

# The Social and Economic Impact of the Resource Sector Job Stream in Papua New Guinea

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## Research aims:

This study focused on the impact of the PNG resource sector 'job stream' on the national labour market and on the way that national workers who cross this job stream, and are thus employed in the resource sector for various periods of time, contribute to the nation's social and economic development in their own right. This entailed an examination of the ways in which the periodic growth and contraction of the resource sector job stream intersects with the career paths of individual Papua New Guineans who join it and leave it with various skills in their possession.

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# Summary of Action Research Activity

## **The social and economic impact of the resource sector job stream in Papua New Guinea**

Papua New Guinea (PNG) is as an example of a developing country of moderate size with a significant resource boom, but very poor human development indicators. Throughout its history as an independent nation, it has been heavily dependent on the resource sector for both export earnings and government revenues. This study was funded by the Australian government aid agency (AusAID) as one of several country studies intended for inclusion in a companion volume to the World Bank's World Development Report for 2013.

The purpose of this study was to search for answers to a number of different questions:

1. What are the short-term and long-term impacts of the resource sector job stream on productivity, living standards and social cohesion in PNG?
2. If the resource sector is currently draining expertise from other sectors of the national economy, which sectors are most affected by this phenomenon and what is the impact on the quality and quantity of jobs in their own job streams?
3. How (or how much) does foreign investment in the resource sector stimulate the creation of new or better jobs outside of the sector's core job stream (in exploration, construction and extraction)?
4. When workers (male or female) move into or out of jobs in the resource sector, what different skills do they bring or take with them and how are those skills used in their new jobs?
5. Does the resource sector contribute to national social cohesion by enhancing the scale of cooperation and interaction between people of different ethnic backgrounds, or does industry preference for a commuting workforce detract from this contribution?
6. Why are large numbers of PNG workers exchanging jobs in PNG's resource sector for jobs in Australia's resource sector and what contribution do such workers continue to make to PNG's economy and society?
7. How do current PNG government policies relating to the resource sector (like the preferred area policy or gender equity policy) affect the social and economic impacts of the resource sector job stream?
8. What more could be done by government or other actors to improve the quality of jobs, or the quantity of 'good jobs', within and beyond the resource sector job stream?

The study concludes with a number of recommendations including actions which the national government could undertake, and other actions which it should probably not take, to foster the creation of more jobs and better jobs in the context of a resource boom which has contributed to a rapid increase in job mobility.

Priorities for government action include, dealing with the problem of urban land and housing, strengthening the public institutions of professional and technical training which currently have glaring weaknesses and the development of human capital in those rural areas with the most acute levels of poverty, where the windfall benefits of a major resource project may never materialise, and where local people would struggle to take advantage of them even if they did.

# THE SOCIAL AND ECONOMIC IMPACT OF THE RESOURCE SECTOR JOB STREAM IN PAPUA NEW GUINEA

DRAFT REPORT, 4 OCTOBER 2012

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## INTRODUCTION

Papua New Guinea (PNG) is as an example of a developing country of moderate size with a significant resource boom and very poor human development indicators, or a 'resource-rich' country with extreme levels of poverty (and a poverty denial syndrome). Hardly a week passes without someone writing a letter to the newspapers deploring the failure of the government to convert the country's mineral wealth into 'development' for the broad mass of the population. Having formerly been administered by Australia, PNG achieved self-government in 1973 and became an independent state in 1975. Throughout its history as an independent nation, it has been heavily dependent on the resource sector – here defined as a combination of the mining and petroleum sectors – for both export earnings and government revenues. The recent resource boom has exaggerated this form of dependency.

Previous studies of the impact of the resource sector on the rest of PNG's national economy have mainly been concerned with the management of mineral revenues at different levels of political organisation, because the sector has long been seen as a sort of cash cow that ought to finance the pursuit of broader development objectives, or else with various aspects of the so-called resource curse or Dutch Disease, because of the sector's overwhelming contribution to PNG's export revenues. The present study will focus on the impact of the resource sector 'job stream' on the national labour market, where some Dutch Disease effects are currently in evidence, but also on the way that national workers who cross this job stream, and are thus employed in the resource sector for various periods of time, contribute to the nation's social and economic development in their own right. This entails an examination of the ways in which the periodic growth and contraction of the resource sector job stream intersects with the career paths of individual Papua New Guineans (both men and women) who join it and leave it with various skills in their possession.

The present study has been funded by the Australian government aid agency (AusAID) as one of several country studies intended for inclusion in a companion volume to the World Bank's World Development Report for 2013. The focus of the main report is on the role of 'good jobs' in the achievement of

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development objectives and the alleviation of poverty. Good jobs are here understood as jobs that are not only good for the individuals who hold them but also good for the wider society and economy to which these individuals belong. The purpose of this study can thus be framed as a search for answers to several different questions:

1. What are the short-term and long-term impacts of the resource sector job stream on productivity, living standards and social cohesion in PNG?
2. If the resource sector is currently draining expertise from other sectors of the national economy, which sectors are most affected by this phenomenon, and what is the impact on the quality and quantity of jobs in their own job streams?
3. How (or how much) does foreign investment in the resource sector stimulate the creation of new or better jobs outside of the sector's core job stream (in exploration, construction and extraction)?
4. When workers (male or female) move into or out of jobs in the resource sector, what different skills do they bring or take with them and how are those skills used in their new jobs?
5. Does the resource sector contribute to national social cohesion by enhancing the scale of cooperation and interaction between people of different ethnic backgrounds, or does industry preference for a commuting workforce detract from this contribution?
6. Why are large numbers of Papua New Guinean workers exchanging jobs in PNG's resource sector for jobs in Australia's resource sector, and what contribution do such workers continue to make to PNG's economy and society?
7. How do current PNG government policies relating to the resource sector (like the preferred area policy or gender equity policy) affect the social and economic impacts of the resource sector job stream?
8. What more could be done by government or other actors to improve the quality of jobs, or the quantity of 'good jobs', within and beyond the resource sector job stream?

The present study was initiated with a design workshop held in Port Moresby, the capital of PNG, at the beginning of February 2012. Aside from presentations made at this workshop by representatives of different interest groups, the main sources of information sources of information for this study are:

1. A review of published literature on employment and business development in PNG's resource sector, and on the incidence of poverty in PNG.
2. Interviews conducted between February and April 2012 with 285 PNG citizens currently or formerly employed in the resource sector.
3. A rapid assessment of artisanal and small scale mining activities in three locations where these are significant livelihood practices.
4. Analysis of jobs advertised in one or both of PNG's national newspapers in the months of February and March in the years 2002, 2007 and 2012.
5. Analysis of recent PNG national newspaper articles relating to training, employment and business development in the resource sector between the start of 2007 and the end of 2011.
6. Analysis of recent PNG national newspaper articles and other documents relating to the impact of mine closure on the island of Misima.

7. Company records for most of the 'landowner companies' that were either mentioned in national newspaper articles from 2007 to 2011 or have been audited by contractors working for the PNG LNG Project.
8. Summary statistics derived from PNG's Household Income and Expenditure Survey conducted in 2009 and 2010.

The present report does not attempt an exhaustive analysis of the ways in which these different sources of information can help to provide answers to the questions posed about the resource sector job stream in PNG. It is intended as a summary of the major points to have emerged from the analysis of these sources.

## **A RESOURCE-RICH COUNTRY...**

If a resource-dependent economy is defined as one in which extractive industry contributes more than 50 percent of export earnings and more than 15 percent of GDP, then PNG has had a resource-dependent economy for most of the period since 1975 and all of the period since 1985 (Figure 1). Even at the time of Independence, when the Panguna copper mine was the only large-scale mining operation in the country, mineral exports accounted for 60 percent of the value of all PNG's exports. Since 1984, when the Ok Tedi mine came into operation, the proportion has rarely fallen below 60 percent, even after the Panguna mine was forcibly closed in 1989. Since 2000, the proportion has been fluctuating around 75 percent (Table 1). In 2011, when the proportion fell back to 70 percent, the resource sector still accounted for 18 percent of GDP (Figure 2).

Insofar as PNG has experienced a resource boom in recent years, it has not been a boom in production, but a boom in exploration and construction. Although the world market prices of oil, copper and gold have been rising steeply since 2002, the export volumes of these commodities have been falling. The volume of crude oil exports fell from more than 150,000 barrels in 2002 to less than 10,000 barrels in 2011. The volume of copper exports was 15 percent lower in 2011 than it had been in 2002, while the volume of gold exports was 12 percent lower. Two gold mines have been opened during this period, but their exports have done little more than replace those from another gold mine that closed in 2004. The recent spikes in net foreign direct investment are almost entirely due to spending on resource project construction (Figure 3). The huge spike that began in 2009 reflects the capital cost of the PNG LNG Project, currently estimated at between 15 and 16 billion US dollars (twice the total value of PNG's annual exports), but only 5 percent of this investment will have entered the national economy when the construction phase ends in 2014. Annual growth in GDP has been running at an average of 7 percent since 2007, but most of this growth is attributed to the construction and agriculture sectors, not to the resource sector.

The World Bank considers that the rate of economic growth may well have peaked in 2011, because the prices of PNG's main exports are now weakening while the national currency has not yet begun to depreciate (Bulman 2012). The PNG kina has been trading at close to 50 US cents for most of 2012, and is stronger than it has been since the collapse of commodity prices in the wake of the Asian financial crisis in the late 1990s. There was a notable decline in the value of exports across all sectors between the first quarter of 2011 and the first quarter of 2012, which is the latest period for which there is data

from the Bank of PNG. The weighted average price of PNG's export commodities fell by 18 percent over this period. The total value of exports from the resource sector fell by 45 percent, those from the forestry sector by 64 percent, and those from the agricultural sector by 29 percent. The value of palm oil exports, which accounted for almost 40 percent of the total value of agricultural exports in 2011, fell by 50 percent between the first quarter of 2011 and the first quarter of 2012.

Once operational, the LNG Project should increase the total value of PNG's exports by two thirds or more, and as operations proceed, it should raise total government revenues by as much as one third of their current value. The impact of project construction on GDP has been relatively small because most of the construction activity takes place offshore and national employment accounts for only 10 percent of total labour costs. However, the steady increase of government revenues after the first few years of what is expected to be an operational phase of at least 30 years could boost GDP by 25 percent or more when the volume of gas exports reaches its peak. The PNG Department of Treasury has estimated that the project will make a net addition of 15-20 percent to GDP, and a 10 percent addition to GNI, over its entire life.

Such predictions tend to assume that all other things are equal, but this is unlikely to be the case. There is much uncertainty about the value of future contributions to export earnings, GDP, GNI and government revenues from other sources, both within and beyond the resource sector. On the other hand, there is a risk that the national government will raise levels of spending and borrowing in anticipation of tax revenues from new resource projects that will not begin to turn a profit until several years after they have started to operate, even if they have not been granted a tax holiday in their development contracts. At the end of an earlier exploration boom in the 1980s, the country's GDP grew by more than half over a four-year period in which two major resource projects became operational, but a large part of that growth was due to government spending and borrowing based on the anticipation of future tax revenues, and that episode ended in a fiscal crisis from which the government had to be rescued by a structural adjustment loan from the World Bank.

