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Submission to Environmental Protection Authority

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on

Protection of the Environment Operations (General) Amendment (Native Forest Bio-material) Regulation 2013

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Preamble

The Clarence Environment Centre has maintained a shop-front in Grafton for over 23 years, and has a proud history of environmental advocacy. One of our greatest concerns in recent years, has been the continued failure by governments of all persuasions, and levels, to take necessary steps to minimise the impacts of climate change.

Despite clear warnings from an overwhelming percentage of the world's climate scientists, the International Energy Agency, NASSA, the CSIRO, and even the World Bank, Australia continues to be the world leader in exporting greenhouse gas emissions, and NSW now proposes changing legislation that will further add to atmospheric pollution by allowing the burning of wood from native forests to generate electricity.

We strongly believe the devious way that this proposal has been sold to the public, suggesting this fuel is “waste” material, is offensive in the extreme. The official announcement confirms that the proposed changes relate to “*bio-material obtained **from pulp wood logs** and heads and off-cuts*”. However, the inclusion of “heads and off-cuts” has, in our opinion, been added to deliberately deceive the public into believing that the material is 'waste' that will ultimately be burned anyway.

Almost that exact argument was used to establish the wood-chip industry in NSW, a trade that saw whole forests on the NSW south coast clear-felled. While significant quantities of timber has been logged from north coast forests for wood pulp, no tree heads, off-cuts, or other real waste material has ever been taken, and it won't be taken as bio-mass, because it simply isn't economically viable. Material for burning to generate electricity will all come from easily sourced and transported logs that are either too small, not straight enough, or not the right tree species for timber production.

The need to burn bio-material

The bottom line is that we don't need wood fired power. There is no shortage of electricity, and Australia is blessed with vast quantities of renewable, non-polluting, energy resources such as solar, wind, geothermal, tide, and wave. There is enough wind resource alone to supply all of Australia's current electricity demand many times over.

Co-generation

The Clarence Environment Centre believes there is a genuine case for industry to recycle waste by way of co-generation, as has been the case in timber mills where heat from burning mill waste is used to kiln-dry wood, and also to generate electricity. North coast sugar mills have also burned Bagasse, waste from crushing operations, and field trash that is burned anyway, in their crushing operations and also to generate electricity. This type of operation is supported by the Centre.

The downsides of burning wood.

Proponents of wood-fired electricity generation rely wholly on the argument that wood is renewable, while doing all in their power to avoid mentioning that it is also highly polluting. The comparative Carbon dioxide (CO₂) out of the power station stack to generate 1 GWh of electricity by using wood, brown coal and black coal are as follows:

	CO ₂ /energy (kt CO ₂ PJ ⁻¹)*	Conversion efficiency (%)	CO ₂ output kt CO ₂
Wood	94	20	1.69
Brown coal	93	27	1.24
Black coal	92	36	0.92

The above chart signifies greenhouse gas emissions for coal and wood at the output of the power station. Wood is dirtier than coal but proponents of wood power claim that greenhouse gases are less for wood because of the uptake of carbon in a forest at the regrowing stage. This assumption falls over where forests are not sustainably managed as is the case in NSW.

The biomass proponents' claim that: “**Alternative + renewable + green + clean = biomass**”, is a variation on the old saying, “if we muddy the waters, we can catch the fish by hand.”

“Renewable” is the term that is used in state and federal legislation, and in government energy programs, and almost universally, definitions of renewables include “biomass”. Therefore, under those definitions, being renewable does not necessarily qualify a product as clean or green. It’s only used to describe whether an energy source can be replenished.

