



50 Shades of Green

Submission in response to Climate Change Commission
Draft Advice to Government

ABSTRACT

New Zealand's hard won export markets built up over many years are an essential lifeblood for our economy, **if nothing changes to limit land use change to exotic pine, it is game over for regional NZ. We need a mechanism and Government needs to signal it quickly**

50 Shades of Green, 25 March 2021

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Executive Summary

We must protect what New Zealand expects to see on its regional landscapes and it is not a sea of pine. 50 Shades of Green's stance remains

- We do not want one more farm to go into exotics. We cannot have farms going into exotics driven by carbon.
- The ETS is not fit for purpose.
- When we talk carbon, we talk plantation forest and no-cut forest. Both include the price of carbon to do their economics.
- The market lacks a restrictive mechanism. No matter the draft advice to Government, while carbon pricing remains the land use change will continue at a pace and scale beyond the 380,000 ha's advised
- We support a split gas approach to reducing NZ emissions - however measuring farmers on their gross emissions of methane whilst other sectors of NZ are being measured on their net emissions is discriminatory against farmers. We therefore suggest a net measurement of biogenic methane which takes into account past methane emissions breaking down
- There must be equal consideration given to reducing emissions at source and protecting food production (2.1b Paris Accord). We must not prioritise one over the other
- Forestry in its current form is NOT a business model which supports communities.¹

New Zealand relies on pastoral income. **If nothing changes to limit land use change to exotic pine, it is game over for regional NZ.** Landscapes will be changed forever in short course.

We need a mechanism and Government needs to signal it quickly

Introduction

We welcome the change in approach being heralded by the Climate Change Commission in seeking to address emissions at source and the acknowledgement that we cannot plant our way to net zero without placing an enormous burden on subsequent generations. We support this stance and are deeply grateful for the time the commission has taken in listening to provincial communities while formulating the recommendations.

- Our view is **we do not want one more farm to go into exotics driven by carbon**. Protecting what New Zealand expects to see on its regional landscapes, should be forefront of any government's responsibility to its citizens. We cannot have farms going into exotics **driven by carbon**.

Pursuing the current plan of "offsetting" emissions will inevitably wipe out the entire sheep and beef industry and New Zealand will be left as a countryside that consists largely of dairy farms and pine-trees and we strongly urge **decoupling the price incentives** to limit offsets by exotic forestry. We say this because; the phrase 'carbon farming' is a misnomer. A farmer tends the land - as a caretaker for the next generation. What is happening now, is a one-off corporate investment in land accruing a large amount of cash over 17 years then abandoning both the land and the surrounding communities - in that regard it is more akin to asset stripping programmes of the 1980's share market boom - whatever it is - it is not farming, and the impacts will not deliver a New Zealand fit for purpose 2050 and beyond.

Carbon speculation

Carbon speculation is a scourge. Fundamentally while government policy may be well intentioned it is instead delivering unintended consequences and cynically trading away our long-term economic independence and health for short term carbon policy goals.ⁱⁱ In short:

- Exiting the pipeline of export income into our economy while conversely
- Installing a pipeline of our cash exiting the country

The ETS

Our view is the ETS is not fit for purpose.

The original intention of the ETS was to provide a pricing mechanism to change emitters behaviour at source. There is a growing body of concern recognising that the ETS is not fit for purpose. The Environmental Defence Societies Policy Director Raewyn Peart has said ¹ *"Policy tools like the ETS which is incentivising the planting of exotic plantation forest so as the*

¹<https://www.rnz.co.nz/national/programmes/ninetoon/audio/2018784922/failure-to-protect-our-landscapes-calls-for-central-governance>

*price of carbon goes up, we are at danger of actually seeing our landscapes being essentially plastered with pine trees, **that is something we need to head off now***"

Doc supports our view on putting land into pine, and the ecological impacts on our landscapes² the same issues pertain to exotic carbon forestry when planting these invasive species on our landscapes. Throughout New Zealand communities scramble to control wilding pines because they enjoy their landscapes and want them protected, so too, we at 50 Shades of Green despair when we see our landscapes being increasingly covered in monoculture carbon forests. It is contradictory that one Government department spends millions of dollars to control wilding exotics because they are seen as a pest, while on the other hand new plantings of exotics attract a price incentive.