Although a second exploration boom has been in evidence in the period since 2002, the major resource projects that have so far been developed during this period have been based on discoveries made during the earlier boom. These include the Ramu nickel-cobalt mine, now nearing the end of its construction phase, as well as the PNG LNG Project. The interval between the discovery of a significant resource and the grant of a development licence by the national government is typically more than 10 years. Delays are partly due to the volatility of commodity prices and partly due to the complexity of the development approval process. There are strong expectations in some quarters that one or two more LNG projects will prove to be feasible and will be granted development licences within the next two or three years, and that one or two large-scale copper mines will follow suit. If these expectations are realised, then PNG's economy will be more resource-dependent than ever before, despite the rapid decline in output from major resource projects already in operation. If they are not realised, there will simply be a shift in the overall composition of outputs and benefit streams from the resource sector.

## ... BUT STILL A POOR COUNTRY

In 2011, PNG ranked 153<sup>rd</sup> out of 179 countries listed in the United Nations Human Development Index, which makes it the lowest-ranked country in the Pacific Islands region, and the third lowest in the Asia-Pacific region as a whole after Afghanistan and Nepal. In the same year, PNG ranked 154<sup>th</sup> out of 183 countries listed in Transparency International's Corruption Perceptions Index, which again makes it the lowest-ranked country in the Pacific Islands region – less corrupt than Afghanistan but slightly more corrupt than Nepal.

Preliminary data from the 2011 national census indicate a population of just over 7 million. In 2000 – the last year for which detailed national census data is currently available – about four fifths of the population (then less than 5 million) still lived in traditional rural village communities, while the rest was distributed between large and small urban centres, peri-urban settlements and 'rural non-villages' such as oil palm estates and resettlement schemes. Half of the total population was living in the densely settled valleys of the central highlands, while another third was living within 10 kilometres of the coastline.

Evidence from various sources suggests that the rural village population can be divided between three zones of relative prosperity or poverty:

- About 40 percent inhabit an inner zone where there is reasonably good access to markets or urban centres, and villagers can therefore derive a reasonable income from the sale of cash crops or other commodities.
- Another 40 percent inhabit an intermediate zone, where income earning opportunities are much more limited, but where schooling has enabled some people to get paid employment and hence to provide some support to their home villages by means of remittances.
- The final 20 percent inhabit an outer zone where contact with both the market economy and the formal education system has been very limited, and there are barely any social or economic links between village and town.

According to standard definitions of the poverty line in developing countries, about 40 percent of the total national population falls below it. About 5 percent of the poor people in PNG live in urban and peri-urban squatter settlements, but the vast majority are to be found in the intermediate and outer rural zones. Poverty levels are especially acute in the lowland interior and highland fringe areas that account for most of PNG's total land area but only one sixth of its total population.

There is some popular resistance to the very idea of poverty in PNG. This is due to an assumption that all native Papua New Guineans are customary landowners and therefore have a right to a life of 'subsistence affluence' in the rural village communities to which they already belong or to which they could easily return. In practice, it is not clear how many of the people who do not live in rural village communities could actually exercise this right of return, but more importantly, it is not clear how many would even wish to do so, given the conditions in which most rural people actually live. Assessments of rural poverty in PNG have not been solely based on cash incomes, but have also taken account of the economic value of subsistence production and a range of human development indicators that measure the overall welfare of the rural population. For example, in the intermediate and outer rural zones, life

expectancy at birth typically varies between 30 and 50, while the infant mortality rate typically varies between 10 and 40 percent.

The geographical distribution of poverty has not changed much since Independence in 1975. This is essentially because the worst social indicators are associated with environmental conditions in which the practice of subsistence agriculture is least productive. There has been a steady flow of migrants from less advantaged to more advantaged areas, but the flow has been limited by the unwillingness of many customary landowners to accommodate migrants on their land, while migrants who squat on the relatively small areas of vacant state land in urban areas are often threatened with eviction. The ability of the poorest villagers in the intermediate and outer rural zones to move beyond the confines of their own customary land is constrained by the absence of close relatives who have already secured their own livelihoods in better locations. At the same time, the spatial extent of the intermediate and outer rural zones seems to have grown as the quality of economic and social infrastructure in rural areas has declined, so many rural village communities now have less access to decent schools or health facilities than they had in 1975.

All this helps to explain why most rural villagers welcome the prospect of a major resource project because they think it represents their best chance of 'development'. The development of a few major resource projects in some rural locations has modified the geographical distribution of relative prosperity and poverty, but not to the extent that might have been anticipated. A substantial proportion of the benefit streams that ought to flow to the original residents of areas directly affected by the development of these projects have been captured by local elites, or by relatives living in town, or by new migrants to the affected area, or by politicians and public servants who have no local ties at all. As a result, many of the people living in the affected areas show little or no improvement in their standard of living, even after a project has been operating for 10 or 20 years. And when a major resource project closes down, the only significant change in the situation of such people might be the increase in the number of their relatives who have managed to escape from what then ceases to be a directly affected area and reverts to simply being a more or less impoverished area.

## **RESOURCE DEVELOPMENT POLICIES**

The development of major resource projects in PNG is framed by three main types of agreement that are normally negotiated in the following order:

1. Compensation agreements between the holder of an exploration licence and the customary owners of the land covered by that licence provide for payments to be made for damage caused to any assets or resources which belong to the customary landowners or landholders. These agreements are subject to some degree of government regulation, and are likely to be revised and expanded if exploration leads to a development proposal.
2. Development agreements between the national government and prospective investors are based on feasibility studies which the investors provide to the government, and are primarily concerned with the distribution of economic costs and benefits between the two parties. These agreements are also conditional on a prior process of environmental and social impact assessment.

3. Benefit-sharing agreements between the national government, the provincial and local government(s) hosting the project, and the customary owners of the land required for development purposes, are negotiated through an institution known as the development forum (Filer 2008). The developers are not formally involved in the negotiation of these agreements, but development licences are not granted until the agreements have been finalised.

The first two types of agreement have been features of the mineral policy framework since Independence in 1975; the third type was added in 1988 in response to political pressure from provincial governments and local community representatives.

Compensation agreements normally make no reference to project employment or other forms of national and local participation in project development. Development agreements have normally required that national participation or 'national content' be specified in training and localization plans and business development plans whose implementation is then reported to the national government at regular intervals. These plans are subject to the 'preferred area policy' which has come to inform the negotiation of benefit-sharing agreements.

The origins of the preferred area policy can be traced back to a pair of decisions made by the newly independent national government in 1976:

- The first decision was to repatriate a sum equivalent to the whole of the royalty collected by the national government in its capacity as the legal owner of sub-surface mineral resources to the province from which those resources were extracted. This decision was made in response to threats of secession from the province that hosted the Panguna copper mine, but it would have general application under the new system of provincial government that was put in place at the same time.
- The second decision was to oblige the future developer of the Ok Tedi gold and copper mine to give preference in training, employment and business development to the people of the area most directly affected by the mining operation. This decision was not initially meant to have general application, nor did it apply to the Panguna mine. It was justified by the observation that the people living around the Ok Tedi mine were exceptionally poor and therefore deserved this form of affirmative action.

Considerations of poverty and equity have long since disappeared from the preferred area policy. The allocation of royalties and the allocation of entitlements to training, employment and business development opportunities are now included in the range of benefits that are subject to benefit-sharing agreements through the institution of the development forum. The policy has thus created concentric rings of entitlement around each major resource project, with the innermost ring occupied by the customary owners of the land covered by development licences, the next by 'project area people' (however these might be defined), the next by the people or government of the host province, and the outermost ring by the population or government of the nation as a whole (Filer 2005). These zones cut across the geographical zones of relative prosperity or poverty described in the previous section.

In the period since the development forum was invented, there has been a steady increase in the proportion of the direct economic benefits from each new resource project that is captured by

organizations or individuals in the three inner circles of entitlement. In 1988, less than 5 percent of the money which the national government collected from the operation of the Panguna mine went back to the host province. By 2002, with four large-scale mines in four different provinces producing revenues for the national government, the proportion had risen to more than 25 percent (Finlayson 2002). It is not so easy to calculate the distribution of wages and other benefits between different sections of the national workforce employed on major resource projects, or the value of contracts for nationally owned companies to supply goods and services to these projects, but the available evidence indicates that the preferred area policy has also served to increase the proportion captured by workers and companies within the host provinces and more limited areas of preference.

The share of resource project benefits captured by different sections of the national population does not remain constant through the life of each major project. The national government has been inclined to postpone the revenue share which it collects on behalf of the country as a whole while providing more in the way of up-front payments to provincial and local stakeholders in order to secure their political support for the construction and initial operation of each new project. This temporal imbalance grows more acute with the scale of the project. The national government has already promised to deliver K1.2 billion in infrastructure development grants to the provinces hosting the LNG Project during the construction phase and the initial phase of operations. Another K120 million has been promised as 'seed capital' for local landowner companies to take advantage of new business opportunities during the construction phase. These are more than 100 times the amounts promised under the benefit-sharing agreement for the Lihir gold mine that was finalized in 1995, and was regarded at the time as an unprecedented act of generosity on the part of the national government. When the LNG Project begins to export gas in 2014, 4 percent of the value of production – around K400 million a year – will instantly accrue to the host provincial governments, local-level governments, and assorted landowner groups in the form of royalties and development levies. Meanwhile, the national government will have borrowed money overseas to finance the implementation of its initial promises and to purchase a 20 percent equity stake in the project, part of which will also be held in trust for provincial and local stakeholders. By the time that the national government begins to earn significant revenues from corporate income tax on the profits of the operation, a large part of these revenues will most likely be used to pay off the debts.

The Constitution of PNG calls for non-renewable resources to be used wisely for the purpose of national development and the benefit of future generations. At the time of Independence, policy makers accepted the orthodox argument that large-scale resource projects would not serve this purpose by creating new jobs or new business opportunities, but could serve this purpose by providing additional revenues to the national government. However, the nation's mineral wealth has not been successfully applied to the creation of a more diversified national economy, nor has it been used to improve the health and education of the national population as a whole, nor has it served to remove the country's dependence on foreign aid. Instead, the perceived failure of the national government to make wise use of its mineral revenues has stimulated the demand for these revenues to be redistributed under the preferred area policy. The implementation of this policy has created many new opportunities for mineral revenues to be misappropriated as they flow back from the national government to the host provinces. And even if benefits were properly distributed in accordance with the terms specified in

benefit-sharing agreements, there would still be a greater problem of resource dependency at the provincial and local level than already exists at the national level. The more that local organizations and individuals come to depend on a single resource project for their incomes and general welfare, the more they are likely to lose when that project comes to the end of its life (Filer and Imbun 2009). The purchase of provincial and local political support for major resource projects by means of benefit-sharing agreements appears to be a necessary condition for their development, but it has also created intractable problems of governance and sustainability.

## **IMPACTS OF THE RESOURCE BOOM ON THE LABOUR MARKET**

Data from the 2000 national census indicate that mining and petroleum companies then employed about 5000 PNG citizens – about 7 percent of all those employed in the formal sector of the economy. Comparable data from the 2011 census is not yet available. The PNG Chamber of Mines and Petroleum seeks employment data from its member companies at regular intervals, but the response rate has been far from satisfactory. Responses from 2010 show the pattern of employment in the three largest and oldest mining operations in PNG (Table 2). Here it can be seen that the proportion of expatriates in the workforce tends to decline with the age of the operation, the proportion of women is roughly constant at around 10 percent, and the proportion of national workers drawn from the host province or ‘preferred area’ varies according to the size of the population in the area of preference.