NSW's public forests are already being logged at unsustainable rates, as is confirmed by the following quotes from industry and Government sources over the past 5 years:

1. The Institute of Foresters of Australia – Letter to Rob Oakeshott, 2009:

*“In NSW the adopted forest strategy is to **unsustainably cut** the available public native forest through to 2023 at which point hardwood plantations are proposed to be available to make up the very significant shortfall in logs. Unfortunately, the species mix and rate of plantation development in NSW post 2000 makes this unachievable”.*

2. Dailan Pugh, RFA negotiator, July 2011.

“Timber volumes were intentionally committed above the estimated sustainable yields in north-east NSW by both the FAs and RFA (Forest Agreements and Regional Forest Agreements). The fact that Forests NSW has drastically overestimated the available timber volumes, is simply compounding the problems now being faced.

3. The Environmental Defenders Office – Executive Summary, of its report - “**COMPLIANCE FAILURES IN THE PUBLIC FORESTS OF NEW SOUTH WALES**”, July 2011.

“It is clear that native forests are not being managed in a way that complies with the principles of Ecologically Sustainable Forest Management (ESFM) and the conservation of biodiversity.”

4. The Victorian Department of Primary Industries - “Economic Policy Settings in the Forest and Timber Industry – An inter-jurisdictional comparison”, May 2008

“There is concern that Forests NSW will not be able to meet commitments in Wood Supply Agreements with the current forest areas allocated for commercial forest production. This is evidenced through the fact that Forests NSW is purchasing private native forest resources to meet current commitments.”

5. The NSW Auditor General - "2009 Performance Audit":

- a) *To meet wood supply commitments, the native forest managed by Forests NSW on the north coast is being cut faster than it is growing back.*
- b) *The North Coast region has been unable to meet its species commitment since 2004 for blackbutt (the North Coast's most logged species, at 24%).*
- c) *current yield from native forests in the north coast is not sustainable in the long term.*

Our highly biodiverse native forests cannot possibly withstand the onslaught of yet another exploitative industry?

Where will wood-fired power stations be built?

We also need to consider where the biomass will be used. Current coal-fired generators are situated adjacent to the coal mine with a very efficient delivery of fuel directly from the mine to furnace by conveyor belt. The fact that a wood-fired station requires approximately double the volume of fuel, with huge handling and transport costs, relative to coal generators, means that any potential power station must be as close as possible to the timber resource.

We believe that transport costs, particularly with rapidly escalating fuel prices, will be a major factor in determining both the positioning and size of these power stations, and doubt if anyone has seriously considered what is the optimal distance between power station and forest resource. Do we build a numerous small generating plants in each state forest region, or a larger central power station which will reduce construction and running costs, but incur higher fuel delivery costs. Either way we believe wood-fired power generation cannot be made economically viable, ultimately leading to more tax-payer funded hand-outs to industry.

Impacts on rivers and/or water bodies.

Research from a little over a decade ago, that came out of the proposed Koolkhan power station near Grafton, raised concerns over the potential impact of thermal pollution on the Clarence River. It was noted that if the Broadwater Bagasse burning proposal (sugar mill co-generation) was any indication, there could be as much as 150 ML of super heated water entering the river daily, along with an additional 250,000 litres of boiler feed water contaminated with chlorine and a biocide. It is believed this water will effect dissolved oxygen levels which are already marginal, risking outbreaks of algae leading to fish kills.

Any thermal power station requires huge quantities of water that can only come from a permanent water body, so these types of risks apply anywhere that a power station is established. It also dictates where the power stations can be built. Will the need to site the station close to the resource to reduce transport costs, require rivers to be dammed to ensure a constant supply of water. Again, we do not believe this issue has been thought through.

Impacts on biodiversity

Australia's flora and fauna are unique to this planet. We are truly blessed to have such amazing biodiversity, but the complex forest ecosystems that support that biodiversity are already under unacceptable threat from over-exploitation, not only by the timber industry, but also through land clearing for rural residential development and infrastructure provision, bad land management and over burning, weed invasion, and urban expansion. As a result, many hundreds of plant and animal species are now listed as threatened, and face extinction if their depletion rates are not reversed.

