectors such as telecommunications, electricity and transport. This will require strengthening the role of the Independent Consumer and Competition Commission (ICCC) in investigating the competitiveness of markets and prosecuting anti-competitive behaviour. However the ICCC will be better able to focus on these important functions if its function of developing policy to promote competition is vested in another entity. A separate entity will therefore be mandated or established to analyse markets and develop policy to promote competition and consumers, with the ultimate goal of improving the living standards of Papua New Guineans.

Consumer protection is another important aspect of competition policy. Consumers need to be well informed of their rights and avenues to ensure that retailers and other service providers are providing quality goods and services. By ensuring consumers are well informed and well supported, the ICCC will better meet its mandate to protect consumers.

3.6. State owned enterprise reform

GOAL

A high standard of service delivery by state owned enterprises

The Government owns or controls a number of enterprises that provide key services. There is a clear role for Government ownership or control in service industries where investments are large scale, with a long time frame and often involve significant benefits beyond the capacity to pay of the service recipients. The private sector will not make such investments without Government. State owned or controlled enterprises have been set up to undertake these vital investments. Under the Government's Public Private Partnership Law, state owned enterprises can engage with the private sector to leverage greater resources for investment.

The Government intends for state enterprises to operate on commercial principles, to be subject to competition and consumer protection policies, and to be accountable to the people – its ultimate stakeholders.

When state owned enterprises perform poorly, the result is ineffective service delivery to the majority of the population. However state owned enterprises cannot undertake the investments needed for service delivery without adequate resourcing and effective management.

Strategies

The Government recognises that formulation of a dividend policy is required to guide how much revenue from a state owned enterprise is re-invested into the enterprise, as opposed to being allocated to the general budget. Failure to adequately invest in infrastructure will undermine future service delivery.

Competition will play an important role in motivating state owned enterprises to deliver good services. Community services obligations are ineffective without competition, as demonstrated by the poor delivery of community services obligations in the past by state owned monopoly service providers. The introduction of competition, where feasible, will place pressure on Government owned enterprises to upgrade their performances to that expected of them and required by the people of PNG. However the introduction of competition in each sector will need to be guided by a strategic review that draws on the experiences of other economies, while also accounting for the unique circumstances in PNG.

There is a need to comprehensively define community services obligations that are clear and measureable for the provision of services by state and private enterprises. The ultimate goal for community service obligations is that of enhancing the welfare of all Papua New Guineans, particularly those who lack the capacity to pay. For private enterprises, these obligations would be specified in the tender process as output based specifications and in the contract for the provision of their services.

When state owned enterprises are accountable to the Government and to the people of PNG, they will be motivated to meet the expectations of these key stakeholders. To this end, the financial management practices of state owned enterprises need to be improved and audited.

The use of public private partnerships (PPPs) is necessary as a means for sharing the risks and the financial burden of infrastructure developments with the private sector. The Government's PPP policy and the enactment of the PPP Law will open the way for state owned enterprises to work with private sector participants. The nature of partnerships will vary from sector to sector.

3.7. Trade

GOAL

To realise the benefits of trade for PNG

Objectives

- That trade with the rest of the world will flourish; and
- That PNG will effectively represent PNG's best interests and those of other Pacific Island countries in international and regional trade negotiations.

Current situation

International trade not only provides PNG with market opportunities, but is also a vehicle for the transfer of world best technologies into PNG.

Over recent years PNG has considerably reduced barriers to trade, including by abolishing import quotas and sharply lowering import tariffs. As a result, barriers to imports are low by international standards and lower than most industrialised countries. Moreover, PNG's exports attract little support in the way of subsidies. This is in sharp contrast to the high degree of export support provided in industrialised countries, particularly for agricultural commodities.

Strategies

PNG's foreign policy will be focused on supporting PNG's trade and development, as reflected in part 6.11. In particular, PNG needs to participate in international trade negotiations to support developing country efforts in addressing the imbalance in trade barriers between industrialised countries and developing countries – particularly in agriculture. It is also important for PNG to take a leadership role for Pacific island countries in these forums.

Trade negotiations

Trade negotiations are in progress for the creation of a free trade zone amongst Pacific Forum countries, including Australia and New Zealand, known as PACER Plus. There is a strong imbalance in these negotiations between the Pacific island countries and Australia and New Zealand. This places much responsibility on PNG to properly represent the interests of the Pacific island countries to ensure that any agreement will be to the clear benefit of PNG and its Pacific neighbours. This equally applies to WTO negotiations and any other free trade proposals that may emerge over the *PNGDSP* period. The international experience of free trade agreements between developing and industrialised countries is that it is the industrialised countries that have benefited most. This includes things like intellectual property conditions which have prevented developing country access to low cost medicines whilst at the same time allowing multinational companies to obtain legal rights over traditional medicines – an area where PNG and other Pacific countries are particularly vulnerable.

In this area, PNG will pursue the following objectives:

- address both trade barriers and technical barriers to trade through systematic reforms and trade dialogue;
- proactively engage in global integration through
 - regional trade agreements and
 - regional production networks; and
- take a leadership role amongst Pacific island countries in global and regional trade negotiations.

Outward-oriented trade policies

PNG is mindful of the benefits and costs of trade liberalisation and will endeavour to facilitate the process through discrete policy choices. In order to maximise economic benefits from its rich natural resources, appropriate trade policy, especially outward-oriented policies, will be pursued. An outward-oriented trade policy has already been pursued in previous Government plans through the export-led growth strategy and the *PNGDSP* will emphasise export promotion rather than import-substitution. This will require:

- the creation of a well functioning domestic economic base with sound infrastructure and utilities development as outlined in part 4;
- opening up access to export markets by:
 - developing domestic marketing and technological capabilities to improve productivity;

- striving to minimise the regulatory burden upon businesses, particularly those that are export oriented in order to improve their ability to compete in the world market; and
- providing a low cost, low risk environment to run a business to enable export oriented businesses to be highly competitive;
- promoting export led growth in all industrial sectors through careful planning that utilises cost advantage, economies of scale and linkages of inputs to production; and
- promoting targeted investment through the economic corridors outlined in part 2, including free trade and export processing zone arrangements.

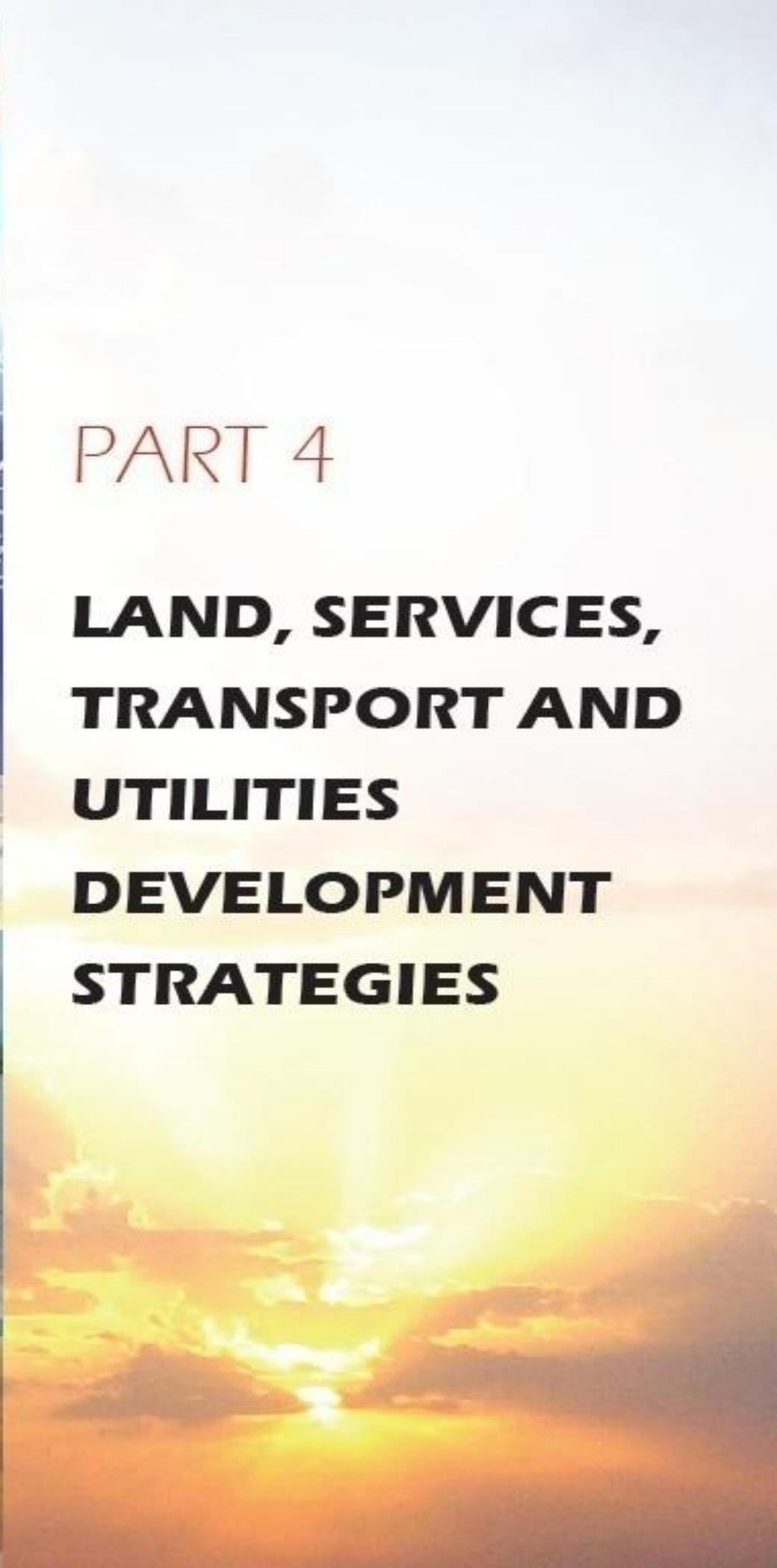
Accommodative trade policies

Trade policies will be pursued that support trade and growth. These are known as accommodative trade policies. Accommodative policies include addressing trade barriers, strengthening institutions, improving governance and ensuring macroeconomic stability. In particular, the focus will move away from *liberalisation* of imports to *facilitation* of exports. For example, as discussed in section 5.1, the Government will facilitate the establishment of international standards in the handling and marketing of agricultural produce in order to gain access to foreign markets. Another specific strategy will be to establish a Trade Development Board that will effectively and strictly coordinate and pursue trade, especially exports promotion.



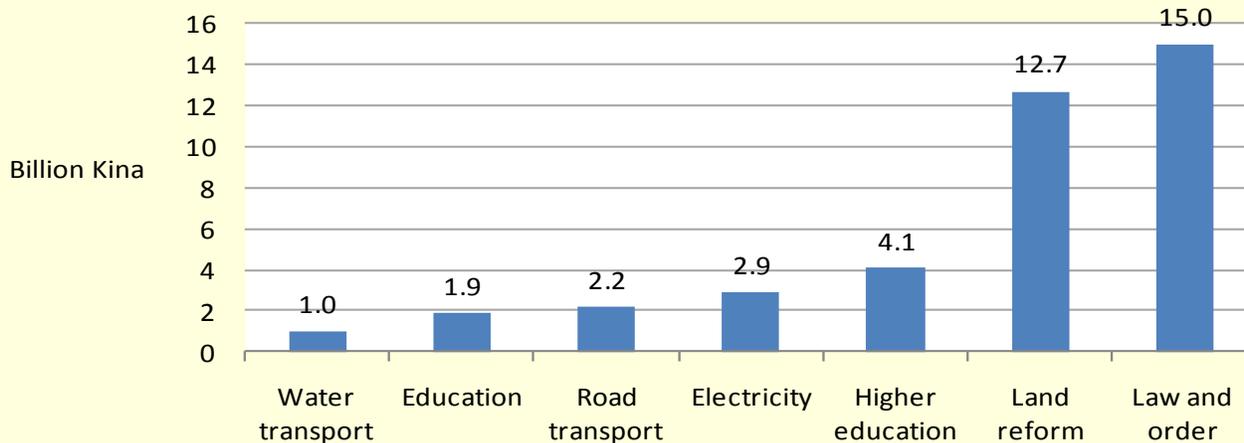
PART 4

LAND, SERVICES, TRANSPORT AND UTILITIES DEVELOPMENT STRATEGIES



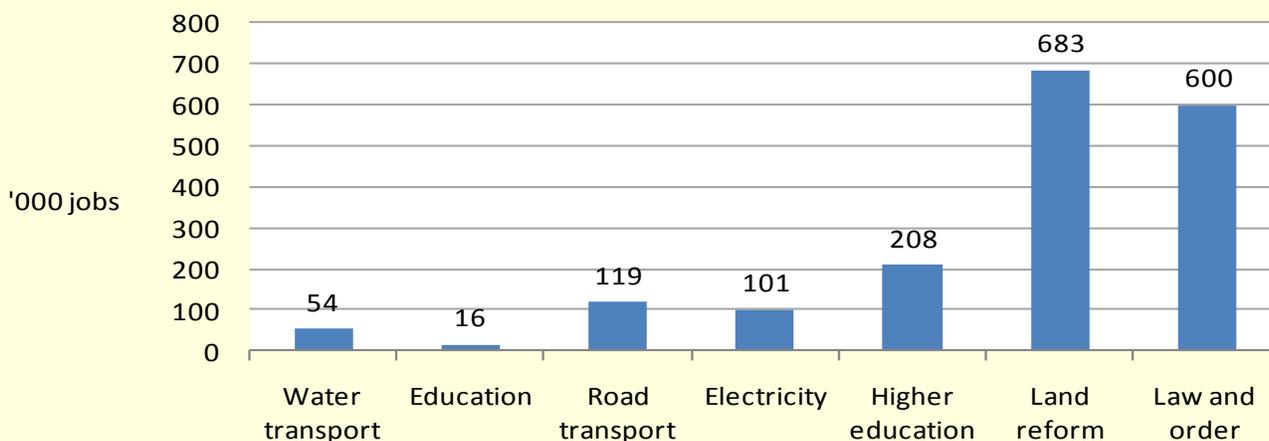
Land, law and order, education, health, transport and utilities are all crucial issues for economic and social prosperity. They are fundamental to economic growth and are prerequisites for development of the economic sectors outlined in part 5. The PNGDSP will implement strategies that will result in substantial progress in each of these areas. The economic and employment impacts of sector strategies outlined in part 4 are summarised in figures 4A and 4B. In addition, there are considerable benefits in social welfare and quality of life not picked up in these figures.

4A Economic impact of implementing sectoral strategies in Part 4
 Increase in national income in 2030*



*Data from table 1.1

4B Employment impact of implementing sectoral strategies in Part 4
 Increase in employment in 2030*



*Data from table 1.2

4.1. Land development

GOAL

Provide a secure, well administered land market that serves the needs of landowners and contributes to the nation's strategic development

The importance of land

Secure access to land is fundamental for the future development of PNG. Although PNG is endowed with abundant land resources, land has been difficult to access for development. This is true of the 97 per cent of land held under customary tenure and of the 3 per cent of alienated land that is mostly owned by the State. For both customary land and alienated land, poor administration and an inadequate legal framework have prohibited productive land use. Improving the administration of all forms of land is central to achieving sustained broad based economic growth and development.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
Land area in the formal market, including customary land	Less than 5% of PNG's land mass	An inadequate supply of secure customary and State land has constrained PNG's progress. A well designed system of administration is required that accommodates PNG's customary land into the formal system.	Increase land use within the formal administration system to over 20% of PNG's land mass (figure 4C).
Number of registered Incorporated Land Groups (ILGs)	1408 in 2008	Weaknesses in legislation and administration have meant ILGs have not been well utilised. Recent legislative and administrative changes have addressed this and the number of ILGs is rising.	At least 60% of landowner groups registered as ILGs
Land dispute settlement	n/a	Land disputes are clogging the court system and are not being resolved in a timely manner.	A fully functional land court system

Strategies for making land available for development

The implementation of appropriately designed land reforms is necessary to ensure that land is available for development. The Government's Land Development Program is a PNG initiative that works within the context of PNG's many systems of land ownership. The emphasis of the Land Development Program is on improving the existing administration of customary and alienated land, including dispute resolution, and on strengthening the PNG institution of Incorporated Land Groups. If the program is well implemented, at least 682,000 extra jobs will be generated by 2030 and there will be an additional K18 billion of GDP (figure 4B, table 1.1). These gains will be a result of the introduction of tenure security and transparent land markets, which will lead to higher rates of investment and higher productivity in land intensive industries such as agriculture.

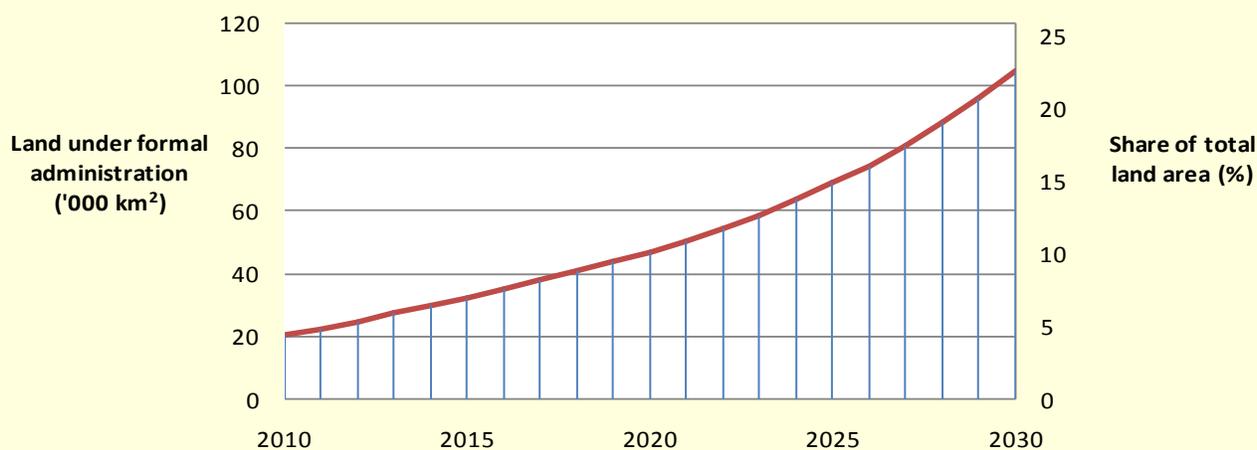
Land administration

Land administration underpins the security of land, whether it be alienated land or customary land. The Government is resourcing and otherwise improving the land administration system to ensure certainty over ownership and land use rights and to facilitate the marketing of customary and alienated land. Among other substantial benefits, proper administration of land is expected to reverse the growth of illegal settlements in the cities.

An important element of administration is dispute resolution. To resolve disputes efficiently and effectively it is important to enhance and fast track the implementation of reforms to the land dispute settlement system. The Government's introduction of a single land court will contribute to better outcomes in this area. Importantly, magistrates and judges who specialise in land law will be more proficient in land disputes.

The Government also has a key role in facilitating the development of an effective, transparent market for leased land, including by providing clear guidelines for market institutions, and by assisting land owners to market their land effectively. Government assistance in marketing land should be concentrated in areas where the returns to land development are high, for example in peri-urban areas where land is in high demand, in highly productive agricultural areas and otherwise within the Economic Corridors.

4C Land area operating within the formal administration system



Customary land reforms

Land is an abundant resource in PNG, but landowners will not choose to make their land available for development unless their rights are protected. Therefore, it is necessary to enhance and fast track the implementation of the Government's reforms that will allow customary landowners to register their land, to bring specified portions of land out of customary tenure and in under statutory tenure, and to then use leasing mechanisms to make their land available to the market.

A central aspect of these reforms is strengthening PNG's Incorporated Landowner Group (ILG) process. Developed for the PNG context, ILGs will remain a key institution for coordinating multiple owners of a single piece of land.

Information campaign

None of these strategies will be effective if people remain largely ignorant of the new opportunities available to them. It is therefore necessary to promote awareness of the opportunities to utilise customary land.

4.2. Law and order

GOAL

Provide a safe, secure and stable environment for all citizens, visitors, communities and businesses to conduct their affairs freely

The crime situation

Governments have a duty to establish and enforce the rule of law and to provide security and safety to its citizens and visitors. A number of surveys have confirmed that law and order stands out as by far the biggest impediment to business and investment, more so than infrastructure, governance, regulatory and urban land issues. As much as 9 per cent of business revenues are consumed by the law and order problem.

As well as deterring foreign investment, PNG's alarming law and order problem is hindering economic activities such as tourism. The resources and capacity of law enforcement institutions are inadequate to deal effectively with this problem. Real expenditure on law enforcement has remained virtually unchanged since the 1970s, while the rate of crime has dramatically increased by more than 12-fold.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
Crime rate	Average victimisation rate 9.7%	International studies confirm that PNG suffers from crime rates that are among the worst in the world, placing an immense burden on development and quality of life.	Number of crimes fall by 55%; victimisation rate below 5%
Incidence of major crime	600,000 estimated; 150,000 reported in 2005	Due to weak reporting systems, the number of reported crimes has been low with only 20-30% of actual crimes reported.	Reduce to 270,000 actual
Number of sworn police officers	5160 (there is one police officer per 1200 people)	Police numbers are the same now as they were in the 1970s, despite population growth and worsening crime. The ratio of one police officer for every 1200 people compares with the international benchmark of 1 per 450 people. With 20% of the police force due to retire by 2010-11, a recruitment drive has to start early.	Increase to 24,000 (one police officer for every 400 people)
Number of magisterial personnel	98	An inadequate number of magistrates is delaying the processing of cases in district and lower courts. At least 150 magisterial personnel are required to effectively deal with the current case load, and more will be needed in the future.	Maintain adequate number through to 2030.

Note: Average victimisation rate is an average across urban centres and an average across burglary, assault, sexual assault, violence, vandalism and vehicle theft.

Strategies for reducing the crime rate

The law and justice system of PNG rests on three pillars: deterrence of crime, coordination of law and justice agencies and restorative justice.

The core strategy for achieving the target of a 55 per cent reduction in crimes is to build an effective deterrence system, which includes raising the operational capacity of the police force to international standards. This will involve improving skills and technological capacity as well as expanding the size of the force. A ratio of one police officer for every 600 people will be reached by 2016 and then one for every 400 people by 2030 in order to provide a safe society for citizens, visitors and businesses. Importantly, the effectiveness of police will need to be strengthened by developing systems to improve productivity, loyalty and adherence to procedures, and to eliminate corruption.

A lack of resources hinders the judiciary system in the resolution of criminal cases. Court houses, lock ups and magistrate's accommodation are needed in key locations and will be provided under the *PNGDSP*. Measures will also be taken to address the inadequate number of magistrates and to improve case management practices. The high cost of the circuit service has been a large burden on the magisterial services budget. Transport costs will come down in the longer term as a result of strategies being implemented under the transport sector (section 4.8). In the meantime, additional resources will be required to support an effective circuit service.

Establishing sector coordination mechanisms that allow and encourage dialogue with the agencies in the law and justice sector will improve the effectiveness of the system. The use of national court circuits to serve districts is encouraged, but this must be accompanied by subsequent programs to roll out police posts and rural lock ups at district levels as further steps to reduce the overall costs of transporting prisoners to main centres.

Other measures will also help ensure a safe society, including the introduction of reserve police, sector patrols, neighbourhood watch and the improvement of police-community relations. Initiatives such as the use of village peace officers and traditional law enforcement measures can also be effective for deterring crime, thereby reducing the overall cost of combating crime.

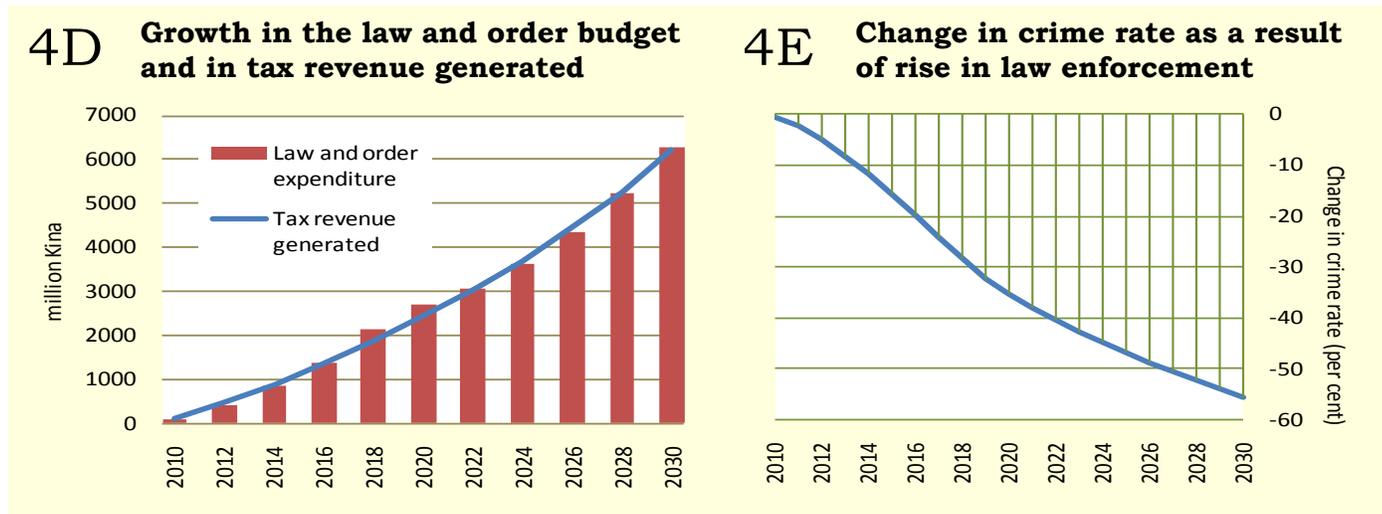
Traditional measures for dispute resolution need to be utilised to complement the statutory court system. Mediation that characterises many of PNG's traditional legal systems can be effective in resolving disputes while at the same time promoting reconciliation and relieving the pressure on the court system.

As a complement to the core strategy of deterrence, increased efforts will be put into crime prevention and restorative justice, in partnership with churches, the community and the civil sector. This includes supporting efforts to divert people away from criminal lifestyles by promoting ethics and legitimate livelihoods. Key initiatives include strategies to integrate youth into the community (section 6.2) and the provision of tourist police (section 5.9).

The law and order Budget and the crime reduction target

The sharp fall in the crime rate will lead to a considerable boost to economic activity, which in turn will generate K6.2 billion in additional tax revenue in 2030 (table 1.1) and nearly K57 billion in additional tax revenue over the years 2010-2030. The additional government

resources committed to law enforcement are calculated to be Budget neutral so that the expenditures are offset by these additional tax revenues (figure 4D). The average annual increase in the law and order Budget will be 20 per cent from 2011 to 2019, and then 10 per cent annually from 2020 to 2030. The target of a 55 per cent fall in the crime rate has been calculated based on the impact of committing these additional resources (figure 4E). Over and above the benefits in quality of life that the 55 per cent reduction in the crime rate will bring, the economy will be K15 billion better off in 2030 and nearly 600,000 jobs will be created (figures 4A, 4B).



The size of the law and order budget however, is only indicative and would reflect the drastic efforts required under PNGDSP to bring the crime rate down by 55 percent. For instance, if strategies to increase investment, job creation, restorative justice, community policing, strengthening traditional ways and process, etc. are not properly addressed under PNGDSP then the Government would require, for instance, K6.2 billion alone in the 2030 budget to fund this sector. But under PNGDSP, development strategies are integrated so that the efforts in law and order can be greatly enhanced by development elsewhere and would reduce the fiscal burden.

4.3. Health

GOAL

Achieve an efficient health system which can deliver an internationally acceptable standard of health services

The state of the health system

Considerable health gains were made in the first two decades after PNG's independence in 1975. However, progress in a number of key health indicators has worsened or slowed since the mid 1990s (as reported below). This coincided with the transfer of responsibility for rural health services to the local level government under the *Organic Law on Provincial and Local Level Government (1995)*.

The deterioration of health services has complex causes. These include:

- poor access to quality health services and facilities such as specialist hospitals, aid posts, health centres and equipment – a situation made worse in the context of rapid population growth;
- the inadequate state of transport infrastructure and other utilities, denying many people adequate access to health services;
- law and order issues, for example, health facilities have been burnt down or health workers have been attacked, resulting in the closure of service centres;
- closure or limited operation of facilities due to shortage of staff (doctors, nurses and community health workers), insufficient medicines, malfunctioning equipment and poor maintenance of buildings. In particular, approximately 50 per cent of rural health facilities are not functional;
- lack of emphasis on primary and preventative health practices, healthy lifestyles and dietary practices; and
- poor management of the highly decentralised and fragmented National Health System, including failure by provincial governments to adequately resource health services through their annual budgets.

Key strategic areas

Current indicators show the poor state of PNG's health system by international comparison. The targets are set with reference to the levels currently achieved by low to middle income countries. Map 4A is provided for reference to the location of the facilities reported in the following table.

Key indicators	Baseline information	Issues	2030 target/objective
Infant (up to 12 months) mortality rate	57 per 1000 live births in 2006	The 2015 Millennium Development Goal (MDG) target tailored for PNG is 44 per 1000 live births. This rate is still high by international standards. Malaysia's rate in 2007 was 10, and Fiji's 16.	Reduce to below 17 per 1000
Under 5 mortality rate	75 per 1000 live births in 2006	The 2015 MDG target tailored for PNG is 72 per 1000. Key reasons for this high rate are poor health and a lack of nutrition. Malaysia's rate in 2007 was 12, and Fiji's 18.	Reduce to below 20 per 1000
Maternal mortality rate	733 per 100,000	Maternal mortality rate has worsened, is very high by international standards – 4 times higher on average than Pacific island countries. The 2015 MDG target for PNG is 274 per 100,000 live births.	Reduce to below 100 per 100,000
Life expectancy	57 years	PNG's life expectancy is very low by international standards. The average for developing countries is 67 and for East Asia and Pacific 72. Future progress depends on controlling HIV/AIDS.	70 years

Key indicators	Baseline information	Issues	2030 target/objective
Incidence of tuberculosis (TB)	475 per 100,000 people in 2008	The current rate is three times higher on average than middle income countries. The MDG target for PNG is to have TB under control by 2015, and to reverse the incidence of TB by 2020.	Reduce to 150 per 100,000 people
Incidence of malaria	246 per 100,000 people in 2008	Although the incidence of malaria has fallen recently, the number of deaths has risen. The 2015 MDG target for PNG is to have malaria under control by 2015, and to reverse the incidence of malaria by 2020.	Reduce to below 100 per 100,000 people
Incidence of life style and coronary diseases	n/a	With diet and lifestyle changes, lifestyle and coronary diseases are becoming more prevalent.	Keep incidence low
Under 5s with moderate to high malnutrition	Over 50% in 2008	Most children under 5 years visiting public health facilities, have been diagnosed with severe or moderate malnourishment.	Reduce malnutrition to less than 5%
Number of hospitals in full operation	19	PNG's hospitals have deteriorated due to the lack of capacity and specialised skills required to meet the increasing demand for quality health services.	4 specialised regional hospitals; 50% of district health centres upgraded to hospital status
Number of functioning aid posts in PNG	1870 in 2008	Of the 2672 aid posts in the country, about 30% are closed and many are not operating at full capacity due to lack of equipment, health workers and medical supplies.	7500
Facilities with adequate medical supplies	51% in 2008	Distribution of medical supplies to health facilities declined markedly in 2008.	100%
Facilities receiving at least one visit from headquarters a year	53% in 2008	Average supervisory visits to health facilities have remained low with little improvement in most provinces.	100%
Ratio of physicians per 100,000 people	5 per 100,000 people (300 physicians)	The number of physicians is inadequate, particularly in rural areas. By comparison, the ratio in Malaysia is 70 per 100,000. Only 35 physicians a year are trained in PNG.	Increase to 50 per 100,000 people (4,900 physicians)
Number of nurses	50 per 100,000 people in 2009 (2844 nurses)	With 80% of nurses nearing retirement, expanding nursing training is a priority.	Increase to 200 per 100,000 people (19,500 nurses)

Key indicators	Baseline information	Issues	2030 target/objective
Community health workers	3883 in 2009	Health services delivery in rural areas has been a major challenge with insufficient community health workers in health posts and health centres.	20,000
Supervised deliveries	37% in 2008	Unsupervised deliveries are a key reason infant and maternal mortality rates are very high.	Increase supervised deliveries to 95%
Ante-natal care	63% of pregnancies in 2008	Insufficient attention is paid to ante-natal care services for detecting early risk in pregnancies, maternal health and infant health.	Increase ante-natal coverage to 100%
Immunisation coverage	52% of children aged 12 to 23 months fully immunised in 2006	Immunisation coverage has improved from 38% in 1996, but is still inadequate. Full coverage is needed for reducing infant mortality, preventing diseases and reducing the demand on health treatment services.	100%
Food outlets implementing the safe food code of practice	40% in 2008	Food safety regulation is inadequately enforced, putting the community at risk. Prevention of food borne diseases reduces the burden on health services.	90%

Case Study: SPECIALISED HOSPITALS FOR PNG

PNG needs to have the best available medical services and facilities to cater for its growing population. Its citizens continue to spend large amounts of financial resources and time seeking overseas medical services for specialised treatments. To address this issue the Government intends to set up four specialised regional hospitals, which will be formed by upgrading existing provincial hospitals. The specialised hospitals will be set up using international benchmarks that distinguish a hospital as 'specialised', equipped with modern medical equipment.

The Angau General Hospital in Morobe province will be the first specialised hospital to be established, while discussions are ongoing regarding the other specialised hospitals. A concept design for the Angau specialised hospital is in place in 2009 and a more detailed architectural design, together with other detailed ground work, is underway. The concept design already sets the minimum standards for a specialised hospital. For instance, the Angau specialised hospital will have the facilities and capabilities for heart transplants.

Since the concept is new, the progress of Angau will be critical. Once Angau is established, building the other three specialised hospitals will be easier, in terms of replicating architectural designs and other specifications.

Strategies for developing a world class health system

Achieving the targets for 2030 will require a complete transformation of the health system. Strategies for doing this are outlined as follows.

Management

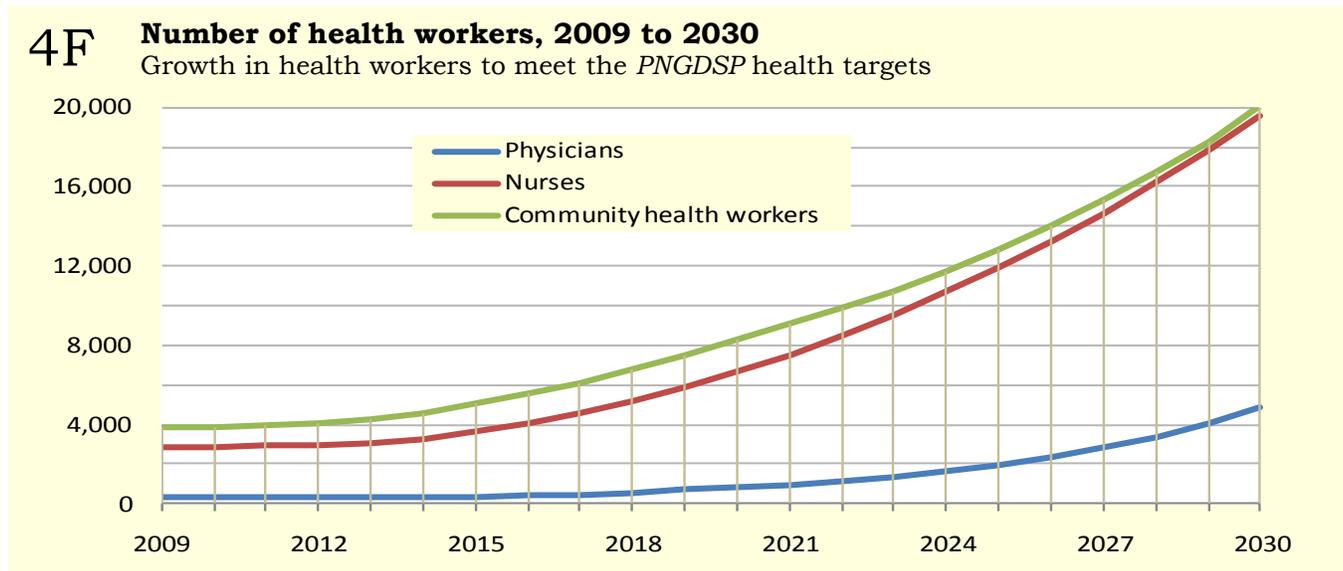
As reflected in the 2001-2010 National Health Plan, effective management of the health system is vital if resources are going to be used well. It is therefore important to strengthen the capacity of management at all levels, including a clear demarcation of the functions of different levels of management. Given the small population of PNG, and the large and growing rate of migration within the country, it will be more cost effective to centralise delivery of health services. This will require legislative changes and further reforms to the public health system.

