Can the Corona Virus crisis indicate possible directions?
The impact of global warming on nuclear power and nuclear waste

An introductory note to submission: William Plain, "Nuclear Means Futurecide"

Senate Committee: National Radioactive Waste Management Amendment
(Site Specification, Community Fund and Other Measures) Bill 2020 [Provisions]

In responsible risk management, a medium or even low probability of catastrophic damage is totally unacceptable. Promoting such a path, when fully informed (see accompanying submission), involves direct personal responsibility and possible liability of the persons or 'organisations' concerned for destructive consequences.

The 'facts' on which convictions and decisions are formed are (almost) always 'selective', aimed at obtaining a pre-determined result. To be fully open to a complete range of facts requires the conscious adoption of non-judgemental creativity, critically examining all pre-established and 'organisational' points of view. This submission, over 36 pages, offers 'people facts', not 'industry facts'; facts that safeguard the future of each family, not facts that promote inordinate profit.

The submission, "Nuclear Means Futurecide", alludes to several distinct issues, each of vital importance, and each of which require consideration by this Senate Committee.

The "World Clock" is now at 100 seconds to midnight. We have survived 75 years under the threat of nuclear annihilation. The US would now be aligning its armies and its nuclear weapons along the border with Russia for operation "Defender 2020", with the clock ticking even closer to midnight, except, Corona Virus has rendered armies obsolete, at least temporarily. I wonder how close we would have been right now to Nuclear Winter.

The "World Thermometer" is now fractions of a degree from climate midnight. We have created the threat of thermal annihilation over 250 years, and continued increase in toxic emissions is bringing us ever closer, except, Corona Virus has rendered whole industries obsolete, at least temporarily. Unfortunately, the thermal impetus has hardly relented.

But what would happen if these two should combine, if the loss of thermal equilibrium should result in long term industrial closure, impacting, critically, on the nuclear industry? Nuclear winter due to nuclear power plant and nuclear waste site breakdown (as being studied by this Senate Committee) would be a rather sorry solution to global warming!

What does the Corona Virus teach us?

Surprisingly, it shows us that **we can survive controlled industrial closure**, along with the contraction of a consumer society. We can consume much less, and we can produce much less, without really collapsing.

For many, society, family and friends can adapt quite well – for many others, already on the edge of society, the challenges can be far, far greater. **All of this needs intelligent management of the national economy**, but that's what politicians are for: **creating a society and an economy that are supportive of all, of planet and people, without exception!**

We've gone so far along the road to 'thermal dyscrasia' that no matter what steps we take to re-establish planetary homoeostasis, we will still need to protect against partial industrial breakdown. Nuclear power, and **centralised nuclear waste**, unavoidably present **extreme risk**.

We can change. We just need to change in the right direction: put as simply as possible –"People and planet, before power and profit". How? See "I am Earthsight".

And who can show us the way, who can advise us, who has done it before, over 100,000 years? Decimillennial Australia.

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Senate Committee: National Radioactive Waste Management Amendment (Site Specification, Community Fund and Other Measures) Bill 2020 [Provisions]

Nuclear Means Futurecide

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South Australia, March 2020

This paper looks at:

nuclear impacts

the interaction of 'nuclear' with global warming

the cause of and means of correcting erroneous paradigms and policies

A related paper looking at global warming is: "Futurecide"

see www.earthsight.org > New Articles > Futurecide

Contents:

I wish to introduce this Submission to the Senate Committee on National Radioactive Waste Management Amendment (Site Specification, Community Fund and Other Measures) Bill 2020 [Provisions]by providing a personal context within which my research in this area has developed, followed by an exploratory scrutiny of the major risk impacting on the decision to open a centralised nuclear waste facility.

Personal Context

I am very concerned about the potential dangers of each and every aspect of the nuclear fuel cycle. Unlike most industries where the impact of an accident, design flaw or intentional misuse is generally limited in gravity and extent, nuclear can impact on human lives and entire ecosystems in an entirely unprecedented manner. The risks, from mining, to power production, to waste management, to nuclear weapons, are so great that any sane risk analysis would have placed a moratorium on all aspects of nuclear research from the very beginning … but *homo sapiens sapiens* is notably lacking in *sapientia* (more on this later in this paper).

On bringing the focus of attention to a purely personal level, my own lived experience with 'nuclear' leads me to be alarmed at the effects of evidently unavoidable nuclear accidents and the apparently intentional obfuscation of the extent of their impact, as I have been a direct witness to two of the three major nuclear incidents to date.

In April 1986, with my family, I was living in a village in the northwest of Italy when a nuclear cloud from Chernobyl passed over the area during a period of rain. Most people forewent the pleasures of eating the vegetables from their own garden, but a few refused such 'waste'. Five family members and near neighbours suffered from cancer as a result and only one was lucky enough to survive. When 'official' figures give the number of deaths as "fewer than 50" (WHO), I have clear evidence of the control imposed by nuclear interests over all organs of government, including international organisations (IAEA and WHO) – extending in all likelihood, on a much, much smaller scale, to the present National Radioactive Waste Management Amendment.

In March 2011, with my wife, I was packing up to leave Japan on retiring after 20 years as full professor in Japanese universities when the Great East Japan earthquake and tsunami struck. Although I did not witness at first hand the slowly developing awareness of the impact on the Fukushima Daiichi Nuclear Powerplant, a number of my colleagues lost family and even 'home town' to the tsunami, and an untold number will have been affected by the subsequent nuclear contamination of entire ecosystems and food chains.

The other component of the 'big three', the atomic bombing of Hiroshima and Nagasaki, occurred when I was 2 months of age, in Australia. Consequently, I have a sense of being, unwillingly, implicated in the birth of the nuclear age. And as an Australian of but a few generations, I slowly become conscious of sharing the decimillenial tradition of being 'responsible for country'.

Throughout my years of teaching in Japan, I was fortunate in being able to develop a personal curriculum in both content and methodology. In terms of content I attempted to bring an awareness of 'human impact' while methodological concerns in Educational Linguistics (the art of teaching language) led to examining how "I" can be responsible for my own learning, and do something about "my" responsibility for the human impact on the planet. Content led to an extensive review of the impact of our civilisation (in Japan the 'nuclear question' was a natural focus of attention), the seriousness of global warming and corporate externalities. My personal research brought a focus on creativity in the learning process and discussion on why "I" am responsible for the 6th great extinction of life and how "I" can correct the root cause of this, identifying an evolutionary failing and a possible means of "individual evolution" to correct this.

Nuclear, global warming and paradigms

Three elements are interwoven in this presentation: a concern for nuclear impacts, the interaction of 'nuclear' with global warming, and understanding the cause of and means of correcting erroneous paradigms and policies.

There have been major 'discontinuities' in the past. When legislating for an area as fraught with potential danger as nuclear, responsible risk management demands of us that we factor in the possibility of a major discontinuity 'on our watch'. We need to remember that risk is defined by both likelihood and consequence. For an event that can have a major impact on a civilisation or even an entire species, with 'beyond catastrophic' consequences, the level of risk would necessarily be defined as 'extreme' even if the event itself is 'very unlikely'. PLEASE NOTE, THIS IS IMPORTANT!

It might be reassuring to hope that our present industrial/consumer society will continue along its upward development curve, but responsible management requires that we scrupulously measure the risk that the development/GDP curve we are watching may itself be generating another curve which is much less advantageous for the future, even the very near future.

Around 11,600 years ago there was a major discontinuity, registered by science as an ice age, but recorded in multiple traditions as perhaps a planet-wide earthquake and tsunami (though admittedly scientific consensus is lacking). On another time scale, records of multiple 'great extinctions' have seen up to 90% of life forms disappear. (Surprisingly there is more scientific consensus about these pre-historic events than one that is recorded in multiple traditions). While we are deeply convinced that we have now succeeded in taking control of the planet herself, and will inevitably extend our control to nearby planets, we are obliged to consider the possibility that our hubris places us in great danger.

It is now considered that we have already moved from the Holocene era (starting with that event of c. 11,600 BP) to the Anthropocene, the era of human impact on, we prefer to say control over, the biosphere. Starting probably with the industrial revolution of around 1750 we have initiated the 6th great extinction, the Anthropocene, the first caused by a single species.

We can no longer allow ourselves the luxury of believing that our actions, our decisions, can be without fundamental consequences. We have already initiated a major discontinuity in planetary health, the Anthropocene Mass Extinction. A steady upward curve of human development is not guaranteed, an abrupt collapse is at least thinkable. This represents a risk factor that absolutely needs to be considered in national decision making. With catastrophic impact, even a very unlikely event points to extreme risk.

Each of us is personally responsible for the decisions that are made as a collective. Our responsibility to the planet, to all life on the planet, and to the future, to there being a future, is absolute. Further, "our" responsibility does not mean responsibility of the group, the collective, it means "me", each individual participant. "I" am responsible.

We are already decades, perhaps centuries, into a man-made disaster, an extinction event on a planetary scale. The fact that national and corporate decision-making has made virtually no attempt to rectify this situation now means that the Anthropocene Mass Extinction is morphing into global warming, which is now close to 'runaway'. A (simple) mass extinction event would represent major species extinction and would be experienced as catastrophic by all species affected. However, an exponential warming event on planetary scale, with a sufficiently steep exponential curve, brought about by multiple interactive 'positive feedback loops', could even overwhelm the planetary thermal homeostasis which has defined the 'living planet' since its 'awakening' some 4 billion years ago.

In order to consider all levels of risk, and as a means of stimulating deep reflection and personal realisation of a useful paradigm shift, it could be enlightening to realise that a number of increasingly concerned scientists have suggested that the Earth may find itself on a trajectory of warming that could result in temperatures existing on Venus. "My" (author's and reader's) exploration of 'parallel paradigms' (a stimulus to creativity) could then lead "me" to question whether there might also be a history of planetary extinctions, Venus, an earlier Mars event, and even Phaethon (the asteroid belt).

In turn, our process of paradigmatic exploration, might, tentatively, englobe the observations of a small number of influential thinkers who are analysing our species-specific tendency to civilisation rise and, seemingly inevitable, collapse. An unavoidable factor in all of this is that constant growth tends necessarily (mathematically) to exponential. Exponential leads to vertical growth on the time axis with three possible results:

> the convex upward moving curve flattens into a concave curve leading back to a controlled sustainable state of equilibrium, e.g. controlling an epidemic
>
> exponential growth continues toward the vertical until the host system collapses, with a rapid fall to a much lower level of stability, the 'lemming curve'
>
> the exponential curve continues to rise indefinitely, resulting in the destruction of the overall system, in this case, the planet – there is no future, and no past, history, the record of life, disappears.

An exercise of creative imagination can concede that this may have already happened two or three times in the local galaxy, and may be on the verge of repeating itself. The key element of this process is 'intelligence', or better, a specific form of intelligence. Animals and insects, though intelligent, rarely exhibit this tendency. But it seems that occasionally a specific animal develops a form of intelligence that leads it to assume a role of superiority, and a sense of self, which becomes self-reinforcing, to the point of exponential growth – unless limited by a society giving primacy to sustainability.

I discuss this further in a 2005 paper on my website, www.creativediscussion.org > Contents > "The Awakeness Paradigm", where I attempt to explain the evolutionary problem, lack of "mental proprioception", and a means of correcting it: "flash of insight" as the key to creativity.

There is a further aspect to this conundrum: the implacable action of exponential growth is based on 'quantitative' growth, growth which is measurable, growth that requires resources, which ultimately are finite.

Qualitative growth is not subject to the limitations of the exponential. Growth in quality does not, essentially, draw down on resources, it adds to the reserve of resources.

> *Quantitative growth is based on power and profit.*
>
> *Qualitative growth is based on people and planet.*

Here then lies the essential clue to a resolution, a way out, a world that has a future. Is a society based on qualitative growth possible? Can we identify a society based on the premise of qualitative growth and quantitative sustainability, which has lasted over a different order of time?

The answer of course, in the Australian context, is here, with us, accessible.

> *Decimillennial Australia. (see www.earthsight.org > "Decimillenial Australia")*

Australian indigenous culture stretches back over 100,000 years. The dominant world civilisation, which (re)emerged but hesitantly after the "event" of 11,600BP, has maintained a fundamental attachment to quantitative growth, particularly over the recent

few hundred, at most a few thousand years. The Australian civilisation has 'developed' over decimillennia while maintaining an attachment to qualitative growth.

Decimillennial Australia, contrary to established terra nullius mentality, has not been a static occupation of an unformed landscape. Rather it has always been a dynamic culture and land management based on a respect for limitation, an awareness of resource fluctuation and the primacy, in culture and cultivation, of quality over quantity.

Is it possible for our civilisation to radically change, to respect the limitations of our planetary home, without a sense of going backwards? Here then is the way forward: changing what we consider to be important, redefining our values, adopting measures of 'growth' which reflect development in quality instead of development measured in quantity.

