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Date: 31st ~~March~~ ^{July} 2008

The Secretary
Senate Standing Committee on Rural and
Regional Affairs and Transport
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Parliament House
Canberra, ACT, 2600
Email rrat.sen.@aph.gov.au

Dear Chairperson

Inquiry into the Implementation, Operation and Administration of the Legislation Underpinning Carbon Sink Forests

The Clarence Environment Centre has been active in the Grafton district of northern NSW for two decades, and has recently undertaken considerable research into the plantation forest industry which has expanded rapidly on the North Coast over the past eight to ten years. There is a groundswell of concern amongst environmentalists, community organisations, and farmer groups over the proliferation of these mainly Eucalypt monocultures.

It is clear that the relevant facts are not being conveyed to the upper levels of Government. Responses to letters written to various State and Federal Ministers have largely ignored our comprehensive list of concerns (see below) and have been limited to the following:

1. The Hon. Verity Firth. NSW Environment Minister. Responded to her Department's responsibility in relation to recorded incidences of private homes being sprayed by poisonous chemical drift from aerial spraying of neighbouring plantations, claiming that:

- *"The Department's North Coast office has trained pesticides enforcement officers".* We pointed out that at this point in time the North Coast office, covering an estimated area of 35,000 square kilometres, containing more than 50,000 hectares of hardwood plantations, has only **ONE** full time pesticides inspector.
- *"Area Health has recommended the fitting of first flush devices to drinking water tanks "to limit (not prevent altogether) the amount of sediment entering water tanks."* Our response to explain that we were talking about people's drinking water, and that these chemicals are linked with a wide range of organ failures, birth defects, and cancer.

2. The Hon. Ian MacDonald. Minister for Primary Industry. Responded to the same list of concerns stating the Government supported plantations because:

- *"the expansion of plantations is necessary to provide sufficient timber to balance the declining availability of timber from native forests."* and,
- *"plantations also provide additional benefits in the form of greenhouse gas abatement."*

Clearly the Minister is unaware of the facts; specifically: The Federal Government's publication, **"Australia's plantations, 2007, Inventory update"**, which states (page 6): *"90% of new hardwood plantations established in 2006 are aimed at pulpwood production"*.

Yet another publication, **"Australia' plantation log supply 2004 – 2049"**, acknowledges (page 3) that: *"Forecast supply in 2010 comprises hardwood pulpwood (46%), softwood sawlogs (35%), softwood pulpwood (18%) and hardwood sawlogs (1%)."*

By 2010 therefore, approximately 98% of Australia's hardwood plantations will produce wood-chip, a process that is seriously carbon negative, and will in no way take pressure off native forests to provide saw logs.

3. The Hon. Tony Burke. Federal Minister for Forests etc. Again in response to our concerns, asked a Mr Allen Grant to respond on his behalf. Mr Grant concentrates on just 2 aspects, claiming:

- *"Most plantations in this region (north coast NSW) are intended primarily for sawlog production."* Again we pointed to his own Bureau of Rural Science's figures showing that over 95% of all hardwood plantations were being established for wood-chip production. This is a fact that is widely acknowledged by all but the Ministers it seems.
- We also take issue with Mr Grant's claim that, *"Studies have shown that plantations have a greater biodiversity than open agricultural and grazing land"*, and pointed out that much of the land currently being planted to wood lots is **not** fully cleared agricultural land, We also asked to see a copy of those studies for thorough analysis. Needless to say we have received no further response.

4. The Hon. Peter Garrett. Federal Environment Minister. Apparently Mr Garrett did not consider the following list of concerns worthy of a response as, 4 months on, we have not heard from him.

Concerns over wood-chip plantations on the North Coast of NSW

Economic issues:

- As traditional rural industries decline, that flow on effect is felt by a range of rural related industries, from farm machinery sales to abattoirs, veterinary surgeons to stock transport.
- The significant cost of upgrades to rural roads and bridges to accommodate the increase in heavy transport, becomes the responsibility of local councils, and thus to local ratepayers who see little benefit in return.
- The cost of land preparation, plantation management, and transport of wood-chip to export ports is expensive, not only in dollar terms, but in the enormous amount of greenhouse gas emissions.
- Doubts have been cast on the efficacy of many of these managed investment funds, and doubts about the potential returns to investors. Some plantations have already been bulldozed for poor performance and replanted, possibly to obtain further tax concessions.
- Overseas experience shows that plantations change soil structure so that rotational cropping has proved to be unsustainable. In some parts of Australia, even a second crop is not possible.

Environmental issues:

- The Plantations and Reafforestation Act currently allows the removal of all remnant forest under one hectare in size; and all 'irregular projections' from forest edges, with no stipulation as to a minimum area that can be removed in the process. Only one habitat tree for each hectare cleared needs to be retained somewhere nearby, all of which greatly reduces habitat and biodiversity.

- Trees planted are invariably alien to the area, requiring chemical fertilizers to sustain growth. Runoff of these nutrients into waterways contributes to algal blooms in dry times, and fish kills in de-oxygenated water following heavy rain events.
- Because plantations are monocultures, they attract a variety of insect pests and diseases, requiring chemical control, leading to pollution, not only of the soil, but of all waterways downstream, again leading to an overall loss of biodiversity.
- Young vigorous growth in Eucalypt plantations is known to use excessive water, impacting on local creek and river flows which can be reduced by as much as 50%.
- The interception of large volumes of run-off water, contributes to the retention of salt, and potentially leads to land degradation through salinity.
- As with all soil disturbance, the land clearing for plantations contributes to erosion and siltation of wetlands and waterways.

Social impacts:

- Large-scale plantation development within rural communities sees a significant increase in unemployment, following an initial short term increase in casual employment during the planting phase, mainly undertaken by backpackers or other itinerant workers.
- The decline of rural populations has negative implications for amenities such as country schools.
- There are a number of documented incidents of residents being directly hit by chemical spray drift, with obvious implications for human health over both the short and long term.
- The proliferation of unattractive, single species, plantations, sometimes planted within metres of private homes, significantly reduces the quality of life for many living in rural areas.
- There are hundreds of millions around the world living with hunger, either because of famine, or because they can no longer afford the inflated prices of food caused by competition for biofuels, This poses a serious ethical dilemma about planting food-producing land to trees, simply to provide paper, or biofuels that enable rich people to continue driving cars, and polluting the atmosphere.


The Clarence Environment Centre has researched all the above issues by reviewing various Government reports and pamphlets, the results of which are compiled in the following attachments on the accompanying CD:

- Attachment A: Social and economic impacts.
- Attachment B: Legislative inadequacies.
- Attachment C: Chemical usage.
- Attachment D: Water usage.
- Attachment E: Other environmental damage.
- Attachment F: Managed Investment Funds.

We Ask the Committee to look closely at our evidence. We are not opposed to tree planting, but assert that plantations are not forests. We need multi-species plantations that would massively reduce chemical usage and, if allowed to mature, could then be logged for timber rather than wood-chip. This would maximise carbon storage, and take the pressure off our native forests over the medium and long term.

What is currently happening is just plainly wrong.

Yours sincerely



John Edwards
Honorary Secretary

Plantation Issues

Economic and social impacts

Economic impacts:

- Large-scale plantation operations within rural communities result in a short term increase in casual employment during the planting phase, mainly undertaken by backpackers and itinerant workers, after which employment drops dramatically. Most ongoing management is undertaken by outside contractors, providing services such as aerial spraying and harvesting, again on a short-term basis. Unemployment places added pressure on the county's economy.
- As traditional grazing and farming activities decline after being replaced by plantations, the flow on effect is felt by a range of rural related industries and retailers.
- The impacts of a significant increase in heavy transport, demands upgrading of roads and renewal of old timber bridges at a significant cost to the community.
- Overseas experience shows that plantations change soil structure so that rotational cropping has proved to be unsustainable. In some parts of Australia, even a second crop is not possible.
- There are serious doubts about the predicted investor returns being promised by some managed investment funds.