Quality

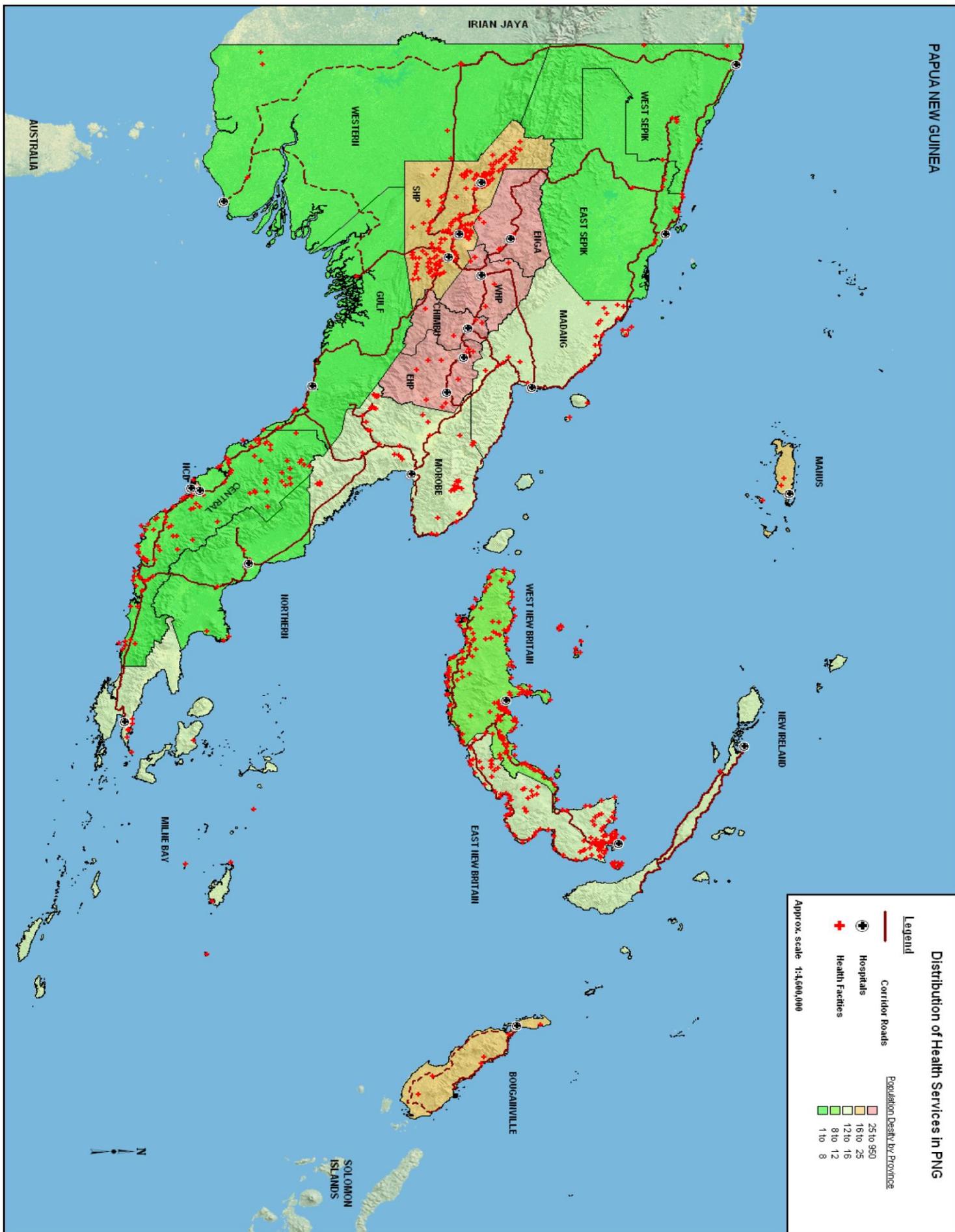
The quality of health service delivery, including accurate diagnosis and treatment, depends on the skills of health workers. It is always a priority to increase both the number and quality of health workers through better training. This will be achieved by upgrading and expanding training facilities for medical practitioners, nurses and for community health workers generally to meet the projections outlined in figure 4F. Further strategies for building the capacity of tertiary education in general are outlined in section 4.5.

Modernising health facilities will also improve the quality of service delivery. The introduction and improvement of medical technologies, information and communication technologies (ICT) including tele-health and medical laboratories, both diagnostic and research, are all necessary.

Efficient procurement, storage and distribution of basic drugs and medical equipment is essential. Achieving this may require the Government to establish bulk stores or warehouses, including the introduction of an information technology network that will require all hospitals to monitor levels of drug supplies. Engaging with private enterprise under the Government's PPP policy is an option to promote efficiency and guarantee an effective distribution system.



Map 4A – Distribution of hospitals & health facilities



Access

Access to health services in rural areas is poor. Improving access is critical for achieving gains in health outcomes. Fundamental to this is the extension of transport, electricity, and utility services into rural areas as outlined in sections 4.6-4.8. Also important is the strategy of universal education which will assist people in understanding and addressing health issues.

To ensure that health services are accessible to the whole population, a number of additional strategies are proposed. Firstly, existing health facilities are to be recapitalised and upgraded. Four regional hospitals will be upgraded to become specialised hospitals. District health centres will be equipped and expanded to become hospitals in order to deliver better primary health care in rural areas.

Secondly, strong partnerships with churches and other non government organisations (NGO) health service providers will be important. Such a partnership has been achieved in the “Church – State Partnership Framework” signed on 7th October, 2008. A strong partnership is necessary to achieve 100 per cent coverage in the delivery of more effective health services to the majority of the rural population.

Attracting physicians to live and work in rural areas is a priority for extending rural medical services. Through the economic corridors, service centres will be established, constituting a hub of shops, health services, schools, communication services and other services. Accommodation for key personnel, including physicians will be provided at these points, to make rural service more attractive to physicians.

Hospital outreach programs are recognised as an effective approach to improve the accessibility of health services to rural populations. Specialist doctors and nurses will be scheduled to visit different parts of the provinces to administer and treat rural population several times a year. These visits will be made public in advance through the media.

Preventative health

A number of strategies are proposed to prevent illnesses. The provision of clean water and sanitation is vital for reducing the spread of disease, yet only 9 per cent of the population have access to piped water. Strategies discussed in later sections to improve water and sanitation are therefore essential for raising the health of the population generally.

Immunisation is a key strategy in preventing disease. The rate of immunisation is currently 69 per cent, and, if raised significantly, will help control disease. Development of preventative programs to contain malaria and tuberculosis are also important.

Lifestyle is critical for good health. A balanced diet and regular exercise will help lower coronary illnesses, various cancers and many other lifestyle health problems that characterise high income nations. Educating the population and encouraging people to maintain a healthy lifestyle will be a major part of the strategy for health, thereby avoiding the high cost of treating lifestyle illnesses later on.

4.4. Primary and Secondary Education

GOAL

Achieve a better future by promoting and enhancing integral human development

The state of the education system

A highly literate and numerate workforce is desirable as this plays a fundamental role in sustaining strong economic growth and social development.

However PNG's youth literacy rate is less than 64 per cent and numeracy standards are also poor. This is partly because the majority of school aged children are not attending school. Standards of numeracy and literacy are also low due to under-trained teachers and a poor quality curriculum. Furthermore, high attrition rates at primary and secondary levels, low transition rates between primary and secondary education, weak management and administration, declining resources despite high unit costs and variable teacher performance and attendance all demonstrate that further reforms are needed to the country's education system.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
Net admission rate (percentage of ages 6-14)	11.5%	Many children are not admitted into school at the correct age. International research demonstrates that students attending school at the correct official age perform better.	Close to 70%
Net enrolment rate (percentage of ages 6-14)	52.9%	The low enrolment rate is due to low affordability, lack of infrastructure and poor quality teaching, especially in rural areas.	100%
Completion rate to level 8	45.4%	The rate of completion at all levels of education has not improved and of the total number of students admitted at the first grade, only 45.4% completed level 8.	Close to 100%
Retention rate	30%	There is a low transition of students from one level of education to another, particularly at year 8 and higher. Lack of capacity in the education system is the key constraint.	70%
Average class size (teacher to pupil ratio)	1:45	Performance of students and quality of education has been undermined by a high teacher student ratio. This can be overcome by reducing class size and/or by integrating IT and other facilities into the classroom.	1:40
Youth literacy rate (percentage of ages 15-25)	less than 64%	Poor outcomes in literacy are a result of low enrolment and retention, a misguided curriculum and weak teaching. Literacy skills are essential for economic and social participation.	90%

Key indicators	Baseline information	Issues	2030 target/objective
Numeracy (percentage of ages 15-25)	n/a	There is a lack of emphasis in the teaching of numeracy skills and this is holding back PNG's progress. International research demonstrates a strong link between mathematical skills and development.	Attain a numeracy level consistent with middle-income countries
Number of teachers and support staff	38,000 in 2008	The number of teachers and support staff is insufficient to meet the needs of higher enrolment rates, reduced class sizes and a rising population (see figure 4E).	111,000 (figure 4H)

Strategies to provide quality education

Providing quality education for children today will help create a productive workforce in the future. If most of the population is able to read, write and do mathematics by 2030, it is estimated that the PNG economy will be K3.5 billion better off in terms of GDP. The contribution of education to PNG's economy will continue to increase after 2030 as literacy and numeracy rates among the population continue to increase. However to achieve this, a radical change to the education system is required.

Education reform

An overhaul of the country's education system is necessary to prepare PNG for high and sustained growth and development. The recent introduction of an elementary education system based on the vernacular language has been counterproductive. English is the national language, is the language of later years of schooling and is an important language of international commerce. Children need to be competent in English to later access the benefits of education and formal employment. The National Government will therefore no longer fund elementary education in the vernacular language.

Across all levels of schooling, curriculum reform is needed to promote student activities that facilitate understanding of key subject matters like English, mathematics, information technology, science, foreign languages and also health education and PNG history. In this age of information technology, computer literacy has the capacity to greatly enhance productivity in PNG, bringing the country closer towards achieving a knowledge based economy. Understanding key foreign cultures and languages is also important in this modern world, particularly when it comes to accommodating tourists, influencing foreign affairs and engaging with international business partners.

Universities and technical colleges will be represented on the curriculum panel for secondary school. This will help ensure that schools are preparing students well for further education. The high school system will be flexible in order to direct students into the type of education that matches their interests and abilities. This will address the issue of "school drop outs".

In the first place, students with technical abilities will be provided with easy access into vocational and technical colleges, including polytechnic colleges and community colleges. This includes ensuring that vocational and technical training is provided to students while still at secondary school as well as to school leavers. More broadly, the vocational training system will be made flexible to be easily available to those currently employed or at school, or who are

moving out of employment or school. Programs will be developed that cater for all such students.

Furthermore, the national high school system will be reinvigorated to ensure that students entering university are well prepared for tertiary studies. To prepare for tertiary training, students require access to costly equipment such as science labs, computers and well stocked libraries. They also require excellent teachers. The national high school system allocates these resources where the students have the greatest capacity to benefit. This in turn will raise the returns to PNG's higher education expenditure, resulting in better qualified graduates from PNG's tertiary system.

Providing incentives will enhance the performance of schools, teachers and students. An incentive fund will reward all schools for performance in retention rates and in student results, motivating schools to be committed to providing the quality education PNG needs. Another strategy will be to make known the results of national exams for each school, in order to motivate schools and teachers to perform highly on these exams. Test results can be used to guide policy and to inform parents in their choice of schools.

Universal education access

Universal access to education is necessary for equity and for PNG's development. Universal access to primary education will therefore be introduced as an immediate priority. Subsequently, universal secondary education will also be introduced through to year 10, together with mechanisms that retain students to year 12 or that smooth the transition into technical colleges. This will help guarantee that PNG's future workforce will have a quality education with options available to develop further skills needed in the modern workforce.

As education becomes universally available, it will be made compulsory for children to attend school as there are high public returns to children receiving a quality education. At the same time, school fees will be phased out.

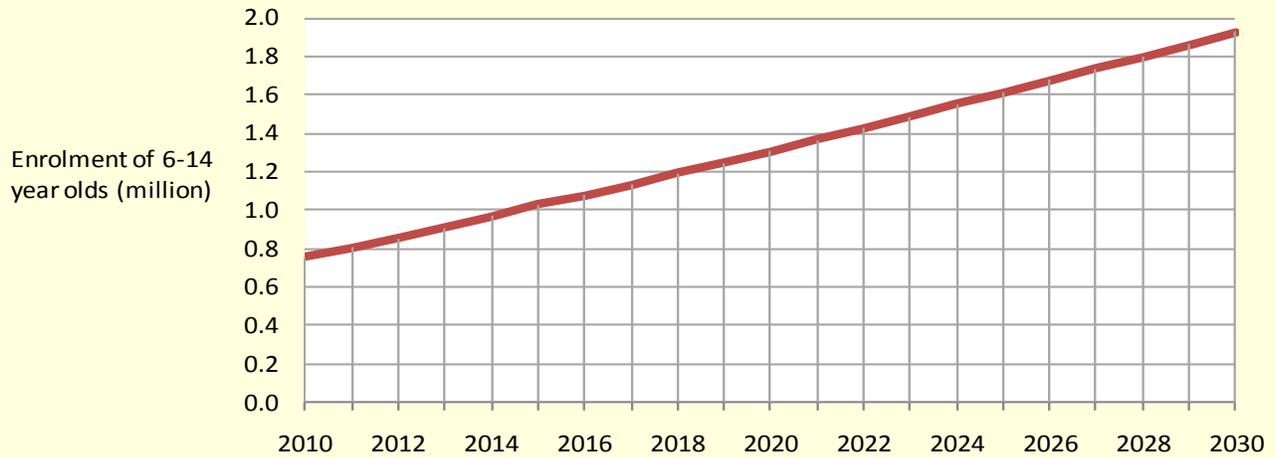
Building education capacity

Achieving universal access to a high standard of education up to year 10 will require substantial investments in the capacity of schools and associated infrastructure, and in the education of teachers. Preliminary estimates indicate that the Government will need to invest K50 billion between 2010 and 2030 to deliver quality universal education up to year 10, while also reinvigorating the national high school system to year 12. To put this figure into perspective, it represents less than 20 per cent of the revenues the *PNGDSP* is expected to generate between 2010 and 2030. The Government can reduce the budget costs of expanding education access by proactively seeking the participation of the private sector as discussed below.

Universal access is expected to result in a rise in student numbers in the 6-14 age group from 0.8 million in 2010 to 1.9 million in 2030 (figure 4G). At the same time, students will need access to libraries, to the internet and to other information and computing technology (ICT) resources in order to achieve a quality standard of education. This means substantial investment in expanding existing resources. In addition to a physical expansion in infrastructure, a rehabilitation of existing infrastructure is required, including the provision of sufficient education materials.

4G Growth in school capacity for 6-14 year olds, 2010 to 2030

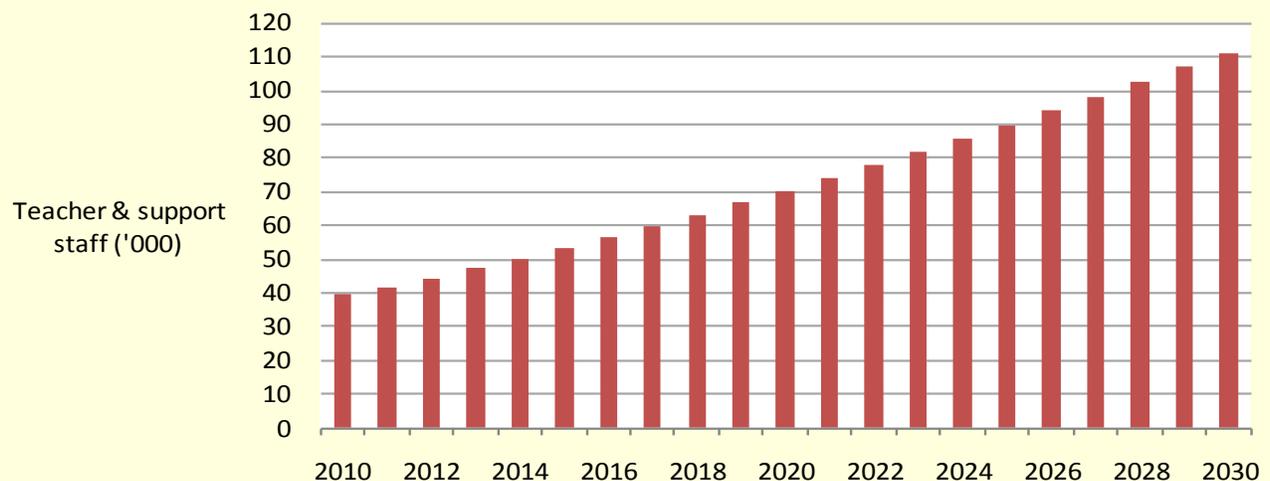
Growth in student places to achieve the PNGDSP education targets for 6-14 year olds



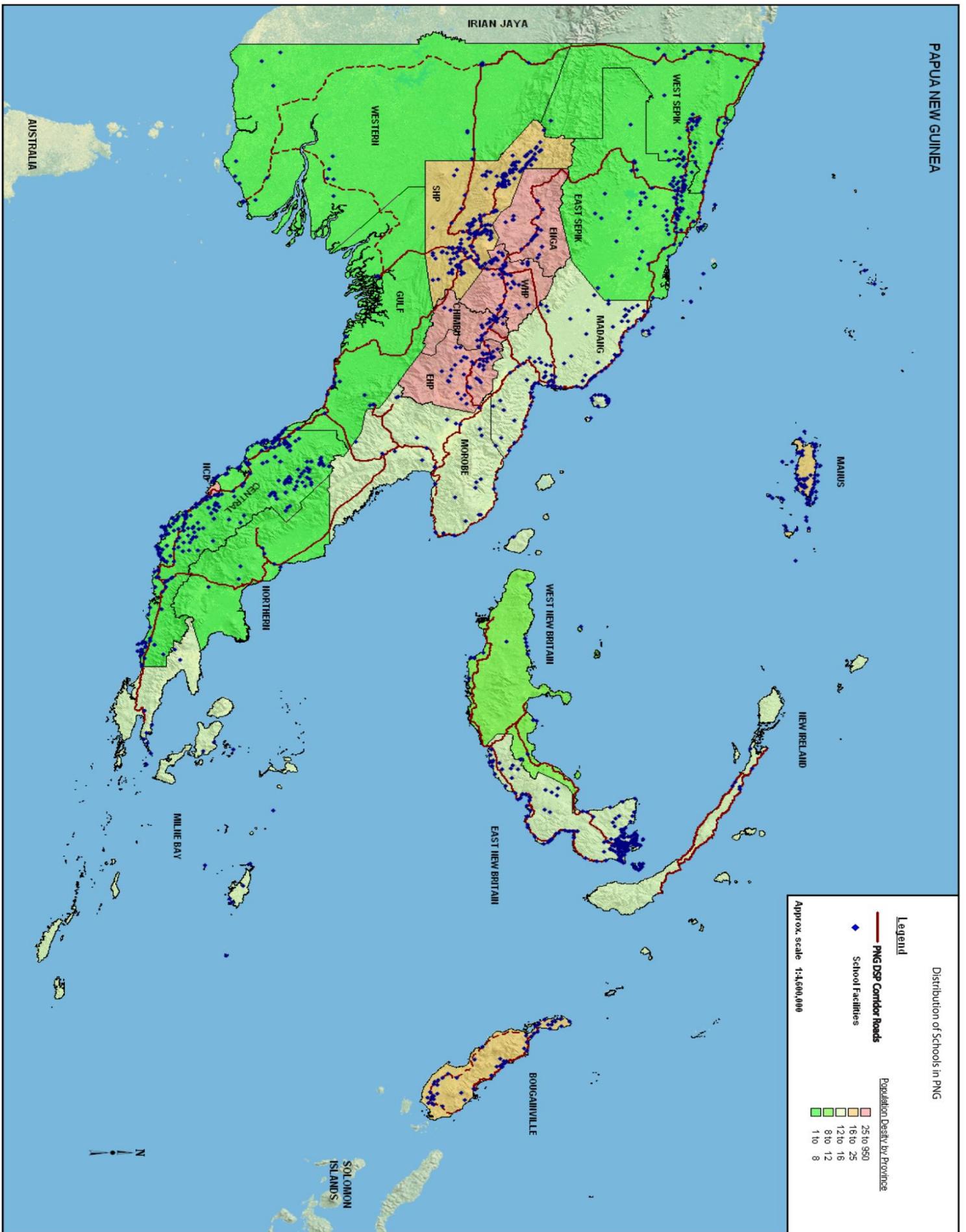
Further, the number of teachers and support staff will need to rise at a greater rate than the rise in student numbers in order to improve the quality of education services and to reach the target of reduced average class sizes (figure 4H). The quality of teaching must also improve. Secondary school teachers will be trained as subject specialists so that they are able to teach their subjects to a high standard.

4H Number of teachers and support staff, 2010 to 2030

Growth in numbers required to meet the PNGDSP education targets



Map 4B – Distribution of schools in PNG



Distribution of school materials and supplies

The quality of education and teaching services in PNG schools, particularly those in rural areas, suffers from the lack of textbooks and school supplies. As indicated by Map 4B, many schools are located in the rural areas of PNG. To provide materials to all schools, including rural schools, a concerted effort is needed to establish bulk storage warehouses and an effective distribution system through a public private partnership arrangement.

Legislative changes will also help by ensuring that all educational materials prepared for PNG are reproducible without any copyright restrictions throughout PNG. Materials may then be printed and distributed promptly as needed.

Partnering with the private sector

Private education reduces the burden on the public education budget. Many areas of PNG are sparsely populated with many remote communities. Map 4B compares the spread of PNG's population with the distribution of schools. It is costly to provide access to schooling across such a large and difficult terrain. By targeting remote areas, private schooling would greatly alleviate the financial burden on the public education sector. The supply of private schooling by churches, the International Education Agency and other private education providers will therefore be facilitated by Government policy, particularly in remote regions.

Other legislative reforms

Legislative changes are required to centralise and standardise the delivery of education functions in order to improve delivery or reduce cost, for example in forming education policy, in determining education curriculum standards and in providing national testing methods to monitor standards.

4.5. Higher education

GOAL

Develop the higher skills needed for PNG's prosperity with a world class tertiary education sector

The role of higher education

Higher education – which includes universities and other tertiary educational establishments – is crucial for supplying the skilled workforce that is required for the country's development. No nation has become prosperous without developing a highly skilled workforce. The Government therefore has an important role in ensuring that a sufficient number of people are graduating to supply the country's skill requirements in all sectors of the economy. Additionally, graduates need to be of an international standard and to have secured the right types of skills to meet PNG's future market demand. For example, engineers, teachers, nurses and doctors are all crucial to support the rapid development envisaged in the *PNGDSP*. The huge number of foreign workers that PNG relies on to fill skilled jobs is proof that the higher education system is not delivering, resulting in K780 million leaving the country every year in the form of foreign remittances.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
Graduates from tertiary education	6496 graduates in 2008	Inadequate higher education has resulted in one-third of skilled jobs being held by foreigners who drain K780 million out of PNG. Moreover, the PNGDSP will require a surge in tertiary educated skilled labour as outlined in figure 4I.	265,000 between 2010 and 2030; 17,500 a year by 2030
Capacity of universities	10,365 enrolled in 2008 and 3135 graduates	Access to university education has not increased due to lack of capacity at the 6 universities. To deliver the PNGDSP a substantial increase in places is needed.	21,500 places by 2030 (figure 4J)
Capacity of technical and business colleges	2482 enrolled in 2008	The 7 existing technical and business colleges have insufficient capacity to meet future needs. Four of these will need to be upgraded to polytechnic colleges and a substantial expansion in capacity will be required with more colleges and more places.	6800 places by 2030 (figure 4J)
Capacity of teachers colleges	3874 enrolled in 2008 and 1355 graduates	The capacity of teachers colleges is insufficient to meet the target for teacher numbers outlined in section 4.4.	8000 places by 2030 (figure 4J)
Capacity of nursing colleges	423 enrolled in 2008 and 142 graduates	A sharp growth in nursing education is required immediately because 80% of nurses are close to retirement age. Further, a big increase in nursing education is needed to reach the target of 19,500 nurses outlined in section 4.3.	5000 places by 2030 (figure 4J)
Capacity of other training institutions	1358 enrolled in 2008 and 1003 graduates	Training for specialised human resource development is insufficient and requires deepening and expanding.	3700 places by 2030 (figure 4J)
Capacity of vocational and training colleges	128 colleges	The number of people qualified in a trade is insufficient. A substantial increase in the capacity to teach trades is required to take PNG forward.	Some upgraded to technical colleges, and substantial capacity expansion

Strategies to develop higher education services

Rapid development in PNG through the implementation of the PNGDSP will require 315,000 tertiary educated skilled personnel by 2030 (figure 4I). If PNG is to rely on foreign labour to meet this target, then projected economic gains under the PNGDSP will be adversely affected as foreign wages are transferred abroad. Therefore, the number of foreign skilled workers is targeted to fall slightly to 20,000 by 2030 and PNG skilled workers will increase to 295,000. To meet this target, tertiary institutions will need to produce an increasing number of graduates, growing from the current level of 6500 a year to reach 17,500 a year by 2030. This, in turn, will require 45,000 tertiary places in 2030. While most of these places will need to be in universities, strong growth will also be required at other institutions (figure 4J). In particular, the number of places at teacher colleges will be required to rise rapidly in the next five years to support the PNGDSP goal of expanding education. In all, 265,000 graduates will be required by 2030 to build a skilled workforce of 295,000.

To achieve a rapid expansion in students at universities and other institutions, a reform of the country's education system is required, as discussed in section 4.4. A particular initiative is

the introduction of a flexi high school system that smoothes the path for students to move into technical and tertiary training options.

By attaining the targets of 295,000 skilled local workers by 2030 (figure 4I) and 265,000 graduates by 2030, PNG's economic welfare will be K4.1 billion higher and the size of the economy in terms of GDP will be K6.4 billion larger (figure 4A, table 1A). Furthermore, the stimulus to economic activity will result in the creation of 208,000 additional jobs (figure 4B).

Case Study 2: ADDRESSING THE NEED FOR A SKILLED WORKFORCE

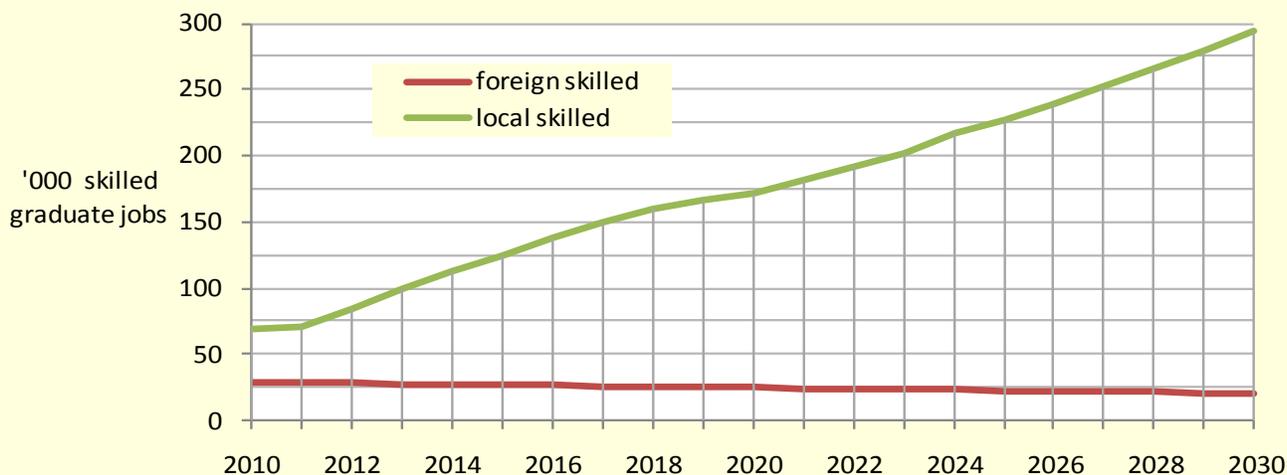
There is a considerable shortage of skilled people in PNG. The existing tertiary institutions in PNG are not able to produce all of the manpower and skills required by industries. In addition, as a result of a mismatch between courses and skills demanded, many tertiary graduates are not able to find work. Building the institutional capacity to produce the kind of skills required under the PNGDSP will take time and alternative means have to be pursued in the short-term.

In 2009, the Government undertook an important initiative to send up to 2000 students to Australian TAFE colleges from 2010-2015. Under a National Technical and Vocational Education Training (TVET) scholarship program students will be selected to specialise in skills and trades relevant to PNG's development needs. The TVET scholarship program will be demand driven. In addition, options to send students for similar training in Asian economies will be explored.

The program will be phased out when PNG develops its own institutions and capacity to provide specialised courses and training.

4I The skilled workforce, 2010 to 2030

Growth in the skilled workforce required for the PNGDSP, and the target splits between foreign and PNG labour

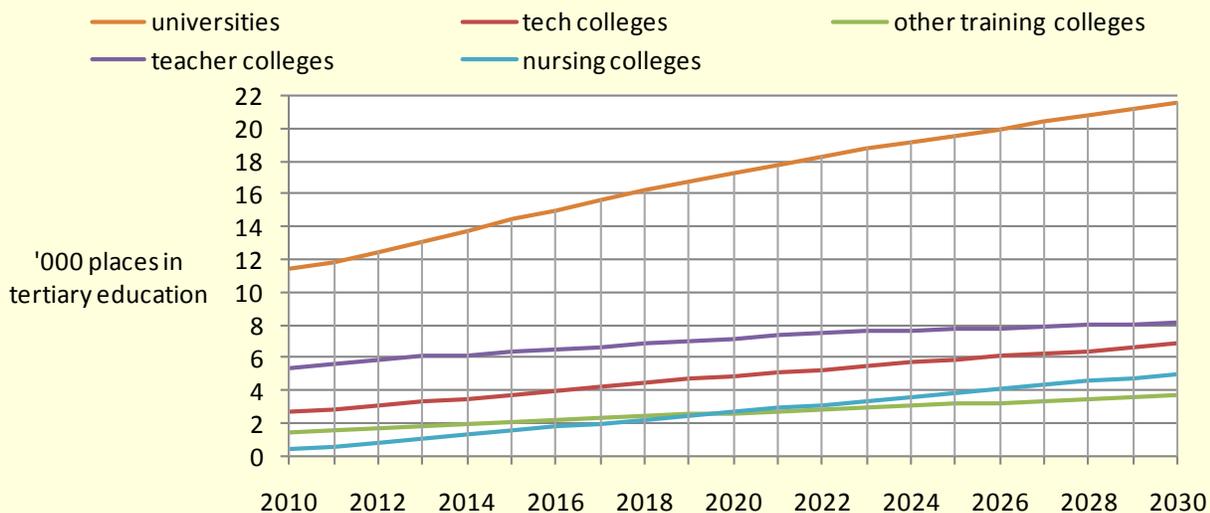


Significant investments in the capacity of the tertiary education institutions will be required to achieve these gains. This will involve a physical expansion and recapitalisation of existing institutions, while at the same time taking full advantage of internet and communication technologies. The capacity and quality of vocational schools, community colleges, technical and polytechnic training institutions will need to expand to fully absorb year 10 and 12 graduates. In addition to raising the capacity of tertiary institutions, the following strategies will improve the quality of tertiary education:

- implement higher education reforms to reach global standards with effective and autonomous management of tertiary institutions and enhanced quality assurance and accreditation. The highest performing tertiary institutions in the world are characterised by autonomy over how they manage staffing, teaching and finances. However, external auditing and standardisation of assessment standards are elements of management that need to be managed outside of the institutions;

4J Growth in capacity of tertiary institutions, 2010 to 2030

Number of student places in tertiary institutions



	2010	2015	2020	2025	2030
Universities	11,400	14,400	17,200	19,600	21,500
Tech colleges	2,700	3,800	4,900	5,900	6,800
Teacher colleges	5,300	6,300	7,200	7,700	8,000
Nursing colleges	400	1,600	2,700	3,900	5,000
Other colleges	1,400	2,000	2,600	3,200	3,700

- realignment of public higher education funding to target training to meet the demand for skills and thereby promote economic development in PNG. This is to ensure that public resources will not only benefit individual graduates, but will benefit PNG as a whole;
- redirect higher education funding to students based on their performance in national exams at the end of their secondary schooling, and based on success in their higher education studies. This is to ensure higher education institutions have a financial incentive to attract and retain students;
- tertiary institutions need to forge partnerships with reputed tertiary institutions in other countries and thereby learn from their experience and benefit from their resources, including through the use of internet and communication technologies;
- tertiary institutions need to forge partnerships with industry and with government institutions at national, provincial and local levels to ensure that institutions are providing the skills required;

- Government and donor research and development funding will prefer tenders that develop and use research and development capacity within PNG institutions including PNG tertiary institutions. This will reinforce the development of PNG's science and technology capacity (see part 4.7);
- training standards need to be nationally aligned to the PNG qualifications framework; and
- the higher education sector needs to achieve the 2030 target of 265,000 skilled graduates across the range of professions that best contribute to the development of the nation.

4.6. Human resource development and training

GOAL

Provide a workforce that is professional and skilled by developing a coherent human resource development strategy

Brief background

PNG, like many developing countries, faces skills shortages in a number of critical areas. This skills gap is being filled by consultants and foreign workers at a high cost. Human resource development and training enhances the productivity of private and public sector organisations by equipping the workforce with the skills they require. The current National Training Policy has been in place since 1989 and is long overdue for review.

Under the *PNGDSP*, the number of workers will rise rapidly across the economy. The nation's capacity to provide timely, well directed training to workers will therefore also need to increase markedly. In the education sector, for example, the number of teachers and support staff will rise from 40,000 in 2010 to 111,000 by 2030. In the health sector, 45,000 health professionals will be needed by 2030, an increase from 7,000 in 2010. Strong growth in personnel needs is also envisaged in other large sectors, for example in the tourism, manufacturing and construction sectors.

Strategies

Improvements in education outlined in sections 4.4 and 4.5 will go a long way toward raising the capacity of human resources. There remains, however, an important role for on-the-job training in the public and the private sectors. Specific measures for human resource development and training are outlined as follows:

- develop a coherent human resource development strategy that is reflective of the industry and development needs of the country;
- extend the reach of human resource training to rural areas according to development needs;
- ensure the private sector is well engaged in the resourcing and provision of human resource training, including through the National Training Council, so that the training requirements of the private sector are being met;

- develop policy and fiscal incentives for employers to provide accessible and effective in-service training;
- ensure an approach to training that complements the tertiary system, thereby avoiding the costs of duplication;
- develop plans and schedules in each skills category with clear targets for training institutions;
- implement flexibility and adaptability of training institutions to accommodate changes in demand for skilled human resources in various industries or sub-sectors; and
- align training standards to a national qualification under the PNG qualifications framework.

4.7. Research, science and technology

GOAL

Accumulate a world standard science and technology pool through adaptation and research and development processes which can be effectively and competitively utilised to drive strong and sustainable growth

The need for science and technology

There is ample evidence that countries which place emphasis on science and technology do well in increasing incomes for its citizens. This is because progress in science and technology tends to increase productivity and serve as the engine of economic growth. PNG can benefit from global integration by accumulating scientific knowledge and applying technology. Long term economic growth will depend on PNG fully adapting appropriate technology and creating national technology stock. To lay a strong foundation for sustainable and strong economic growth in the longer term, PNG will need the capacity to identify and adapt technologies, making them relevant, affordable and easily accessible to the local industries and people. Further, it is important to enhance PNG’s participation in global trade by using appropriate technologies to advance activities and productivity in the areas in which PNG has natural advantages.

Key strategic areas

Key indicators	Baseline information and issues	2030 target/objective
Science and technology spending	A lack of investment in science and technology is holding PNG back.	At least double both public and private sector investment in science and technology.

Strategies for building PNG’s capacity in research, science and technology

Given the value of science and technology capacity for development, the following broad strategies will be important:

- mobilise resources to strengthen the capacity of institutions that do research and development;

- establish partnerships and strategic alliances with both internal and external research and development organisations and institutions;
- facilitate the accessibility of knowledge and technologies for researchers and end users;
- develop a scientific mindset from primary through to higher educational institutions through course designs that reinforce science and technology and by revitalising learning facilities; and
- protect scientific and technological discoveries and research results.

