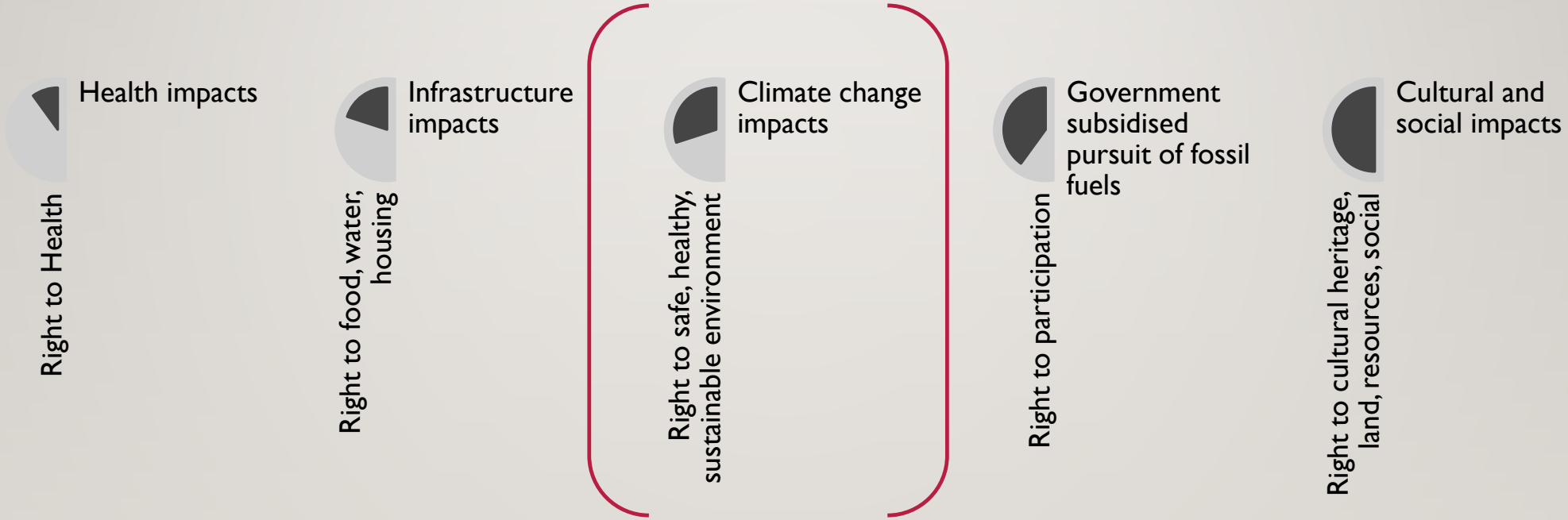
HUMAN RIGHTS IMPACTS OF UNCONVENTIONAL GAS

AUSTRALIAN SESSION – SUBCASE 3

SUBCASES


Health impacts
Right to Health
Infrastructure impacts
Right to food, water, housing
Climate change impacts
Right to safe, healthy, sustainable environment
Government subsidised pursuit of fossil fuels
Right to participation
Cultural and social impacts
Right to cultural heritage, land, resources, social

SUBCASE 3 – ENVIRONMENT AND CLIMATE CHANGE

The environment and climate change subcase will examine

- the human rights and earth rights implications of fracking's impacts on the climate system, for present and future generations and for other living beings, which may result from a CO2-intensive extraction process, fugitive and intentional methane releases, fostering a continued reliance on fossil fuels, and so on.
- impacts on ecosystems, oceans and wildlife, on contamination and depletion of ground and surface waters, and on the contribution to earthquake swarms.

TESTIMONY INVITED

- The following is a selection of the issues associated with this subcase.
- You are invited to provide testimony or witness statements supporting this subcase.

FOSSIL FOOLS CHOICE

The pursuit of fossil fuels to the detriment of investment and development of renewable sources

- The government made a series of choices that selected fossil fuels over renewables and the creation of a gas industry in particular.
- From legislating a portion of electricity production be from gas to having productivity commissions into the easing of red and green tape for the industry
- The Government were even so lead by the desires of multinationals instead of the good of the country that in their dash to create an export industry for gas they destroyed the supply and demand basis for pricing and eliminated the domestic supply that had previously been legislated.

