Workforce nationalisation in Papua New Guinea: Security and logistics in resource organisations

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Chapter 4: Case Study of the PNG LNG Project, 2009 to 2016

4.1 Introduction

The use of a case study in this research was predominantly to demonstrate the size, scope and complexity of a resource project in PNG. I selected the PNG LNG project for this research because it is the most recent project completed in PNG, and it is now in a steady state of operation, also known as production. Through the use of the company’s employment data (published yearly and provided on its website), I will be able to demonstrate the size of the workforce during each phase of the project—from the early pre-construction work that involved preparing the landscape for construction, to the construction phase, and then onto the final turnover from the project to the organisation of production. Finally, the project was commissioned, gas was introduced to the system, and the project moved into steady-state production. The workforce numbers that relate to this project outline are depicted in the case study, thereby providing context for the research. The primary limitation of this case study is that only the workforce data were examined fully. These data and all other information used in the case study were drawn from publicly released information and governmental reporting—copies of which are available on the company website www.pnglng.com.

4.2 Background

ExxonMobil is the parent company of ExxonMobil PNG Limited—the operator of the PNG LNG project, who successfully and safely delivered PNG’s first LNG project. In 2004, an affiliate of ExxonMobil began working on a concept to commercialise the natural gas in PNG’s Southern Highlands and transport this via a 3,000-kilometre pipeline to customers in Australia. In 2007, it was decided that this project, the PNG Gas Project, was unfeasible, and work began on evaluating an LNG project within PNG.

In 2008, the initial PNG LNG project partners signed a joint operating agreement. In that same year, an independent economic impact study was commissioned and demonstrated that the project would have a significant effect on PNG’s gross domestic product, in addition to providing other benefits, such as employment and business opportunities. On 22 May 2008, the project venture participants and PNG state formally signed the Gas Agreement. The Gas Agreement established the fiscal regime and legal
framework by which the PNG LNG project was to be regulated throughout its lifetime, and established the terms and mechanism for state equity participation in the project. Following this, it was announced that the project would begin front-end engineering design (FEED).

Between December 2009 and March 2010, sales and marketing agreements for the gas were signed with four major customers. In October 2009, the environmental impact statement, which drew on 26 supporting studies and took two years to complete, was approved by the PNG Government. This documented the many rigorous commitments and measures the project would implement to manage the environment. On 8 December 2009, the project venture participants approved the project, thereby paving the way for construction to begin. This was supported by the completion of financing arrangements with lenders in March 2010. Engineering, procurement and construction contracts were approved in late 2009, and construction work began in early 2010. In April 2014, the PNG LNG project started production of LNG ahead of schedule. On 25 May 2014, the first shipment of LNG from the PNG LNG project was delivered by the Spirit of Hela to the Tokyo Electric Power Co. Inc. (TEPCO) in Japan.

4.3 Project Overview

Figure 4.1 PNGLNG Project Map
The US$19 billion PNG LNG project is an integrated development that includes gas production and processing facilities that extend from Hela, the Southern Highlands, and the Western and Gulf provinces to Port Moresby in the Central Province. ExxonMobil PNG Limited operates PNG LNG on behalf of six co-venture partners. The facilities are connected by over 700 kilometres of onshore and offshore pipeline, and include a gas conditioning plant in Hides and a liquefaction and storage facility near Port Moresby. LNG production began in April 2014, months ahead of schedule. Since then, the project has been reliably supplying LNG to four long-term major customers in the Asia region, including:

- China Petroleum and Chemical Corporation (Sinopec)
- Osaka Gas Company Limited
- The Tokyo Electric Power Company Inc.
- CPC Corporation.