We are seeing examples, that on one side of the road the Government is spending cash on eradicating wilding pines, and on the other side of the road spending millions of dollars via the ETS planting the same invasive species (EG Napier Taupo Road)

Essential Mechanism to limit offsetting

No matter the draft advice to Government, while carbon pricing remains, the land use change will continue at scale and pace.

Our key message is we need a mechanism to limit offsetting whether **production or no-cut pine**. In 18 short months we estimate **at least** 70,000 hectares (and counting) have been transferred out of food production demonstrating the juggernaut is happening. With the rising price of carbon and no limiting mechanism this will not stop at the planned 380,000 ha's referenced to in the report (page 67).

If nothing changes it is game over for regional NZ. Landscapes will be changed forever in short course. **We need a mechanism and Government needs to signal it quickly**

Under the current policy settings, the ETS will deliver us a whole country in exotic trees. New Zealand should be reducing fossil fuel emissions at source. Referring constantly to offsetting is sending the wrong signals, undermining efforts, and taking the eye off true attempts at mitigation, adaptation of new technology and of individuals changing their behaviours. It is outrageous in our view to use regional New Zealand as the scapegoat for managing climate change.

² <https://www.doc.govt.nz/nature/pests-and-threats/weeds/common-weeds/wilding-conifers/>

When we talk carbon

Land-use decisions between farm and forest need unbiased information from within New Zealand, without Government screwing the scrum towards foreign investors³ We would include in this insight, screwing the scrum in favour of any exotic forestry investment whether international or domestic and should include both types of carbon farming.

1. No cut
2. Plantation

Both are driven by the price of carbon

Plantation's foresters themselves are on record saying it is a waste of time only referencing no cut pine.⁴ The pace of recent property sales of highly productive farmland into plantation forest incentivised with and earning carbon credits needs immediate attention. Addressing emissions is being prioritised over food production and in breach of the Paris Accord.

Every property that comes up for sale is a potential forest attracting carbon. The 380,000 ha's quoted in the report to be transferred into forestry is not selected on best land use, merely selected on availability, hence the next farm for sale.



Figure 1 Highly productive farms sold to exotic carbon forestry

Monitoring and enforcement

There is no current method to monitor and enforce an investors intent to harvest or not.

Who will make the phone call after a certain period of time (once all the credits have been allocated) and ask when the forest will be harvested? The speculation given the signals regarding an increase in the future price of carbon will only exacerbate this (End note ⁱⁱⁱ

³ Forestry issues still need much debate [by](#) Keith Woodford

⁴ Phil Dunlop FOA at recent Blue Greens Conference

Forest360 email to clients, March 2021), resulting in a negative impact on economic indices. With the complexities involved in differentiating no-cut versus harvest forests (such as bonds, deferred allocation of credits) it would be far simpler and practical to allow no further credits for new plantings of exotics.

Changes to the ETS

- We support amendments to the ETS which would decouple the marginal abatement cost for emitters from the carbon price for sequestration.
- We support any amendments to the ETS or any other mechanism which discourages and prevents the use of invasive exotic species as permanent carbon sinks and encourages greater use of native trees on marginal land for this purpose.
- We support recommendations that would require central government to work closely with local government to understand the regional distribution of effects with respect to afforestation (especially for carbon) and the retirement of productive pastoral land, particularly at an economic and social level, with environmental considerations also being key.
- We encourage the Climate Commission to better understand and quantify the productivity implications of the carbon price on existing production forestry – which currently seems largely absent in the report – this information should include changes to projected harvest patterns/volumes/ and resulting wood products and the ramifications for employment, with a particular focus on those areas where marginal profitability is highly dependent on the fuel price and log price fluctuations. Without this information the GDP projections will be inaccurate as much of the behaviour changes expected as a direct result of the ETS will be most evident within the forest sector – including new entrants to the sector and emerging business models which place less emphasis on productivity. This will be particularly so if there is a limit placed on the additional area for afforestation – which would likely result in more pressure to grow existing trees to greater ages to benefit from carbon price rises.