Social impacts:

- Large-scale plantation development within rural communities sees a significant increase in unemployment over the long term. High rural unemployment has been linked to more sinister consequences such as increases in depression and suicide.
- The decline of rural populations has negative implications for amenities such as country schools.
- There are a number of documented incidents of residents being directly hit by chemical spray drift, with obvious implications for human health over both the short and long term.
- The proliferation of unattractive, single species, plantations, sometimes planted within metres of private homes, significantly reduces the amenity and quality of life for those living in rural areas.
- The ethical dilemma faced when planting good food-producing land to trees when millions starve around the world.

* * *

The federal government released a series of documents in 2007 on plantation forestry, one specifically addressing socioeconomic impacts and benefits. We make the following analysis.

Socioeconomic Impacts of Plantation Forestry

(Australian Government, Bureau of Rural Sciences)
Department of Agriculture, Fisheries, and Forestry. (Authors – unknown)

This document dwells briefly on some socioeconomic downsides, but either claims these only occur in a minority of cases, or tries to manufacture positives that are clearly not reflected in reality.

A word search of the 16 page document reveals that pesticide, poison, pollution, or health (in terms of quality) do not appear. The single mention of the word chemical appears when espousing the benefits of plantations (page 7) where it is claimed: *“jobs are created for contractors and businesses providing **chemical** and fertilizer application services.”*

<< SOCIOECONOMIC IMPACTS OF

PLANTATION FORESTRY

For a document supposedly providing a socioeconomic assessment of plantation forestry, the failure to make any mention of these negative aspects, must raise serious questions as to why not, given the experiences of Clarence Valley farmers on the northern rivers of NSW.

The ugly reality of living with chemicals

In September 2007, Forest Enterprises Australia (FEA) purchased and leased a number of grazing properties near Coaldale, west of Grafton. They immediately began clearing operations which was followed by aerial spraying of herbicides using helicopters. Within weeks there were two well documented incidents of spray drift affecting neighbouring properties.

John Golding, a Coaldale farmer relates how he was removing weeds on his property, while a helicopter was spraying herbicide on a neighbouring plantation, when he felt moisture droplets fall on his exposed face and arms. He approached the operators and asked them to stop until the wind direction changed, and was roundly abused for his trouble.

He reported the incident to the Grafton office of Environmental Protection and Regulation (EP&R) a branch of the Department of Environment and Climate Change, who tested the area for traces of spray drift. Those tests showed significant amounts of Simazine (see below for further details).

The spray drift burned off all vegetation in the Golding homestead garden, most of which subsequently recovered. However, concerned about the fact that these chemicals fell across his roof and would get into his water tanks (all at Coaldale rely on tank water), he asked for advice and was told all he could do was remove downpipes to prevent what water he had from being contaminated.

Mr Golding was keen to see FEA prosecuted, but on learning that only the helicopter pilot could be fined, he withdrew his complaint in disgust. The EP&R failed to take the matter further at that time.

The Reardon family, whose ancestors settled in the district over one hundred years ago, and own a grazing property about 600m from one of the new plantations, reported a separate incident. In that event spraying began in moderate to high wind conditions which blew spray drift across several properties including their own. They could smell the chemical which resulted in the family experiencing headaches and nausea later in the day.

They too immediately reported the incident to the EP&R, and again spray drift was confirmed. Action was finally taken, and the pilot fined a paltry \$400. When we consider the cost of the tests is reportedly in the order of \$1000, this penalty appears to be nonsensical.

On learning that several of the chemicals used have been banned, or their use discontinued, in many overseas countries, and that they have been linked to cancers, reproductive disorders, and a wide range of organ failures (see below), Coaldale residents have joined communities across the country in demanding action to stop the inappropriate use of these poisonous substances.

The Federal Government's socioeconomic propaganda continues:

For example: The document vaguely acknowledges that in areas where land is purchased by plantation developers, it, *“can lead to higher than average growth in the value of land suited to plantation development”*, and that: *“While purchase of land has the most direct impact on land prices, leasing may affect markets by reducing the land available for sale”*. Also, as if price impact is only an issue in a minority of cases, and a reminder that plantations occupy only 0.2% of Australian landmass, the authors dismiss the problem by claiming: *“when rates of plantation expansion were not high, there was little or no observable impact on land markets.”*

Then there is the matter of dwindling populations after farms are purchased for plantation forestry, a phenomenon that has occurred in many communities across Australia. In this case we are told, with no referenced research to back it up, that, *“plantations are often established in areas experiencing population decline.”*

The document's mapping of plantations shows the industry clustered around the south west coast of Western Australia, southern Victoria, and along the entire east coast of Australia between the coast and ranges; hardly areas of declining population.

In NSW, a series of Department of Planning “Regional Development Strategies” were released in 2007. According to the Mid North Coast Regional Strategy, covering an area from the Great Lakes to Iluka, the NSW Government's Transport and Population Data Centre (TPDC) predicts an increase in population of 91,000 by 2031, or 1% per annum (27% over 25 years), The Strategy also admits (page 4) that: *“over the past 25 years the Mid North Coast has experienced a 70% population increase.”* **All the regionals strategies predicted similar growth. Clearly the east coast of Australia is not experiencing population decline.**

Not only does the report fail to accept that communities around the country are being decimated by the plantation industry, or the implications these diminishing populations have for small rural schools and other amenities, it tells us that any possible decline can be offset. It explains that, *“where there is interest in rural “lifestyle” blocks, subdivision of 'homestead blocks' on rural properties may provide opportunities for rural population growth.”* **A lucrative sideline; always assuming they can find people happy to be sprayed with chemicals on a regular basis.**

The report likewise makes no mention of the detrimental economic impacts on country towns resulting from plantation development. However, in the Clarence Valley local retailers are noticing these impacts, where it is rumored that Primac, a large produce store, lost a \$250,000 a year account when one rural property at Kangaroo Creek, 'Bardool', was turned over to plantation. Primac is now out of business, but the flow-on effects of this change in land management affects all businesses tied to the agricultural sector, produce stores, abattoirs, stock and station agents, farriers, stock transport, agricultural machinery and parts suppliers, saddlers, veterinary surgeons, hardware stores, and more.

Surprisingly, the need for upgraded infrastructure, roads, bridges etc, is somehow represented in the report as a socioeconomic benefit to the community, with no mention of those who are expected to fund these improvements, the ratepayers. In a statement of breathtaking arrogance, the author maintains: *“It is essential to plan for the future transport needs of the sector from the time of the first establishment, to ensure that adequate infrastructure will be in place as plantation harvesting and processing expand.”* In the Clarence Valley this expansion has been a reality for almost a decade, with not one cent paid by the industry towards infrastructure upgrades.

The unofficial government view

While the “Socioeconomic Impacts of Plantation Forestry” reflected the previous government's official view that there are no insurmountable socioeconomic problems associated with the industry, a number of senior government members are openly scathing. Senator Bill Heffernan described the industry as an “approaching train wreck”, and likened investors in managed investment funds (MIAs) contributing to plantations as 'bunnies'.

The late Treasurer, Peter Costello, and Minister for Agriculture, Peter McGauran, have both described plantation MIAs as tax rorts, or tax avoidance schemes, and voiced concerns about “fund managers playing with tax free dollars. Member for Bombala, Gary Nairn came out prior to the last federal election predicting the social impacts of plantations threatened his chances of reelection. He lost his seat.

Ethical issues.

Today there are hundreds of millions around the world living with hunger and starvation, either because of famine, or because they can no longer afford to buy food. This poses a serious ethical dilemma around the planting of food-producing land to trees, simply to provide paper to hang in our toilets; and supply us with a broadsheet to peruse over breakfast, 90% of which we will never read; or to produce the millions of tonnes of junk mail that ends up, unopened, to rot in landfill and produce the serious greenhouse gas, methane.

