Myth Buster

Public Meeting

1st Sept 2014

Green Party Whanganui Branch

www.ClimateJusticeTaranaki.info

LOCK THE GATE AUKATI www.lockthegate.org.nz

www.LockTheGate.org.nz

Myth 1:

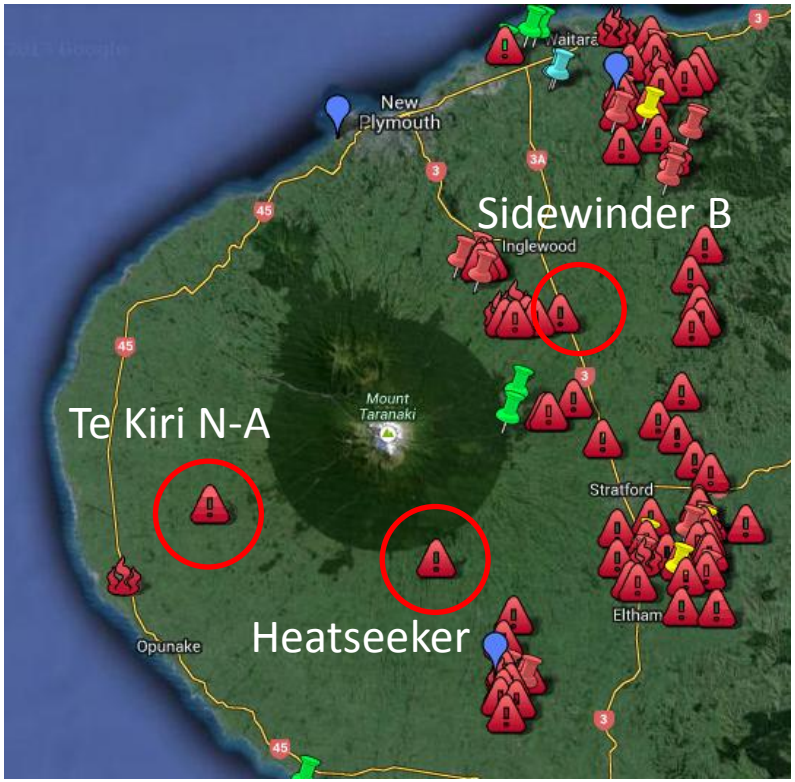
The oil and gas industry in NZ follows world-class best practice and is well regulated

Fact:

Parliamentary Commissioner for the Environment: *"clearly out of step with international 'best practice'… regulators scrambling to catch up… councils unprepared… rules in plans…inadequate… extraordinarily permissive… not acceptable… "*

http://www.pce.parliament.nz/publications/all-publications/drilling-for-oil-and-gas-in-new-zealand-environmental-oversight-and-regulation/

"...it is the cumulative effect of many wells on the landscape, on the risk to groundwater, and so on, that matters most. The Resource Management Act has never been well-suited to managing cumulative effects because of the way precedents are created" PCE, June 2014.

