Some Impacts of Rising World Oil Prices on Australian Indigenous Rural and Remote Communities

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Introduction

Almost all of the recent debate in Australia on world oil prices has been on the rising petrol prices which affect the large proportion of our population that lives in its urban areas and cities. However, there have already been serious impacts due to higher fuel prices on many Indigenous Australians living in remote and rural communities throughout Australia. In this paper I wish to raise the issue of ‘peak oil’, present consequences of the rise in oil prices over the past three years for remote and regional Australia, and consider possible ways of addressing the bleak future I will paint for economic development in these regions, particularly in terms of transport.

The impact of ‘peak oil’ has been particularly hard on the small remote Indigenous communities in Western, Central and Northern Australia which use diesel fuel for power supply as well as transport. Apart from a small number of larger communities connected to electricity grids, most of Australia’s small remote Indigenous communities depend on electricity generated by diesel power. Electricity powers bore pumps, household and workplace appliances, and essential equipment including refrigeration. All food and other freight travels long distances via road transport, which already contributes to the higher prices of goods in remote community stores.

The material presented below has been gathered from ‘desk top’ research, but vividly points to the need for urgent research in actual communities. One example where there is data on the current impact of higher fuel prices on these communities is in the Western Desert of Western Australia (WA)- about 1,000 km north-east of Perth. The Ngaanyatjarra Council’s\(^1\) (2005) annual municipal grant for diesel purchase from the Australian government for the 2005 calendar year was based on the figure of AUD\(^2\)1.10 per litre.\(^3\) The Council had used up their funds by July 2005, about half way through their grant period, as prices had been over $1.60 per litre for long periods. The Ngaanyatjarra Council has since agreed to enter into a Regional Partnership Agreement

\(^1\) This remote region is home to 11 small Indigenous communities and in 2004 these communities were granted native title over an area of about 188,000 km\(^2\) [http://www.nntt.gov.au/media/ ngaanyatjarra.html](http://www.nntt.gov.au/media/ ngaanyatjarra.html).

\(^2\) AUD = Australian dollar. All $ signs refer to the Australian dollar unless otherwise indicated.

\(^3\) In early 2007, $1 was worth approximately US78c.
(RPA) with the WA State and Australian governments with a Shared Responsibility Agreement (SRA) providing additional funds to reimburse the Council for the budgetary impact of these higher diesel prices.\textsuperscript{4} In another jurisdiction, during 2006, Aboriginal Air Services (AAS) in Alice Springs (in the centre of the continent) closed its doors due to high aviation fuel prices. AAS had provided essential transport services to over 60 remote communities for more than 20 years (Roberts, 2006). Finally, fuel prices of nearly $3 per litre are forcing Indigenous fishers in the Torres Strait outer islands (such as Boigu and Dauan) to return to traditional sail-powered vessels for their essential fishing activities, as they used when European explorers Bligh and Flinders sailed these waters between Australia and Papua New Guinea over 200 years ago (McGuire, 2006).

**What is Peak Oil?**

‘Peak oil’ is a description developed in the early 1950s by a Shell geologist, Marion King Hubbert, for the way in which the production of oil from regional reserves follows a path that is similar to a ‘bell’ curve. In 1956, he accurately predicted that US oil production would peak in the early 1970s, and estimated that world production would peak around 2000 (Heinberg, 2003: 90). He based his predictions on an accurate record of prior oil discoveries, and reserve growth. In 1956 he was labelled a pariah for his prediction, but 20 years later he was proved to be correct as US production in the Lower 48 states peaked at about 10 million barrels per day, a rate that has not been duplicated despite later substantial discoveries in Alaska and the Gulf of Mexico. Figure 1 indicates that world oil discoveries peaked in 1960, and since about 1980 the world has been consuming more oil per annum than it has discovered (Longwell, 2002: 102). Longwell (then Director and Executive Vice President Exxon Mobil Corporation) provided Figure 1 below, which shows the world has consumed approximately 2-3 barrels of oil for each new barrel discovered since the 1990s.

