

## **Submission on the Draft New Zealand Energy Strategy**

*Campaign for Better Transport, 30<sup>th</sup> March 2007*

### **Introduction**

The Campaign for Better Transport (CBT) would like to congratulate the Government for attempting to develop an energy strategy.

As the CBT is primarily focused on transport issues, we have chosen to concentrate our submission on this area.

We have arranged our submission into key headings. We have also included a commentary on some specific wording within the NZES document that we think should be reconsidered in the "Edit; Undo" section at the end of this document.

Finally we have answered selected questions from the "Have Your Say" sections of the strategy.

### **Peak Oil**

Considering the time frame of the Energy Strategy is until 2050, it is surprising that Peak Oil is so readily dismissed in section 4.1.2 – "So while there will be peak 'cheap' oil from conventional sources, the world has plentiful sources of fossil-based fuel".

Yes, but at what price? \$1,000 per barrel? We think the assumption of \$60 per barrel contained in the New Zealand Energy Outlook to 2030 is completely optimistic. As recently as three years ago the Government assumed oil would be \$35 in the long term. Given that demand for oil is continuing to increase in developing countries while production remains flat or declining, we see no reason why oil prices should not be above \$100 per barrel in the next few years.

The Strategy suggests that rising prices will spur exploration, new technology and make previously uneconomic reservoirs of oil viable to use. The "technology will save us argument" has been dismissed by a number of informed commentators, with decades of experience in the oil industry. We have included a summary of these myths in the Appendix. Specific mention of "oil-rich shales" is mentioned in the section under peak oil, so we have included an article entitled "Toxic Waste Left In Wake of Oil Sands Extraction" in the Appendix, which points out the huge amounts of energy expended in the extraction process, as well as the environmental and emissions damage.

Also in section 4.1.2 is the statement that "It is unclear whether conventional oil production will peak in the next decade, or a decade or two later." As this is a strategy for 2050, this is irrelevant. Even the most conservative estimates have oil peaking some time in the next thirty years. The strategy must prepare New Zealand for the reality of declining fossil fuels.

A number of commentators are highlighting indications that a peak in oil production may have already occurred. Last year in 2006, Saudi Arabian oil production declined by 8% from the previous year. Most of the oil majors have not managed to increase production at all, despite record high oil prices. It is becoming increasingly clear that oil is moving towards the high oil price scenario described in the New Zealand Energy Outlook to 2030.

As Deffeyes puts it<sup>1</sup> – “Oil & Gas Journal publishes annual production estimates in late December each year, subject to revision a year later. The O&GJ preliminary estimate for 2006 is 72,486,500 barrels per day, compared to 72,361,600 in 2005. That extra 124,900 barrels per day isn't going to fuel all the new cars in Russia, China, and India.”

<b>Winners and Losers: Change in Oil Production 2006 vs. 2005, barrels of oil per day.</b>	
<b>Winners</b>	<b>Losers</b>
<ul style="list-style-type: none"> <li>• Russia +267,000</li> <li>• Azerbaijan +181,700</li> <li>• Abu Dhabi +150,000</li> <li>• Angola +146,900</li> <li>• Canada +131,200</li> </ul>	<ul style="list-style-type: none"> <li>• Norway -232,600</li> <li>• UK -198,000</li> <li>• Nigeria -186,700</li> <li>• Venezuela -142,800</li> <li>• Saudi Arabia -70,000</li> </ul>

The lack of any serious exploration of Peak Oil or background facts to support claims made in the New Zealand Energy Strategy is negligent, and should be addressed as it is a major short-coming.

## Conservation and Reducing Travel Demand

Little mention is made of how big the role of conservation can play in reducing our green house gas emissions. In the late 70's, the world's oil consumption of fossil fuels declined by 12m barrels per day as high prices and worldwide restrictions had their impact.

Under section 3.5.2, no mention is made of encouraging people to shift away from their private cars and onto public transport or car-sharing arrangements.

Similarly tele-working also has a role to play in reducing green house gas emissions.

2.3.2, p35, mentions that increasing that “increasing the fuel efficiency of vehicles on our roads offers the largest potential gains in reducing green house gas emissions” is not backed up by any evidence to support this.

The CBT would argue that there are even greater gains to be had, particularly in Auckland, in raising the occupancy levels from the current average of 1.2 people per car. Having two people in a car instead of one effectively doubles the fuel efficiency per person. Having three people would triple it.