* * *



A common sight in the Clarence Valley, old-growth Red Gums bulldozed to plant Dunns White Gum seedlings, a species only any good for wood-chip.

Plantation forestry issues

Some inadequacies of the Plantations and Reafforestation Act, 1999 and 2001 Code of Practice.

While the Plantations and Reafforestation Act may have been well-intentioned, the wording is such that it provides loopholes and interpretations in relation to environmental protection that are far outside what we hope was the intent of the legislation.

The inadequacy of the Code of Practice was identified very early in the piece, with the Department of Primary Industry seemingly acknowledging that fact when ordering a review in 2004. That review is still underway, as the promised modified Code has still not been presented.

Plantations in NSW are established under the Plantations and Reafforestation Act (P&RA), 1999, and its subsequent Code of Practice 2001, which dictates that plantations under the act must be planted: *“on land that was predominately non forest prior to 1st January 1990”*.

The term 'predominately non forest' is the first loophole. Open to a number of interpretations, it could be argued that young regrowth on land in 1990 was 'predominately non forest'. However, that 1990 regrowth is now, in 2008, a well established forest with trees available for logging.

An example of this is depicted in the aerial image at right, where the red circled area clearly shows a relatively high forest density, subsequently bulldozed and burned (see photograph below).



A plantation near Lawrence in the Clarence Valley. The red circled area showing the relatively heavily wooded area before plantation clearing took place.



A 200 metre long windrow containing charred remains of some reasonably large trees, the one pictured measuring at least 800mm DBH, and double the size of anything that had been left in the paddock.

Most areas of 'predominately non forest' on the north coast were previously cleared for grazing purposes, but retained varying numbers of 'paddock trees' or 'cattle camps' (groves of trees left to provide shade for stock). The Code of Practice recognises the importance of these remnant trees in terms of habitat and refuge for wildlife, and stipulates a minimum number of habitat trees that must be left standing.

In listing areas of native vegetation that is exempted from plantation establishment, a number of descriptions are provided (Code of Practice, page 18), including:

- *Any individual patch of woody native vegetation (other than that referred to in paragraphs (a) and (b)) of more than 1 hectare. This allows a forest remnant measuring less than 100m x 100m to be legally removed, as long as it isn't rainforest or listed for conservation.*
- *Regrowth vegetation that the regional vegetation schedule allows to be cleared may be cleared from any patch within that provision, Note: The definition of regrowth appears to apply only to trees up to 15 years, not shrubs or understorey vegetation which can be bulldozed regardless of age.*
- *The Director-General may authorise the clearing of irregular projections from any patch within that provision if:*
 - (i) *the clearing is to improve the functional design of the plantation, and*
 - (ii) *not more than 10% of the patch is so authorised to be cleared. Does this mean that if the adjoining 'patch' measures 1,000 hectares, that up to 100 hectares (10%) can be removed those 'irregular projections'?*

Note: These exemptions provide enormous opportunity for those seeking to clear the maximum land available.

The Code also stipulates a minimum number of habitat trees that must be retained, e.g.:

(1) If a plantation is 30 hectares or more:

- (a) *at least 30 native habitat trees must be retained on any given 30 hectares of plantation, or*
- (b) *if there are less than 30 native habitat trees on any given 30 hectares of plantation, all those trees must be retained. Note: If possible, habitat trees should be retained in groups of 2 or more to minimise the impact of this requirement on plantation design and to reduce loss of biodiversity.*

The stipulation that “*habitat trees should be retained in groups*” creates yet another loophole, and allows trees in adjoining forest or drainage lines, which cannot be cleared under clause (d) above, to be included in the calculations.

Then all the protection listed above is totally undone by what appears to be a mandatory 'exemption' clause, stating:

Despite subclauses (1) and (2), any tree required to be retained under those provisions may be cleared if the following requirements are met:

- (a) *if the cleared tree has a diameter at breast height of between 40 and 80 cm:*
 - (i) *the cleared tree must be replaced with 10 new trees (being local native species), and*
 - (ii) *an area of at least 0.01 of a hectare must be retained, being the area on which the new trees are to be located,*
- (b) *if the cleared tree has a diameter at breast height of more than 80 cm:*
 - (i) *the cleared tree must be replaced with 20 new trees (being local native species), and*
 - (ii) *an area of at least 0.02 of a hectare must be retained, being the area on which the new trees are to be located,*

These exemptions that allow the felling of 200 year old trees are not backed by compliance monitoring to ensure those replacement seedlings remain into the future.

The plantation owners can cop out altogether if they wish by letting nature do the job for them, allowing planting to be delayed by 18 months, as explained:

if 10, or 20, (as the case may be) tree seedlings have not naturally regenerated (that is, from seed-stock of existing local native species) in the designated area within 18 months then the balance of the replacement trees must be planted in that area as seedling trees.

And so it goes on. This legislation must be reviewed, because it simply is not being implemented in the spirit in which it was drafted, and certainly not in the best interests of the environment.

* * *



Virtually all habitat trees at this Coaldale plantation in the Clarence Valley were 'legally' bulldozed, courtesy of badly worded, ill-conceived legislation.

Plantation Forest Issues

Chemical usage: Human health and environmental pollution

Chemical usage in agriculture and plantation forestry has a number of serious consequences for:

- Human health from
 - Direct contact, through the skin or breathing vapour.
 - Drinking contaminated water collected from roof-tops.
 - Swimming in contaminated waterways.
 - Consuming contaminated produce following spray drift.
- Runoff and pollution of streams, rivers, and the ocean, with negative consequences to aquatic and marine life.
- Poisoning of wildlife that graze recently sprayed areas, or predate on contaminated species.
- Poisoning of non-target insects including beneficial species, leading to:
- An overall reduction in biodiversity.

In compiling this segment, the Clarence Environment Centre has undertaken an assessment of a federal government pamphlet released to the public, seemingly with a view to hiding the more controversial aspects of the industry. The pamphlet in question is:

Pesticides in Plantations

Use of chemical pesticides by the Australian plantation forest industry SUMMARY REPORT (September 2006)

by B.M. Jenkin (Sylva Systems P/L) and B. Tomkins (GreenTree Forestry Services)
also for the Australian Government - Forests and Wood Products Research and Development Corporation

According to the contents page: *“The report summarises a major study of chemical pesticides by the Australian plantation forest industry. ...”* The same page also distances the Forests and Wood Products Research and Development Corporation (FWPRDC) from any liability resulting from the publication of the report, claiming: *“The FWPRDC and all persons associated with it exclude all liability (including liability for negligence) in relation to any opinion, advice or information contained in this publication or for any consequences arising from the use of such opinion, advice or information.”*

Pesticides IN PLANTATIONS

Use of chemical
pesticides by the Australian
plantation forest industry

SUMMARY REPORT

Would the apparent keenness to avoid liability have anything to do with the report's failure to cover known negative environmental, and human health impacts, associated with the use of said chemical pesticides, such as Atrazine which had received enormous amounts of adverse publicity in the years immediately preceding its publication? It is apparently illegal to claim that Atrazine has been banned, particularly in Europe, where authorities have simply refused to approve its use! In France where Atrazine use ceased 20 years ago, traces are still found in water supplies today.

Professor Eugene Hayes, PhD Professor at the Laboratory for Integrative Studies in Amphibian Biology, in the Department of Integrative Biology, University of California, Berkeley, USA, had already published his findings that Atrazine 'chemically castrated' frogs, by converting testosterone hormones into estrogen, at levels as low as 0.1 part per billion <www.atrazinelovers.com> (see also documentaries “Silent Spring to Silent Night”, and “Men in Danger”, shown on SBS TV, April 08). Surprisingly, Hayes found that higher doses of Atrazine had little effect on the amphibians, and concluded that the lower doses entered under the radar of the frog's immune system, which kicked in only when confronted by higher doses. His emphatic conclusion – **small doses matter!**

Manufacturers of Atrazine, Novartis/Syngenta, initially contacted Hayes in 1998 to conduct research into the product, and needless to say were not happy with the results. In moves reminiscent of the tobacco industry's reaction to claims of a connection between cigarette smoking and a raft of health problems, the pesticide industry heavily criticised Hayes, claiming the results of his studies have not been able to be replicated, even though they have.