The following facts represent the scope and scale of the project:

- In 2016, the project operations produced 7.9 million tonnes of LNG—an increase of 14% from the original design specification of 6.9 million tonnes per annum (MTA). Over the next 30 years, the project estimates that PNG LNG will produce more than 11 trillion cubic feet of LNG.
- The project production workforce consists of 2,400 workers, of which more than 80% are Papua New Guinean and 20% are women.
- Around one billion cubic feet of natural gas is converted into LNG every day at the LNG plant.
- The project produced over 7.9 million tonnes of LNG in 2016.
- Over 210 Papua New Guinean operations and maintenance technicians are being trained, of which 25% are women.
- PGK 12 billion has been spent on services provided by Papua New Guinean companies since 2010, PGK 3 billion of which is with landowner companies.
- More than 17,500 Papua New Guinean entrepreneurs have been assisted by the ExxonMobil-established Enterprise Centre to help develop their business.
- 1,500 Papua New Guinean businesses are registered on the PNG LNG–established Enterprise Centre Supplier Database.
• More than PGK 800 million has been invested in community and infrastructure programs focused on education, health, women’s empowerment, environment and agriculture.

Additional construction facts:

• The US$19 billion PNG LNG project is an integrated development that includes gas production and processing facilities that extend from Hela, the Southern Highlands, and the Western and Gulf provinces to Port Moresby in the Central Province.
• ExxonMobil PNG Limited operates PNG LNG on behalf of six co-venture partners.
• The project facilities are connected by over 700 kilometres of onshore and offshore pipeline, and include a gas conditioning plant in Hides and a liquefaction and storage facility near Port Moresby.
• LNG production began in April 2014—months ahead of schedule. Since then, the project has been reliably supplying LNG to four long-term major customers in the Asia region, including:
  o China Petroleum and Chemical Corporation (Sinopec)
  o Osaka Gas Company Limited
  o The Tokyo Electric Power Company Inc.
  o CPC Corporation.
• In 2016, the project operations produced 7.9 million tonnes of LNG—an increase of 14% from the original design specification of 6.9 million tonnes per annum (MTA). Over the next 30 years, it is estimated that the PNG LNG project will produce more than 11 trillion cubic feet of LNG.

4.4 Workforce Composition

Over 55,000 workers were involved in the construction of the project, with 21,220 employed at its peak in 2012. More than 10,000 Papua New Guineans were trained for construction and operation roles, and more than 2.17 million hours of training through 13,000 training programs were delivered. In a presentation to lenders in 2010 and again to local leaders in PNG, the PNG LNG management presented the following information:
• First priority: PNG citizens originating from within the local representative landowner company area.
• Second priority: PNG citizens from the overall project impact area.
• Third priority: PNG citizens from the four provinces of the project impact area and the national capital district.
• Fourth priority: PNG citizens from elsewhere in PNG.
• Last priority: Non-PNG citizens from overseas—only for positions open to foreigners.

The below was enacted into the Act as an amendment at the same time, which removed the obligation to follow the Act—not just for ExxonMobil PNG, but for all contractors associated with the project.

Figure 4.2 PNGLNG Exemption Rule

4.5 Employment Data

Table 4.1 Workforce Employment by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Workforce</th>
<th>Non-PNG Nationals</th>
<th>PNG Nationals</th>
<th>PNG Nationals %</th>
</tr>
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<tbody>
<tr>
<td>2010</td>
<td>5,719</td>
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<td>8,564</td>
<td>60</td>
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<td>21,220</td>
<td>12,799</td>
<td>8,421</td>
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<tr>
<td>2013</td>
<td>14,749</td>
<td>9,149</td>
<td>5,600</td>
<td>38</td>
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<td>71</td>
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<td>2015</td>
<td>2,400</td>
<td>519</td>
<td>1,899</td>
<td>79</td>
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<td>2016</td>
<td>2,406</td>
<td>476</td>
<td>2,046</td>
<td>81</td>
</tr>
</tbody>
</table>
2010

- Early work in Hides, clearing for pipeline and plant site footprints.
- Work starts on LNG marine terminal and jetty.
- Work starts clearing the LNG plant outside of Port Moresby.
- Setting up and building of camps to support the project.
2011

- Drilling operations commence in the Highlands.
- Construction of Komo Airport commences.
2012

- Construction is underway on all parts of the project. Workforce will peak at year's end.
- Drilling is underway in the Highlands.
- Pipeline construction in the Highlands and subsea is underway.

![2012 Workforce Composition](image)

**Figure 4.6 Workforce Composition 2012**

2013

- Construction is nearing completion on most of the project.
- Komo is handed over and being used for heavy load flights for turbines.
2014

- In February, turn over and commissioning commences at Hides Gas Conditioning Plant.
- In April, the first gas is produced and the pipeline goes live, with the LNG plant in Port Moresby ready to deliver its first cargo months ahead of schedule.
- In May, the first shipment is delivered and departs PNG.
- The project transitions into steady-state production.
2015

- The project is in steady-state production.