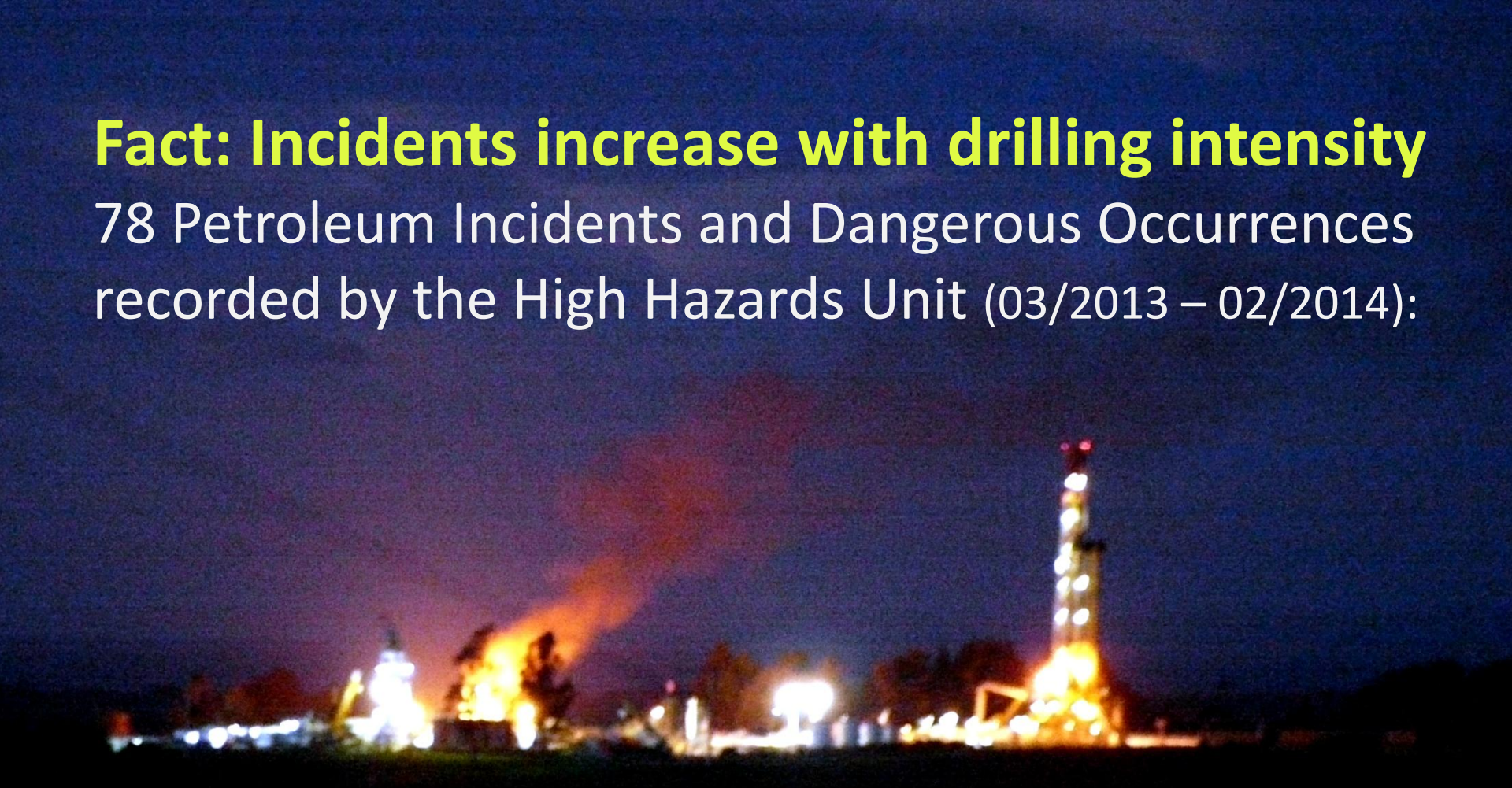


http://climatejusticetaranaki.wordpress.com/resources/fact-sheets-presentations

Aerial view of Jonah Field, Wyoming, by Bruce Gordon, EcoFlight Sky Truth 2006

Fact: Incidents increase with drilling intensity

78 Petroleum Incidents and Dangerous Occurrences recorded by the High Hazards Unit (03/2013 – 02/2014):



2 fires, 6 uncontrolled releases of hydrocarbons, 10 serious harm, 15 emergency response plans activated & 3 incidents with potential to cause a major accident.

http://www.3news.co.nz/Report-shows-61-dangerous-petroleum-incidents/tabid/423/articleID/339150/Default.aspx

Todd Taranaki Mangahewa-C wellsite. Photo by Fiona Clark, 11/04/2013

Todd Energy Te Kiri North-A wellsite (Kina Rd, Oaonui)

a case of unbundled consenting

- Proposed to drill one exploration well on Kina Road (near Parihaka). Depending on results, up to 8 wells might be drilled…
- *"If well results indicate hydraulic fracturing is beneficial a discharge consent would be sought from TRC …"*
- If successful, production facilities, pipelines and deep well injection (DWI) will likely be required… Consents will be sought at that time...

Source: Todd Energy AEE for Te Kiri North-A wellsite, March 2014.

Thursday, June 12, 2014 OPUNAKE & COASTAL NEWS

Drilling for oil to take place in Kina Road area

Tag Oil, the oil and gas production exploration company is to drilling for oil on a farm in Kina Road, Oaonui near the intersection of Wiremu and Kina Roads.

Residents from the 54 homes in the area were invited to learn about the drilling process in a PR exercise last Thursday night hosted jointly by Tag Oil and Shell Todd which included refreshments, a slide show and then supper. Around a dozen attended the evening.

"We very much value transparency, openness while we're doing it," remarked Winfred Boeren, who has been the General Manager of Development at Todd Energy for 20 years, who is clearly wanting to allay any fears locals might have about the operation.

There will no fracking involved, he assured explaining that fracking requires a special licence which they haven't applied for. He said afterwards he was a fracking expert though and believes that the process is safe, especially how it is practised in New Zealand.

Explaining that Todd Energy is "one hundred percent New Zealand owned", he remarked that they "see themselves as part of the community - not here

Winfred Boeren speaking to Kina Road residents Len Pentelow (right) and Robert Muggeridge.

just to make a quick buck."

The operation needs to be completed by the end of the year as the 6 year permit, which they applied for from the government expires at the end of the year.

It is anticipated that they will start mid to late June beginning with some work on the roads in the area. Construction will take 12 weeks with drilling timed to take place late September.

Mr Boeren seemed keen to reassure those in the area that there would be a minimum of disruption to them with heavy vehicles used only during daylight hours, "except in the unlikely event of an emergency".

They would also make sure that the roads are maintained.

"The noise generated during drilling at night has been raised as a concern in other operations. Hamish said the rig was completely encased unlike in other drilling around Taranaki such as at Tikirangi. "All the generators are encased in soundproof units."

Other potential irritations like beeping to indicate reversing vehicles are now replaced by flashing lights.

The slide show gave an interesting insight into just what is involved in drilling for oil.

The process begins with the exploration of areas using seismic surveys. This involves looking for underground structures

Continued page 3.

Continued from page 2.

which are likely to yield oil. They send a signal down which when it comes back can tell you something about the type of rock underground and whether there is rock with a high hydrocarbon fill, he said.

"The only way to confirm this is to drill it."

He explained there is a 10% probability of success.

Concerns expressed

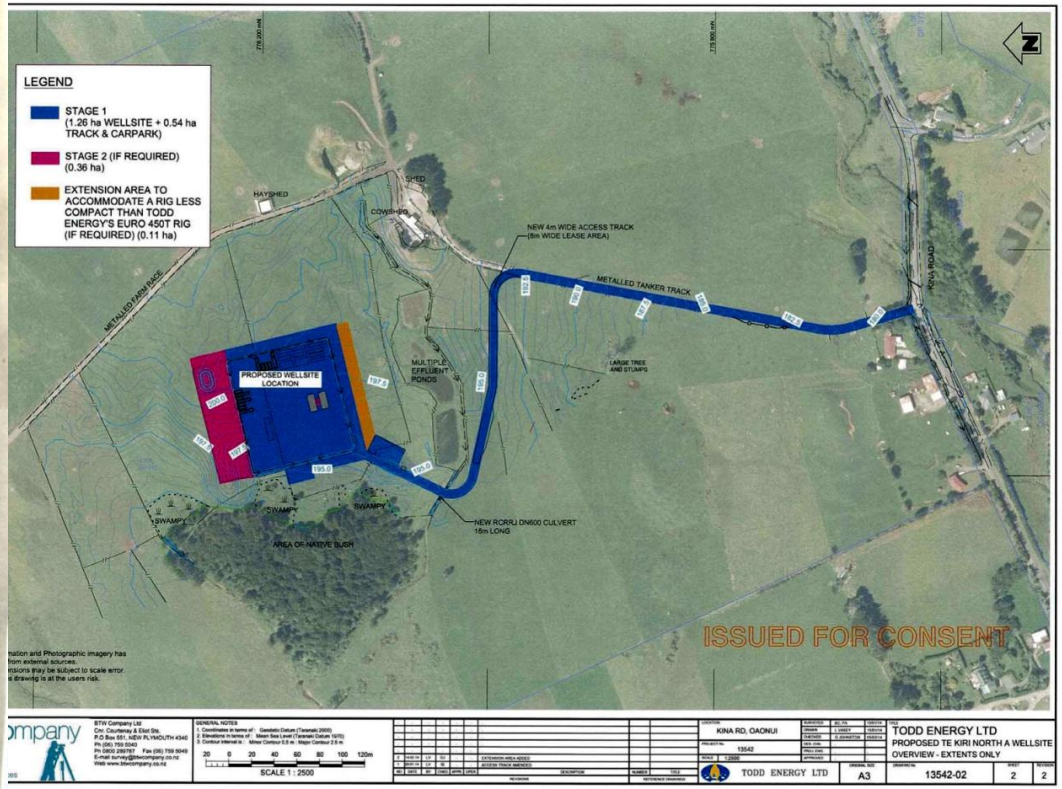
Not everyone however was happy at the prospect of drilling occurring on farmland. Grant Bishop who owns a neighbouring farm which has been in the family since 1919 for generations had concerns about water contamination.