SCALE OF THE INDUSTRY

- https://youtu.be/1w1o1JCXJeU

Credit: People 4 the People

ENVIRONMENTAL IMPACTS

The scale of the industry is unprecedented

- Large-scale development comes with an extensive catalogue of potential environmental impacts

Prof Alan Randall
http://www.smh.com.au/federal-politics/the-question/is-coal-seam--gas-worth--the-risk-20110819-1j20j.html

disturbance and fragmentation of land surface

Increased / induced seismic activity

treatment and disposal of contaminated waste water

land subsidence

Voracious demand for water especially groundwater

contamination from drilling and hydro-fracturing fluids

potentially irreparable damage and destruction of aquifers

the liberation of methane and carbon dioxide (potent greenhouse gases) into the atmosphere

ENVIRONMENTAL IMPACTS

The scale of the industry is unprecedented

The planned scale and scope of the development makes the whole question of impact more complex - the projects are licenced in a piecemeal method but cumulative impacts are not predictable and potentially more systemic when environmental systems are subjected to disturbance on such a scale.

Prof Alan Randall

http://www.smh.com.au/federal-politics/the-question/is-coal-seam--gas-worth--the-risk-20110819-1j20j.html

CLIMATE FUGITIVE

- As already indicated in subcase 1 – Health, the sum of the fugitive emissions of this industry along with the emissions that are estimated for the NPI, this industry does not wash up as the spin suggests 'cleaner than coal'.

Methane emissions from coal seam gas development raise climate change concerns

By Stephen Long

Updated 3 Mar 2017, 12:50pm

Tim Forcey is searching for a concealed threat.

"We could be looking at a potential climate disaster here. We just don't know. It's hidden, invisible, unmeasured," he said.

The chemical engineer is a 35-year veteran of the oil and gas industry.

What he is looking for cannot be seen by the naked eye, or by an ordinary camera. But his is no ordinary camera.

"This is a sophisticated camera, military grade, that can detect invisible gases like methane," he said, showing me the $140,000 Forward Looking Infra-Red (FLIR) video recorder.

"The way that it does that is it has got a special device inside that can cool down the inside of the camera to minus 200 degrees Celsius."

GIF: The FLIR video recorder can detect invisible gases like methane.

RELATED STORY: Gas forgotten in coal v renewables energy debate

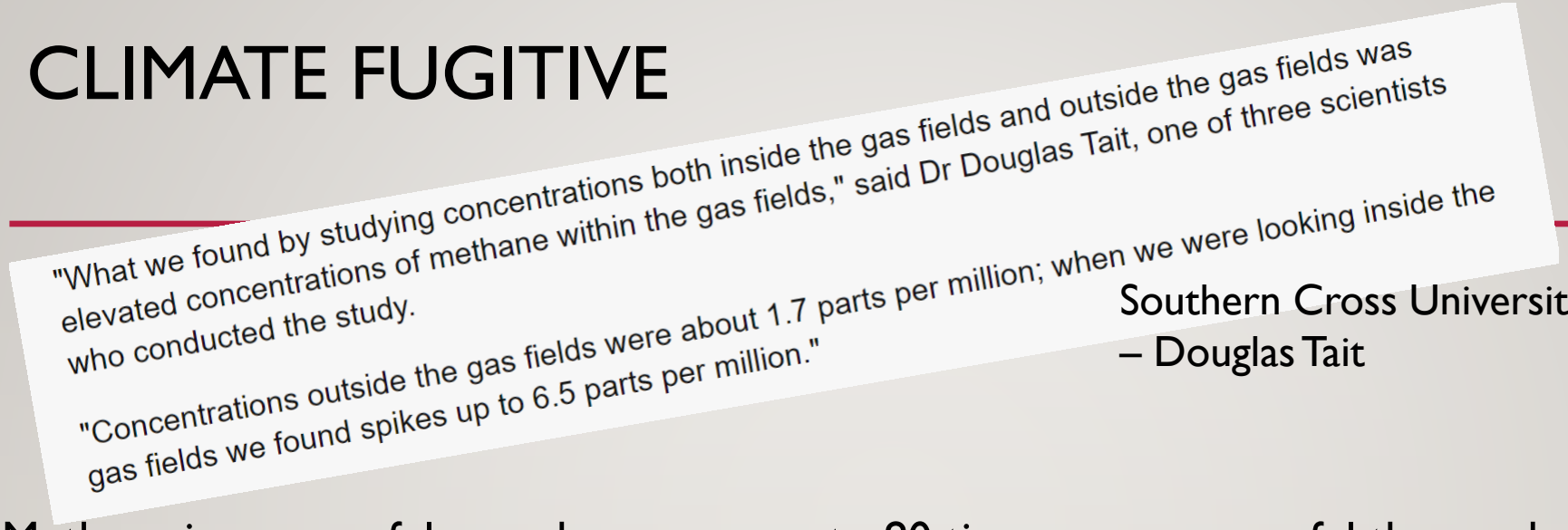
RELATED STORY: Coal seam gas mining costs farmers millions, CSIRO study finds