At the end of 2010, the Chamber of Mines and Petroleum estimated that the number of people formally employed in the work of exploration, construction and extraction had grown from 12,000 in 2004 to 30,000 in 2010. These numbers cannot be directly compared with those derived from the 2000 census because they include people employed by on-site contracting companies as well as those directly employed by mining and petroleum companies. It is not clear how many of the estimated 30,000 workers in 2010 were thought to be part of the LNG Project construction workforce, given that construction started in that year. The number of people employed in construction of the LNG Project has reached a peak of around 18,000 in 2012, but only one third of them are Papua New Guineans, and the number of jobs available for national workers will fall to around 800 when the construction phase ends in 2014. It is not known how many Papua New Guinean workers have been employed in construction of the Ramu nickel-cobalt mine over the past four years, but their numbers will also have fallen as the construction phase is almost complete. Under normal circumstances the number of people formally employed in the resource sector, including those employed by on-site contractors would not be greater than the 27,000 people directly employed by the oil palm industry, which accounts for less than 10 percent of the total value of PNG’s exports.

The Chamber of Mines and Petroleum reckons that extractive industry creates 4 or 5 additional jobs in the rest of the national economy for each job directly tied to the work of exploration, construction and extraction. Evidence from other countries would suggest that the multiplier is not this large unless it includes people employed by on-site contractors. The number of people formally employed in the supply of goods and services of all kinds to the operators of major resource projects is unlikely to be more than twice the number directly employed by the operators themselves, but it is hard to estimate the additional number of jobs in the formal and informal sectors that might be involved in the supply of

goods and services to this larger group of workers or to project area people whose livelihoods depend on compensation and royalty payments rather than wages (Baxter 2001, Brooksbank 2002).

It is also hard to estimate the number of jobs that exist in that branch of the informal economy which consists of alluvial or artisanal mining. In 2000, there were thought to be as many as 60,000 artisanal gold miners in PNG, although many of them only worked on a part-time basis (Susapu and Crispin 2001). Given the increase in the gold price over the past decade, the number of people involved in this activity, whether full-time or part-time, is likely to have grown much larger. Evidence collected for this study shows that there are now large numbers of artisanal miners operating in areas where there were hardly any ten years ago. The only scenario in which former artisanal miners are likely to gain formal employment on major resource projects is one in which a development licence is granted over the area in which they have been working and they acquire the status of preferred area people as a result. Likewise, when a major mining operation reaches the point of closure, former employees from the preferred area may revert to artisanal mining as a livelihood, especially if they do not have the skills required to gain formal employment in another part of the country.

Evidence collected by the Bank of PNG from its own company surveys shows a lower rate of increase in the number of people formally employed in the resource sector than the rate estimated by the Chamber of Mines and Petroleum – about 70 percent instead of 200 percent since 2002 (Table 3). This discrepancy could partly be explained by the likelihood that many of the new jobs created by the resource boom are registered as jobs in the construction sector or other sectors of the national economy because of the way that employers have been classified. This explanation is consistent with the evidence from job advertisements published in PNG's national newspapers (Table 4). These have been classified in accordance with the standard industrial classification used by the PNG National Statistical Office. Here it can be seen that the number of jobs advertised in the construction sector has risen by a greater margin than the number advertised in the resource sector. But what is most remarkable about this dataset is the overall increase in the number of jobs being advertised across all sectors: the number of jobs almost doubled between 2002 and 2007, and almost doubled again between 2007 and 2012. There is no obvious way to explain this increase except by reference to the impact of the resource boom and other components of recent economic growth on the mobility of labour across several parts of the formal economy. Even a relatively small increase in the total volume of formal employment can create a much bigger increase in the number of job advertisements in a relatively small labour market.

The job advertisements have also been classified by reference to the standard occupational classification used by the PNG National Statistical Office. In this instance, the advertisements were assigned a three-digit rather than a two-digit code, and were then grouped into occupational categories that are somewhat different from those officially distinguished at the two-digit level. There is not much evidence to indicate an unusual rate of increase in the number of jobs being advertised in particular occupational categories, but it seems that many of the jobs advertised for physical and engineering science professionals and associates, metal and machinery trades workers, and drivers and mobile machine operators have been linked to the booming resource sector (Table 5). This observation is

supported by analysis of the types of jobs being advertised by mining and petroleum companies alone during the three two-month periods for which this type of data was collected (Table 6).

Nearly all of the jobs advertised in PNG's national newspapers are for citizens, not expatriates. Those advertised by mining and petroleum companies (or their contractors) may not provide an accurate picture of the occupational profile of the national workforce in the resource sector, first because there may be higher levels of labour mobility in some occupations than in others, and second because people from the preferred area – or even the host province – may be recruited by other means. Evidence from other sources suggests that the workforce in an operational resource project can be divided into four main segments:

- Expatriates occupy the most senior management positions and most specialized technical positions: they may account for less than 10 percent of the total workforce but more than 50 percent of the operator's total labour costs (Johnson 2012). This in itself constitutes a strong economic incentive for companies to implement their training and localization plans if they can find suitably qualified citizens.
- At the other end of the scale, preferred area employees may account for more than 50 percent of the workforce but less than 20 percent of the total labour costs. For obvious reasons, these workers are likely to include the least qualified members of the workforce, and their opportunity to exchange one job for another is limited by the fact that they are only preferred for employment if they stay within a project's area of preference (Brooksbank 2002).

In between are national employees who are recruited because of their qualifications rather than their place of origin, and they can be divided into two main groups by the nature of their qualifications:

- Some – like geologists, metallurgists or specialized plant operators – are qualified for jobs that can hardly be found outside the resource sector, so their capacity to find better jobs is largely dependent on the fortunes of the sector as a whole.
- Others – like electricians, clerical workers or community relations officers – are qualified for jobs that can be found in several sectors, and therefore find it easier to move between different parts of the national labour market.

Some of the more specialized workers have taken advantage of the resource boom in other countries to emigrate from PNG, thus increasing the competition between resident mining and petroleum companies for the services of those who remain. Meanwhile, recruitment of less specialized workers by mining and petroleum companies has created a shortage of skilled labour in other sectors of the national economy, which is one of the classic manifestations of the so-called Dutch Disease. In both cases, employers are confronted with some fundamental limits on the number of suitably qualified individuals graduating from PNG's tertiary education and training institutions, where the shortage of suitably qualified teachers has also become a major problem.

## **THE MAINSTREAM WORKFORCE IN THE RESOURCE SECTOR**

The main body of data collected for this study consists of interviews conducted between February and April 2012 with 285 PNG citizens currently or formerly employed in the resource sector. This survey was

mainly designed to elicit information about the employment history of the individuals who were interviewed, their reasons for changing jobs, their levels of job satisfaction, their social activities, and their contributions to development in the form of economic support to other people in the areas from which they originated. The many constraints placed on the conduct of this survey mean that none of the different groups of people who were interviewed can be regarded as a representative sample of any larger group of people, so the results can only be taken as a form of anecdotal evidence.

Of the 285 interviews, 180 were conducted with PNG citizens currently employed in the resource sector within PNG. This is taken to be a sample of the 'mainstream workforce' in the resource sector. The distribution of these workers between occupational categories (Table 7) is quite similar to the distribution of jobs advertised by mining and petroleum companies in the national newspapers (Table 6). It is known that preferred area employees and employees of on-site contractors are under-represented in this sample. The sample is also biased in favour of the mining sector as opposed to the petroleum sector and in favour of operational projects as opposed to exploration and construction. The sample also contains a higher proportion of female workers than is characteristic of the large-scale mining industry as a whole. More than 20 percent of the workers in the sample are women, compared with an average of 10 percent in PNG's three biggest mining operations (Table 2).

There are some notable discrepancies between the profiles of the male and female workers in this sample. The average age of the women is a good deal lower than the average age of the men (Table 8), and so is their average rate of pay (Table 9). That is hardly surprising. But the women also have a narrower range of educational qualifications than the men. All the women have a minimum of ten years of formal schooling, but only one has postgraduate qualifications. Nevertheless, a slightly larger proportion of the women have university degrees (Table 10). If they do not earn as much as the male graduates, this might be explained by the concentration of men in specialized technical jobs, while the women are more likely to occupy clerical jobs of the sort found in many parts of the national economy. However, while 41 percent of the women in the sample do occupy clerical jobs, more than a quarter of them occupy more specialized technical jobs (Table 7).

One of the most interesting gender discrepancies is the length of time spent in particular jobs (Tables 11 and 12). The women have been in their current job for an average of 3.1 years (with a maximum of 16 years), while the men have been in their current job for an average of 4 years (with a maximum of 31). The women have been in their previous jobs for an average of 2.6 years (with a maximum of 12), while the men have been in their previous jobs for an average of 4.2 years (with a maximum of 17). These previous jobs may or may not have been with the same employer, but there is no evidence to indicate that the higher turnover amongst the women is due to their greater chances of promotion. Nor does it seem to have anything much to do with the division of previous jobs between the resource sector and other sectors. The most plausible explanation is that workers tend to stay longer in the same job as they grow older, so the higher rate of turnover amongst the women is due to their lower average age.

There is less of a discrepancy between men and women if attention is confined to their history of employment over the past decade instead of their whole career (Table 13). Male and female workers are equally likely to have held a job outside the resource sector before taking up a job inside it, but the evidence indicates that once they do have a job in the resource sector, their next job is likely to be in the

resource sector as well. Experience of jobs outside the resource sector does not appear to vary significantly between workers in different age groups or on different rates of pay. However, the rate of movement between jobs does seem to reach a peak amongst workers in their thirties and those earning more than K2000 but less than K4000 per fortnight (Tables 14 and 15).

The workers in this sample gave a wide variety of reasons for leaving their previous jobs, and their reasons are not easily classified. An inadequate career path is one of the most frequently mentioned reasons, and is more frequently mentioned by women than by men (Table 16). On the other hand, internal promotion accounts for more than one third of the reasons given by the women, but only 12 percent of the reasons given by the men. This evidence suggests that the women are both more active and more successful in seeking to advance their careers, which might in turn help to explain why they change jobs more frequently (Tables 11 and 14).

Workers in this survey were asked to specify their contributions to development 'at home' in the previous year (2011) under three main headings:

1. Goods supplied as gifts to relatives outside of the worker's own nuclear family.
2. Payments of cash to meet a variety of expenses on behalf of such relatives.
3. Accommodation of rural relatives for various periods of time by workers resident in urban areas.

Nearly all of the mainstream workers sampled in the survey claimed to make one or both of the first two types of remittance, and a majority of the town-based workers said that they hosted rural relatives. There is no great difference between the proportions of male and female workers who made such claims (Tables 17-19).

Almost 90 percent of the mainstream workers in the survey sample specified the value of their remittances under one or both of the first two headings. Some of the remaining workers said that they did make such remittances but failed to specify their content or value. More than 60 percent of the workers in the survey specified the content and value of goods which they supplied to relatives at home, and the combined value of these remittances was estimated at more than K1 million (Table 20). Almost 85 percent specified the purpose and value of cash payments which they made to relatives at home, and the combined value of these remittances was almost K2 million (Table 21). The proportion of these remittances that could be counted as contributions to the formation of physical, human or social capital, as opposed to personal consumption, is remarkably high.

Some doubt could be cast on the validity of these figures because some workers claim to have made remittances in excess of their net annual salaries. In some of these cases, the claims make sense in terms of the sheer cost of things like public motor vehicles (mini-buses) and the fact that this would count as form of business investment on which a profit would be made in future, but if the claims are correct, then the workers must have engaged in a very high level of saving or borrowing in order to afford them. On the other hand, if the combined value of remittances in cash and in kind has been inflated by excessive and implausible claims on the part of a small number of workers, there are other reasons to think that some of the remittances made by workers in the sample have not been counted at all. Aside from the fact that some workers claimed to have made such remittances but then failed to specify their content or value, all workers in the survey were only asked to specify their four most

significant contributions under each heading over the course of the year. Even if some of the more excessive claims are discounted, and median values are substituted for mean values in each spending category, it appears that this group of 180 workers together spent well in excess of K1 million, and possibly more than K2 million, on such remittances in 2011. As might be expected, the value of both types of remittance is related to the income level of the workers making them, and this is the case for both mean and median values (Tables 22-24). This suggests that the value of remittances in cash and in kind makes up a similar proportion (20-30 percent) of disposable income across all income categories.