Robinson and Powrie (2004) report that Australia's own large Bass Strait oil and gas province started production in 1970, reached its peak in 1985, and has declined steadily ever since. Australia's overall oil production peaked in 2000 and is steadily declining. Geoscience Australia’s 90% and 50% probability forecasts show a continual steep decline, while Australia’s projected consumption trend remains steeply upwards (see Figure 2 below). The probability of new Australian discoveries meeting the earlier peak production rate is very low, while the annual cost of importing oil is now over $20 billion per annum, with the net cost of oil imports being greater than exports by $5 billion in 2005 (The Senate, 2007: 64).
Excluding deepwater oilfields, output from 54 of the 65 largest oil-producing countries in the world is now in decline (Robinson, 2006). While global oil production rose markedly between 2000 and 2005, it has since slowed. Since the world oil price began its upward march in late 2002, world oil production has been able to quickly supply the additional oil demanded by the global market. However, as Figure 3 shows, over the past two years world production has plateaued at about 84-85 million barrels of oil produced each day. Appendix A shows that within OPEC, the only country presently with any significant spare production capacity is Saudi Arabia. This surplus is heavy oil that is more expensive to refine than light, ‘sweet’ crude oil. The absence of any reliable audited reserve and field by field production data in most oil producing countries means it is not possible for more than uncertain probability estimates to be made of a likely date for a global ‘peak’. Estimates for such a ‘peak’ vary over a great range, from 2005 through to 2030, and beyond (The Senate, 2007: 43).

5 These figures for ‘oil’ include the production of other liquid hydrocarbons such as ethanol, bitumen and liquids condensates from the production of natural gas. IEA- International Energy Agency in Geneva and EIA- US Department of Energy, Energy Information Agency, Washington DC.
The major impact on Australians, particularly in remote Australia, has been the rapid rise in fuel prices. Figure 4 shows the rapid rise in world oil prices, and the recent volatile nature of these price movements. In mid-2006 the NYMEX futures price for West Texas crude peaked at US$78 per barrel. Currently, some commentators believe that oil will soon be priced at around US$80-100 per barrel, while others believe that it will drop to around US$45 (Helman, 2006). Peak oil doesn’t mean the world will run out of oil, but it does mean the world has come to the end of cheap liquid fuels, as global demand (especially from China and India) outstrips the growth in production. It is unlikely that oil will return to the figure of US$20 per barrel that it was trading at just five years ago.
Population in Indigenous lands

A recent Senate Inquiry into Australia’s future oil supplies attracted about 200 written submissions, but there was only one on the likely impact on Indigenous communities\(^6\). Most submissions focused on the impact of price rises on urban drivers and what could be done by government to make their weekly fuel bills cheaper. The particular location and distribution of remote Indigenous communities is an important aspect of their ability (or lack thereof) to manage these rising prices. According to the 2001 Australian Census (ABS, 2004), the Aboriginal and Torres Strait Islander population was estimated to be 458,520, or 2.4% of Australia’s population. The median age of Indigenous Australians was a youthful 20.5 years, compared with 36 years for other Australians, and around 25% of the Indigenous population lived in areas classified as 'remote' or 'very remote', compared with only 2% of the non-Indigenous population.\(^7\) Table 1 shows the distribution of the Indigenous population in Australia (ABS, 2005) while Figure 5

---

Table 1 - Estimated Indigenous population of Australia: 30 June 2001

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Indigenous population</th>
<th>Proportion of Indigenous population</th>
<th>Proportion of jurisdiction population</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>3,909</td>
<td>0.9%</td>
<td>1.2%</td>
</tr>
<tr>
<td>New South Wales</td>
<td>134,888</td>
<td>29.4%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>56,875</td>
<td>12.5%</td>
<td>28.8%</td>
</tr>
<tr>
<td>Queensland</td>
<td>125,910</td>
<td>27.4%</td>
<td>3.5%</td>
</tr>
<tr>
<td>South Australia</td>
<td>25,544</td>
<td>5.6%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Tasmania</td>
<td>17,384</td>
<td>3.8%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Victoria</td>
<td>27,846</td>
<td>6.1%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Western Australia</td>
<td>65,931</td>
<td>14.4%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Australia</td>
<td>458,520</td>
<td>100%</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

Figure 5 - Australian population distribution by age and sex (ABS, 2004b)

[Graphical representation of population distribution]

Taylor used data from the Australian Bureau of Statistics (ABS, 1999) report *Community Housing and Infrastructure Needs Surveys* (CHINS) to identify future challenges for Indigenous communities. For example, he projects that over the next 10 years the Indigenous population in the remote Australian desert (or arid zone\(^8\)- see Figure 6 below) will grow by about 10,000 people to nearly 45,000 (2002: 13).