The PWC Report

We caution the Climate Commission on its use of references to the PWC report given it admitted coarse use of data and inconsistencies in the application of economic and employment data.

As an example – using industry averages for economic returns per hectare fails to account for the fact that much land over 700m in altitude remains in pasture due to its undesirability to the forest sector. Similarly, many exotic forestry blocks in remote areas and in challenging terrain remain unharvested and may never be harvested – skewing the data in favour of profitable forests which generate high economic returns. In addition – while all downstream employment of the forest sector was included in the PWC data – many sectors related to sheep and beef farming were excluded. This has been taken up with the ombudsman and references to these aspects of the PWC report should be removed until such time as these anomalies have been rectified.

There is a presumption that the current ETS settings are sufficient to encourage approximately 25,000 ha of exotic forests to be planted. The current planting rates are poorly understood by policy makers due to areas being planted on private and iwi land not being easily captured. The land sales resulting in conversions are more easily captured but may represent as little as half of pastoral land being planted and therefore the Commission should not be advising that afforestation **‘at current rates’ be continued for the first ten years of the carbon budget**, until they have fully established what ‘current rates’ are.

The Wilding Pine Threat

With 1.8 million ha of NZ is currently considered ‘under threat’ by wilding pine invasion – it is advisable that the commission take a stronger stance on the obligations of exotic forest owners to remediate the land and to mitigate the likely resulting external costs of weed and pest control falling on the wider community. This factor could be remedied by excluding invasive exotic trees from permanent carbon sinks entirely. Any management plan option (even for native species) would need to consider the potential for weed invasion and for existing production forestry to transition to carbon only forest (and vice versa) at any given point in time. Therefore, the Commission must ensure that Government understand that any compulsion to remediate will need to be ensured via preliminary bonds, or perhaps deferred payments for credits until such time as the remediation has occurred. Failing to implement such protections would result in individual responsibilities being undermined by limited liability structures and resulting remediation costs falling on taxpayers. A far simpler process is to not allow any new plantings of exotic trees to earn carbon, they should be driven on commercial expectations only and any environmental impacts addressed at regulatory level.

Job losses

We regret the emphasis placed on job losses in the energy sector and the degree to which these are considered ‘transferable skills’ when **page 94** of the report highlights that the pastoral sector is expected to lose almost three times as many jobs and with few of these jobs being transferable, for example there is no alternative deployment for shepherds or shearers.

Split Gas Graph

The graph presented on **page 73** should be removed as the split gas approach is not consistent with capturing the impact of warming from methane relative to carbon dioxide at a single point in time. The result is a graph which is very easily misinterpreted.

Water Storage Implications

On **page 120**, the draft advice talks of the importance of understanding ‘water storage implications of different farming systems’ and the need for them ‘to be considered in the context of broader water quantity and quality issues within Aotearoa’. Forestry needs to be considered as a water user in future policy and land use decision making given its impact of surface water flows is substantial- being a reduction of up to 80 % in surface water flows (Our Land Report 2018).

Progress indicators

Page 123. The plan for forestry policies to be published by 2022 must consider and address the implications on land demand – particularly in the time period between when policies are proposed (2022) and when they are implemented (by 2024). This would prevent a rush of land sales and conversions in a speculative manor with the expectation of policies limiting exotic forestry land supply.

Circular economy goals

The goals of the circular economy (**page 125**) should fully acknowledge the relationship between plastics and the extraction of fossil fuels. This should inform better choices in Aotearoa New Zealand as a country rich in natural and renewable fibres and packaging options.

Statements referring to a need for significantly higher marginal abatement costs (**page 132**) need to be strengthened to better reflect the advice that this cost should not correspondingly

be available to sequestration activities. The statement merely noting that a high marginal abatement cost does not 'align' with relying less of afforestation is a weak statement and more detail is needed to highlight the risk of failing to decouple these pricing incentives. In simple terms, the lack of a mechanism

Time Critical necessary action

Time critical necessary action **7 (b)** must be amended to reflect the same immediacy as

(a) to ensure the immediate response to (a) is not a significant (if temporarily) misalignment with (b). It should be amended to read: 'Immediately amend the NZ ETS so that it contributes, as part of a package of urgent policies (see time-critical necessary action 5), to delivering the amount of afforestation (native only) aligned with our advice on the proportion of emissions reductions and removals, consistent with budget recommendation 2.'