In the 1950s when his father owned the farm there had been drilling on the farm and 60 years on, they had a problem with "3-4 holes" seismic holes. "Something triggers it and water bubbles out and they were left with a swamp, said Grant. This had happened 3 or 4 times in the 35 years he'd owned the farm. He was also concerned about water contamination and the long term consequences of what they were doing. Once asbestos was considered OK he remarked.

He also expressed concern about the proximity of the drilling to a faultline which was just half a kilometre away. Len Pentelow who owns a farm on Kina Road said he had concerns about traffic. "Don't ruin our brand new roads," was another comment. Another person present Irene Mullan however said they had had people on their farm and there were no problems at all. Robert Muggeridge whose farm borders Keith Harvey's farm said he was "OK about it".

Map: Todd Energy AEE for Te Kiri North-A wellsite, March 2014.

"We very much value transparency, openness while we're doing it," remarked Winfred Boeren, Todd Energy. … There will [be] no fracking involved, he assured explaining that fracking requires a special licence which they haven't applied for.



"Calculation of the Hazards Effect Ratios … [HFSP] … given the volumes and nature of substances on the site, resource consent will be required [from STDC]… It is possible that the substances listed could be swapped for other similar proprietary products…"

Todd Energy AEE for Te Kiri North-A wellsite, March 2014.