![Figure 6 - Location of arid and semi-arid regions of Australia](image)

(Taylor, 2002: 2)

Half of this increase will be in the prime employment age groups (ie. 24-65) where population numbers will increase by 35% over the decade. In a later publication, Taylor (2004: 98) suggested that high Aboriginal fertility will lead to sustained and rapid population growth and a high proportion of infants and children in these communities. In the Northern Territory (NT), this will lead to a doubling of the Aboriginal population within a generation, with a high potential for continued growth beyond that. Unlike the issue of population decline and ageing that is a problem in many parts of urban Australia, the urgent challenge in many regions with significant Indigenous communities will be how to house and employ this growth in young Indigenous people. In addition,\(^8\)

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\(^8\) The arid zone amounts to 3.5 million km\(^2\), or 45 per cent of the Australian land mass (Taylor, 2002:4).
ensuring that they will be able to access cost-efficient transport and energy will be
critical to their future ability to reside in their communities.

The substantial land transfer in the arid and semi-arid zones, resulting from the land
rights and native title processes since the 1970s, is an important element of the
population transformation in Australia’s arid lands and rangelands (Taylor, 2002: 5).
Indigenous people’s attachment to their land has resulted in the emergence of a distinct
settlement structure involving the formation of numerous dispersed, small, and discrete
Indigenous communities. This is especially the case in the NT, WA and the far north of
South Australia (Cane & Stanley, 1985) (see Table 2 below). These demographic
factors have resulted in quite different residential settings for Indigenous and non-
Indigenous populations in Australia’s desert region.

In 1996, only 26 per cent of desert Indigenous people lived in the four major inland
urban centres of the arid zone (Alice Springs, Port Hedland, Kalgoorlie and Broken Hill),
while the remainder lived in more remote areas (Taylor, 1998). Taylor (2002b: 7) reports
that about 30% (or about 25,000 people) of the Indigenous population living in these
remote and very remote live in small communities of less than 200 people (see Table
2). The future housing and infrastructure requirements of small communities in these
remote areas are acute. They will face further challenges in an environment of higher
fuel prices with significant associated flow-on price rises for food, transport and
construction.

<table>
<thead>
<tr>
<th>Settlement Size</th>
<th>Remote % of Isol. Cty</th>
<th>Pop. %</th>
<th>Comm.</th>
<th>Pop.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;19</td>
<td>6.7%</td>
<td>0.8%</td>
<td>71</td>
<td>642</td>
</tr>
<tr>
<td>20-49</td>
<td>3.2%</td>
<td>1.2%</td>
<td>34</td>
<td>915</td>
</tr>
<tr>
<td>50-99</td>
<td>0.4%</td>
<td>0.3%</td>
<td>4</td>
<td>250</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Very Remote Comm</th>
<th>%</th>
<th>Pop.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>484</td>
<td>45.9%</td>
<td>4,841</td>
<td>6.1%</td>
</tr>
<tr>
<td>241</td>
<td>22.8%</td>
<td>7,235</td>
<td>9.2%</td>
</tr>
<tr>
<td>65</td>
<td>6.2%</td>
<td>4,331</td>
<td>5.5%</td>
</tr>
</tbody>
</table>
Indigenous communities need for power

While the focus of this paper has been on liquid fuels and transport, many remote Indigenous communities across Australia are not connected to a grid for electrical power, or have intermittent grid power. Among communities that do have electricity, about 40 per cent have regular interruptions to supply (The Senate, 2000: 139). Small remote communities with populations of less than 50 people mainly use domestic generators, whilst the remaining larger communities are most likely to be supplied with power via the State grid or large community diesel generators. The ABS CHINS study found 133 Indigenous communities (or about 10%) with no electricity supply at all. Of these, all have populations of less than 50- see Table 3 below (ABS, 1999: 17).