Leadership

Former Prime Minister Geoffrey Palmer said *“Part of the job of leadership is to lead public opinion: Show them the vistas of Mt Olympus, rather than the lowlands of where we are now.*

The stampede for a short-term solution will deliver a legacy no future generation will thank this generation for.

In our view, the Climate Change Commission should consider the implications of what leadership New Zealand can offer to countries who share a similar emissions profile based on agricultural production. Many of these countries are not wealthy nations and have fewer resources available to them to invest in research and development and limited opportunity to reduce emissions without impacting food production. New Zealand can advocate for better recognition of biogenic emissions as distinct from fossil fuel emissions and the extent to which they contribute to sustaining global wellbeing, relative to their contribution to warming.

We have a duty of care as per the Paris agreement to not only protect food production but to promote our world leading agricultural practices.

We also advocate that New Zealand take a proactive role in determining, based on our own science – the contribution that our decreasing livestock number have on actual warming. While we acknowledge that the Commission is using mass units in terms of the desired reduction in methane emissions – we would advocate that New Zealand pre-empt the work being undertaken by participants in the IPCC Short Lived Climate Forcers working group to better understand SLCF's role in warming and the extent to which these should legitimately be used in substitution for faster carbon dioxide reductions. Where this substitution occurs – this should be clearly articulated so that credit is given where it is due and those responsible for methane reductions leading to cooling relative to 1990 levels – should be rewarded in the same way that sequestration results in rewards.

Moving targets

It is with some frustration that we note that the reductions targets are constantly moving in relation to start points which seem to arbitrarily change with every new piece of Climate related policy. From 1990, then to 2005, and now against 2017 levels – those required to budget against these targets find the movement incredibly frustrating – particularly within the pastoral sector where improvements in efficiency and reduced real emissions since 2005 may have been dramatic – the 2017 base line now excludes that progress from measurement. We advocate for adherence to the 1990 start date which is well understood and well socialised within the pastoral, industrial and forestry sectors.

Individual Choices

Sheep and Beef are not the problem, we are constantly frustrated that our food producing sector is thrown under the bus and substituted for a whole lot of carbon

We should all be honest. There is only one way to get massive change, and that is to make everyone who uses fossil fuel bear the cost directly. Because this is not politically palatable, the current solution is to defer to other parts of our economy, i.e our provincial communities.

Simply put, people and business must make individual choices, if not done collectively, we will not succeed in our goals. It is going to cost. It cannot be deferred back to our provincial communities.

Visionary Alternatives

New Zealand should be looking to deliver a gold standard system the world can follow and includes getting the ETS to work as intended. There are **alternatives** to lead us further than 2050 to 2100 and beyond which we share below

Close the ETS to new entrants of exotic plantings

- protects people who have invested in 'good faith' in the scheme
- immediately stops a carbon emitter abdicating their responsibility to mitigate their emissions at source.
- allows the ETS to function as per original intention
- will still allow exotic afforestation that is driven purely by commercial expectations.

Create a Green energy fund or Renewable Energy Fund

Restructure of the NZ ETS – a truly sustainable approach

50 Shades of Green advocates for a complete restructure of the NZ ETS and the way it allocates funds. Funds collected from major emitters of pollutant gases from fossil fuels would be better used for 'NZ based renewable energy projects' Partnering with landowners to fund strategic planting of native trees in suitable areas in conjunction with Regional Councils, Land Management Officers and QE11

This is a truly sustainable approach for the future. It will fast track New Zealand ceasing the use of fossil fuel for electricity generation whilst providing funds to landowners to plant suitable areas in new native forest.

Money going to exotic plantation forestry for radiata pines is driving the replacement of our heartland hill country sheep and beef industry and communities with a monoculture of pine leading us towards financial ruin as a nation for no environmental benefit.

No-cut exotic carbon forestry should desist, and production forestry stand on its own economics like other industries without the massive subsidy currently in the form of NZ ETS carbon credits.⁵ The Climate Change Commission acknowledges we cannot plant our way out of our emissions and need to cut emissions at source in this sense, this recommendation fits well.