RELATED STORY: Climate wildcard methane is spiking, global research finds

MAP: Chinchilla 4413

http://www.abc.net.au/news/2017-02-28/methane-emissions-from-coal-seam-gas-climate-change/8310932

CLIMATE FUGITIVE



"What we found by studying concentrations both inside the gas fields and outside the gas fields was elevated concentrations of methane within the gas fields," said Dr Douglas Tait, one of three scientists who conducted the study.

"Concentrations outside the gas fields were about 1.7 parts per million; when we were looking inside the gas fields we found spikes up to 6.5 parts per million."

Southern Cross University – Douglas Tait

- Methane is a powerful greenhouse gas; up to 80 times more powerful than carbon dioxide emissions that are causing most concerns about climate change.
- No baselines again cause contention in both camps and the provides the pro camp with plausible deniability
- The only independent study undertaken so far (4 years ago) shows there is an issue for concern.

CLIMATE CHANGE - NOW

- Evidence from even the conservative areas indicate that to keep to the 2% rise in temperature commitment made in Paris, no new fossil fuels can be developed

Leave fossil fuels buried to prevent climate change, study urges

New research is first to identify which reserves must not be burned to keep global temperature rise under 2C, including over 90% of US and Australian coal and almost all Canadian tar sands

George Monbiot: Why leaving fossil fuels in the ground is good for everyone

https://www.theguardian.com/environment/2015/jan/07/much-worlds-fossil-fuel-reserve-must-stay-buried-prevent-climate-change-study-says

'Stuck in the dark ages': Pacific island leader vents after Australia's emissions hit record high

By Nicole Hasham

Updated 30 September 2017 - 08:34am, first published 29 September 2017 - 04:23pm

Desperate Pacific islands at risk of sinking beneath the sea say Australia is "stuck in the Dark Ages" by relying on fossil fuels, in response to alarming data showing this nation's energy emissions have hit record highs.

The outcry from Australia's smallest neighbours comes just weeks after Prime Minister Malcolm Turnbull visited Samoa and reportedly promised Pacific leaders that he understood "very clearly" the threat of sea level rise to low-lying islands

"Australia needs to be told that climate change is destroying our islands and way of life,"

LOVE THY NEIGHBOUR

- Australia is already being called out by our neighbours as turning our back on those who are to be the first to be effected by the government / industry decisions to not keep fossil fuels in the ground
- even moderately scaled domestic projects can, collectively, have dramatic effects on the global commons'. Given both the youth and rapid expansion of the CSG industry, understanding this is…crucial.

Ortolano, L. & Shepherd, A. (1995) 'Environmental impact assessment: challenges and opportunities', Impact Assessment 13(1), pp. 3–30.

https://www.brisbanetimes.com.au/politics/federal/stuck-in-the-dark-ages-pacific-island-leader-vents-after-australias-emissions-hit-record-high-20170929-gyrbi6.html

CLIMATE CHANGE CONCERNS NOT REFLECTED IN THE APPROVALS AND DECISION MAKING

- Even if the Government was to convince us that their concerns regarding climate change matched the community's and they referred to the Environmental Impact Assessment process as evidence of the rigour to which the industry was held, and the impact managed, they would still fail in this regard.