Likewise, a study in WA indicated that 75% of Indigenous communities rely on electric-powered bores for their water supplies, 20% have their water delivered by truck and only 5% are connected to a town supply (DIA, 2004: 33). It is clear from these figures that most Indigenous communities in remote Australia are reliant on diesel fuels to generate their day to day electricity to a much greater extent than elsewhere. Electricity is also important for their water pumps, household and workplace appliances and refrigeration for food and medical supplies. This reliance on diesel for electricity significantly increases their vulnerability to any future cost rises.
Table 3- Indigenous discrete communities – main source of electricity supply

<table>
<thead>
<tr>
<th>Type of electricity supply</th>
<th>&lt;20</th>
<th>20-49</th>
<th>50-99</th>
<th>100-199</th>
<th>200+</th>
<th>Total (a)</th>
<th>Reported Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>State grid</td>
<td>44</td>
<td>61</td>
<td>50</td>
<td>60</td>
<td>66</td>
<td>281</td>
<td>4,408</td>
</tr>
<tr>
<td>Community generators</td>
<td>85</td>
<td>70</td>
<td>30</td>
<td>33</td>
<td>81</td>
<td>299</td>
<td>50,990</td>
</tr>
<tr>
<td>Domestic generators</td>
<td>241</td>
<td>89</td>
<td>12</td>
<td>-</td>
<td>-</td>
<td>342</td>
<td>5,615</td>
</tr>
<tr>
<td>Solar</td>
<td>83</td>
<td>43</td>
<td>4</td>
<td>1</td>
<td>-</td>
<td>131</td>
<td>2,321</td>
</tr>
<tr>
<td>Solar hybrid</td>
<td>62</td>
<td>21</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>91</td>
<td>1,994</td>
</tr>
<tr>
<td>Other source</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>5</td>
<td>212</td>
</tr>
<tr>
<td>All communities with an electricity supply</td>
<td>517</td>
<td>286</td>
<td>101</td>
<td>96</td>
<td>149</td>
<td>1,149</td>
<td>108,540</td>
</tr>
<tr>
<td>No electricity supply</td>
<td>118</td>
<td>13</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>133</td>
<td>1,378</td>
</tr>
<tr>
<td>All communities</td>
<td>644</td>
<td>299</td>
<td>102</td>
<td>97</td>
<td>149</td>
<td>1,291</td>
<td>109,994</td>
</tr>
</tbody>
</table>

(ABS, 1999: 16-17)

Transport to access government services

The main mode of transport used by remote Indigenous communities to access key government and community services is diesel-fuelled car or four-wheel drive vehicle. People from about half of these communities must travel for between one and four hours to reach such services, and 16% of residents report travel times in excess of five hours. Due to variable weather conditions, road access into or out of communities may be cut for periods of up to one week, four or five times per year. In some cases (37 communities), there have been continuous periods of road closure for up to three months or more in extreme weather conditions, such as floods.

Transport infrastructure is a key to the sustainability of these remote communities. West Australian Indigenous MP, Ms Carol Martin, recently highlighted the problems for her constituents in the Kimberley (north-west WA) due to low road maintenance budgets and the impact of higher fuel prices:
I would like to raise some issues regarding the Dampier Peninsula, particularly the Dampier Peninsula road. This road is approximately 110 years old. Originally, it was used by the monks to access the peninsula. …In the past couple of months there has been increasing concern about the freight service. I have been speaking to Broome Freightlines, which specifically services that area. It said that the maintenance costs on its vehicles is restricting its ability to operate. About three weeks ago it upped the ante, and freight costs increased by 20 per cent. The community wore it, because there was not much it could do about it. Norm Gardiner, the owner-operator, rang my office and said that the community had accepted the increase in freight costs, but because of the cost of maintenance on his trucks he can no longer justify servicing the community. He informed me that today would be the last day he would provide the service. … The reason he can no longer provide the service is that the road is wrecking his vehicles. (Hansard WA, 14 September 2006)

The construction of a sealed road would positively assist the economic participation of this Indigenous community in the local pastoral and pearling industries. In reply, the Minister for Planning and Infrastructure reported to Parliament that the cost of sealing the 160 km of gravel road would be about $35 million, far outside the resources of the local council, the Shire of Broome. This experience is likely to be typical of many remote communities across the top end of Australia. Unfortunately there seems to be no Australian government strategy to gather data from Indigenous communities on their reliance on diesel for transport, and the costs of providing suitable infrastructure such as sealed roads. The greater reliance on diesel fuel for transport in WA and the NT can be seen in Table 4. Cheap diesel fuels are critical to Indigenous communities, and this reliance is reinforced by the travel data collected by Taylor in Figure 7.