In this process of "what if", I am inviting the reader to walk beyond the confines of present science and self-reassurance, and experiment with "parallel paradigms", non-judgementally observing alternative ways-of-seeing, as a means of eliciting a personal "flash of insight" which can lead to creative solutions. See www.creativediscussion.org for a way in which this individual process can be incremented by sharing one's insights with colleagues by using "Creative Discussion using Plain Pair Groups".

As an encouragement to follow some distance down this perhaps unfamiliar path, we need to realise that 'all this' is occurring "on our watch", and "I" am responsible, not only for country, but also for planet.

The present human health discontinuity, resulting from a new form of Corona Virus with limited effect on a single species, can give a measure of the impact that an abrupt planet-wide transition would impose. The impact of Covid19 on ordered production, transport and consumption is but a faint image of what could happen due to global warming in the near future, when it seems likely that a temperature increase of just 3ºC would suffice to bring about a collapse in food production and possibly a breakdown in industrial activity. While February 2020 in Southern Hemisphere land surface temperatures recorded +1.50ºC above 1900-2000 base, the Northern hemisphere recorded +2.79ºC above the base (ENSO-neutral) (https://www.ncdc.noaa.gov/sotc/global/202002). January in Russia, Scandinavia, eastern Canada registered +5ºC. Imagine the recent Australian bushfires if we had had an additional +1.3ºC – or +3.5ºC as in the Arctic. (All admittedly from a single month, but the trend is clear).

We are riding an exponential curve (it's essential to understand what that means). What would our familiar world look like if we lost one simple thing – electricity. Please take a moment to extrapolate from a simple virus to a 'planetary fever'.

To bring our discussion to the question of nuclear energy and nuclear waste, without electricity nuclear power plants would soon follow Chernobyl and Fukushima, nuclear waste dumps would soon become a source of radiation exposure, with centralised waste dumps posing a threat that increases as the size of the dump increases.

Nuclear waste deposits should be small, distributed and local, which seems to be the present policy. Therefore, the best policy would be 'no change'.

In following this line of risk analysis, we see that anything nuclear is a potential risk given the continued increase in net global CO_2 levels and consequent warming. Any move to centralise nuclear waste would only increase risk, especially given the inevitable industry pressure that would follow on from the establishment of a centralised facility with the aim of extending such a facility to a world-wide dump as was proposed but refused in South Australia in 2016.

In this Senate Committee, a review ostensibly of relatively limited scope concerning a centralised waste facility for Australian nuclear waste, the Senate members are invited to extend their horizon to include, firstly, the high probability that they are in fact deciding on the eventual establishment of a high-level nuclear waste facility for the entire world. They are also responding – or not responding – to the beyond urgent demands imposed on our decision-making systems, at all levels, by near-runaway global warming.

Further, it is incumbent on those few people who will read this paper to share the personal insights that will arise as a result of thoughtful reading with other members of the decision-making world. I invite a close reading of my academic website, www.creativediscussion.org , in particular "Wisdom in Planetary Leadership", which will give each person a means of engaging their colleagues in a discussion process that can open the way to new paradigms, more appropriate to a world with a future.

In order to present a coherent opposition to establishing a nuclear waste dump, anywhere in Australia, I would like to append my submission to the South Australian Parliament enquiry into the nuclear waste proposal, as well as to the Royal Commission:

"Nuclear Means Futurecide: Submission to the Parliament of South Australia Joint Committee on Findings of the Nuclear Fuel Cycle Royal Commission" <http://www.earthsight.org/Human_impact/Nuclear_Means_Futurecide.pdf>

In doing so, I purposefully equate the present 'limited' waste disposal facility with the 'unlimited' nuclear dump that was intended to attract interest, and nuclear waste, from a wide number of other countries.

Given the history of nuclear waste advocacy in Australia dating back at least to the 1990's, it would be infantile to assume that the proposed national waste facility would not in the future be the subject of intense lobbying to extend it to a wider clientele, despite whatever wording might be used in the present legislation.

I therefore invite all members of the Senate Committee to analyse the broader aspects of nuclear energy and to reflect on the high, even extreme risk that global warming may result in a catastrophic breakdown of any centralised nuclear waste disposal facility, no matter how sophisticated the design, planning and execution.

In addition to this section, which was written specifically for the present Senate Committee: National Radioactive Waste Management Amendment, I have also added a recent personal paper, "Anthropocene Warming: responsible risk management". Earlier papers, "The planet and me" and "The Perfect People Planet" (section: "There is an alternative"), could be read in conjunction with "Anthropocene Warming" as a means of summarising: the problem and the solution.

The solution can be easy – create a world that reflects the critical interests of each individual – "me" – and the planet – the ultimate "me". The international response to the Covid19 pandemic can be a way of realising, clearly, dispassionately, what can be done if we see, really see, the absolute need. The world has changed since the beginning of 2020. As of writing, March 2020, the impact resulting simply from our response to the health crisis has fundamentally changed the functioning of the consumer economy, as well as of society as a whole. If, overlaying this, there is a major financial collapse, while maintaining the restrictions required to limit the virus, we will be in a different world.

If we consider that runaway global warming, on reaching about 3ºC, could result in agricultural and industrial breakdown, the paramount question – today! – is: what world can we create – today! – to reduce the risk of "futurecide".

A centralised nuclear waste dump is certainly not part of this world.

Anthropocene Warming: responsible risk management

1.5ºC … OR … +5.8ºC ➤ +6.4ºC ➤ +7.8ºC ➤ … + Methane!

The Anthropocene is 'our' extinction event, the 6th great extinction. We have done nothing. This has now become the Anthropocene Global Warming. We are still doing (almost) nothing.

For decimillennia, wiser civilisations than ours have adopted responsible sustainable planetary management. Today, we need a planet-wide awareness of what we have done – and what we can do. **A global awakening can enable a total transformation**, making the planet a much more pleasant place to live, for all, while radically reducing the risk of global warming.

We need to understand the level of risk we are really facing (see below) – then explore what we can do (see: www.creativediscussion.org > Contents > "*Alternative Paradigms in Planetary Management*").

RISK MANAGEMENT is an obligation in all government and corporate activity.
Risk = Likelihood x Consequence

Faced with extreme risk of catastrophic outcome, even if far from certain, we need total national focus on meeting the challenge:

+8ºC global warming (IPCC "high confidence" – see next page) would have "Beyond Catastrophic" consequences.
RISK ASSESSMENT therefore is EXTREME
with "Unlikely" (see Matrix below). Possibly also with "Very Unlikely".

Risk Assessment Matrix		CONSEQUENCE				
LIKELIHOOD		MINOR	MAJOR	SEVERE	CRITICAL	CATASTROPHIC
		A	B	C	D	E
ALMOST CERTAIN	5	Low	Moderate	Significant	Extreme	Extreme
LIKELY	4	Low	Low	Moderate	Significant	Extreme
POSSIBLE	3	Negligible	Low	Moderate	Significant	Extreme
UNLIKELY	2	Negligible	Negligible	Low	Moderate	Significant
VERY UNLIKELY	1	Negligible	Negligible	Low	Moderate	Moderate

It seems no one in public life is confronting the real issue.

We need a public commitment to action – by government, corporations and media

explaining clearly the urgency demanded

moving from 'business as usual' to responding without delay to the greatest danger ever to confront the human species.

There is a legal obligation under Federal and State law for risk management!

And an absolute obligation to our grandchildren – and their grandchildren.

IPCC (Intergovernmental Panel on Climate Change): 1st report in 1990, 6th report in 2018/19 (1,000s of scientists, *with consensus from every participating government*. ""Summary for Policymakers" is subject to **line-by-line approval by** delegates from all (120) **participating governments**."

2001 3rd report: "it is at least **90% certain that temperatures will** continue to rise, with average global surface temperature projected to **increase by** between 1.4° and **5.8ºC above 1990 levels by 2100**.

2007 4th report: temperature increase **up to 6.4ºC**.

2014 5th report: increase by 2100 of **up to 7.8ºC, with "high confidence"**: IPCC 2014 Summary for Policymakers p. 8:
http://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_summary-for-policymakers.pdf

Note: the IPCC reports do NOT examine the effect of methane – or other positive feedback loops. Methane release is critical: see "*Futurecide*" on *www.earthsight.org* (New Articles: June 2014).

With positive feedback loops, the standard linear progression no longer applies. The curve tends to exponential, meaning increasingly rapid growth. Only 'qualitative' growth can continue indefinitely.

All levels of government need to **prioritise radical drawdown of CO^2**. Balancing fees for emissions with rebates for reducing emissions **('feebate')** can facilitate this process. [See *http://arctic-news.blogspot.com* > scroll down right-hand menu to "*Climate Plan*"].

The **Commonwealth Government** needs to **grant an immediate "Voice to Government" for indigenous Australia** – giving advice, not just on indigenous affairs, but on the future of the planet: **"What are the successful decimillennial values that can guarantee there will be a future?"**

Our society's emphasis on "Quantity" needs to be replaced by a focus on "Quality" in all areas: people, planet, peace, education, culture, health.

See *www.earthsight.org* for more details of 'the problem'.
See *www.creativediscussion.org* for a possible way to move towards 'a solution'.

SAY NO TO NUCLEAR WASTE IN AUSTRALIA

We do not want to see our land and our future destroyed by nuclear interests of any country. Protect Australia and future generations by making a final recommendation to refuse a high level nuclear waste dump. Recommend a nuclear-free Australia and renewable energy that we can all live with.

As indicated in the section "Nuclear, global warming and paradigms", a centralised nuclear waste dump, of any size – initially – will inevitably be an 'ouvre sésame' to the international nuclear industry to pressure government to accommodate high level waste from other countries. The following text referring specifically to high level international waste is therefore clearly pertinent, though much of it could well apply to a more limited waste facility.

Why is this important?

"They" want to bring ALL of the world's high-level nuclear waste into Australia and leave it lying around, ABOVE ground, for years. Nuclear waste in highly dangerous temporary containers may never be placed underground as "they" will need to make enough money out of importing the world's most toxic waste before an underground storage facility can be excavated that is able to resist the highly corrosive action of nuclear materials for a MILLION years.

That's right, the plan that has been announced is to import the high level nuclear waste first, and only when (and if!) enough money has been collected, to set about making the underground storage facilities (Commissioner Scarce in response to questioning 15/2/16). According to the Tentative Findings of the SA Nuclear Fuel Cycle Royal Commission

http://nuclearrc.sa.gov.au/app/uploads/2016/02/NFCRC-Tentative-Findings.pdf

the nuclear fuel would be held in temporary above-ground storage for a minimum of 17 years (#89 p. 18).

> 89. anticipated long lead-times involved in their development and construction
>
> a. imports of used fuel with interim storage and associated revenues commencing at year 11 after the project decision[82]
> b. transfers from the interim store to the geological disposal facility commencing 28 years after the project decision

NO country so far has succeeded in building a permanent high level nuclear waste dump and no material has yet been invented that can withstand the corrosive action of nuclear materials for more than 100 years.

> "High-level waste must be isolated from the environment for one million years – but no container lasts longer than 100 years. The isotopes will inevitably leak, contaminating the food chain, inducing epidemics of cancer, leukemia, congenital deformities and genetic diseases for the rest of time.
>
> "This, then, is the legacy we leave to future generations so that we can turn on our lights and computers or make nuclear weapons. It was Einstein who said "the splitting of the atom changed everything save mans' mode of thinking, thus we drift towards unparalleled catastrophe."
>
> "The question now is: Have we, the human species, the ability to mature psychologically in time to avert these catastrophes, or, is it in fact, too late?"
>
> http://www.helencaldicott.com/the-impact-of-the-nuclear-crisis-on-global-health/

Now Australia wants to bring all the world's waste and dump it out in the open until we succeed in doing what no one else has done, build a successful million-year vault that guarantees it will stay where they put it - forever, and ever, and ever.

"They" say very large amounts of money will help the local economy and provide a few jobs. But how much money will be left after completing the (first ever!) safe permanent site, repackaging the nuclear waste every 100 years - for 1 million years - and cleaning up the inevitable leaks and nuclear pollution that will be impossible to avoid? People make mistakes, and nuclear mistakes are catastrophic.

The Commission stated "the society would carry the risks of the activity in the long term" (#90 p. 18) - but the risks are so enormous that there is no financial return that can compensate the risk to society, to people, to you and me.

Do you want the world's toxic nuclear waste or accidental radioactivity in YOUR backyard – in YOUR country? Do you wish it on someone else, or an aboriginal community? There seems to be an unspoken assumption in targeting Australia for the world's nuclear dump that large parts of this country are uninhabited - terra nullius once again! But people live there. And there may eventually be people living everywhere, anywhere, around Australia. Any site "they" choose may be in YOUR family's future backyard.

"They" say community consent will be necessary for a permanent dump site, but given the immense disparity in power and influence, individual councils and aboriginal communities can find it difficult to stand up to the pressure. Even state and commonwealth governments have evidently been swayed by the worldwide interests at play.

Are "they" going to consult the communities in all the places nuclear waste could be transported and stored, and perhaps forgotten, as "they" continue to import the world's waste for "83 years" (#89 p. 18). c. imports of used fuel and intermediate level waste ending 83 years after the project decision[83] Many temporary nuclear containers will just lie around, forgotten – until there is enough money, and new technologies, to create a permanent dump site. And if there isn't?