Dr. Tyrone Hayes

In rivers, downstream of areas where agricultural use of Atrazine had run off into the waterways, Hayes found that frogs were smaller and had larger heads than those living above the intake point.

That was not all; Hayes also undertook studies into effects on humans and found that sperm levels were dramatically reduced in men who worked with the chemical.

Atrazine, and another Triazine-based herbicide Simazine, run equal second to the most commonly used herbicide in Australia, Roundup, both averaging about 3,000 tonnes per year in 2002, and both having applications in agriculture and forestry (Roundup usage is about 15,000 tonnes annually).

There is no attempt by the federal government's “Summary Report” to deny the widespread use of chemicals, from herbicides and insecticides, to fungicides and straight out poisons to kill **“declared pest animals such as rabbits and browsing native animals.”** In Tasmania, wallabies are a declared pest, and there is undeniable evidence that a range of native fauna from Bettongs to Possums fall victim to the 1080 laced carrot baits, apparently acceptable as unavoidable collateral damage.

The Summary Report's strategy to downplay the effects of chemical use in plantations, is to point out that, in dollar terms, the industry's use of pesticides amounts to just 0.7% of the national total. This use of monetary comparisons can be highly misleading, with some commonly used chemicals such as Roundup (Glyphosate) being extremely low cost, allowing the millions of tonnes used annually to compare with perhaps a thousand tonnes of a much more expensive compound.

The comparison is also misleading in that it makes the assumption that all pesticides have equal negative impacts, implying that the 0.7% of chemicals used in plantations, equals 0.7% of the environmental and human health impacts.

The Summary Report virtually ignores insecticide use in plantations, stating (page 3): **“Pesticide spending is estimated to be 99% on herbicides, and 1% on insecticides.”** Apparently that 1% deemed too insignificant to identify the chemicals used. Where the acknowledged use of fungicides and poisons such as 1080 fit into this 100% is not explained. Nevertheless, despite listing 12 herbicides used in plantation management (Table 1), not a single insecticide or fungicide is named.

It seems that even the list of 12 herbicides is not complete, with Paraquat, a highly toxic compound commonly mixed with Glyphosate, and known to be used in plantations on the NSW north coast, not mentioned (perhaps Paraquat is included under another chemical name).

For Eucalypt plantations herbicide mixtures are applied prior to planting. Chemical fertilizers are applied at planting, and further herbicide is used to address weeds within the first 2 years. After this various insecticides and fungicides are required to combat problems attracted to these monocultures.



Land sprayed with a cocktail of herbicides for quick knock-down of all vegetation.



Rows of weed infested saplings sprayed with selective herbicide

Despite all the above, there is no mention of any negative environmental or social aspects of chemical use in the report, and the only conclusion made is: ***“The use of pesticides in plantation forestry is limited, restricted to particular stages of crop development and actively regulated.”***

That active regulation is restricted to written legislation only. There is no requirement anywhere in Australia, except Tasmania, for monitoring and reporting on chemical levels in waterways. That fact is acknowledged in the Summary Report (page 12), claiming: ***“monitoring of chemical pesticides mainly occurs on “as needs” basis or in response to perceived risk of off site movement. Individual plantation forestry managers may conduct water sampling associated with operations and report these as part of compliance with code of practice or other regulatory requirements...”***

The report, dated September 2006, states that: ***“The only systematic program of water sampling relevant to plantations is in Tasmania,*** explaining that quarterly sampling for 19 active ingredients across 54 sites began in January 2005, at which time no detections were made. However, ***“There have subsequently been four detections generally below guideline values, and all below health values.”***

The fact that poisonous chemicals are turning up in waterways within 18 months, and some already exceeding guidelines, has to be a major concern, given the most commonly used chemical, Atrazine, persists in water for over 20 years (see below), and will ultimately travel downstream and impact the marine environment.

In the Clarence Valley, 'as needs' regulation only occurs when third parties report incidents or breaches of the Pesticides Act, an Act that is administered by a separate government department (DECC) to that which administers the P&R Act (DPI). **A representative of the Grafton Office of Environmental Protection and Regulation section of DECC, admitted there are no requirements in NSW to monitor water quality after spraying, and that he was unaware of any individual plantation forestry managers conducting water sampling associated with their operations, and doubted if there ever had been.**

It should be noted that the North Coast Region, covering the area from the Queensland border to Kempsey in the south, has only one trained, full time pesticide inspector.

At Coaldale, west of Grafton in the Clarence Valley, there were two reported incidents of chemical drift from Aerial spraying affecting neighbouring properties in 2007. Residents experienced headaches and nausea and were advised to remove down-pipes to their drinking water tanks as a precaution. They also reported a number of flying-fox deaths, the cause of which has not been confirmed. The operators denied using Simazine (Daily Examiner 31st January 2008), but were fined when traces of Simazine were detected in samples taken from two neighbouring sites by the EP&R.

The potential consequences of exposure to these chemicals are not widely advertised. The labels spell out the safety precautions to be taken by spray operators, and possible symptoms, but nothing to alert innocent bystanders.

Responding to a letter outlining these concerns the Minister, Verity Firth's office, appeared to completely miss the potential seriousness of such occurrences, suggesting that: *“Area Health has recommended the fitting of first flush devices to drinking water tanks “to limit (not prevent altogether) the amount of sediment entering water tanks.”* We were talking about people's drinking water, and these chemicals are linked with a wide range of organ failures, birth defects, and cancer. It is frivolous to consider fitting first flush devices to water tanks, when children's play equipment, washing lines, swimming pools, and even garden lawns are covered by these poisons.

So what is the status, and the potential impacts to humans and the environment of some of the chemicals known to be widely used in the plantation forest industry? The following pages detail the actual, and suspected effects of these chemicals on the environment, and on human health, as identified by the US Environmental Protection Agency (EPA), the Australian Pesticides and Veterinary Medicines Authority (APVMA), and various Internet sources. In the case of Atrazine, we have also included extensive research documented on the <www.atrazinelovers.com> website. That site, and all others quoted in the attachment, provide extensive references to all the published findings.

* * *

Impacts and effects of chemicals used in Australian plantation forestry

• Atrazine:

According to Professor Tyrone Hayes, an expert on Atrazine, having put in a decade or more of research into the chemical (www.atrazinelovers.com): *“Atrazine is the second largest selling pesticide in the world (largest up until 2001). It is an herbicide (weed-killer) used primarily on corn, but also on crops such as sorghum, sugar cane, and Christmas trees. Also of note, it is used in forestry after tree harvesting.*

Atrazine is the most common pesticide contaminant of ground and surface water. It is also highly mobile and can travel in rainwater. A half million pounds of atrazine return to the earth in rainfall and snow in the United States every year. Atrazine is also highly persistent and remains in groundwater... . Further, atrazine has persisted in groundwater in France, even though it has not been applied there for 15 years. Thus, even if atrazine use was stopped today, it would be another generation (at least) before the environment is atrazine-free.

Hayes' research has shown that: *“In laboratory rodents, atrazine-induced estrogen production and causes reproductive cancers (prostate cancer in males and breast cancer in females) to develop. In fact, female rats exposed to atrazine, will produce male offspring with prostate disease, if dams (mothers) are exposed while pregnant or suckling.*

Atrazine also causes immune system failure in animals. This effect has been shown in amphibians and laboratory rodents. In amphibians, atrazine exposure impairs immune function and increases susceptibility to disease.”