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9 Includes ‘not stated’.
Table 4 - Fuel consumption per State of Australia, 2006 (Million litres)

<table>
<thead>
<tr>
<th></th>
<th>Auto Petrol</th>
<th>Auto Diesel</th>
<th>Auto LPG</th>
<th>TOTAL Volume</th>
<th>Auto Petrol</th>
<th>Auto Diesel</th>
<th>Auto LPG</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>6,031.6</td>
<td>3,558.1</td>
<td>871.6</td>
<td>10,461.4</td>
<td>57.7</td>
<td>34.0</td>
<td>8.3</td>
</tr>
<tr>
<td>VIC</td>
<td>4,085.8</td>
<td>2,502.6</td>
<td>1,344.5</td>
<td>8,932.1</td>
<td>55.4</td>
<td>29.3</td>
<td>15.3</td>
</tr>
<tr>
<td>QUEENSLAND</td>
<td>4,249.9</td>
<td>4,573.9</td>
<td>342.9</td>
<td>9,166.7</td>
<td>46.4</td>
<td>49.9</td>
<td>3.7</td>
</tr>
<tr>
<td>SA</td>
<td>1,356.2</td>
<td>1,070.1</td>
<td>230.5</td>
<td>2,656.8</td>
<td>51.0</td>
<td>40.3</td>
<td>8.7</td>
</tr>
<tr>
<td>WA</td>
<td>1,801.6</td>
<td>3,230.7</td>
<td>172.3</td>
<td>5,294.6</td>
<td>35.7</td>
<td>61.0</td>
<td>3.3</td>
</tr>
<tr>
<td>TAS</td>
<td>464.3</td>
<td>359.0</td>
<td>18.4</td>
<td>832.6</td>
<td>55.8</td>
<td>42.0</td>
<td>2.2</td>
</tr>
<tr>
<td>NT</td>
<td>137.9</td>
<td>438.3</td>
<td>5.1</td>
<td>581.2</td>
<td>23.7</td>
<td>75.4</td>
<td>0.9</td>
</tr>
<tr>
<td>TOTAL</td>
<td>19,017.7</td>
<td>15,803.6</td>
<td>2,985.1</td>
<td>37,806.4</td>
<td>50.3</td>
<td>41.8</td>
<td>7.9</td>
</tr>
</tbody>
</table>

(WA, 2007: 41)

Figure 7 - Major Indigenous communities and their economic & cultural travel needs

(Taylor, 2002b: 10)
Indigenous health and access to medical services

High fuel prices also impact on Indigenous health. The ABS reported that 895 (69%) of the 1,291 discrete Indigenous communities in Australia are located 100km or more from their nearest hospital, with only 53% of these communities having access to emergency air medical services (ABS, 2005: 182). People from these communities have to travel large distances to access what Australian city dwellers think of as critical health infrastructure. For example, nearly 50% of Indigenous communities in WA, SA and NT have to travel over 25km to access health centres (see Figure 9 below).

<table>
<thead>
<tr>
<th>Distance to Nearest Hospital and Community Health Centre—2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Discrete communities located less than 10km from nearest hospital</td>
</tr>
<tr>
<td>Discrete communities located 10km or more from nearest hospital</td>
</tr>
<tr>
<td>Distance to nearest community health centre</td>
</tr>
<tr>
<td>Less than 25km</td>
</tr>
<tr>
<td>25km or more</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Total number of communities(a)</td>
</tr>
<tr>
<td>Total population(s)</td>
</tr>
<tr>
<td>Proportion 10km or more from nearest hospital and 25km or more from nearest community health centre</td>
</tr>
<tr>
<td>Communities</td>
</tr>
<tr>
<td>Population</td>
</tr>
</tbody>
</table>