Greater occupancy can be encouraged by such measures as High Occupancy Vehicle (HOV) lanes, which are commonplace overseas, but virtually non-existent in New Zealand.

More effort needs to be placed on encouraging fuel conservation and reducing travel demand.

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<sup>1</sup> <http://www.princeton.edu/hubbert/current-events.html>

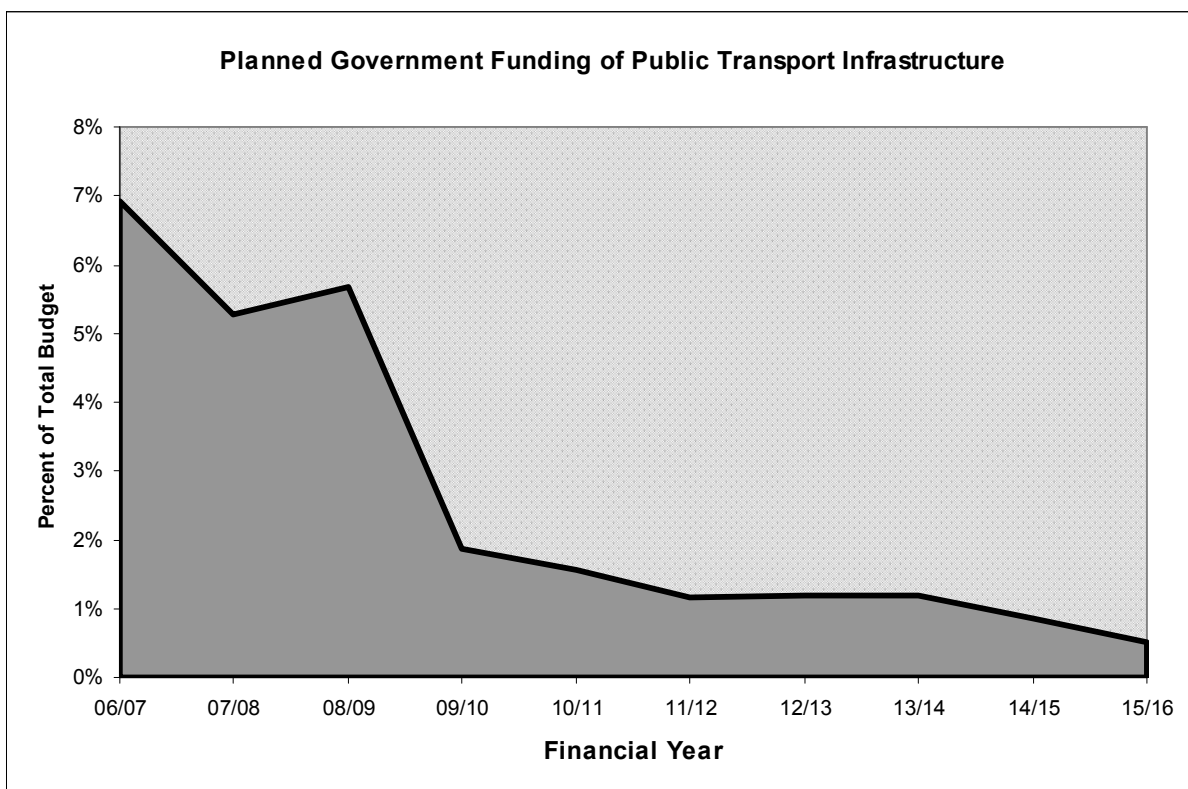


## Public Transport Infrastructure

While the strategy talks about a nine fold increase in public transport expenditure over the last seven years, it does not mention that public transport infrastructure spending is set to decline to just \$15m by 2016, according to the latest National Land Transport program.

Inexplicably the Government has also guaranteed funds for building new highways for the next six years, a policy that can only have a seriously adverse effect on greenhouse gas emissions.

There is also no clear funding methodology for rail projects – for some reason Treasury now makes decisions on capital rail investments, while roading projects fall under Land Transport New Zealand. Under the Land Transport Management Act, all transport projects should be evaluated using a consistent set of criteria.



Currently the Government spends about \$2.5bn a year on transport. According to the National Land Transport Programme, in 2016 50% of the budget will be spent on roading maintenance, 25% new roads and just 0.5% on public transport infrastructure. The Government needs to change the activity class funding mechanism so that sustainable transport modes receive priority.

## Aviation

The Strategy makes no mention on limiting green house gases from aviation. The action plan on transport (p. 30) makes no mention of aviation whatsoever, a considerable oversight given the attention that air miles are receiving overseas, particularly in Europe.