When Friends of the Earth invited Professor Hayes to visit Australia in 2007, they released a statement informing that: *“Women exposed to atrazine via well water have been shown to have a higher risk of getting breast cancer and men working in factories where atrazine is produced have an 8% increase in the risk of getting prostate cancer.”*

Other researchers, reported on the Atrazine Lovers website, claim that: *“After 49 years of using atrazine at or above 80 million pounds per year, many target weed species have become atrazine-resistant. In fact, the number of documented atrazine-resistant “super” weeds number more than 80. No other herbicide has produced such dramatic effects on the evolution of weeds.”*

Perhaps the most concerning aspects of Atrazine pollution are its impacts on marine ecosystems, with studies showing that: *“In salmon, the atrazine-induced increase in stress hormones in fresh water smolt, impairs the ability of exposed fish to return to the ocean leading to high mortality in these commercially important fish.*

In fish, atrazine decreases growth and causes hyperactivity and erratic swimming... Similarly, tadpoles exposed to low levels of atrazine show erratic swimming behavior that would predictably lead to energy wasting and increased encounters with predators.”

The US National Oceanic and Atmospheric Administration found that, *“...atrazine negatively affects marine phytoplankton. These microscopic organisms serve as food for other organisms such as clams and oysters and the effect of atrazine is likely reflected throughout marine food webs: Phytoplankton serves as food for zooplankton which is in turn food for many larval and young fish and several species of whales.”* The long term implications for marine ecosystems if Atrazine continues to leach into the oceans, are serious in the extreme.

A review of Atrazine by Pan International concluded: *“Atrazine is a pesticide of major concern for a number of reasons including possible negative health effects, effects on aquatic organisms, levels in drinking water and the development of resistance. Whilst it is becoming less widely used, the effects of its long-term persistence may still cause health and environmental problems in the future.”*

The US EPA lists: *“Short-term: Health effects when people are exposed to atrazine at levels above the MCL (maximum contamination level) for relatively short periods of time: congestion of heart, lungs and kidneys; low blood pressure; muscle spasms; weight loss; damage to adrenal glands.*

Long-term: Atrazine has the potential to cause the following effects from a lifetime exposure at levels above the MCL: weight loss, cardiovascular damage, retinal and some muscle degeneration; cancer.”

In December 2004, despite all this information, the Australian APVMA released the [Atrazine Second Draft Final Review Report](#) and *“found that atrazine does not pose a risk to human health but non-agricultural uses might pose a possible risk to the environment. Changing the instructions on product labels would significantly reduce or eliminate these risks.”*

To achieve this, *“The APVMA recommended strengthening label warnings to reduce chemical handling by workers, and to reduce drift and runoff into water bodies.”*

How this latter can be achieved when there is no compliance monitoring, and operators are able to aerial spray, using helicopters, to apply this highly mobile chemical within 20 metres of waterways, is a mystery.

- **Glyphosate (Roundup)**

Roundup, the world's most commonly used herbicide, was initially sold as being biodegradable. The public was assured it became inert immediately on contact with the soil. Subsequently, it was found to be toxic to frogs, so the manufacturers developed a frog-friendly version.

However, the biodegradable claim was eventually deemed to be false advertising, and the manufacturers, Monsanto, were forced to remove the claim from all packaging and advertising.

A writer for "Environmental Health Data Search" sums up the information on Glyphosate very accurately explaining: *"When I read in a recent newsletter of the Wildflower Society of Western Australia that there was a "clear link" between glyphosate and a form of cancer, I naturally went to the internet to see what was there. I entered the search words "glyphosate" and "cancer" and found a plethora of sites. After several hours of browsing, I came to two inescapable conclusions:*

1. Glyphosate is the most dangerous chemical ever released into the environment: acutely toxic, carcinogenic, persistent, and yet mobile so that water is also contaminated.

2. Glyphosate is the most benign and beneficial chemical ever discovered: of low toxicity, non-carcinogenic, rapidly decomposed in soil, and immobile.

However, the US EPA states Glyphosate is regulated, in part, because of the following health effects:

"Short-term: EPA has found glyphosate to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: congestion of the lungs; increased breathing rate.

Long-term: Glyphosate has the potential to cause the following effects from a lifetime exposure at levels above the MCL: kidney damage, reproductive effects." They do not enlarge on, or explain types of potential 'reproductive effects'.

The Wikipedia website claims (all fully referenced to an impressive list of 28 studies) that:

"There are concerns about the effects of glyphosate (and Roundup) on non-plant species even including on possible human reproductive dysfunction. Indeed, Denmark banned glyphosate in 2003 when it confirmed it had contaminated the country's groundwater." This would further support findings that the product is not biodegradable.

Such is the confusing mass on information available. **The single most important conclusion should be that a precautionary approach must be taken to ensure the greatest level of protection for the environment and human health, and this means the use of Glyphosate must be minimised. Currently it is not only being widely applied in broadacre agriculture and plantations, but sprayed about with gay abandon in drains; along roadsides and waterways; along fence-lines; in backyards, on sporting fields, and in school grounds.**

• **Simazine:**

Simazine is a very closely related chemical to Atrazine, both being Triazine based.

The US EPA's website shows the following:

"Short-term: EPA has found simazine to potentially cause the following health effects when people are exposed to it at levels above the MCL for relatively short periods of time: weight loss, changes in blood."

However: "Long-term: Simazine has the potential to cause the following effects from a lifetime exposure at levels above the MCL: tremors; damage to testes, kidneys, liver and thyroid; gene mutations; cancer."

How someone who is exposed to chemicals in the field, such as those at Coaldale, can determine whether the exposure was above or below the MLC, isn't explained.

Incredibly, Simazine is also sold over the counter for killing algae in backyard swimming pools, and domestic fish tanks. It is doubtful if this category of users would know how much water is in their pools, and some may not even be able to read the instructions, so are unlikely to get the mix

right. Nevertheless, they are responsible for pouring this poison into the water where their children will spend much of their spare time absorbing it, while the potential long-term effects of the exposure are not known.

- **Dimethiote:** (commonly marketed in Australia as Rogor) is an **organophosphate** insecticide used to kill mites and insects systemically and on contact.

Regulatory Status: In the USA, Dimethoate is considered a moderately toxic compound in EPA toxicity class II, and we read under the heading - Acute toxicity that: ***“Dimethoate is moderately toxic by ingestion, inhalation, and dermal absorption.”***

However, according to Exttoxnet's “Pesticide Information Profiles” ***“Symptoms of acute exposure to organophosphate or cholinesterase-inhibiting compounds may include the following: numbness, tingling sensations, incoordination, headache, dizziness, tremor, nausea, abdominal cramps, sweating, blurred vision, difficulty breathing or respiratory depression, and slow heartbeat. Very high doses may result in unconsciousness, incontinence, and convulsions or fatality. Persons with respiratory ailments, recent exposure to cholinesterase inhibitors, impaired cholinesterase production, or liver malfunction may be at increased risk from exposure to dimethoate. High environmental temperatures or exposure of dimethoate to visible or UV light may enhance its toxicity”.***

The Exttoxnet bulletin goes on:

Effects on Birds:

“Dimethoate is very toxic to birds. Birds are not able to metabolize dimethoate quickly like mammals (White-Stevens. Pest. in Environ. Vol. I. 1971). 7 mg/kg of dimethoate will kill one-half of the wild birds exposed (LC50). The LC50 for birds in general is 22 mg/kg of dimethoate (NIOSH RTECS Online File 84/8310).

Effects on Aquatic Organisms:

Dimethoate is highly toxic to fish and to aquatic invertebrates.

Effects on Other Animals (Nontarget species)

Dimethoate is highly toxic to honey bees. The 24-hour topical LD50 for dimethoate in bees is 0.12 ug/bee. The 24-hour oral LD50 in bees is 0.15 ug/bee. It is very toxic to livestock (Clarke. Vet. Tox. 1981) and other wildlife. Oral LD50's range from 30 mg/kg (humans) to 400 mg/kg (dogs) (NIOSH RTECS Online File 84/8310). Dimethoate is 300 times more toxic to insects (house flies) than to mice.”