If there is a leak of radioactive material, are "they" going to consult all the communities whose land or water resources have been contaminated, or the large areas of the country downwind of a nuclear cloud? Are "they" going to consult all the future generations that can be affected?

Chernobyl radiation did a complete tour of the northern hemisphere and Fukushima radiation has reached Europe. A radiation leak from central Australia could easily reach the major east coast cities, depending on the direction of the winds

References detailed below pp. 6-9.

To impose such an immense burden on future generations is inconceivable. What would we think today if a company had buried a super-toxic waste in the 1890's which we still have to look after today, and which would continue to be super-toxic for "500 years" and would need "isolation from the environment for many hundreds of thousands of years" (#73 p. 16). And we hope people will look after our waste for that time into the future - so someone can make a profit today?

Do you want that for your country? For your backyard?

Storing nuclear waste only validates the nuclear industry. Nuclear is forever. New infrastructure, a new idea, lasts decades, even millennia, nuclear waste lasts beyond our civilisation, beyond our species.

"I" am responsible - here - now! (See www.earthsight.org "Wasted Australia")

There is an alternative

The planet and me

Runaway global warming and approaching civilisation extinction demand a massive combined effort to achieve peace, with the living planet and with each other, with the hope of limiting and even reversing the planetary processes we have put in motion.

We have forgotten. We are part of the earth, we are the earth and the earth is each of us. The separateness we experience is of our own creation.

There is no 'other', our separateness, individual, nation and even species, is fictitious. In reality, there is no dividing line between what is 'me' and what is, in appearance only, 'not me'.

In every aspect of human activity we need cooperation not competition, quality not quantity, inclusion not exclusion. People, nature and planet must always come before profit, production and development.

When we struggle against each other to accumulate all we can, when we destroy the Earth, we destroy ourselves.

Can we live in a perfect 'people-world'? Today, we have no choice. Our 'big-world' is leading us to rapid extinction, perhaps along with our planet. We have to choose, immediately, a world which is perfect for people and for planet, even if the 'big-world' has to change radically.

What is the 'big-world'? Any entity that is bigger than the sum of the constituent individuals. An entity which controls what individuals want, rather than responding to what they need. An entity whose interests are separate to those of the individuals composing it and can be contrary to those external to the entity.

Throughout life, we are each part of some 'big-world' organisation, a school, a company or corporation, a nation.

GNP is a measure of our aggression against the earth.

We need to create the type of society that can allow us, along with all forms of life, to survive. Our present society is taking us rapidly towards extinction.

There is no choice, we need to act, now.

The Perfect People Planet

There is a problem, which is urgent, and can be beyond catastrophic. We need to act immediately, and we need to change almost everything.

Global warming has developed out of the Anthropocene mass extinction, the most catastrophic event in 70 million years, for which we are uniquely responsible. We have done virtually nothing to turn this around and many species are already extinct. Now it is our turn, unless we change most of the fundamental directions we have taken in the last 250 years.

However, change can be easy, even pleasant and ultimately profitable. We simply have to make a perfect people world.

A world in which each individual person is respected and given value.

A world in which each species is protected and given its appropriate space.

A world in which all of the planetary systems supporting and enriching life are allowed to flourish.

This world would be perfect, everyone would be much happier, and, if we act very very – very – fast, we have a good chance of avoiding the worst effects of global warming.

The only time we've got is now. We no longer have yesterday, and we might not have tomorrow.

Nuclear power production and centralised nuclear waste disposal play no part in reducing the risk of global warming. Accelerated global warming can trigger nuclear catastrophe.

Responsibility and managing change

At this point it may be useful to reflect on a letter I sent to Mr Grant Chapman, who offered a part of his land in the northern Flinders Ranges for a national low and medium level nuclear waste dump, a similar copy sent also to the Chancellor of the University of Adelaide, Prof. Kevin Scarce, in his role as the leading academic in South Australia.

Your action in promoting nuclear energy and offering a concrete solution to consolidated waste storage in Australia demonstrates your adherence to a coherent paradigm of political and economic policy over many years. This orientation is obviously founded on a complex of facts that in turn validate the orientation chosen.

In responsible political and business management, regular evaluation of and, where necessary, reorientation of policy direction is a fundamental aspect of efficient ongoing management practice resulting, as new facts emerge, in appropriate modifications, or even taking a new direction.

Such changes are not to be considered vacillation, changing one's mind, even betrayal, etc, but rather the intelligent and considered reorientation required to maintain a continuing underlying dedication to achieving results appropriately tailored to the fundamental goals of the organisation.

Changes responding to an altered situation or new facts can be routine and easy to navigate, but they can also call for redefining a wide range of organisational goals, even embracing a totally new paradigm, the way one views the world in which the organisation functions. This can require very considerable courage, intelligence and perseverance to carry through to a successful outcome. I wish to bring these questions to the surface, realising that you are fully aware of their functioning, or occasional lack of functioning, in national and state political decision-making.

It seems apparent at the moment that a set of so far occulted facts has now emerged that demand a total re-evaluation of the nuclear energy paradigm in Australia, and specifically the storage of nuclear waste, low & medium level national waste as well as high level international waste.

Details can be accessed through <www.communityrun.org/p/nonuclearwaste> – or see <www.earthsight.org>

I respectfully request that you study, in the depth that this issue requires, the linked sources of information - facts that have so far been largely absent from the national mainstream media or political conversation.

Given the importance of responsible and visionary political management in this moment of major (very) long-term decision making, I make bold to "challenge" you to dedicate the time necessary to study, not only the attached papers, but more importantly each of the linked references so as to be able to say, to yourself, "I had all the information".

At that point it will be up to you to evaluate, not what is possible, but what is essential and unavoidable. It seems evident that these facts call for a radical redirecting of Australian political and corporate "interests" in the area of nuclear energy and waste storage.

As I well understand that calling into question the very foundations of one's professional life can be "challenging" to say the least, I wish also to reference my long-term research on creativity and innovative decision-making at <www.creativediscussion.org> Contents > Collective Deliberation > Wisdom in Planetary Leadership.

End of letter.

In responding to the research and the facts that have been presented above, it is important to set the corporate, political and community discussion into a context where:

The real facts, the non-nuclear-industry-promoted facts, can be examined dispassionately, without the imposition of pre-established convictions and obligation-to-organisation.

Can we re-evaluate our firmly held beliefs and knowledges? This is not to say we need to accept any particular presentation, but rather how "I" can look freely and creatively at a situation or set of information as if I were seeing it all anew. "I" (in inverted commas), refers to the individual, any person reading this or involved in this conversation, as a free individual, not as an employee or as representative of any organisation or set of ideas.

The present political and community debate and nuclear energy and waste storage calls for a fundamental re-evaluation of firmly held beliefs (the word 'conditioning' may be of some relevance here) and a means of understanding the burden we are placing on OUR future generations.

Are you in favour of nuclear?

Or not seeing the absolute need for total and immediate transformation of human polity & economy: zero impact favouring planet, (all!) people and (all!) nature.

> What if you are completely wrong?
>
> Only YOU can answer!

How?

> "I" am a member of the ONLY species to have caused a major mass extinction of life on the planet! Somewhere "I" have been very very wrong.
>
> "My" brain is largely conditioned, formed by 'other-people-knowledge', by the past – by 'those' mistakes.
>
> It's very difficult to challenge the fundamental tenets on which our professional and personal life is based – but in some cases our collective and even personal survival can be at stake.
>
> Challenge your own knowledge and your own certitudes – with your own deep realisations.
>
> Read this paper, not to agree or disagree, but to stimulate your own "insight", a direct awareness of reality that may be very different to what we think, believe and even work to achieve.
>
> Here is the problem – and a way "you" can find an 'answer-with-a-future'.
>
> Read the following text and finally (#10) see HOW you can discover for yourself what "you" really know – and what you CAN do.

Do not 'agree' or 'disagree', but be attentive to your own "flash of insight".

"Facts"

Throughout this debate, 'facts' are being presented, but they are generally the 'wrong facts', information that allows only one conclusion, facts that argue in favour of the immense financial interests involved in the nuclear industry in general. Facts that allow for the protection of people potentially affected by nuclear activities are rarely allowed to make an entry. The 'right facts' exist, but are rarely available in the community conversation which is supposed to happen when "we" are being consulted.

When viewed with an open mind, I'm sure even by those who are 'pro-nuclear' by profession or association with an organisation having an interest in nuclear activities, the 'right facts' present an impact of alarming dimensions and intensity. Suffice it to say, if there were not a significant government subsidisation of the nuclear industry, at times hidden or effected through orders for nuclear weapons as well as through ignoring extensive externalities, in particular concerning nuclear waste, the nuclear industry would be much less visible than it is today.

The incapacity of the industry to solve the question of recycling or inactivation of nuclear waste, as well as the catastrophic consequences of nuclear accidents, represent a degree of externality that should put the entire activity in question. A tightly held industry profits enormously, and a large number of people suffer tremendously, with the very high possibility of similar, even more extensive, consequences to future generations – to 1,000 generations, and even longer. The degree of wilful ignorance and self-imposed blindness is second only to our collective responsibility for the Anthropocene Extinction and resulting (perhaps runaway) global warming.

There are a wide range of expert publications which can provide a view into the 'other side', the 'right facts', which are needed by the individual who will be affected, as much as by the professional who, to take a personal, individual, independent stance will most likely need to muster a degree of courage, determination and persistence in the face of the system/organisation/area of knowledge to which they pertain.

The medical effects of nuclear radiation are often ignored or downplayed. An expert on the medical effects of nuclear radiation needs to be given the importance her work merits in this field:

> A curious situation is developing in South Australia that will have serious health ramifications, especially for Aboriginal communities, and will also severely impair the state's reputation for its superb wine and food. …
>
> This is bad news for residents and for Australia. …
>
> To date no safe storage of radioactive waste for a million years (US EPA guidelines) has been developed. …
>
> Inevitably this long-lived radioactive waste stream will leak into water, concentrate in food supplies bequeathing epidemics of cancer, leukaemia, congenital deformities and genetic disease to our descendants.
>
> Last but not least. Plans include construction of small modular fast reactors … Fast reactors are hugely expensive and never been produced commercially.
>
> [http://www.helencaldicott.com/increased-uranium-mining-and-more-radioactive-waste-would-be-bad-news-for-australia/]
>
> **Myth:** we can isolate high level radioactive waste from the environment for 200,000 years
>
> **BUST:** There is no operating dump for high level waste anywhere in the world
>
> The Royal Commission is considering the feasibility of establishing a high level nuclear waste dump in South Australia to store other countries nuclear waste.
>
> > Even countries that actually have stockpiles of high level waste have not been able to solve this problem

> There is one deep underground repository for long-lived intermediate level waste in New Mexico – the Waste Isolation Pilot Plant. Before it opened it was predicted that it may have one radiation release in 200,0000 years. In February 2014, after 15 years in operation, a waste barrel exploded leading to an aboveground release of airborne radiation. Twenty-two workers tested positive to low-level radiation exposure.

Australia can't even manage the waste it has

> In the late 1990's the Australian government "cleaned up" the Maralinga nuclear test site, leaving tonnes of plutonium-contaminated debris buried in shallow, unlined pits. In 2011, 19 of the 85 pits containing contaminated debris were found to be subject to erosion or subsidence, including the main Taranaki trench where the radioactive debris from the weapons trials was buried.

Myth: of an empty interior

BUST: The desert isn't empty

Historically the nuclear industry in Australia has disproportionately impacted Aboriginal communities

> The uranium mining industry has a track record of stripping Aboriginal communities of their land rights and heritage protections. For example, the Olympic Dam mine is exempt from the Aboriginal Heritage Act that applies elsewhere in the state.

Previous attempts to impose nuclear waste dumps on Aboriginal communities in SA and the NT have faced fierce opposition from traditional owners.

[http://www.helencaldicott.com/common-myths-of-the-nuclear-industry/]

Plans for a nuclear waste repository in Australia are not new. The following article details the historical process of promoting nuclear interests in Australia. A close reading of the full text (not possible to present in this paper) will shed light on the influence the nuclear industry enjoys among Australian decision-makers, even if to the detriment of the people and the country.