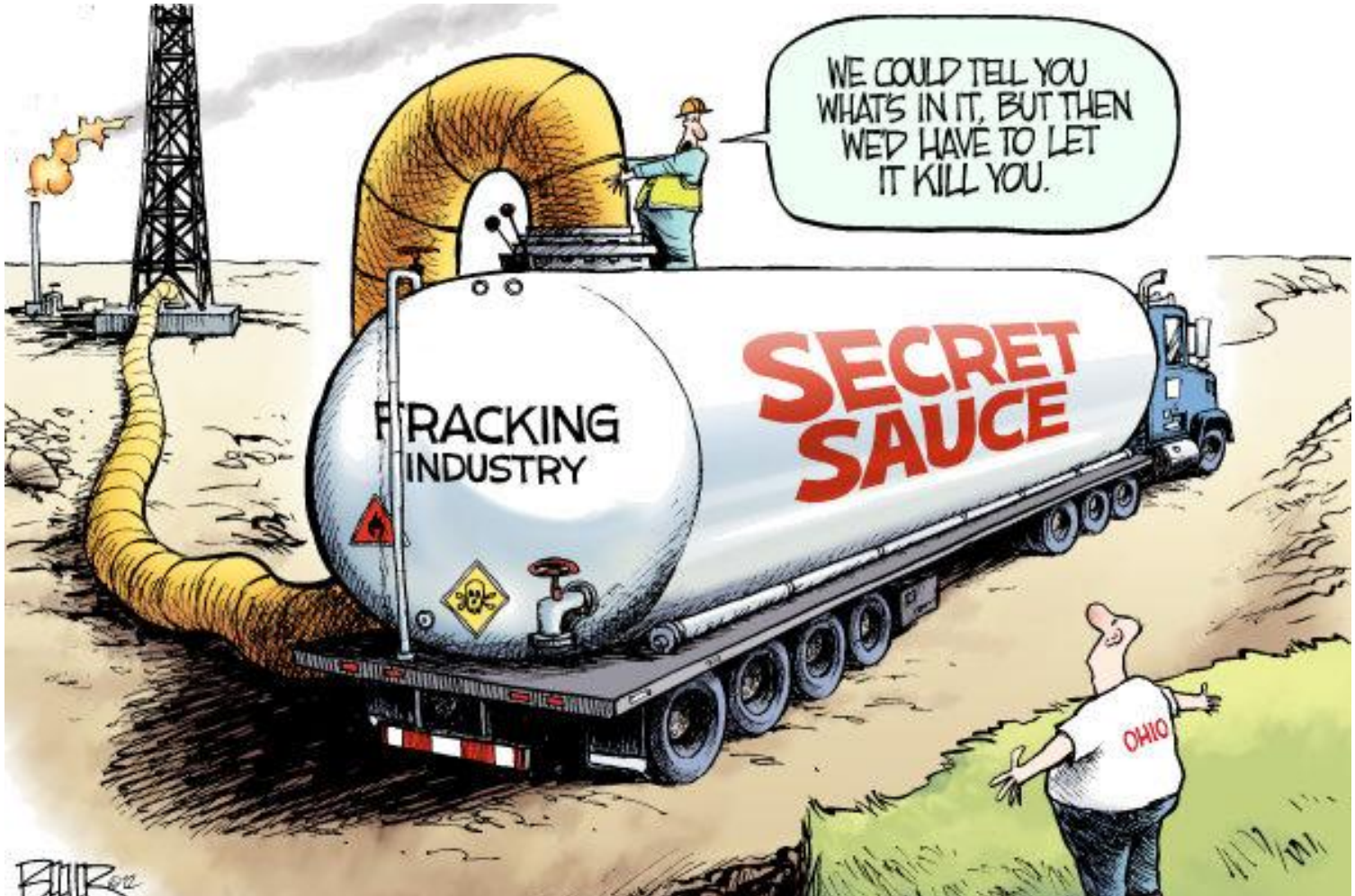


Table 2: Drilling Phase Hazardous Substance Inventory

Substance Name	Form	Conc (%)	Specific Gravity	Proposed Quantity (in known units)	Proposed Quantity (in t or m3)	UN No.	UN Class	HSNO CLASS	Storage or Use	Distance from site boundary
Barite (Halliburton and MI)	Powder	100		40000kg	40t			6.1D, 6.7A, 6.9A 9.3C	Storage	>30m
Class G Cement	Powder	100	3.15	5.1MT 5100kg	5.1t			6.1D, 6.5A, 6.5B 8.2C, 8.3A	Storage	>30m
Diesel	Liquid	100	0.85	20000L	17t			3.1D, 6.1E, 6.3B 6.7B, 9.1B	Storage	>30m
Ecotrol RD	Solid	100		1225kg	1.2t			3.1C, 6.1C, 6.1E 6.3B, 6.4A, 6.6B 6.8B, 6.9B, 9.1D	Storage	>30m
Frac Attack*	Powder	100		5000kg	5t			6.3B, 6.4A, 6.7B	Storage	>30m
Gacscon 469	Liquid	100	1.1	2000L	2.2t			6.1E, 6.3A, 6.4A 6.7A, 6.9A	Storage	>30m
G-Seal	Powder	100		4000kg	4t			6.1E, 6.3B, 6.4A 9.1D	Storage	>30m
HZ-20	Liquid	100		1200L				9.1B	Storage	>30m
KCl (Halliburton and MI)	Powder	100		24075kg	24t			6.1E, 6.3B, 6.4A 9.3B	Storage	>30m
Lime	Powder	100		2000kg	2t			8.2C, 8.3A, 9.1D	Storage	>30m
LPG	Gas	100	1.6	100m3	100m3	1075	2.1	2.1.1A	Storage	>30m
Methanol	Liquid	100	0.79	1500L	1.185t	1230	3(II)	3.1B, 6.1D, 6.4A 6.8B, 6.9A, 9.3C	Storage	>30m

carcinogenic
acute toxicity
flammable
mutagen
reproductive toxicity
skin corrosion
eye damage
aquatic toxicity
ecotoxic

Source: Todd Energy AEE for Te Kiri North-A wellsite, March 2014.

Substance Name	Form	Conc (%)	Specific Gravity	Proposed Quantity (in known units)	Proposed Quantity (in t or m3)	UN No.	UN Class	HSNO CLASS	Storage or Use	Distance from site boundary
MIX II (Coarse & Fine)	Powder	100		4000kg	4t			6.7A, 6.9A	Storage	>30m
Monoethylene Glycol	Liquid	100	1.15	1500L	1.75t			6.1D, 6.4A, 6.9A 9.3C	Storage	>30m
Na Formate	Liquid	100	1.92	13,500 gals 51104L	98t			6.1E	Storage	>30m
Novamul	Liquid	100	0.95	3200L	3t			3.1D	Storage	>30m
Novatec F	Liquid	100	1.01	4095L	4.1t			6.1D, 6.5A, 6.5B 8.2C, 8.3A, 9.3C	Storage	>30m
OS1-L	Liquid	100	1.34	1000L	1.34t			8.2C, 8.3A	Storage	>30m
Produced Hydrocarbons	Liquid	100	0.85	127,000L	149t			3.1B, 6.6A, 6.7A 6.9B, 9.1C	Storage	>30m
SSA-1	Solid	100		9900kg	9.9t			6.7A, 6.9A	Storage	>30m
Tuned Spacer III	Solid	100		2268kg	2.26t			6.7A, 6.9A	Storage	>30m

*Frac Attack is a drilling fluid additive used to seal permeable sands, micro-fractured shales, and vulgular formations. It is not used for fracking in this context.

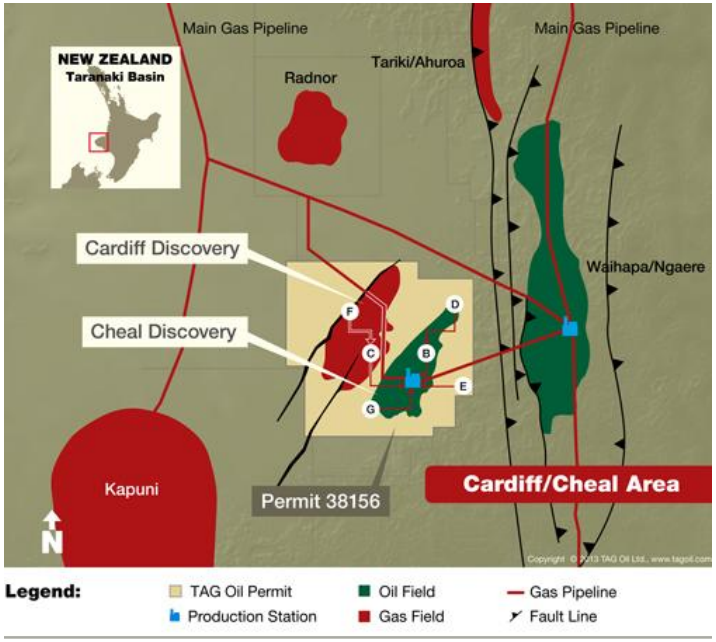
Note: Guidance from STDC District Plan, Appendix II

- A substance that is taken from a container and used in small amounts while its bulk continues to be stored would be rated as being storage; unless the processing is permanently connected to the bulk storage.
- Small packages generally treated same as bulk quantities.

Source: Todd Energy AEE for Te Kiri North-A wellsite, March 2014.