The proportion of town-based workers accommodating rural relatives for various periods of time also seems to be fairly constant across different income categories (Table 25). This practice represents a hidden form of remittance to the extent that the hosts are normally liable to pay for the food consumed by their guests, sometimes for the cost of their attendance at educational institutions, and often for the cost of their travel back home at the end of their stay. On the other hand, survey respondents said that more than 25 percent of all their guests provided assistance with childcare, which counts as a reverse form of remittance or subsidy, and is one of the factors that enables married women with young children to remain in the formal sector workforce. It is not possible to establish the distribution of costs and benefits in this type of relationship because the participants make no such calculation themselves.

## **PAPUA NEW GUINEANS ABROAD**

There is no hard evidence on the number of Papua New Guineans who have left their country to take up jobs in the resource sector overseas, but the number is thought to be substantial, most of them are likely to be highly skilled and specialized workers, and their departure would therefore be one of the key factors behind the occupational mobility of those workers with equivalent qualifications who have remained in PNG.

Two of the men included in the sample of mainstream resource sector workers in PNG had already held jobs with mining companies overseas before returning to take up their present jobs (Table 16). Anecdotal evidence suggests that there could be more than 1000 Papua New Guineans currently employed in the resource sector in Australia. This estimate is partly based on the number who turned out to greet PNG's prime minister when he visited Perth (the capital of Western Australia) in 2011. Foreigners migrating to Australia for employment may enter the country on temporary or permanent residency visas if they have the support of their employers, and temporary residents may become permanent residents once they have arrived. According to the Australian Department of Immigration and Citizenship, there were 327 Papua New Guineans living in Australia on temporary residence visas in August 2012, of whom 238 (73 percent) had been sponsored by resource companies. In June 2011, the number of temporary residents from PNG was considerably higher (816), but the proportion who had been sponsored by resource companies is currently unknown, as is the number of Papua New Guineans who have been sponsored for permanent residency by such companies.

For the purpose of the present study, interviews were conducted with 45 Papua New Guinean expatriates employed in the resource sector, of whom 39 were based in Australia and six in other countries. In the absence of any sampling frame, these workers could only be identified by a

snowballing technique that made use of personal networks, but the sample is not obviously skewed towards any particular region or province of origin in PNG. Of these 45 workers:

- Forty are men (37 of whom are aged between 30 and 49) and five are women (four of whom are aged between 30 and 39).
- Twenty-seven (60 percent) count as 'physical and engineering science professionals and associates' (more than twice the proportion in the mainstream survey sample).
- Thirty-eight (84 percent) have university degrees, and 13 (29 percent) have additional postgraduate qualifications.
- All but four have fortnightly take-home pay equivalent to at least 2000 Australian dollars, and 22 (49 percent) earn more than A\$4000 a fortnight.

The workers in this sample have been in their current job for an average of 2 years (with a maximum of 8 years), and have been in each of their previous jobs for an average of 3.3 years (with a maximum of 17 years). With some exceptions, they have been changing employers or getting promoted at a somewhat faster rate than their counterparts in the mainstream sample with the same gender and level of formal education.

All of the expatriate workers in this sample made remittances in cash or kind or both to relatives at home in PNG, and specified the content and value of such remittances. Their pattern of spending on different items is quite similar to that of their counterparts in PNG (Tables 26 and 27). The mean and median values of the remittances made by these workers also vary with their level of income (Tables 28-30), and the combined values are quite similar to those of the remittances made by their counterparts in PNG, given that the Australian dollar was worth about two PNG kina during 2011. However, this rate of exchange means that the expatriate workers are earning two or three times more than their PNG counterparts in comparable jobs, so the proportion of their disposable incomes devoted to remittances is two or three times lower. Furthermore, the expatriate workers accommodate a much smaller number of visiting relatives, and the visitors stay for much shorter periods of time, because of visa restrictions imposed by the countries where they now reside.

It is not clear whether this discrepancy is a function of the ability of expatriate workers to literally distance themselves from the pressure of relatives at home, or whether it is due to the greater real costs of living overseas – for example the need to pay international fees for the education of their children. It might also be due to a relatively inelastic demand for remittances, or the failure of relatives at home to realise how much their relatives overseas are actually earning. Whatever the explanation, the value of remittances from expatriate workers should not be underestimated. The Australian government has recently been promoting a scheme by which Pacific Island economies can be strengthened by remittances from workers employed in the Australian agricultural sector on a seasonal basis (mainly as fruit-pickers). Less than 100 Papua New Guineans have so far been employed under this scheme (and they are not granted temporary residence visas). If there are ten times the number of Papua New Guineans employed in the Australian resource sector, their fortnightly earnings are five times those of the seasonal agricultural workers, and their annual earnings are ten times greater, it means that their combined earnings are one hundred times greater, and even if they only remit 10 percent of these

earnings back to PNG, this will be ten times the total value of the wages paid to the seasonal workers in any one year.

Interviews with this group of expatriate workers reveal that they think of their expatriate status as a major achievement in its own right, yet this is not so much because they wish to dispense with their sense of national or ethnic identity, but rather because they see their 'escape' from PNG as a reflection of their experience and skill, and an opportunity to become part of a globalised professional industry workforce. Most of them have children in school (88 children between them), and many say that the opportunity of providing a better education for their children was one of the main reasons for their emigration. However, some of them may yet be disappointed if it turns out that the resource boom has now come to an end. If they have not yet acquired permanent residency in the countries where they are currently based, they might could lose their jobs and then be obliged to return to PNG.

## **JOB CREATION BY LANDOWNER COMPANIES**

Landowner companies (or LANCOs for short) have no clear legal definition in PNG, but have become a significant part of the institutional landscape in the resource sector because of the business development provisions of the preferred area policy. Most are registered under the terms of the *Companies Act* as 'Division 4 companies', which limits the extent of their accountability to shareholders. What distinguishes LANCOs from other nationally owned companies is that their shareholders are the customary owners of land within a particular area. In the resource sector, they are not necessarily owners of the land covered by project development licences, but can include the owners of any land that falls within a preferred area. There is no legal requirement for LANCOs to be broadly representative of all the landowners with an interest in a specific area of land, but attempts have been made to engineer this kind of representation by allocating shares to incorporated groups of landowners. Even then, if the articles of association do not limit the powers of board members, and the board members control the appointment of company managers, the shareholders or their representatives may have little influence. Directors often treat company assets in the same way that politicians treat government assets, and articles of association often allow the directors to award themselves large fees or loans without shareholder approval. There is widespread ignorance of the obligations which company directors owe to shareholders, and when those obligations are not met, disgruntled shareholders are sometimes inclined to dissociate themselves from the directors rather than seek to change the composition of the board (Whimp 1995).

LANCOs have proliferated around major resource projects as their directors and managers compete to benefit from the supply of goods and services to the developers and from the national government's provision of 'seed capital' under the terms of benefit-sharing agreements negotiated through the development forum. The bigger the project, the more intense the competition. There are thought to be hundreds of LANCOs competing for benefits from the construction phase of the LNG Project, some of which had already been established to compete for benefits from earlier oil export operations. In this case, LANCOs have started to compete for access to the K1.2 billion allocated to provincial governments as infrastructure development grants under the project's benefit-sharing agreements.

The developers of major resource projects have tried to strengthen the capacity of local LANCOs by appointing their own business development officers. These efforts have not been very successful, partly because the developers have tried to avoid the risk of alienating public opinion in their preferred areas by awarding contracts to a large number of small LANCOs, many of which have failed because of mismanagement or misappropriation. Amongst the few LANCOs that have survived and thrived are the so-called 'umbrella companies' whose principals have somehow managed to persuade the directors of many smaller LANCOs to become shareholders in their operations. Even these larger LANCOs have sometimes run into major financial difficulties and have had to be 'bailed out' by the developers who are normally their main customers (Brooksbank 2002).

One of the survival strategies adopted by the directors of the more successful LANCOs has been the formation of joint ventures with national or foreign companies that have already built a solid reputation in some particular line of business, such as catering or mechanical repairs. This strategy has reduced their dependence on managerial and financial support from the developers who are often their customers, but often at the expense of a new dependence on their joint venture partners. Once the joint venture partner takes over the management of the business, the LANCO can easily lose popular support in the preferred area because its own directors and managers lose the ability to distribute jobs, dividends and donations to other members of their local community. At the same time, their business is still constrained by its narrow customer base and the prospect that this will disappear when the local resource project reaches the point of closure.

A few of the umbrella LANCOs have managed to escape these forms of dependency by finding new customers outside the preferred area from which they originate, and even outside the resource sector, while retaining overall control of specific lines of business operated by wholly-owned subsidiary companies. One notable example of such an 'entrepreneurial' LANCO is Anitua, an umbrella company whose shareholders are six other LANCOs representing each of the six 'clans' on the Lihir group of islands and the business arm of the local-level government. One of its subsidiaries, National Catering Services Ltd (NCS), originally catered for the workforce at the Lihir gold mine, but now supplies this service at other mine sites and to other organizations outside the resource sector. The business was originally expanded through a joint venture with a foreign catering company that has since been discontinued. In early 2012, NCS employed around 1600 people, 96 percent of whom were Papua New Guineans, and most of whom were still Lihirians. The directors of the umbrella company have ensured that their subsidiary company maintains its own training and localization program, with specific emphasis on the training of Lihirian employees, while protecting NCS from the social pressures that have undermined the viability of many other LANCOs.

It is not clear whether the success of a handful of entrepreneurial LANCOs like Anitua has been dependent on the resource boom and other components of recent economic growth to an extent which makes them especially vulnerable in the event of an economic downturn. A few of the LANCOs that have emerged to compete for benefits derived from the construction of the LNG Project could be counted as entrepreneurial companies, but it is hard to say whether they will have time to diversify their operations and their customer base before the construction phase comes to an end in 2014, when the developer's demand for locally produced goods and services will shrink dramatically. If margins are

compressed by weaker demand, the directors and managers of entrepreneurial LANCOS may struggle to maintain high levels of efficient investment if their local shareholders and employees seek a greater share of the profits they have made already, either through dividend payments or appointments to better paid jobs. The qualities of political leadership required of successful LANCO directors are not easily transferred without making their business operations vulnerable to new forms of political competition.

An effort was made to include a reasonable number of LANCO employees in the main sample of workers interviewed for the purpose of this study in order to compare their experience of employment with that of other workers employed directly or indirectly by mining and petroleum companies. However, while some of the respondents did say that they were employed by LANCOS, their number too small for this purpose, and some respondents evidently found it hard to distinguish between LANCOS and other on-site contractors.

## CONCLUSION

The government policies that apply to the domestic distribution of benefits (including jobs) that flow from large-scale investment in the resource sector now have wider national application because of the sector's prominence in PNG's national economy. The benefit-sharing agreements associated with the preferred area policy are thus regarded as an integral feature of the political landscape, despite their distorting effects on the labour market and business activity. The benefit-sharing agreements associated with the LNG Project pose bigger questions about good governance than have previously been posed by any major resource project. The PNG government has taken some steps to mitigate the volatility in mineral revenues through the establishment of a sovereign wealth fund, but has not so far shown much enthusiasm about the prospect of joining the Extractive Industries Transparency Initiative. At the same time, national government policy makers have paid far more attention to the question of who should get how much in the way of benefits from major resource projects than to the question of how these benefits might be translated into more and better jobs for the people of PNG.