> When the waste breaks down, it produces hydrogen and ***"there is simply no way, over a 100,000 year time scale, to stop the fuel leaking out".***
>
> Our Great Artesian Basin is the largest and deepest artesian basin in the world, stretching over a total of 1,711,000 square kilometres over 4 states, including the site of the Roxby Downs, Olympic Dam and Maralinga in South Australia. **What happens when the deadly hydrogen eventually leaks into Australia's largest underground water reservoir?**
>
> [https://independentaustralia.net/politics/politics-display/plans-for-australia-to-become-worlds-nuclear-waste-dump,3343]

Chernobyl radiation did a complete tour of the northern hemisphere and Fukushima radiation has reached Europe. A radiation leak from central Australia could easily reach the major east coast cities, depending on the direction of the winds. (see p. 1)

> For the past 23 years it has been clear that there is a danger greater than nuclear weapons concealed within nuclear power. Emissions from this one reactor (Chernobyl) exceeded a hundredfold the radioactive contamination of the bombs dropped on Hiroshima and Nagasaki. No citizen of any country can be assured that he or she can be protected from radioactive contamination. One nuclear reactor can pollute half the globe. Chernobyl fallout covered the entire Northern Hemisphere.
>
> http://stopnuclearpoweruk.net/sites/default/files/Yablokov%20Chernobyl%20book.pdf

While we tend to give maximum importance to research carried out in our own language and in 'our' own countries, the research carried out in the former Soviet Union concerning the nuclear catastrophe in the Ukraine is much more likely to reflect the actual situation as it developed. The previous quotation comes from a major work which demands the utmost attention. For direct download see p. 20.

> Fukushima vs. Chernobyl: Consequences of the Catastrophe for People and the Environment, A Review of book by Alexey Yablokov, Vassily Nesterenko, and Alexey Nesterenko, By Dr. Rosalie Bertell (http://www.globalresearch.ca/author/rosalie-bertell)
>
> This new publication of the Annals of the New York Academy of Sciences (Volume 1181), by Alexey Yablokov, Vassily Nesterenko, and Alexey Nesterenko, is the elucidation many of us have been waiting for since the 1986 disaster at the failed nuclear reactor in Ukraine. Until now we have read about the published reports of limited spotty investigations by western scientists who undertook projects in the affected territories. Even the prestigious IAEA, WHO and UNSCEAR reports have been based on about 300 such western research papers, leaving out the findings of some 30,000 scientific papers prepared by scientists working and living in the stricken territories and suffering the everyday problems of residential contamination with nuclear debris and a contaminated food supply.
>
> Chernobyl: Consequences of the Catastrophe for People and the Environment is wrtitten by Alexey Yablokov, Vassily Nesterenk and Alexey Nesterenko. The senior author, Alexey Yablokov was head of the Russian Academy of Science under Gobachev – since then he receives no support. Vassily Nesterenko, head of the Ukrainian Nuclear establishment at the time of the accident, flew over the burning reactor and took the only measurements. In August 2009, he died as a result of radiation damage, but earlier, with help from Andrei Sakarov, was able to establish BELRAD to help children of the area.
>
> The three scientists who assembled the information in the book from more than 5000 published articles and research findings, mostly available only within the former Soviet Union or Eastern block countries and not accessible in the West, are prestigious scientists who present objective facts clearly nuanced with little or no polemics. They were not encumbered by a desire to promote or excessively blame a failed technology! …
>
> The government of the former Soviet Union previously classified many documents now accessible to the authors. For example, we now know that the number of people hospitalized for acute radiation sickness was more than a hundred times larger than the number recently quoted by the IAEA, WHO and UNSCEAR. Unmentioned by the technocrats were the problems of “hot particles” of burning uranium that caused nasopharyngeal problems, and the radioactive fallout that resulted in general deterioration of the health of children, wide spread blood and lymph system diseases, reproductive loss, premature and small infant births, chromosomal mutations, congenital and developmental abnormalities, multiple endocrine diseases, mental disorders and cancer.
>
> The authors systematically explain the secrecy conditions imposed by the government, the failure of technocrats to collect data on the number and distribution of all of the radionuclides of major concern, and the restrictions placed on physicians against calling any medical findings radiation related unless the patient had been a certified “acute radiation sickness” patient during the disaster, thus assuring that only 1% of injuries would be so reported..
>
> This book is a “must read” for all of those bureaucrats currently promoting nuclear power as the only “solution” for climate change. Those who seek information on the disaster only from the official documentation provided by the IAEA, WHO and UNSCEAR need to broaden their reading to include the reality check from those scientists who have access to local findings and are simply telling the truth, with no hidden propaganda agenda.
>
> I was impressed by the simple message of the cover of this volume, which shows a number of felled logs with clearly distinguishable colors of wood: before and after Chernobyl. The reader will find that the environment, living plants and animals all suffered ill effects from this experience, as did the human population. It should be a sobering read for all those who have believed the fiction that “low doses of radiation are harmless”, or that a severe nuclear accident is easily contained within the human environment.
>
> http://www.globalresearch.ca/chernobyl-consequences-of-the-catastrophe-for-people-and-the-environment/17571 (p. 1)

Many other sources of information and research indicate the extreme nature of nuclear accidents. Fukushima is a disaster that is continuing to this day.

> Experts: Fukushima ‘globally enhanced’ cesium-137 levels in air by 2 to 3 orders of magnitude — Radioactive plume that reached Europe “contaminated the land, and as a

consequence the whole food chain" — Concentrations greatly underestimated, Published: August 4th, 2014 at 3:44 pm ET By ENENews

[ENENews, a very informative news aggregator focusing on nuclear issues, Japan, US and World, closed down some time ago. While you cannot access the ENE site, you can access the following articles directly through their URL.]

Environmental Science & Technology (American Chemical Society), Published Sept. 3, 2013: *Size Distributions of Airborne Radionuclides from the Fukushima Nuclear Accident at Several Places in Europe* [...] Before the FDNPP accident, average 137Cs levels were typically of 1 μBq m−3 in Central Europe and lower average values (<0.3 μBq m−3) were characteristic of northern, western and southern Europe. […] During the passage of contaminated air masses from Fukushima, airborne 137Cs levels were globally enhanced by 2 to 3 orders of magnitude.

Collaboration Network on EuroArctic Environmental Radiation Protection and Research (pdf), March 12, 2014: *Traces of Fukushima nuclear power plant accident observed in the EuroArctic region*

Journal of Radioanalytical and Nuclear Chemistry, Volume 299, Issue 1, January 2014: *Radionuclides from Fukushima accident in Thessaloniki, Greece and Milano, Italy*. The radioactive plume that reached European countries has only small amounts of radioactive isotopes. However, these isotopes, that were observed at low-level in the air boundary layer, were deposited by wet and dry deposition and have contaminated the land, and as a consequence the whole food chain.

http://enenews.com/experts-fukushima-disaster-globally-enhanced-cesium-137-levels-in-air-by-2-to-3-orders-of-magnitude-radioactive-plume-that-reached-europe-contaminated-the-land-and-as-a-consequence-the-whol

Fukushima nuclear fuel fragments found in Europe — 10,000+ km from reactors — Plume came directly from N. America — Hot particles a "significant part" radioactive release — Quickly spread over entire hemisphere — Film shows core material on Norway air filter (PHOTO), Published: May 6th, 2014 at 11:31 am ET By ENENews

Poster for Alaska Marine Science Symposium (Arctic Ocean and Bering Sea/Aleutian Islands), Jan. 20, 2014: *Exposure to fallout while on ice in 2011* [...] Models suggest pinnipeds may have been exposed while on ice to the following: [...] Hot particles, nuclear fuel fragments, were detected in air samples taken in Svalbard, Norway (Paatero et al. 2012).

(Paatero et al. 2012) Airborne fission products in the High Arctic after the Fukushima nuclear accident: The plume arriving in Svalbard did not come from Europe but directly from North America [...] [Hot particles are] either fragments of the nuclear fuel or particles formed by the interactions between condensed radionuclides, nuclear fuel, and structural materials of the reactor [...] a significant part of the activity related to Fukushima was in hot particles. So far the authors are not aware of any other reports concerning hot particles from the Fukushima accident. [...] radionuclides emitted into the atmosphere were quickly dispersed around practically the whole northern hemisphere within a couple of weeks.

http://enenews.com/professors-nuclear-fuel-fragments-fukushima-found-europe-study-significant-part-fukushimas-radioactivity-hot-particles-film-air-filter-norway-photo

Study: Fukushima fuel burn-up spread over entire northern hemisphere's middle latitudes — First time measured in southern hemisphere, Source: Science of The Total Environment Author: P. Thakura, S. Ballard, R. Nelson Date: August 1, 2013

The Great East Japan Earthquake and tsunami on March 11, 2011 resulted in the tragic accident at the Fukushima Nuclear Power Plant (NPP) and subsequently uncontrolled release of radioactive contaminants into the atmosphere. [...] The radioactive gases and particles released in the accident were dispersed over the middle latitudes of the entire northern hemisphere and for the first time also measured in the southern Hemisphere. Isotopes of iodine and cesium were detected in air, water, milk and food samples collected across the entire northern hemisphere. Elevated levels of fission products were detected from March to May 2011 at many locations over the northern hemisphere.

http://enenews.com/study-fukushima-fuel-burn-up-dispersed-over-entire-northern-hemispheres-middle-latitudes-first-time-also-measured-in-southern-hemisphere

An important source of ongoing news about "nuclear" is ENENews, a news aggregator collecting articles concerning nuclear events, classified into three areas, Japan (Fukushima), US/Canada and World. To understand what "nuclear" means requires a serious study of the resources available through this website. The headlines of the day of writing, 18th March 2016, are as follows (if the URL link here does not work, go to http://enenews.com/ and choose the article directly):

The following articles are now unavailable as they are linked to ENENews, which has been closed down. The following brief descriptions, limited to February/March 2016, will however give a sense of the catastrophic consequences of nuclear power.

Latest Headlines:

06:29 PM EST on March 16th, 2016 | 236 comments

TV: Radiation in ocean off Fukushima at highest levels in years — Out of control leakage coming from plant — 'Big spikes' in radioactivity observed — "Surprising… Concerning… Crisis" — 1,000s of tons of contaminated liquid being released — Scientists: Japan gov't covering up situation (AUDIO)

08:13 PM EST on March 15th, 2016 | 293 comments

Reuters: Fukushima fuel melted through containment vessels and is "spewing radiation" — Nuke Expert: Fuel has "scattered all over the place" — Gov't: Fuel may have burned out into environment — Tepco Official: Fuel could have flowed out "like lava in a volcano" (VIDEOS)

10:36 AM EST on March 14th, 2016 | 365 comments

"Shocking how many people died in Fukushima" — Cremated bodies of Fukushima radiation workers found near plant — "Such a high rate of cancer" being detected in Fukushima children (VIDEOS)

10:06 AM EST on March 11th, 2016 | 831 comments

Nuclear Expert: Fukushima "like the worst nightmare becoming reality" — Released as much as 1,000 atomic bombs worth of radioactive material — "Everyone on earth has been exposed… an increase in cancer will be the result"

09:34 AM EST on March 10th, 2016 | 238 comments

EMERGENCY: Fire breaks out at another US nuclear plant — Blaze ignites in turbine building — "It took so long to put out" — Alert issued to government officials (VIDEO)

06:48 PM EST on March 8th, 2016 | 513 comments

ALERT: Emergency at US nuclear plant after "massive" fire and multiple explosions — "All of a sudden we heard this loud boom and the whole ground started shaking" — "Intense Flames… Heavy Black Smoke… Chaos" — 100s of fire personnel called in — "We ask that the public stay away from the area" (VIDEOS)

05:12 PM EST on March 4th, 2016 | 782 comments

New Gov't Report: Fukushima radiation found in US marine life — Investigators detect radioactive contamination "in a variety of marine products" harvested off West Coast — Effects of exposure need to be studied and understood in coming years

06:59 PM EST on March 2nd, 2016 | 247 comments

TV: Shocking number of cancers around leaking nuclear plant near NYC… Tens of thousands of cases recently reported… "More than anywhere else in US"… "Why is this story not being covered by everybody?" — Teacher: "I can't believe the number of teachers who have gotten cancer" (VIDEOS)

12:02 PM EST on March 1st, 2016 | 358 comments

"Uncontrollable radioactive flow" coming from nuclear plant near NYC — Actual releases are "trillions of times" higher than reported during latest leak — Cracks in multiple spent fuel pools — Intense investigation underway to see if it can be stopped

(VIDEO)

09:58 AM EST on February 29th, 2016 | 236 comments

L.A. Times: “Ongoing fish famine” along US West Coast — “Dearth of food across ocean” — Severe fishery implosion — Supply has been low since 2011 — Gov’t Expert: “Looks very grim… It is hard to watch”

11:10 AM EST on February 25th, 2016 | 639 comments

TV: “Mysterious and terrifying epidemic” spreads near radioactive site — “People suffer from hallucinations… They cry, howl, even tear their hair out” — Residents in “coma-like state” with swollen brains — Radiation levels almost 20 times normal (VIDEOS)

08:31 AM EST on February 24th, 2016 | 331 comments

Gov’t: “Alarming” release of radioactivity from US nuclear site — AP: “Uncontrolled spread of contamination” — Official: Contains “high levels of radioactive isotopes” (VIDEO)

09:37 AM EST on February 23rd, 2016 | 217 comments

Officials: “Historic crisis” along US West Coast… “We’re facing a fishery disaster”… “Very never-seen-before things”… Should be exclamation alarm to public — Extinction threat for salmon runs; Loss of sardines, squid, sea urchins, kelp; Massive sea star deaths; Marine mammal strandings… more