Figure 9- Indigenous access to health resources

(ABS, 2005: 182)

Cultural maintenance and land management

Finally, there is clear evidence that these small communities of Indigenous people must continue to live on their customary land in remote areas to ensure the long-term sustainability of their heritage and culture. For these communities, transport becomes a key factor in the continued passing down of important aspects of their culture to younger generations. For example, Sullivan (1988: 43) reports the "sudden and massive regional mobilisation" of Indigenous people attending a meeting of the Kimberley Land Council (KLC), in a remote location, required a journey of two or three days each way. Figure 10

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10 This proportion is likely to be now lower with the closure of AAS in Alice Springs, reported above.
below clearly shows the strong correlation between the maintenance of a traditional lifestyle, including living on traditional (remote) lands, to the retention of their Indigenous languages.

Despite the existing strong links to their traditional land in many of these communities, there is anecdotal evidence that some Aboriginals from smaller communities in WA have begun to leave their land and move into larger settlements, such as South Hedland. This is being done to try and ease the burden posed by diesel prices that have risen by 30% in a period of just 18 months. Figure 11 below uses data from the WA government’s FuelWatch service to chart the rise in diesel prices in the Kimberley region, while Figure 12 shows a similar increase in prices in the NT.
Information, provided by a WA government departmental official, demonstrates that the budget for diesel in some remote Indigenous communities rose in 2006 from about 20% of their annual maintenance budget, to over 80%. This shortfall has had to be made up from elsewhere in community budgets, eg by reduced maintenance, passing on costs to

service providers, and from their education and health services. As has been demonstrated above, many Indigenous communities in remote regions are heavily dependent on oil-based fuels for culture (trips to country), electricity generation, transport and key business inputs (e.g., tourism, agriculture and the running of pastoral properties). While additional funds have been provided to Indigenous communities from the Australian government, these now come with ‘mutual obligations’ to be undertaken by the community. In relation to the Western Desert, additional powerhouse funds were provided to the Ngaanyatjarra Community (2005: 7) but under their ‘mutual obligations’ its members were required to:

- take steps to minimise power consumption;
- pay power bills when presented;
- enter into arrangements to settle any outstanding debts; and
- not pressure staff or others to provide power services free of charge.

The Ngaanyatjarra Council itself was required to undertake new initiatives such as:

- set a benchmark fee collection rate of 100% for all community members;
- develop an education program aimed at encouraging members to save power and minimise fuel costs; and
- implement the collection of tariffs in accordance with the rates set by the Australian government.

Finally, diesel fuels form the core economic input for many future economic ventures being considered by Indigenous organisations in remote Australia to maintain their ability to stay on their lands. For example, the Kimberley Natural Resource Management plan (2004: 93) suggests that the Kimberley Land Council explore the possibilities of tourism in their desert country. The success of such ventures would be

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heavily dependent on affordable fuel inputs, so that tourist experiences can be priced competitively compared to local and overseas tourist experiences.\textsuperscript{13}

Pastoralism is another important sector for Indigenous employment. Research done by Baker (2000) for the Australian Parliamentary Library quotes a government report that shows that the fuel costs of pastoral properties in the NT averaged about $57,000 per annum, or about 10\% of their total annual expenditures. This figure is considerably higher than properties in other less-remote jurisdictions.

Possible alternate solutions
In urban areas, governments have a wide range of ‘demand-side’ solutions that can assist drivers deal with higher fuel prices, eg. greater usage of public transport. In remote Australia, governments must focus on ‘supply-side’ solutions. These possible solutions include:

\begin{itemize}
  \item[i)] Alternate fuel sources to replace diesel.
  \item[ii)] Convincing the State and Australian governments to ‘subsidise’ the future use of crude-based diesel fuels.
  \item[iii)] Closing down the remote communities and moving residents to larger centres.
\end{itemize}

Alternative three won’t be explored here, but there are many influential stakeholders who are already pursuing it as a ‘solution’ to other Indigenous issues such as community violence. This includes influential journalist Nicholas Rothwell from \textit{The Australian} (2006; 2006b) and the then-Minister for Indigenous Affairs, Hon. Amanda Vanstone (2005) who threatened “All Australians living in remote areas of the country