The number of Papua New Guineans directly and indirectly employed in the development of major resource projects has grown significantly over the last decade, and most of them believe that they have better jobs than their fellow citizens employed in other parts of the national economy, but this does not prevent them from seeking better jobs for themselves in a context of increasing labour mobility. There has been considerable public debate about the negative effects of the resource boom on the quantity and quality of jobs available in other economic sectors, but this problem may be exaggerated in comparison with other symptoms of the Dutch Disease that are currently in evidence. More than three-quarters of the 6000 Papua New Guineans currently employed in construction of the LNG Project are preferred area employees, and while their current employment and likely redundancy at the end of the construction phase will have significant social and economic impacts in the preferred areas, these impacts should be much smaller in the rest of the country. The remainder of the national workforce involved in construction of the LNG Project is no greater than the number of workers who have emigrated from PNG to find work in the resource sector overseas. There seem to be several factors behind the recent increase in labour mobility, and while it puts some upward pressure on wages and

creates some headaches for many employers, it also means that jobs in the resource sector are less isolated from jobs in the rest of the economy as workers move in and out of the resource sector job stream as well as circulating within it.

The scale and content of remittances made by workers in the resource sector job stream to relatives at home represents a significant contribution to social and economic well-being beyond the limits of major resource project enclaves. Workers formally employed in other sectors, including the public service, no doubt make similar contributions, but the evidence collected for this study indicates that the amount of remittances grows with the size of worker's pay packet, so if workers in the resource sector job stream are especially well paid, their contributions will be larger. The evidence collected for this study also indicates that town-based workers make bigger remittances to their rural relatives than those who live in villages and commute to work in major resource projects on a fly-in-fly-out basis. Whatever the reason for this, remittances from town-based workers can partly be understood as investments in a sort of social and economic safety net that makes it easier and more attractive for such workers to retreat to their home villages when they retire or if they lose their jobs. Even workers now based overseas are motivated to make this type of investment.

Evidence collected for this study also confirms the common observation that workers with higher levels of education and income are also more likely to marry partners from other ethnic groups or other provinces, and if they live in town, are more likely to associate with workmates or friends who are not members of the same ethnic group when engaging in social activities outside of the workplace. In this sense, people with good jobs or better paid jobs do make a positive contribution to national social cohesion, but to judge by the scale of their remittances, this does not appear to come at the expense of their links to the rural relatives of one or both of the partners. For understandable reasons, workers employed under the terms of the preferred area policy are less likely to form social relationships with people from other areas, and also make smaller remittances to relatives within the preferred area, partly because they tend to have a lower average income than other members of the national workforce in the resource sector.

There are some things which the national government could do, and other things which it should probably not do, to foster the creation of more jobs and better jobs in the context of a resource boom which has contributed to a rapid increase in the movement of workers between the jobs that already exist.

One thing the government should probably not do is to use a mixture of subsidies and regulations to create new jobs in other rural industries in order to mitigate the effects of the Dutch Disease on the labour market. Previous government efforts to subsidize the agricultural sector have not been effective, while recent efforts to impose downstream processing requirements on the log export industry are proving to be counter-productive. These types of government intervention may simply add to the market distortions already being created by the preferred area policy. The government's focus should be on the removal of current barriers to investment rather than on measures directly aimed at the creation of new jobs in the private sector.

Another thing the government should probably not do is to provide additional support to landowner companies based in resource project enclaves, beyond the support which they already receive from the

application of the preferred area policy. While the application of this policy may have created the space for entrepreneurial LANCOs to emerge in the first place, their emergence from a much larger group of LANCOs with defective business models owes nothing to government support, and there is no reason to give them further competitive advantages against other nationally owned companies. Foreign investors in the resource sector now have a better idea of how to foster the emergence of such companies in their fields of operation, and there is an argument for such lessons to be shared, especially in the preparation of their mine closure plans. If there is a role for government here, it should mainly be concerned with policies to improve levels of corporate governance and accountability that would apply to all landowner companies.

The national government has been in the process of drafting a mine closure policy for the last 12 years, but it has yet to be finalized, and it is not clear what, if anything, it might eventually say about job creation or job protection. In this regard, the key to avoidance of social and economic dislocation in a preferred area appears to be twofold: first, an industrial training program that succeeds in creating a cohort of preferred area employees who are sufficiently skilled to gain employment in other parts of the country where they no longer count as preferred area employees; and second, the formation of at least one entrepreneurial LANCO which can also compete in a national marketplace, even if some of its staff are still recruited from the preferred area. In some areas, it may be possible for mining and petroleum companies to subsidize small-scale commercial activities that will provide a reasonable living for local people after project closure, but the record to date has not been impressive, and there is no reason to think that government policy measures would improve it.

It has sometimes been suggested that the government should actively promote the emigration of highly skilled national workers from the resource sector in order to create more jobs for workers who remain in PNG. However, there is currently no government agency with either the mandate or the capacity to perform this task, and the workers in question have proven to be quite capable of organizing their own emigration, with or without the support of their former employers in PNG. Some employers might even prefer a system of incentives that would discourage the emigration of highly skilled national workers, but that is even less likely to be adopted as a matter of government policy.

The decline of government capacity to either regulate or promote national employment in the resource sector or other parts of the private sector may be regarded as part of a more general phenomenon in which a booming industry sucks capacity out of the public service by offering better salary packages to people with relevant expertise. This is a trend that can certainly be detected in those PNG government agencies responsible for regulating the resource sector. This raises the question whether public service salaries need to be increased in order to limit the scale of the brain drain. There is certainly an argument for raising salaries in some critical branches of government, but this currently runs up against the provisions of the Public Finance Management Act, and these can only be achieved by turning line departments into statutory authorities which can offer better terms and conditions to their employees. However, such measures do not address the main cost of living pressure which currently confronts all town-based workers, including public servants, which is the cost of housing.

Skyrocketing rental costs in PNG's major urban centres, and especially in the national capital, have been blamed on the influx of thousands of foreign workers involved in construction of the LNG Project. There

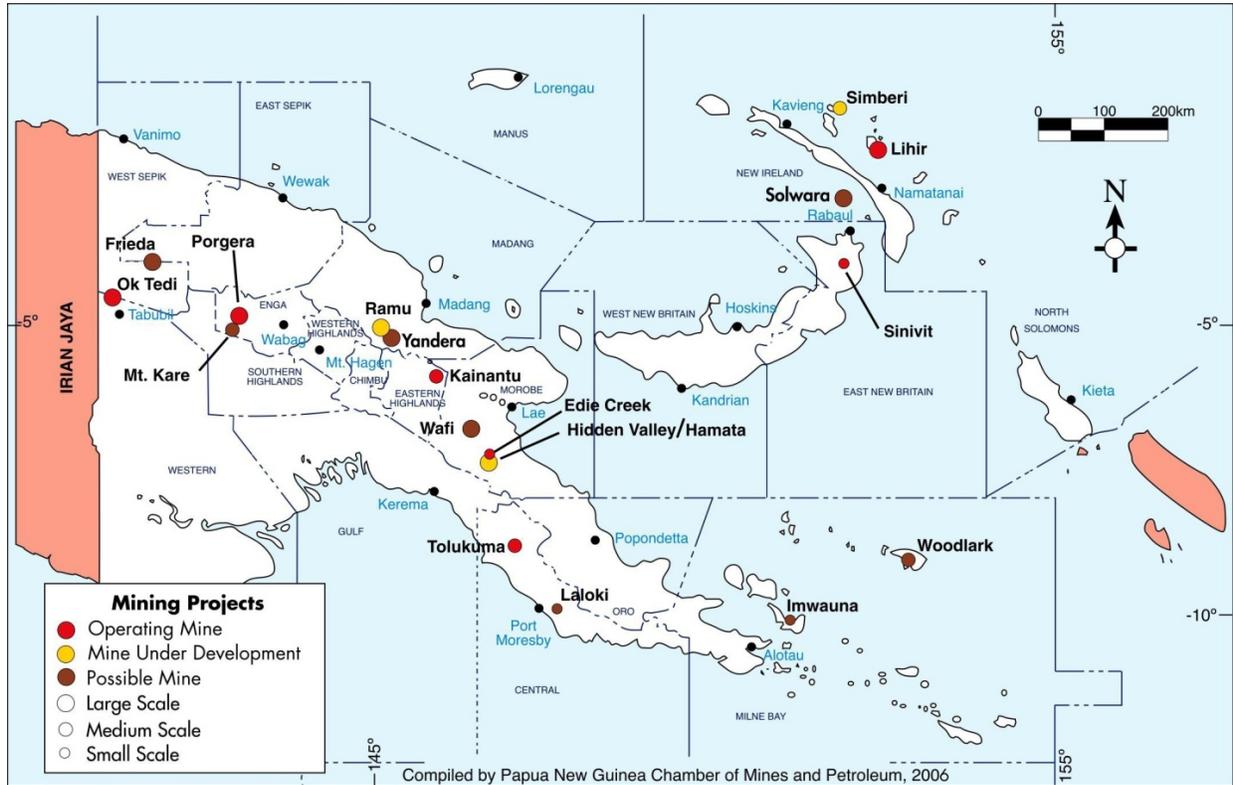
may be an element of truth in this explanation, but there is also a longer term trend for the urban population to expand much faster than land can be freed up for the construction of new housing. If there is one priority for government action, it is to deal with this problem of urban land and housing. Since the problem has been recognized for a long time, there is also a long history of government failure to deal with it effectively. But like other priority areas for government action, the problem will not go away, so some solution must be found.

A second priority should be to strengthen the public institutions of professional and technical training which currently have glaring weaknesses. This does not entail the reintroduction of centralized manpower planning of the kind attempted in the early years of Independence, nor does it entail a specific focus on the more specialized skills required by the resource sector. There is no point in having a surplus of qualified geologists when the resource boom comes to an end. On the other hand, it is unreasonable to expect that mining and petroleum companies should bear all the costs of making up for deficiencies in the public education of their national employees in a situation where workers trained at company expense are likely to find a new job with a new employer within a few years. There needs to be a concerted effort by relevant government agencies and organizations representing employers in different branches of industry to improve the overall quality of post-secondary education. This imperative has already been recognized by some aid agencies, but reliance on foreign aid to strengthen any part of the public education system is unlikely to produce sustainable results in the long term.