In addition, research and development needs to be concentrated in those areas which are most productive for PNG. The following strategies support this end:

- prioritise and coordinate the allocation of research and development funding to match PNG's development priorities, in particular reinforcing PNG's growth sectors of tourism, agriculture, fishing, and manufacturing;
- prioritise research that involves technology transfer into PNG for Government research and development expenditure, particularly in high growth industries. Examples of such technologies may be lab techniques for identifying disease in aquaculture fish or the introduction of more productive strains of livestock;
- increase private sector contributions to research and development, for example by imposing a research and development levy on key industries to fund the research priorities of that industry. Government funding would then match the industry contribution; and
- fully audit all research and development expenditure to ensure that money and resources are used well.

4.8. Transport sector development

GOAL

Establish a transportation network that links all of PNG

PNG's transport system

Establishing an effective, modern transport system in PNG is very important to growth and development. The lack of transport infrastructure constrains PNG's economic and social development. A lack of periodic maintenance, the wastage of funds, a lack of competition in the air and water sub-sectors, weak monitoring and evaluation and landowner issues are all principle factors contributing to PNG's poor transport system.

Nation building requires a transport policy that goes beyond maintenance. Funding is required to establish new roads, new ports and to completely rehabilitate and expand the capacity of airports.

The *National Transport Development Plan 2001-2010* identifies some of the priority expenditures that PNG requires to establish an integrated transport network linking most regions of PNG. In addition, new priorities have been identified, including the missing link

roads that are needed to connect all of PNG’s national roads and the corridor roads that are needed to open up key regions of PNG for development.

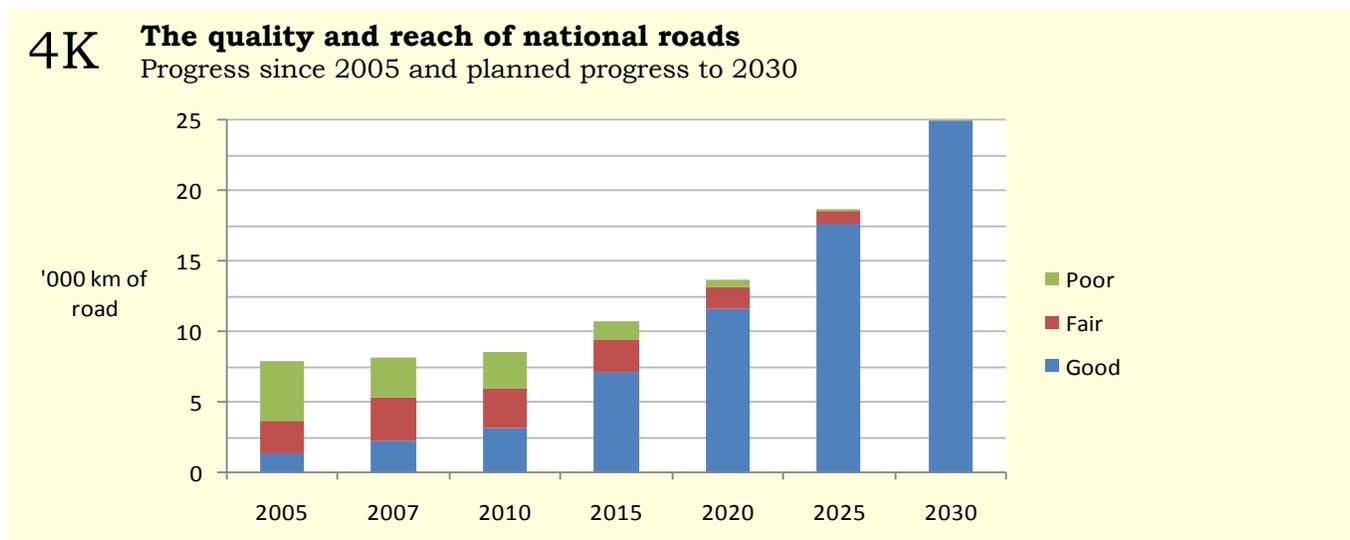
The successor to the *National Transport Development Plan 2001-2010* is currently under development and will incorporate all of these priorities, building on the original plan. The new plan will aim for an effective transport system where the modes of transport work in unison and the system connects all people in all parts of the country by 2030.

4.8.1 Road transport

The road transport infrastructure in PNG is inadequate both in terms of maintenance and nationwide connectivity. Furthermore, the rapid rise in trade and prosperity envisaged in the *PNGDSP* will require considerable growth in the coverage and quality of the national road network. A comprehensive program of rehabilitation and construction is advocated that will expand PNG’s national road network that is in good condition to 25,000 kilometres by 2030 (figure 4K).

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/ objective
Road network	8460km of national roads (total network 30,000km)	PNG has one of the lowest road densities in the world. The road transport network is the lifeline of most rural communities providing people with access to markets and services.	Triple national roads to 25,000km
Percentage of national roads in good condition	28.7% (2512km)	Thousands of kilometres of roads have not been maintained.	100%



Strategies for road transport

Upgrading and maintenance of road infrastructure is essential. National Government expenditure on upgrading, including re-routing, and on rehabilitation will be directed to the following 16 priority roads (table 4.1, map 4C).

4.1 Priority roads in the National Transport Development Plan 2006-10		
Very high priority	High priority	Medium priority
Highlands Highway	Sepik Highway	Kokoda Road
Buluminsky Highway	West Coast Road	Wau Road
Koroba-Mendi Road	Baiyer Road	Buka Road
Pogera-Togoba Road	Hiritano Highway	Magi Highway
New Britain Highway	Coastal Highway	Ramu Highway
		Northern Road

In addition, construction of nation building roads comprising of the “16 missing links” and additional “corridor” roads is required over the next 20 years (table 4.2, map 4C). Missing links will finish connecting the nation with a complete road network, facilitating the flow of people and goods and services. Corridor roads will open up potentially productive regions outlined in part 2, supporting the development of the nation. It is estimated that establishing a national road network in good condition will directly contribute K2.2 billion to the nation’s income in 2030 and result in nearly 120,000 jobs being created (figures 4A, 4B). The construction of new roads will be prioritised and sequenced under the MTDPs according to the costs and benefits of proposed roads.

Access to land is a major constraint on transport infrastructure, preventing expansion. Therefore, implementing the Government’s land development program will greatly reduce the cost and accelerate progress in expanding infrastructure for land, marine and air transport.

To finance the expansion and maintenance of a nation-wide network of roads, the Government will engage the private sector through the public private partnership scheme.

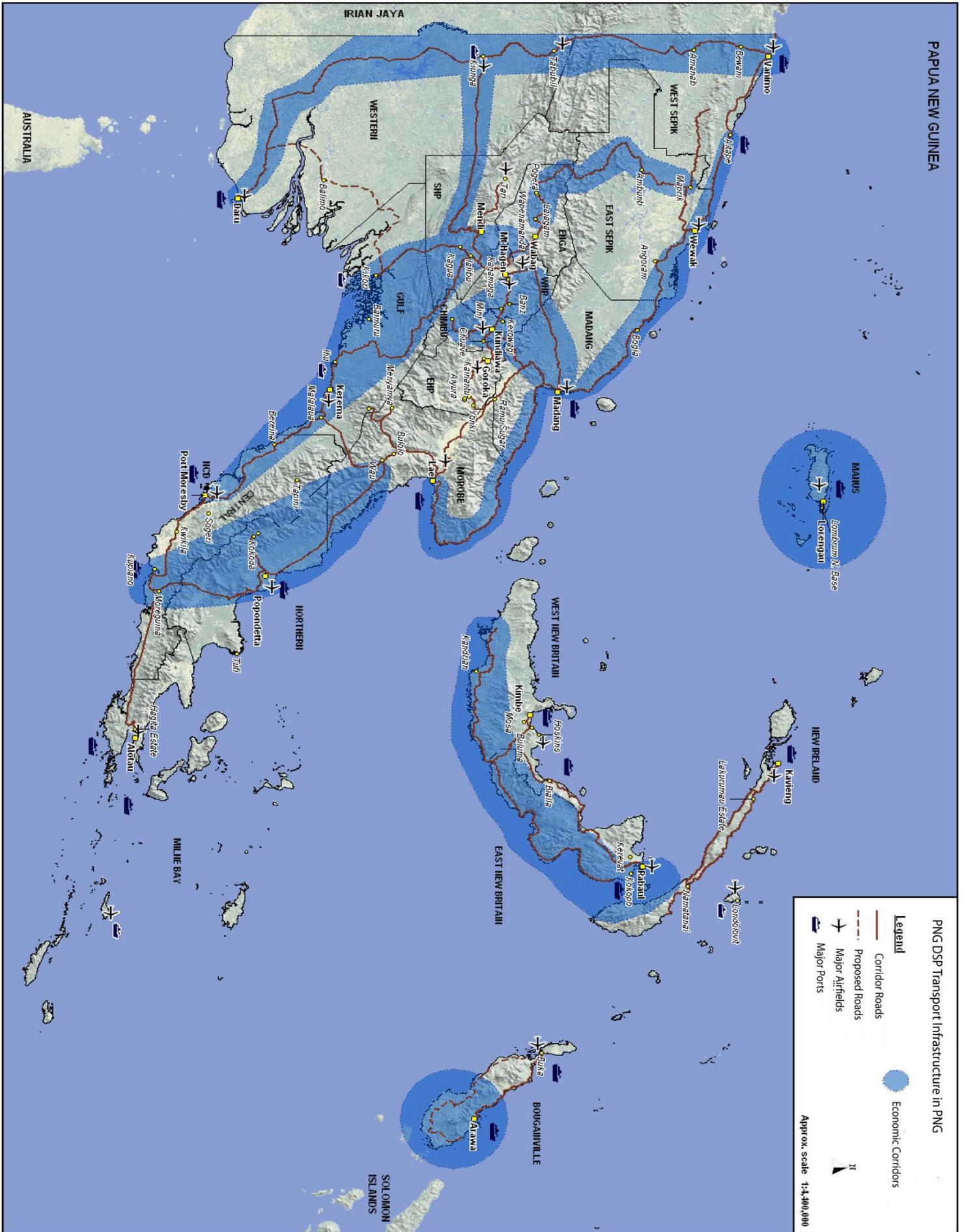
The Government is committed to the construction of quality roads that do not deteriorate quickly. To this end, tenders and contracts for construction or repair will specify an obligation to maintain the road for a number of years and payments will be contingent on the road being maintained in good condition. Contractors will then have the incentive to construct a good road from the outset, as they will have to maintain it later. Further, contracts for construction will be open to international road construction firms with an excellent proven record, as well as to domestic firms.

Congestion on urban roads is a growing issue that needs to be addressed under the PNGDSP, particularly as the number of passenger vehicles will rise rapidly with rising income levels. National transport strategies will seek to minimize the traffic congestion in urban areas, for example by locating new airports and new sea ports out of the way of current and future urban centres.

Various mechanisms will be considered in order to engage private investment in roads, ports and airports, including for example giving the private investor the right to charge a fee for use. As PNG prospers, the number of passenger vehicles on the road will increase, as will the capacity of road users to pay for road use. In this context, toll roads will be cost-effective for relieving congestion on urban roads, including in Port Moresby. In these same circumstances, PNG would have the capacity to regulate and enforce car parking, and could then introduce car parking fees to help fund the provision of car parks.

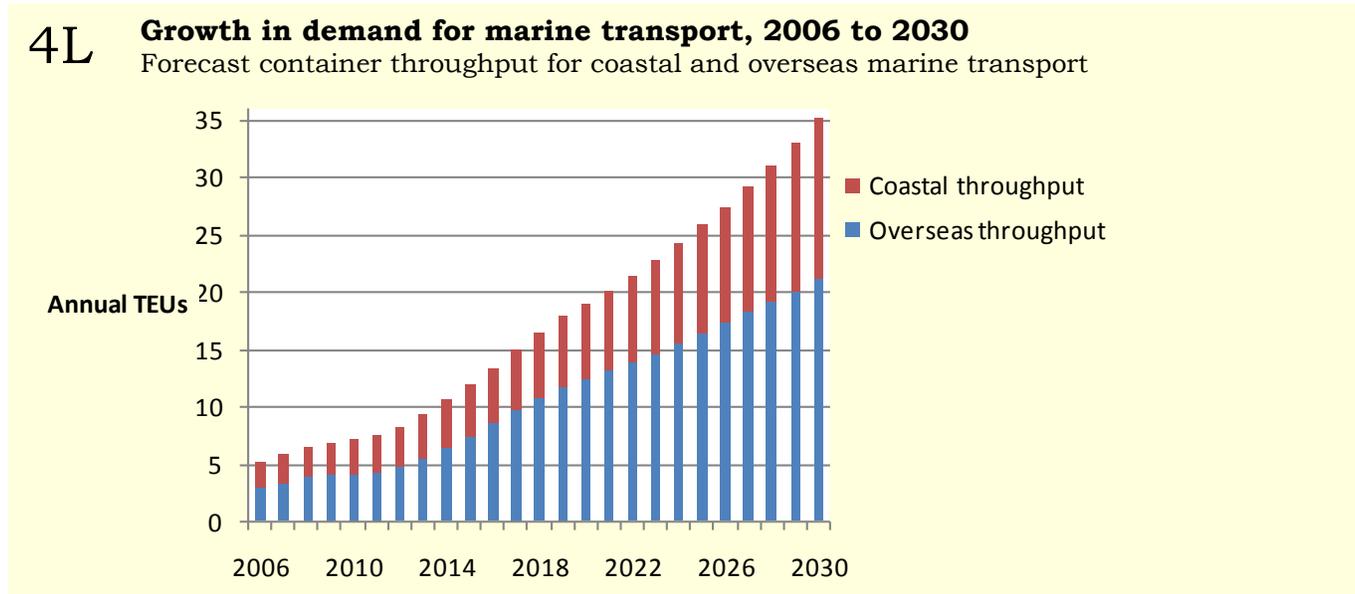
4.2 Nation building roads		
Region	Location	Road category
Momase	Coastal Highway (Aitape-Vanimu)	Missing link
Momase	Bogia-Angoram Road (Madang to East Sepik)	Missing link
Momase/Highlands	Baiyer River–Aiome –Amele Road (Western Higlands to Madang)	Missing link
Momase	Saidor–Wasu–Sialum Road	Missing link
Momase	Bewani-Imonda-Amanab-Green River- Telefomin Road (West Sepik to Western Province)	Missing link
Momase/Highlands	Pagwi-Ambunti-Kuvenmas-Laiagam Road (East Sepik to Enga)	Missing link
Momase	Lae-Finchaffen-Kabwum Road	Missing link
Momase	Wau-Garaina-Morobe Patrol Post	Missing link
Highlands/Southern	Kagua-Kikori Road	Corridor
Momase	Bogia-Angoram-Wewak	Corridor
Highlands	Kopiago-Oksapmin-Telefomin-Tabubil Road (Southern Highlands to Western Province)	Missing link
Highlands	Kiunga-Mendi Road	Corridor
Southern	Kupiano-Gadaisu Road (Central to Milne Bay)	Missing link
Southern	Bubuletta-Motau-Lavora-Raba Raba-Agaun Road	Missing link
Southern	Bariji-Safia-Moreguina Road (Oro to Central)	Missing link
Southern	Moreguina-Popondetta-Wau Road	Corridor
Southern	Kerema-Kopi Road (Gulf to Southern Highlands)	Missing link
Islands	Siara Junction-Soreken-Kunua Road (linking Torokina)	Missing link
Islands	New Britain Highway	Missing link
Islands	Ralubang-Tol-Pomio-Gasmata-Kandrian-Gloucester Road (linking East and West New Britain)	Missing link

Map 4C – Transport connectivity under PNGDSP



4.8.2 Water transport

There are fourteen Maritime Provinces in PNG. The size of the population in these provinces is an indication that at least 59 per cent of the country's population depends on water transportation. Many of the communities in these provinces do not have ready access to road or air. These communities therefore rely on water transportation, including for the delivery of goods and services.



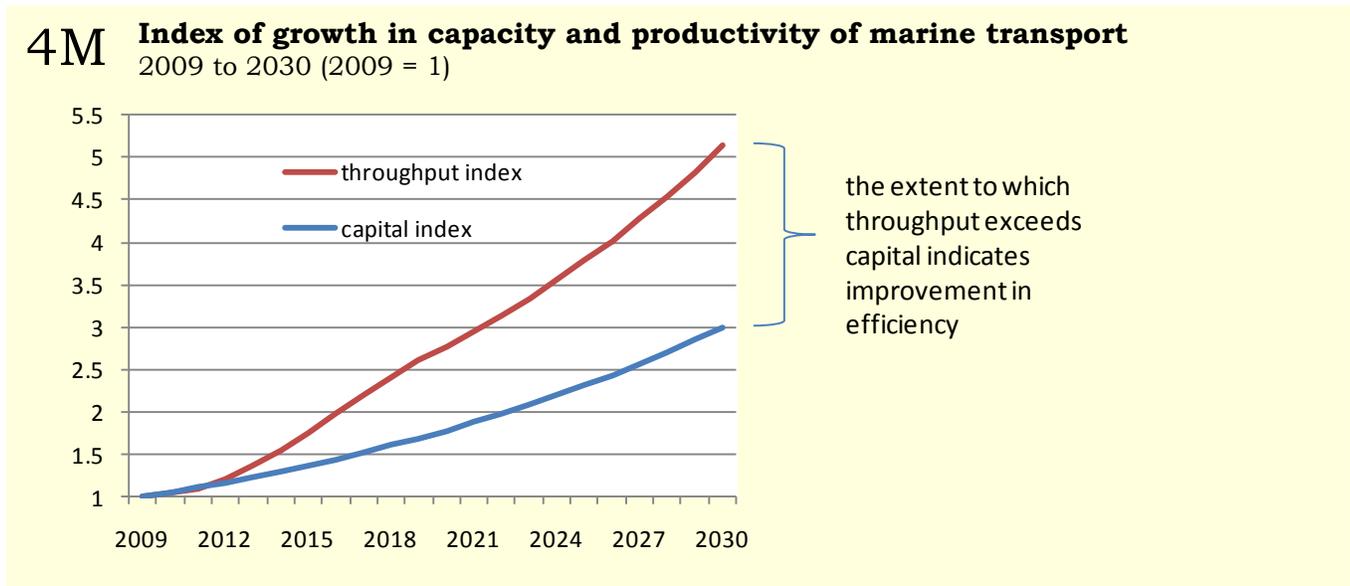
Lae, Port Moresby and Kimbe are the country's busiest sea ports, accounting for 80 per cent of the country's cargo throughput in 2008. The throughput at these ports is increasing rapidly, rising by 28 per cent from 2004 to 2008. Similarly, rapid growth is occurring at other ports of PNG including Rabaul, Madang, Wewak, Vanimo and Buka.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
Domestic water transport capacity	n/a	Water transport services provide the highways for communities who live on islands and in remote coastal and river locations. The water transport system is inadequate and requires more vessels, more transport routes, more frequent services on existing routes and better ports and jetties.	Triple number of routes serviced and number of vessels, and upgrade ports
International port turnaround times	3 days	PNG's two principal ports are at Port Moresby and Lae. Handling times at these ports is slow by international standards.	1 day

Strategies for water transport

Between 2010 and 2030 it is projected that cargo throughput at all of PNG's ports will increase five-fold under the rapid development envisaged by the PNGDSP (figure 4L). This growth will be in both international cargoes and in domestic coastal cargoes. Assuming that the efficiency of port and other marine services improves by around 2 per cent a year, it is estimated that marine infrastructure, including ports, will need to expand at least three-fold to support the growth in cargo throughput (figure 4M). Failure to expand PNG's port capacity will constrain the country's export and import potential and increase costs throughout the country, thereby undermining economic development.



Investment is needed throughout the nation to rehabilitate and upgrade major ports. At Lae, the country's busiest port, work is well underway to expand the port's capacity. A second port will also be constructed at Lae. Fairfax harbor in Port Moresby needs to be relocated well away from Port Moresby to make way for the city's development – beginning with a desktop feasibility study assessing the suitability of four or five potential sites away from the city of Port Moresby. Madang's port also needs to be relocated, because its capacity is being constrained by the shallow depth of its waters. Again this must be preceded with a comparison of potential sites to ensure the new site best caters for the region's needs over the long term.

It is also important to strengthen the capacity of customs to inspect cargo and stop illegal and contraband goods from entering the country. Container scanning equipment is needed at the country's busiest ports to speed up the flow of traffic through the port, while at the same time improving the effectiveness of customs operations.

For the purposes of passenger and local freight transport in Maritime Provinces, drive on passenger vessels will be central for interconnection as these enable the road and water transport networks to operate smoothly with one another. New transport routes will therefore need to be opened up and more frequent services provided on existing routes. Partnership with the private sector will be crucial in raising the capacity of shipping services as the private sector will be relied upon for much of the investment.

There may be a case for introducing Government funded shipping services to facilitate the flow of people and cargo, particularly in remote regions of the 14 Maritime Provinces and islands of PNG. To minimise the impact on the budget, the Government will pursue a public private partnership arrangement. It is expected that between 15 and 20 ships will be required over the next 20 years to serve the coastal regions.

4.8.3 Air transport

The aviation industry plays a vital role in the changing economic, political and social development and life of the country as alternative forms of transport are often not available. Given the complexity of PNG’s topography and terrain, air transport for many remote parts of PNG will continue to be the only possible means to link to the main centres of the country.

The condition of the 22 airports (14 jet airports and 8 non-jet airports) has deteriorated over the years to an unacceptable state, thus breaching the international compliance requirements for safety and security of the airports. This situation is made worse by the introduction of Fokker 100 aircraft, which are much too heavy for the pavements of most airports. Remedial action is needed to reverse the current situation and avoid accumulated cost implications.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
Share of regional airports meeting international certification	7 out of 22 in 2008 (32%)	Safety standards at 70% of PNG’s regional airports do not meet international certification standards.	100%
Airports upgraded for higher seating capacity	Only Port Moresby handles large jets	Regional airports do not have the capacity to handle the larger planes and increased passenger numbers expected (figure 4N).	10 airports upgraded for larger jets
Number of unused airstrips rehabilitated	n/a	Most airstrips located in remote areas are not in use. These will be rehabilitated according to their economic viability, taking into account alternative options for access provided by improving road and water transport.	Up to 50

Strategies for air transport

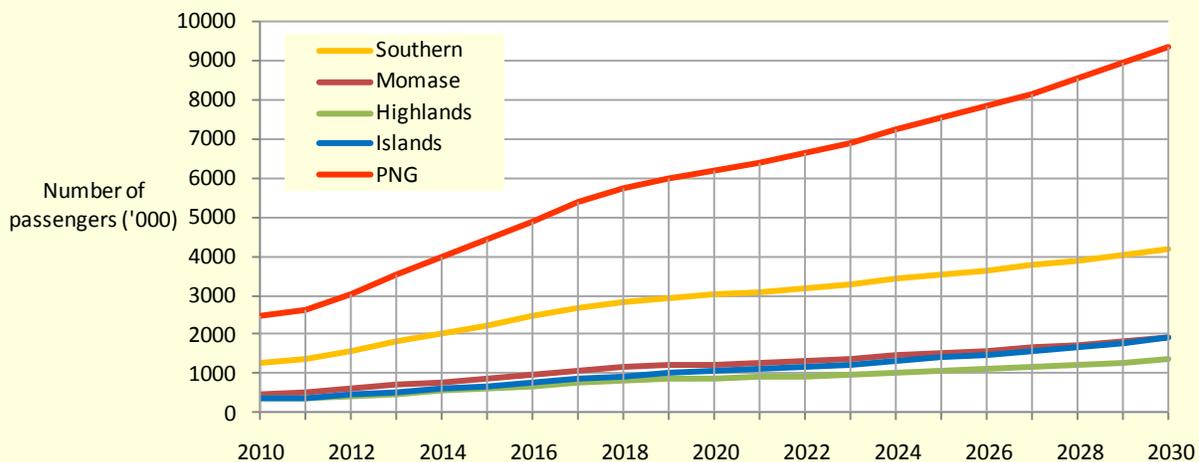
With the support of the Asian Development Bank (ADB), the Government is investing close to K2 billion in upgrading PNG’s 22 national airports. Airports will be upgraded to comply with international safety and security standards and to serve future needs. Maintenance contracts will also be put in place to ensure the airports remain in good condition. The investment program will initially concentrate on the five national airports of Port Moresby, Mt Hagen, Wewak, Hoskins and Gurney.

This investment is timely as Jacksons airport, for example, needs to be expanded to cater for the expected growth in domestic and international travel. It is estimated that the number of domestic travelers in the Southern region will more than quadruple from 1 million passengers in 2010 to over 4 million passengers in 2030 (figure 4N).

4N

Domestic air travel by region

Number of passengers, 2010 to 2030



Alternatives to Jacksons airport are also required in the region with the capacity to handle large jets and international flights. This is to alleviate the costs associated when one airport is closed, for example because of a lightning storm, and to otherwise reduce the pressure on Jackson's airport.

The growth of international tourism will require new international routes and appropriate airport infrastructure at key tourist destinations including Alotau, Rabaul, Madang and Manus. International airports may also be required near cities such as Lae that are an important hub for international business. Regional airlines amongst Pacific island countries should be encouraged as they promote closer regional integration.

The liberalisation of PNG's air space and the promotion of a competitive airline market is vital for reducing the cost of travel and for improving service on domestic flights.

4.9. Utilities

GOAL

All citizens and visitors to have access to reliable and affordable public utilities by 2030

Brief background

Access to public utilities like water and sanitation and postal services by all Papua New Guineans is becoming an increasing necessity in today's modern society. But at present, the levels of penetration of these utility services are well below international standards for developing countries and will no longer be considered acceptable. In PNG, there has been no improvement in recent years. Therefore greater efforts are needed to give more communities access to water, sanitation and postal services.

Key areas

Key indicators	Baseline information	Issues	2030 target/objective
Access to improved water source	39% of total population (30% of rural population in 2008)	Water borne diseases impose a burden on the health of the nation and the current level of access to improved water is amongst the lowest in the world. Just 9% of the population in PNG have access to piped water.	70% of population
Access to improved sanitation	44% of population	Only 5% of the population use flushing toilets and 44% use some form of improved sanitation. A significant improvement in sanitation services is needed in PNG.	70% of population
Proportion of education institutions having access to safe water	30% in 2008	Of all education establishments, 70% do not have access to safe drinking water.	100%
Access to reliable postal services	72 districts have access to formal postal services	Postal services in PNG are limited. There is considerable scope to extend and modernise postal delivery services, including the introduction of delivery to place of residence in urban areas. Formulation of a Postal Services Policy will provide direction to this sector.	All districts will have access to formal post services. Delivery to residence in urban districts.

Strategies

Public and private investment

The targets for utilities are ambitious but can be achieved with considerable resources. To this end, the private sector can play a role through public private partnerships. In particular, partnership with the private sector will be needed to invest in the expansion of the reticulated water and sewerage systems in urban areas and in the water catchments needed for the country's growing urban population. Public investments to increase access to safe drinking water, sanitation and postal services in smaller communities will be made in partnership with communities, the private sector, churches, NGOs and aid donors.

Institutional strengthening

The institutions responsible for utilities will need strengthening, which will involve:

- ensuring that agencies coordinate and work together;
- ensuring that deliverables are clearly defined and that it is also clear who is responsible for each deliverable;
- establishing accountability and transparency for state owned enterprises delivering utility services; and
- developing an enabling legislative and policy framework for the various utilities.

4.10. Information and communications technology

GOAL

A modern and affordable information and communications technology that reaches all parts of the country

Recent developments

Telecommunications services have benefited from the introduction of private sector competition in the mobile phone network which has resulted in a substantial upgrade in the quality and reach of services and a significant decline in cost. However broadband access remains expensive by international standards.

It is current Government policy to roll out the benefits of competition throughout the telecommunications sector, including all forms of internet access, access to the international gateway and the fixed line phone service. Competition in these areas is crucial to the modernisation of PNG.

Key areas

Key indicators	Baseline information	Issues	2030 target/objective
Access to a telephone	150 mobile subscribers per 1000 people	Mobile phone technology is superseding the land line network and within a very short period of time has connected over 1 million subscribers. This has had a very positive effect on the economy and on welfare.	800 mobile subscribers per 1000 people
Access to the internet	2.3% of population use internet	Access to quality internet services is very low and this limits access to information, financial services, business and education. Providing internet access to the rural population is necessary to spur development.	70% of people use the internet
Media coverage	55% access radio; 26% access television	Many rural areas do not have media access and poor literacy levels further constrain access to information through the print media. Media access is vital to ensure the population is kept informed.	100% access to radio and television

Strategies

Under the phase 2 reforms of the Government's ICT policy, access to mobile phone and broadband internet services will be promoted through a competitive market in areas of PNG where this is a commercially viable strategy. Access to the international gateway will also be opened to reduce the cost of international telecommunications, to the benefit of PNG consumers and PNG businesses.

Wherever the extension of phone, internet and media services is less viable, public private partnerships will be encouraged. An important initiative for the extension of services into rural areas will be to secure satellite access.

Additional strategies include:

- maintaining mutual relationships with international ICT organisations ensuring compliance with international conventions, standards, practices and trends; and

- promoting the development and expansion of a range of government services to rural communities using mobile phone and internet technology (e-services).

4.11. Energy development

Role of energy in development

Energy plays a very important role in development as it provides the means to an end just like transport infrastructure and other utilities services. It provides the foundation for which chains of development activities in all sectors can take place. The future prosperity and success of PNG as a nation will depend on how best it pursues its energy development over the *PNGDSP* period.

GOAL

All households have access to a reliable and affordable energy supply, and sufficient power is generated and distributed to meet future energy requirements and demands

Energy supply

PNG has 503MW of electricity generation capacity, about half of which is provided by the private sector, particularly for mining. PNG's primary source of energy is from hydro schemes providing just under half of all electricity generation capacity while around one-third of electricity capacity is provided by diesel generators. Gas and geothermal generation represent most of the balance with the bulk of this energy used for mining. Diesel is dominant in off-grid applications.

Energy demand

Average daily peak load demand for electricity is estimated at 290MW. A buffer between average daily peak load demand and total capacity is needed to ensure sufficient supply when there are demand spikes, when supply is compromised due to maintenance, or when capacity is reduced by cyclical events such as reduced water flows in dry seasons.

The demand forecast for energy requirements shows that the country will be struggling to meet its energy demand by 2014 (figure 4Q). By 2030, prosperity expected with the *PNGDSP* will result in energy demand at five times current levels (figure 4O). This means more sources of power generation must be identified. There is considerable potential for hydro schemes in PNG, including the Purari River in Western Province, Brown River and Vanapa river catchment in Central Province, Gumini hydro potential in Milne Bay, and Kimadan in New Ireland Province.

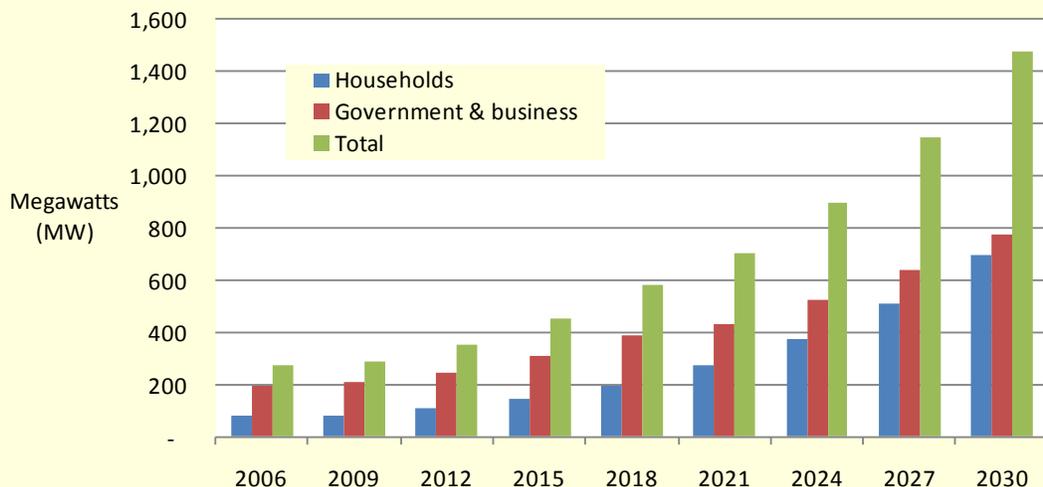
The transmission and distribution system

The state owned enterprise, PNG Power, owns and operates 27 distribution systems in PNG of which 10 systems are part of the inter-provincial power grid (the Ramu system), while the remainder are independent systems. As the country progresses, there is a need to place power lines underground for environmental and technical reasons.

40

Average daily peak load demand for electricity

Estimated growth from 2006 to 2009 and forecast growth to 2030

**Key strategic areas**

Key indicators	Baseline information	2030 target/ objective
Access to electricity	12.4% of households	At least 70% of households
Gas, hydro and other renewable generation capacity	Gas: 72 MW Hydro: 217 MW Other: 56 MW	Gas: 390 MW Hydro: 1020 MW Other renewables: 500 MW
Diesel and coal generation capacity	158 MW grid connected diesel generation	Less than 40 MW capacity diesel generation and 30 MW coal generation
National grid	Does not exist	All major towns and cities to be in the national grid which will feed off an electricity super-corridor
Easipay domestic customers (prepaid power)	4% of households (51,000 households)	Most households have access to Easipay

Strategies to develop energy sources

Development of energy, especially electricity generation and transmission, is central to PNG's development strategy. Major investments in electricity infrastructure is necessary due to the expected 5-fold surge in demand for electricity by 2030 (figure 40). This entails an increase in generation and transmission capacity sufficient to meet demand.

The energy ladder

Energy development will be pursued with proper sequencing following the concept of a Six Steps of Energy Ladder as identified under the 2009 Power Sector Development Plan Report of the Department of Petroleum and Energy (table 4.3).

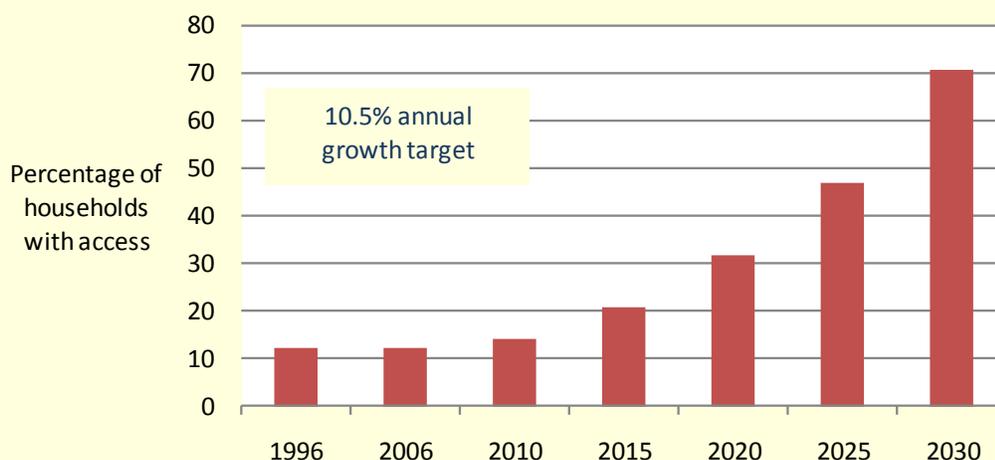
4.3 Six Steps of Energy Ladder

Step 1	Over 80% of households use primitive energy sources such as wood
Step 2	Between 10% and 50% of households use fuels like kerosene for lighting, cooking, etc.
Step 3	At least 50% of households use fuels like kerosene, electricity or gas for lighting and cooking, while less than 10% use electricity (if connected) or gas for lighting, cooking, etc.
Step 4	Between 10% and 50% of households use electricity or gas for lighting, cooking, etc.
Step 5	Between 50% and 70% of households use electricity or gas for lighting, cooking, etc.
Step 6	By 2030 over 70% of households and all businesses have access to reliable, affordable and modern clean energy sources

Reaching the target in step 6 will require an expansion of electricity services to households at an average annual rate of 10.5 per cent (figure 4P). In most places, access to electricity will be through the electricity grid, but for some remote areas, off-grid electricity systems will need to be developed. This is discussed in more detail in section 4.9. The benefits to PNG of achieving the 70 per cent electricity coverage target will be the creation of over 100,000 additional jobs and a rise in national income of more than K2.9 billion (figures 4A, 4B).