FAILURE OF THE EIA PROCESS

- Simone Marsh pre-empted these failures in her multiple whistleblower submissions and provides in her submissions evidence of a list of lack of baseline data, scientific rigour and star chamber protective behaviour to the fatally flawed "adaptive management' matra that the government hangs its hat on as permission for allowing csg to be rolled out. Submission 316 Simone Marsh – Unconventional gas mining inquiry
- That EIA addresses individual projects may produce a number of constraints, BUT EIA are site-specific, temporally constrained and limited in coverage of cumulative environmental effects. The current method fails to identify the aggregate of environmental effects may be greater than the sum of the individual effects.
- "Strategic environmental assessment in Australasia, identifies that EIA misses regional impacts, cumulative impacts of multiple projects over time, and may allow environmental death by a thousand small cuts".

Marsden and Dovers (2002 Marsden, S. & Dovers, S. (2002) Strategic environmental assessment in Australasia, Federation Press, Annandale.

From the Seam to the Stove: greenhouse gas assessment and the coal seam gas industry in Australia

Mischa Vickas, Phil Mcmanus & Christopher Dey

DOI:
http://dx.doi.org.ezproxy2.acu.edu.au/10.1080/00049182.2014.986791

PUBLISHED ONLINE:
22 January 2015

Table 6 of 6
Table 6. Coverage of emission sources in the EISs reviewed as part of this research

Emission source	Project							
	Queensland					New South Wales		
	Arrow Energy Surat	Arrow Energy Bowen	APLNG	Santos Gladstone LNG	QGC QCLNG	AGL Gloucester	AGL Camden (Northern Expansion)	Eastern Star Gas Narrabri
Non-CSG fuel combustion–Transport								
Non-CSG fuel combustion–Stationary								
Electricity use (Scope 2)								
Electricity (Scope 3)								
Fuel (Scope 3)								
Materials (Scope 3)								
Landfill waste (Scope 3)								
Water treatment								
Land clearing								
Fugitives–Venting								
Fugitives–Flaring								
Fugitives–Leaks								
End-use								
Liquefaction (Qld only)								
Export (Qld only)								

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Green: the assessment provided a quantitative estimate and discussion of the emission source.

Orange: the emission source was calculated with exceptions.

Red: the source was not estimated with justification or not recognised at all.

GROUND WATER DEPENDENT ECOSYSTEMS

Water extraction and gas migration due to unconventional gas present risks for:

- aquifer storage (groundwater sustainability)
- groundwater users
- groundwater-dependent ecosystems (springs)

Risk for the Condamine Alluvium at present is mainly related to uncertainties regarding the interaction of this aquifer with the underlying Walloon Coal Measures. Therefore,

EIA FOR WATER

R T Drinkwater, 2015, Understanding Environmental Risks Associated With Unconventional Gas in Australia. Master of Science (Engineering) Thesis, Department of Civil Engineering, Monash University, Clayton, VIC, Australia, July 2015, 115 pages.

Project Details	P1	P2	P3	P4	P5	P6
Total Estimated Area (ha)	570,000	860,000	800,000	Not stated	Not stated	21,000
Number of Wells Predicted	10,000	7,500	6,625	6,000	Not stated	200-300
Estimated Project Lifespan (y)	30	35	40	Not stated	20	
Estimated Water Extraction	Modelled based on head drop to depressurise	Peak Production 120 ML/day	Not stated	Not stated	Not stated	In the order of 6ML/day during dewatering
Estimated Production Rates	Not contained in this attachment	Peak Production ~1,050 TJ/day	~520 TJ/day	Not stated	~5,300 PJ	30 PJ/annum

Table 3 Project details adapted from results displayed in Appendix 3

All Queensland projects predicted drawdown effects for all potentially affected stratigraphic layers for both project and cumulative cases. However, none predicted any significant groundwater quality impacts – based primarily on the no inter-aquifer connectivity assumption and a low risk of contamination due to operations.