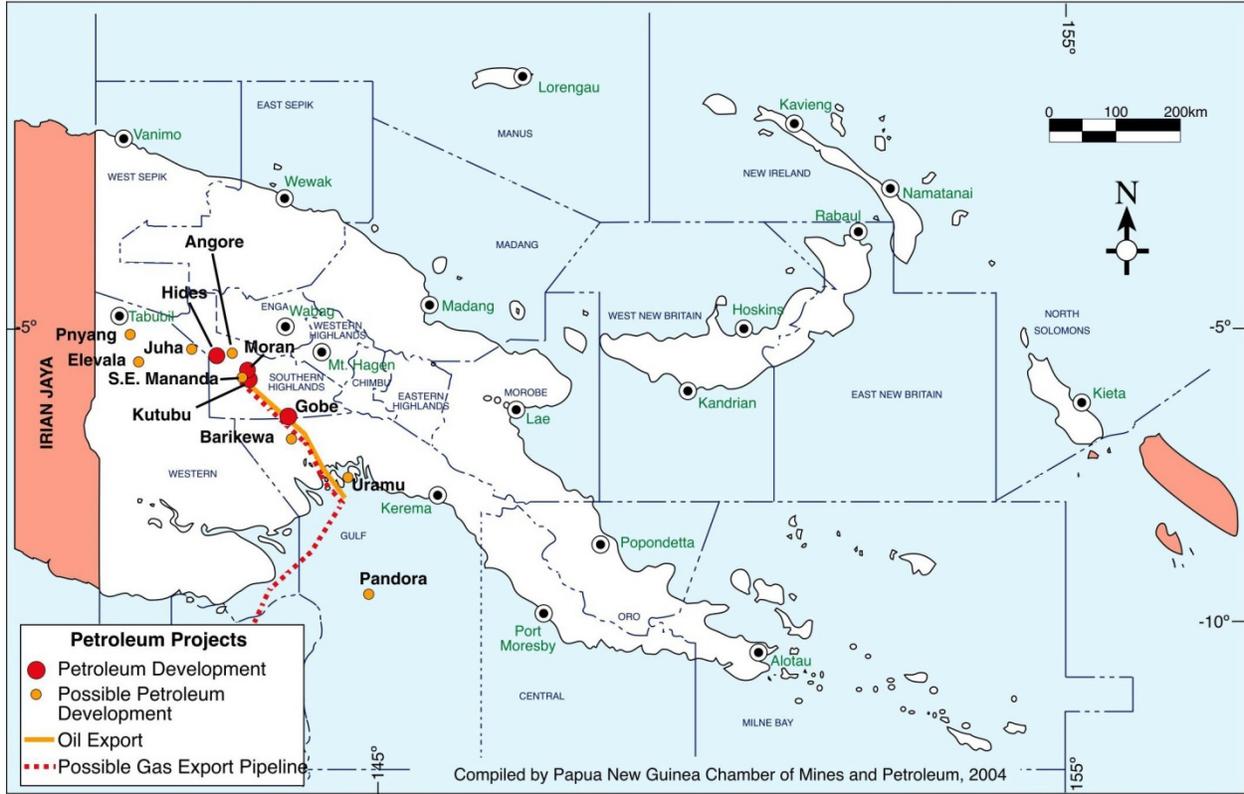
The third priority should be the development of human capital in those rural areas with the most acute levels of poverty, where the windfall benefits of a major resource project may never materialize, and where local people would struggle to take advantage of them even if they did. For the most part, these areas get no benefit from an increase in the quantity and quality of jobs in the formal sector of the economy because village children have an ever-diminishing chance of getting the sort of education that would qualify them for such jobs, and village adults do not even have the opportunity of migrating to a major town, getting jobs as security guards and receiving the minimum wage of K200 a fortnight. The question of what to do about these areas of extreme disadvantage has been recognized as a major policy problem for a long time, but here again, the recent tendency has been for the government to let foreign aid agencies search for a solution. The present national government might claim that it has come up with its own solution in the form of the free education policy that is now meant to relieve parents of the financial burden of school fee payments. However, free access to primary schools does not have much value if the schools have no teachers. There is a case to be made for special allowances to be paid to teachers and health workers who are posted to the least developed areas, so long as there is some sensible way of deciding where these areas are and limiting opportunities to abuse a system of financial incentives.

MAPS, FIGURES AND TABLES

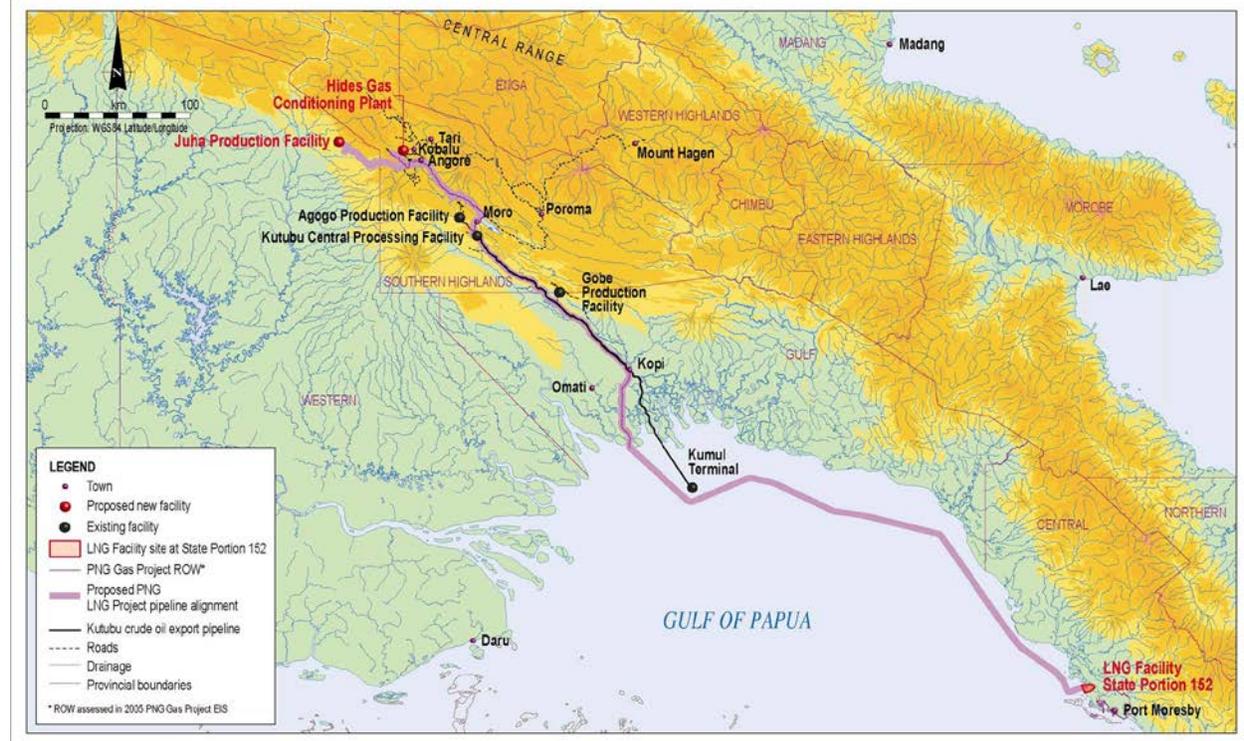
Map 1: Major mining projects in Papua New Guinea, 2006.



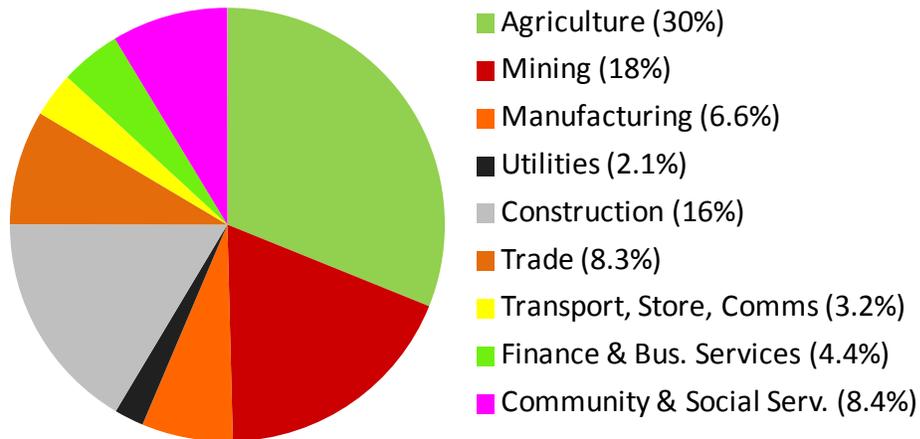
Map 2: Petroleum development projects in Papua New Guinea, 2004.



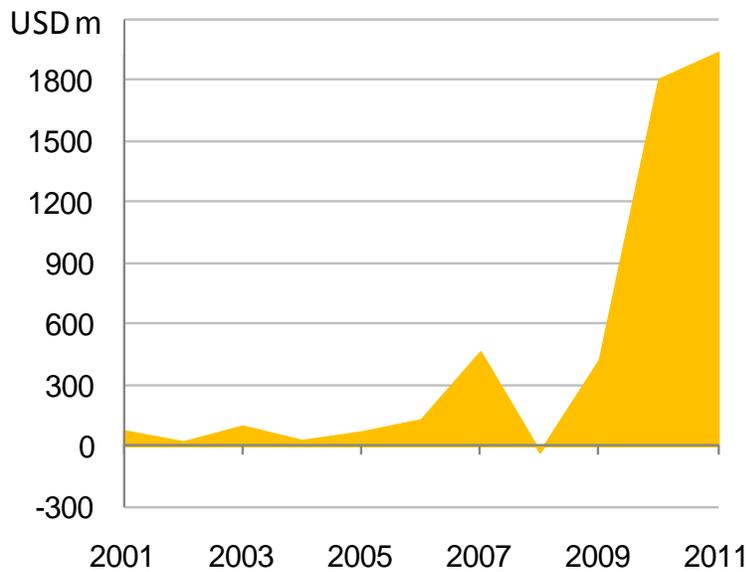
Map 3: LNG Project under construction, 2010-2014.





**Figure 2: Sectoral composition of PNG's nominal Gross Domestic Product, 2011.**

Source: PNG Department of Treasury.

**Figure 3: Net foreign direct investment in PNG, 2001-2011.**

Sources: International Monetary Fund, Bank of Papua New Guinea.

**Table 1: Percentage of PNG export values by sector, 2002-2011.**

SECTOR	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	TOTAL
Resources	75.0	75.3	73.1	75.4	82.2	78.6	75.7	75.7	75.5	70.6	75.7
Agriculture	17.0	17.8	20.6	19.2	13.0	16.5	19.0	18.4	19.0	23.1	18.4
Forestry	6.5	5.3	5.6	4.7	4.1	4.5	3.4	3.9	4.8	4.7	4.8
Other	1.5	1.6	0.7	0.7	0.7	0.4	1.9	2.0	0.7	1.6	1.2

Source: Bank of Papua New Guinea.

**Table 2: Employment in three large-scale mining projects, 2010.**

<b>OK TEDI</b>	<b>No.</b>	<b>%</b>
<b>National employees (total)</b>	<b>2,046</b>	<b>94.6</b>
Preferred area employees	712	32.9
Host province employees	57	2.6
Other employees	1,264	58.5
<b>Non-citizen employees</b>	<b>116</b>	<b>5.4</b>
All male employees	1,945	90.0
All female employees	217	10.0
<b>Total direct employment</b>	<b>2,162</b>	<b>100.0</b>
Contractors' national employees	2,628	85.8
Contractors' non-citizen employees	434	14.2
<b>Total indirect employment</b>	<b>3,062</b>	<b>100.0</b>
<b>Total direct and indirect employment</b>	<b>5,224</b>	
<b>PORGERA</b>		
<b>National employees (total)</b>	<b>2,418</b>	<b>93.1</b>
Preferred area employees	1,666	64.2
Host province employees	36	1.4
Other employees	716	27.6
<b>Non-citizen employees</b>	<b>178</b>	<b>6.9</b>
All male employees	2,210	85.1
All female employees	208	8.0
<b>Total direct employment</b>	<b>2,596</b>	<b>100.0</b>
Contractors' national employees	846	95.7
Contractors' non-citizen employees	39	4.4
<b>Total indirect employment</b>	<b>884</b>	<b>100.0</b>
<b>Total direct and indirect employment</b>	<b>3,480</b>	
<b>LIHIR</b>		
<b>National employees (total)</b>	<b>1,957</b>	<b>89.7</b>
Host province employees	814	37.3
Other employees	1,143	52.4
<b>Non-citizen employees</b>	<b>224</b>	<b>10.3</b>
All male employees	1,888	86.6
All female employees	293	13.4
<b>Total direct employment</b>	<b>2,181</b>	<b>100.0</b>
<b>Total indirect employment</b>	<b>2,842</b>	
<b>Total direct and indirect employment</b>	<b>5,023</b>	

Source: PNG Chamber of Mines and Petroleum.