4P Households with access to electricity

Outcomes for 1996 and 2006, and targeted growth to 2030



An electricity super-corridor

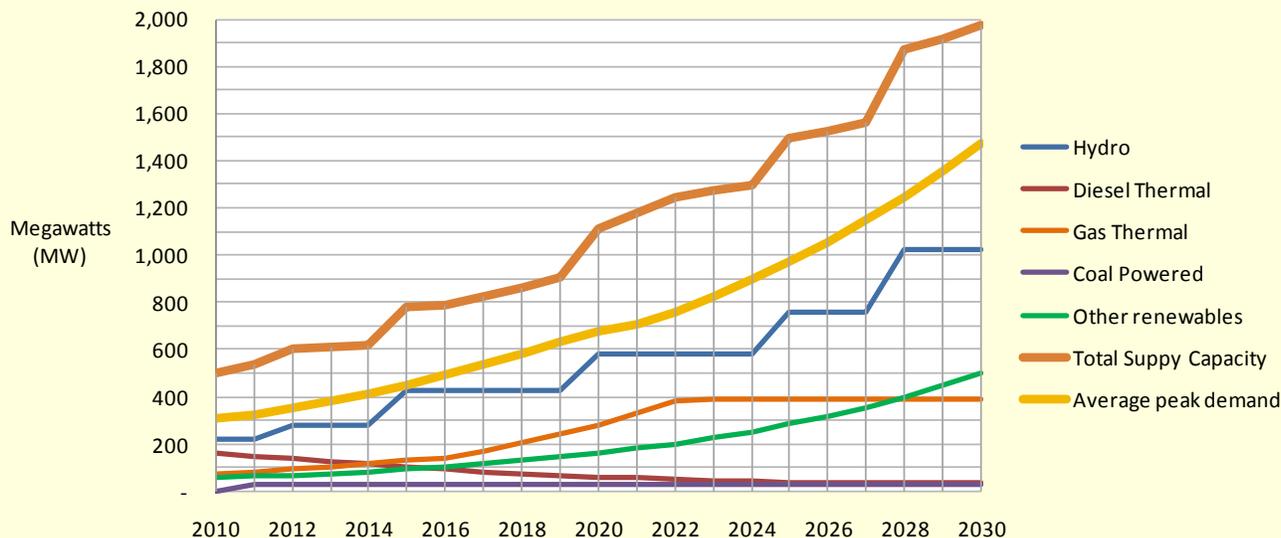
An electricity super-corridor will be built that passes through the areas where electricity can be generated at lowest cost, with a national grid feeding off it and transmission lines passing through each of the economic corridors (map 4D). This will allow the towns, cities and rural economies to access electricity where it can be generated at lowest cost. It also allows electricity to be allocated efficiently across the country, and even allows the possibility of interconnection to a regional grid where electricity can be exported. For example, as Australia and Indonesia look to reduce their reliance on fossil fuel powered electricity in the future, buying electricity off the PNG grid may be a competitive option. The Purari River alone could generate enough power for the entire Australian state of Queensland. Furthermore, electricity-

intensive industries such as aluminium smelting may relocate to PNG because of the availability of low cost, clean power.

Building the super-corridor will incur significant cost and will rely heavily on private sector participation through public private partnerships. This applies both to the construction of transmission lines and to the building of electricity generation capacity.

4Q Electricity peak demand projections and targeted generation capacity

Projections for 2010 to 2030 by electricity generation technology



	2010 MW	2015 MW	2020 MW	2025 MW	2030 MW
Hydro	215	430	580	750	1020
Diesel thermal	160	100	60	40	30
Gas thermal	70	130	280	390	390
Coal	0	30	30	30	30
Other renewables	55	90	160	280	500
TOTAL CAPACITY	500	780	1110	1490	1970

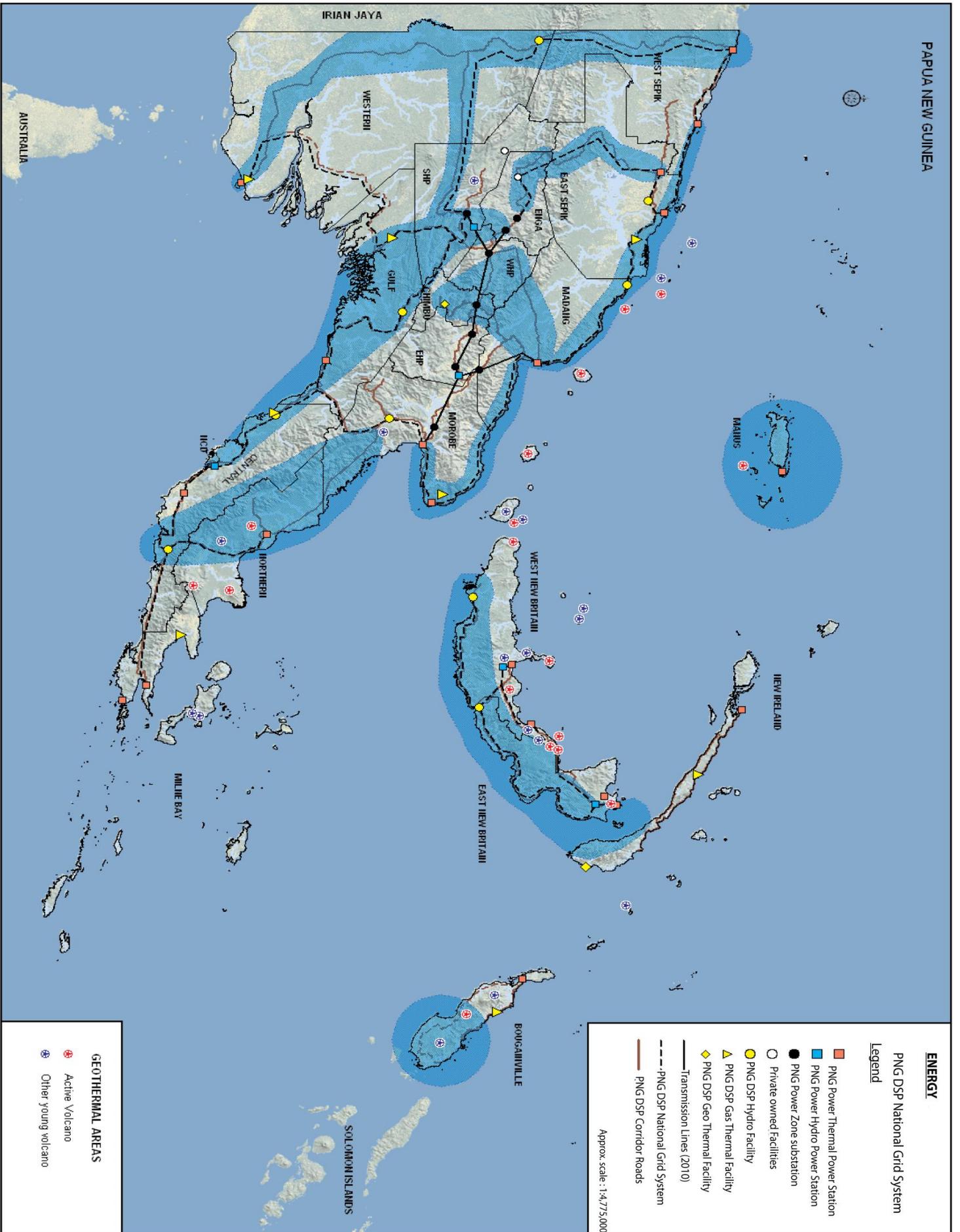
Hydro electricity power

By 2030, 52 per cent of electricity will be generated from hydro to meet the 5-fold rise in demand (figure 4Q). To build a 60MW hydro facility together with its transmission infrastructure, would cost over K1.5 billion in 2009 prices, so private sector participation will be crucial. In five phases, 800MW of hydro electricity generating capacity will be either built or upgraded during the PNGDSP period.

Diesel thermal sources

Diesel and heavy fuel generated electricity is expensive and has been a main contributor to the high cost structure in the energy sector of PNG. Under the PNGDSP, diesel generators will be phased out and retained mainly for back-up purposes. By 2030 diesel will account for only 2 per cent of the generating capacity.

Map 4D –Energy Development in PNG



Gas thermal sources

Prior to the *PNGDSP*, over 70 MW equivalent of gas has been imported and used for domestic, industrial and electricity generation purposes. Gas is a cheap energy source and easier and cheaper to install than other technologies such as hydro. In view of the substantial gas resources, PNG will significantly increase the use of gas for electricity generation during the initial *PNGDSP* period while plans are made and resources are mobilised to develop the renewable sources.

Other non-renewable sources

Due to immense pressure put on electricity generating capacity during the initial *PNGDSP* period, cheaper energy sources will be built and utilised. Coal, if feasible, can be imported and will be used mostly in the Momase region as a number of significant developments require substantial energy in a timely manner.

Other renewable sources

In partnership with the private sector, energy development from renewable sources will be pursued, including geothermal, wind, and biomass. A considerable amount of investment will be required to produce energy and electricity generating capacity from these other sources where feasible, but importantly there is great potential because they can produce electricity at low cost. By 2030 around 25 per cent of PNG's electricity needs will be generated from these renewable sources. In addition, biofuels will be developed as a renewable energy alternative to fossil fuels for transport.

4.12. Rural development

GOAL

Rural prosperity

The need for change in rural areas

About 85 per cent of the population lives in rural PNG. However rural areas are often deprived of the essential services that are taken for granted in urban centres.

Improving service delivery and income opportunities to the rural population is a key priority of the Government. Deliberate interventions are needed to provide agricultural extension services, health services, schools, proper housing, electricity, transport, telecommunications, water supply and postal services.

Indicators and targets for bringing socioeconomic prosperity to rural areas

Key indicators	Baseline information	Issues	2030 target/objective
Household income and wage rates	n/a	A large disparity in incomes exists between rural areas and urban areas.	Parity with urban areas, adjusted for the cost of living
Health indicators	n/a	Rural communities suffer from poor access to health services and consequently have poor health standards.	See 2030 health indicator targets in section 4.3
Access to electricity	Only 3.7% of PNG's rural population have access to electricity	Electricity is largely unavailable in rural areas, yet electricity powers key services such as sanitation, communications, the pumping of clean water and refrigeration of medicines at health facilities. Electricity also replaces the use of wood for fuel, relieving deforestation pressures.	More than 60% of PNG's rural population will have access to electricity

The strategic way forward

The major sectoral strategies outlined elsewhere in the *PNGDSP* are focused on rural development. This reflects the priority given by the Government to ensuring that the benefits of growth are experienced by the rural majority. The various strategies implemented will bring modernisation to the rural areas with electricity, telecommunications and internet services. Education will be compulsory for all children up to 14 years in rural societies. Markets will open up with the development of road and water transport networks, the promotion of technological and productivity improvements in agriculture, and the facilitation of market chain linkages with downstream processing and export markets. Traditional landowners will be given secure, equitable opportunities to make their land available for productive use. The extension of health services and an improved transport network will assist rural communities to enjoy good health. Micro finance facilities will be encouraged and their expansion will support rural investment. Private sector investments will provide a large array of opportunities for rural people.

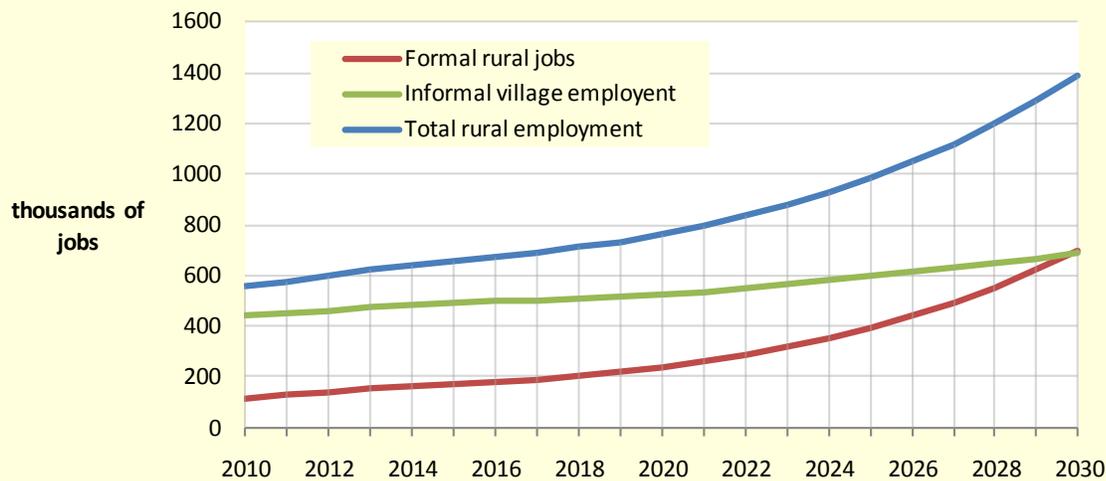
As a result of these initiatives, it is estimated that rural areas will experience a rapid rise in employment and incomes, with formal jobs accounting for an increasing share of total rural employment (figure 4R).

Any strategy for rural development must be pursued consistently over time and with budget support if rural communities are to experience sustainable, tangible benefits. The following additional strategies are proposed:

- strengthen lower levels of Government especially at the district and local level to effectively implement local development programs and to make resource allocation decisions;
- extend basic services to all districts;
- promote cooperative societies in all rural areas as an effective mechanism for developing agriculture and fisheries enterprises;
- establish microfinance banking agencies in all districts by 2030;

- encourage eco-tourism and cottage industries as these open up opportunities for employment and income for many locals;
- deliver specific training programs at the district level;
- create growth centres at all key areas in all districts; and
- ensure that programs introduced by foreign stakeholders are culturally sensitive and consistent with traditional structures, PNG values and local ways of life.

4R **Formal rural jobs and informal employment in villages** full-time equivalent jobs, 2010 to 2030



Electricity is crucial to rural development. Education, health, finance, telecommunications and internet services all depend on a reliable supply of electricity. Section 4.11 outlined strategies for building an electricity network, but it will be uneconomic to extend the network to all rural communities. In such cases, rural communities will require off-grid electricity generation and distribution systems. The extension of off-grid electricity services will depend on resources from the Government and donors, but ongoing running costs will be on a user pays basis. A state owned enterprise will need to be given responsibility for the management of off-grid services. The appropriate electricity generation technology will vary across rural communities depending on the natural environment, but the focus will be on exploiting locally available energy sources. In most situations mini-hydro schemes will be most appropriate, with wind, solar and biomass comprising other feasible technologies. Diesel generation will be avoided in rural development due to the high and volatile running costs, and the reliance on bringing the energy source from elsewhere.

4.13. Urban development

GOAL

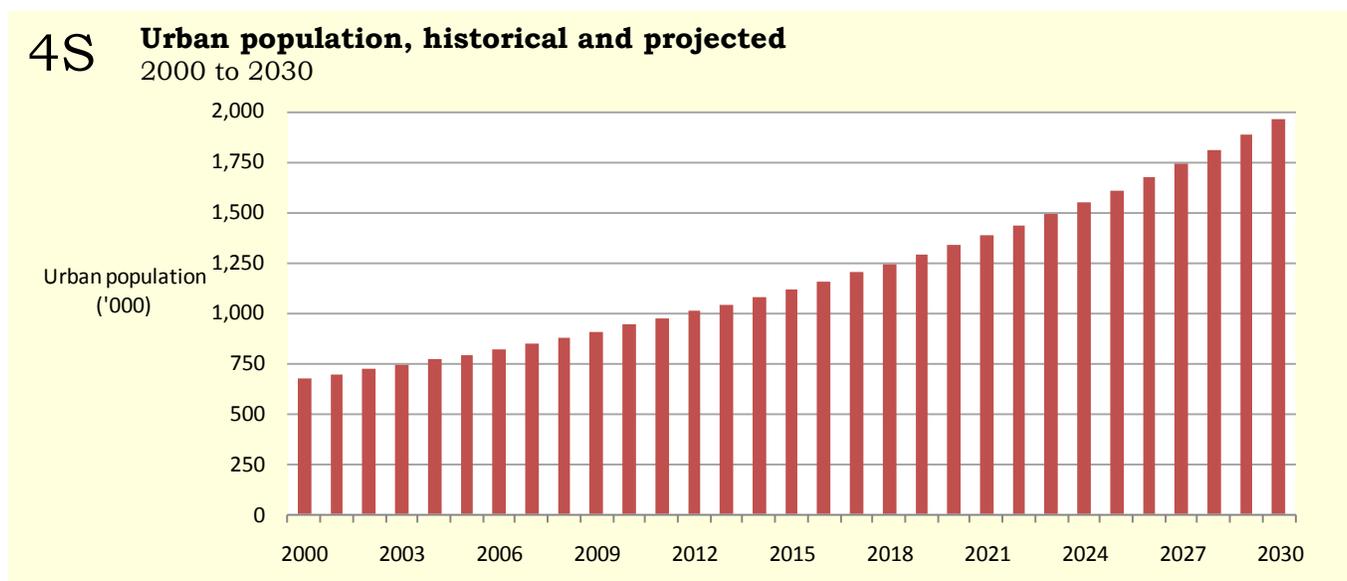
Urban centres developed according to international town planning standards in order to cater for urbanisation and socioeconomic progress and deliver quality of life for all urban people

The growing urban population

The population in PNG's major cities and towns is expected to double by 2030 to reach nearly 2 million (figure 4S). This is as a result of high rural-urban migration.

It is estimated that in the National Capital District alone, the population will have grown by 100,000 between 2000 and 2010. Other major towns that are facing a similar scenario are Madang, Mt Hagen, Lae, Kimbe and Rabaul. In contrast, provinces such as Chimbu, East Sepik, Milne Bay, Oro, Gulf and Manus are expected to experience an out migration of people.

The large inflow of people into urban areas has been associated with sharp growth in urban settlements. At the time of the 2000 Census the settlement population was 21 per cent of the urban population and is estimated to have grown to 28 per cent in 2008.



The urban development challenge

There are two broad strategies for addressing the challenge of rural-urban migration. Firstly, developing rural areas will mitigate the attraction of towns and cities, thereby slowing the extent of rural-urban migration.

Secondly, the provision of secure land and proper town planning will help accommodate urban growth, facilitating housing estates and the provision of essential services.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
Urban population	13%	High rates of rural to urban migration are a result of a lack of services and income opportunities in rural areas. To stem the flow of people into the cities this needs to be rectified.	Contained at 20%
Population living in urban settlements	28% of the urban population live in settlements	Some of the worst living conditions and highest levels of poverty are found in urban settlements. Proper urban planning and availability of secure land for urban housing are the solutions to moving people out of settlements.	Less than 15% of the urban population live in settlements
Town spatial planning	Very weak	Inadequate urban planning and urban development causes poor quality of urban life.	Meet minimum international standards
The supply of affordable housing	Rent and purchase prices very high relative to average earnings	The supply of affordable accommodation is weak due to poor planning and inadequate availability of land.	Adequate supply of affordable housing

Strategies

Towns and cities play an important role in supporting rural development by providing a market for rural based products, providing remittances from relatives and supporting the delivery of rural services.

Town and city authorities will need to work diligently with customary landowners in peri-urban areas to open up secure parcels of land for urban housing and development. Secure land has to more than double by 2030 in towns and cities (figure 4U) to cater for the projected increase in urban population and to consolidate the declining trend in settlement households envisaged in figure 4T.

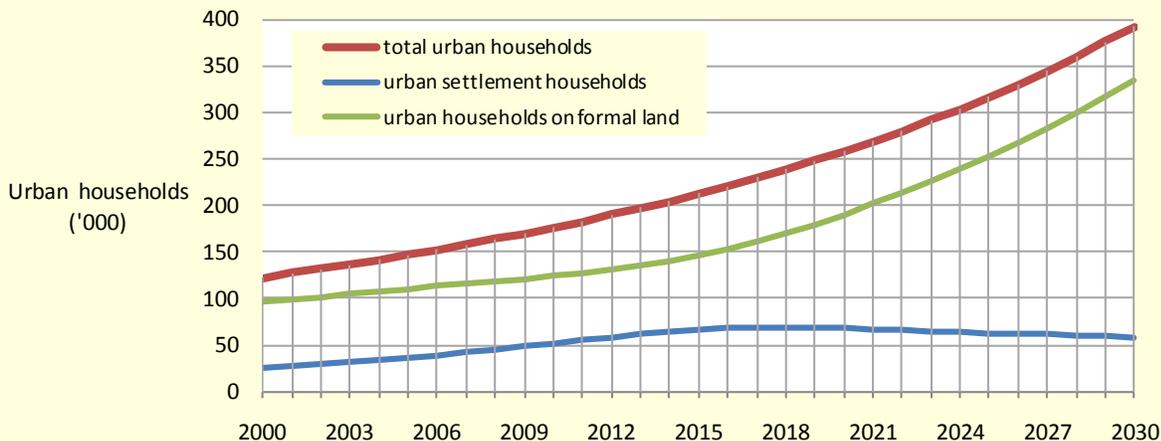
The private sector will be needed to undertake the bulk of investment in new housing. To facilitate private sector participation, land can be zoned and made available for large scale housing estate developments. Further, increasing competition in the delivery of housing finance, combined with developing secure land titles will help release private sector funds for the construction of housing.

Transparent and efficient asset management within the agencies responsible for public housing will help ensure they provide an effective service. Effective physical town planning will be required to ensure residential and industrial developments are well located and properly provided with essential public infrastructure.

Legislation is required to introduce strata title, allowing a block of apartments, for example, to be divided among multiple owners. This reform will substantially reduce the cost to Papua New Guineans to purchase their own home. It will also make it easier for investors to build quality strata accommodation to meet the huge demand for accommodation in urban areas.

4T Number of urban households, 2000 to 2030

2000 census and projections to 2030

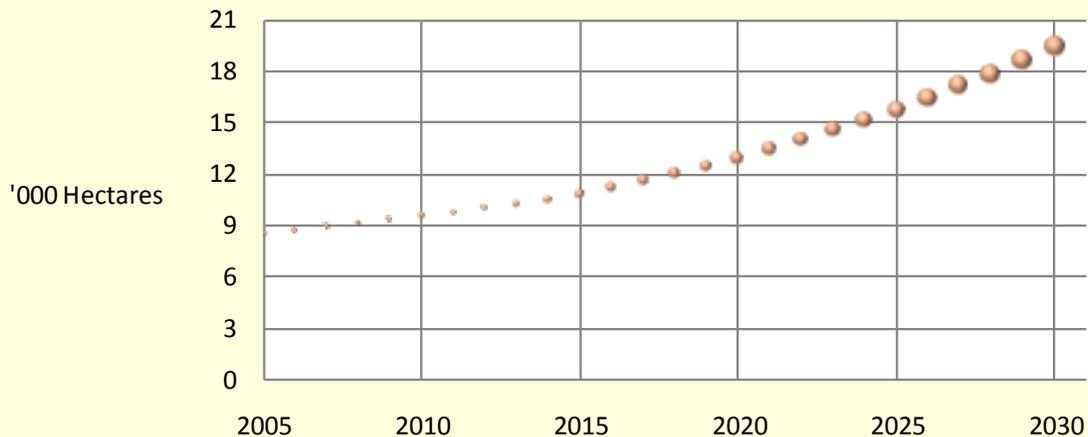


Foreign investment can be used to help develop urban accommodation. In PNG, foreign investors will be allowed to invest in real estate, but only in the construction of new buildings and not the purchase of existing homes or buildings. This approach will bring in foreign funds, but will ensure these funds are used to help reduce the price of accommodation for Papua New Guineans.

A National Identification Card system may assist the Government to better plan for its citizens. Legislation will make it legal for all citizens to have a National ID card.

4U Projected demand for urban residential land, 2005 to 2030

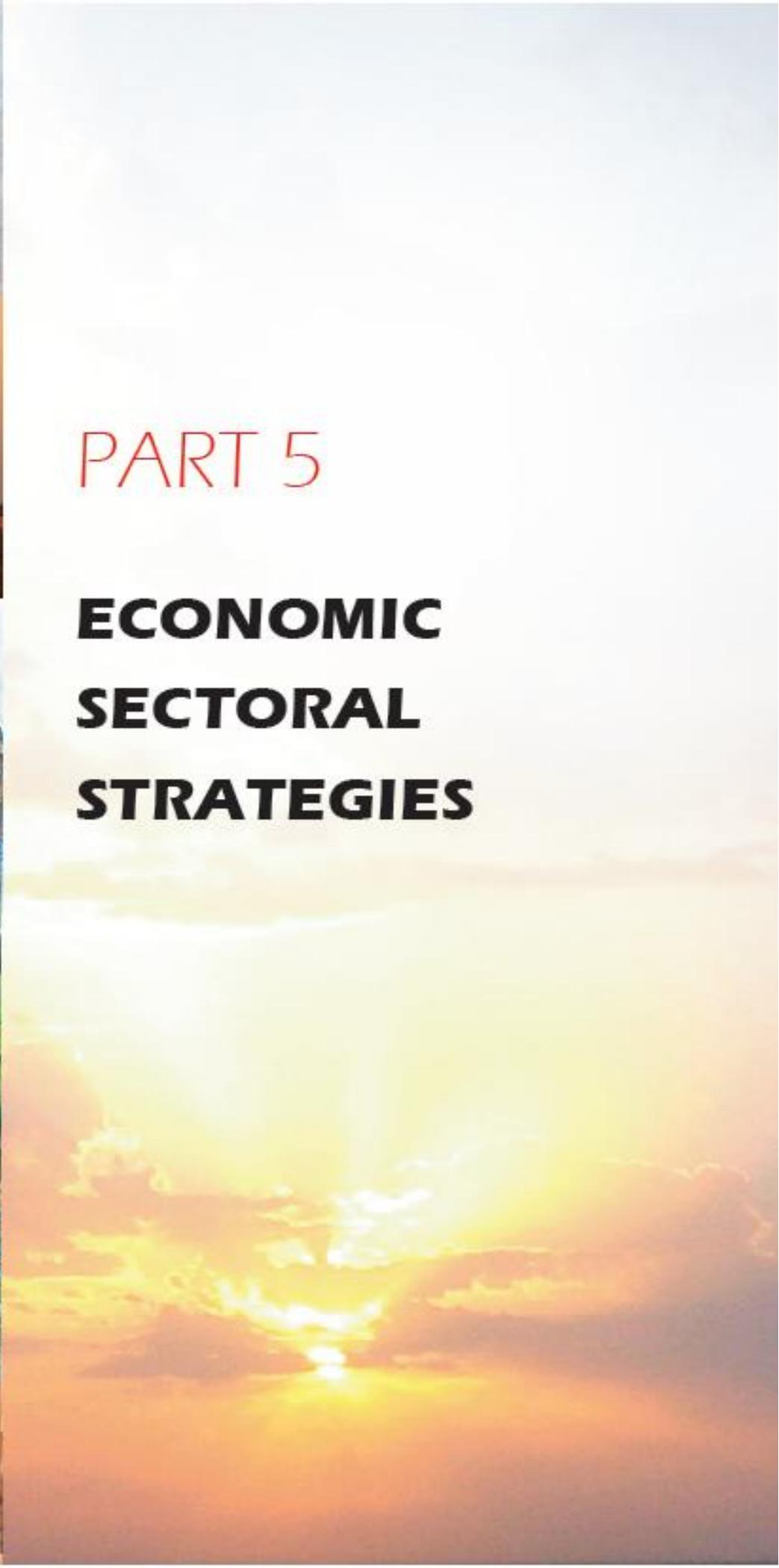
Bubble size represents additional land area each year to meet demand





PART 5

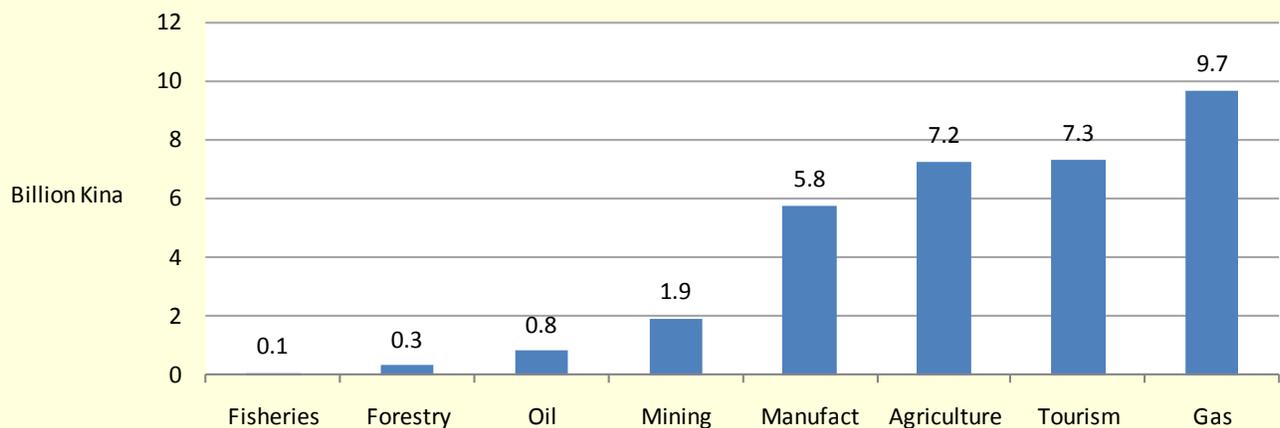
ECONOMIC SECTORAL STRATEGIES



PNG's economy is predominantly dependent on primary production. The main sectors are: agriculture, fisheries, forestry, petroleum, minerals, the informal sector, manufacturing and tourism. LNG gas will become a major sector from 2014.

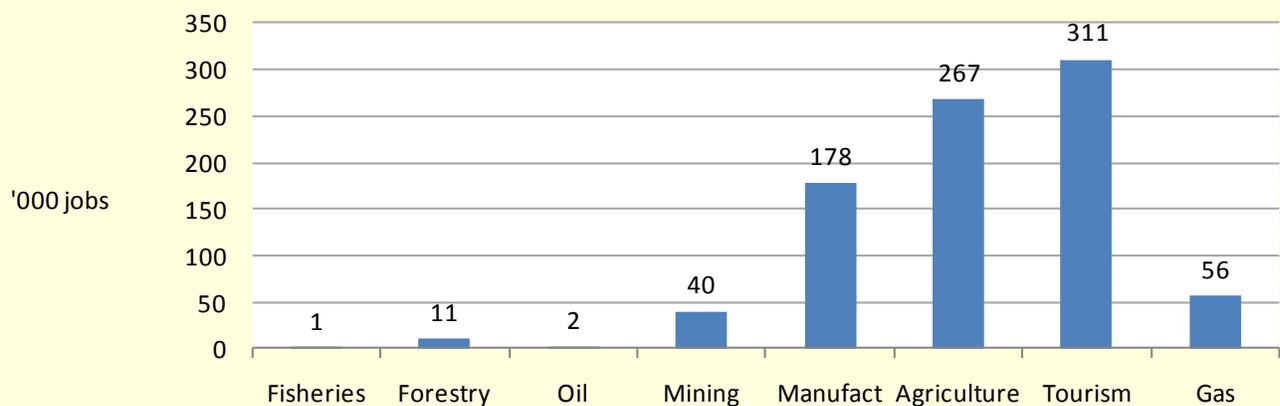
The overall aim of the strategies for these sectors is to diversify the economy so that production is not overly dependent on any one sector, for example resources. Part 5 outlines the plan for developing these key economic sectors with successful implementation dependent on the policy measures and strategies outlined in parts 3 and 4. Figures 5A and 5B outline the economic and employment impacts that will result from the implementation of the sector strategies.

5A Economic impact of implementing sectoral strategies in part 5
 Increase in national income in 2030*



*Data from table 1.1

5B Employment impact of implementing sectoral strategies in Part 5
 Increase in employment in 2030*



*Data from table 1.2

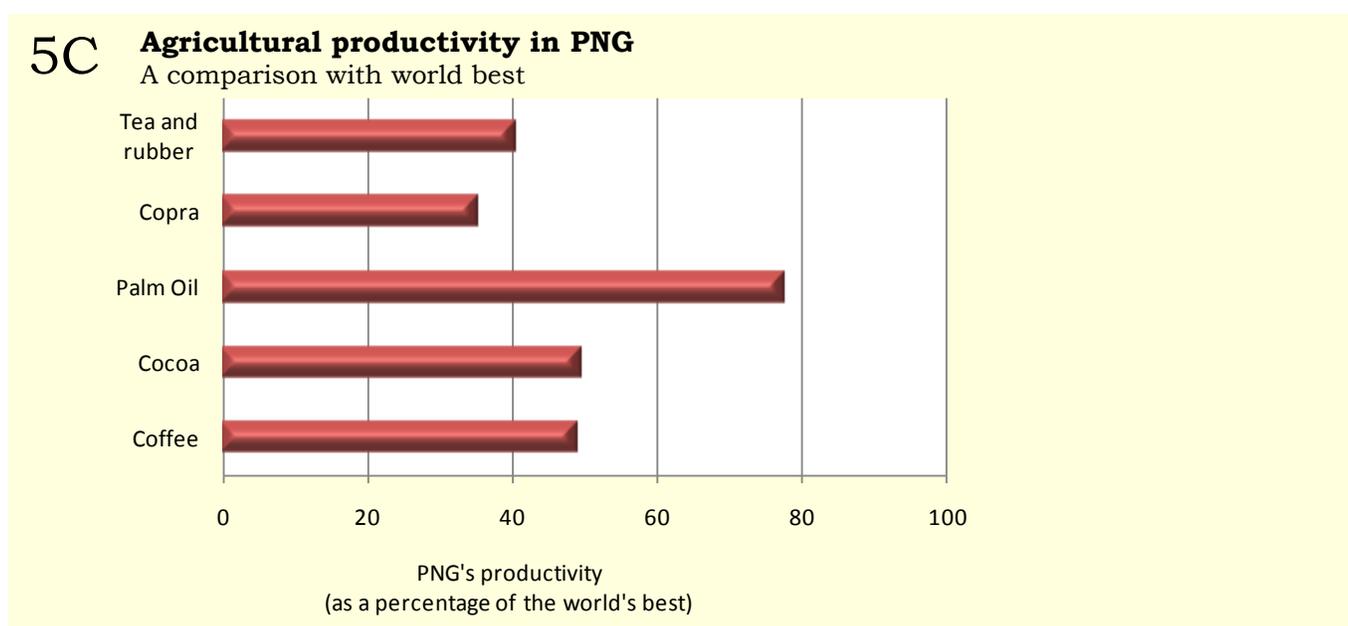
5.1. Agriculture and livestock

GOAL

A world class agricultural sector that is responsive to international and domestic markets for a diverse range of products and provides the best available income and job opportunities

Agriculture developments

PNG has abundant but underutilised fertile land. An estimated 30 per cent of PNG's land has moderate to very high agricultural potential. However, less than 4 per cent of PNG's land is currently used for commercial agricultural production. Furthermore, PNG's agricultural sector is generally much less productive, and therefore much less profitable, than agricultural sectors in many other countries (figure 5C). For example, the current stocks of coffee and cocoa trees are old and therefore low yielding. There is therefore considerable scope for expansion of PNG's agricultural output.



Eighty-two per cent of PNG's population farm for food or cash. Agricultural development will directly contribute towards a reduction in poverty, will provide food security and will deliver other economic benefits.

Key strategic areas

The table below provides targets to 2030, drawing on the Government's general equilibrium model. While these targets were derived independently, they are broadly consistent with PNG's National Agriculture Development Plan 2007-2016. The National Agricultural Development Plan provides detailed projections to 2016 for many of PNG's agricultural commodities, including specific items not included here such as honey and chilli. Annually updating these projections and the analysis underlying the projections would be useful for informing farmers and policy makers alike, enabling PNG to position itself well in response to both opportunities and threats.

Indicators	Baseline	2030 target/objective
Meat production, including organic	407,000 tonnes in 2007	4 million tonnes
Coffee production	63,000 tonnes in 2008	500,000 tonnes
Oil palm production	556,000 tonnes in 2007	1.6 million tonnes
Cocoa production	56,000 tonnes in 2008	310,000 tonnes (minimum of 100,000 tonnes required to allow the development of a local processing industry)
Copra production	110,000 tonnes in 2007	440,000 tonnes
Horticultural production, including organic	n/a	Increase by 5 times
Rice production	Domestic market dominated by foreign entities	Strengthen the bargaining power of local growers and encourage local processing
Sago production	n/a	Establish 2 large scale sago plantations by 2030 and venture into full commercialisation
Staples (sweet potatoes, cassava, taro, banana) production	n/a	Increase production to levels sufficient to feed the population and supply downstream industries
Subsistence agriculture	Most in rural areas depend on subsistence	70% of subsistence farmers will expand into small and medium primary agricultural enterprises

Strategies for realising the full potential of agriculture

Successful implementation of the strategies in figure 5D is projected to support a five-fold increase in agricultural production in PNG between 2010 and 2030, creating an estimated 267,400 additional jobs and K7.2 billion in additional national income by 2030 (figures 5A, 5B).

Figure 5E shows that the substantial increase in agriculture is derived from a 180 per cent increase in the use of land by agriculture and from a 60 per cent improvement in agricultural productivity. Land reform will be necessary to provide the incentive to landowners to release their land for agricultural development. At the same time, extension services will assist land holders to replant with new, high yielding varieties of coffee, cocoa and copra. These measures will support the envisaged expansion in agriculture.