Myth 2:

Technological advance means that oil and gas wells are fail-safe



Fact:

All well casing leaks. Even new wells can leak.

e.g. Tag Oil recently drilled, cased and fracked Cardiff-3 well, but *"… either the fracture stimulation was affected by a poor cement bond … or skin damage must exist … restricting flow. … TAG is now planning to move uphole and initiate testing on the second of the three identified potential zones, where there is a competent cement bond in place…"*

http://www.tagoil.com/20140507-TAG-Announces-FY2015-Drilling-Program-Operations-Update.asp

http://www.stuff.co.nz/taranaki-daily-news/news/10405544/Oil-wellsite-probe-news-to-explorers

Fact:

In 20 years, over half of the wells will leak.

Wells Cheal 1, 2, 3 & 4 at Cheal A wellsite.

e.g. Two Cheal-A production wells have been losing power fluids since 2007 but only notified TRC in Sept 2009. *"The discharge to the Urenui Formation was …due to integrity issues with casing patch seals within the wells".* Consent was then changed to allow for the discharge and provide *"a regulatory response to the reported well leakages."*

http://www.trc.govt.nz/assets/Publications/technical-reports/oil-and-gas-compliance-monitoring-reports/717351.pdf

Fact: *"The likelihood of an abandoned well leaking increases with its age. … once a well has been abandoned and 'signed off' by the High Hazards Unit and the councils, any leaks from the well become the responsibility of the owner or occupier of the land."* PCE, June 2014

Myth 3:
Effects on the environment are minor or 'less than minor'

Fact: Water contamination

"In a recent incident at an exploration well site in Taranaki, equipment failure led to oil collecting in a flare pit, leaching into a tile drain, through a manhole, and into a stream…In another… hundreds of litres of oil and produced water leaked from a pipeline into a stream and was detected when noticed by a local Farmer." PCE, June 2014.

http://www.pce.parliament.nz/publications/all-publications/drilling-for-oil-and-gas-in-new-zealand-environmental-oversight-and-regulation/

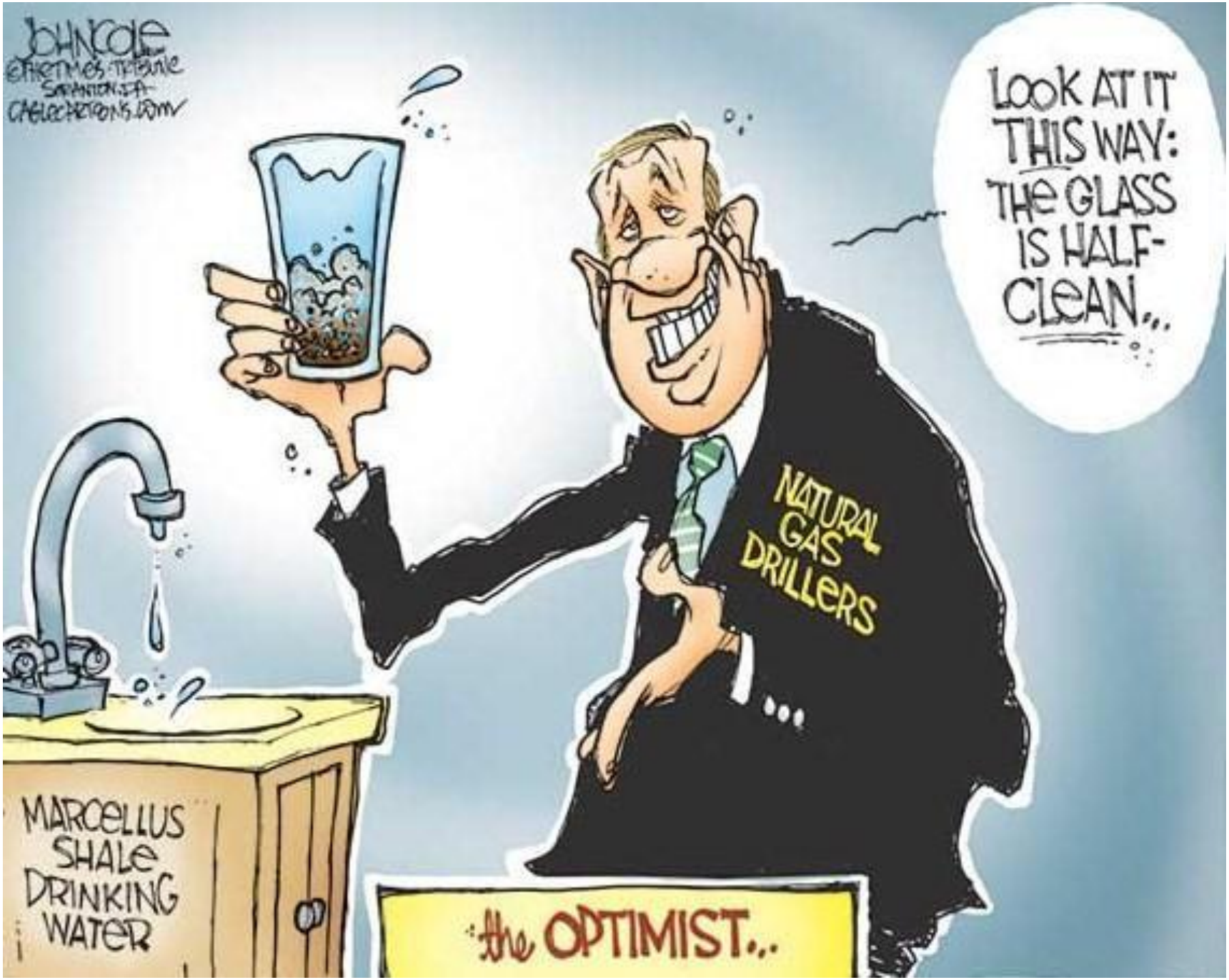
Fact: Shallow groundwater below five STOS Kapuni wellsites is not fit for potable or stock water use. Two sites do not meet the criteria for irrigation.