**Table 3: PNG employment index by sector, first quarter 2002, 2007 and 2012.**

SECTOR	2002	2007	2012
<b>Extractive industry</b>	<b>100.0</b>	<b>116.4</b>	<b>172.7</b>
Primary industry	100.0	134.7	167.1
Manufacturing	100.0	136.8	181.5
Construction	100.0	130.9	180.6
Transport	100.0	116.2	151.9
Wholesale trade	100.0	159.0	199.4
Retail trade	100.0	111.3	138.0
Financial & other services	100.0	111.1	142.2
<b>All non-extractive sectors</b>	<b>100.0</b>	<b>127.3</b>	<b>162.7</b>

Source: Bank of Papua New Guinea.

**Table 4: PNG job advertisements by industry, February-March 2002, 2007 and 2012.**

INDUSTRY CATEGORY	Jobs 2002	%	Jobs 2007	%	Jobs 2012	%
Agriculture, hunting & forestry	21	2.9	40	2.8	61	2.2
Fishing	16	2.2	0	0.0	0	0.0
Mining & quarrying	46	6.3	158	11.0	230	8.1
Manufacturing	47	6.4	53	3.7	104	3.7
Electricity, gas & water	7	1.0	26	1.8	16	0.6
Construction	50	6.8	215	14.9	500	17.7
Wholesale & retail trade & repairs	117	16.0	178	12.3	386	13.6
Hotels & restaurants	15	2.1	29	2.0	67	2.4
Transport, storage & communications	36	4.9	105	7.3	144	5.1
Financial intermediation	15	2.1	32	2.2	114	4.0
Real estate, renting & business services	172	23.6	279	19.3	779	27.5
Public administration & defence	36	4.9	36	2.5	70	2.5
Education	55	7.5	86	6.0	40	1.4
Health & social work	22	3.0	9	0.6	65	2.3
Other community, social & personal services	34	4.7	68	4.7	89	3.1
Private household with employed persons	1	0.1	1	0.1	1	0.0
Extra-territorial organization & bodies	31	4.2	117	8.1	155	5.5
Unspecified	9	1.2	10	0.7	7	0.2
<b>TOTAL</b>	<b>730</b>	<b>100.0</b>	<b>1442</b>	<b>100.0</b>	<b>2828</b>	<b>100.0</b>

Source: Data collected for present study.

**Table 5: PNG job advertisements by occupation, February-March 2002, 2007 and 2012.**

OCCUPATIONAL CATEGORY	Jobs 2002	%	Jobs 2007	%	Jobs 2012	%
Senior executives, general managers & branch managers	13	1.8	32	2.2	39	1.4
Specialised (divisional/departmental) managers	30	4.1	67	4.6	95	3.4
Physical & engineering science professionals & associates	42	5.8	166	11.5	198	7.0
Life science & health professionals & associates	37	5.1	30	2.1	76	2.7
Education & training professionals & associates	45	6.2	66	4.6	58	2.1
Business & legal professionals & associates	113	15.5	216	15.0	348	12.3
Aid project staff, applied social scientists & associates	13	1.8	76	5.3	96	3.4
Media & sports professionals & associates	14	1.9	13	0.9	17	0.6
Clerical workers & junior sales staff	88	12.1	135	9.4	296	10.5
Providers of miscellaneous personal services	20	2.7	25	1.7	109	3.9
Security service providers & supervisors	94	12.9	82	5.7	452	16.0
Mineral extraction and processing workers	14	1.9	26	1.8	39	1.4
Building & construction workers & supervisors	13	1.8	91	6.3	224	7.9
Metal & machinery trades workers & supervisors	124	17.0	299	20.7	484	17.1
Drivers & mobile machine operators & supervisors	26	3.6	89	6.2	244	8.6
Miscellaneous manual workers & supervisors	44	6.0	29	2.0	53	1.9
<b>TOTAL</b>	<b>730</b>	<b>100.0</b>	<b>1442</b>	<b>100.0</b>	<b>2828</b>	<b>100.0</b>

Source: Data collected for present study.

**Table 6: Jobs advertised by mining and petroleum companies, February-March 2002, 2007 and 2012.**

OCCUPATIONAL CATEGORY	No.	%
Senior executives, general managers & branch managers	0	0.0
Specialised (divisional/departmental) managers	14	3.2
Physical & engineering science professionals & associates	105	24.2
Life science & health professionals & associates	13	3.0
Education & training professionals & associates	14	3.2
Business & legal professionals & associates	29	6.7
Aid project staff, applied social scientists & associates	6	1.4
Media & sports professionals & associates	3	0.7
Clerical workers & junior sales staff	12	2.8
Providers of miscellaneous personal services	4	0.9
Security service providers & supervisors	21	4.8
Mineral extraction and processing workers	66	15.2
Building & construction workers & supervisors	4	0.9
Metal & machinery trades workers & supervisors	101	23.3
Drivers & mobile machine operators & supervisors	27	6.2
Miscellaneous manual workers & supervisors	15	3.5
<b>TOTAL</b>	<b>434</b>	<b>100.0</b>

Source: Data collected for present study.

**Table 7: Jobs held by 180 workers in the PNG resource sector by gender, 2012.**

OCCUPATIONAL CATEGORY	M	%	F	%	TOTAL	%
Senior executives, general managers & branch managers	1	0.7	0	0.0	1	0.6
Specialised (divisional/departmental) managers	6	4.3	2	5.1	8	4.4
Physical & engineering science professionals & associates	40	28.4	10	25.6	50	27.8
Life science & health professionals & associates	1	0.7	3	7.7	4	2.2
Education & training professionals & associates	8	5.7	0	0.0	8	4.4
Business & legal professionals & associates	9	6.4	3	7.7	12	6.7
Aid project staff, applied social scientists & associates	9	6.4	0	0.0	9	5.0
Media & sports professionals & associates	0	0.0	0	0.0	0	0.0
Clerical workers & junior sales staff	12	8.5	16	41.0	28	15.6
Providers of miscellaneous personal services	1	0.7	2	5.1	3	1.7
Security service providers & supervisors	7	5.0	2	5.1	9	5.0
Mineral extraction and processing workers	10	7.1	0	0.0	10	5.6
Building & construction workers & supervisors	3	2.1	0	0.0	3	1.7
Metal & machinery trades workers & supervisors	14	9.9	0	0.0	14	7.8
Drivers & mobile machine operators & supervisors	14	9.9	1	2.6	15	8.3
Miscellaneous manual workers & supervisors	6	4.3	0	0.0	6	3.3
<b>TOTAL</b>	<b>141</b>	<b>100.0</b>	<b>39</b>	<b>100.0</b>	<b>180</b>	<b>100.0</b>

Source: Interview data collected for present study.

**Table 8: Sample of 180 workers classified by age group and gender.**

AGE GROUP	M	%	F	%	TOTAL	%
20-29	27	19.1	16	41.0	43	23.9
30-39	41	29.1	17	43.6	58	32.2
40-49	49	34.8	6	15.4	55	30.6
50 plus	24	17.0	0	0.0	24	13.3
<b>TOTAL</b>	<b>141</b>	<b>100.0</b>	<b>39</b>	<b>100.0</b>	<b>180</b>	<b>100.0</b>

Source: Interview data collected for present study.

**Table 9: Sample of 180 workers classified by pay rates and gender.**

PAY RATES	M	%	F	%	TOTAL	%
< K800	24	17.0	16	41.0	40	22.2
K800 - K1990	72	51.1	16	41.0	88	48.9
K2000 - K4000	29	20.6	7	17.9	36	20.0
> K4000	16	11.3	0	0.0	16	8.9
<b>TOTAL</b>	<b>141</b>	<b>100.0</b>	<b>39</b>	<b>100.0</b>	<b>180</b>	<b>100.0</b>

Source: Interview data collected for present study.

**Table 10: Sample of 180 workers classified by educational level and gender.**

EDUCATIONAL LEVEL	M	%	F	%	TOTAL	%
Doctoral degree	2	1.4	0	0.0	2	1.1
Masters degree	4	2.8	1	2.6	5	2.8
Postgraduate diploma/certificate	7	5.0	0	0.0	7	3.9
Undergraduate degree	42	29.8	16	41.0	58	32.2
Grade 12 plus diploma/certificate	8	5.7	7	17.9	15	8.3
Grade 12 only	5	3.5	3	7.7	8	4.4
Grade 10 plus diploma/certificate	35	24.8	7	17.9	42	23.3
Grade 10 only	11	7.8	4	10.3	15	8.3
Grade 8 plus certificate	6	4.3	0	0.0	6	3.3
Grade 8 only	5	3.5	0	0.0	5	2.8
Grade 6 plus certificate	3	2.1	0	0.0	3	1.7
Grade 6 only	3	2.1	0	0.0	3	1.7
Less than Grade 6	5	3.5	0	0.0	5	2.8
Not stated	5	3.5	1	2.6	6	3.3
<b>TOTAL</b>	<b>141</b>	<b>100.0</b>	<b>39</b>	<b>100.0</b>	<b>180</b>	<b>100.0</b>

Source: Interview data collected for present study.

**Table 11: Years in jobs for a sample of 141 male workers.**

JOBS	TOTAL	MEAN	MAX
Current job	561	4.0	31
Previous job 1	457	3.6	17
Previous job 2	493	4.9	16
Previous job 3	273	4.1	16
All previous jobs	1223	4.2	17
All jobs	1784	4.1	31

Source: Interview data collected for present study.

**Table 12: Years in jobs for a sample of 39 female workers.**

JOBS	TOTAL	MEAN	MAX
Current job	120	3.1	16
Previous job 1	71	2.3	7
Previous job 2	73	3.3	12
Previous job 3	31	2.2	5
All previous jobs	175	2.6	12
All jobs	295	2.8	16

Source: Interview data collected for present study.

**Table 13: Typical (average) employment history of 180 workers in past decade by gender.**

	M	F	BOTH
Number of jobs in last 10 years	2.6	2.6	2.6
Number of employers in last 10 years	2.1	1.9	2.1
Years in all jobs in last 10 years	7.2	6.6	7.0
Years in RS jobs in last 10 years	5.9	5.0	5.7
Years in education in last 10 years	1.2	1.9	1.3
Years unemployed in last 10 years	1.7	1.4	1.6

Source: Interview data collected for present study.

**Table 14: Typical (average) employment history of 180 workers in past decade by age group.**

	20-29	30-39	40-49	50 plus
Number of jobs in last 10 years	2.1	3.2	2.6	2.1
Number of employers in last 10 years	1.9	2.5	1.9	1.8
Years in all jobs in last 10 years	3.8	8.1	7.8	8.5
Years in RS jobs in last 10 years	2.9	6.2	6.6	7.7
Years in education in last 10 years	4.6	0.5	0.3	0.0
Years unemployed in last 10 years	1.6	1.4	1.9	1.5

Source: Interview data collected for present study.

**Table 15: Typical (average) employment history of 180 workers in past decade by pay rates.**

	< K800	800-1990	2000-4000	> K4000
Number of jobs in last 10 years	2.0	2.6	3.1	2.9
Number of employers in last 10 years	1.9	2.1	2.3	2.2
Years in all jobs in last 10 years	5.2	7.1	8.4	8.4
Years in RS jobs in last 10 years	3.8	5.8	6.8	7.9
Years in education in last 10 years	2.2	1.1	1.0	1.1
Years unemployed in last 10 years	2.7	1.8	0.6	0.5

Source: Interview data collected for present study.