All EAs for Queensland provided concentration and/or discharge rate limits for disposal of wastewater and treated effluents – although the various ranges and parameters for each could be described as inconsistent between projects at best. A groundwater monitoring program of some form or another was required for each Queensland project, although once again, the parameters and frequency varied

For atmospheric sections of Queensland EISs, the majority of data regarding baseline conditions was sourced a long distance from the gas fields in urban areas (such as Toowoomba >300km away), and local ambient levels were not measured. However, concentrations for a range of parameters including: NOx, SO2, CO, PM10, PM2.5, VOCs and specific compounds for each project based on the ToR for each EIS and EA requirements, were modelled in order to describe the existing environment. No monitoring or validation for these models appeared to be proposed in any of the EISs, nor did any ongoing monitoring program appear to be described within this documentation.

No EIS or EA appeared to include any baseline data or ongoing monitoring requirement for CH4 in atmospheric and air quality monitoring.

R T Drinkwater, 2015, Understanding Environmental Risks Associated With Unconventional Gas in Australia. Master of Science (Engineering) Thesis, Department of Civil Engineering, Monash University, Clayton, VIC, Australia, July 2015, 115 pages.

Coal seam gas water: potential hazards and exposure pathways in Queensland

Maryam Navi, Chris Skelly, Mauricio Taulis & Shahram Nasiri

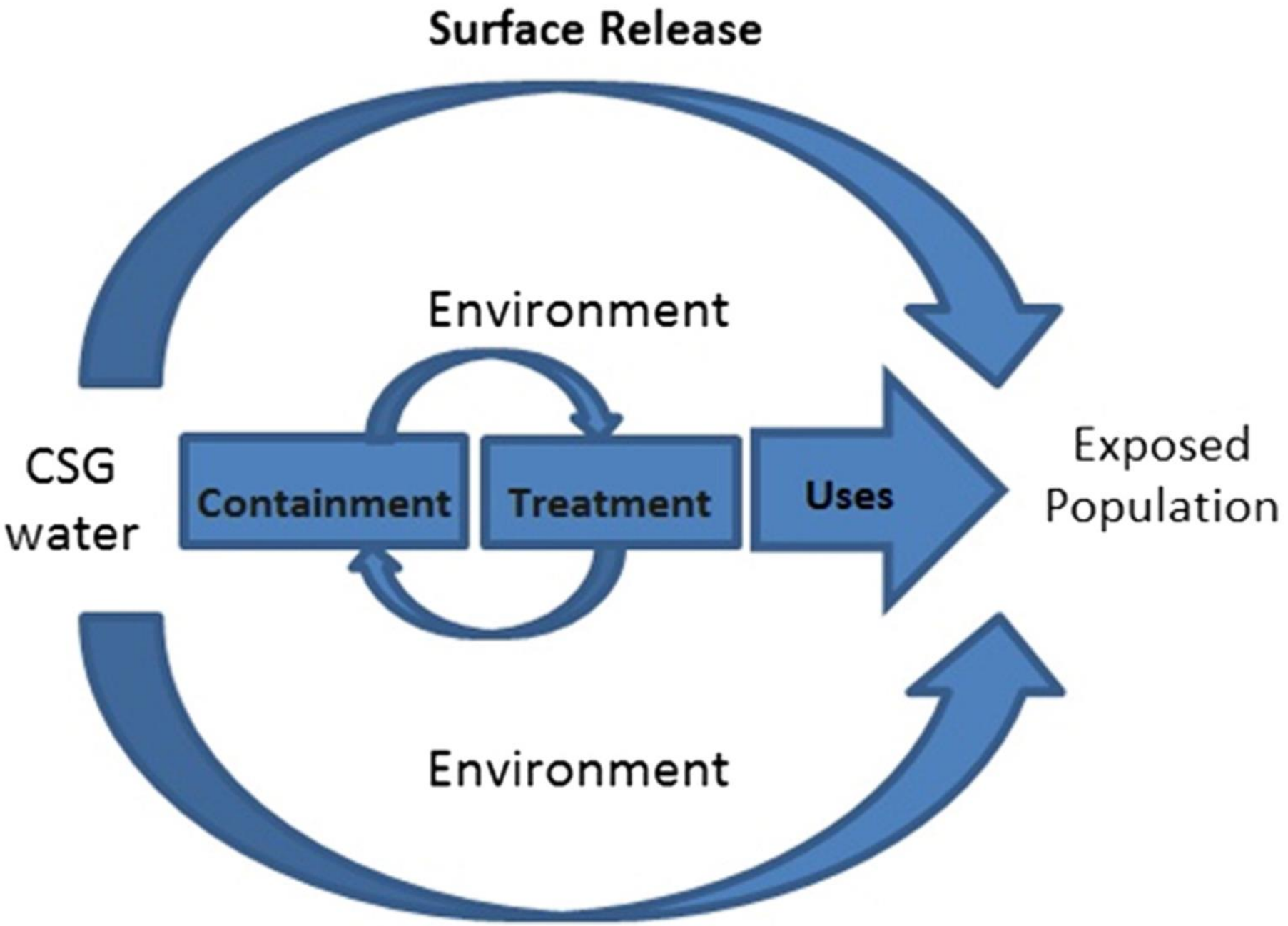
DOI:
http://dx.doi.org.ezproxy2.acu.edu.au/10.1080/09603123.2014.915018