A 747 jet can burn over a tonne of aviation fuel just taxiing to the runway. The Strategy needs to suggest ways of limiting the emissions from aviation.



Alternatives to domestic air travel need to be explored in the Strategy, given that air travel is also subject to the effects of Peak Oil.

The CBT supports an excise tax being placed on aviation fuel domestically and also internationally if done in a consistent manner with other countries.

## Electric Vehicles

Mention is made (2.3.1.2, p.34) of removing potential barriers to the introduction of hybrid and full electric vehicles into New Zealand. The CBT supports electric vehicles being made legal on New Zealand roads. In particular, small urban electric vehicles that are currently available overseas, such as the Reva<sup>2</sup> type of vehicle will have appeal to a wide number of people, yet as these don't meet standard car safety requirements and are subsequently not permitted in New Zealand.

We would suggest that these types of should be classified in a similar manner to motor scooters, being restricted for use on motorways, but permitted in the suburban and city environments.

## Shipping

A recent report in the Guardian<sup>3</sup> reported a study that CO2 emissions from shipping are twice that of aviation:

"Carbon dioxide emissions from shipping are double those of aviation and increasing at an alarming rate which will have a serious impact on global warming, according to research by the industry and European academics.

Separate studies suggest that maritime carbon dioxide emissions are not only higher than previously thought, but could rise by as much as 75% in the next 15 to 20 years if world trade continues to grow and no action is taken. The figures from the oil giant BP, which owns 50 tankers, and researchers at the Institute for Physics and Atmosphere in Wessling, Germany reveal that annual emissions from shipping range between 600 and 800m tonnes of carbon dioxide, or up to 5% of the global total. This is nearly double Britain's total emissions and more than all African countries combined."

Thus the environmental effects of shipping look to be serious and also completely overlooked by the Strategy. At the very least, for our export industry New Zealand needs to research arguments as to how shipping goods halfway around the world to Europe can be compatible with reducing greenhouse gas emissions.

## Biofuels

The Strategy makes little reference to the core issue of people competing with vehicles for food crops. There are major concerns that crops are being grown to "feed" cars, that is displacing crops that feed people. Large tracts of Indonesian rainforest are being cleared presently to supply biofuels to wealthy countries. When permanent forest is cleared to grow fuel, the net result is more, not fewer, greenhouse gas emissions than conventional fossil fuel sources.

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<sup>2</sup> <http://www.revaindia.com>

<sup>3</sup> <http://environment.guardian.co.uk/climatechange/story/0,,2025726,00.html>

Further more the net energy equation in the production of some fuels based on plant materials may well be negative<sup>4</sup>. More energy is put into the growing, harvesting, processing and distribution of certain types of bio-fuels than is available from the fuel itself.

## Target Reductions

The Strategy lacks any concrete targets for emission reductions.

The draft energy strategy sees a reduction in CO<sub>2</sub> emissions, to 1990 levels, by 2030.

The CBT supports the view of the Forum for Sustainable Transport, in that this is clearly inadequate, both in the context of targets set by the international community, and in terms of what is scientifically necessary.

The European Union recently committed to 20% cuts in greenhouse gas emissions by 2020, and has proposed 30% cuts - but on the provision that other developed countries follow suit. The German Government has called for even greater cuts of 40% by 2020.

The EU has called for cuts of this magnitude in light of a growing scientific consensus that global warming must be restrained to no more than 2 degrees Celsius, in order to avoid "dangerous levels" of climate change.<sup>5</sup>

Proposed reductions in transport sector emissions are extremely weak – and in fact represent a substantial increase over base 1990 levels – from approximately 10 million tonnes of CO<sub>2</sub> in 1990, to nearly 14 million by 2030.

The CBT recommends clear targets for greenhouse gas reductions, consistent with the aims of overseas countries.

Targets should also be expressed in a meaningful way for individuals and families. There is considerable interest at these levels in making a difference to climate change, but there is very little statistical information available to people about volumes of greenhouse gases emitted by households, and what targets would be required to match the overall NZES target.

## Have Your Say

2.5, p.38

**On Energy Security:** It is vitally important that we reduce our reliance on fossil fuels, not only through the suggestions listed but through reducing consumption as well.

**On Biofuels:** We still don't know if biofuels are going to be a sustainable resource in the future, as demonstrated by the transport fuel vs. food debate. Some alternatives look to be better than others, in particular bio-diesel looks far more equitable than ethanol. A distinction should be made between these fuels, rather than talking about biofuels in a general sense. The Government should be cautious about mandating higher sales obligations in this area. More benefit might be obtained by encouraging smaller engine sizes in cars.