The world needs to change its energy source from burning fossil fuel⁶ to generating renewable energy from water, wind, and the sun, of which there is an abundance to power the world. Cutting emissions at source, a key goal.

New Zealand talks a lot of rhetoric on moving to a zero-carbon economy. The reality is we are going the other way, importing more coal last year than in 2017 and 2018 combined⁷, much of which was used to generate electricity. At the same time, our lack of uptake of the use of solar energy is appalling. In our current building boom, we are seeing new subdivisions of thousands of new homes all over the country which require more and more energy from an already over stretched grid and not a solar panel in sight.

- A renewable energy fund could include:
 - Funding solar power to schools and public buildings that only have daytime use.
 - Subsidising PV installations in private homes are two examples of renewable energy projects. Adding an extra \$10k on solar panels when building new homes may not a vote winner but it is short term pain for long term gain

The fund has the potential to support all manner of renewable energy projects for the world to follow. Then and then only will electric vehicles be a clean alternative, (currently a major shift to EV's will require the extra generation to come from fossil fuel, coal powered cars. This is our opportunity to push for positive change

⁵ It is worth noting that most of our plantation forests are foreign owned so that money paid in the form of NZ ETS credits will go offshore to wealthy foreign investors with no benefit to New Zealand

⁶ currently burning of coal accounts for 79% of the worlds global warming)

⁷ Imported coal 2020. 1.1 million tons

Alternatives Summary

- a) Close off the ETS to new planting of exotics
- b) Allow offsetting only with natives facilitated by Regional Councils in partnership with carbon emitters, Land Management Officers, QE11 and only in partnership with landowners
- c) Allow credits to be earned if emitters invest in approved and enduring technologies (such as example regarding solar panels, hydroelectricity etc)
- d) Allow credits to be earned by investing in approved research and development companies and institutions, or the like.

Additional supporting evidence

- **How Much land use change are we talking**
- **Who pays the bill**
- **Environmental Impacts of more exotic afforestation**
 - **Collateral damage to beaches**
 - **Freshwater environments**
- **Social Impacts**
- **The moral quandary**
- **Aesthetics**

Summary

In our view, the concept of offsetting fossil fuels emissions with exotics in largely rural communities is unacceptable.

We believe, in so far as it recommends more exotic afforestation of New Zealand farms, that this report underestimates the severe long-term social consequences for regional New Zealand of such a trajectory, and that it completely overlooks the collateral environmental damage that will undoubtedly occur in our creeks and estuaries and on our beaches (refer supporting evidence). Any policy setting that deliberately creates vast areas of economic wasteland in our regions - is short sighted in the extreme and is becoming increasingly unpopular with most New Zealanders. New Zealand has a once in many generations opportunity to strategically set the way we manage the impacts of climate change. It is not too late to make the changes so that our emissions can be reduced with a more holistic approach - where all of New Zealand and all of our environment can benefit

We agree that emissions should be treated at source.

Our first and critical priority is the need for an explicit mechanism to limit the planting of carbon eligible exotic forestry in New Zealand, if allowed at all, and to protect our landscapes and maintain a diverse environment where rural communities can continue to live, work and deliver revenues back into our economy.

We are seeing that prescribing a policy from central Wellington without understanding it's impact on the land does deliver perverse outcomes. And not just for the Sheep and Beef sector. It is important to note, the forestry sector also has come to acknowledge the potential effect on their business with increased carbon returns. *"... we may as well pack up the logging toys and go home"*^{iv} This direct quote from Forestry on the future of plantation forestry if the increasing cost of carbon continues its current trajectory.

50 Shades of Green recognised the risk of this eventuality when formed nearly two years ago. It is this unintended consequence driving our passion and is why we persist in asking the government to crouch and hold until the impacts of current policy and climate change management advice is widely understood, it is among other things imperative that the Government puts in place a mechanism to limit offsets by fossil fuel emitters via exotic carbon forestry to protect our landscapes and communities from the inevitable sea of pine.

Thank you again for the opportunity to submit our response to the Climate Change Commissions Draft Advice to Government.