In Australia and the US, Dimethoate is registered for use against a wide range of agricultural and plantation pests. It is also sold over the counter for use in home gardens.

- **Fastac duo (*alpha-cypermethrin*):**

Animal studies undertaken into the effects of Fastac duo, ***“indicate repeated or prolonged exposure to alpha-cypermethrin can act on the nervous system and produce excitatory effects.”*** In humans: ***“Breathing vapour can result in headaches, dizziness, and possible nausea. Breathing in high concentrations of vapour can produce central nervous system depression. Which can lead to loss of co-ordination, impaired judgment, and if exposure is prolonged, unconsciousness.***

The APVMA see no obstacles to using the material as per manufacturer's specifications. Nevertheless, withholding periods under Australian regulations (for Chick peas) are:-

- Do not harvest for 21 days after application.
- Do not graze or cut for stockfood for 35 days after application.

There are no checks in place to ensure these chemicals are used as per manufacturer's recommendations, There is no requirement for users to notify neighbours as to what chemicals are being used, there clearly are toxic effects, and while landowners may know to remove stock from sprayed areas for 35 days, herbivorous wildlife will not be so informed and are at risk.

Cynamid Agriculture P/L has published a Materials Safety Data Sheet, warning Fastac is: *“Dangerous to bees, do not spray on any flowering plants while bees are foraging.”* And also: *“Dangerous to fish and aquatic invertebrates such as yabbies. Drift and runoff from treated areas may be hazardous to fish and crustaceans in adjacent sites.”* In broad-acre plantations, which are planted to within 20 metres of wetlands and waterways, the aerial spraying of these materials makes it impossible to comply with the above requirements.

Having given Fastac duo the green light, Cynamid is quick to publish a disclaimer explaining: *“The information provided is based upon sources believed to be accurate. However the company assumes no responsibility for the accuracy, completeness, or suitability of this information.”*

• **Paraquat:**

Pan UK's website reports: *“Paraquat is one of the most widely used herbicides in the world. It has had a tarnished reputation because of its acute oral toxicity and ill-health associated with operators - particularly in the plantation sectors of many developing countries. Paraquat is an extremely toxic substance.*

According to Centre for Disease Control and Prevention: *“Because paraquat is highly poisonous, the form of it that is marketed in the United States has a blue dye to keep it from being confused with beverages such as coffee, a sharp odor to serve as a warning, and an added agent to cause vomiting if someone drinks it. Paraquat from outside the United States may not have these safeguards.*

The report continues:

Ingestion of small to medium amounts of paraquat may lead to development of the following adverse health effects within several days to several weeks:

- *Liver failure*
 - *Kidney failure*
 - *Heart failure*
- Lung scarring (may evolve over several weeks)*

However: *“If a person survives the toxic effects of paraquat poisoning, long-term lung damage (scarring) is highly likely. Other long-term effects may also occur, including kidney failure, heart failure, and esophageal strictures (scarring of the swallowing tube that makes it hard for a person to swallow).*

People with high-dose exposure to paraquat are not likely to survive.”

Things don't get any better with the report continuing: *“Paraquat is highly toxic to animals and has serious and irreversible delayed effects if absorbed. As little as one teaspoonful of the active ingredient is fatal. Death occurs up to 30 days after ingestion. Absorbed paraquat is distributed via the bloodstream to practically all areas of the body. The lungs selectively accumulate paraquat, and therefore contain higher concentrations than other tissues. This develops into pulmonary oedema and other lung damage, leading to fibrosis. Liver damage occurs and renal failure may follow as the kidneys remove absorbed paraquat.”*

In Germany *“The federal biological institute (BBA) asserted in 1983 that repeated treatments of paraquat led to an accumulation in the soil and damage to crops. It refused to re-register paraquat products, but this was challenged in the courts by ICI. In 1992 the Court ruled that*

the BBA was justified but also ruled that registration should be granted to a new ICI formulation of only 10% paraquat, which was re-approved later that year. Field crop applications are permitted only once every four years, and only in areas at risk from erosion. Wider registrations were refused because of effects on the environment”

In Australia Paraquat is widely used in the plantations industry, often mixed with Glyphosate as is currently happening in the Clarence valley, to ensure a quick kill of all vegetation prior to planting trees.

* * *

Plantation issues Water usage

Young vigorous growing Eucalypt plantations are known to use excessive water, impacting on local creek and river flows. In some situations, they can also encourage soil salinity by preventing runoff which would otherwise flush the salt into the river systems.

Forests NSW, in their “Draft Ecologically Sustainable Forest Management Plan” acknowledged the impact of plantations on groundwater, which in turn sees a reduction in available water for streams and rivers because growing forests **“act as water pumps”** (page 11 of the Plan), and use more water than mature forests. Some States, specifically South Australia, have enacted legislation requiring some plantation owners to take out water licenses even when irrigation is not anticipated.

The 2nd International Salinity Forum, 30 March - 3 April 2008, at the Adelaide Convention Centre, was told that scientists working with the Victorian DPI had found that: **“Impacts of stream flow and salt load over a 30-year rotation (of some Eucalypt plantations) covering the entire plantable area, plantations reduced stream flow relative to current practice by 11% to 50% depending on sub-catchment, whilst salt loads to streams were reduced by 5% to 46% depending on sub-catchment.”** However, most Eucalypt plantations on the NSW north coast are 15-year rotation, thus locking the industry permanently into the fast growing, high water use, stage.

The Federal Government's distributed literature downplays the problems with water in the following publication. The Clarence Environment Centre takes this opportunity to expose the realities of plantation induced water shortages.

Plantations and Water Use (Australian Government, Bureau of Rural Sciences) Department of Agriculture, Fisheries, and Forestry. Authors - Parsons, Frakes and Gerrand, August 2007.

Key Point, as identified in the document:

“Competition for water has become a major issue in many catchments around Australia. Plantations are a relatively minor land use across Australia and currently occupy a few percent of most catchments. However, because trees use more water than pasture, plantation expansion has become an issue in catchments where water is in short supply.”

SCIENCE *for* DECISIONMAKERS

Plantations and Water Use

Mark Parsons, Ian Frakes and Adam Gerrand

This opening paragraph lulls us with the assurance that plantations are only a minor problem, and then only in **“catchments where water is in short supply.”** Perhaps local government authorities across southern Australia, all of which are forced to regularly apply water restrictions on their long-suffering ratepayers, would love to know the location of these plentiful water catchments.

To reinforce their assurances in relation to water and plantations, the authors quote research undertaken by highly regarded organisations such as the ANU and the CSIRO. However, we doubt if any of that work suggests that plantation forestry has little or no impact on water supplies.

If we accept the key point that plantations are a problem in catchments where water is in short supply, the authors must be seen as being deliberately misleading. All catchments across southern Australia experience water shortages, therefore, plantation expansion must be an issue everywhere.

The key points continue, rightfully claiming: *“The effects on runoff of land cover change such as reforestation depend on the proportion of the catchment affected. Because rainfall and hydrological factors are highly variable, in small catchments it is difficult to measure an impact if reforestation is less than 15-20% of total catchment area. This threshold is lower in larger catchments. Stream flow from small sub-catchments may become more intermittent if a large proportion is reforested.”*

However, another key point made, that must be questioned given the extent of the area concerned, is: *“The plantation forestry industry reports that it is aiming to increase the plantation area in the headwater catchments of the Murray Darling Basin by a total of less than 50,000 hectares by 2020. Studies of two catchments in that region indicate that such forecast plantation expansion may reduce stream flow by up to about 1%. At a local scale, and in particular years, the impact may be significant if new plantations are concentrated in particular subcatchments.”*

The plantation forest industry's assertion that it only expects to expand the plantation estate in the Murray Darling by 50,000 hectares over the next 15 years, seems highly conservative, given the same industry has probably planted more than that in the Clarence Valley in just five years. The disturbing prediction of a further 1% reduction of flow in the already stressed Murray Darling Basin as a result of that predicted expansion, is then answered by claims that: *“Guidelines can be developed to minimise the impact of reforestation on water supplies. For example, water use is less if plantations are located in elevated parts of catchments or in lower rainfall zones, or if distributed in smaller blocks across a catchment. Water use is also reduced for several years after a plantation is thinned.”*



A clearly stressed Clarence River in northern NSW, reduced to a trickle in 2007, not even a drought year. This catchment has seen unprecedented plantation development in the past decade, a clear concern for environmentalists and an ever increasing number of farmers.