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<sup>4</sup> <http://www.news.cornell.edu/stories/July05/ethanol.toocostly.ssl.html>

<sup>5</sup> <http://news.bbc.co.uk/2/hi/europe/6377983.stm>



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**On Public Transport:** The Government should invest heavily in public transport projects. The current funding inequity between roading and public transport is inconsistent with the goals of the strategy.

**On Improving Fuel Economy:** Yes the Government should be taking steps to not only increase the fuel efficiency of vehicles on our roads, but also discourage the use of fossil fuels. The CBT supports the introduction of additional taxes on petrol and diesel to support this, provided any revenue generated is invested in transport alternatives that reduce overall emissions. Note that the net tax burden does not necessarily have to increase for families or individuals. For instance an excise tax increase of 30c per litre could be combined with a reduction in GST. Alternatively

**On Electric Powered Vehicles:** Yes the Government should encourage the use of electric vehicles, first of all by legalising vehicles that are already available overseas. Subsidies of certain types of vehicles such as hybrids should be avoided. Subsidies don't address the single occupant problem which is the primary cause of congestion and unnecessary emissions in Auckland. We also want to reward those that don't need a car, who walk or take public transport or car-pool.

**On Freight:** A shipping strategy is required as recent studies have shown that CO2 emissions from shipping are twice that of aviation.

## About The Campaign for Better Transport

The Campaign for Better Transport is a voluntary group of people who are campaigning for the provision of a viable public transport system which provides reliable options, thereby allowing Aucklanders to reduce their dependency on motor vehicles.