Forests support much of our terrestrial biodiversity, and that biodiversity provides us with life-giving oxygen, and filters the water we drink. It provides us with everything we eat, much of what we wear, and most of the medicines that protect us from sickness and disease. It is imperative that biodiversity be protected and enhanced, and the cutting down and burning of those forests is the worst thing we can do.

Climate Change.

There is a simple fact that, if we do not reduce carbon emission, this planet will not be tenable in a short few hundred years from now. Forests sequester carbon, and burning them releases it. We simply have to stop polluting the atmosphere, and move to clean renewable energy or face our own extinction.

Toxic emissions

Burning wood for power is thermally inefficient. Figures produced for the proposed wood-fired power station at Koolkhan showed it could only convert about 20% of the quoted 280,000 tons of fuel (about 760 tonnes a day, that's a lot of truck loads) into usable electricity. The rest has to be spread round our environment as pollution.

Like the burning of coal, there are emissions of toxic substances, with some 90 different chemical compounds released during the wood burning process. A report prepared in June 2008 for the Canadian Ministry for Environment by Envirochem Services Ltd, identified half of those 90 compounds as **“Candidate Pollutants of Concern”, i.e. dangerous to human health, and here they are:**

<i>Acetaldehyde</i>	<i>Alpha-pinene</i>
<i>Beta-pinene</i>	<i>Carbon monoxide (CO)</i>
<i>Formaldehyde</i>	<i>Methanol</i>
<i>Naphthalene</i>	<i>Toluene</i>
<i>Total phenols</i>	<i>Turpentine</i>
<i>PAHs</i>	<i>2,3,7,8 Tetrachlorodibenzo-p-dioxin</i>
<i>2,3,7,8-Tetrachlorodibenzo-p-furan</i>	<i>Hydrogen sulphide</i>
<i>Nitrogen oxides (Nox)</i>	<i>Beryllium</i>
<i>Cadmium and compounds</i>	<i>Chromium (II) compounds, as Cr</i>
<i>Chromium (III) compounds, Cr</i>	<i>Chromium (metal)</i>
<i>Chromium (total)</i>	<i>Chromium, hexavalent metal & compounds</i>
<i>Cobalt as Co metal Dust and fume</i>	<i>Cobalt carbonyl as C</i>
<i>Copper, Dusts and mists, as Cu₃</i>	<i>Copper, Fume</i>
<i>Iron</i>	<i>Lead arsenate, as Pb₃ (A2O4)</i>
<i>Lead chromate, as Cr</i>	<i>Lead compounds</i>
<i>Magnesium</i>	<i>Manganese</i>
<i>Molybdenum</i>	<i>Nickel and compounds</i>
<i>Particulate matter (PM)</i>	<i>Phosphorus</i>
<i>Selenium</i>	<i>Silver</i>
<i>Thallium</i>	<i>Zinc</i>
<i>Arsenic and - inorganic arsenic compounds</i>	
<i>Mercury</i>	<i>Hydrochloric acid</i>
<i>Sulphuric acid</i>	<i>Sulphur dioxide (SO₂)</i>

However, here's the crunch. While it is possible to filter out all those compounds, it is prohibitively expensive. An adequate filtration system, i.e. one that reduces emissions to acceptable levels, using good combustion practices and control; cyclones and filters; acid gases and scrubbers; and fuel and combustion modifications, costs about the same to run as the generation plant itself. i.e. at the very minimum, operating the filtration equipment doubles the cost of running the power station.

Therefore, as is the current case with coal fired power generators which emit huge volumes of toxic substances, including carcinogens, a compromise has to be made between economic and social costs, and we end up with a filtration system that filters out just enough of these toxins to comply with what some bureaucrat has proclaimed to be “safe levels”. i.e. a second-rate filtration system that allows the operation to be price competitive.

It is critical for any combustion operation that a constant reliable source of fuel is available. We have already commented on the efficient 'coal face to furnace' operations of most coal-fired generators, something that cannot be provided by a timber resource. This would require a wood-fired power station to maintain mountainous stockpiles of fuel on site, to protect against prolonged wet weather periods when logging is not possible. Such unsightly stockpiles pose their own unique health hazards through leaching of all manner of contaminants into the soil and groundwater.