\textsuperscript{13} Roarty and Barber (2004: 3) list the following reasons why country petrol prices tend to be higher than metropolitan prices: “A country service station typically sells less than half the amount of fuel of a metropolitan service station. Hence there is less opportunity to reduce the operating margin on fuel sales taking into consideration the overall viability of the business. Additionally there is higher distribution costs associated with country retail outlets. Furthermore, there are generally lower sales of higher profit non-fuel items in the country.”
have less access to services …. Perhaps we need to explicitly draw a line on the level of service that can be provided to homeland settlements.”

Alternative two was proposed in a recent submission to a Senate inquiry into Australia’s petrol prices by the Remote Area Planning and Development Board (RAPAD) in northern Queensland, which is responsible for an area of 385,000 km², encompassing 17 towns in 11 local government areas.¹⁴ In verbal evidence supporting this submission, the Mayor of Winton Shire proposed a reduction or abolition of the Federal fuel excise (38c per litre) and the Goods and Services Tax (about 10-13c per litre) on fuel sales as a way of supporting the sustainable development of remote Australia.¹⁵ Neither of the major Australian political parties seem to support such a proposal at this time, especially given the arbitrage opportunities it opens for those living on either side of a boundary separating areas with different fuel taxes.

If governments refuse to subsidise fuel use in remote Australia, can the funds be generated by economic activities, particularly tourism? Evidence collected by the Senate inquiry from the Road and Automobile Club of WA indicated that tourism to remote Australia (and hence income for these communities) was already suffering due to the present rise in diesel prices over the past three years:

Senator WEBBER—Recently there was some publicity looking at price being a determinant for the change of behaviour and about how fewer people are driving east across the Nullarbor and how the roadhouses are really struggling to make a quid. Are you aware of those reports? They are saying they are hardly getting any passing vehicles these days.

Mr Moir (RACWA)—We do not track vehicle movements like that, but anecdotally we hear the same stories as you. We hear that the tourism market in the north-west, which is largely dependent on passenger or private transport, is suffering at the moment because of the fuel prices. With respect to the ‘grey nomads’, as they are referred to, the retired tourists, anecdotally we hear that their numbers are dropping off because of fuel prices. (http://www.aph.gov.au/hansard/senate/committee/S9623.pdf pE36)

This anecdotal evidence was confirmed by another witness appearing before the Inquiry, this time from Queensland:

**Councillor Collins (Mayor, Winton Shire)**—Total visitor numbers have been declining in what we call the outback region, which actually runs, outside of the RAPAD Board area, from the New South Wales border at Cunnamulla in the west, north to Mount Isa and Richmond and Hughenden. The outback region covers about two-thirds of Queensland. In that area there has been a general decline—I think it [the reduction] is in the order of about three or four per cent a year for the last four or five years.


The more likely way that these remote areas can maintain their existing communities, customs and lifestyles is to convince government to develop alternate fuel sources to diesel. Communities right across the north of Australia could benefit from the development of transport fuels based on liquid natural gas (LNG) or compressed natural gas (CNG), developed as part of the massive gas developments in the North-West Shelf and Timor Sea regions. Most existing large diesel engines can be easily modified for these fuels and the major requirement would be to install fuelling outlets in the existing petrol stations. This would cost about $50-100,000 per outlet, a not insurmountable cost, given the alternate cost of housing and caring for people in rapidly growing centres, such as Alice Springs, if remote communities were forced to close. The development of a local LNG/CNG industry could also offer new training and employment opportunities for Indigenous workers to support this change in fuel supplies.