If water is available, plantations will use x amount per hectare regardless of whether they are small or large, on elevated land or lower down the catchment. In fact, smaller plantations, spread through a multitude of subcatchments would potentially take a significantly greater percentage of available water, particularly in dry times, than if they were established in one subcatchment. The only effect lower water supply has on trees is slower growth.

From the outset, the plantations and water use document makes the point that: ***“Plantations are a relatively minor land use across Australia”***, in a deliberate effort to downplay any significant impact on water or the environment. The document virtually ignores hardwood (Eucalypt) plantations with only three references in the entire 12 page production, those being:

- ***“Since the 1980s, most plantations—pines and eucalypts—have been established on sites from which the forest was cleared many years previously to provide farmland.” While this is essentially true, under the NSW Plantations & Reafforestation Act, significant tracts of remnant forest, large numbers of old growth habitat trees, and 18 year old 'regrowth', can legally be bulldozed to plant trees that will be harvested for wood pulp within 15 years. There are no tax breaks for wood-chipping that regrowth, so it is all burned.***
- ***“Because pines have a longer production period than Eucalypts, they tend to intercept more water and therefore require a larger water access entitlement.” This is deliberately misleading because, while a 30 year pine plantation production period might require more water than a 15 year Eucalypt period, the fact that there are two cycles of Eucalypts to each one of pine is ignored. It is well established that broad leaved Eucalypts, particularly Blue Gums, will intercept more water than pine trees if the water is available.***
- ***“Eucalypt plantations are typically grown on a cycle of 10 to 15 years and some of these are also thinned. As a result of these fluctuations in water use during the production cycle, only a proportion of a plantation estate will be at peak water use at any given time.” We have yet to learn of any 10 to 15 year cycle Eucalypt plantations being thinned, while the argument about peak water cycles is pure semantics.***

Again, the water use report's comments appear to be designed to downplay the impact of plantations on water and the environment, particularly Eucalypt, so we draw attention to the results the Glenelg Hopkins CMA's five year study by consultants, Sinclair Knight Merz (SKM), into water and land that found deep-rooted vegetation like blue gums use more water than other agricultural enterprises.

The study was commissioned because of unprecedented speed of land use change in south-west Victoria over the past 10 years. SKM said, ***“the scale and change of land use - and what's anticipated in the next 20 years - were so great they may transform the amount and quality of water moving through the landscapes of south west Victoria”***. These changes, according to SKM, ***“may have profound implications for the region's water dependent ecosystems.”***

This is a very different picture to that painted by the government sponsored document which could have been written by representatives of the plantation industry. Nowhere does it admit to any adverse environmental impacts. A word search for “drought”, “decrease in water”, “diminished flows”, or “disease”, failed to find a single occurrence.

However, the government was careful to distance itself from the contents of the document with the following disclaimer: ***“The Commonwealth of Australia acting through the Bureau of Rural Sciences has exercised due care and skill in the preparation and compilation of the information and data set out in this publication. Notwithstanding, the Bureau of Rural Sciences its employees and advisers disclaim all liability, including liability for negligence, for any loss, damage, injury, expense or cost incurred by any person as a result of accessing, using or relying upon any of the information or data set out in this publication to the maximum extent permitted by law.”***

Odd that!

* * *

Plantation Issues

Environmental damage and Biodiversity loss

Plantation Forestry of the type currently being widely undertaken, using eucalypt monocultures for short-term rotation wood-chip and biofuel production, is having an unacceptable environmental impact. The impact on water resources, and the impacts of excessive chemical use on human health and the environment, are covered in separate sections of this report. This section concentrates on other environmental issues including:

- The excessive clearing of forest remnants and habitat trees, is adding to the plight of threatened species, and major loss of biodiversity.
- Because the trees planted are usually alien to the area being developed, there is potential for a repeat of the Cadage Gum experience, with the spread of these species into wilderness areas, national parks and forests. Likewise the potential for cross-pollination is never assessed.
- Erosion and siltation of waterways. We have yet to see any erosion control measures being undertaken in any of the many plantations that we have investigated. Erosion issues appear to be very low on the list of the developer's priorities.
- A plantation surrounding wetlands where there is only a 20 metre buffer zone, will become off limits to the larger aquatic birds with low trajectory take-off ability, requiring open air not trees in close proximity to their habitat, such as Black Swan and the endangered Black-necked Stork.
- The cost of land preparation, plantation management, and transport of wood-chip to export ports is expensive, not only in dollar terms, but emits significant amounts of greenhouse gases.

Loss of Habitat

In Australia, there are literally hundreds of fauna species, birds, reptiles and animals, that are tree hollow dependent, either for nesting or roosting. Others are dependent on tree-hollow dependent species for their own food.

On the north coast of NSW alone, there are approximately 30 hollow-dependent threatened fauna species, their decline in numbers all put down to loss of habitat. Every single habitat tree that is removed, further diminishes that habitat, pushing those species ever closer to extinction.

As described in detail above under the heading “Inadequacies of the Plantations and Reafforestation Act 1999, and 2001 Code of Practice”, loopholes exist in the Act allowing any remnant vegetation measuring less than 100m x 100m to be clear felled, as long as it is not listed for conservation (e.g. Endangered Ecological Community). It also allows the destruction of all habitat trees in excess of one tree per hectare, and the removal of irregular projections from adjoining forest if they are an impediment to the efficient operation of the plantation.

Even the small concession made in the Code to retain one habitat tree per hectare is wiped out by an exemption allowing any habitat tree to be removed as long as 10 or 20 trees (depending on its size) are planted, or allowed to regenerate in its stead. The fact that it will possibly take 200 years before the new trees effectively replace those old trees, to the point they will provide the same level of habitat, is seemingly ignored or considered immaterial.



Threatened Brush-tailed Phascogale

As a result many plantations have been cleared of all existing vegetation, a huge environmental impact resulting in major loss of biodiversity.

Risk of Intergrading

Because the trees planted are invariably alien to the area being developed, or sometimes specially hybridised species, there is a potential for a repeat of the Cadage Gum experience, with the spread of these species into wilderness areas, national parks and other native forests.

Likewise the potential for cross-pollination is never assessed.



Typical plantation cleared of habitat trees, such as those in the foreground

The Cadage Gum from north Queensland was introduced into NSW about 30 years ago by the then NSW Forestry Department. It has now intergraded with the local Spotted Gum species, *Corymbia henryi*, with potentially catastrophic consequences for the long-term future of Spotted Gum as a timber resource. The spread of Cadage Gum into native forests across the north coast of NSW is predicted to rival Camphor Laurel as a noxious pest in years to come.

Authorities have no checks and balances in place to identify or monitor further possible disasters resulting from this trend in planting of alien species.

Erosion:

We have yet to see any meaningful erosion control measures being undertaken on the any of the plantations we have investigated. Erosion issues appear to be very low on the list of the developer's priorities, but one that needs to be addressed.

It appears the plantation developers 'mound' up the tree rows along the contours ostensibly to prevent erosion. However it seems likely this is being done in order to intercept as much water as possible from entering creek lines.