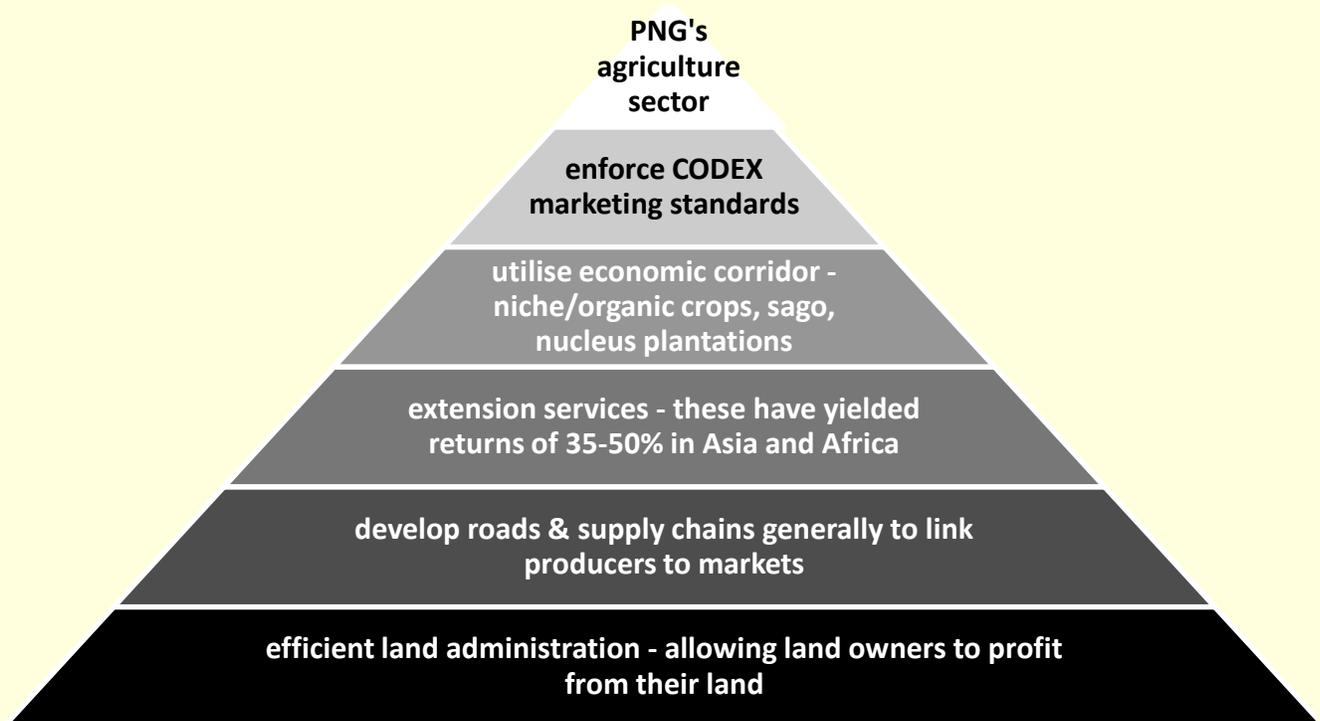
However, roads are critical, connecting fertile regions of PNG with markets. Without roads, fertile land will remain idle or underutilised, despite extension services. The better the roads, the easier for farmers to supply markets and the more profitable farmers will be.

Implementing the international “Codex” food safety and fair trade standards will support the marketing of PNG’s food exports, opening up profitable export opportunities for PNG’s agriculture and food sectors.

5D

Strategies for growth in agriculture

A sequence of strategies for building a World class agriculture sector

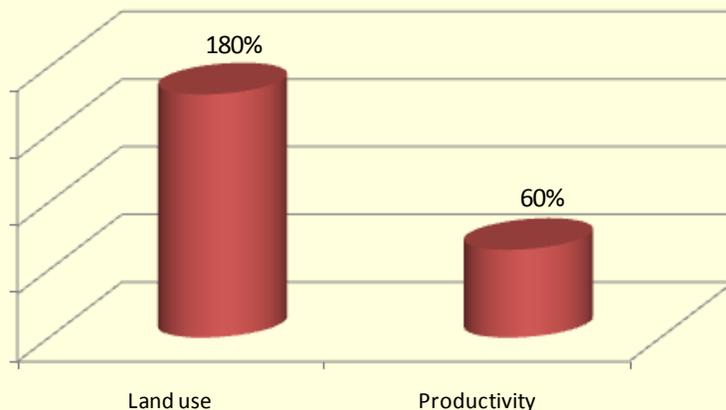


At an institutional level, the roles and functions of the Department of Agriculture and Livestock and other agencies within the sector need to be clarified. Role clarity will improve the delivery of the essential support functions of providing extension services, credit services and training.

5E

Sources of growth in agriculture under the PNGDSP

Percentage change between 2010 and 2030



Interventions that are non-discriminatory, transparent and cost effective will also be an important strategy over the next 20 years. For example, with the Government's support, the National Agricultural Research Institute (NARI) has identified that PNG's vanilla beans are

high in vanilla content, despite being too short for export, thereby raising the prospect of domestic processing.

5.2. Fisheries

GOAL

Develop a fisheries sector that is both sustainable and highly profitable for PNG, including the establishment of PNG as a world leader in the supply of tuna

Overview of fisheries

PNG has extensive and valuable fisheries resources, ranging from inland river fisheries, aquaculture, coastal beech-de-mer and reef fisheries to the prawn trawl and large-scale deepwater tuna fisheries. Commercial fishing is carried out by licensed medium sized domestic prawn and tuna long-line operators, and large international purse seine fleets in the deepwater tuna fishery.

The fisheries sector has considerable potential for expansion, particularly benefiting PNG's 14 maritime provinces. Maritime provinces can encourage local fishermen to utilise the employment and income potential of the traditional 3-12 nautical mile zone. Coastal fisheries and aquaculture, for example farming of pearls, barramundi and trout, are key industries.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
Stock assessment of prawn fisheries	Under exploited	A key constraint in the Gulf fishery is the use of annual licences instead of long term licences. Fishers have little incentive to invest unless they can purchase long term licences.	Increase catch by 25% and raise stock assessment to fully exploited
Licence fees generated from tuna fisheries	K60 million in 2008	Licence fees are low and create an incentive to overfish. Raising fees will benefit PNG. Taxing catch or profit will help sustain the fishery by reducing the incentive to overfish.	K120 million in 2008 prices
PNG processed fisheries exports	K189 million, 21,940 tonnes in 2007, comprising 34% of total exports	Most fish caught in PNG waters are handled or processed outside of PNG. As a result, PNG's fish processing industry misses out on income and jobs.	Triple volume and real value of processed fisheries exports
Quantity share of catch caught by PNG vessels	Less than 1% in 2007	The majority of the catch is caught by foreign vessels. For PNG to benefit more from its fisheries, the share of catch from locally operated fishing operations will need to increase.	Increase to at least 20% by 2030

Strategies for sustainable and profitable fisheries

Developing PNG's valuable fisheries sector is a high priority. The fisheries sector involves catching or farming fish, and also processing of fish. The benefits of fish processing are included in the quantitative analysis undertaken later as part of PNG's manufacturing sector, although many initiatives considered here involve processing because often the two stages are dependent on each other.

State administrative capacities need to be enhanced to oversee the sector, including the enforcement of policy. Critically, the current lack in maritime surveillance capacity is resulting in the loss of millions of Kina in illegal or under-reported fishing activities. Development of the maritime surveillance capacity of the defence and security force will therefore support higher returns from PNG's fishing resources. Research, extension services and marketing capacities also need to be developed to support the industry in managing risks and in providing direction to the industry.

License fees, excise and other revenue raising arrangements will be revised to ensure that PNG is raising revenue efficiently but without discouraging domestic production. For example, more revenue could be obtained from the Pacific tuna fishery by increasing the license fees raised from foreign vessels. This measure would also improve the sustainability of the fishery as some of the target species are overfished. Should PNG take the option of, for example, doubling revenues taken from the foreign tuna fleet, the Government would earn an additional K60 million (table 1.1).

By reinvesting this revenue, for example, in implementing the coastal fishers program, the gains would accumulate. A further K10 million in other taxation revenues is anticipated by 2030, together with an additional K80 million in real national income and almost 700 extra jobs (tables 1.1, 1.2). To put this into context, the fishing sector currently provides around 7000 jobs within PNG.

Local fishermen have exclusive rights to fish the 3-12 nautical mile zone set aside for traditional fishing grounds. These fishing grounds offer local fishers great opportunities to earn a sustainable income, providing the fisheries are well managed and providing fishers have the requisite business skills and market access. To assist fishers to gain from their traditional fishing grounds, fishing cooperatives can be set up that will have responsibility for administration, marketing of local catches, providing cold storage and processing facilities, organising credit and arranging the acquisition of pump boats and other equipment for its members. The Government can facilitate such developments by encouraging joint ventures and by providing key ports and jetty infrastructure.

Marine industrial parks will be established in maritime provinces of PNG, providing an outlet for local fishers that will support fishing incomes. The marine industrial parks will also support the development of onshore processing, adding to PNG's manufacturing capacity. The Madang marine industrial zone is the first such development. Located north of Madang, it is envisaged the zone will include several tuna factories, which will purchase fish from fishers, contributing to the incomes of local fishers. Furthermore, other Pacific island countries will benefit with the right to invest and operate in the Madang marine industrial park. Through this and other measures, Papua New Guinea will strive to become a tuna capital of the world by taking the lead in profitable production and export of processed tuna.

5.3. Forestry

GOAL

Build a forestry sector that is sustainable and highly profitable

Forestry in PNG

Forests cover approximately 25.8 million hectares which is less than two thirds of PNG's total land area. Between 1977 and 2002, 15 per cent of PNG's natural rainforest was cleared with 8 per cent degraded to secondary forest. However the size of PNG's forests still ranks PNG among the top twenty nations of the world for forest cover.

Key strategic areas

By realising the forestry targets below, PNG will capture much greater benefits from its forests for current and for future generations. PNG will progress in the processing of timbers, will be positioned to market its unique forests to tourists, and will meet international demand for carbon storage or for other environmental services.

Key indicators	Baseline information	Issues	2030 target/objective
Share of processed timber in the value of total timber exports	21% in 2007; processed exports of K106 million	The share of processed timber in total timber exports is very low. In Malaysia, the share rose from 20 per cent to 90 per cent in the forty years to 2007. In Indonesia, the share rose from 10 per cent to 90 per cent between 1978 and 1996.	80%
Share of log harvest coming from virgin forest	n/a	A sustainable approach to forestry will ensure the benefits of investments into PNG's forestry sector continue into the future, and will help realise environmental benefits.	Logs will be provided by plantations and managed forests.
Area of plantation forests	62,000 hectares	Insecure land tenure currently constrains investment in the plantation sector.	Substantial increase in plantation forests

Strategies for a sustainable forestry sector that benefits Papua New Guineans

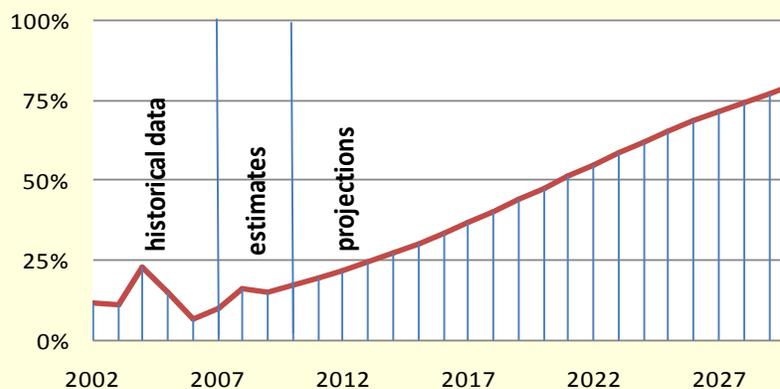
It is a difficult balance to achieve a forestry sector that is both sustainable and profitable for Papua New Guineans. But this must be achieved for the current and long term benefits of the country. The following measures will help achieve this balance:

- establish a forest resource inventory in order to ensure policy decisions are well informed;
- promote sustainable forest management through reforestation and afforestation programs;
- prevent felling of virgin forests unless the land is developed to provide sustainable jobs and income, whether through agriculture, plantation or other profitable land uses. The Forest Clearance Authority will administer this;
- pursue downstream processing of forest products such that 80 per cent of PNG timbers are processed in-country by 2030 as illustrated in figure 5F. Compared with the

current situation where most exports are raw timbers, this strategy will create more than 10,000 jobs as well as generating an additional K300 million of national income (tables 1.1 and 1.2);

- strengthen the regulatory and policy framework, including ensuring compliance in order to give full effect to government policy; and
- enhance the research and extension services of the forest industry so that the industry is profitable and sustainable, to the benefit of current and future generations.

5F Processed timber exports, 2002 to 2030
Share of processed timber out of all timber exports



5.4. Petroleum

GOAL

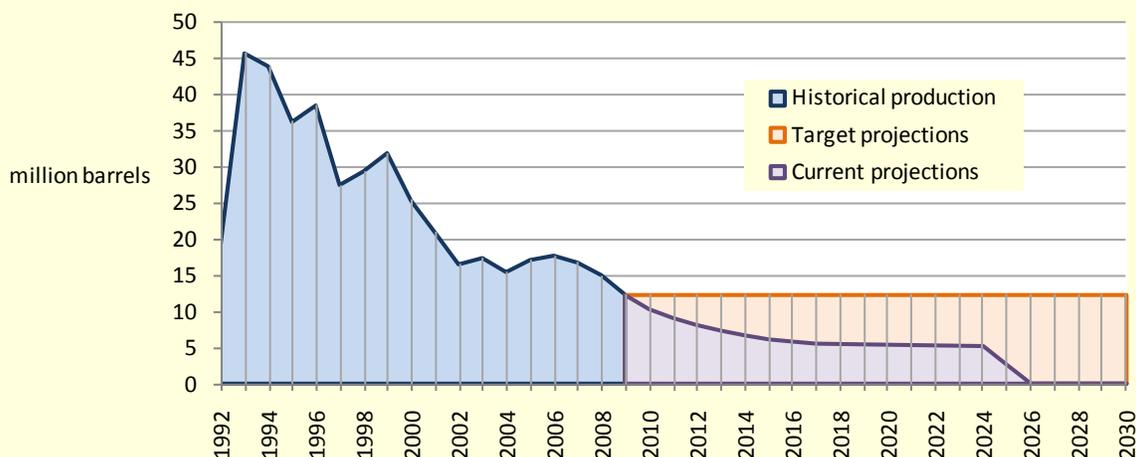
Build a world leading petroleum industry that maximises benefits to PNG and landowners, minimises impacts on the environment and social welfare, and provides PNG with energy security.

Oil and refining

Petroleum development commenced in 1991 with crude oil production at the Kutubu fields. Production peaked in 1993, but has been declining and is projected to be depleted by 2026 (figure 5G). In 2005, PNG’s first oil refinery commenced production, sourcing crude oil from both local oil fields and externally. The Kutubu fields are rich in gas resources but the focus so far has been on the extraction of crude oil. This will change as they become predominantly gas fields, exporting condensate and wet gas and processed petroleum products.

5G Historical and projected crude oil production

1992 to 2030



The gas potential

PNG is blessed with substantial wealth in natural gas reserves providing the platform for a prosperous future for the gas industry and for the nation as a whole. Two projects are at an advanced planning stage: the LNG project headed by Exxon Mobil; and the LNGL project headed by Interoil. The LNG project alone is expected to generate upwards of K11 billion a year in export revenues. This will attract new revenue flows to the State (taxes and dividends), to Provincial Governments, and to the traditional owners of the resource (royalties, dividends, development levies). Importantly, these projects are not just about extracting natural gas. It is anticipated that substantial downstream processing will be developed to convert the natural gas into processed petrochemical products, including LPG. In addition to these two projects, there is strong potential for the development of many more gas projects – both upstream and downstream.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
Volume of crude oil production and exports	16.8 million barrels produced and 14.4 million barrels exported in 2007	Production has been declining as proven reserves become depleted. Preventing further declines will require significant investment in exploration.	Sustain crude oil production and exports at 2009 levels
Remaining oil reserves	859.5 million barrels in 2006	Remaining reserves are depleting with insufficient investment in exploration.	Increase proven reserves by 60%
Refinery production	5.8 million barrels of crude oil processed in 2008	The capacity of the existing refinery is not fully utilised. Future demand will rise rapidly as PNGDSP implementation brings strong growth.	9 million barrels processed
Number of LNG projects	nil	There is considerable potential for LNG projects and potential for processing, including fertiliser production and LPG.	At least 3
Revenues received from petroleum projects	n/a	It is crucial to ensure that the Government secures the maximum revenues from the gas projects, but without harming the incentives for business to invest in the industry.	At least K5 billion a year

Strategies

Administration and institutions

The large scale of the emerging gas projects requires a corresponding strengthening of the state institutions responsible for policy making, administration and enforcement of regulations for the gas industry.

Promoting exploration and investment

The need for specialised expertise and considerable resources means that the private sector will need to lead exploration and investments in the petroleum industry. It is therefore important to have effective strategies for strengthening exploration and production. Central to this is the provision of an environment attractive for business, including a transparent, stable and balanced fiscal and incentive regime. The Government will need to work with landowners and other stakeholders to help break down barriers and pave the way for private sector exploration and development of oil reserves. By encouraging exploration and investment, the target is for 2009 levels of crude oil production to be maintained through to 2030, and for at least 3 large gas projects to be up and running.

Broadening the benefits

If just two major gas projects were to proceed, in 2030 national income would increase by K9.7 billion and there would be K5.1 billion in additional tax revenue (figure, 5A, table 1.1). Sustaining production levels of crude oil at the 2009 level would result in further gains of K0.8 billion in national income and K0.5 billion in tax revenue in 2030 (figure 5A, table 1.1). However, the petroleum industry is not a big employer and does not integrate well with the broader economy. It is therefore crucial for the Government to take measures to spread the benefits to the broader economy. A key strategy for this is the building of a Petroleum Resource Area Economic Corridor as outlined in Part 2. Through this economic corridor, project related infrastructure will be connected to the wider region to provide access and opportunities to agricultural, manufacturing and tourism businesses. A downstream petrochemical industry within the corridor will be promoted, including the production of fertilisers and LPG for domestic use and export.

Investing the proceeds

Careful management of the revenue flows will be required to ensure the maximum benefit from petroleum is secured for the current and future generations. The public finance and investment strategy outlined in section 8.3 provides details of how the revenues accruing to the State will be managed. To enhance the benefits to PNG the Government will invest in partnership with the private sector in the petroleum industry. Industry partners will be strategically selected based on proven performance, financial strength, commitment to PNG participation and optimal investment returns to PNG. The Government will also need to work with provincial governments and landowners to assist them in planning for the prudent and productive use of the revenue proceeds.

5.5. Minerals

GOAL

Double mineral exports, while minimising the adverse impact on the environment

The role of minerals

The minerals sector has been the primary source of Papua New Guinea's exports over the years and will continue to be important into the future. For example, in 2007, gold, copper, and silver exports amounted to K9.2 billion in value, comprising 63.1 per cent of total exports for the year. The sector also contributes significantly to government revenue.

Key strategic areas

The main way the people of PNG will benefit from mineral developments is through government investment of the revenues received from minerals projects. In the past, the gains from mineral projects have been short-lived and have benefited very few. For the future, the PNGDSP provides direction for government investment of tax revenues in order to turn mining projects into sustainable, broad based economic development.

Key indicators	Baseline information	Issues	2030 target/objective
The value of mineral exports	K9.2 billion in 2007	Mining has been a principal source of government revenue since independence.	At least K18 billion
Exploration expenditure	K213 million in 2008	Reserves at existing minerals projects are being depleted. Exploration and investment in new projects will be required to expand the sector.	Sufficient exploration to reach production target
Exploration licences	241 current exploration licences in 2009	The degree of exploration activity will determine future production.	Ongoing high level of exploration activity
Number of mine sites	9 in operation, 4 under development, 11 at advanced stage of exploration	To grow the sector, the number of mine sites will also need to expand.	Around 20 in operation
Government revenues from minerals projects	K2.2 billion in 2007	The Government needs to balance the objective of securing maximum revenues from minerals projects, with the need to maintain incentives for business to invest in the industry.	At least K3 billion a year
Sustainable deep sea mining in PNG waters	n/a	Commercial deep sea mining may commence in PNG waters within the next decade.	A number of projects to have commenced

Strategies for enhancing revenues from a sustainable minerals sector

Doubling mineral exports between 2010 and 2030, would lead to an increase in PNG's national economic welfare in 2030 by K1.9 billion, including K790 million of extra tax revenues (figure 5A, table 1.1). This is a substantial increment in tax revenues – equivalent to 15 per cent of the 2009 budget. The following strategies are proposed to achieve these gains:

- strengthen the capacity of state institutions to administer and enforce mining regulations to ensure the Government’s policy is implemented effectively;
- provide a regulatory and policy framework that is both simple but effective to keep industry compliance costs to a minimum, to protect the environment and to ensure landowners and other stakeholders benefit;
- facilitate further exploration by simplifying and speeding up regulatory procedures;
- promote an integrated approach to mine development rather than an enclave approach, with the use of economic corridor zones to direct project revenues into areas with the greatest potential for sustainable, long term development; and
- develop and review appropriate mechanisms to address landowner’s participation and industry issues. These issues are best resolved before the private sector becomes involved to reduce the costs of investment and thereby attract more investors to PNG.
- pursue strategies under manufacturing and small and medium enterprises that encourage downstream processing industries for smelting of minerals on shore to add value to PNG’s natural resources as well as supplying gold bullion needs of the country.

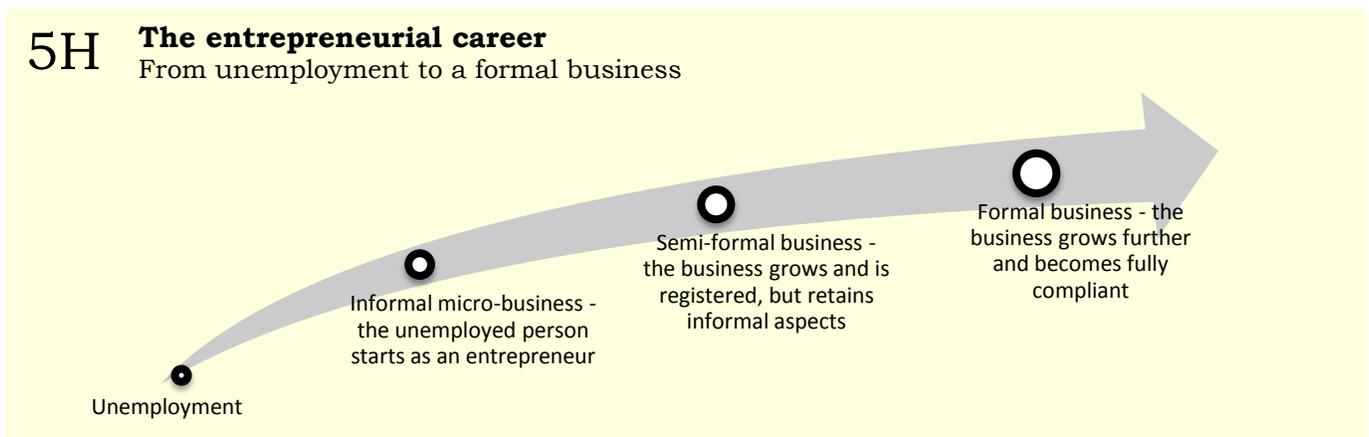
5.6. Non-agricultural informal sector

GOAL

Promotion of the non-agricultural informal sector to secure a livelihood for indigenous entrepreneurs and to encourage progression into the formal sector

The importance of the non-agricultural informal sector

There is a growing number of Papua New Guineans who are becoming landless. The difficulty they face in accessing agricultural land limits their opportunities to earn income. In many cases, these people move into a life of crime and prostitution. Promotion and development of informal micro-enterprise is therefore encouraged. In addition, micro-enterprises should be thought of as a step towards progression into a commercially viable formal business (figure 5H). There is great potential to grow the non-agricultural informal sector into a thriving sector that can provide employment and create local activities. However, at present the sector is small, largely undeveloped and fragmented.



Strategies

It is important to facilitate entrepreneurial micro-enterprise activities and improve the level of participation to ensure that the informal sector is an effective livelihood safety net for the landless, while at the same time providing a basis for the development of a vibrant private sector. Several key measures have been identified to help foster the development of the informal sector in PNG:

- a specific credit line with the National Development Bank to enable growth and development of indigenous micro-enterprises;
- appropriate training programs for facilitating the development of informal sector activities and cottage industries;
- establishment of information and public assistance programs in various locations across PNG to help develop local entrepreneurs; and
- development of policy to facilitate and foster growth of the informal sector including identifying specific targets and measurable indicators to monitor implementation progress in achieving established targets.

5.7. Small and medium enterprises

GOAL

Develop and promote small and medium enterprises in PNG

Current weakness of small and medium enterprises

Small and medium enterprises (SMEs) play a significant role in the development of many economies, especially the rapidly growing Asian economies. However, the development of SMEs in PNG has not been robust due to many policy and institutional issues, as well as environmental and structural impediments that need to be overcome. They include issues such as policy incoherence, overlapping of rules and complexity of administrative procedures, lack of capacity development and training, lack of access to appropriate technology, lack of access to relevant markets, lack of access to information, including knowledge of potential business opportunities, and perhaps above all, lack of access to credit.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
Number of SMEs	n/a	The number of SMEs in PNG is small by international standards and mostly comprises tucker shops (48% of total SMEs).	4-fold increase at least
Employment in SMEs	n/a	If impediments are addressed, SMEs will create employment, promote entrepreneurial skills and innovation and support investment by large enterprises.	4-fold increase at least
PNG SMEs with overseas operations	n/a	SMEs can play a key role in promoting exports of specialised niche products, and providing essential linkages to markets as well as attracting foreign direct investment to PNG.	A significant number

Strategies

Promoting SMEs to unlock their potential for driving PNG forward will require the following measures:

- expand microfinance banking services to all districts in PNG to facilitate access to credit and the development of SMEs;
- reduce the burden of red tape to simplify and lower the cost of establishing and maintaining a business;
- establish a specific SME training institute that promotes modern and dynamic ways of doing business and that otherwise develops the skills required for a successful SME;
- facilitate the transfer, adaptation, and development of relevant technologies required by SMEs through research and development, and promote partnerships with foreign businesses;
- encourage the development of designated facilities for SMEs to sell and market their products to the public and to tourists in various cities and towns of PNG; and
- develop plans and policies that encourage SMEs to focus on export markets.

5.8. Manufacturing

GOAL

A competitive manufacturing sector through the development of higher value chains and appropriate technologies to manufacturing that will lead to the generation of higher income and employment

Manufacturing – building on PNG’s comparative advantage

Papua New Guinea’s manufacturing sector has developed on the back of the nation’s comparative advantage in agricultural and resource based industries. In particular, the largest manufacturing export commodities are palm oil, copra oil, processed timber and most recently refined petroleum. Processed tuna is another rapidly growing export industry. Each of these key export products relies on PNG’s large agricultural and resource base, and shows the importance of manufacturing exports for moving the economy from primary industries into higher value added processing industries.

Key strategic areas

The *PNGDSP* envisages the ongoing development of export oriented, processing industries in order to generate higher income and employment for Papua New Guineans.

Key indicators	Baseline information	Issues	2030 target/objective
Value of manufacturing production	Estimated at K4 billion in 2009	Access to land, law and order and inefficient regulations are some of the key impediments. Dealing with these will attract investment to PNG manufacturing.	K12 billion in 2009 prices
Value of manufacturing exports	K1.6 billion in 2007	Manufactured exports are narrow but expanding. They are dominated by downstream processing of oil, fisheries and agriculture.	K5 billion in 2009 prices
Investment in manufacturing	n/a	The Government needs to promote a conducive business environment, enabling the growth of manufacturing industries in PNG.	Triple current investment

Strategies for developing the manufacturing sector

It is estimated that the measures outlined below can treble manufacturing production. In particular, export led manufacturing growth will create an additional 177,500 jobs by 2030 and K5.8 billion of additional real national income (figures 5A, 5B).

A central strategy will be to encourage exports in the manufacturing sector. This has been a key component of the success of East Asian governments in facilitating growth. An export focus is important because the global economy offers an incomparably larger market than the domestic economy, allowing local producers to specialise in those industries where they are most adept.

Implementing *PNGDSP* strategies that address land and law and order issues, and facilitating development in the informal sector and of SMEs, will also be crucial as these will lower the cost of business in PNG. It will otherwise be necessary to remove regulatory constraints, particularly for export-oriented businesses.

Transforming the sector from current light manufacturing industries into higher value production can be achieved by articulating proper backward and forward linkages and adapting appropriate technology and mechanisms. The Government can assist in this process by providing infrastructure and a low cost regulatory environment, focusing on economic corridors and special areas such as the Madang marine industrial park. In this way, the Government will provide strong incentives that attract investment into PNG manufacturing. Foreign investors and local investors alike will be encouraged to invest substantially, particularly within economic corridors.

Joint ventures between foreign and local investors will also be encouraged as a means of combining local knowledge with foreign capacity. In this way, businesses will be more successful and local capacity will be enhanced.

PNG's manufacturing sector will continue to be based on PNG's comparative advantage in agricultural and resource commodities. Expansion of cocoa production beyond 100,000 tonnes a year, for example, will allow a domestic processing industry to be developed in PNG. LNG, is another example. LNG is produced in a highly technical process, but will be established in PNG because of PNG's vast natural gas resources. Likewise, other petrochemical industries may develop that use natural gas as a feedstock or that use

byproducts from the LNG process, for example fertilisers and LPG. Furthermore, PNG will develop the capacity to smelt its own gold bullion.

As PNG develops its electricity super-corridor, powered by clean renewable energy, PNG will become an attractive destination for electricity-intensive industries such as aluminium smelting. Across the globe, electricity-intensive industries will face the prospect of paying for greenhouse gas emissions if nations cooperate to address global warming. PNG can contribute to the global effort to reduce greenhouse gases and at the same time benefit from industrial growth by making renewable electricity available to electricity intensive industries (see section 4.11).

5.9. Tourism

GOAL

Build a strong, vibrant, world class tourism sector

A global industry

On a global scale, tourism has become a leading industry and has played a major role in increasing the prosperity of nations. Importantly, tourism is a sector that provides diversity of opportunities, opening a gateway for people across society to raise their incomes. A key benefit of tourism is that it earns foreign exchange and is a job creator as it is more labour intensive than other industrial or service sectors. Moreover it provides wide opportunities for businesses outside of the tourism sector to participate in the tourism value chain, including in agriculture.

Visitor arrivals to PNG rose to 121,000 in 2008 which is more than double the arrivals in the early part of the decade. But tourism remains very small by international standards. In fact, PNG receives the second lowest tourist numbers per head of population in the entire Asia-Pacific region. Yet PNG is blessed with some of the richest attractions for tourists and is centrally located within the Asia-Pacific – a market that attracted 184 million tourists in 2007.

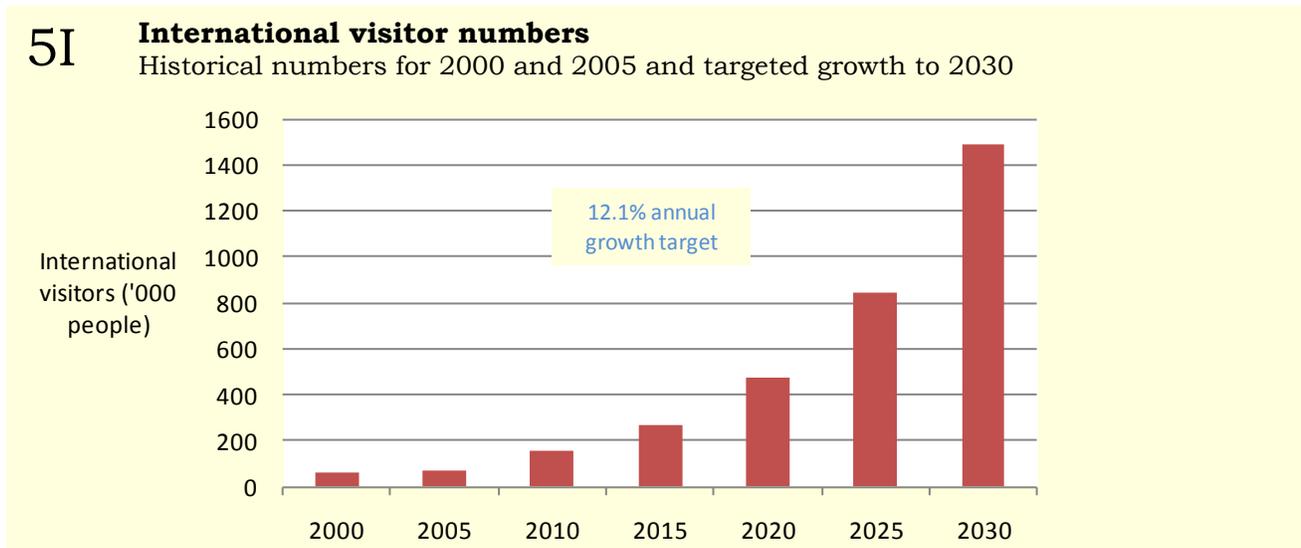
Key strategic areas

Tourism is a priority sector for the *PNGDSP*. In addition to the tremendous potential for a prosperous tourism sector, tourism is chosen as a priority sector because: it is labour intensive employing a diversity of people; it provides a big range of business opportunities for large multinational operations, for small and medium businesses and for informal micro-businesses; and it is less disruptive to local culture and the environment than other modern sector activities.

Key indicators	Baseline information	Issues	2030 target/objective
Number of international visitors	121,000 in 2008	This target is modest in view of the tourism potential of PNG. Cambodia for example has increased tourist numbers at a much faster rate from 220,000 in 1995 to 1.7 million in 2006, and Malaysia received 2.1 million visitors in 1980 compared with 22.0 million in 2008.	1.5 million (figure 5I)

Strategies

The target of 1.5 million visitors a year (figure 5I) can be achieved using a mix of strategies based around two concepts: (1) increasing the capacity of infrastructure and facilities to cope with the rise in tourists; and (2) increasing the appeal of the PNG experience for the visitor so that more visitors will want to come.



The capacity

Transport and accommodation represent the core infrastructure needs of tourists. Airports and airlines will need significant upgrading to cope with the influx of tourists. In addition, new international airport facilities will be needed for key tourist destinations including Madang, Alotau and Rabaul. To visit places of interest, road and water transport will also need to be upgraded. Strategies for raising the capacity of air, road and water transport are outlined in section 4.8. The development of accommodation infrastructure will be private sector led and measures outlined elsewhere in the *PNGDSP* to improve investment conditions for the private sector – including addressing law and order, energy and land issues – will provide the basis for investments in accommodation. Joint ventures between local and foreign stakeholders will be encouraged in order to marry local understanding of culture and business conditions with foreign expertise and capital. In addition, proactive initiatives and incentives to attract global hotel chains to PNG will be needed.

The appeal

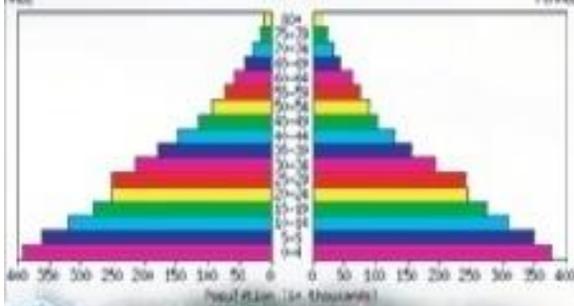
Raising the appeal for tourists first and foremost requires dealing with the law and order problem, and strategies for this are outlined in section 4.2. In addition, the following strategies will be needed:

- substantially upgrade tourism promotion efforts, including through road shows, exhibitions and marketing with partnership between domestic and foreign investors;
- design and implement a regulatory and policy framework to improve the quality of tourism services;

- strengthen the security of the tourism industry, including the establishment of tourist police;
- develop niche tourism, including: trekking, mountain climbing, bushwalking, and WWII history;
- preserve the uniqueness of the diverse cultural heritage of PNG and its striking geography; and
- develop cruise ship tourism to take advantage of the great potential that PNG has to become a world class cruise destination.

The poor

An additional concern is to ensure that the benefits of tourism reach the poor. This requires an additional strategy to facilitate local market chains so that sectors like agriculture, fishing and artifacts link to the tourism industry. The development of SMEs as discussed in part 5.8 is an essential component of this strategy.



