of existing long-lived nuclear waste- by burning it as fuel.

The final waste product from a next-generation nuclear power plant with fuel recycling) has a half-life of 30 years and will degrade to natural back-ground levels within 300 to 500 years.

To put the volume of 'once-used-nuclear-fuel' into perspective, this is all that remains from a now decommissioned nuclear power station which generated power for 31 years.

This is a minuscule amount compared to the waste from our current fossil fuel power stations, which release the equivalent of 5000 Gulf of Mexico oil spills into the atmosphere **every single day**.

Q8.Does nuclear power emit more CO2 than renewables

No. When generating electricity, nuclear power emits no CO2.

When construction, mining and decommissioning of the various technologies are accounted for, nuclear emits far less CO2 than any other electricity generation technology, or mix of technologies, that can meet our demand for electricity.

If we ignore the emissions from the back-up fossil fuel plants, wind power emits roughly the same as nuclear generators. When we include them, wind power emits about the same as efficient gas generation.

Q9. Is nuclear energy fast enough?

It's the fastest option we have. With a supportive population, and a little inspiration from France, we could replace our coal base load with nuclear power in 15 years. At its peak France was building 3500 MWe of nuclear power, or around four to six nuclear power stations, per year. Despite valiant attempts in some countries, no nation has ever come close to installing this much wind or solar in such a short time frame

A changing tide in nuclear power support

Around the world environmentalists and climate scientists are beginning to take a critical look at nuclear power in the context of climate change. Many of them are changing their long held anti-nuclear positions. Here is a list of some of the more prominent identities:

Stephen Tindale - Former Director of Greenpeace. UK

Chris Goodall - UK Green Party member. UK

Stewart Brand -Editor of the Whole Earth Catalog. USA

Mark Lynas - former UK Green Party member, Environment editor "New Statesman" and author of "Six Degrees". UK

George Monbiot - Journalist for "The Guardian" and author of "Heat". UK (he supports nuclear as a potential part of the low-carbon energy mix)

James Lovelock - Scientist, conservationist and originator of the Gaia hypothesis. UK

James Hansen - Head of NASA Goddard Institute for Space Studies (popularly known as the grandfather of climate science). USA

Tim Flannery - Zoologist, conservationist and author of "The Weather Makers". AUS

Barry Brook - Environmental Scientist and Sir Hubert Wilkins Chair of Climate Change, University of Adelaide. AUS

"Lets put all our energy cards on the table to fix climate change fully." Environmental scientist, Barry Brook

Visit the FAQ and climate action pages at:

www.bravenewclimate.com

The BraveNewClimate Real Climate Action FAQ

Our Primary Goal

Avert catastrophic climate change.

Our Secondary Goal: in pursuit of our primary goal

Remove the ban on nuclear power in Australia and include it as an assessable option in our climate change mitigation strategy.

Q1.How urgent is it to address climate change?

Increasingly urgent. The longer we delay, the more we will 'lock in' the build-up of long-lived greenhouse gases like carbon dioxide.

To have a 50:50 chance of avoiding 2°C or more global warming, carbon emissions must be slashed by around 80% by 2050 and essentially eliminated in the few decades after that. It will take decades to make this massive, worldwide transition to new energy sources. We have no time to lose!

Q2.Why bother with nuclear power when we've got renewables?

- **Because alone, non-hydro renewables have failed to replace a single fossil fuel power station worldwide.** This is despite extensive renewable build outs by several dedicated nations. For example, the last 20 odd years has seen Denmark aggressively pursuing wind power, yet it still only supplies between 5% and 20% of their electricity needs. In twenty years the Danes have been unable to replace a single coal -fired power station with zero emissions power. At 650 g CO2 per kilowatt hour, Denmark's emissions are more than 7 times greater than nuclear-powered France. And no country has tried harder or done better with wind then Denmark.

- **Because nuclear power is the only non-hydro clean energy source which *has* replaced fossil fuel power stations.** In just ten years, France almost completely replaced their coal-fired stations with 34 nuclear power plants. Nuclear power currently supplies 78% of electricity to the French grid.

- **Because renewables are reinforcing the building of new fossil fuel plants.** For those countries who refuse nuclear power or lack a potential for large scale hydro expansion, renewables are reinforcing the building of new fossil fuel plants, to "back-up" their intermittency and variability. Germany's refusal to build nuclear has led to plans for 26 new coal-fired power stations in the coming decades.

- **Because nuclear power is preventing the building of new fossil fuel plants.** Finland recently voted to scrap plans for more coal plants and to build two more nuclear power stations instead. Once completed 80% of their electricity will come from zero emissions nuclear power. Even Denmark avoids building new fossil fuel plants by importing electricity from its nuclear power neighbours.