09:28 AM EST on February 22nd, 2016 | 560 comments

Washington Post: “No one knows what to do with Fukushima” — Scientific American: Plant is in “crisis mode”… fuel has melted through containers — Official: Corium may never be extracted — Gov’t suggests dumping it under Pacific Ocean

09:42 AM EST on February 19th, 2016 | 454 comments

Nuclear Expert in Japan: Plutonium “is everywhere… it is everywhere” after Fukushima reactors exploded — It’s being redeposited in “unanticipated” locations — “Black radioactive dust just wherever you go” — “It’s running right into Pacific Ocean” (VIDEO)

08:58 AM EST on February 17th, 2016 | 579 comments

Official Report: West Coast hit with 220,000,000 atoms per liter of Iodine-129 in rain after Fukushima — 15 Million year half-life — Detected in aquifer that supplies drinking water to large number of people — “Transported rapidly” to Canada and US — Elevated levels continued for many months

04:45 PM EST on February 12th, 2016 | 695 comments

CBS: Radiation leak “getting worse” at nuclear plant near NYC — Levels increase over 120,000%, almost 15 million pCi/L — Governor: “Extremely disconcerting” — Expert: I don’t think they know where it’s coming from — Radioactive Antimony now being detected (VIDEO)

11:24 AM EST on February 10th, 2016 | 675 comments

“Mass death” of species found around Fukushima nuclear plant — Gov’t: They “seem to have disappeared… Little or no reproductive success… It is evident biota around the power plant has been affected since the nuclear accident”

11:03 AM EST on February 9th, 2016 | 162 comments

Officials: Fire/Explosion Reported at US Nuclear Plant — Emergency Alert Declared — Fire/Explosion occurred after “unexpected power decrease” in reactor — “Emergency response facilities staffed” — “Abnormal event with potential to impact plant equipment or public health and safety” (VIDEO)

10:21 AM EST on February 8th, 2016 | 235 comments

Experts: Formaldehyde is spewing from massive LA gas leak — “Very dangerous for public”… methane turning into embalming fluid — Can make your body “start digesting itself” — Company knows this is happening and should warn us… Obviously they don’t want you to know about it (VIDEO)

07:44 AM EST on February 7th, 2016 | 227 comments

TV: Radiation leak reported at US nuclear plant — “Alarming levels of radioactivity” — 65,000% above normal — Governor: “I am deeply concerned… Significant failure” — Officials worried about health of public — Extent and duration of release ‘unclear’ — Radiation experts being sent in (VIDEOS)

09:41 AM EST on February 4th, 2016 | 734 comments

Scientists: West Coast bird die-off “is biggest ever recorded” — Stomachs completely empty — “Staggering… Alarming… Unheard of… Never seen anything like it” — “Unprecedented in size, scope, duration” — “Deaths could reach many hundreds of thousands” — “A host of other freakish phenomena” (VIDEO)

[http://enenews.com]

Nuclear Charades

The nuclear fuel cycle has already led to major disasters in fully functioning industrial societies. The risk of global warming resulting in a breakdown in the nuclear energy process cannot be ignored.

A number of evident false beliefs, or charades, concerning nuclear safety and global warming need to be examined.

Charade #1: "decisions are neutral, I am not responsible, I do a good job, I cannot be held liable for future events"

Reality: In responsible risk management, a medium or even low probability of very high and possibly catastrophic damage is totally unacceptable. Promoting such a path, when fully informed (see following), involves direct personal responsibility and possible liability of the persons or organisations concerned for destructive consequences.

Each individual is responsible, even when acting as part of or subordinate to the directives of an organisation. The 'self-interests' of the organisation are not a defence.

The 'facts' on which convictions and decisions are formed are (almost) always 'selective', aimed at obtaining a pre-determined result. To be fully open to a complete range of facts requires the conscious adoption of non-judgemental creativity, critically examining all pre-established and 'organisational' points of view.

> William Plain, Bringing Wisdom into Planetary Leadership: Creativity in Collective Deliberation: brief guidelines for innovative decision-making through "Creative Discussion".
>
> A destructive species:
>
> > our planet is already several decades into the 6th major extinction in the history of large life forms, due to overall human occupation of ecological space
> >
> > as a result of industrially generated global warming, it is possible that, even in the life of our children, this will become the greatest extinction event in the history of Gaia (upper limit temperature predictions - with permafrost methane release - are higher than temperatures accompanying the Permian extinction of ±90% of species)
> >
> > this event is being caused by human groups/organisations/societies that in general seem to be unable to act for purposes other than group self-interest
> >
> > at the origin of the impact of the most destructive species in the history of life is the inability of human organisations to automatically recognise error.
>
> Recognition of error:
>
> > all life forms have acquired the capacity to automatically recognise and correct error in movement ('proprioception')
> >
> > with the recent evolutionary development of a 'mental sphere', the human individual has not yet acquired the ability to recognise error in judgement (i.e. 'mental proprioception') as an automatic process
> >
> > the human group is generally incapable of recognising error in collective purposes and processes other than in terms of group survival and self-interest
> >
> > mental proprioception in the individual (but rarely the group) most effectively occurs through the action of 'insight', which is the one experience capable of providing a totally new vision of the internal or external world, and tends to occur naturally and spontaneously.
>
> Insight:
>
> > the experience of insight, the 'flash of light' of a sudden new understanding, is common to all people, but rarely given the recognition it deserves
> >
> > insight comes as it were from outside the sphere of memory and established knowledge, already whole and instantaneous; in that moment, it is free of conditioning and preformed judgement

attentive perception with a silent mind facilitates the irruption of insight, which is the breaking of conditioned thought and the presence of new ways of seeing, of alternative paradigms

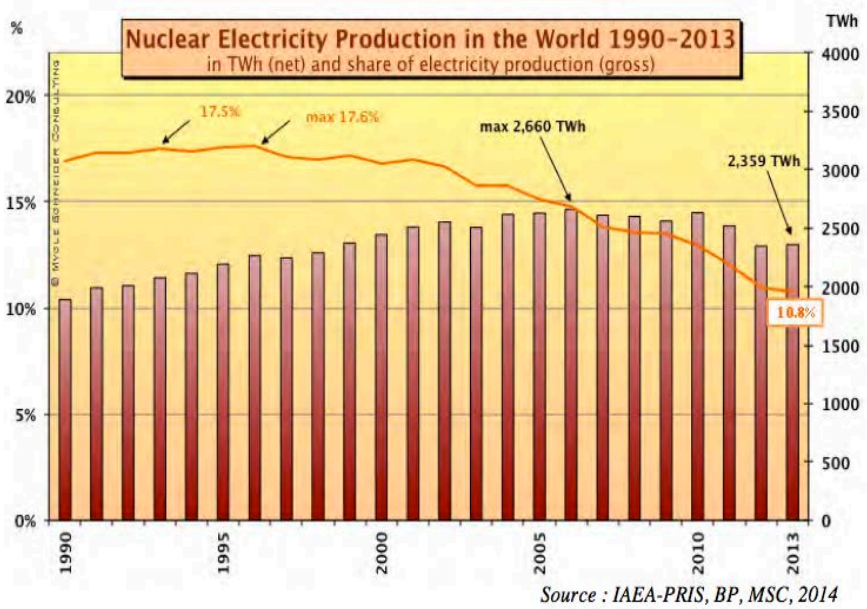
while insight arises within the individual mind, organisations can only reach transformative awareness through the combined creativity of multiple individuals.
http://www.creativediscussion.org/PlainPairGroups/Collective_deliberation/Wisdom_in_Planetary_Leadership.html

Charade #2: "uranium export, nuclear energy and waste storage are good for business and good for South Australia"

Reality: Nuclear power is in decline around the world, for reasons of safety and even profitability. Nuclear energy cannot solve our problems, it only multiplies the risk.

The nuclear industry: share of world electricity has been in decline since 1996 (p. 13),

> **The World Nuclear Industry Status Report 2014,** *By* **Mycle Schneider,** Independent Consultant, Paris, France, *Project Coordinator and Lead Author*; **Antony Froggatt,** Independent Consultant, London, U.K. *Lead Author*
>
> As of the middle of 2014, 31 countries were operating nuclear fission reactors for energy purposes. Nuclear power plants generated 2,359 net terawatt-hours (TWh or billion kilowatt-hours) of electricity in 201317, a minor increase (+0.5 percent) after two years of significant decline, but still less than in 1999 and 11.3 percent below the historic peak nuclear generation in 2006. (See Figure 1.)



> Figure 1: Nuclear Electricity Generation in the World, *Source : IAEA-PRIS, BP, MSC, 2014*
>
> Nuclear energy's share of global commercial electricity generation also remained almost stable (–0.2 percent) in 2013 compared to the previous year, but declined from a peak of 17.6 percent in 1996 to 10.8 percent (see note18).
>
> http://www.worldnuclearreport.org/IMG/pdf/201408msc-worldnuclearreport2014-lr-v4.pdf (p. 13)

is seriously out-dated:

> "Twenty-eight years after the Chernobyl disaster, none of the post-Chernobyl designs has entered service" (idem p. 47). For more details see p. 7.

on the way out (p. 10): "A number of key players are busy transitioning from one paradigm to the next" and already being replaced by renewables: "From an innovation standpoint (idem p. 11), the answer is absolutely clear: it's already happened".

> The World Nuclear Industry Status Report 2015, By Mycle Schneider, Independent Consultant, Paris, France, Project Coordinator and Lead Author, Antony Froggatt, Independent Consultant, London, U.K. Lead Author (p. 10-11)
>
> Foreword by Jonathon Porritt, Co-Founder and Trustee of Forum for the Future and former Chairman of the U.K. Sustainable Development Commission.

There's been no diminution in the intensity of the debate about the role of nuclear power in tomorrow's low-carbon world. Indeed, it seems to become more intense by the day. Articles of historical faith seem to matter much more to protagonists on both sides of that debate than strictly dispassionate analysis. And that's precisely why the *World Nuclear Industry Status Report (WNISR)* plays such a critical role in informing both experts and lay people, updating a longitudinal dataset with scrupulous care and attention to detail every year.

As we know, however, people read the same data in very different ways, leading to very different conclusions. So I can only give you mine, without any attempt at spurious neutrality! And my headline conclusion is a simple one: the impressively resilient hopes that many people still have of a global nuclear renaissance are being trumped by a real-time revolution in efficiency-plus-renewables-plus-storage, delivering more and more solutions on the ground every year.

One of the least understood aspects of today's nuclear debate is *pace of change*: just how fast is R&D converting into prototype and early-investment prospects; just how fast is innovation of that kind converting into near-commercial or fully-commercial projects; and just how fast are those projects converting into scalable roll-out programmes with substantive measurable outcomes.

Every year that passes reveals a widening gap between what is happening with the nuclear industry (forensically laid bare by successive Status Reports) and how so-called alternatives become a new paradigm (based on efficiency, renewables, energy storage and distribution), as portrayed by a wide range of commentators in the energy debate – from the International Energy Agency and mainstream investment banks through to entrepreneurs and NGOs. It's an extraordinary story that emerges from this analytical approach to the relative pace of change in both competing paradigms.

Simply by presenting year-on-year data as to the operational status of nuclear power programmes all around the world, WNISR remorselessly lays bare the gap between the promise of innovation in the nuclear industry and its delivered results.

For instance, back in the 1990s, there was huge enthusiasm for a potential "nuclear renaissance" through what were called Generation III reactors – designed to address the huge problems then confronting the industry in terms of safety, cost and construction complexity. These promises (which were themselves reminiscent of some of the earliest claims made on behalf of nuclear power back in the 1950s and 1960s) were instrumental in persuading both George Bush and Tony Blair in recommitting to nuclear power programmes in the USA and UK respectively.

Twenty years on, not one of the Generation III reactor designs is yet in service. And the kind of reduced costs that were being talked about at that time have been proved entirely illusory: by 2013, the projected costs of Generation III designs had increased eightfold. As the WNISR authors put it: "By May 2015, there were 18 reactors of designs claimed to meet Generation III+ criteria under construction. Only two were still on time, and the rest were two to nine years late. So on the face of it, the claims that these designs would be easier to build appear no better based than the cost claims."

Undaunted by this grinding reality, the nuclear industry is now increasingly active in talking up the prospects for Generation IV reactor designs, which will (we are told) address all the same problems that Generation III designs were supposed to address. Right now, for instance, there's an outspoken lobby making the case for Small Modular Reactors – an idea which is readily badged as Generation IV but actually goes back to the 1960s. Then the 1980s. Then the 1990s. Then the early 2000s! As the International Energy Agency commented in 2002, in an era when it was rather more bullish about nuclear power: "The main reason for this stalemate is that we, in all our doings, continue to rely on nuclear technology developed in the 1950s, which had its roots in military applications which cannot exclude absolutely the possibility of a severe accident and which has reached its limits from an economic point of view.

For those who've now somewhat given up on Small Modular Reactors and other so-called "advanced nuclear reactors", there's always the promise of an entirely new nuclear value chain based not on uranium but on thorium – another proposition that has been around for more than 50 years. And what's remarkable here is that even the keenest advocates of thorium acknowledge that it couldn't possibly make a substantive, cost-effective contribution to the world's need for low-carbon energy for at least another 20 years.