PART 6

CROSS CUTTING POLICIES



6.1. Population

GOAL

Achieve a population growth rate that is sustainable for society, the economy and the environment

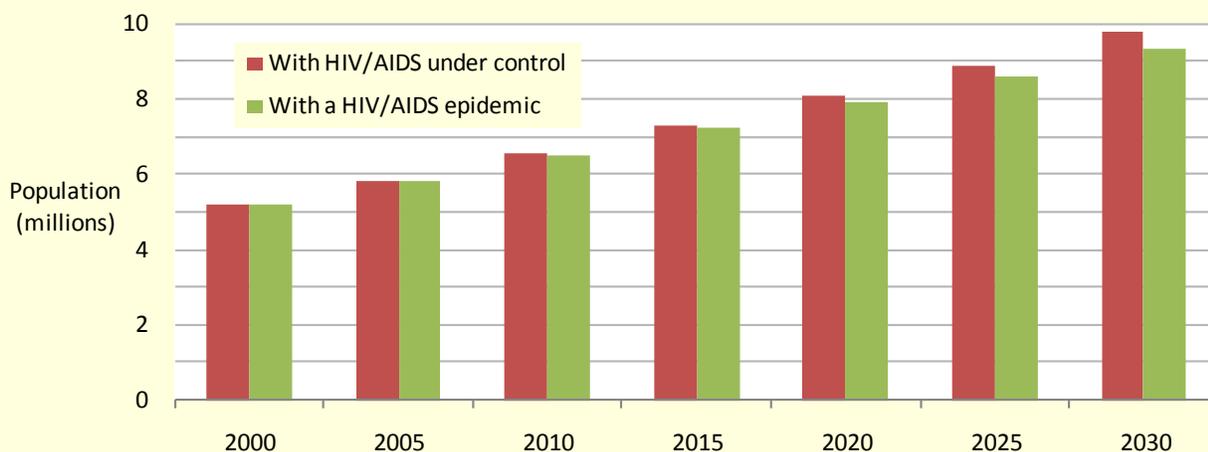
Current and future population

PNG's population reached 5.2 million in the 2000 census and over 6 million in 2009. By 2030, the population is projected to increase to 9.8 million (figure 6A). The rapid increase in population creates significant social, economic and environmental pressures. The key to reducing population growth is to achieve reductions in the fertility rate which currently averages 4.3 children per woman. Across the globe, developing countries that have educated their people and become prosperous middle income countries have seen sharp reductions in fertility rates. This too will happen in PNG with fertility expected to fall to 3.4 children per woman in 2030 in line with the prosperity and education planned for under the *PNGDSP*, and with family planning.

Strategies for bringing HIV/AIDS under control are outlined in section 6.4. Nevertheless, there remains a risk that PNG will suffer from a serious HIV/AIDS epidemic resulting in a significant increase in the mortality rate, particularly among young adults. The result would be a population in 2030 around half a million less than it otherwise would have been (figure 6A).

6A Population projections to 2030

With and without a HIV/AIDS epidemic

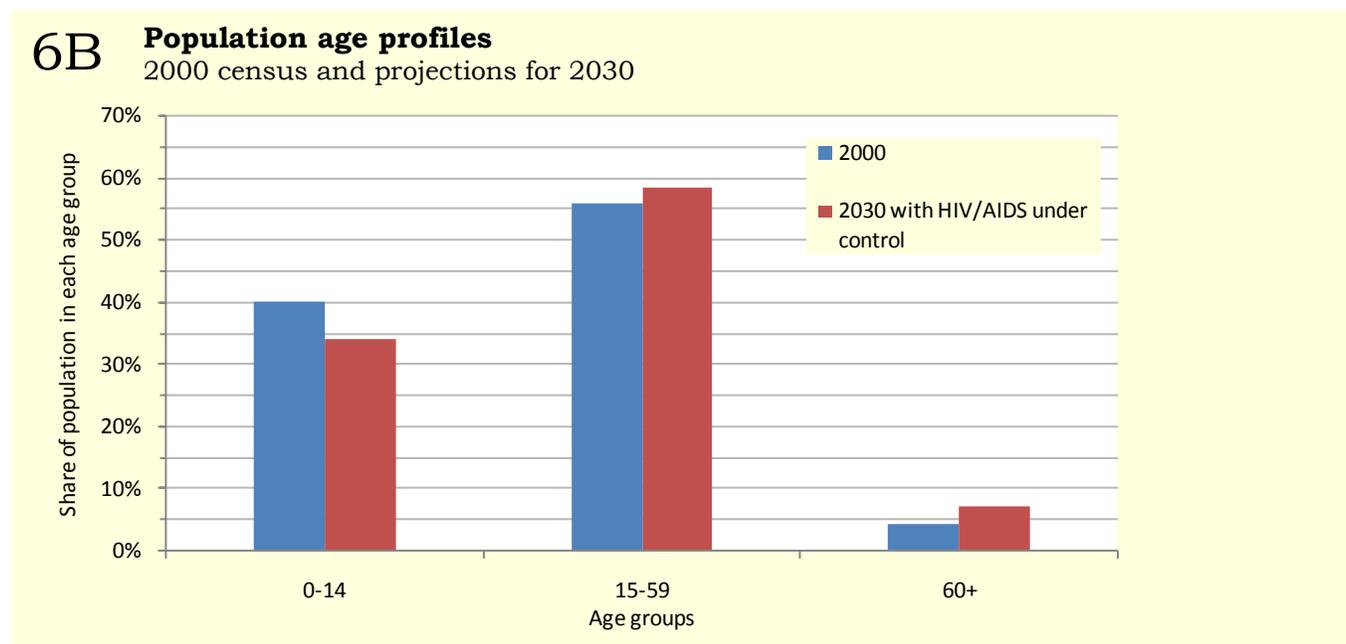


'000 people	2000	2005	2010	2015	2020	2025	2030
Low HIV/AIDS	5190	5820	6520	7280	8090	8950	9860
High HIV/AIDS	5190	5810	6500	7190	7880	8590	9340

A changing age profile

PNG has a very young population with 40 per cent under the age of 15 at the time of the 2000 census (figure 6B). The large young population creates a 'dependency burden' which has implications for consumption patterns, labour force quality and productivity, and challenges the ability of the Government to support productive investments and infrastructure. As a

result of the weak health system and low life expectancy, the ‘dependency burden’ associated with the old age population is low with just 4.2 per cent of the population over 60. This compares, for example, with 7.5 per cent for Fiji and 6.6 per cent for Samoa. The reductions in fertility and improvements in health under the *PNGDSP* will result in a significant change in the age profile of the population as shown in figure 6B. The under 15 population is expected to drop to 34 per cent of the population by 2030, and the over 60 population will rise to more than 7 per cent.



Dependency ratio

Due to high fertility, the dependent population (young and old) is very high, putting pressure on the economically active population. For every 100 people of working age there were 74 people of dependent age at the time of the 2000 census. As a result of lower fertility, this is expected to ease to 63 dependents for every 100 people of working age in 2030, or 65 dependents if there is a HIV/AIDS epidemic.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
Population size and population growth	5.2 million (2000 Census) 2.7% growth rate	The population growth rate is very high and must ease to reach a sustainable level in 2030 in line with middle income countries. The potential for a HIV/AIDS epidemic poses risks to mortality rates, and could result in lower population growth.	9.8 million; less than 2.0% growth rate
Median age	19 years	The median age is very low. The education and health strategies will result in later marriage and extended lives, resulting in an older population (figure 6B).	25 years
Mean age at marriage	Male: 23 Female: 20	Early marriage is a contributing factor of the high fertility rate. Education and development will result in later marriage and a lower fertility rate.	Male: 27 Female: 25

Key indicators	Baseline information	Issues	2030 target/ objective
Urban population	13% live in urban areas	The urban population is rising rapidly. Extending services and income opportunities in rural areas is needed to stem the flow of people into the cities (see section 4.13 on urban development).	Contained at 20%
Total fertility rate	4.3 children per woman	The average of 4-5 children per woman is high, underpinning rapid population growth and a high dependency ratio.	3.4 children per woman

Strategies

As confirmed by international experience, slowing population growth will occur by improving the education of women and girls, as well as boys, and by providing economic opportunities for the people to prosper. These things will be achieved with the implementation of the various PNGDSP strategies. In addition, reductions in fertility can be achieved through appropriate reproductive health care services in line with the country's National Population Policy and by the Government targeting services to encourage fewer children, for example by guaranteeing free education places in the public system to the first two children of each family.

There are some parts of PNG that are already experiencing population pressures, particularly in the highlands. Yet much of PNG has very low population density. Facilitating internal migration will therefore be very important. In particular, people in areas with population pressures will need to access opportunities to migrate to economic corridor areas. Strategies for unlocking the land outlined in section 4.1 will be critical to facilitating internal migration, as will improvements in transport infrastructure discussed in section 4.8.

6.2. Youth

GOAL

A vibrant and productive youth population that has career opportunities, skills, good education, moral values and respect

The youth of today

In 2000 the 15-24 year old youth population was 1 million which constituted 20 per cent of the entire population of PNG. This is a large proportion, yet they are often easily ignored. Education opportunities have been lacking and as a result, 38 per cent of young people in 2000 could not read or write. Without basic literacy, employment and income opportunities for these young people will be limited.

Key strategic areas

Key indicators	Baseline information and issues	2030 target/ objective
Education for youth	Half a million young people have never attended or acquired any formal education, especially in rural areas.	Secondary education for all youth including education through polytechnic institutions
Careers for youth	About 80,000 young people leave the formal education system annually with most unable to find formal jobs.	All youth leaving formal education have job opportunities
Youth morals, crime and drugs	80% of crimes are committed by young people and 71 per cent of prisoners are below the age of 25 years. It is estimated that 300,000 youths are addicted to drugs and alcohol.	Youths committing crime will fall by 55%; drug and alcohol addiction will be controlled
Teenage pregnancies	13% of teenage girls have begun childbearing and unwanted teenage pregnancy reflects a serious social issue.	Less than 5%

Strategies to protect and provide for PNG's young people

Youths are vulnerable and can easily get on the wrong side of the law. Therefore they need to be nurtured and developed, and in that way, they will become effective agents for positive change.

Foremost among the strategies for nurturing young people is the role of the family and the role of a caring, responsible community. There needs to be a clear expectation throughout PNG that parents will take responsibility for the wellbeing and whereabouts of their children. Likewise, efforts to better integrate young people into the broader community will be encouraged.

Strategies for education, employment generation, crime and population are all critical for improving the lives of young people both now and in the future. In particular, the polytechnic program needs to equip young people with the technical and entrepreneurial skills they require to participate in small and medium enterprises.

In addition, young people will be provided with a positive social network and with beneficial activities by establishing and recapitalising youth centres, including the provision of career, sporting and counselling programs. Together with these centres, the Government can partner with churches and NGOs to enhance the social and spiritual opportunities for young people. Education and preventative programs are also required to steer youth away from drug and alcohol addiction.

6.3. Gender

GOAL

All citizens, irrespective of gender, will have equal opportunity to participate in and benefit from the development of the country

The importance of respect for all

Men, women, boys and girls are all valuable members of PNG society. Every person, irrespective of gender, needs to be given the opportunity to reach their potential because in

this way, the whole country will benefit. Currently, gender disparity is evident in many aspects of society, from education, employment and political representation to mortality and cultural norms. This largely reflects traditions that are harmful and life threatening that need to be done away with.

In education, for example, boys have better access to primary school than girls, with boys accounting for 53 per cent of enrolments and girls for just 47 per cent. This gender disparity increases for higher levels of education. In higher education, men account for 63 per cent of total enrolments and women for only 37 per cent.

PNG cannot reach its potential if inequality continues to exist.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
Gender empowerment	A Gender Development Index (GDI) of 0.54	Gender empowerment refers to equality of opportunities and rights for both males and females. By international standards PNG performs poorly because women have fewer opportunities and lower living conditions than men (figure 6C).	A GDI of 0.75
Women and children as victims of domestic violence	n/a	Victims are not well reported due to cultural issues and fear. There is a need to increase the capacity and effectiveness of enforcing agencies and institutions to protect and cater for victims.	Zero tolerance for violence against women and children
Female to male enrolment rate	0.90	There are more males than females attending school.	1
Females in tertiary education	37% of graduates are female	Equality is needed at the tertiary level of education for PNG to rise to its full potential	50% of graduates are female
Females in wage employment	In 2000, 4.4% of women aged 15 years and over	Improving formal education opportunities for women will improve women's formal employment opportunities.	Most women of working age who are looking for work will be employed

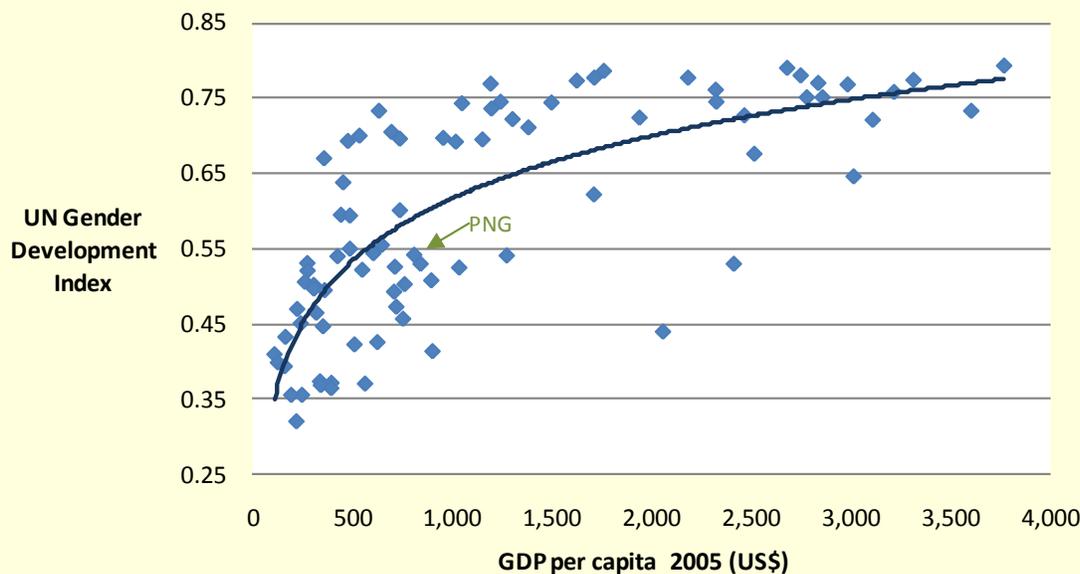
Strategies for enhancing gender equity

International experience confirms the powerful link between a country's prosperity and the equality of men and women. For almost all countries in the world, the UN constructs a Gender Development Index where a score below 1 indicates that women are disadvantaged relative to men. Comparing this index across developing nations reveals a clear link between prosperity and improving respect for women (figure 6C). As more women are educated and join the workforce, PNG will no doubt benefit greatly.

6C

Prosperity and gender equality

Gender Development Index versus GDP per capita for low and middle income countries, 2005



It is therefore desirable to build opportunities for women and girls to participate in economic, political, cultural and social life at all levels (community, provincial and national). This will require, among other things, legislation that not only protects women against violence but ensures their rights to education and in the workplace.

New and innovative programs are also needed to raise awareness about the roles of men and women in development, and to provide access to resources, information, opportunities and other services that support gender equality.

6.4. HIV/AIDS

GOAL

A healthy population free from sexually transmissible infections and HIV/AIDS threats

The HIV/AIDS problem

HIV/AIDS is having a significant impact in PNG with loss of life, thousands of affected families, including children, and a diminished quality of life for many individuals. The number of people who are infected with HIV/AIDS has grown rapidly, from an estimated 3,444 in 2000 to an estimated 28,294 at the end of 2008. This includes around 1700 children who have been infected before birth.

The rate of growth in infections does appear to be slowing. The number of new infections has leveled off at around 5000 since 2006. However, a lack of reliable data makes it difficult to assess the situation accurately. It is possible that the number of infections is higher or at least growing more rapidly than currently estimated.

Worse, without accurate and comprehensive data, it is not possible to identify the main transmission mechanisms. The gender of those who test HIV+ is often not recorded, let alone data regarding how and where they may have been infected. This makes it very difficult for policy makers to develop effective strategies to contain and reverse the spread of AIDS.

Nonetheless, the available data suggests that the rate of HIV infections is greater around enclave developments such as mines, logging and fisheries, and along the Highlands Highway and in Port Moresby. A principal mode of transmission appears to be the exchange of sex for money, although as the infection spreads, other parties are being infected including spouses and children.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
Prevalence of HIV/AIDS (per 1000 in the population)	Est. 0.95 in 2008	Recent revision of data suggests the prevalence of HIV has not yet reached 1. Strong prevention measures are required to keep prevalence below 1.	Below 1 and falling at 2020.
Orphan children due to AIDS	Est. 5995 in 2007	The increase in adult deaths has resulted in many orphans.	Reverse the rise in orphans
% of people with advanced HIV infection who have access to antiretroviral drugs	61 per cent in 2008	Access to antiretroviral drugs is rising rapidly, doubling from 30.8 per cent in 2007 to 61 per cent in 2008. However universal coverage is needed to improve the health of HIV patients.	100 per cent

Strategies

Given the large expenditure to date on containing HIV/AIDS and the lack of success, PNG is reviewing how it fights HIV/AIDS. There are three overall strategies that will greatly improve policy effectiveness outlined below.

1. Data collection and analysis

Accurate data is critical for understanding and therefore controlling HIV/AIDS in PNG. A well functioning monitoring, surveillance and evaluation system of incidences of HIV/AIDS is needed as a matter of priority. Establishing HIV testing centres throughout the country is a step in the right direction. Every testing centre will be required to record basic data about each person that reports HIV positive, including gender, approximate age and the location of the testing site. No funding will be authorised or provided by the Government to testing or treatment centres unless this data is recorded and provided to the Government’s national HIV/AIDS council. This approach to funding has been implemented in Thailand and has greatly improved the availability of accurate data.

2. Coordination

Coordination of efforts to fight HIV/AIDS is critical. Many non government organisations (NGOs), community based organisations (CBOs), donors, and all levels of Government are actively working to resist the spread of HIV/AIDS. But without coordination, money is wasted because of duplication of effort. Coordination will be the responsibility of the national

HIV/AIDS council secretariat. To ensure the coordinating agency is well informed about operations throughout PNG, organisations dealing with HIV/AIDS will need to submit detailed workplans and cost schedules to the Government explaining the linkages between their programs and the Government's national HIV/AIDS strategy. Funding will only be released or authorised by the Government if such plans are provided and where Government requirements are accommodated.

3. A policy framework with PNG ways

PNG is a nation of 800 languages and cultural groups. This makes it difficult to effectively develop and implement effective measures for addressing HIV/AIDS. A policy framework is required to clearly direct the efforts of all stakeholders, in order to improve their effectiveness in the context of PNG's cultural complexities. Recognising the wisdom and experience of many stakeholders, this policy framework will be the product of cooperation with stakeholders. The framework will also be flexible to change as more accurate data becomes available.

In developing this policy framework and in accordance with the Constitution, consideration must be given to PNG ways that help protect citizens from the spread of HIV and AIDS. In particular, abstinence before marriage and faithfulness in marriage are norms of behaviour in many of PNG's cultures and they protect individuals against HIV/AIDS. They will be emphasised in PNG. Conversely, when traditions and norms of behaviour are identified that may accelerate the spread of HIV, any response must be undertaken in harmony with the community affected and where possible, in consultation with the national HIV/AIDS council.

Below are outlined some additional specific measures in the fight against HIV/AIDS.

- A key component of prevention is the provision of information and education about the disease. Peer to peer communication efforts will be emphasised in PNG, learning from the success of such programs in other developing countries. It is envisaged this approach will be particularly useful in PNG because peers will better understand the culture and language. The media and NGOs will also continue to be utilised where effective.
- Steps will be taken to avert high risk behaviour. However, as a last resort, condoms will be provided to those who engage in high risk sexual behaviour. Importantly, the provision of condoms will only be targeted to high risk groups. Again, accurate data is needed to identify who are at risk and therefore in what regions and venues condoms need to be made available. For example, some mining companies are providing their employees with condoms on their arrival at the mine site. Furthermore, hotels in regions of high HIV incidence are also providing condoms in hotel rooms.
- Treatment, care and support is also important. The national health system, in collaboration with the agencies responsible for HIV/AIDS and other stakeholders, will need to design and implement improved health care, epidemiology, counseling, support and treatment for people living with HIV/AIDS. This is an area where coordination is needed of government, communities, churches, NGOs, medical and scientific organisations and development partners.
- PNG's biodiversity and traditional wealth of knowledge may offer effective treatments for AIDS. Traditional herbs are known to enhance the immune system and should be developed within PNG to assist in the treatment of AIDS more broadly. As one of the

most biodiverse countries in the world, PNG otherwise provides excellent opportunities for discovering and developing new medicines. These opportunities need to be taken advantage of by researchers seeking better treatments for AIDS.

6.5. Vulnerable and disadvantaged groups

GOAL

Vulnerable and disadvantaged people will have the support that they require from the Government, service providers and the general public for meeting their right to a minimum standard of living

The challenge

PNG faces daunting challenges in defining and managing its disadvantaged and vulnerable groups within the population. These include people who are exposed to daily hardships, violence, abuse, exploitation and neglect. They also include disabled people, widows, children (including orphaned, adopted and fostered children), settlers, landless people, those suffering acute poverty with no means for self-sustenance and the elderly. In many cases, the vulnerability and disadvantage is due to lack of access to economic and development opportunities, and lack of access to basic services. The Constitution requires equal participation of all people in the country which means everyone should be given equal opportunities to participate and benefit from the nation's growth and development.

The elderly are a particularly vulnerable group and, as a result of improved health delivery under the PNGDSP, the over 65 population is expected to rise rapidly from 123,000 as at the 2000 census to 450,000 by 2030. Traditionally, the elderly have been looked after by relatives, but with the sharp rise in the elderly population, families will find this more and more difficult. More importantly, the elderly will become increasingly vulnerable if, as expected, culture evolves and traditional support systems break down.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/ objective
Disabled persons	0.9% of the population	Facilities and services for the disabled are minimal and are mainly provided by NGOs.	Integrated in the community with better access to services

Strategies

As the nation begins to prosper it becomes an ethical duty to support the elderly and the disabled. Strategies for protecting the vulnerable include:

- developing a sustainable social care and protection system providing for both community and government based interventions for vulnerable and disadvantaged groups;

- creating a child-friendly society by strengthening the capability of families and communities to nurture children, providing full support for their survival, protection, development and participation;
- developing and utilising preventative and proactive approaches to empower vulnerable people and effectively integrating them into the wider community. Such approaches include for example, the provision of relevant communication tools, rehabilitation and assistive devices and self-help mechanisms;
- partnering with donors and community based organisations that specialise in catering for vulnerable and disadvantaged groups;
- strengthening and reinforcing those cultural norms that integrate vulnerable and disadvantaged groups in society, including through cultural responsibilities and social safety nets such as the ‘wantok system’;
- ensuring that public and private building designs cater for disabled persons; and
- through collaborative efforts, instigating a formal care system for the disadvantaged and the aged population, including institutional housing and infrastructure development.

Additional strategies for assisting specific vulnerable groups are provided later in the sections of natural disaster management and climate change.

6.6. Environment

GOAL

Promote a sustainable environment

Background

Conserving the environment is a fundamental pillar of the Constitution. Development needs to be sustainable in order to benefit future generations as well as current generations. However PNG’s achievement in sustainable development has in many ways been compromised. Unsustainable logging operations, direct disposal of tailings into rivers by mining companies and mangrove depletion are just some of the environmental issues that have arisen.

Of significant concern is the high rate of deforestation. Between 1977 and 2002, 15 per cent of PNG’s natural rainforest was cleared with 8 per cent degraded to secondary forest. According to 2002 estimates, primary forest that is accessible to mechanised logging is being degraded at the rate of 2.6 per cent a year. If that rate is sustained, around 83 per cent of PNG’s 1977 commercially accessible forests will be lost by 2021, which equates to about 40 per cent of PNG’s natural rainforest. The main drivers of deforestation and forest degradation have been subsistence and cash crop agriculture (46 per cent) and logging (48 per cent). A further 4 per cent of degradation has occurred as a result of forest fires.

Water pollution is another major environmental concern. Pollution by manufacturing activities such as canneries, illegal dynamite fishing, dumping of tailings by mining companies into rivers and direct disposal of untreated household wastes and raw sewerage into the ocean by

most coastal villages, all contribute to water pollution. Mine tailings alone pose a serious environmental hazard as they contain traces of heavy toxic metals. The collapse of the Ok Tedi Mine Tailing Dam in 1984 with no subsequent reconstruction typifies the complicated environmental, social, economic and development problems that arise when a tailing system is not in place. Recently, consideration has been directed to submarine tailing disposal for disposing of waste.

Some environmental problems have been exacerbated by weaknesses in the monitoring and assessment regime. In 2006, for example, 24 pollution complaints were reported to the Department of Environment and Conservation, but only 15 were investigated.

Strategies for sustaining the environment

Environmental degradation in PNG has been largely driven by the pursuit of short term gains, particularly by those who do not suffer the consequences of degradation. To ensure a balance between material wealth and a cleaner environment, economic incentives must be in place to deter pollution. Pollution taxes and transferable pollution permits will ensure clean production methods and technologies are employed, but they are costly to administer. As PNG develops its administrative capacity, a national pollution market would effectively provide an incentive to reduce pollution.

In accordance with the Constitutional recognition of PNG ways, customary practices for enhancing and preserving the environment will be strengthened. Landowners often have a cultural obligation to ensure the benefit of future generations, supporting the goal of sustainable development.

Ongoing efforts are required to improve the legislative framework, together with monitoring and evaluation mechanisms in order to protect the environment. This is an ongoing process because over time, new environmental challenges arise and scientific understanding improves.

PNG's national environmental programs need to be aligned to international commitments to demonstrate PNG's obligation to the global community. This will strengthen PNG's voice in the international arena.

Agencies responsible for environmental and geophysical issues need to be empowered and resourced to be proactively engaged in mitigation, and to establish a database for environmental accounting. Hydrological stations, for example, can be established at key points to monitor runoffs from mines and processors around the country. Efforts are also required to generate increased awareness and to encourage actions to protect the environment.

6.7. Climate change

GOAL

Adapt to the domestic impacts of climate change and contribute to global efforts to abate greenhouse gas emissions

Background

PNG is directly threatened by the consequences of climate change. The increased frequency and intensity of tropical cyclones and rising sea levels directly affect the coastal and island regions of PNG. The damage to water resources of a projected two to four degree celsius rise in temperature is estimated to cause economic losses amounting to US\$1 billion per year. It is critical that PNG understands how and where climate change is likely to impact on its shores to assist in making decisions for adapting to and mitigating against these impacts. At the same time, PNG can make a significant contribution to reducing global greenhouse gas emissions with good forest management and through the development of its enormous hydroelectricity potential, which is a zero emissions source of electricity (section 4.11).

Deforestation accounts for 17 per cent of global emissions and PNG is the world's ninth largest greenhouse gas emitter with respect to deforestation. There are no incentives in the global system to reduce these emissions and as a key stakeholder, PNG needs to be at the forefront of global negotiations to rectify this. If financial incentives are in place in the global system, not only will PNG and the world benefit from the preservation of its forests, but there will be financial benefits flowing from the international community to the people of PNG. Contrary to popular belief, logging is not the only major cause of deforestation in PNG. Rather, land clearing carried out by subsistence farmers accounts for 46 per cent of deforestation. PNG will therefore need to work with the international community to ensure incentives are provided to subsistence farmers in return for reductions in land clearing.

Rising sea levels will force many coastal communities to relocate. Resettlement of climate refugees will often be costly and raises the risk of conflicts. For example, it is estimated that resettling climate refugees from villages at Caterat Island in the Atolls will cost around K7 million. However costs will vary between communities. In another example, the estimated cost of relocating affected communities around the Lombrum Naval base will be around K26 million.

Energy production currently results in greenhouse gas emission equivalent to 4.69 million metric tons of carbon dioxide, mainly as a result of diesel generation. In comparison, it is estimated that PNG's primary forest stored between 4,724 and 4,735 million metric tons of carbon in 2002. Between 1972 and 2002, through deforestation and degradation via logging, mining and other petroleum activities, 3,397 million tons of carbon dioxide was released.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
PNG risk transfer and adaptation initiative	Very little resources available	Pacific island coastal communities could incur a direct cost of US\$1.4 billion per year due to sea-level rise, resettlement and relocation of climate refugees and further costs due to drought and changes in precipitation.	Adequate level of resources available
Number of meteorological stations	14 (2008)	Extended periods of drought, loss of soil fertility and degradation as a result of increased precipitation will negatively impact on agriculture and food security, particularly in subsistence agriculture and cash crops.	89+ (at least one in every district)
Greenhouse gases	No comprehensive renewable energy program (2007)	Emissions per head are highest in developed countries. However emissions per head are rising rapidly in developing countries as a whole because of their rapid economic growth and their increasing share of energy intensive industries.	Increase investments in clean energy (section 4.11)
Number of tide monitoring stations	2 (2009)	A lack of sea level data would undermine planning efforts for adaptation and mitigation.	20
Climate change research	Limited	Lack of research has impeded the understanding of the implications of climate change for PNG. A strong awareness and education program will ensure people know about the impacts of climate change and thus enable them to build resilience to counter the impacts.	Well resourced
Multi-temporal remote sensed satellite image coverage	1 database system	There is a lack of monitoring of the natural and human built environment. This is needed to enhance planning, monitoring and reporting systems. Vulnerability, risk and cost benefit analysis can be undertaken through this.	20 database systems
Mangrove planting initiative	10,000 seedlings in 2009	The mangroves area in the Pacific islands is expected to decline by between 1% and 13% due to temperature increases of between 2°C and 4°C respectively.	50,000 seedlings

Strategies

PNG can further its interests and those of other Pacific island states by engaging effectively in global climate change negotiations. This would also give PNG the opportunity to highlight the value of natural and plantation forests for the storage of carbon and the value of investing in clean energy reserves.

A national greenhouse gas emissions tax and permits incentive can serve as a catalyst to promote the development of a low carbon society. However this would require considerable expertise and capacity to administer effectively. Until PNG has that capacity, the more cost-effective approach would be to enforce minimum technology and maintenance standards for vehicles and other major sources of greenhouse gas emissions.

Climate change research is needed so that the risks and the opportunities associated with climate change are understood and that informed decisions are made for adaptation and mitigation to build resilience.

Finally, a measured approach to policy development for adaptation and mitigation is needed, guided by advancements in research that improves understanding of the consequences of climate change.

6.8. Natural disaster management

GOAL

Manage the risk of natural disasters

The threat of natural disasters

As a community of tropical islands located along a fault line, PNG faces the risk of cyclones, tsunamis, volcanoes and other natural disasters such as drought. These events will occur from time to time and can be devastating in their effects on communities, on the economy and on the environment.

Between 1997 and 2002, 4.1 million people were affected by a total of 63 major calamities. Over this period, there were 22 major landslides and floods. Half-a-million people were affected at an estimated cost of almost K15 million. Likewise, over that same period, almost 3.2 million people suffered from drought and frost events, at an estimated cost of K85 million. Tsunami events are another concern. The Aitape/Sissano tsunami alone claimed 3,210 lives and cost K31 million.

Further, volcanic eruptions and earthquakes are a threat in some regions. Rabaul volcano erupted in 1994 and has since been emitting ash fall all over the town of Rabaul and the neighbouring communities. This is imposing an enormous economic burden including health costs and relocation costs.

Risk management strategies in response to the threat of natural disasters

There are a number of strategies that will enhance PNG's capacity to mitigate the impact of natural disasters:

- implement and enforce building standards for the construction of infrastructure in disaster prone areas;
- promote awareness of the risk of disasters and how best to respond when disasters threaten, so that communities are well prepared;
- establish an effective emergency line operating 24 hours a day, 7 days a week throughout PNG for the timely reporting of emergencies;
- improve the capacity of monitoring and evaluation mechanisms to predict geophysical threats in order to raise the scope for early warning;

- create a policy and legal framework for the rapid deployment of defence forces in emergencies;
- ensure that disaster management and operation agencies are well coordinated and adequately resourced to ensure a timely and appropriate response in the event of natural disasters;
- increase civil-military cooperation to instill the confidence and coordination required for working together in disaster situations. This will include joint exercises and training in disaster management and disaster response;
- provide adequate training to disaster management agencies; and
- train and work with the UN, the US, Australia and other nation's disaster relief teams in order to gain experience. This will include sending PNG teams to provide disaster relief assistance to other countries.

6.9. Public sector management

GOAL

Attain high standards of public sector management in all levels and institutions of Government

The need for better management

High standards of public sector management involve high standards in the various institutions, departments and agencies through which the Government conducts its business. For PNG to have a prosperous future, good public sector management is crucial as it is the Government that will be relied upon to deliver the foundations of nation building outlined in the *PNGDSP*. Moreover, improving perceptions of the country and of the Government is key to building public trust and investor confidence. PNG does not do well compared with other countries in public sector management as is confirmed by the low rankings of PNG against the *Worldwide Governance Indicators (WGI)* constructed by the World Bank which make comparisons across over 200 countries.

Accountable and transparent service delivery

To date, PNG has not had a good record in the accountability and transparency of service delivery. As a result, service delivery has been weak and corruption continues to be a problem. A root cause is weaknesses in public financial management. Recent initiatives have helped improve public financial management, but much more needs to be done.

The public service

The public service is responsible for the implementation of Government policies, providing policy and technical advice for the Government, and to manage and disburse public funds. Members of the public service are accountable to the Government and tax payers.

Many sectors of the public service face leadership problems and skill shortages. The large presence of high cost foreign advisors and consultants are evidence of this. Accusations of laziness, corruption and mismanagement of public funds are often directed to the public

service. Since independence, the cost of the public service has also been an issue. However, the size of the public service is about 70,000 which is very small by international standards. There is approximately 1 public servant for every 90 people in PNG which compares with developed countries like Australia where the number is about 1 for every 15 people.

Key strategic areas

PNG's targets for 2030 are based on the WGI rankings, as well as the international Public Expenditure and Financial Accountability (PEFA) assessments.

Key indicators	Baseline information	Issues	2030 target/ objective
Rule of law	Bottom 21% in the world	As a result of weaknesses in managing the law and justice system, respect for the law is compromised and contracts that form the basis of the private sector are not secure.	Top 50% in the world
Regulatory quality	Bottom 30% in the world	Weak management has resulted in shortcomings in the design and implementation of regulations.	Top 50% in the world
Public service effectiveness	Bottom 25% in the world	A competent, effective and efficient public service is crucial, but the bureaucracy suffers from endemic weaknesses.	Top 50% in the world
Control of corruption	Bottom 9% in the world	Weakness in public financial management results in the diversion of resources away from essential services and into peoples' pockets. The WGI data is likely to have missed recent gains in this area.	Top 50% in the world
PEFA indicators scoring A or B	34% in 2006	PEFA annual assessments provide a score against various public financial management criteria ranging from A for quality performance to D for unsatisfactory outcomes. Improvement has been shown in recent years but more needs to be done.	100%

Strategies

Substantial improvement to public sector management requires further strengthening of the public service institutions of Government. Improving accountability and transparency in service delivery is crucial and this requires the strengthening of public financial management. Measures to improve public financial management include: improving accounting systems of government; boosting auditing and enforcement capabilities; and institutionalising integrated financial management between central, provincial and local levels of government.

Raising the standards of public sector management will also require:

- developing monitoring and evaluation mechanisms to ensure that public institutions become accountable;
- strengthening systems to ensure due diligence in policy and budgetary processes; and
- developing measures to further improve political stability and the non-violent processes of democracy.

In addition, the whole public service system will be reformed by pursuing innovative ways of doing business such as forging new alliances, sharing knowledge, and reorienting bureaucracies with mechanisms and incentives to attain high standards. Specific measures to revitalise public service institutions to the level of international standards are outlined below:

- develop effective ways to recruit and retain competent public servants who perform to high standards, including mechanisms to enforce competitive merit based recruitment and promotion;
- review and enforce the Public Service Management Act with a performance and output oriented focus, including effective remuneration rewards for good performance and sanctions for poor performance;
- introduce by 2015 minimum criteria of tertiary education for newly appointed executive officers in the public service and by 2020, post-graduate tertiary education for all agency and department heads;
- maintain a database of the skills and education credentials of public service personnel in order to achieve a better match of skills to job requirements. This will lift the efficiency of the public service, particularly if staff movements are flexible within a department or within the public service;
- establish mechanisms to ensure strong compliance with regulations guiding public service performance and with the public service code of conduct; and
- prepare contracts for department heads and executive level public servants that are tied to the relevant sector specific targets as identified in the Medium Term Development Plans.