Figure 4.9 Workforce Composition 2015

2016

- Angore expansion project is pending.
- The project is in steady-state production.
4.6 Non-PNG Citizens Employment

All of the data available, detailed above in figures 4.3 through to 4.10, broke down the staff into two groupings. These groupings were not further broken down. The 2010 report developed at the start of the project recommended that PNG LNG (then referred to as Esso Highlands, and now also known as ExxonMobil PNG [EMPNG]) and its prime contractors (engineering, procurement and construction contractors) should develop their own national content plans. They were also asked to report the breakdown of local staff according to local project area (indigenous), project district, PNG national and other. In addition, they were asked to provide further breakdowns according to gender and job type to aid in social reporting on equity and diversity for the project. Any non-PNG citizens were to be reported as total non-PNG workers, expatriate staff and OCNs that comprised the semi-skilled and unskilled non-PNG workers. Although these data were collected during the project, very few of the data were made available publically, so they could not be used in this case study. However, some estimates from the Labour Department placed the OCN number on the project at an excess of 9,000 in 2012.

The following is an overview of the work permits issued to foreign workers during the project. In 2005, only 6,000 permits were issued, and these were issued predominantly to Australian and New Zealand nationals, while two smaller groups comprised Chinese
and Malaysian nationals. There is then a break in the data until 2010, when the project begins. At this point, the number of permits issued more than doubled, reaching 1,500, of which 1,125 were directly for PNG. A substantial amount of these permits were likely project-related, but for associated organisations in PNG, such as construction and other industries not directly involved in the LNG project. The number jumped to 5,000 permits in 2011, most of which could be directly linked to the project’s 4,657 increase in non-national staff. Similar growth can be seen in the 2012 numbers, when an additional 5,000 work permits were issued to support the project (Voigt-Graf, 2013).

![Work Permits Issued 2012](image)

**Figure 4.11: PNG Department of Labour Data, Retrieved 2015**

To gain insight into the use of OCNs and expatriates in PNG, the following figure analyses the breakdown of nationalities among the workers who received permits in 2012. This figure was developed by Dr Voigt-Graf for the National Research Institute in 2013.
When analysing the above breakdown of work permit recipients by nationality in the context of the PNG LNG project, we must first estimate the non-project numbers. The estimated number of Australians living and working in PNG at the start of the project in 2009 was 14,000. According to the National Research Institute figures above, this number increased to 22,466 in 2012. The increase of 8,466 over three years supports the anecdotal evidence that the majority of expatriates working on this project were Australian. Other developed nations included Canada, the United Kingdom and the United States. Anecdotal evidence gleaned from conversations and observations placed the number of Philippine nationals on the project (estimated at over 9,000) as the largest workforce in 2012. This means they were both the largest workforce on the project in 2012 and the primary OCN nationality working on the project. These personnel were mainly employed for specialist construction and welding trades required for the pipeline, as well as construction of the gas plant. Very few Chinese or Malaysian workers were involved in the PNG LNG project; however, PNG has many large companies operating out of Malaysia and China, which would account for the number of permits for workers from those countries (Voigt-Graf, 2013).
4.7 Workforce Nationalisation Example in Security

The following text provides an example of the successful security workforce nationalisation on the project, taken from the PNG LNG website www.pnglng.com:

Security Lead for Port Moresby and LNG Plant, Mildred, is an example of how hard work and dedication can lead to career development.

Mildred began her career with ExxonMobil PNG (EMPNG) in 2011 as a contract night guard. It was here that Mildred learnt the importance of safety and security and grew a passion to progress a career in this field.

Taking her new-found passion in her stride, Mildred went on to become an executive driver and then a site security contact for EMPNG’s head office in Port Moresby.

In November 2015, Mildred’s hard work and respect for EMPNG’s values of safety and security was rewarded when she became the first female Papua New Guinean to be promoted to the position of Security Lead for Port Moresby and the LNG Plant site.