The consistent history of innovation in the nuclear industry is one of periodic spasms of enthusiasm for putative breakthrough technologies, leading to the commitment of untold billions of investment dollars, followed by a slow, unfolding story of disappointment caused by intractable design and cost issues. Purely from an innovation perspective, it's hard to imagine a sorrier, costlier and more self-indulgent story of serial failure.

This is not the place to develop a full comparison with what I've called "the alternative paradigm", but in each of those four core elements (efficiency, renewables, storage and grids) the pace of change is breathtaking, dramatic, and potentially disruptive on a scale that dwarfs anything the nuclear industry would ever dare to suggest these days after 60 years of perennially depressed expectations.

The best the nuclear industry offers the world today, as we focus more and more relentlessly on accelerated decarbonisation, is providing no more than the same amount of relatively low-carbon electricity in 2050 as it provides today – roughly 10% of global demand. And that's primarily because the current rate of new build (with 62 reactors under construction as of mid-2015— more than a third of which are in China—with at least 47 suffering delays of varying degrees of severity) will struggle to keep up with the rate of decommissioning as nuclear fleets age all around the world and life extension programmes become both more expensive and more controversial.

Such modest expectations sound increasingly forlorn when set against the emerging prospects of a secure, efficient, distributed energy economy, powered primarily by renewables and smart storage technologies.

This increasingly stark contrast between two very different innovation paradigms is not restricted to today's understandably partisan advocates of renewable energy. A number of key players are busy transitioning from one paradigm to the next, with two major European utilities leading the way. In December 2014, Germany's biggest utility, E.ON, announced that it would split in two, retaining the E.ON brand in a company focussing on renewables, networks and "customer solutions", whilst leaving its "legacy assets" (including nuclear and coal-fired power stations) in a new company called Uniper. And in April 2015, GDF Suez (now Engie) issued the following statement of intent: "We have one conviction: the energy model of tomorrow will be in 3D: Decarbonized, thanks to the development of renewable energies; Digitized, by deploying intelligent networks; and Decentralized."

The authors of WNISR have been tracking the contrast between nuclear and renewables for a number of years, and provide a very timely update. The astonishing changes in the solar industry epitomise the general direction of travel:

> There now seems to be a general recognition that the fall in production costs of renewable energy technologies, particularly solar photovoltaics (PV), coupled with the expected falling costs of electricity storage, will accelerate the transformation of the power sector. UBS, in a report published in June 2015, stated: "We believe solar will eventually replace nuclear and coal, and be established as the default technology of the future to generate and supply electricity." An important driver is the realization that solar PV will increasingly be deployed without subsidy, unlike the technology cost curves for nuclear power.

So how long will it take before those seemingly inextinguishable hopes in the promise of nuclear will be finally overwhelmed by the delivered realities of an alternative model that gains momentum not just year on year but month by month? From an innovation standpoint, the answer is absolutely clear: it's already happened. The static, top-heavy, monstrously expensive world of nuclear power has less and less to deploy against today's increasingly agile, dynamic, cost-effective alternatives. The sole remaining issue is that not everyone sees it that way–as yet.

http://www.worldnuclearreport.org/IMG/pdf/20151023MSC-WNISR2015-V4-LR.pdf

(See also "Key Insights in Brief" idem p. 12).

• Japan without nuclear power for a full calendar year for the first time since the first commercial nuclear power plant started up in the country 50 years ago.

• Nuclear plant construction starts plunge from fifteen in 2010 to three in 2014.

• 62 reactors under construction—five fewer than a year ago—of which at least three-quarters delayed. In 10 of the 14 building countries all projects are delayed, often by years. Five units have been listed as "under construction" for over 30 years.

• Share of nuclear power in global electricity mix stable at less than 11% for a third year in a row.

• AREVA, technically bankrupt, downgraded to "junk" by Standard & Poor's, sees its share value plunge to a new historic low on 9 July 2015—a value loss of 90 percent since 2007

• China, Germany, Japan—three of the world's four largest economies—plus Brazil, India, Mexico, the Netherlands, and Spain, now all generate more electricity from non-hydro renewables than from nuclear power. These eight countries represent more than three billion people or 45 percent of the world's population.

> • In the UK, electricity output from renewable sources, including hydropower, overtook the output from nuclear.
>
> • Compared to 1997, when the Kyoto Protocol on climate change was signed, in 2014 there was an additional 694 TWh per year of wind power and 185 TWh of solar photovolatics–each exceeding nuclear's additional 147 TWh.

As for the self-destructive choice of adopting a dying industry, nuclear waste storage would make South Australia the most toxic rubbish tip of the entire planet, for a million years (see St Louis and Mayak).

> Catastrophic event could release radioactive fallout over major U.S. metropolitan area — Gov't issues emergency plan as fire burns near nuclear site — Report: "World is on brink of nuclear disaster" — Senator: "What we have… could end up as Chernobyl", Published: October 12th, 2015 at 8:23 pm ET By ENENews.
>
> AP, Oct 8, 2015 (emphasis added): Beneath the surface of a St. Louis-area landfill lurk two things that should never meet: a slow-burning fire and a cache of Cold War-era nuclear waste, separated by just 300 meters… Authorities have quietly adopted an **emergency plan** in case the smoldering embers ever reach the waste, a potentially '**catastrophic event**' that could release **radioactive fallout in a plume of smoke over a densely populated area of suburban St. Louis**… [T]he plan for a worst-case scenario was developed only a year ago and never publicized until this week… If the underground fire reaches the waste, "there is a potential for **radioactive fallout** to be released **in the smoke plume** and **spread throughout the region**," according to the disaster plan. The **plan calls for evacuations**… **in St. Louis County**… and perhaps the federal government, would be called upon to help…
>
> Missouri Senator Maria Chappelle-Nadal, Sep 17, 2015 (at 27:00 in): "There are references that are in the reports that the Attorney General did with independent scientists where they say that **what we have under the ground could end up as Chernobyl**. What I am concerned about are the **40,000 tons of uranium** that have been spread all over the place… We're talking about **the most potent uranium in the world**… We're looking at the **cancer clusters**… We're looking at the number of children who have **double sets of teeth**, children who have **missing eyeballs**, the number of children who have **brain tumors**. This is not consistent with a normal community whatsoever."
>
> Daily Star, Oct 8, 2015: *Nuclear disaster fears as fire nears Cold War bomb dump; The **world is on the brink of a nuclear disaster** as fire rages towards a cache of Cold War nukes* — A secret emergency plan has been drawn up as an underground blaze creeps towards a waste dump containing radioactive waste from the Manhattan Project. The leaked document warns a "catastrophic event" will be triggered if the nuclear material is ignited… radioactive smoke could erupt over the densely-populated area of St Louis.
>
> http://enenews.com/ap-catastrophic-event-could-release-radioactive-fallout-major-metropolitan-area-govt-issues-emergency-plan-fire-burns-nuclear-site-report-world-brink-nuclear-disaster-senator-could-chernobyl
>
> **The second biggest nuclear disaster in history, Greenpeace**
>
> Everybody knows that the biggest nuclear catastrophe in history was Chernobyl. But how many have heard of the second biggest? Today marks the fiftieth anniversary of a radiation nightmare ... near Mayak, the site of a former Russian nuclear plant and the most radioactively polluted place on Earth.
>
> The Mayak nuclear plant in the Southern Urals was one of the dark secrets of the cold war. It was the Soviet Union's primary nuclear complex, a massive set of plutonium production reactors, fuel production facilities, and reprocessing and waste storage buildings.
>
> In 1957 a storage tank with highly radioactive liquid waste exploded. More than half the amount of radioactive waste released by the accident in Chernobyl was blasted into the atmosphere. A few villagers were evacuated, but most were not. 217 towns and at least 272,000 people were exposed to chronic levels of radiation. The plume was 50 kilometers wide and 1,000 kilometers long.
>
> But the explosion wasn't the only incident of contamination. Between 1948 and 1956 radioactive waste was poured straight into the Techa River, the source of drinking water for many villages. It exposed 124,000 people to medium and high levels of radiation. Nuclear waste was also dumped into the lakes of West Siberia, where storms blew nuclear dust across a vast area around the lake.

[Note by present author: if the Australian low and medium level waste and/or the international high level waste is stored, temporarily or permanently, in the area of the Great Artesian Basin, or other important acquifers, the Techa River tragedy could be repeated in Australia.]

The largest nuclear complex in the world

Today, around 7,000 people still live in direct contact with the highly polluted Techa river or on contaminated land. In the town of Muslyumovo, studies have show genetic abnormalities to be 25 times more frequent than in other areas of Russia. The incidents of malignant cancer are significantly higher. And the number of residents of Muslyumovo on the Russian national oncology registers is nearly 4 times higher than in the rest of Russia. In other surrounding towns and villages people have cancer rates more than double the Russian average. (See the Greenpeace Report, Mayak: A 50-Year Tragedy)

Half a century later, Mayak is one of the most radioactive places on Earth, and the accident continues to have a devastating legacy. Many thousands of people have never been evacuated from contaminated areas.

Dutch photo-journalist, Robert Knoth, visited the Mayak region in 2000 and 2001 and took a series of highly disturbing pictures of the victims of radiation in the region. (Parental warning: The link above contains images of malformed foetuses and other disturbing photos.)

Now, the real tragedy [highlighting by present author: a message to South Australia]

Surely, no government could oversee this kind of disaster and not decide to change its ways. Yet, rather than learning the lessons of the tragedy, the Russian Government has passed legislation to import spent nuclear fuel from other countries to Mayak that would then permanently stay at the plant.

None of the countries shipping their dirty nuclear waste to Russia would allow Mayak to continue operating on their own land. Countries considering sending their radioactive waste to Russia are abdicating responsibility for their nuclear activities by dumping it somewhere else. They may like to think that once it's out of their sight they've got rid of the problem, but nothing could be further from the truth. The people who will suffer its devastating effects are right here, the same victims that have suffered the effects of the radiation disaster for the last 50 years.

The foreign fuel processed in Mayak so far has led to some three million cubic metres of radioactive liquid being dumped and released into the environment. Mayak has reprocessed over 1,540 tons of spent nuclear fuel from several countries including Hungary, Bulgaria, Germany, Finland and the Czech Republic.

Russian authorities now hope to negotiate future reprocessing contracts with Switzerland, Spain, South Korea, Slovenia, Italy, Belgium, and Slovakia.

With its 50 year contamination legacy, Mayak is a horrific example of the true face of the global nuclear industry.

The lesson of Mayak is that nuclear energy is not a solution. This anniversary should serve as a wake-up call to the world about the real costs of nuclear power. Nuclear power undermines the solutions to climate change, by diverting resources away from the massive investment in renewable technologies and energy efficiency the world urgently needs to tackle the climate crisis.

http://www.greenpeace.org/international/en/news/features/mayak-nuclear-disaster280907/

The future reference to South Australia as "Nuclear Waste SA" would close the door to investment and tourism, discourage overseas students and lead the local population to move elsewhere, resulting in "the wasted state".

Charade #3: "nuclear energy is safe"

a) "Chernobyl caused only a few deaths":

Reality: Chernobyl was responsible for nearly one million deaths

Chernobyl: Consequences of the Catastrophe for People and the Environment was published by the New York Academy of Sciences … is solidly based — on health data, radiological surveys and scientific reports — some 5,000 in all.

It concludes that based on records now available, some 985,000 people died, mainly of cancer, as a result of the Chernobyl accident. That is between when the accident occurred in 1986 and 2004. More deaths, it projects, will follow.

The book explodes the claim of the International Atomic Energy Agency– still on its website that the expected death toll from the Chernobyl accident will be 4,000. The IAEA, the new book shows, is under-estimating, to the extreme, the casualties of Chernobyl.

http://www.globalresearch.ca/new-book-concludes-chernobyl-death-toll-985-000-mostly-from-cancer/20908

while "the genetic consequences .. will impact hundreds of millions of people"

> The genetic consequences of the Chernobyl catastrophe will impact hundreds of millions of people, including: (a) those who were exposed to the first release of short-lived radionuclides in 1986, which spread worldwide (see Chapter 1 for details); (b) those who live and will continue to live in the territories contaminated by Sr-90 and Cs-137, as it will take no fewer than 300 years for the radioactive level to decrease to background; (c) those who will live in the territories contaminated by Pu and Am, as millennia will pass before that deadly radioactivity decays; and (d) children of irradiated parents for as many as seven generations (even if they live in areas free from Chernobyl radionuclide fallout).
>
> https://web.archive.org/web/20110419144513/http://www.strahlentelex.de/Yablokov_Chernobyl_book.pdf (or pdf download of book), New York Academy of Sciences (p.77).

"One nuclear power plant can pollute half the globe. Chernobyl fallout covered the entire Northern Hemisphere." idem (p.1) – see full quote above [p. 6 of this paper]

b) "Fukushima was quickly under control and caused even fewer deaths":

Reality: The extensive research published on http://enenews.com (*absolutely essential reading* – from Japan and US and World") show the problems today are continuing and getting worse:

"a million cancers could result from Fukushima"
the North Pacific is virtually a marine disaster
North America and even Europe have been affected.