6.10. National statistics systems

GOAL

Provide a high quality national statistical service for development planning, policy formulation, decision making and research through the production of accurate, comprehensive and timely statistics of an international standard

The importance of accurate statistics

Official statistics are collected to inform planning, policy and research both within government and by the wider community. They provide an objective view of the changes taking place in national life and allow comparisons between periods of time and geographical areas. Accurate statistics reveal progress and more importantly, a lack of progress, highlighting areas where policy needs to be revised or where the implementation of policy needs to be strengthened. The role of national statistics will therefore be critical for monitoring the implementation of *Papua New Guinea Development Strategic Plan*, and the Medium Term Development Plans. Of great concern is that many statistical series have simply not been produced, including a large range of basic social and economic data that would normally be the minimum requirement for official statistics provided by government agencies. In particular, there is a complete absence of regular economic data for rural areas where 85 per cent of the population reside. In many cases, data is collected but not adequately processed, analysed and disseminated.

Key strategic areas

Key indicators	Baseline information and issues	2030 target/objective
Online access to official statistics	Public access to official statistics in PNG is poor with limited internet access of data.	All official statistics to be free and online
Census collections	The national census is conducted every 10 years, and while data collection is reasonable, processing and dissemination is weak.	High quality census collections every 5 years
Social indicators	Statistics for social indicators including health, education, and crime are weak and irregular, yet crucial for understanding and monitoring social progress.	Regular and high quality social survey collections
Labour market data	Labour market data, including for the informal sector, is among the most important of statistical collections yet regular official surveying is nonexistent.	Regular collection of wage and employment data
Economic data	The collection of official economic data is very weak, including basic data such as GDP and inflation. Rural economic data is virtually nonexistent.	Regular collection of all mainstream economic data series

Strategies

PNG's national statistics will only improve if the official collection agency is properly resourced with competent and experienced staff. The capacity of the official statistics agency will be enhanced by investing in the organisation's human resource management and through partnerships with international agencies. Ongoing training of statisticians and support staff will be instituted to ensure PNG's statistics are accurately collected, compiled and disseminated.

Decentralising statistical collection services to each province will improve the agency's capacity to collect rural data. Statisticians can also be located in key provinces to further improve the processes in collecting and compiling data. Quality control is essential for ensuring accurate data. International standards will be adopted to ensure data is of a high standard.

National statistics are used in many areas of government. There is, therefore, a need for coordination between the official statistics agency and agencies that use these statistics. In addition, many government agencies currently collect statistics. It is costly for the Government to support multiple data collection agencies. It also imposes a high cost on industry to be faced with multiple questionnaires from multiple agencies. It is therefore necessary to concentrate all data collection responsibilities under a single agency and to properly resource that agency. This, in turn, will require a careful review of the legislative framework.

6.11. International relations and security

Since independence, PNG's foreign relations have been dominated by PNG's dependency on aid. Now, however, PNG is moving towards financial independence, building on several years of political stability and prudent macroeconomic management. By implementing the *PNGDSP*, PNG will move from being a recipient of aid to being a donor. By 2030, PNG will be

contributing effectively to aid, trade and investment in the Pacific region and representing the region's priorities in international forums.

Trade, and not aid, will guide PNG's bilateral relations in the future. PNG's relations with key former donors including Australia will no longer be one of donor-recipient. Rather, PNG's relations with Australia will be one of partnership, with a focus on trade and investment that benefits both countries. PNG's LNG development, for example, provides opportunities for partnership between PNG and Australia to the benefit of both nations.

In the Pacific region more broadly, PNG will willingly share the benefits of PNG's prosperity with its Pacific island neighbours, aiming to foster strong trade and investment relations throughout the Pacific. By providing technical capacity, aid and leadership, PNG will be a partner with other nations such as Australia and New Zealand in promoting development in the Pacific region.

In international forums, PNG's view will be respected, clearly representing the interests of Pacific island nations. PNG will be an influential member of the international community, with a strong capacity to analyse and influence international policy.

6.11.1 Foreign Policy

GOAL

Strong and pragmatic foreign relations that are in the interests of PNG and the region

PNG has a good standing in the international community as a democratic and peaceful nation, a status that will be built upon during the *PNGDSP* period. Foreign policy encompasses a set of goals outlining how the country will interact with other countries economically, politically, socially and militarily, and to a lesser extent, how the country will interact with non-state institutions and safeguard the country's national interest, national security, ideological goals and economic prosperity. Given PNG's geographic location nestled in the midst of Indonesia to the west, Australia to the south and Asia to the north, it is faced with both challenges and opportunities. There are also responsibilities associated with PNG's leadership role in representing the interests of Pacific island countries. In this regard, PNG will engage effectively to see strong cooperation for mutual benefits and friendship.

PNG will continue to strengthen its ties with traditional partner countries such as Australia while engaging with new partners for trade and technical cooperation that will benefit PNG.

Strategic outcomes in trade diplomacy

Australia is PNG's most important trading partner, receiving 44 per cent of PNG's exports. The deepening of the trade relationship with Australia will see it continue to be the most important export destination in 2030. However, its share of exports will fall to under 30 per cent as trade ties are strengthened with the high growth countries of China and neighbouring South East Asia.

Countries/regions	Exports in 2008 (million Kina)	2030 target (million Kina)	Average annual growth
Australia	6,840	22,100	6%
Japan	2,049	3,700	3%
European Union	2,048	6,500	6%
South East Asia	1,625	18,700	13%
South Korea	729	2,300	6%
China and Hong Kong	646	10,700	15%
All other countries	1,718	11,500	10%
Total exports	15,656	75,500	8%

Strategies

The future emphasis in foreign diplomacy will be to forge relationships on a foundation of trade. The promotion of trade will provide a strong and sustainable basis to PNG's relations with other countries and will provide the criteria for prioritisation of relationships between countries. In this way foreign policy would be devised to reap greater economic and social prosperity for PNG. Some specific priorities will include:

- building foreign relations to take advantage of the opportunities that globalisation presents and to mitigate against the disadvantages, particularly in trade and investment policies, and in accessing innovations in information technology;
- providing leadership among the South Pacific island countries on global issues such as international trade, climate change, the environment, transnational crime and international terrorism;
- engaging effectively with new partners, especially emerging economies, through trade diplomacy by integrating with regional trading networks and other mutually beneficial arrangements through strategies described in section 3.7;
- gradually participating as a donor, especially to Pacific island countries, not only in times of adverse needs, but also for the development of aid for trade relationships; and
- Monitoring implementation of all global and regional commitments PNG acceded to in order to maximize their benefits for PNG.

6.11.2 Immigration

GOAL

The best systems that benefit PNG in the area of skills and entrepreneurial expertise, while upholding safety measures against illegal immigration.

PNG's immigration policies will be strengthened to promote growth, social cohesion and national security. As part of this, stronger links with PNG diaspora living abroad will be facilitated, including through dual citizenship or permanent residency status. This will allow

PNG to tap into their human and financial capital and international networks. PNG is otherwise mindful of the need to attract skilled migrants to work and live in PNG, reinforcing the value of the strategies that address law and order and other issues of significance.

On the other hand PNG will not condone those who enter the country illegally by ensuring that systems and processes are run effectively using innovative technology. Only those meeting the country's requirements will be allowed to enter for work and business.

PNG needs to expand its capacity to manage the arrival of refugees and illegal entrants in boats. Construction of detention centres at key border points would avoid the cost of relocating these people to PNG's correctional detention centres.

Importantly, opportunities for Papua New Guineans to work abroad will be facilitated. A key benefit is that income remitted from abroad will help support communities in PNG. In addition, by sending Papua New Guineans abroad, links with international networks will be developed, facilitating access to skills, capital, technology and business opportunities.

6.11.3 Foreign aid

GOAL

An advanced stage of foreign aid management and attaining independence from foreign aid

Foreign aid dependency

Since independence, PNG has been a recipient of foreign aid from various industrialised countries, multilateral financial institutions and global funds. However, despite the outlay of considerable funds, the impact on the quality of lives of the citizens of PNG has been disappointing.

International experience shows that countries that have succeeded in becoming prosperous have done two things: (1) driven their own development agenda and (2) educated their people with the skills needed for nation building. To date, PNG has failed in educating its people and as a result, the bulk of foreign aid funds committed to PNG are consumed in the hiring of skilled foreign personnel in the form of technical assistance (TA) to undertake the task of nation building. The result is that PNG is not in full control of its development agenda and the international experience demonstrates that this formula will not succeed.

Due to the lack of a proper recording system for grants and technical assistance in particular, the Government is not able to confirm how much aid resources it has received since independence and its full impact. In line with the aid effectiveness agenda that PNG acceded to, there needs to be systems within government that ensures the country's aid program is aligned to the priorities set out in the *PNGDSP* and *MTDPs*. It is also envisaged that with such systems in place, there will be a strong degree of respect and optimism towards the Government's leadership in driving the aid program to attain sustainable development outcomes, including transparency in the manner in which the program is delivered.

PNG is a signatory to the Paris Declaration and the Accra Agenda for Action on aid effectiveness. These are international obligations in the provision of aid that emphasise local

ownership, mutual accountability and responsibility, harmonisation, alignment and managing for development results. Under these agreements aid recipient countries such as PNG should take the lead in managing how donor funds are spent in their countries in line with partner Government’s development priorities. In addition, donors are committed to using recipient country’s systems for channelling their aid.

Key strategic areas

Key indicators	Baseline information	Issues	2020 target/objective
TA provided by donors	More than 70% of aid	Donor spending on the infrastructure PNG needs for nation building is small relative to TA. For the <i>PNGDSP</i> , the target will be to shift all donor funding into nation building and to achieve full independence from donors in the provision of skilled personnel.	By 2020, less than 5% of aid to be TA

Strategies

Over the twenty years to 2030, PNG will move from dependence on aid to being a donor in the Pacific region. As PNG moves toward prosperity, PNG will welcome opportunities to extend technical assistance and support to other Pacific island nations, in partnership with Australia and New Zealand and other neighbouring countries. PNG’s recent agreement with the Solomon Islands is a step in this direction.

Under the *PNGDSP* and in line with international commitments, foreign aid to PNG will be transformed with the goal of maximising benefits of aid and attaining independence from donors. The main concern relates to the dependence on donors for providing skilled personnel. Under the *PNGDSP*, the target will be to achieve by 2020 full independence from donors in the provision of skilled personnel. Attention will be focused on developing partnerships with donors to help resource the building of infrastructure, particularly roads, ports, schools and hospitals, as well as assisting with higher education.

The core strategy for phasing out aid for technical assistance will be to boost higher education of Papua New Guineans to provide the skilled people needed to replace foreign skilled personnel. This will be achieved by: (1) strengthening the higher education system as outlined in section 4.5; and (2) working with donor partners to significantly increase scholarships for post-graduate tertiary education in foreign universities.

Until the investment made in higher education produces enough skilled Papua New Guineans, foreign skilled personnel will still be required to bridge the skills gap in government departments and agencies. To achieve independence from donors by 2020 the Government will take full control of the hiring of foreign skilled personnel with independent mechanisms for providing technical assistance and funding. Taking these measures for aid independence will result in the PNG economy being K450 million better off by 2030 with 7000 additional jobs.

A commitment to the Paris Declaration principles and implementation of the Annual Action Plan of the PNG Commitment on Aid Effectiveness will require the following.

Ownership

The Government will clearly define its operational development policies and the processes for interaction with development partners. This will require the Government to provide strong leadership in coordinating development assistance, including NGOs and private donors.

Alignment

The Government will strengthen its institutional capacity through sustained reform and capacity building in key public sector areas and require development partners to use Government systems and processes. Considerable resources are wasted when technical assistants develop their own systems and processes.

Harmonisation

Measures will be designed to ensure development partners implement common arrangements and simplify processes and procedures. Identification of the comparative advantages of each development partner, aligning support and where appropriate, ensure that the activities and coordination at the sector level is led by one development partner.

Managing for results:

Assess the effectiveness of development partners' assistance against performance indicators in the *PNGDSP* and in the MTDPs. Donor funding will shift from program approaches to specific projects to improve transparency and accountability and facilitate monitoring and evaluation.

Mutual accountability:

Strong measures are required to ensure development partners provide timely, transparent and comprehensive information on aid flows and projects. Periodic reviews will be needed, including joint Government-development partner reviews, of the foreign aid program.

6.11.4 Defence and security

GOAL

A defence force that safeguards PNG's sovereignty and its security, including by contributing to the task of nation building and to disaster relief

Background

Defence and security are the responsibility of the Government. The lead agency responsible for PNG's defence and security is the PNG Defence Force (PNGDF), together with the National Intelligence Organisation, Internal Revenue Commission (Customs), as well as the law and justice sector agencies. The National Constitution outlines that the PNGDF is responsible for the protection of PNG's borders; the fulfillment of PNG's international obligations; providing disaster relief; helping to maintain public order and security; and "to participate to the maximum in the task of national development and improvement".

As part of the global community, PNG is widely exposed to threats such as transnational crime, gun trafficking, pandemics, drug trafficking, environmental degradation and natural disasters, human rights violations, terrorism, violation of intellectual property rights, piracy, tribal warfare, human trafficking and illegal migration. From within, social unrest also

threatens PNG's security, for example when disputing communities resort to armed conflict or when political protests result in disorder.

As PNG develops and becomes more influential in the international community, the nature and degree of threats to PNG will evolve. PNG's capacity to ensure its security will also grow including in the areas of technology, surveillance and intelligence.

PNG being a member of the United Nations has the potential to field its defence personnel to serve in international missions under the auspices of the UN. PNG has demonstrated its credibility in this role in the Vanuatu crisis and in the ongoing Regional Assistance Mission for Solomon Islands (RAMSI). The minimum prerequisite for international duties is to have well trained, well equipped, and well disciplined forces.

Under the Constitution, the defence force is mandated to engage in the task of national development, for example by undertaking civic works, and to respond to natural disasters and emergencies.

Key strategic areas

Key indicators	Baseline information	Issues	2030 target/objective
Number of PNGDF personnel	2000 (1 for every 3,300 citizens)	The size of PNG's defence force is inadequate for ensuring internal and border security. By employing PNGDF in nation building activities and by contributing to UN service, PNG will be able to afford a larger force.	10,000 (1 for every 1000 citizens)
Maritime surveillance capacity	Limited	Without effective maritime surveillance, there are growing problems with illegal border crossings, trafficking, poaching, piracy and money laundering.	Establish effective surveillance
Marine capacity	4 patrol boats & 2 LCH	The patrol boats are too small to be effective and the Landing Craft Heavy (LCH) vessels are obsolete, purchased in 1948. For effective surveillance, PNG currently needs 8 large patrol boats and at least one larger vessel capable of remaining at sea for several weeks.	At least 8 large patrol boats and at least 2 larger vessels
Air capacity	7 planes and 4 helicopters	Some aircraft are not operational and most of the others lack the capabilities PNG requires. PNG requires sufficient aircraft to lift the force that is available for call out. PNG also requires aircraft that can land on a very short airfield. Surveillance aircraft would also enhance PNG's maritime surveillance capacity.	Effective air force
Size of force available for call out	1 company (100 personnel)	Because of a lack of resources, the PNGDF cannot sustain more than one company in an operation at any one time.	1 battalion (1000 personnel)
Land craft capacity	2 15-seater buses	The PNGDF has to hire out vehicles in order to transport personnel. The open back vehicles that are most commonly used are inappropriate for military transportation. Some barracks have no vehicles available at all.	Land rovers, troop carriers and other machinery as required
Size of reserve force	Nil	Legislation is required to allow the creation of a reserve defence force. A reserve force would increase the capability of the PNGDF, but at less cost.	An effective reserve force
Training facilities	2 training facilities still in operation but in poor condition	The training facilities that exist are run down and PNG has no maritime defence training facility. Further, traditional defence partners are reducing the spaces available for PNGDF personnel. To achieve a substantial increase in capacity, PNG will need to invest heavily in training facilities.	Sufficient for achieving and maintaining a 10,000 strong force

Key Indicators	Baseline Information	Issues	2030 Targets/ Objectives
Regional engineering bases	1 partially complete	Regional engineering bases were proposed in the 1999 Defence White Paper to support the PNGDF's capacity to develop infrastructure in rural locations.	At least 4 fully complete
Forward operating bases	2	PNG's borders are insecure because there are only two forward operating bases and these are both in need of upgrading.	At least 8 well equipped

Strategies

The following measures will be taken to enhance the nation's security:

- enhance defence and security capacity by building equipment, infrastructure and human resource capacity to provide effective protection against all forms of threats and to strengthen PNG's capacity to contribute to nation building, international peace efforts and disaster relief;
- increase the use of the military for nation building activities, for example the construction of quality infrastructure in rural areas, the provision of emergency and rescue services, and the provision of surveillance services. This is mandated by the Constitution and PNG will be able to afford a larger defence force if it makes a direct and valuable contribution to the development of the nation;
- equip and use the military to provide relief from natural disasters, both within PNG, as part of PNG's donor contribution among Pacific islands, and as part of PNG's contribution to UN efforts. Not only will PNG contribute to the wellbeing of other nations, the funding received from the UN for PNG's contributions will help support a larger defence force. The International Obligations Bill, once passed, will give the Government greater power to deploy the PNGDF to provide disaster relief to other countries;
- cater for female recruits to ensure the military is able to attract and retain female personnel;
- establish a reserve force, particularly in areas where border security is required;
- improve the capacity of defence and security agencies at border posts so that they effectively screen people and personal effects at border entry and exit points;
- shift from a state-centric view of security to a more human-centric view for protection of the population from threats that are not associated with military conflicts (civic activities);
- enhance security cooperation between the security law enforcement agencies to maintain peace; and
- improve the delivery of basic services in rural areas and in areas of poverty in order to prevent foreign opportunists capitalising on the poor welfare status of these people to pursue their non-traditional warfare activities. This strategy includes developing border economic corridors, for example the proposed pilot Border Trade and Investment Development Project to be financed by the Asian Development Bank.



PART 7

PARTNERSHIP & COOPERATION



Implementing the *PNGDSP* requires a collaborative effort among all major stakeholders in PNG. The government central agencies, implementation agencies and supporting institutions need to coordinate their efforts if they are to effectively implement the *PNGDSP*. Development efforts of donor agencies, churches and other credible non government organisations need to be aligned with the Government if they are to deliver concrete development results. Some of the mechanisms and approaches required for effective collaborative efforts in delivering the *PNGDSP* are highlighted in part 7.

7.1. Whole of government collaboration

GOAL

A unified and dynamic public sector that efficiently delivers on government goals with all central government agencies working in collaboration

Principles for engagement

Implementation of the *PNGDSP* requires an effective and efficient effort from government central agencies, implementation agencies and supporting institutions. To achieve the *PNGDSP* objectives, these agencies and institutions must not only be effective as entities, but must also interact effectively with each other to ensure that the overall public service machinery is effective. This will require a concerted and well coordinated contribution from all agencies and institutions.

In addition, over the twenty year *PNGDSP* period, new core competencies are likely to be needed to address new developments. The culture of each individual organisation must embrace innovative ways to inspire and engage staff, create teams and networks and to use them effectively.

Strategies

Implementation of whole of government collaboration will require the following strategies:

- strengthen the collaboration between central government agencies and otherwise improve networking among public servants by facilitating dialogue and encouraging cooperation;
- resource and enforce the coordinating functions of central agencies, in particular, ensure that public institutions comply with central directives;
- ensure that coordination mechanisms of sectors are established and sector meetings are institutionalised for agencies to work towards achieving set targets;
- revise the legislation and regulations that guide agencies to ensure there is a clear demarcation of responsibilities between various central government agencies;
- encourage knowledge networking both within and between agencies, including by encouraging the use of e-government and internet resources and by ensuring that all staff have access to the knowledge capital of their agency and the opportunity to learn from best practices within other agencies; and

- foster a global search for ideas, expertise and innovation and effectively use this global knowledge to solve local problems.

7.2. The private sector

GOAL

Partnership between the Government and the private sector to provide services and public infrastructure

Principles for engagement

Under the *PNGDSP*, the private sector will be the vehicle for prosperity and jobs, because it is through this sector that businesses are created and expanded. The strategies outlined throughout the *PNGDSP* will lay the foundation for private businesses to seize new opportunities and flourish. Importantly, the private sector can also be a partner with the Government in building infrastructure and providing essential services to the people of PNG. Public private partnerships (PPP) will therefore be a cornerstone of the implementation of the *PNGDSP*. Innovative approaches to PPP will be developed to exploit the potential for the private sector to contribute to the building of infrastructure and the delivery of services. Careful planning is paramount to ensure that PPP arrangements are designed to achieve the best possible outcomes for the people of PNG.

Bringing the private sector into partnership with the Government brings substantial advantages including access to technology and know-how, access to efficient and effective operational practices, and access to finance and resources.

Strategies

The following strategies will build on those already identified in other parts of the *PNGDSP* for realising the full potential of the private sector (for example strategies in section 3.4);

- strengthen and improve the policy dialogue between the private sector and the Government both to convey Government policy thinking and to gauge private sector views;
- develop innovative and effective PPP mechanisms and, where appropriate, implement the public private partnership policy for delivery of major infrastructure and services in PNG;
- encourage private entities to accept their social responsibility, for example by undertaking social development programs or by providing grants to development agents such as the economic corridor implementation agencies discussed in part 2; and
- ensure private entities adopt sustainable practices and invest in science and technology research and development.

7.3. Development partners

GOAL

Strong and decisive leadership in driving the aid program forward to achieve sustainable economic growth

Principles for engagement

Development partners are the local and international organisations that provide development assistance to PNG. Currently, PNG receives overseas development assistance from five bilateral donors – Australia (AusAID), Japan (JICA/JBIC), New Zealand (NZAID), People’s Republic of China, and People’s Republic of Korea – and a number of multilateral donors – European Union, World Bank and Asian Development Bank. In addition, a number of agencies of the United Nations provide assistance (e.g. UNDP, UNICEF, UNFPA, UNHCR, FAO, WHO, GEF, UNHABITAT, UNIFEM). PNG also receives funding and technical assistance channeled through both international and local NGOs. Furthermore, there is a proliferation of new players such as private foundations (e.g. Clinton Foundation) and sector-specific vertical programs (e.g. Global Fund to fight AIDS, Tuberculosis and Malaria) that help to ameliorate the hardships faced in PNG.

PNG is a signatory to the Paris Declaration on aid effectiveness and the Accra Agenda for Action. In 2008, the Government signed the PNG Commitment on Aid Effectiveness, which proposes actions and monitorable targets (for 2012) to implement the principles of the Paris Declaration: ownership, alignment, harmonisation, managing for results and mutual accountability section 6.11.3). The Government will continue to engage with the development partners through the joint technical work team on aid effectiveness and annual donor consultation forums to further implement the above joint commitment. As per the PNG commitment on aid effectiveness, an aid coordination strategy will be developed and implemented.

Strategies

Achieving independence from aid is crucial in PNG’s future engagements with development partners. The *PNGDSP* strategies to achieve this independence are outlined in section 6.11.3 with a focus on reducing technical assistance, whilst continuing to welcome initiatives of development partners to fund investments and essential services. PNG is committed to pursuing the Paris Declaration principles and to implementing the annual action plan of the PNG commitment on aid effectiveness. In addition, PNG will participate in and take a leadership role for the Pacific in future international forums for development assistance.

7.4. Churches

GOAL

Effective health, education and community service delivery through a close and sustainable partnership with PNG's churches

Principles for engagement

For the purpose of development planning in PNG, churches refer to the predominantly Christian organisations that have a long history of delivering basic social services to the heavily populated rural areas of PNG where government services are inadequate. As well as promoting integral human development through spiritual programs, churches play an important role in the delivery of essential services such as education and health. In recognition of this, the Government has embarked on initiatives that strategically involve churches through appropriate policy frameworks and programs to enhance the delivery of these basic services.

Strategies

Strategies for strengthening service delivery partnerships with churches include the following:

- implement and further develop the policy framework that guides the partnership between the state and the churches;
- develop close working relations to include churches in implementing relevant programs that contribute to the goals of the *PNGDSP*;
- engage church efforts in combating law and order problems as part of their basic service delivery responsibilities (section 4.2); and
- establish a process to hold periodic joint coordination meetings, and independent monitoring mechanisms to assess performances and to facilitate a deeper, more engaging and sustained development partnership.

7.5. Civil societies and community based organisations

GOAL

Civil societies organisations and community based organisations will complement the Government in service delivery

Principles for engagement

Civil societies organisations (CSOs) and community based organisations (CBOs) in PNG are, for the most part, legally constituted organisations created by private entities or people with no participation or representation in government. Often CSOs and CBOs implement programs that address social and economic issues affecting communities, especially in rural areas. Since independence, PNG has seen an increase in the number of international and local CSOs and CBOs, private donors and churches operating in the country.

The strength of CSOs and CBOs lies in their proximity to the people, their flexibility and the high degree of involvement and participation in their activities. These strengths lead to appropriate solutions that are well accepted by local communities. CSOs and CBOs can therefore provide efficient, innovative and cost-effective approaches to difficult social and economic problems.

Strategies

There are areas where the Government can help to strengthen the operations of legitimate and credible CSOs and CBOs and thereby improve the impact of their development efforts. The Government should provide leadership by clearly articulating the need for CSOs and CBOs in specific areas and to improve their capacity where applicable.

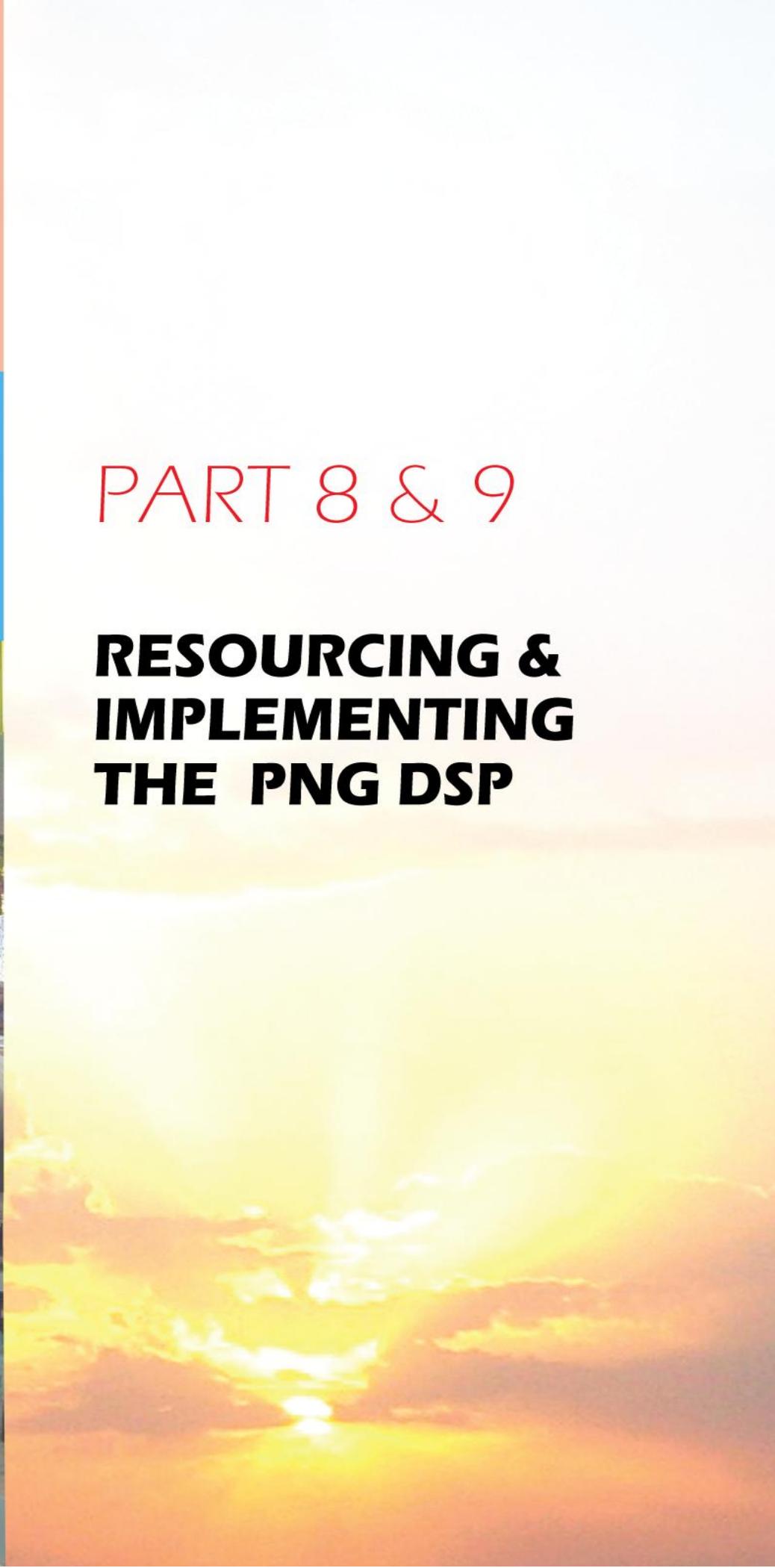
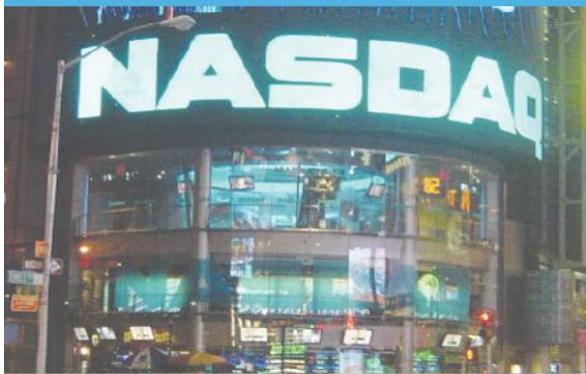
A policy and regulatory framework is required to ensure the transparency and accountability of CSOs and CBOs to improve their governance. Under the *PNGDSP* it would become mandatory for CSOs and CBOs to be monitored by the agency responsible for planning and development to ensure their effectiveness. This would require all CSOs and CBOs to meet a national minimum standard that will be clearly stipulated in the regulatory and policy framework.

In addition, their effectiveness would be enhanced by improving the coordinated flow of information among CSOs and CBOs, and with stakeholders, including government and development partners. This can be done through the formation and expansion of networks at national and provincial levels. Public forums for CSOs and CBOs will be promoted to discuss development issues to identify common concerns and practical experiences with key stakeholders.



PART 8 & 9

RESOURCING & IMPLEMENTING THE PNG DSP



8.0 Resourcing the PNGDSP

The implementation of the *PNGDSP* requires effective mobilisation of physical and financial resources. In particular, interventions at sectoral and provincial levels will require careful scoping to achieve the greatest benefits from the limited available resources. The approach to resourcing the *PNGDSP* is discussed broadly in this part.

8.1. Resourcing the PNGDSP strategies

The *PNGDSP* will be largely self financing

The implementation of the *PNGDSP* will require a very large amount of money. However, progress made from implementing each strategy of the *PNGDSP* will generate tax revenue for the Government. This additional revenue will be a direct result of the expected surge in economic activity. For example, more jobs will result in additional income tax and higher household incomes will lead to higher government revenue in the form of GST. Estimates of both the costs of implementation and revenue earnings indicate that the *PNGDSP* will be largely self financing. Furthermore, policy measures can be implemented to deliver efficiencies and greater Budget savings.

The *PNGDSP* strategy of substantial public investments is an approach consistent with that of successful developing countries of East Asia, where rapid rates of development and large public investments were largely self-financed due to the tax revenues generated. As a result, these countries do not have significant debt burdens, despite their huge public investment programs.

Preliminary estimates of the total cost to the recurrent and development budgets of implementing the *PNGDSP* will be almost K251 billion over the years 2010 to 2030. This only accounts for the high cost items of roads, ports, airports, law and order initiatives, and investment in human capital through the provision of education and health services. While it is likely that costs can be significantly reduced by a number of measures proposed in the *PNGDSP*, the preliminary estimates provide a starting point.

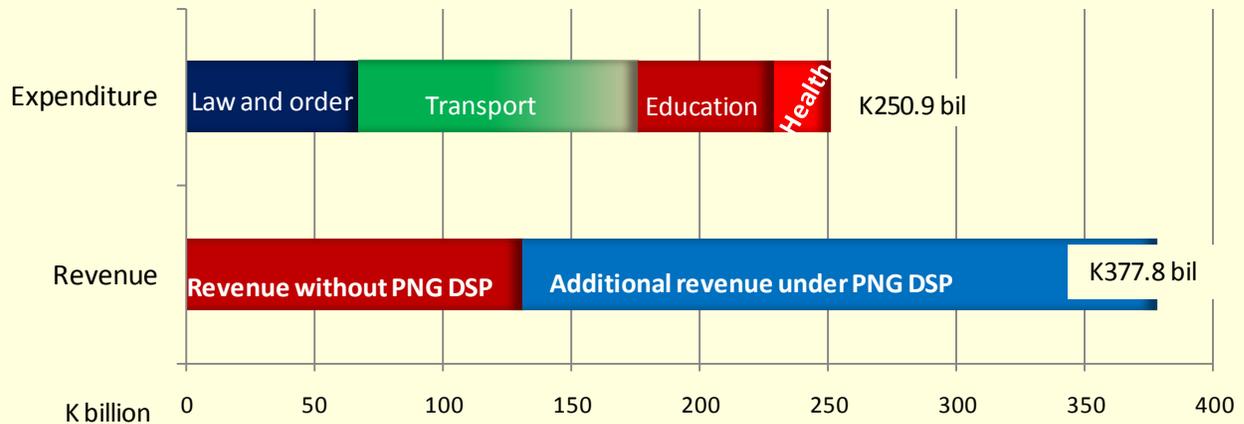
However the strong growth envisaged under the *PNGDSP* also contributes to Government revenues in the period 2010-2030 inclusive. Without the *PNGDSP*, Government revenues will amount to just K131 billion for the twenty year period of 2010-2030. Whereas the sum of all government revenues over the years 2010 to 2030 are expected to amount to K377.8 billion under the *PNGDSP* (figure 8A), exceeding the estimated costs by K126.8 billion.

However not all costs have been allowed for. Other significant items not accounted for in these preliminary estimates include water and sanitation, and rural electrification. These investments will generally need to be funded by the Government, because the social benefits substantially exceed the private returns to investors.

8A

Impacts of the PNGDSP on government revenue and expenditure

Revenue earned compared with the major costs of implementation, 2010 to 2030



Options for financing shortfalls

Once these other costs are allowed for, it is possible that total costs will exceed total revenue over the 2010 to 2030 period. Donors will be asked to assist in bridging any shortfall through grants and concessionary loans (figure 8C). As GDP grows, PNG will have increased capacity to expand debt through concessionary loans while maintaining its current low debt to GDP ratio.

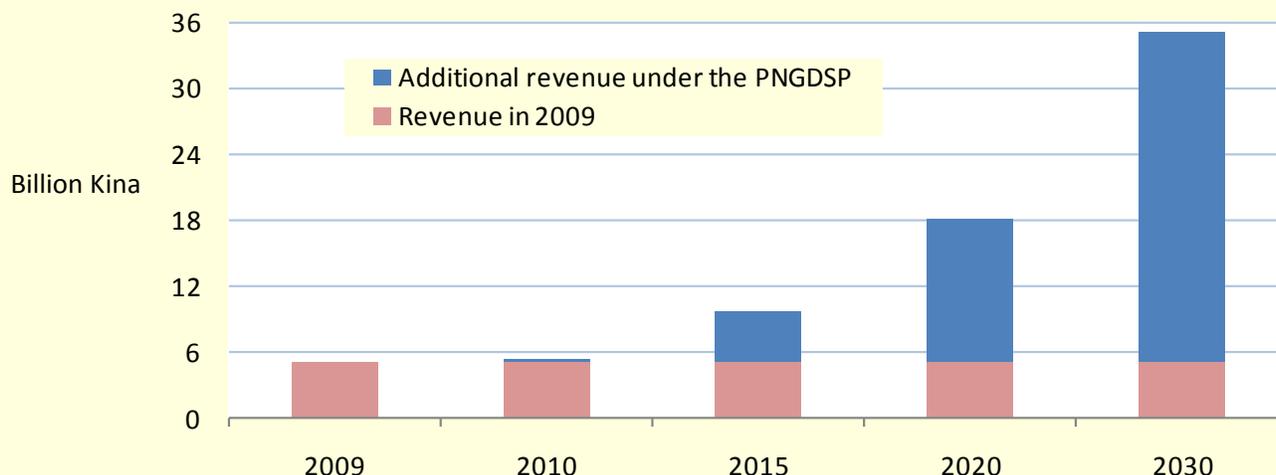
Increasing long term debt by taking on commercial loans is to be avoided given the increased cost of servicing such loans. However, there may be periods of temporary shortfalls in resources where implementation costs exceed the revenues generated, leading to Budget deficits. In this case, commercial loans are a viable short term option to finance Budget deficits in accordance with the PNGDSP requirement that deficits are temporary and do not exceed 4 per cent of GDP.