Another possible alternate fuel source is biodiesel. The WA government is presently exploring the policy issues surrounding this option via a Taskforce which is due to report in mid-2007 (ABC, 2006). Biodiesel has advantages over other biofuels, such as ethanol, as it can be made from agricultural waste in small cost-efficient local plants (eg sugar waste from the Ord River scheme in the Kimberleys). The WA Farmers Federation is presently investigating a plan for its members to develop a network of regional biodiesel plants. They would be based on a cooperative model and each plant would produce between 20-25 million litres per annum.
An alternative biodiesel source to agricultural waste could be obtained by planting and harvesting the ‘diesel tree’, or *copaifera langsdorfii*. It is estimated a one hectare plantation could produce 12,000 litres of fuel a year - enough to make a small farm self-sufficient in fuel (SMH, 2006). The economics of such an alternate fuel relies on transport distances being less than those for traditional diesel and petrol supplies. Again, the development of a local biodiesel industry in remote and regional Australia could also offer new training and employment opportunities for the growing number of young Indigenous workers.

**Conclusion**
This paper has used existing data sources to compile an argument that analyses the dependence of remote Indigenous communities on cheap fuel supplies, and their future vulnerability to higher fuel prices. A brief summary of the recent slowing of world oil production and associated price rise for NYMEX future contracts was given along with an explanation for the theory of ‘peak oil’. The remote Indigenous communities have evolved from traditional practices of ‘living on country’ to become settlements, townships or homelands. Their continued existence relies on regular flows of low-cost diesel and petroleum fuels to support nearly all essential community infrastructure and functions. The immense change to these communities over recent decades to a reliance on hydrocarbons presents a significant challenge as the effects of ‘peak oil’ in Australia are imposed. The future sustainability of remote settlements will require considerable future research efforts to quantify the real situation, to consult with community members and to evaluate ways to reduce the dependence on oil-derived fuels, or its replacement by biodiesel.

While I have provided some initial material on the impact of rises in fuel prices, there is very little data being systematically collected on this issue at a local, State or Federal level of government in Australia. Some solutions are emerging in WA at least, but they will need several more years to produce worthwhile levels of biofuel available to remote communities at a cost-efficient price. If the danger from fuel rises is left unchecked,
further price rises could impede any economic developments in regional and remote Australia that would help with the growing number of young Indigenous people emerging into the job market in the next decade. It could be the final factor that triggers the exodus from their traditional lands. This was recognised by the well-respected Indigenous leader Mick Dodson (2006: 8) who recently said “What will become of small Indigenous communities if the Federal and State/Territory governments decide to abandon infrastructure development in these places?”
### APPENDIX A- OPEC OIL PRODUCTION (as at January 2007, thousand barrels per day)

<table>
<thead>
<tr>
<th>Country</th>
<th>OPEC 10 Quota</th>
<th>Production</th>
<th>Capacity</th>
<th>Surplus Capacity</th>
</tr>
</thead>
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<tr>
<td>Algeria</td>
<td>894</td>
<td>1,360</td>
<td>1,430</td>
<td>70</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1,451</td>
<td>860</td>
<td>860</td>
<td>0</td>
</tr>
<tr>
<td>Iran</td>
<td>4,110</td>
<td>3,700</td>
<td>3,750</td>
<td>50</td>
</tr>
<tr>
<td>Kuwait</td>
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<td>2,500</td>
<td>2,600</td>
<td>100</td>
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<tr>
<td>Libya</td>
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<td>1,650</td>
<td>1,700</td>
<td>50</td>
</tr>
<tr>
<td>Nigeria</td>
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<td>2,250</td>
<td>2,250</td>
<td>0</td>
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<tr>
<td>Qatar</td>
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<td>810</td>
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<td>40</td>
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<td>8,800</td>
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<td>1,700 -</td>
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<td>2,600</td>
<td>100</td>
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<td>2,450</td>
<td>110</td>
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<td>28,990</td>
<td>2,220 -</td>
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<tr>
<td>Other Liquids</td>
<td></td>
<td></td>
<td>4,305</td>
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Table 3a. [http://www.eia.doe.gov/emeu/steo/pub/3atab.html](http://www.eia.doe.gov/emeu/steo/pub/3atab.html)
(Energy Information Administration\Short-Term Energy Outlook – February 2007)
APPENDIX B- GLOBAL SURPLUS OIL PREDICTION (US Department of Energy, 2007)

World Oil Spare Production Capacity

http://www.eia.doe.gov/emeu/steo/pub/gifs/Slide13.gif

http://www.eia.doe.gov/emeu/steo/pub/gifs/Slide13.gif
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