Table 26 Summary of blow-down pit groundwater monitoring result exceedences

Wellsite	Monitoring well	No. of times sampled	Year last sampled	Compounds exceeding MfE criteria		
				Potable	Irrigation	Stock water
KA-1/7	PDP2	4	2004	B, X	-	N
KA-4/14	MWH1	1	2007	B, X	-	N
	MWH3			B, X	-	N
KA-5/10	-	1	2007	-	-	-
KA-6/11	MWH1	2	2007	B, X	-	N
	MWH2			B	-	N
	MWH3			-	-	N
	MWH4			B	-	N
KA-8/12/15	MWH1	2	2008	C7-C9, B, E, X, BAP	B, X, N, BAP	X, N, BAP
KA-13	PDP2	5	2008	B, E, X	B, N	N
	PDP3			B, E, X	-	N

B=benzene
E=ethylbenzene
X=total xylenes
N=naphthalene
BAP=benzo(a)pyrene

http://www.trc.govt.nz/assets/Publications/technical-reports/oil-and-gas-compliance-monitoring-reports/854309.pdf (June 2011)


JOHN COLE
©THE TIMES-TRIBUNE
SCRANTON, PA
CAGLECARTOONS.COM
LOOK AT IT THIS WAY: THE GLASS IS HALF-CLEAN...
NATURAL GAS DRILLERS
MARCELLUS SHALE DRINKING WATER
the OPTIMIST...

Fact: Soil contamination

Four flare/blowdown pits at STOS Kapuni wellsites have heavily contaminated soil. From KA2, >350 tonnes sent to BTW Brown Road landfarm and >100 tonnes sent to Wellington for treatment, then landfill. From KA3 & KA13, 2,688 & 1,500 tonnes of impacted soil were removed.

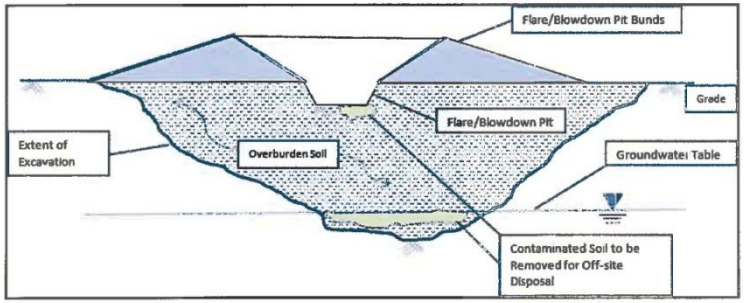


Figure 3: diagrammatic representation of proposed excavation works

"These pits were used, infrequently, for temporary containment, and were unlined … In the past, some pits were used to take fluids from fracked wells" STOS, 2012.

http://climatejusticetaranaki.files.wordpress.com/2011/04/stdc-information-report-re-consents-for-kapuni-contaminated-soil-2012-08-7.pdf
http://www.stuff.co.nz/taranaki-daily-news/news/7704340/Contaminated-soil-removed

Fact: Food Safety Risks

Steers seen on BTW landfarm, June 2014. Photo by Fiona Clark.

TABLE 4: COMPOUNDS AND MINERALS DETECTED IN FARM MILK

Farm	Compound / Mineral					
	Toluene	Barium	Longer chain saturated hydrocarbons	Polybrominated diphenyl ethers		
			C25-35	#47	#99	#100
	ng/g	mg/kg	ng/g	ng/kg	ng/kg	ng/kg
Control Farm: Blenheim	0.017	0.14	< 0.06	<0.02	<0.02	<0.02
Control Farm: Otautau	0.016	0.10	< 0.06	<0.02	<0.02	<0.02
Control Farm: Rotorua	< 0.01	0.14	< 0.06	<0.02	<0.02	<0.02
Farm A	0.024	0.16	< 0.06	<0.02	<0.02	<0.02
Farm B	0.014	0.15	< 0.06	<0.02	<0.02	<0.02
Farm C	0.012	0.17	< 0.06	3.73	2.04	0.466
Farm D	0.026	0.10	< 0.06	<0.02	<0.02	<0.02
Farm E	0.029	0.15	< 0.06	<0.02	<0.02	<0.02
Farm F	0.019	0.18	< 0.06	<0.02	<0.02	<0.02
Farm H	<0.01	0.16	< 0.06	<0.02	<0.02	<0.02
Farm I	0.014	0.22	1.5	<0.02	<0.02	<0.02
Farm J	0.025	0.10	< 0.06	<0.02	<0.02	<0.02
Farm K	0.022	0.25	< 0.06	<0.02	<0.02	<0.02
Farm L	0.019	0.15	< 0.06	<0.02	<0.02	<0.02
Farm M	0.014	0.17	< 0.06	<0.02	<0.02	<0.02
Farm N	0.020	0.17	< 0.06	<0.02	<0.02	<0.02
Farm O	0.013	0.17	< 0.06	<0.02	<0.02	<0.02
Farm P	0.011	0.14	1.4	<0.02	<0.02	<0.02
Farm Q	0.019	0.14	< 0.06	<0.02	<0.02	<0.02
Farm R	0.014	0.09	< 0.06	<0.02	2.34	<0.02

http://www.mpi.govt.nz/news-resources/publications

Food Safety Minister Nikki Kaye:

"Sheep and beef testing would require huge control samples", take a lot longer than milk testing, and should only be done *"if we actually see something showing up in the milk. …*

We are looking at what is the quickest way to get assurance that there is definitely nothing there and we think that's through milk testing…"

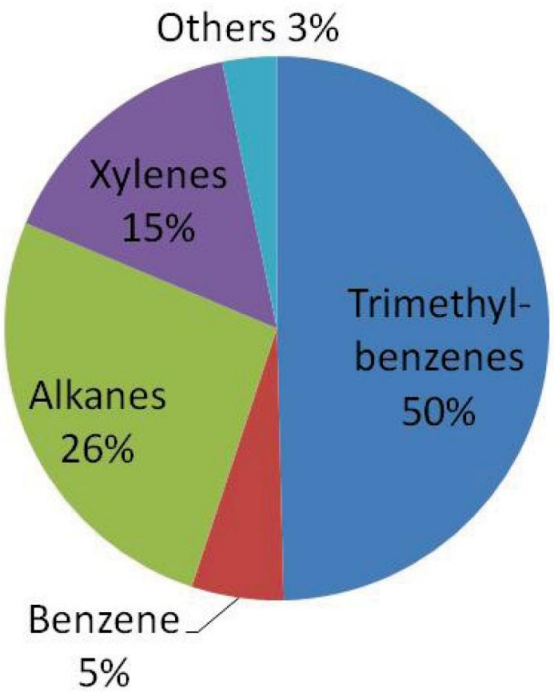
http://tvnz.co.nz/national-news/greens-want-land-farm-meat-tested-contamination-5912913 (April 2014)