PUBLISHED ONLINE:
23 May 2014

Table 2 of 3
Table 2. CSG water elements/compounds in Queensland.

Element/Compound	Concentrations (mg/L)	ADWG (mg/L)	Reference
Fluoride	2.9	1.5	URS (2011)
Benzene	0.006	0.001	Arrow (2011)
Iron	0.57–16.60	0.3[a]	Kinnon et al. (2010)
Aluminum	<0.01–1.32	0.2[a]	
Fluoride	1–3.7	1.5	
Fluoride	Reported exceeding standards	1.5	Moran and Vink (2010)
Boron		4	
Aluminum	1.159	0.2[a]	APLNG (2010)
Fluoride	4.140	1.5	
Iron	1.324	0.3[a]	
Fluoride	2–3.1	1.5	URS (2009)
Mercury	<0.1	0.001	
Lead	0.001–0.31	0.01	
Iron	0.029–190	0.3[a]	

[a] Insufficient data to set a guideline value based on health considerations, so an aesthetic value has been presented.


Surface Release
Environment
CSG water
Containment
Treatment
Uses
Exposed Population
Environment

Coal seam gas water: potential hazards and exposure pathways in Queensland

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DOI:
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PUBLISHED ONLINE:
23 May 2014

Table 3 of 3
Table 3. Summary of generic exposure pathways for CSG water.

Source	Fate and transport				Exposure point	Exposure route	Exposed population
Beneficial uses	Drinking water purposes				Water	Ingestion, dermal and inhalation	General population
					Water	Ingestion	CSG Occ sectors
	Dust suppression				Aerosol	Inhalation	CSG Occ sectors
	Agriculture				Aerosol	Inhalation	AgriOcc sectors
		Stock watering	Bioaccumulation in stock dairy and meat		Food	Ingestion	General population
		Irrigation	uptakes by plants		Food		General population
		Aquaculture	Bioaccumulation in aquatic organisms		Food	Ingestion	General population
	CSG well development		Migration into aquifer systems	Extracted for domestic purposes	Water	Ingestion, dermal and inhalation	General population
Surface release		Run-off to rivers, lakes	Recreational use		Water	Ingestion, dermal and inhalation	General population
		Bioaccumulation in aquatic organisms			Food	Ingestion	General population
		Infiltration through soil	Migration into aquifer systems	Extracted for domestic purposes	Water	Ingestion, dermal and inhalation	General population
Underground release			Migration into aquifer systems	Extracted for domestic purposes	Water	Ingestion, dermal and inhalation	General population
Impoundment of CSG water	Evaporation				Aerosols	Inhalation	CSG Occ sectors
	Passage through the floor or sides of the dam		Migration into aquifer systems	Extracted for domestic purposes	Water	Ingestion, dermal and inhalation	General population