A typical wetland, surrounded by plantation. As the trees grow, larger water birds will be unable to exit the site.

Isolation and pollution of wetlands.

A plantation surrounding a relatively small wetland leaving only a 20 metre buffer zone, will become inaccessible to larger aquatic birds with low trajectory take-off ability such as Black Swans and the endangered Black-necked Storks, which require open air, not trees in close proximity.

There is currently no requirement for fauna studies that will take this aspect into consideration, or assess the impact on fauna, unless there are already official records of threatened species on the site.

The runoff, or wind drift, of chemicals into wetlands cannot be avoided. Products such as Atrazine, and Fastac Duo, that have the potential to eliminate frogs, and kill fish and other aquatic life, will create a huge gap in the vital food chain which will impact, not only on water birds, but a range of other birds, small mammals, and reptiles.

Climate Change Implications

Climate change is without doubt the greatest environmental challenge facing us today, and will likely be the greatest impact on the planet since the extinction of the dinosaurs. We have been told to dramatically reduce emissions of greenhouse gases starting now. One way help is to plant trees, but for that to be effective, the carbon has to remain sequestered in the tree or the timber it produces. What is currently happening, with 98% of all hardwood plantations supplying wood-chip, is having the opposite effect, and seriously contributing to greenhouse gas levels in the atmosphere.

The Federal Government's spin on this is expressed in a glossy 20 page production titled "**Forests Wood and Australia's Carbon Balance**", which repeats 'ad nauseum' the numbers of tonnes of carbon stored in timber used as lumber, and tonnes of CO₂ that have not been pumped into the atmosphere thanks to plantation forests.

The opening statement in the Federal Government's publication (item 1 page iii), states: *"Forests in Australia store an estimated 10.5 billion tonnes of carbon (excluding soil carbon). The carbon store has been built through the forest plants having removed almost 38.5 billion tonnes of carbon dioxide from the atmosphere, about 70 times Australia's annual net greenhouse gas emissions."*

At a glance, Mr Joe Public, who believes much of what government tells him, probably fails to grasp that the impressive amount of stored carbon is, in the case of many old-growth trees, the net result of a thousand years or more of growth. He may also fail to appreciate that, at 2004 rates, carbon that it took nature a thousand years to store, we in Australia will return to the atmosphere in just 70 years. This is being achieved by burning ancient fossil forests, oil, coal, and gas, while at the same time destroying much of the growing forests through both legal and illegal clearing which we see going on all around us.

However, even the most optimistic of us cannot help to notice comments such as that explaining (page 3): *"Emissions from exported wood products (including woodchips) are reported in the national inventory of the importing country."* Isn't that convenient, when wood-chip for paper will end up producing methane in landfill or being burned within the year!! But then they claim that: *"Wood and paper products produced in Australia in 2004 stored a net 5.3 million tonnes of carbon."*

This comment is supported by a photograph of two relatively entire sheets of paper they claim to have exhumed from landfill after 20 years. How they would reconcile this with other literature encouraging us to compost paper, isn't mentioned. Certainly we would not support the claim that paper is a carbon sink. In fact, Southern Cross University studies currently being undertaken, estimate the carbon life of wood-chip to be an average of three years.

The carbon storage life of most paper products is extremely short: Newspapers, cartons, hand towels, toilet paper, tissues etc, having caused major air and water pollution during manufacture will, as explained above, end up as CO₂ or methane emissions within months.

Figure 9 shows: *"The fossil-fuel displacements that can be obtained for a Eucalypt plantation (15 years rotation) in northern NSW"*, claiming: *"The harvested biomass is used for bioenergy."* This is clear deception. **Few, if any, hardwood plantations will be used for bioenergy production.**

Another clear deception is the claim (page 2) that, *“the coarse roots of the hardwoods studied remained intact for 25 years after harvest, with up to 50% of the roots still present 85 years after harvest.”* While roots can survive for long periods, in a plantation context stumps have to be bulldozed and burned to allow machinery access for replanting and operation of the next cycle. Few roots survive. Some plantation operators claim the stumps will remain in the ground, and planting will be done between them. Sooner or later they won't be able to plant trees for stumps.

From machinery emissions during clearing, to the burning of all cleared vegetation prior to planting. From the emissions of machinery used in land cultivation, and regular application of chemicals, to the emissions involved in the mechanical harvesting and wood-chipping of the trees. From the emissions of transport taking wood-chip to export terminals, to the air and water pollution produced during the paper production phase. Then finally to the burning of residues left after harvest, which has to be removed before the entire deadly process begins all over again. All of this adds up to serious CO₂ pollution which the world cannot afford.

In conclusion

We can think of no positive environmental outcomes from the current trend in short rotation hardwood timber cropping for export wood-chip, or biofuel production. We feel plantations must be multi-species to encourage biodiversity and eliminate chemical dependence, and preferably be allowed to mature into forests for sustainable logging in perpetuity. This would remove the current pressure on State forests, would provide a long-term carbon sink, and re-enhance biodiversity.

* * *

Plantation Issues

Managed Investment Schemes

Background.

Managed Investment Schemes (MIS) are nothing new. They are business enterprises in which investors can purchase a share and then be considered to be carrying on a business, and derive all the benefits that apply to business operators, particularly by way of tax write-offs or negative gearing.

Several years ago, in a move to encourage the planting of timber trees to take the pressure off native forests across Australia, the federal government decided to allow a 100% tax deduction to investors in tree-planting schemes.

There are now (2007) 17 managed investment scheme companies operating in the forestry sector, and are now so prevalent they have their own industry body, Tree Farm Investment Managers Australia, part of Australian Forest Growers. This group, whose membership includes companies such as Great Southern Plantations, Timbercorp, Willmott Forests, Forest Enterprises of Australia, ITC, Northern Tropical Timbers, Tropical Forestry Services, and Bioforests, is now responsible for 80-85 per cent of all the funds raised in the last few years.

Investors may be other businesses, superannuation funds, or private individuals. Typically, at the end of the financial year a cash-strapped business or individual, faced with a tax bill, will speak to a financial adviser who will say "have I got a deal for you", just invest in tree planting and you no longer have a tax problem. An avalanche of money has flowed in ever since, growing at an average of 6% per year, totalling \$1.14 billion dollars last financial year. Today 38% of Australia's plantations are in the hands of superannuation or managed investment funds (Australia's plantations 2007, Inventory Update, page 5), overtaking governments in the percentage of plantation ownership.

Since this legal tax avoidance scheme was introduced, the woodchip industry has hijacked the saw-log business, with approximately 94% of all hardwood plantations by 2010 to be harvested on a 10 to 15 year cycle for woodchip (Australia's Plantation Log Supply, 2007, page 3).

Prue Adams, reports for the Landline program, talking about how the investment works. She explains: *"... Melbourne based firm, Willmott Forests, manages more than 300,000 hectares of commercial plantations on behalf of its 3,500 investors. Most of the trees are in south-east NSW and just over the border in Victoria... . Investors buy a half hectare woodlot for just over \$4,000, then they're automatically called 'a grower' and can visit their woodlot. The promoter plants the trees and maintains them.... At year 13, the trees are thinned, and this is when income starts to flow and some fees have to be paid. Importantly, while the investor owns the trees, Willmott retains ownership of the land."* **These companies are now among Australia's largest landowners.**

Many stock market analysts such as Steve Johnston believe the predicted returns from these woodchip plantations are dubious. World wood-chip prices are reportedly falling with a glut of product on the market. In some areas on the north coast of NSW plantations are being bulldozed because of poor performance, and then replanted with the insurance money. Who the losers or beneficiaries will be in the long term is anyone's guess; there have even been suggestions that the developer is claiming further tax concessions for the second round of planting.

The fact that many of these schemes are being promoted as 'green' is yet another concern, and the Clarence Environment Centre has asked the Total Environment Centre and the Nature Conservation Council, to include plantation forestry on their lists of unethical investment opportunities.