[More detailed quotes are available above pp. 9-11]

This occurred in an advanced technological civilisation - in the present decade.

*** Energy News (enenews.com) is a news aggregator that continually updates news on the effects of nuclear energy. A glance at the headlines for each of the three Regions will profoundly change our view of what it means to "go nuclear".

Unfortunately, ENENews has now (been) closed down.

Charade #4: "nuclear is the answer to global warming"

Reality: The failure of nuclear power generation systems due to technical problems or cyclical natural events is already capable of causing extensive human death and destruction of natural species, affecting continents and oceans.

Furthermore, possible runaway global warming *in the next few decades* (see #5 and #6) would result directly in the breakdown of industrial capacity and power systems, resulting in the meltdown of nuclear reactors, thus impacting life on the entire planet.

Maintaining a nuclear waste storage facility requires continuing industrial capacity for 1 million years, and re-packaging of waste every 100 years (i.e. 10,000 times).

[Detailed quote available above p. 3].

See submission to Climate Change SA review, "Not just our grandchildren", on www.earthsight.org: - see the linked web pages and study the indicated source material.

Climate Change SA: "not just our grandchildren"

"We" are responsible for the 6th great extinction of life on Earth, the Anthropocene, which started with the Industrial Revolution.

Under 'business - and politics - as usual', the Anthropocene has resulted in climate change and global warming, possibly extending to human and even planetary extinction.

"I" am responsible: as a member of the 'not-so-wise' human species, as a member of multiple 'nested' organisations and as an individual.

Only a fundamental change in our civilisation, and in "myself", can help us to cooperate with, instead of being in competition with, the planet.

Simple answers can be immediately available, but are locked out by 'interests'.

Multiple-individual creativity can help us move quickly to a perfect 'people-world'.

For a very short outline of problem and means of seeking an answer see:

www.earthsight.org > "Arctic Methane Earthsight".

For greater detail see:

www.earthsight.org > *"Futurecide"*

To explore creativity in corporate and governmental decision-making see:

www.creativediscussion.org > *"Bringing Wisdom into Planetary Leadership".*

The IPCC AR5 (2014) prediction of up to 5.6ºC of global warming by 2100, especially in the case of 'business as usual', in effect means civilisation collapse. This is a conservative estimate, authorised and accepted by major governments, and should normally lead to government and corporate assumption of responsibility and appropriate risk management for an event **in the lifespan of present schoolchildren**.

The IPCC AR5 (given long research lead time) virtually ignored the exponential increase of Arctic methane starting in 2010. The positive feedback process involved could advance the risk timeline for civilisation collapse to **the lifetime of present senior decision-makers**, not just their grandchildren [see: "Arctic Methane Earthsight"].

The collective response to 'our' extinction event, the Anthropocene, has been woefully inadequate. We now face our own species' extinction and possible 'futurecide' – in .. our .. lifetime! We have only to continue as we are [see: "Futurecide"].

Why are "we" not reacting with absolute urgency? Entire populations have responded with urgency to a wide range of past catastrophes. Why are we not responding now to an enormously greater catastrophe, even if there is only the slightest risk of it happening?

Although species extinction is important to us as individuals, organisations/corporations/political parties are more concerned with their own continuity, which generally ignores the individual and the planet (externalities).

Creativity, the capacity for the totally new, is limited to the individual – as 'flash of insight'. Organisational creativity is only accessible as 'multiple-individual creativity'. Each individual in an organisation can contribute – how? See: "Bringing Wisdom into Planetary Leadership". To experiment with forms of decision-making where "I" can make a radical contribution to climate change strategy, bring a coordinator group to Burra.

"I" am responsible for country. There is no future, there is only "now".

A pro-nuclear decision today brings with it a high risk of 'nuclear winter'.

There are clear and simple alternatives. A climate plan that deserves careful attention includes a combination of 'fees' and 'rebates' ('feebates') at national, state and (importantly) local levels, aiming at emission cuts of:

80% by 2020!!!

An Effective and Comprehensive Climate Plan

Feebates typically are the most effective way to achieve the necessary shifts, and they generally are best implemented locally. …

A local feebate will facilitate the transition from specific polluting products to clean alternatives, by imposing fees on sales of the polluting products as a percentage of the price, while each time using the revenues exclusively to fund rebates on products that are both sold locally and constitute clean alternatives to the polluting products. …

This Climate Plan offers a great amount of flexibility for each individual country to choose the policies they want, and in fact recommends countries to delegate the action to states and local level. This, and the effectiveness of the proposed policies make that this Climate Plan has a good chance to become widely accepted across the globe.

http://climateplan.blogspot.com.au/

Energy feebates can best clean up energy, while other feebates (such as pictured in the above diagram) can best raise revenue for carbon dioxide removal. Energy feebates can phase themselves out, completing the necessary shift to clean energy within a decade. Carbon dioxide removal will need to continue for much longer.

http://climateplan.blogspot.com.au/p/policies.html

Charade #5: "global warming is not all that urgent"

Reality: The 2014 IPCC report (p. 8) said that under 'business as usual' there was a significant risk of a 4.8 ºC temperature increase by 2100 and "7.8 ºC when including climate uncertainty .. (high confidence)".

The IPCC observation of a "high confidence scenario" of c. 5 ºC to 8 ºC temperature increase, due in particular to economic growth, in effect means industrial breakdown then civilisation collapse

HISTORIC KILLER METHANE COULD ERUPT FROM ARCTIC, *by Gary Houser*

FOREWORD AND ENDORSEMENT *by Professor Peter Wadhams, University of Cambridge*

*"The world is entering one of the most dangerous periods in its history. The failure of international efforts to reduce carbon emissions has led to a carbon dioxide level in the atmosphere which guarantees a serious level of global warming during coming decades, enough to compromise the life support system of the planet. (*Foreword and Endorsement *by Professor Peter Wadhams, University of Cambridge) …*

Two critically important British documentaries explore the scientific inquiry linking methane to both the Permian **[5]** and PETM **[6]** mass extinction events.

Etched into ancient layers of rock is the record of the Permian extinction event - the most complete decimation of life known to science. Searches for fossilized clues of living organisms reveal a stunningly empty slate. **[7]** It is believed that a staggering 90% of the life forms on earth simply disappeared. Scientific opinion - also based on the geologic record - is that a tremendous series of volcanic eruptions in Siberia released enough carbon dioxide to drive earth's temperature up five degrees C (centigrade). This radical increase then warmed the world's oceans enough to thaw previously frozen methane. Evidence points to the heat from this super global warming gas driving temperatures up another five degrees C and causing the horrific wipe-out. [highlighting by present author]

How Severe is the Current Threat?

Numerous, quite authoritative and politically neutral sources (such as the World Bank and the International Energy Agency (IEA) are now in agreement that if global carbon emissions are not dramatically reduced very quickly, the planet will be seeing temperature increases of five degrees C or more by the latter part of this century. **[8]** Such a human-generated increase could very well take the place of the volcanic eruptions in Siberia, and could set the stage for a potential mass release of ancient methane. …

Super Greenhouse Gas Beginning to Thaw and Vent to Atmosphere -

Researchers in the field are now bringing back eyewitness reports of plumes of methane bubbles rising to the surface on a scale they have never seen before. Igor Semiletov - who has pursued this issue for 15 years - reported astonishment regarding the observations made during a joint U.S.-Soviet expedition to the East Siberian Arctic Shelf (ESAS) in 2011 …

How Close Are We to a Major Release?

It is not possible to predict precisely when such a line could be crossed. But Arctic scientists are indeed reporting that the conditions necessary for such a "breakout" are now in fact lining up. These include a vast storehouse of frozen methane, shallow seas that allow the gas to reach the surface, a massive loss of ice that only seems destined to accelerate, and rapid warming of temperature. Shallow seas also warm faster than deep ocean. Not only is the Arctic the most rapidly warming region on earth, but the East Siberian Arctic Shelf is the most rapidly warming segment of that region. According to Natalia Shakhova of the Russian team: "Observed warming on the ESAS (March-April-May)..... is the strongest in the entire Arctic and the region is now 5°C warmer compared with average springtime temperature registered during the 20th century." **[20]**

This level of radical warming is already approaching that generated by the volcanic eruptions preceding the Permian mass extinction. The fact that major concern is increasing is reflected in the striking development that no less than 21 Russian scientists all agreed that circumstances were approaching a point when the words "potential catastrophe" should even be included in the title of their paper: "The Degradation of Submarine Permafrost and the Destruction of Hydrates on the Shelf of East Arctic Seas as a Potential Cause of the 'Methane Catastrophe' ." Here is what they say in the paper itself:

"Under the conditions of the observed abnormal warming of the East Siberian shelf, the acceleration of thawing of the upper layer of submarine permafrost and an increase of bottom erosion are inevitable ..... The emission of methane in several areas of the ESS is massive to the extent that growth in the methane concentrations in the atmosphere to

values capable of causing a considerable and even catastrophic warming on the Earth is possible." **[21]**

When one looks at the history of extremely careful and cautious use of language by the Russian research teams, this escalation in terminology is even more remarkable.

http://arctic-news.blogspot.com.au/2013/08/historic-killer-methane-could-erupt-from-arctic.html

The dangers of nuclear power and waste storage are intimately linked to the risk of runaway global warming. Any breakdown in industrial capacity, even limited to one country, can produce a chain of events involving one nuclear site after another.

As indicated in #4 above, any form of disruption to our present industrial system can result in the breakdown of nuclear energy production and waste storage with catastrophic results. To date, we have witnessed only isolated breakdowns. However, in the case of generalised disruption, e.g. of electricity grids, as might happen in the type of scenario explored by the IPCC, the release of nuclear products by a nuclear power station or nuclear waste dump could have a knock-on effect, impacting on similar facilities 'downwind', resulting in a chain nuclear-meltdown, one facility after another.

As seen earlier, even one nuclear power station emergency can send a nuclear cloud around the hemisphere concerned, and even extend to the other hemisphere. If runaway global warming should result in any form of industrial breakdown, even just a serious slowdown in any one country, then the effect could form a chain reaction of breakdowns around the planet.

Charade #6: "there is no need to worry about Arctic methane and positive feedback"

Reality: Even with this dire forecast, the IPCC report still ignored the very rapid increase in Arctic methane since 2010, causing a methane veil to spread down over much of the northern hemisphere (www.earthsight.org "Arctic methane Earthsight" p.2)

The long anticipated East Siberian Arctic Shelf (ESAS) methane release started in:

September 2010 with methane 'plumes' metres across, increasing exponentially

September 2011 100s metres across

September 2012 kilometres across

September 2013 150 kilometres across (a NASA reading).

Leading Arctic scientists have endorsed this research, including University of Cambridge Arctic physics Professor Peter Wadhams in a paper at http://arctic-news.blogspot.com.au/2013/08/historic-killer-methane-could-erupt-from-arctic.html .

In **October 2013** the release of methane from the deep Arctic Ocean appeared, reaching alarming levels over a few months.

In **February 2014**, Earth mantle involvement in methane release was observed, brought about, notably, by anthropocene warming: see http://arctic-news.blogspot.com.au/2014/02/mantle-methane.html .

From **July 2014** pockets of methane have been erupting in an area of Siberia resulting in massive holes up to 2 km in diameter brought about most likely by a 2ºC increase of average temperature with anomalies up to +20ºC: see http://arctic-news.blogspot.com.au/2015/04/north-siberian-arctic-permafrost-methane-eruption-vents.html .

This whole process, including the spread of a methane veil, slowing moving southwards from the Arctic Circle, combined with a hydroxyl/ozone hole in the west Pacific, uplifting methane into the stratosphere, is covered in: http://arctic-news.blogspot.com.au/2014/06/arctic-atmospheric-methane-global-warming-veil.html

"An extinction event equivalent to the Permian Extinction is expected to begin by 2038 to 2040 and last through to 2065".

"If we do not stop the massive increases of Arctic methane emissions into the atmosphere the **oceans will begin to boil off by 2080**, when the mean temperature

anomaly exceeds 115 to 120°C and the **temperatures will be like those on Venus by 2100**": http://arctic-news.blogspot.com.au/2013/12/act-now-on-methane.html .

More details are available from this paper which gives extensive coverage to the impact of Arctic warming on planetary systems.