Cameron Pitches

Convenor

Campaign for Better Transport

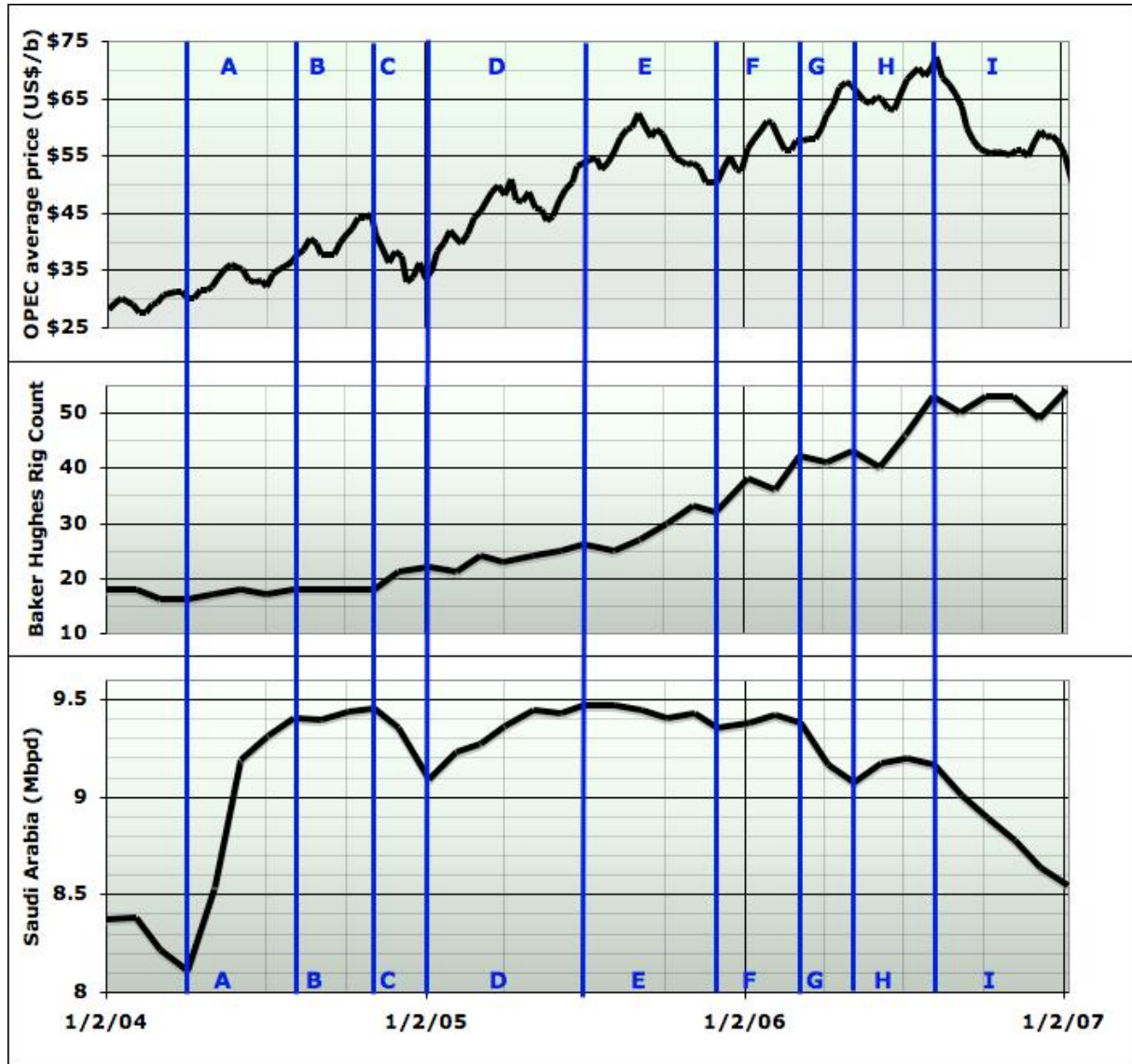
## Edit Undo

Section	Page	Phrase	Revise to
1.3.1 Our Energy System	7	"In the transport sector, New Zealand has: ... a limited rail network, because of our geography and small population."	Our geography and small population has not caused the rail network to be limited, underinvestment has. "In the transport sector, New Zealand has: ... a largely underutilised rail network."
3.3.2 Transport	11	"If more local oil is found, it would offset some of our oil imports, which cost \$4.4bn per annum."	This figure is out of date. Refer to the latest information available from Statistics New Zealand and the figure is now \$6bn per annum, due to escalating oil prices.
3.3.2 Transport	11	"It would also bring ... export earnings into the economy."	This is only significant if a New Zealand company owned the rights to the oil obtained. If a large international oil company owns the rights, the oil could be extracted and removed from New Zealand and sold to overseas markets, wherever profit would be maximized.  Revise to: "... and <i>possible</i> export earnings into the economy, if New Zealand companies own the rights to the oil."

## Appendix: Supporting Information and References

### **Saudi Oil Production**

This recent chart comes from Stuart Staniford, a researcher in oil depletion.<sup>6</sup>



Note the decline in oil production of a million barrels of oil a day in the last year, despite the increasing number of oil rigs. Clearly the pure economic view that higher prices will increase supply does not apply to Saudi oil production. Most likely it doesn't apply to world production either.

<sup>6</sup> <http://www.theoil Drum.com/node/2393#more>





## **Oil: Why Technology Won't Save Us**

This is an extract from his book "Hubbert's Peak: The Impending World Oil Shortage", written in 2001.<sup>7</sup>

**New Technology.** One of the responses in the 1980s was to ask for a double helping of new technology. Here is the problem: before 1995 (when the dot.com era began), the oil industry earned a higher rate of return on invested capital than any other industry. When oil companies tried to use some of their earnings to diversify, they discovered that everything else was less profitable than oil. Their only investment option was doing research to make their own exploration and production operations even more profitable. Billions of dollars went into petroleum technology development, and much of the work was successful. That makes it difficult to ask today for new technology. Most of those wheels have already been invented.

**Drill Deeper.** The next chapter of this book explains that there is an "oil window" that depends on subsurface temperatures. The rule of thumb says that temperatures 7,500 feet down are hot enough to "crack" organic-rich sediments into oil molecules. However, beyond 15,000 feet the rocks are so hot that the oil molecules are further cracked into natural gas. The range from 7,000 to 15,000 feet is called the "oil window." If you drill deeper than 15,000 feet, you can find natural gas but little oil. Drilling rigs capable of penetrating to 15,000 feet became available in 1938.

**Drill Somewhere New.** Geologists have gone to the ends of the Earth in their search for oil. The only rock outcrops in the jungle are in the banks of rivers and streams; geologists waded up the streams picking leeches off their legs. A typical field geologist's comment about jungle, desert, or tundra was: "She's medium-tough country." As an example, at the very northernmost tip of Alaska, at Point Barrow, the United States set up Naval Petroleum Reserve #4 in 1923.<sup>10</sup> As early as 1923, somebody knew that the Arctic Slope of Alaska would be a major oil producer.