Myth 4: Effects on Neighbours are minor

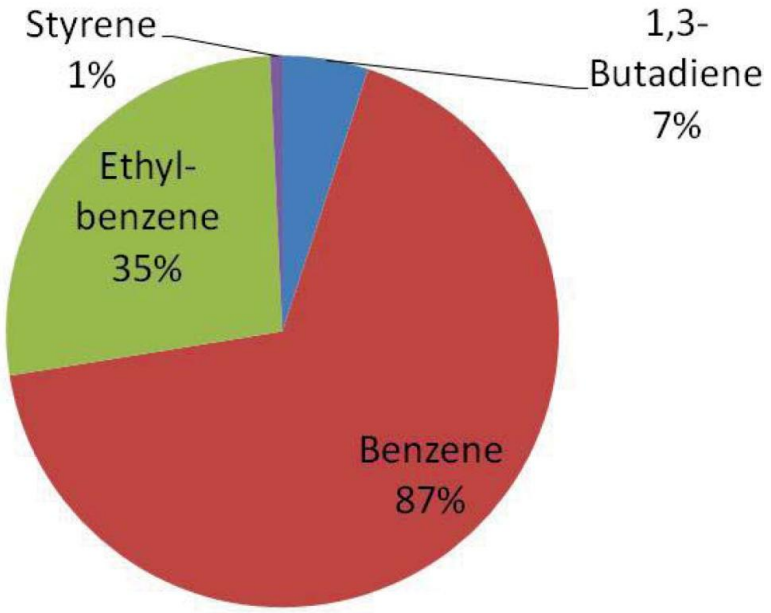
Fact: Human health risk related to air emissions from development of unconventional natural gas resources

Residents living ≤½ mile (800 metres) from wells are at greater risk for health effects from NGD. Cumulative cancer risks were 10 in a million vs 6 in a million.

Non-Cancer Risk Drivers



Cancer Risk Drivers



Dr. Lisa McKenzie, Colorado School of Public Health, University of Colorado, 2012

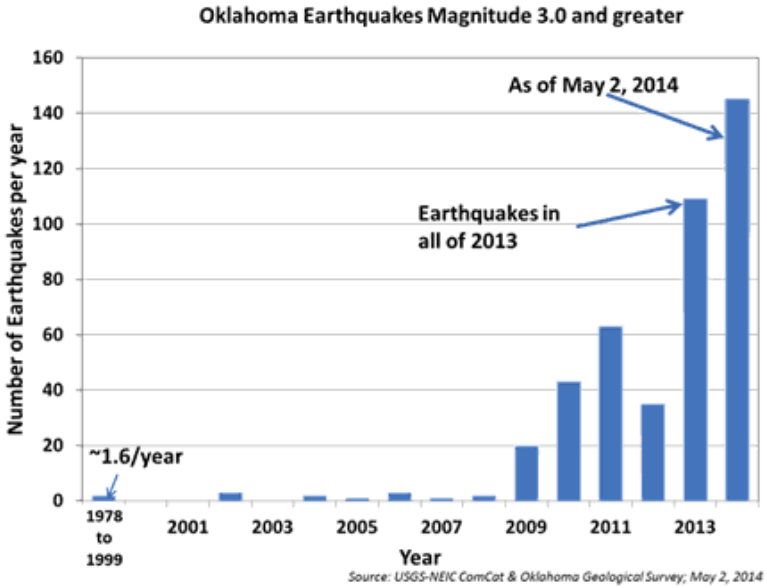
https://www.bouldercounty.org/doc/landuse/mckenzie2012study.pdf

Association between density and proximity of natural gas wells within a 10-mile [16km] radius of maternal residence and prevalence of congenital heart defects and possibly neural tube defects.

McKenzie et al. 2014
http://dx.doi.org/10.1289/ehp.1306722

Norfolk School is ~600m from Tag Oil's proposed Sidewinder B wellsite.
http://www.norfolk.school.nz/?p=1957

Fact: Deepwell Injection & Fracking can cause Earthquakes



e.g. Oklahoma's heightened earthquake activity since 2009 includes 20 magnitude 4.0 to 4.8 quakes, plus the largest earthquake in Oklahoma's history – a 5.6 quake near Prague on Nov 5, 2011.

http://earthquake.usgs.gov/regional/ceus/products/newsrelease_05022014.php

Dr Anthony Ingraffea explains: *"We've mobilized pre-existing, stable faults," he says.* Underground water from waste disposal *"lubricates those faults and changes the pressure on them."* Naturally, the waste injection wells at issue are the ones that are closest to faults.

http://www.motherjones.com/environment/2014/08/inquiring-minds-anthony-ingraffea-science-fracking-methane

Myth 5:

The oil/gas industry brings jobs and wealth – we need them

Fact:

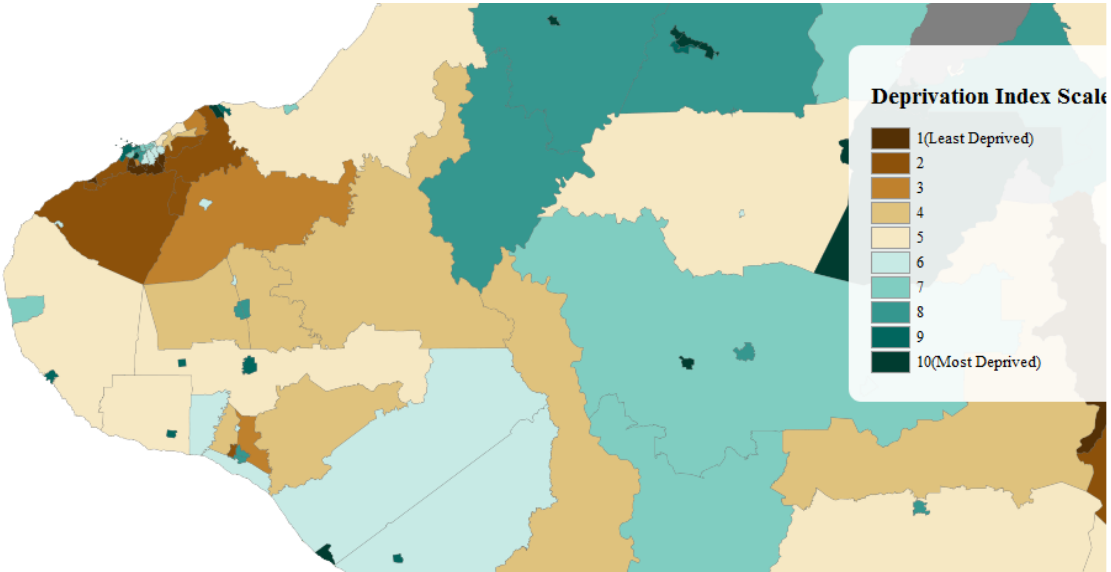
Green energy creates 4x more jobs than oil.

Tax takes from oil industry:

NZ = 46%; World average = 70%

NZ Deprivation Index:

Patea = 10; Kaponga, Eltham, Waitara East = 9, Stratford = 8



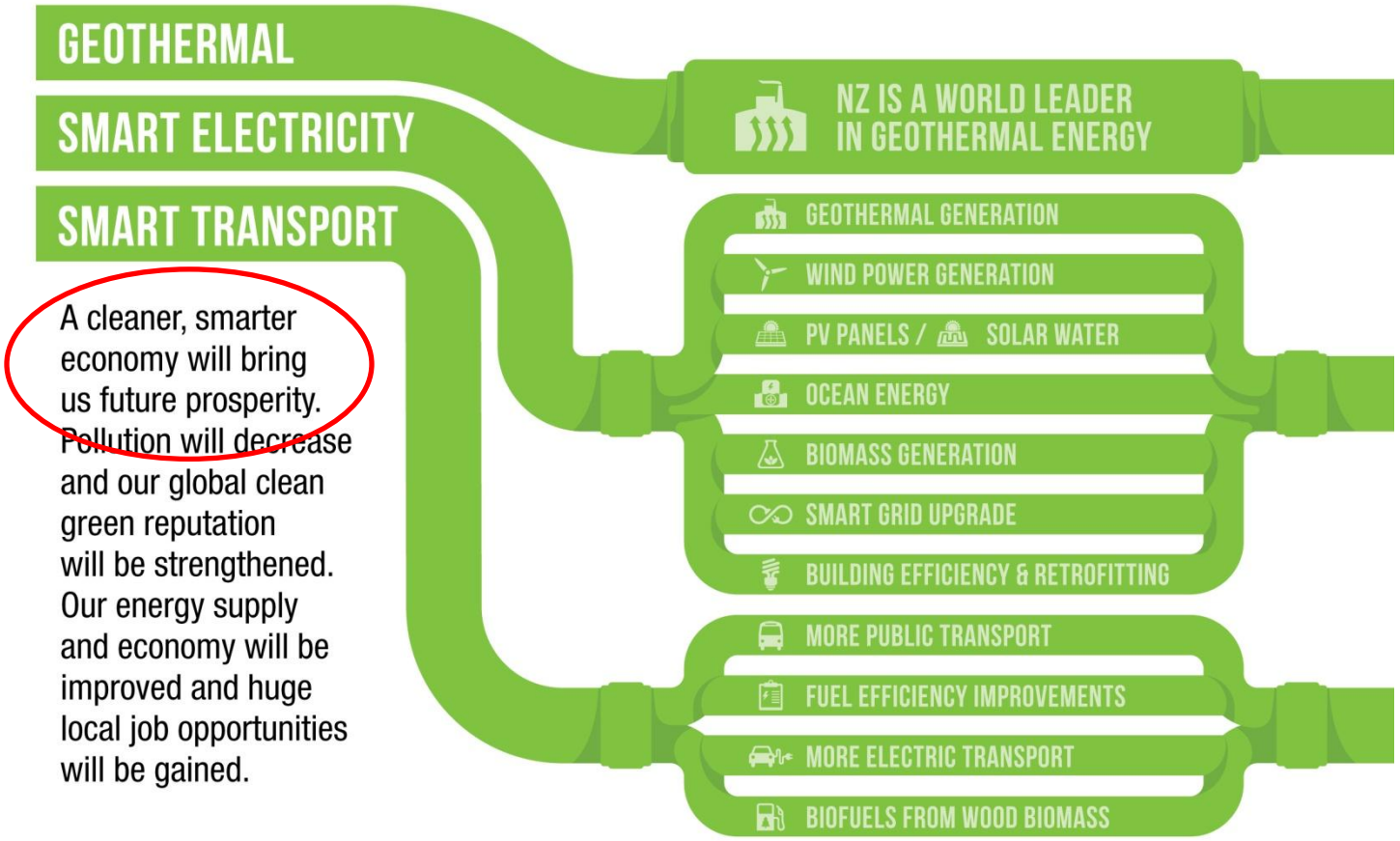
http://www.greenpeace.org/new-zealand/en/campaigns/climate-change/The-Future-is-Here/

http://awsassets.wwfnz.panda.org/downloads/wwf_fossil_fuel_finance_nz_subsidies_report.pdf

http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11254032

By Alexei Talimonov

THE RIGHT ENERGY PATH FOR NZ



50% OF JOBS RELY ON NZ'S CLEAN GREEN REPUTATION

70% OF EXPORTS RELY ON NZ'S CLEAN GREEN REPUTATION

GREEN ENERGY CREATES **4X MORE JOBS** THAN OIL

http://www.greenpeace.org/new-zealand/en/campaigns/climate-change/The-Future-is-Here/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