Such deficit financing is most likely to be needed in the period to 2016. This is because expenditure on investments under the PNGDSP will have a lagged impact on economic activity and revenues. The boost in Government revenues expected after 2016 from the LNG Gas Project provides security that the deficits will be short term and that any commercial loans can be quickly repaid.

Figure 8B provides estimates of the growth in annual revenues over time under the PNGDSP. In the initial 5 year period the gain in revenues is small as the PNGDSP takes time to have effect, leading to the likelihood of temporary Budget deficits. Revenue is expected to grow rapidly thereafter so that by 2030, annual revenue will be K30 billion above the 2009 level.

8B Annual revenue generated from 2010 to 2030

Additional amounts compared with 2009



Policy initiatives for cost savings

The cost estimates provided above do not take into account the impact of four key policy initiatives that have the potential to deliver substantial cost savings. These are: partnering with the private sector, good governance, utilising economic corridors and the sequencing of strategies.

The Government can cut back on the costs of implementing the *PNGDSP* by relying more on the private sector. This is a key purpose, for example, of the 2008 National Public Private Partnership Policy. Competitive and transparent tender processes can be used to identify private businesses to build and maintain public investments – such as roads, hospitals and schools – at least cost to the Government. Private schools, for example, can be encouraged to provide elementary education in remote, rural villages.

Good governance is vital for ensuring that government revenues are used well for the benefit of the entire country. The *PNGDSP* envisages a number of strategies to improve governance, including strengthening the public service, improving law and order and improving accountability of all public institutions.

Economic corridors are a means of concentrating limited investment funds, to ensure that full advantage is taken of the substantial economies of scale and scope associated with large service sector infrastructure. Economic corridors therefore increase the returns flowing from infrastructure investment.

Careful sequencing of the *PNGDSP* is required because some strategies will generate substantial additional revenues. High revenue earning strategies, for example those that promote development of gas and mineral resources and those that facilitate competition, need to be a priority early in the *PNGDSP*, so that revenues generated can be reinvested into other strategies. In this way, the *PNGDSP* can remain largely self financed. There are other considerations when sequencing that also have revenue implications and these are considered in section 8.2 below.

8.2. Sequencing the PNGDSP strategies

Successful implementation of the *PNGDSP* will depend on how well strategies are sequenced. While each Medium Term Development Plan (MTDP) is designed to achieve progress in every aspect of the *PNGDSP*, some parts will need to be given higher priority in the early MTDPs.

Good progress must be made early on in the *PNGDSP* period, so that revenues are generated to support ongoing *PNGDSP* investments. This means early priority needs to be given to those policy areas that are preconditions for the success of all other parts of the *PNGDSP*, and on those strategies that generate substantial net revenues.

Fiscal and monetary stability, an effective land system, law and order, road access and governance are all essential for attracting investment in agriculture and in other major sectors of the economy, and so become priorities early in the *PNGDSP*. Likewise, encouraging competition is a low cost policy that facilitates both economic progress and efficient delivery of services. Introducing competition into the mobile phone sector for example, has generated an unprecedented improvement in phone services throughout PNG.

Similarly, education needs to be given high priority early in the *PNGDSP*. While the benefits of primary and secondary education will not manifest until about 10 years later, a highly productive workforce will be essential by then to ensure the success of the *PNGDSP*. Higher education is also a key priority to equip the workforce to implement the *PNGDSP* and build the nation. Moreover, short term economic gains from higher education are available by replacing expensive foreign workers.

Transport, the provision of public utilities and the secure supply of energy are all needed to facilitate investment across the economic sectors of PNG, from agriculture to manufacturing to tourism. However the costs of providing this infrastructure are lower and the returns are higher when land is accessible, when crime is not an impediment, when funds are well managed, and when providers are competing by offering higher service and lower prices. At the same time, effective infrastructure services help to reduce the cost of providing rural education and law and order. Making all of these areas a priority in the early MTDP will therefore create a virtuous cycle of growth, establishing the foundation for PNG's prosperity under the *PNGDSP*.

The issues of sequencing have been covered in the *PNGDSP* only in broad terms. There are important details that will be explored further in the Medium Term Development Plans.

8.3. Managing mineral revenues through a public finance and investment strategy

The proposed gas projects will bring considerable revenues to PNG. Mining is also expected to continue to provide strong revenues as it has done since independence. The revenues that are generated from gas, oil and mining belong not just to the current generation but to all future generations. It is therefore important that these revenues are *invested judiciously* so that future generations will benefit. The investment in nation building that is detailed throughout the *PNGDSP* is the most important and most productive way to invest revenues from gas, oil

and mining. For example, investment in schools, hospitals, roads and ports is an investment in PNG's prosperity from which future generations will benefit. Such investments will convert non-renewable revenues into sustainable and renewable development.

Figure 8C depicts a public finance and investment strategy for managing revenue flows and investing these flows in PNG's future. A core principle of the public finance and investment strategy is that all LNG gas revenues are kept out of the Recurrent Budget. Instead, these revenues will be directed to the Development Budget and to investment funds. Some of the key characteristics of the public finance and investment strategy are outlined below.

Development Budget

The Development Budget will have four sources of revenue (figure 8C):

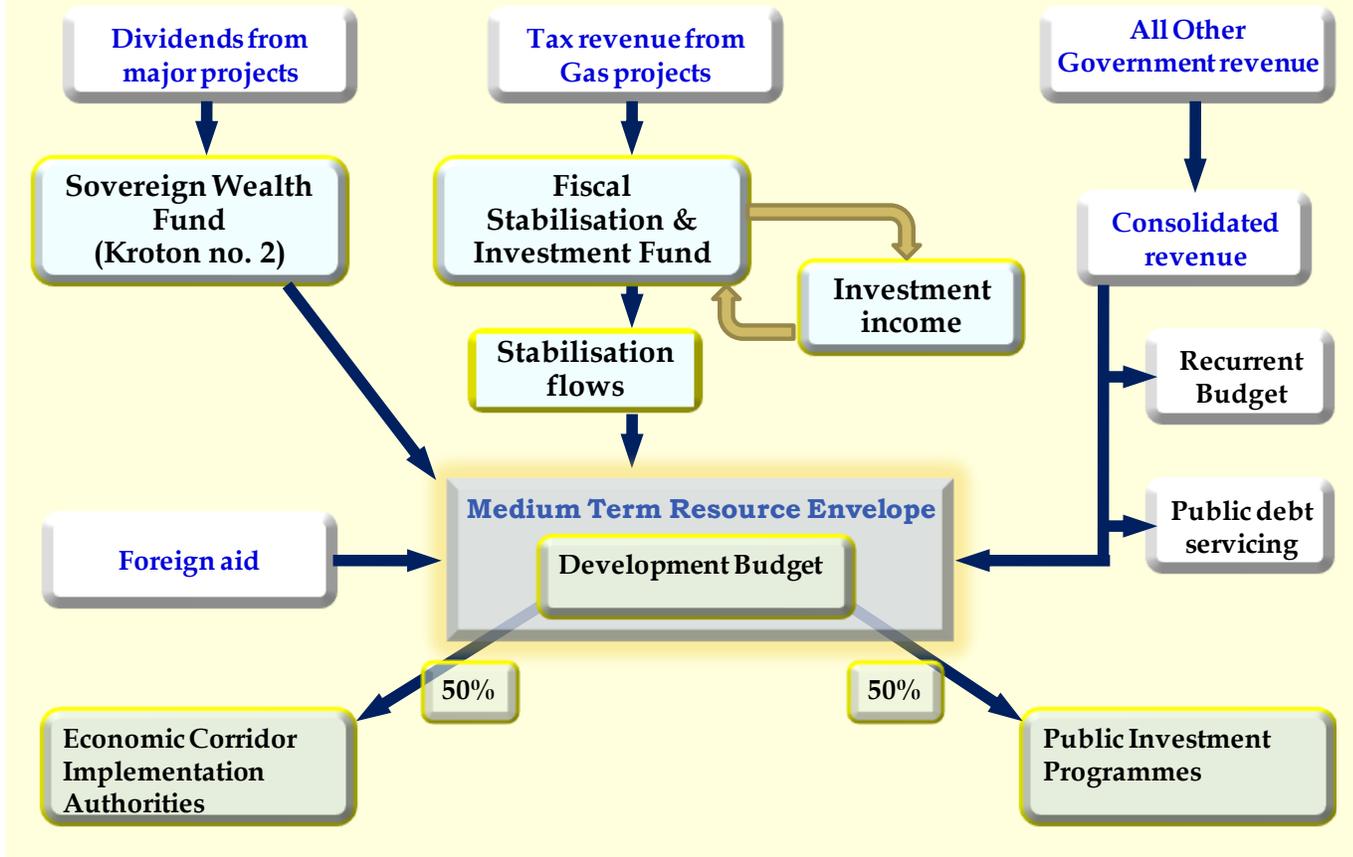
- foreign aid;
- consolidated revenue through the normal Budget process;
- a sovereign wealth fund; and
- a fiscal stabilisation and investment fund

The Development Budget will be guided by the Medium Term Resource Framework (MTRF) and will be applied to implement the *PNGDSP*. The economic corridors detailed in part 2 contain approximately half of PNG's population. Accordingly, half the Development Budget will be allocated through the economic corridor implementation agencies described in part 2 and the other half through specific public investment programs of the *PNGDSP*.

Sovereign Wealth Fund

Dividends from the Government's equity holdings in major gas projects will be directed to a sovereign wealth fund. The proceeds will then be used for nation building projects such as investment in infrastructure projects through the Development Budget and to provide future back-in costs for PNG to participate in future projects. The release of funds will be contingent on the development of infrastructure projects in line with *PNGDSP* priorities, the MTRF, and the availability of funds. The implementation, monitoring and evaluation of projects will be overseen by the Department of National Planning in line with the public investment programs of the Government.

8C Structure of the public investment strategy



Fiscal Stabilisation and Investment Fund

All tax revenues that flow to the Government from large LNG projects will be quarantined into a fiscal stabilisation and investment fund. This will not include dividends from these projects, which instead will be directed to the sovereign wealth fund described above.

The primary function of the Fund will be to provide a stable flow of resources to the Development Budget. As a result of volatility in commodity prices, revenue flows from the minerals sector can become unpredictable. The resource envelope for the Development Budget will be estimated in each five year Medium Term Development Plan in accordance with commodity price forecasts and the available Fund balance. In the event of unexpected low commodity prices in any particular year, distributions from the Fund into the Development Budget may be less than the revenues accruing to the trust fund. In years of high commodity prices the reverse will be the case.

Through legislation the Fund will be subject to stringent institutional arrangements to ensure the investment is protected and the returns maximised. There will be strict auditing controls, regular reporting to Parliament, and a performance and monitoring system that will require the fund manager to achieve returns equal to or better than comparative international benchmarks. Importantly, the fund will be managed within PNG with the Bank of PNG playing a key role.

The investment portfolio guidelines will include an emphasis on prudence and low risk. There will be a focus on investments in the international markets in order to facilitate macroeconomic stability. For example, in the event of low commodity prices, funds released into the Development Budget would be drawn down from international investments. By doing this, the negative impacts of low commodity prices on the Budget deficit and the balance of payments would be neutralised. Conversely, when commodity prices are high, international investments would be increased.

The investment portfolio will also include investments within PNG. This would provide the basis for PNG to deepen its local capital markets. Small and medium enterprises will be key beneficiaries with improved access to finance and venture capital. A key area of local investment would be the smelting and storage of gold bullion on PNG's shores, contributing to the Bank of PNG's reserves and thereby the economy's capacity to withstand overseas financial crises. Overseas firms can also access the domestic capital to invest in the country.

Importantly, the Fund will act to prevent Dutch disease by quarantining the Recurrent Budget from mineral revenues and ensuring that such revenues are converted into investments. This is facilitated either in offshore investments through the Fund, in local financial investments, or in nation building infrastructure investment through the Development Budget.

Governance of the two Funds

Both funds will have well defined governance structures and transparent administrative processes, procedures, and investment guidelines consistent with aspects of the 'Santiago Principles'.

The Santiago Principles outline the need for governments to build around sovereign wealth funds and other such funds effective governance structures and processes in the areas of reporting, accountability, and so forth.

Public debt

PNG can invest its LNG gas revenues into reducing debt as it is prudent to keep debt at modest levels. Moreover, it is crucial for the economic sovereignty of PNG to keep debt low as international lenders such as the IMF and World Bank normally place conditions on how the Government runs the country when providing loans. As outlined in section 3.1, debt is not high in PNG so it is not a priority to reduce debt. However, it is important that PNG does not allow the country's debt to increase above current levels as a ratio of GDP.

8.4. Managing risk – sensitivity analysis

The future is not certain. Therefore the economic and employment impacts of the *PNGDSP* that are estimated using *PNGGEM* rely on a range of assumptions about what will happen in the future. In this section, some alternative assumptions about the future are made to test the sensitivity of the results.

Scenario 1 – Gas

Revenues from the gas projects will finance many of the Government’s investments under the *PNGDSP*. If only one gas project were to proceed over the next twenty years, what would this mean for PNG’s development? The results of this scenario also provide an indication of the impact on PNG if a large mining project were to be interrupted.

Scenario 2 – Law and order

Law and order is a priority under the *PNGDSP*, because of the large benefits to all sectors of the economy from reducing crime. However, if the decision was made to limit resourcing for law and order, such that crime declined by just 30 per cent instead of the targeted 55 per cent, what would be the economic implications?

Scenario 3 – Agriculture

Agriculture will be one of the most important sectors for providing jobs under the *PNGDSP*. But what if world prices for agricultural commodities were to trend lower than assumed under the *PNGDSP*?

Scenario 4 – Land

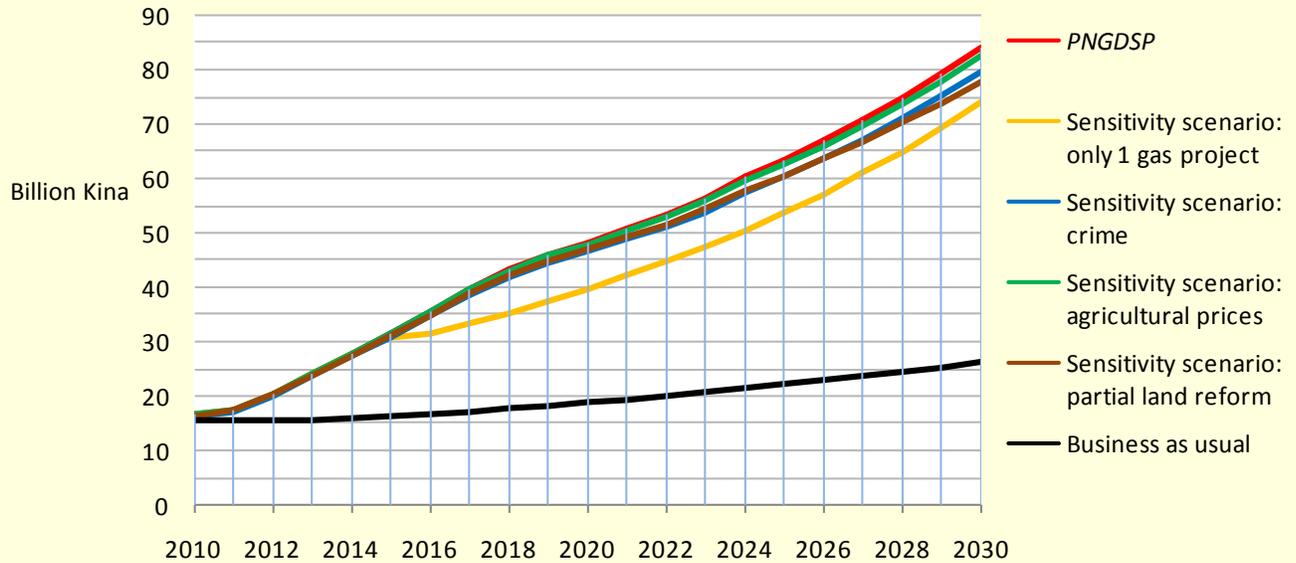
The land development program is a critical component of the *PNGDSP* because it is currently very difficult to access secure land. If there are delays to the implementation or uptake of the land development program, land supply may constrain PNG’s development. This scenario considers the implications if just 10 per cent of land comes under formal administration by 2030 instead of 20 per cent.

Scenario	Description
PNGDSP	This is the base scenario for the full implementation of the <i>PNGDSP</i>
Business as usual	This scenario assumes that no aspect of the <i>PNGDSP</i> is implemented, and the full range of issues and sectors in the <i>PNGDSP</i> will carry on as before
Scenario 1: gas	The <i>PNGDSP</i> is implemented except rather than the target of 2 major gas projects to be established by 2030, only 1 gas project proceeds
Scenario 2: law and order	The <i>PNGDSP</i> is implemented except the resources allocated to law and order are reduced so as to target a 30% reduction in crime rather than a 55% reduction
Scenario 3: agriculture	The <i>PNGDSP</i> is implemented but export prices for agricultural commodities steadily fall over the years 2010 to 2030 to be 20% lower than expected for the <i>PNGDSP</i> scenario
Scenario 4: land	The <i>PNGDSP</i> is implemented however delays in the uptake of the land development program may occur, such that just 10 per cent of PNG’s land comes under formal administration by 2030 instead of 20 per cent.

These sensitivity analysis scenarios are all tested and compared against the *PNGDSP* scenario and the business as usual scenario using PNGGEM. The results for national income are reported in figure 8D and for employment in figure 8E. It is found that the high growth in national income and employment expected under the *PNGDSP* would not deviate significantly by the events of the alternative sensitivity scenarios.

8D Sensitivity analysis, national income

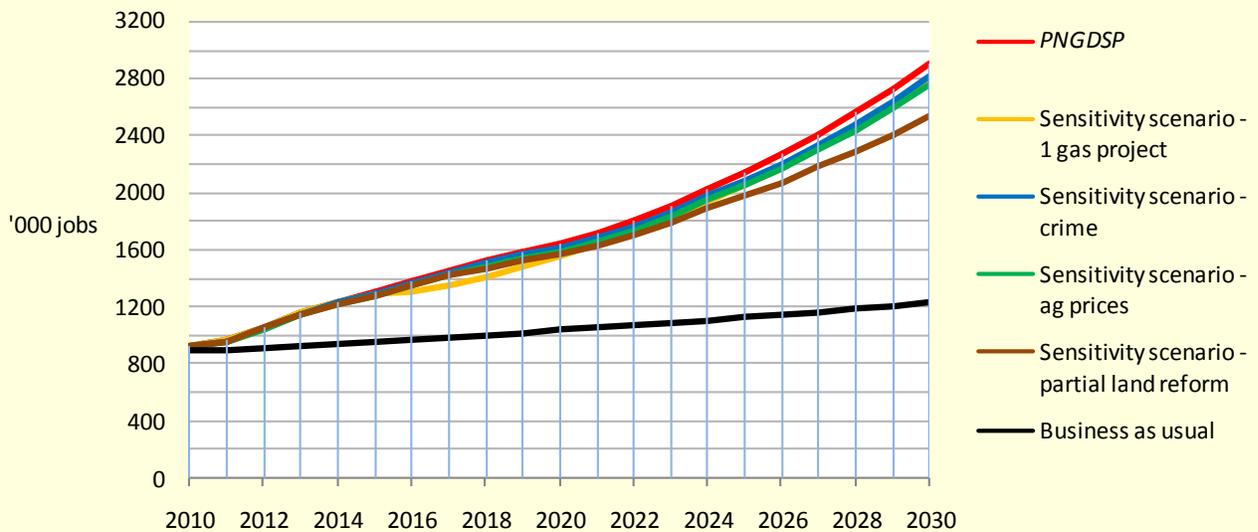
Comparison of growth in national income 2010 to 2030



	<i>PNGDSP</i>	Business as usual	Scenario 1: gas	Scenario 2: law and order	Scenario 3: agriculture	Scenario 4: land
Average annual growth	8.4%	2.6%	7.8%	8.1%	8.3%	8.0%
Total growth, 2010 to 2030	446%	70%	383%	418%	436%	407%

8E Sensitivity analysis, employment

Comparison of growth in full-time equivalent employment 2010 to 2030



9.0 Implementation, monitoring and evaluation framework

9.1. Introduction

The *PNGDSP* lays out a strategic plan for broad based growth and sustainable development. The successful implementation of the *PNGDSP* depends on whether:

- the key stakeholders discharge their responsibilities in its implementations; and
- monitoring, evaluation and reporting is effective, including effective responses to underperformance.

Definitions of the concepts of monitoring, evaluation and reporting are provided in the appendix.

GOAL

Achieve the *PNGDSP* objectives.

9.2. Protocols

The implementation of projects and programs is the responsibility of the line departments and other government implementing entities at all levels of Government.

It is the DNPM's role to:

- identify national development priorities;
- formulate development strategies and plans;
- coordinate development expenditure including by managing the public investment program in support of these plans; and
- monitor, evaluate and report on the implementation of projects and programs.

9.3. The framework for implementing the *PNGDSP*

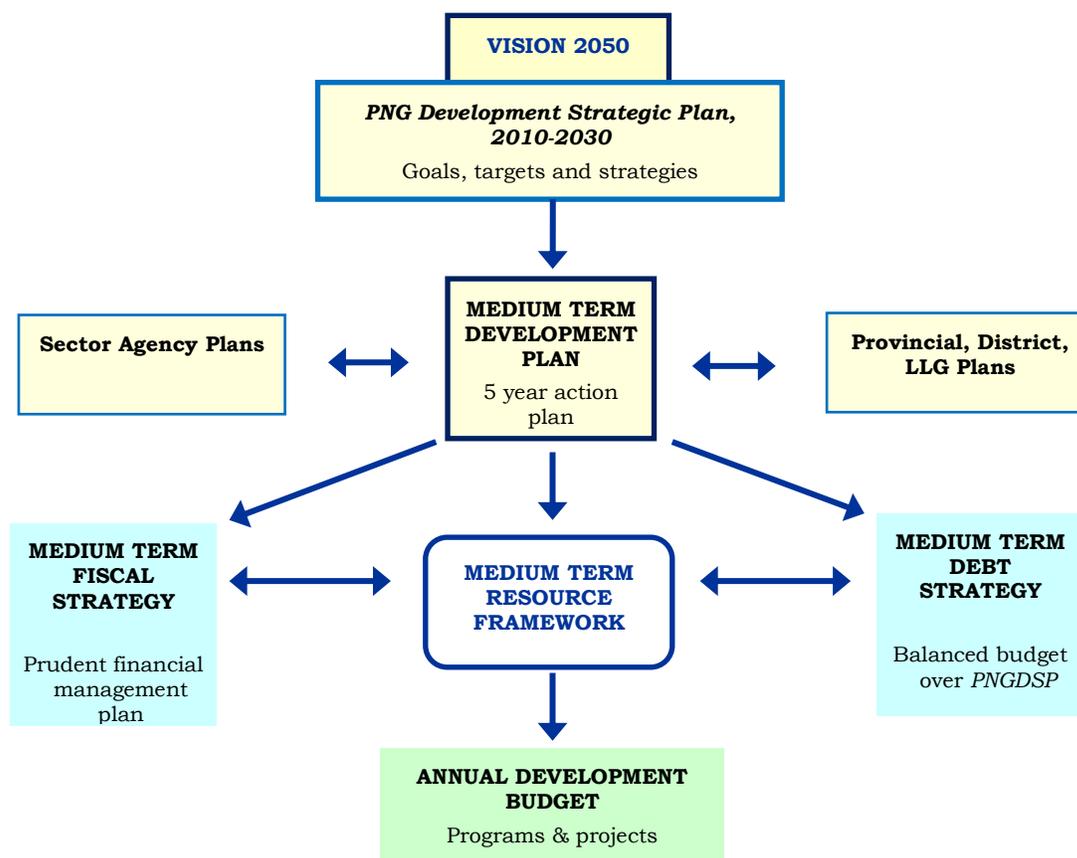
The *PNGDSP* identifies key development targets or objectives for each sector. The *PNGDSP* therefore sets the direction for development expenditure in PNG. However the outcomes and impacts envisaged by the *PNGDSP* need to be made a reality through the programs and projects funded by the annual budget. The schematic in figure 9A illustrates the process through which this is done.

The MTDP has a critical role in this process, translating the 20 year *PNGDSP* targets and objectives into 5 year action plans. The MTDP prioritises and sequences the implementation of policies and activities according to what will best achieve the *PNGDSP* vision and goals. It is through the MTDP that resources (human, financial and capital) will be linked to outputs.

At the National level of Government, sectoral agencies will be required to contribute their understanding and information toward developing the MTDP. Further, all sectoral agencies will develop detailed sectoral plans for implementing the MTDP. Sectoral plans will clearly set

out the detailed programs and activities of the sector, explaining how they will contribute to achieving the MTDP targets and objectives. To assist in monitoring, sectoral plans will also outline ways in which DNPM may monitor over time the contribution of the plan to the MTDP targets and objectives. Sectoral plans will otherwise clearly identify the resources required and provide any other vital information about implementation. The Development Budget will resource the development components of agency sectoral plans in accordance with the MTDP.

9A Linking the PNGDSP to the annual budget



Implementation of the *PNGDSP* and the MTDP also rests on other levels of Government. PNG will only realise the vision of becoming a prosperous middle income country by 2030 if all levels of Government are working together, with an integrated approach to planning. To this end, the *PNGDSP* implementation framework provides the means for integrating plans at the National, Provincial and District levels of Government. Provincial and District level Governments will be engaged through consultations in the process of formulating the MTDP. All proposals of the Provincial and District Plans that are consistent with the MTDP will be eligible for financial consideration.

The medium term resource framework is the resource envelope of the MTDP. It is determined by the Medium Term Fiscal Strategy (MTFS) and the related Medium Term Debt Strategy (MTDS). This framework provides for medium term debt financing during the initial *PNGDSP* period, while ensuring the Government budget is balanced over the long term. In particular, there is little risk that Government revenues from the LNG project will commence around the beginning of the second MTDP. Rather than waiting for the second MTDP to invest in key

infrastructure, the medium term resource framework allows for borrowing during the first MTDP against the income expected in later years, and thereby investing now in critical infrastructure to develop PNG's economic potential. Infrastructure investment will in turn lead to faster growth in Government revenues, financing the repayment of debt and ongoing high levels of infrastructure investment in future MTDPs.

9.4. Monitoring and evaluation framework

For the purpose of the *PNGDSP*, monitoring, reporting and evaluation will be done at two levels. Firstly, at the strategic level, the DNPM and responsible line agencies will be responsible to ensure that project outputs contribute to the outcomes identified in the *PNGDSP* and MTDPs. Secondly, at the implementation level, line agencies and DNPM will monitor project inputs and outputs to ensure that monies are used as intended.

Monitoring outputs to outcomes

In formulating the development budget, projects will be developed and selected that clearly contribute to the targets and objectives, or the envisaged outcomes, of the *PNGDSP* and MTDP. These quantitative targets and qualitative objectives will also be the benchmark used by DNPM for monitoring, evaluating and reporting the effectiveness of strategies, project outputs and government agencies. When strategies or projects are failing to deliver the intended outcomes, they will be revised or replaced accordingly.

DNPM will otherwise monitor the performance of sectoral agencies according to how effectively their funded programs and activities contribute to the MTDP targets and objectives. Each agency will be held accountable for its performance.

Where there are quantitative targets, baseline data will be collected for each sector to establish the "baseline" starting point. Where there are no baseline data for indicators, targets will be set based on international benchmarks and other available data. During the implementation phase, data will be collected on an ongoing basis to assess progress towards the quantitative targets. For example, the target for law and order is to reduce crime in all its forms by 55 per cent by 2030. Crime data must be collected each year to assess progress towards the target of a 55 per cent reduction. The current poor quality of statistics presents a challenge for collecting accurate baseline data, however, the *PNGDSP* includes a plan to substantially upgrade the quality of statistics and this should include efforts to derive and improve on reasonable baseline estimates.

Monitoring inputs to outputs

Once projects have been approved and funded, implementing agencies will be accountable for the proper use of resources to achieve the intended project outputs. Agencies will regularly report on progress to DNPM, including the release of funds and the project status. In their report agencies will identify any factors that may be delaying progress, increasing costs or compromising the quality of the outputs. Agencies will also outline how they are addressing those factors and whether assistance from other agencies may be required.

If project outputs are not delivered, agencies will be required to explain why. However early identification of constraining factors will help circumvent the failure to deliver.

Agency reports to DNPM will inform DNPM's progress reporting on the *PNGDSP*.

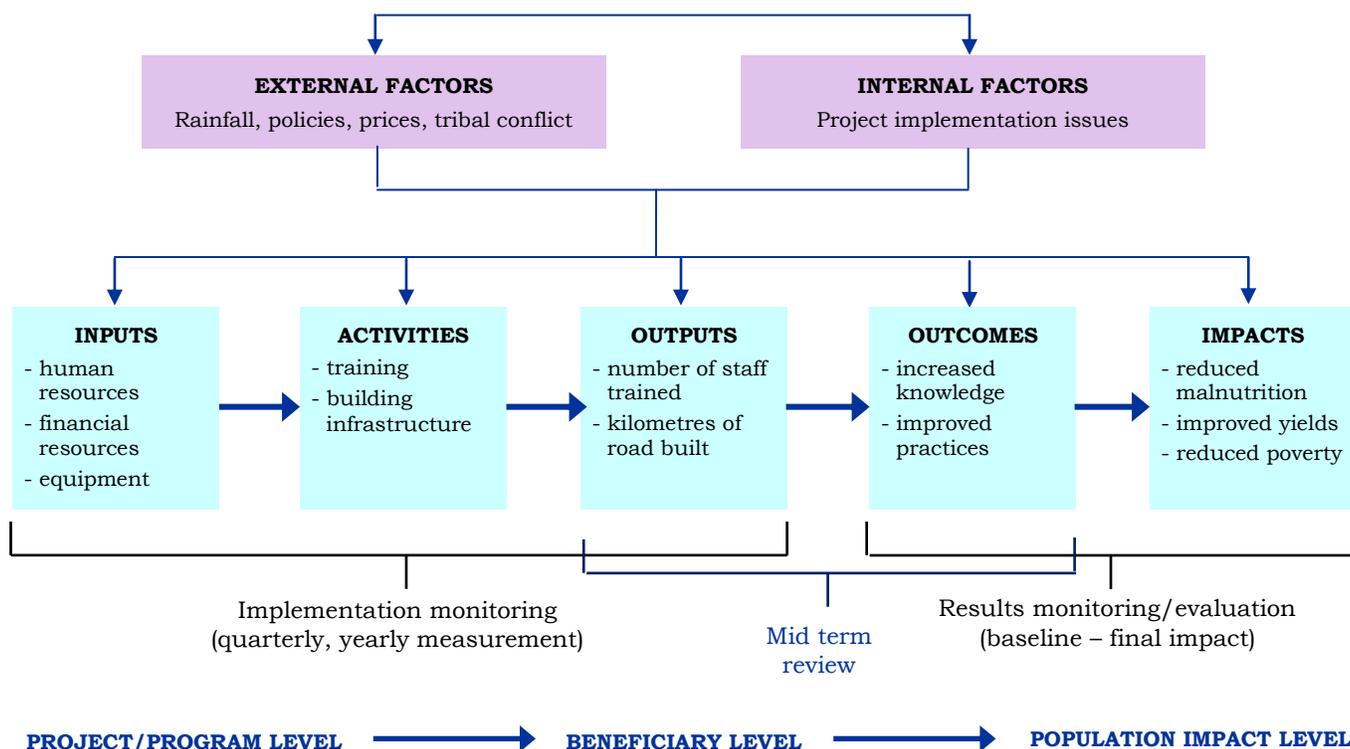
Reporting of monitoring results

Through an annual publication, DNPM will report broad development trends resulting from the Government's annual development budget expenditures. The publication will be named MTDP Results Monitoring Framework (MRMF). It will be a useful tool for reporting and monitoring the results of development expenditure. The performance indicators of the MRMF will be aligned to the PNGDSP so that it will serve as a tool for monitoring higher level development results.

Impact assessments and ex post evaluations

Ongoing impact assessments, with beneficiary participation, and *ex post* evaluations of specific projects and programs will supplement monitoring of the PNGDSP. Evaluations will strive to identify a traceable "results chain" from inputs through to impacts as shown in figure 9B, and also clearly identify external and internal factors that contribute to the success or failure of a project or program, and make recommendations for improvement.

9B Traceable results chain for projects and programs



Appendices

A. Definitions

Activities – a set of tasks undertaken to transform inputs to outputs; eg. number of literacy training courses held, financial incentives to business

Evaluation – an assessment of a planned, ongoing or completed intervention to determine its relevance, efficiency, effectiveness, impact and sustainability. The intent is to incorporate lessons learnt into management decision-making processes.

Goal – the higher order program or sector objective to which a development intervention, such as a project, is intended to contribute. It is a statement of intent.

Impact – long-term effect of a development intervention in society or on a sector or sub sector. Usually linked to quality of life factors; eg. higher income levels; increased access to higher skilled jobs; reduced child mortality and morbidity.

Inputs – financial and human resources used to undertake activities which are expected to produce outputs.

Monitoring – the regular collection and analysis of information to provide indicators of progress and achievement towards objectives, assist timely decision-making, ensure accountability and provide the basis of evaluation and learning.

National income – income that accrues to PNG, which mainly comprises:

- income from economic activity
- foreign aid
- income from investments abroad
- less income accruing to foreign workers and foreign companies
- less interest payments on foreign loans.

Open economy – an economy that has a high level of trade in the form of both exports and imports. An open economy is normally associated with low barriers to international trade.

Outcomes – or results, are the changes that are expected to occur after achievement of an output or several outputs. Outcomes, when they are sequentially connected, may be broken down as follows:

- immediate outcome – may occur immediately after an output has been produced (for example, literacy training completed for a district);
- intermediate outcome – an outcome achieved in the medium term that contributes towards achievement of a goal or long term outcome (for example, full literacy achieved in the 10 least developed districts of PNG);
- long term outcome – or “impact” (see definition for impact). An example of a long term outcome would be 100 per cent literacy levels achieved in PNG.

Outputs – the tangible (easily measurable, practical), immediate and intended results to be produced through sound management of the agreed inputs. This could be goods, services or infrastructure produced by a project, or changes resulting from an intervention, such as number of adults completing literacy courses, or number of new businesses established.

Outward-oriented policies – policies with a focus on expanding exports.

PNGGEM – A state of the art model of the PNG economy of the type known as dynamic computable general equilibrium model. The model incorporates over 40 economic sectors including a range of

agricultural, mineral, manufacturing and service sectors. Included in the model are depictions of households, the labour market, the capital market, investment, business profits, the foreign exchange market, taxes, the government budget, crime, the informal sector and the subsistence sector. The model includes comprehensive linkages between the different parts of the economy and as such captures the full economy-wide impacts.

Reporting – the feedback submitted to decision-makers and stakeholders by project proponents and all those responsible for the effective implementation of projects or programs.

Targets – a specified objective that indicates the number, timing and location of that which is to be realised.

B. Acronyms

AUSAid – Australian Agency for International Development

CBO – community based organisations

CSO – civil society organisations

DNPM – Department of National Planning and Monitoring

FAO – Food and Agriculture Organisation

GDI – gender development index

GDP – gross domestic product

GEF – Global Environment Facility

GNI – gross national income

GST – goods and services tax

ICCC – Independent Consumer & Competition Commission

ICT – information and communication technology

ILGs – incorporated land groups

IMF – International Monetary Fund

IT – information technology

JICA – Japan International Cooperation Agency

JBIC – Japan Bank for International Cooperation

LNG – liquified natural gas

MDG – Millennium Development Goals

MRMF – MTDP Results Monitoring Framework

MTDP – Medium Term Development Plan

NARI – National Agricultural Research Institute

NEC – National Executive Council

NGO – non government organisation

NZAID – New Zealand's International Aid & Development Agency

PACER Plus – Pacific Agreement on Closer Economic Relations

PEFA – Public Expenditure and Financial Accountability

PPP – public private partnerships

PNGDSP – Papua New Guinea Development Strategic Plan

SMEs – small and medium enterprises

SOEs – state owned enterprises

STI – sexually transmissible diseases

TA – technical assistance

TAFE – technical and further education

TB – tuberculosis

TVET – technical and vocational education training
UN – United Nations
UNDP – United Nations Development Program
UNFPA – United Nations Population Fund
UNHABITAT – United Nations Human Settlements Program
UNHCR – United Nations Refugee Agency
UNICEF – United Nations Children’s Fund
UNIFEM – United Nations Development Fund for Women
WGI – Worldwide Governance Indicators
WHO – World Health Organisation