Notes

- **Why forestry in its current form is NOT a business model that supports communities**
- **How much land use change are we talking about**
- **The Environmental Impacts of more exotic afforestation**
- **Collateral environmental damage – beaches**
- **Collateral environmental damage – water**
- **Social Impacts – unemployment and 'tipping points'**
- **The Moral Questions**
- **Aesthetics**
- **Forestry sector comments**

i Why Forestry in its current form is NOT a business model that supports communities. The long lags between planting, pruning and harvest mean an employment trend which results in a transient workforce throughout the first 25-year cycle - during which local populations migrate to find reliable work.

once harvesting begins, the impacts from dust - slash, road degradation etc often result in any remaining residents moving away as quality of life deteriorates.

-the risk associated with the forestry business model rests entirely on the most vulnerable members of the supply chain - those who work in the forests for contractors and the contractors themselves. When times get tough forest owners can stop the harvesting for years at a time and job losses occur immediately with little or no support available for communities beyond social welfare. Contractors are often highly leveraged (all their assets rest in forest machinery) and suffer most, having no choice but to lay off staff, often also losing their businesses and sometimes their homes.

-There is no other industry in this country with the ability to push all its risk onto workers and their families in communities in the way the forest industry can. Farming, horticulture, and most other productive enterprises have little or no ability to hold over stock and stop production, meaning business owners will themselves incur debt and continue operating, riding out market lows at their own cost while still providing economic stimulus to the local economy and contributing to employment. This does not occur in the Forest sector. Once harvesting becomes uneconomic forests gates are shut.

If evidence of these effects is required, the current large scale economic support packages required by the Gisborne region in response to the forestry sector slowdown should provide some idea of what is at stake

ii How much land use change are we talking about?

The following article <https://www.stuff.co.nz/environment/climate-news/116415334/the-sea-of-pines-that-is-going-to-be-needed-to-balance-the-nz-carbon-budget> gives a good overview and balances both protagonists and antagonist

arguments Here Parliamentary Commission for the environment Simon Upton warns that we will require a further 2.6M ha of trees by 2050 and then another 2.8M ha more by 2075 if we continue down this track. We have 7.7M ha of grassland in NZ, less 2.4M ha of dairy pastures (which are too expensive to be attractive for carbon conversions) that leaves around 5.3M has of sheep and beef land which will be targeted. Basically, if we are going to pursue this plan of "offsetting" our emissions, then we will inevitably wipe out the entire sheep and beef industry and be left with a countryside that consists largely of dairy farms and pine-trees.

Impacts of land use change

The change being foisted upon NZ by current policy makers is massive. There are three key areas of concern about it - Economic, Social and Environmental.

The Environmental Impacts of more exotic afforestation

Climate Change Commission advice to government states (p67) “In our path, exotic afforestation would continue the trajectory expected under current policies up until 2030”. At no point are the potential environmental risks of this unfettered exotic afforestation even discussed. We believe this is a significant short-coming in the report and a more holistic approach to environmental policy making is required.

Dame Anne Salmond offers a good summary of these collateral environmental risks in her Stuff article “*Let them eat wood*” 7 July 2020, where she highlights the problems resulting from planting shallow rooted pines on highly erodible soils.

“As the Parliamentary Commissioner for the Environment pointed out 10 years ago, in tackling climate change, it’s vital to avoid perverse incentives and bad ecological outcomes. On highly erodible soils, the folly of planting shallow-rooted pine trees and clear-felling them every 25-30 years is obvious. Witness the [tsunami of logs and sediment](#) that have drowned streams, rivers, houses, fields, beaches and harbours in places like Tolaga Bay, Marahau, and many other parts of New Zealand... With two-thirds of the forestry industry owned overseas, like the logs, the profits are exported, but the costs remain behind. Ravaged landscapes, wildling pines, roading networks wrecked by logging trucks... The farmers are right. At present, the incentives in the ETS are perverse, and they’re taking us in the wrong direction. It needs to be fixed before it’s too late”

Further to this we refer to Page 88 of the PCE Report.