**Table 16: Main reason given by mainstream workers for leaving previous jobs by gender.**

MAIN REASON	M	%	F	%	TOTAL	%
Internal promotion (same employer)	33	11.9	22	33.8	55	16.0
Internal transfer (same employer)	21	7.6	3	4.6	24	7.0
Better job offer (new employer)	47	16.9	7	10.8	54	15.7
Remuneration and benefits	28	10.1	5	7.7	33	9.6
Poor management or work environment	10	3.6	4	6.2	14	4.1
Inadequate career path	34	12.2	14	21.5	48	14.0
Pursuit of further education	4	1.4	1	1.5	5	1.5
Opportunity to emigrate	2	0.7	0	0.0	2	0.6
Commuting time or job location	5	1.8	0	0.0	5	1.5
Family or personal reasons	18	6.5	1	1.5	19	5.5
Redundancy (including mine closure)	60	21.6	7	10.8	67	19.5
Terminated by employer	6	2.2	1	1.5	7	2.0
No specific reason (just resigned)	10	3.6	0	0.0	10	2.9
<b>TOTAL</b>	<b>278</b>	<b>100.0</b>	<b>65</b>	<b>100.0</b>	<b>343</b>	<b>100.0</b>

Source: Interview data collected for present study.

**Table 17: Mainstream workers who said they supplied goods to relatives at home last year by gender.**

CONTRIBUTED	M	%	F	%	TOTAL	%
Yes	94	66.7	28	71.8	122	67.8
No	38	27.0	8	20.5	46	25.6
Not specified	9	6.4	3	7.7	12	6.7
<b>TOTAL</b>	<b>141</b>	<b>100.0</b>	<b>39</b>	<b>100.0</b>	<b>180</b>	<b>100.0</b>

Source: Interview data collected for present study.

**Table 18: Mainstream workers who said they supplied cash to relatives at home last year by gender.**

PAYMENTS	M	%	F	%	TOTAL	%
Yes	122	86.5	30	76.9	152	84.4
No	14	9.9	7	17.9	21	11.7
Not specified	5	3.5	2	5.1	7	3.9
<b>TOTAL</b>	<b>141</b>	<b>100.0</b>	<b>39</b>	<b>100.0</b>	<b>180</b>	<b>100.0</b>

Source: Interview data collected for present study.

**Table 19: Town-based workers who hosted rural relatives last year by gender.**

	M	F	TOTAL
Workers accommodating relatives	60	19	79
Number of relatives visiting	290	110	400
No. staying more than 1 month	174	72	246
No. staying more than 6 months	93	42	135
No. mainly helping with childcare	88	16	104
No. being educated at host's cost	60	27	87

Source: Interview data collected for present study.

**Table 20: Goods supplied to relatives at home last year by frequency of mention and total value.**

GOODS SUPPLIED	N	K	MAX	%
Construction and building materials	26	409,110	100,000	38.4
Transport (vehicles, motors, parts, fuel)	20	388,130	114,000	36.4
Household furniture and appliances	42	67,485	20,000	6.3
Working tools and equipment	21	37,980	12,000	3.6
Clothing and accessories	58	57,850	10,000	5.4
Mobile phones and digital devices	14	7,350	1,700	0.7
Food	40	61,470	10,000	5.8
Other	23	37,380	10,000	3.5
TOTAL	244	1,066,755	125,000	100.0

Source: Interview data collected for present study.

**Table 21: Cash supplied to relatives at home last year by frequency of mention and total value.**

PURPOSE OF CONTRIBUTION	N	K	MAX	%
School fees	89	272,960	16,000	22.8
Funeral expenses	66	145,700	20,000	12.2
Compensation payments	22	65,950	7,000	5.5
Brideprice payments	42	65,300	5,000	5.5
Other customary activities	20	62,900	20,000	5.3
Church activities & Xmas celebrations	35	60,780	10,000	5.1
Travel expenses	17	39,850	10,000	3.3
Medical expenses	16	24,050	7,000	2.0
Transport (vehicles, motors, parts, fuel)	6	97,700	80,000	8.2
Construction and building materials	13	45,400	20,000	3.8
Other	39	192,130	100,000	16.1
Unspecified	46	124,330	20,800	10.4
TOTAL	411	1,197,050	112,000	100.0

Source: Interview data collected for present study.

**Table 22: Workers who supplied goods to relatives at home by pay rates and value of goods.**

PAY RATES	WKRS	TOTAL	MAX	MEAN	MEDIAN
< K800	23	39,815	8,250	1,731	1,000
K800 - K1990	55	364,685	125,000	6,631	1,320
K2000 - K4000	26	347,105	60,600	13,350	1,700
> K4000	10	315,150	114,000	31,515	12,250
TOTAL	114	1,066,755	125,000	9,358	1,600

Source: Interview data collected for present study.

**Table 23: Workers who supplied cash to relatives at home by pay rates and value of payments.**

PAY RATES	WKRS	TOTAL	MAX	MEAN	MEDIAN
< K800	28	97,260	15,500	3,474	2,300
K800 - K1990	75	388,790	23,000	5,184	3,800
K2000 - K4000	33	387,300	105,000	11,736	5,000
> K4000	16	323,700	112,000	20,231	10,950
TOTAL	152	1,197,050	112,000	7,875	3,950

Source: Interview data collected for present study.

**Table 24: Workers who specified remittances in kind and/or cash by pay rates and remittance values.**

PAY RATES	BOTH	KIND	CASH	VALUE	MAX	MEAN	MEDIAN
< K800	22	1	6	137,075	20,000	4,727	2,400
K800 - K1990	49	5	26	753,655	135,000	9,421	5,500
K2000 - K4000	25	2	8	734,405	106,350	20,983	10,500
> K4000	10	0	6	638,850	150,000	39,928	22,000
TOTAL	106	8	46	2,263,985	150,000	14,150	6,550

Source: Interview data collected for present study.

**Table 25: Town-based workers who hosted rural relatives last year by fortnightly pay rates.**

	< 800	800-1990	2000-4000	> 4000	TOTAL
Workers accommodating relatives	17	32	22	8	79
Number of relatives visiting	94	155	124	35	408
No. staying more than 1 month	53	87	79	27	246
No. staying more than 6 months	28	38	53	16	135
No. mainly helping with childcare	14	32	36	22	104
No. being educated at host's cost	18	36	21	12	87

Source: Interview data collected for present study.

**Table 26: Goods supplied to relatives at home last year by expatriate PNG workers in resource sector.**

GOODS SUPPLIED	N	AUD	MAX	%
Construction and building materials	15	53,200	25,000	34.2
Transport (vehicles, motors, parts, fuel)	5	42,500	34,000	27.4
Household furniture and appliances	10	13,340	5,000	8.6
Working tools and equipment	5	2,700	1,000	1.7
Clothing and accessories	13	8,350	3,000	5.4
Mobile phones and digital devices	9	7,200	3,000	4.6
Food	10	16,250	6,000	10.5
Other	9	11,850	3,000	7.6
<b>TOTAL</b>	<b>76</b>	<b>155,390</b>	<b>34,000</b>	<b>100.0</b>

Source: Interview data collected for present study.

**Table 27: Cash supplied to relatives at home last year by expatriate PNG workers in resource sector.**

PURPOSE OF CONTRIBUTION	N	AUD	MAX	%
School fees	18	29,950	4,500	20.6
Funeral expenses	10	12,000	4,000	8.3
Compensation payments	10	45,000	21,000	31.0
Brideprice payments	14	14,620	3,000	10.1
Other customary activities	2	3,500	2,000	2.4
Church activities & Xmas celebrations	3	5,900	5,000	4.1
Travel expenses	1	500	500	0.3
Medical expenses	5	7,050	2,000	4.9
Transport (vehicles, motors, parts, fuel)	0	0	0	0.0
Construction and building materials	2	8,500	7,000	5.8
Other	7	18,290	12,000	12.6
Unspecified	0	0	0	0.0
<b>TOTAL</b>	<b>72</b>	<b>145,310</b>	<b>21,000</b>	<b>100.0</b>

Source: Interview data collected for present study.

**Table 28: Expat workers who supplied goods to relatives at home by pay rates and value of goods.**

PAY RATES	WKRS	TOTAL	MAX	MEAN	MEDIAN
< \$4000	21	42,590	5,000	2,028	1,500
> \$4000	20	112,800	60,000	5,371	3,000
TOTAL	41	155,390	60,000	7,400	2,500

Source: Interview data collected for present study.

**Table 29: Expat workers who supplied cash to relatives at home by pay rates and value of payments.**

PAY RATES	WKRS	TOTAL	MAX	MEAN	MEDIAN
< \$4000	20	46,520	8,700	2,326	1,635
> \$4000	18	98,790	33,000	5,488	2,000
TOTAL	38	145,310	33,000	3,824	2,000

Source: Interview data collected for present study.

**Table 30: Expat workers who specified remittances in kind/cash by pay rates and remittance values.**

PAY RATES	BOTH	KIND	CASH	VALUE	MAX	MEAN	MEDIAN
< \$4000	18	3	2	89,110	13,700	3,874	3,500
> \$4000	16	4	2	211,590	68,000	9,618	4,195
TOTAL	34	7	4	300,700	68,000	6,682	4,000

Source: Interview data collected for present study.

## REFERENCES

- Baxter, M., 2001. 'Enclaves or Equity: The Rural Crisis and Development Choice in Papua New Guinea.' Canberra: AusAID (International Development Issues 54).
- Brooksbank, J., 2002. 'Sustainable Development Policy and Sustainability Planning Framework for the Mining Sector in Papua New Guinea -- Working Paper 3: Business Development, Training and Employment.' Port Moresby: PNG Mining Sector Institutional Strengthening Project.
- Bulman, T., 2012. 'Papua New Guinea Economic Briefing: The Challenge of Transforming Today's Boom into Better Living Standards Tomorrow.' Port Moresby: World Bank.
- Filer, C., 2005. 'The Role of Land-Owning Communities in Papua New Guinea's Mineral Policy Framework.' In E. Bastida, T. Wälde and J. Warden-Fernández (eds), *International and Comparative Mineral Law and Policy: Trends and Prospects*. The Hague: Kluwer Law International.
- , 2008. 'Development Forum in Papua New Guinea: Upsides and Downsides.' *Journal of Energy & Natural Resources Law* 26(1): 120-150.
- Filer, C. and B. Imbun, 2009. 'A Short History of Mineral Development Policies in Papua New Guinea, 1972-2002.' In R.J. May (ed.), *Policy Making and Implementation: Studies from Papua New Guinea*. Canberra: ANU E Press.
- Finlayson, M., 2002. 'Sustainable Development Policy and Sustainability Planning Framework for the Mining Sector in Papua New Guinea -- Working Paper 2: Benefit Stream Analysis.' Port Moresby: PNG Mining Sector Institutional Strengthening Project.
- Johnson, P., 2012. 'Lode Shedding: A Case Study of the Economic Benefits to the Landowners, the Provincial Government, and the State from the Porgera Gold Mine.' Boroko: PNG National Research Institute (Discussion Paper 124).
- Susapu, B. and G. Crispin, 2001. 'Report on Small-Scale Mining in Papua New Guinea.' London: Mining, Minerals and Sustainable Development Project (Working Paper 81).
- Whimp, K., 1995. 'Representative Resource Owner Bodies for Forestry Projects.' Boroko (PNG): Forest Management and Planning Project.