In the USA, fuel shortages have been identified as a major problem for wood-fired generators, with household, and even more toxic industrial waste often substituted to keep the furnaces running.

Flow-on risks – the USA experience - “The Burning Issues of Biomass”, M. Ewall.

That USA experience showed that the economic imperative of keeping the turbines running in the face of wood shortages, coupled with local governments faced with growing mountains of household and industrial waste, leads to the temptation to use wood-fired generators to double as industrial incinerators.

It starts with burning waste building material including treated timbers, which invariably leads to more hazardous types of waste. In some cases, permission has been granted to burn treated wood waste, black liquor solids and/or paper sludges, and wood tar waste. In other cases, state agencies have allowed the disposal of their oily water by spraying it on their wood fuel.

So what does this mean? Fibreboard plants use formaldehyde (a hazardous air pollutant) and other toxic glues such as isocyanate. The toxic constituents of these glued and otherwise treated wood products make them unsafe to burn.

Particleboard and other processed wood products can come contaminated with chlorinated plastics that are burned since they're not easily removed. Also wood waste can be contaminated with wood preservatives, binders, paints, glues, plastics, laminating materials or other non-wood substances. Particleboard, flakeboard, plywood, fibreboard and manufactured wood, have plastic laminates, chlorinated adhesives, or phenol and urea formaldehyde resins. Painted wood may include lead or mercury (particularly in demolition debris). Mercury has been used as a fungicide in paint. Treated woods are usually coated with creosote, copper chromium arsenate, or pentachlorophenol. Pentachlorophenol is a chlorinated compound, which will form dioxins and furans when burned.

Burning wood treated with copper chromium arsenate (CCA) will release arsenic and chromium VI. Since copper serves as a catalyst in dioxin formation, any small bit of CCA-treated wood will greatly escalate dioxin emissions from industrial wood burners.

In the U.S some wood-fired power stations have been allowed to accept a certain percentage of chlorinated wastes, since wood waste suppliers are unable to completely isolate all vinyl-coated material. In construction/demolition wastes, there is likelihood of PVC (polyvinylchloride) contamination from many sources common in building materials. For example, all household electrical wire sold is coated with PVC plastic. Since this wire is made of copper, it's an extremely dangerous mixture to have burned, since the copper will catalyse increased dioxin formation out of the PVC.

Studies have already identified significant health implications, such as respiratory problems, for those living near coal-fired power stations (refer to the current Port Augusta cancer cluster), and similar problems are certain to accompany power stations using wood as a fuel. Such risks should not be entertained when we have such abundant non-polluting resources available to us.

Who Pays

Clearly, the burning of forest waste to generate electricity can never be competitive, so it seems inevitable that there will be more corporate welfare handed out to an industry that is continually propped up by the taxpayer. The fuel supply will largely be supplied from our State Forests, which cost tax-payers \$8 million dollars last financial year, and has lost millions of dollars annually for half a decade. And all this while logging at unsustainable levels.

If wood-fires power stations are built, our rivers and air will be polluted. These community assets will be devalued or even lost. Increased health costs associated with poor air quality will be likewise be borne by the taxpayer, as will the road maintenance costs incurred by the thousands of trucks needed to transport the fuel to the generators.

In conclusion

The Clarence Environment Centre strongly feels there is no valid argument to support burning native forests to produce electricity. The process is highly polluting and will exacerbate global warming; would be a serious risk to human health, is uneconomic; will have negative implications for the health of river systems, and will have a hugely negative impact on biodiversity through damage to forest ecosystems.

Therefore, we urge the NSW government to reject any notion of burning wood for electricity generation out of hand, other than genuine co-generation plants that burn wood or vegetable waste as a part of their natural manufacturing processes.

Yours sincerely
John Edwards
Honorary Secretary.

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