ADAPTIVE MANAGEMENT = ADAPT TO NO WATER

- Despite proof that warnings from whistleblowers such as Simone Marsh are coming to pass, that inadequate science, oversight and constraints are leaving the nation in dire straits in terms of climate change and environmental impacts, the industry has progressed
- The industry has been progressed despite limited groundwater monitoring data and impacts and risk assessment that may take years to decades to develop depending on the proximity of an aquifer to the coal seam reservoirs, and these impacts may persist for prolonged periods.
- These hazards and risks are greatest for the aquifers east of Roma, west and southwest of Chinchilla and west of Dalby – predominantly high producing agricultural areas and communities and ecologies dependent on water.

PEER REVIEWED SCIENCE

- What does it take for the government to hear? Their continued response to the public concern is denial and bloody minded ignorance.
- A recent review of 685 peer-reviewed scientific papers on the impacts of unconventional gas published between 2009 and 2015 showed that the weight of scientific evidence 'indicates hazards and elevated risks to human health':
- 84% of public health studies contain findings that indicate public health hazards, elevated risks, or adverse health outcomes; 69% of water quality studies contain findings that indicate potential, positive association, or actual incidence of water contamination; and 87% of air quality studies contain findings that indicate elevated air pollutant emissions and/or atmospheric concentrations.

Jake Hays and Seth B. C. Shonkoff, 20 April 2016, PLOS One Toward an Understanding of the Environmental and Public Health Impacts of Unconventional Natural Gas Development: A Categorical Assessment of the Peer-Reviewed Scientific Literature, 2009-2015

http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0154164

PRECAUTIONARY APPROACH?

- It is anything but a precautionary approach being taken to coal seam gas development in Australia: the technology is novel, not yet standardised, and poorly understood; the uncertainty about consequences is huge and the worst-case potential for harm is enormous; and the scale of planned development is so large that cumulative impacts are not even part of the permitting process. Surely the definition of human and earth rights impacts.

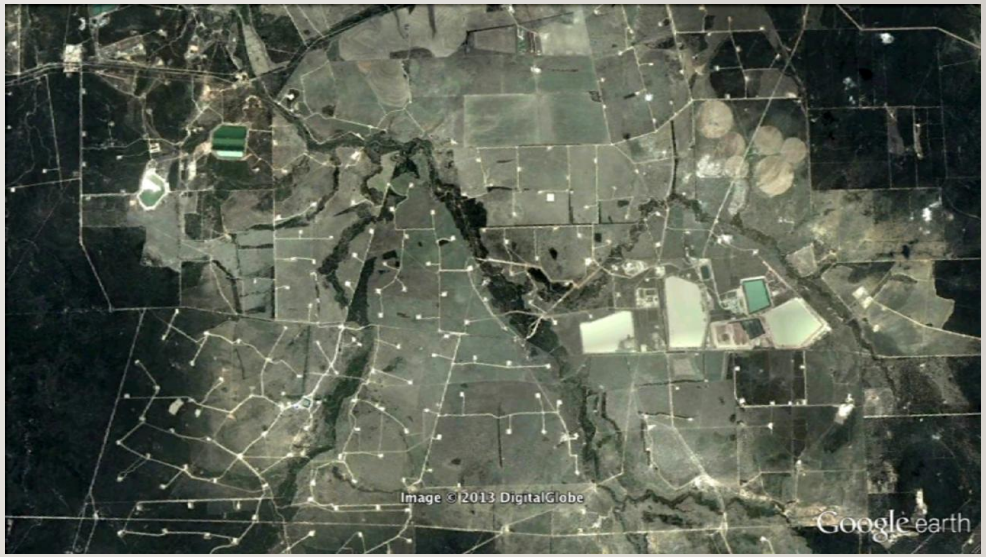

Image: ABC 4 Corners

http://www.smh.com.au/federal-politics/the-question/is-coal-seam--gas-worth--the-risk-20110819-1j20j.html

TESTIMONY INVITED

- This has been a brief summary of the basics of the impacts that this industry has on climate change and the environment.
- Please contact us to provide your testimony regarding the impact of the industry on you.

CONTACT US

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