- **Because renewables are failing to meaningfully reduce emissions.** At just 90g CO_2 per kilowatt hour of electricity, France now has the lowest emissions from electricity generation of any non-hydro, developed nation in the OECD. Compare this to the three countries in the EU with the highest non-hydro renewable penetration: Denmark @ 650g, Spain @ 443 g and Germany @ 539 g.

- **Because renewables are proving more costly than nuclear power.** Finland's newest 1600MW nuclear power plant will have a capacity factor of 80-90% and is coming in at a cost of around $7 billion (expensive by world standards). Denmark's newest and largest 400MW wind farm will have a capacity factor of between 30-40% and is costed at $2.3 billion . To meet the average capacity of the Finland plant, 9 more of these wind farms would need to be built, 10 in total at $23 billion or 16 billion dollars more than the nuclear option.

On top of this, the counties with the highest renewable penetration eg Denmark, Germany and Spain have some of the highest electricity prices in the EU for little appreciable emissions reductions.

High penetration nuclear nations such as France, Sweden and Switzerland have some of the lowest electricity prices in the EU... and the lowest emissions in the developed world.

"We need bridging low-carbon technologies and nuclear power should be one of them." Greenpeace Executive Director UK 2001-2006, Stephen Tindale

Q3. Isn't it more important for us to scale down our energy requirements through energy efficiency and conservation?

Population increase, a switch to electric vehicles, climate change adaptations (e.g. desalination) the continuing electrification of the developing world, and, I'm afraid, human perversity, will all conspire to make conservation little more than a smoke screen – empty action that allows even weak adherents to feel a dangerously misplaced confidence while the planet continues to die. They cannot be relied upon as anything more than peripheral emissions reduction strategies.

Q4. Aren't renewables our safest option?

Renewables are only safe if they work. At the moment Australia can only rely on a demonstrably ineffective renewables/fossil fuel electricity generation mix. This won't address climate change (see Q2). No other accident or disaster in history will match the scale of unmitigated climate change. Placing our faith in renewables alone, is a climate disaster waiting to happen.

Is nuclear power Safe ?

Q5. Isn't radiation a concern?

Radiation is all around us. People, animals, plants, water, rocks and the sun all emit radiation. The average radiation dose we receive each year is 360 millirems. But depending on where you live in the world, what your life style is like, what your favourite foods are etc you may be exposed to a natural and completely harmless background radiation dose of anything from, about 200 millirems per year, to more than 5000 millirems/yr. For example:

Poland is low at – 240 millirem/yr

Grand Central station, NY – 540 millirem/yr (It's built from granite)

Kerala, India – 900 millirem/yr

Pripyat, Chernobyl (1992) – 2500 millirem/yr

Certain beaches in Brazil – 3000 millirem/yr.

Tamil Nadu, India at – 5,300 millirem/yr

A nuclear power station's radiation is indistinguishable from natural background radiation levels, at about 0.005% of our average radiation dose it's equivalent to the radiation dose we'd receive from eating one banana per year and around 100 times below that emitted by our current coal plants.
The developed nations with the highest reliance on nuclear power have life expectancy, under 5 year old, and infant mortality rates equal to any other developed nation. There is little evidence to suggest nuclear power stations pose increased health risks.
Numerous studies have been undertaken to determine the effects of living near nuclear power plants and the overriding evidence is there is no rise in cancer rates, or other problems, for communities who live close to nuclear power plants, compared to those who do not.

Ask yourself this: If we accept the science on climate change, why shouldn't we accept the science on nuclear power?

Q6.What about meltdowns?

Compare Chernobyl with Three Mile Island, Pennsylvania. Chernobyl didn't have a containment dome, Three Mile Island did. Not a single person died or fell ill as a result of the Three Mile Island meltdown. Containment domes work.

Risk assessment studies reveal nuclear power is the safest of all the electricity generation technologies. Nuclear is 10 to 100 times safer than our current coal electricity generation. Coal plant safety varies but nuclear power is at least 10 times safer than the safest coal power plant. Nuclear power is the only non-hydro, zero emissions technology which has proven able to replace a fossil fuel power station. This alone makes it safer than intermittent renewables such as wind and solar.

New generation III and IV nuclear power stations (e.g. IFR) are even safer than the already incredibly safe current designs. They have passive safety systems, controlled not by human operators but by the laws of physics. Unless the laws of physics – which have been running the universe since the beginning of time – 'decide' to change, then these designs are fail safe. They cannot melt down. If something goes wrong they simply shut themselves down. Not a single human operator need be present in the plant for this to occur.

Q7. What about the waste?

All technologies create waste – even wind and solar require the disposal of long lived toxic waste (e.g. cadmium). For nuclear power the long lived waste issue has been solved. In reality, nuclear waste is much better thought of as 'once-used-nuclear-fuel', of which only about 1% to 10% of the energy has been used. The brilliant thing about Generation IV nuclear power plants is that they use this 'waste' as fuel, consuming over 99% of the remaining energy. In fact. Generation IV nuclear power plants are the ONLY way we can get rid