In her role, Mildred is responsible for overseeing Port Moresby and the LNG Plant Site Security Operations by way of providing guidance to staff and contractors. She is committed to protecting the people and assets that are in her care.

The promotion was not only a reflection of her work performance and recognised capabilities, but the support she provides female staff on personal security issues outside the office.

Mildred is most proud of being the first female Papua New Guinean in security operations to be promoted to Lead. Along with this, she is proud to be making a difference to the workforce with her fresh eyes and passion to deliver her best, influencing staff who share the same passion.

One of Mildred’s career highlights was attending security leadership training at Las Vegas, USA, in 2015 where she learnt detailed protection protocols (EMPNG case study, July 2017).

Although this was taken from the PNG LNG website in July 2017, the focus of the case study (Mildred) had already departed the company in March 2017. However, it is a useful case study for this research because it allows a comparison of the differences
between the programs for maintenance and operations technicians and the programs for the security departments. No formalised mentoring or workforce nationalisation program existed for the security or logistical workforces at the start of the project in 2010. However, there was an operations and maintenance program that involved millions of dollars, dozens of specialised expatriate staff, and a purpose-built facility in Port Moresby to enable a live-in program. The security department’s workforce development program was smaller in scale, developed later in the project, and championed by only a few managers. It had no budget or strategic direction other than an end objective number to achieve in 2015 for national employment. Thus, the success of this case study is likely a testament to a handful of security managers mentoring and working with an already strong performer to achieve a good result. This case study on Mildred was used to demonstrate that positive results can be achieved in a security setting on a resource project, given the right support. It also demonstrates the bias shown towards technical disciplines that more closely align with the resource company’s primary business—in this case, operations and maintenance technicians. This example further demonstrates that, given the same conditions and support afforded to the technical trainees in the early phase of the project, the security and logistical workforce may have been more able to produce strong managers in 2017.

The recent opening of a technical training college in Port Moresby to support the resource industry is a step in the right direction. Thought should be devoted to operating parallel courses in both logistics and security and risk management to complement the technical disciplines. This would allow a more structured approach to training staff, akin to apprenticeships that develop staff in a more structured way in the resource industry.

4.8 Conclusion

Overall, the PNG LNG project was very successful. It was completed on time and was able to produce gas (LNG) earlier than scheduled. However, it did suffer from some cost issues—eventually expanding from US$16 billion to nearly US$20 billion. This was primarily caused by a foreign exchange swing, coupled with the additional costs of building the Komo Airport to accommodate the required Antonov aircraft. The runway and supporting infrastructure to support the Antonov loads were added to the project scope when the expansion of the Tari Airport was deemed unfeasible in late 2009.
The case study of this completed project demonstrated the size and composition of the workforce from pre-construction, which relied predominantly on localised manual labour, through to construction, which relied on both expatriate managers and supervisors. The construction phase also showed a swing towards large workforces of semi-skilled trades brought in from overseas in the form of OCNs, such as welders and tradespeople from the Philippines and India. During this phase, the majority of national workers were in unskilled positions, with the exception of a few skilled hires from other companies. Nevertheless, there were some workforce nationalisation initiatives during the project, one of which was the operations and maintenance technician program that developed local staff and was responsible for developing 210 skilled workers by 2016. Other informal or departmental initiatives were attempted during this time, with varying results. In the security and logistics organisations, there was no formalised program, such as the program to develop operations and maintenance staff, supported by senior management.

This case study successfully demonstrated and supported three key points that support this research. It articulated the data on staff numbers during each phase of the project and discussed the reasons for the staff composition. In terms of workforce nationalisation, it indicated what can be achieved with senior support, long-term goals and funding. The best examples are the operations and maintenance trainees, who began the process in 2010 and now provide 210 fully trained operators. This case study also supported the theory that the same opportunities were not available for the security and logistics workforces, which had no focused workforce nationalisation program operating from the project’s beginning. Although there was a minor mentoring program at the middle-manager level in the logistics department, this program had limited success. The security department had some early success, as demonstrated in the case study of Mildred above; however, this success was short lived. In summary, this case study was able to further support the research argument that there are limited workforce nationalisation programs for the security and logistical workforces in PNG resource projects (ExxonMobil, 2016).