Today, about the only promising petroleum province that remains unexplored is part of the South China Sea, where exploration has been delayed by a political problem. International law divides oil ownership at sea along lines halfway between the adjacent coastlines. A valid claim to an island in the ocean pushes the boundary out to halfway between the island and the farther coast. It apparently does not matter whether the island is just a protruding rock with every third wave washing over the rock. Ownership of that rock can confer title to billions of barrels of oil. You guessed it: several islands stick up in the middle of the South China Sea, and the drilling rights are claimed by six different countries. Although the South China Sea is an attractive prospect, there is little likelihood that it is another Middle East.

**Speed Up Exploration.** It takes a minimum of 10 years to go from a cold start on a new province to delivery of the first oil. One of the legendary oil finders, Hollis Hedberg, explained it in terms of "the story." When you start out in a new area, you want to know whether the oil is trapped in folds, in reefs, in sand lenses, or along faults. You want to know which are the good reservoir rocks and which are the good cap rocks. The answers to those questions are "the story." After you spend a few years in exploration work and drilling holes, you figure out "the story." For instance, the oil is in fossil patch reefs. Then pow, pow, pow--you bring in discovery after discovery in patch reefs.

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<sup>7</sup> <http://press.princeton.edu/chapters/s7121.html>

Even then, there are development wells to drill and pipelines to install. It works, but it takes 10 years. Nothing we initiate now will produce significant oil before the 2004-8 shortage begins.

### ***Oil Sands: Toxic Waste Left In Wake of Oil Sands Extraction***

Post Tribune article: <http://www.post-trib.com/news/158395,oilsandside.article>

EDMONTON, Alberta -- It takes enough oil sands to fill the backs of four half-ton pickup trucks to make one 42-gallon, 275-pound barrel of clean crude -- plus a vat of water big enough to wash the two tons of ore.

About 85 percent of the material dug up by the Alberta industry's gargantuan earth-moving equipment is discarded. As a result, the bitumen extraction method, a hot water process for separating oil from sand first patented in 1929, creates environmental issues on a scale to match the production megaprojects.

The biggest single headache, wet waste or "tailings" ponds, has spawned generations of industrial, government and academic research. The incomplete quest for a speedy cleanup system continues at numerous institutions, especially in the province's political and educational capital of Edmonton.

About 300 miles north, in the Fort McMurray oil sands mining district, millions of tons of quartz sand separated from oil are banked up into towering dikes. They hold deep, still pools of plant tailings that are a yogurt-like stew of fine particles, trace elements and chemicals suspended in slowly cooling water.

Some of the materials are toxic. Startling features of oil sands complexes include scarecrows and frequent bangs by mechanical shotguns to shoo water birds away from landing on the ponds. Much research focuses on wringing clean water out of the tailings, so they can be more quickly dried out then safely buried.

Until a breakthrough is achieved, sand and wet waste continue to pile up. By 2010, the Oil Sands Tailings Research Facility near Edmonton estimates, the growing industry will have a sand pile of 8 billion tons in dikes holding 1 billion cubic meters of water. That will be more than enough to fill a 20-square-mile lake.

Greenhouse-gas emissions likewise pose a worsening problem. Waste carbon-dioxide vented into the atmosphere by thermal oil sands production will reach 45 million tons per year if output forecasts of 5 million barrels per day turn out to be true, say forecasts by the provincial government's Alberta Research Council.

Bitumen mining emits an estimated average 80 pounds of carbon-dioxide per barrel of oil production. "In-situ" underground extraction generates up to 160 pounds of greenhouse-gas per barrel of oil. Synthetic oil upgrading makes up to 180 pounds of carbon dioxide per barrel of refinery-ready crude produced.

For decades, industry performance has ignited criticism by conservation groups such as the Sierra Club, Greenpeace, the World Wildlife Fund and Alberta's home-grown Pembina Institute for Appropriate Development.

But government and business are also acutely aware of the environmental headaches.

Like tailings research, greenhouse-gas studies are becoming a branch of industry and a hot item in engineering schools, institutes and firms.



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At an industry conference earlier this year, research council president John McDougall delivered a warning.

"Unless we deal with this, environmental pressures will accumulate and gather that will at best slow the pace of development and at worst stop it," he said.

"It's not going to do us any good if we have 5 million barrels a day of oil sands production but we can't breathe," said McDougall, who is also a past-president of the Edmonton Chamber of Commerce and the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

A related energy conservation problem costs the industry a fortune and helps spur work on cleaning up atmospheric emissions.

Thermal oil sands production burns colossal volumes of expensive natural gas.