> Arctic Atmospheric Methane Global Warming Veil, *The Arctic Atmospheric 'Methane Global Warming Veil'. Its Origin in the Arctic Subsea and Mantle and the Timing of the Global Terminal Extinction Events by 2040 to 2050 - A Review.* ***By Malchttp://earthsight.org/Human_impact/Arctic_methane_Earthsight.pdfolm_P.R. Light, Harold Hensel and Sam Carana, June 8th, 2014***
>
> Abstract:
>
> Methane formed by organisms in the water becomes trapped in the fabric of water ice crystals when it freezes and is stable below about 300 meters depth in the Arctic Ocean and on the shallow East Arctic Siberian Shelf. There are such massive methane reserves below the Arctic Ocean floor, that they represent around 100 times the amount that is required to cause a Permian style major extinction event, should the subsea Arctic methane be released in a short period of time into the atmosphere (Light and Solana, 2012-2014, Carana 2012 - 2014). There are also giant reservoirs of mantle methane, originally sealed in by shallow methane hydrate plugs in fractures cutting the Arctic seafloor (Light 2014, Carana 2013).
>
> If only a few percent of the subsea methane hydrate reserves in the Arctic Ocean (some 1000 billion tons of Carbon) is dissociated and the methane is released into the atmosphere, it will cause total deglaciation and a major extinction event (Light and Solana 2002). The energy necessary to produce these Arctic methane release rates is relatively small; it requires only about one thousandth of the heat energy input from the Gulf Stream to dissociate the methane hydrates (Figure 30). Furthermore, the energy necessary to produce these Arctic methane release rates represents less than one millionth of the global warming heat energy being added to the oceans, ice, land and atmosphere by human fossil fuel burning (Figure 30). Unfortunately for us, global warming has heated up the oceanic currents fed by the Gulf Stream flowing into the Arctic, causing massive destabilization of the subsea methane hydrates and fault seals and releasing increasing volumes of methane directly into the atmosphere. …
>
> The whole northern hemisphere is now covered by a thickening atmospheric methane veil that is spreading southwards at about 1 km a day and it already totally envelopes the United States. A giant hole in the equatorial ozone layer has also been discovered in the west Pacific, which acts like an elevator transferring methane from lower altitudes to the stratosphere, where it already forms a dense equatorial global warming stratospheric band that is spreading into the Polar regions. The spreading atmospheric methane global warming veil is raising the temperature of the lower atmosphere many times faster than carbon dioxide does. …
>
> The United States and Canada must cut their global emissions of carbon dioxide by 80% to 90% in the next 10 to 15 years, otherwise they will be become an instrument of mass destruction of the Earth and its entire human population. …
>
> The United States and Canada must now cease all their fossil fuel extraction and go entirely onto renewable energy in the next 10 to 15 years otherwise they will be guilty of planetary ecocide - genocide by the 2050s. There must also be a world-wide effort to capture methane in the subsea Arctic permafrost, ocean and eradicate the quantities accumulating in the atmosphere.
>
> http://arctic-news.blogspot.com.au/2014/06/arctic-atmospheric-methane-global-warming-veil.html

With runaway methane release, and no significant action by states, extinction temperatures could become possible even within the next few decades.

Charade #7: "where an event has never occurred, risk management can be ignored"

Reality: The possibility of a low-impact high-risk event can be ignored.

A high impact event, with medium risk, calls for careful avoidance planning.

A cataclysmic event, even at low risk, calls for an urgent collective response at all levels.

> [See http://earthsight.org/Human_impact/Futurecide.pdf or http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/Direct_Action_Plan/Submissions (submission number 69) for my submission to the Senate hearing on The Abbott Government's Direct Action Plan and **a wide ranging study of the problem inherent in global warming and the ways in which our individual and collective response can be facilitated**.

The scientifically attested possibility of human extinction *in our lifetime* calls for an immediate fundamental re-evaluation of all aspects of our economic, financial and industrial activities.

Charade #8: "this royal commission is just another royal commission"

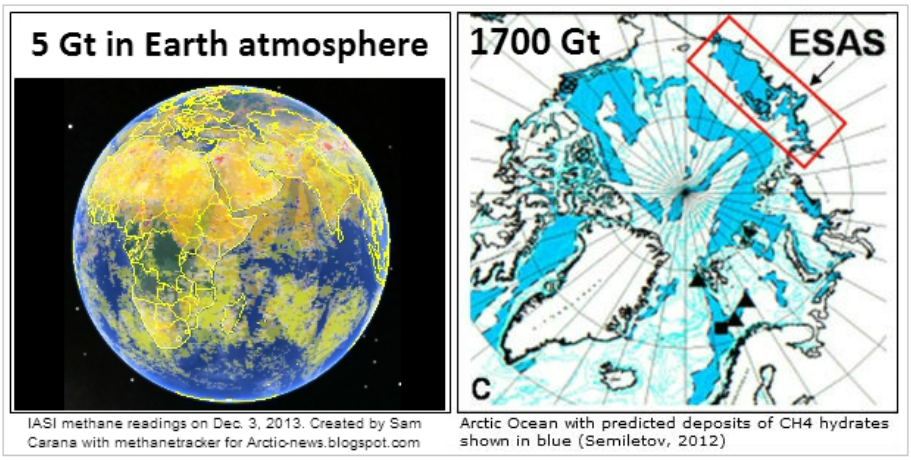
Reality: This royal commission, and parliamentary enquiry, is perhaps the most important in the history of Australia. A victory by pro-nuclear interests can have catastrophic consequences.

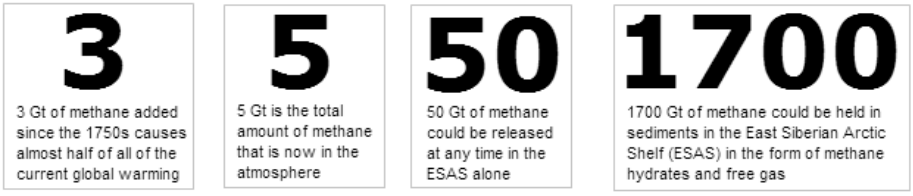
The choice of renewable energy can help the economy and employment and carry Australia to a position of leadership.

A pro-nuclear decision could radically impact Australia - and the world - by leading to nuclear disaster, already possible from predictable causes, and more so with the risk of near-term runaway global warming.

Act now on methane, **by Malcolm Light**

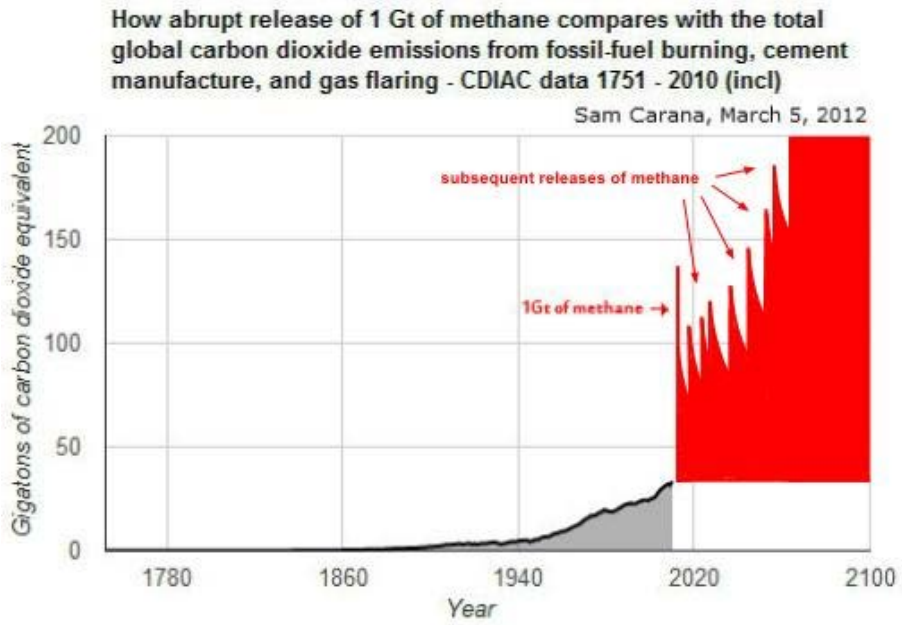
Sediments underneath the Arctic Ocean hold vast amounts of methane. Just one part of the Arctic Ocean alone, the East Siberian Arctic Shelf (ESAS, see figure 7. below), holds up to 1700 Gt of methane. A sudden release of just 3% of this amount could add over 50 Gt of methane to the atmosphere, and experts consider such an amount to be ready for release at any time.





The time has come to spread the message. Please share this image widely! Created by Sam Carana for Arctic-news.blogspot.com

Smaller releases of methane in the Arctic come with the same risk; their huge local warming impact threatens to further destabilize sediments under the Arctic Ocean and trigger further methane releases, as illustrated by figure 8. below.



http://arctic-news.blogspot.com.au/2013/12/act-now-on-methane.html

Facilitating nuclear power in other countries through the export of uranium or by providing nuclear waste facilities in Australia can be devastating, for other countries and for Australia, and result in widespread destruction of life on land and in the sea. To avoid the possible impact of runaway global warming, ALL nuclear power stations need to be decommissioned urgently while the risk of nuclear waste storage needs to be limited by demanding that storage facilities be strictly local, eschewing large centralised storage as now proposed in Australia.

South Australia can gain enormous advantage by proclaiming a nuclear-free state and promoting renewable energy.

Charade #9: "let's not exaggerate – we're OK mate – above all don't hurt the economy"

Reality: There have been 5 major mass extinction events in the history of life on this planet. 'Our' "Anthropocene extinction" is already considered the 6th, and augmented by global warming and runaway feedback loops it may well become the greatest.

The Permian with 90% extinction involved a 5 ºC warming due to volcanic CO2 (compare to IPCC warning in #5 above), in turn causing Arctic methane release and a further 5 ºC warming. With only 1 ºC warming so far we are already close to a (summer) ice-free Arctic Ocean and release of the "Methane Monster".

> **The Methane Monster Roars, Tuesday, 13 January 2015, *By Dahr Jamail, Truthout | News Analysis***
>
> **Another "Great Dying?"**
>
> The Permian mass extinction that occurred 250 million years ago was related to methane - in fact, the gas is thought to be the key to what caused the extinction of approximately 95 percent of all species on the planet.
>
> Also known as "The Great Dying," it was triggered by a massive lava flow in an area of Siberia that led to an increase in global temperatures of 6 degrees Celsius. That, in turn, caused the melting of frozen methane deposits under the seas. Released into the atmosphere, it caused temperatures to skyrocket further. All of this occurred over a period of approximately 80,000 years.
>
> We are already in the midst of what scientists consider the sixth mass extinction in planetary history, with between 150 and 200 species going extinct daily, a pace 1,000 times greater than the "natural" or "background" extinction rate. This event may already be comparable to, or even exceed, both the speed and intensity of the Permian mass

> extinction. The difference: Ours is human caused. (Plus, it probably isn't going to take 80,000 years; it has so far lasted just a few centuries, and is now gaining speed in a non-linear fashion.)
>
> It is possible that, on top of the vast quantities of carbon dioxide from fossil fuels that continue to enter the atmosphere in record amounts yearly, an increased release of methane could signal the beginning of the sort of process that led to the Great Dying.
>
> Some scientists fear that the situation is already so serious and so many self-reinforcing feedback loops are already in play that we are in the process of causing our own extinction. Worse yet, some are convinced that it could happen far more quickly than generally believed possible - in the course of just the next few decades - or, as Beckwith believes, possibly even sooner than that.
>
> http://www.truth-out.org/news/item/28490-the-methane-monster-roars

Charade #10: "it's too late to do anything – and there's nothing "I" can do"

Reality: It seems clear, there is a problem with our species.

As a member of the human species, "I" am responsible.

As a member of a society, a corporation, a government, a nation, "I" am responsible.

But, a sense of responsibility without a means of responding is profoundly debilitating.

The present author points to an understanding of the human problem and a means of responding, by the individual and by the individual within the organisation, that may be a key to the fundamental change urgently required. For a brief outline of problem, why our species is destroying its own planetary home and a way of finding an answer at the level of the individual see Charade #1 above.

For greater detail see "The Awakeness Paradigm" on http://www.creativediscussion.org/PlainPairGroups/Developing_Creativity/The_Awakeness_Paradigm.htm. This paper is a summary of research carried out by the present author over some 20 years in leading Japanese universities and presented to an international conference at the University of Adelaide in 2005. It is too extensive to present here but may well provide key understandings that can facilitate a serious concerted effort to bring about fundamental change in the political, corporate, media and community attempts to move towards an intelligent long-term approach to the relationship between the human species and the host planet.

The world needs to change, totally, but, with imagination and creativity, this planet can (easily) be a much, much better place to live in.

For a detailed examination of what "I" *can* do, see and experiment with 'Creative Discussion'.

> Creative Discussion using Plain Pair Groups, William Plain
>
> Every individual experiences moments of inner silence, of "awakeness", along with a "flash of insight" which brings a new way of seeing, of understanding. While "insight" is often ignored, particularly in education or employment, and even in daily life, it is the key to breaking the conditioning that ties us all to the past and the accumulation of error.
>
> While insight can be accessed only by the individual - the organisation can only access this through the insights of multiple individuals - I still need to share my insights and interact with those of others.
>
> This website shows how insight can be facilitated by "Creative Discussion", a form of interaction within a small "Insight Group", and how insights arising among members of this group can be shared with other groups and throughout an organisation or community by each group member also belonging to a separate group - the "Plain Pair Group".

http://www.creativediscussion.org/index.html

William Plain
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www.creativediscussion.org & www.earthsight.org
South Australia, March 2020