“Perhaps of more concern, however, is the risk that dead, dry plant tissues in a forest will significantly increase forest flammability. The number of days per year when conditions are considered to present very high and extreme fire risk is projected to increase under all climate scenarios examined, particularly along the east coasts of both the North and South Islands

The frequency of very high and extreme fire risk is projected to increase by an average of **71%** across New Zealand by 2040. It has been noted that a further one-degree Celsius rise in average temperature could see the east coast of New Zealand, from south of Dunedin to the East Cape in a very high or extreme danger zone for **up to six months of the year**

This signals significantly rising costs of maintaining and managing forests in a warming world.

Collateral environmental damage - beaches

The collateral environmental damage to our beaches from exotic afforestation has been well documented in recent years. Some East Coast beaches and marine environments face huge environmental pressure from forestry 'slash' washing down from hill country rivers



Figure 2 Aftermath of Tolaga Bay storm

As of today, most of this damage is being caused by plantation forestry not no cut pine for carbon speculation but the potential risk is still there. What will happen in all these huge areas of new exotic forests on highly erodible soils, when the trees start to fall over and break down as eventually, they must? They will, by the forces of gravity, slip off the hills, choke up our rivers and pollute our beaches.

Collateral environmental damage - water

The damage caused by exotic afforestation to freshwater environments has been less well covered by media in recent years because it is less spectacular but no less insidious. There are a number of scientific studies however, that do raise questions about the long-term sustainability of exotic afforestation on so called 'marginal land'.

1. One of the most well studied catchments is at Whatawhata, Waikato, where approximately half of the Whatawhata Research Station, a hill country farm, was planted with pine trees and the subsequent changes in water quality were monitored over many years. Streams from the afforested sub-catchments were compared against streams from those sub-catchments remaining in pasture or native bush. In 2002, Quinn & Stroud (*Land use effects on water quality and exports 2002 - Table 5*) found that pine streams at Whatawhata had the lowest visual clarity, with turbidity and suspended sediment typically 2- to 4-fold higher than the pasture and native streams. This was attributed to erosion of sediment deposits built up during the pasture phase, with bank sediment previously held by grass being released as the

stream channel widened under a shady forest regime. In 2010, further studies (Hughes A, Quinn J, Costley K 2010. *The effect on stream water quality of ICM changes at the Whatawhata Research Station.*) show that in the sub-catchment retired from pasture and planted into pines - stream clarity had not improved whereas improvement was occurring in a pasture stream where cattle were excluded from riparian areas and poplars planted. Then in 2014, Hughes and Quinn (*Before and After Integrated Catchment Management in a Headwater Catchment: Changes in Water Quality 2014*) reported significant deterioration trends in water clarity (-6.2%pa) and increasing levels of both Phosphorous (+8.1%pa) and Nitrates (+7.2%pa) for six years of measurement following the afforestation and monitoring of site PW2. It can reasonably be assumed that these results understate the true long-term sediment load of afforestation on the stream because most of the sediment load will come in later years during harvesting.

2. In another nearby study at Waitetuna (*Storm fine sediment flux from catchment to estuary, Waitetuna-Raglan McKergow et al, 2010*) it was noted that during a storm event a pine forest catchment exported 4x as much sediment as an adjacent pasture catchment and that a native forest catchment exported 3x as much as pasture.
3. In Mahurangi, Gibbs (*Identifying source soils in contemporary estuarine sediments: a new compound-specific isotope method. Estuaries and Coasts 31:344-359 Gibbs M 2008*) found that the major sources of sediment were pine forest (46%), pasture (19%), and native forest soil (14%). As these three main land use types in the catchment occupied 16, 64 and 18% of the area respectively, the contribution of pine forest soil in the river delta sediments was almost three times greater than its proportion as a land use in the catchment.

We do not seek to infer that all hill country water problems are the result of forestry activities. Farmers are also responsible, and sediment is undoubtedly the main water pollutant in extensive hill country farming (whereas N and P are the main issues in intensive lowland farming), but sediment output has been shown to be able to be reduced significantly (47% in Horizons Council data) by farmers themselves through individual farm planning and voluntary farmer led sub-catchment approaches. It is critically important that the CCC recognise the ample opportunity for hill country farmers to incorporate small areas of natives within existing farms - given the right policy settings and incentives. As Dame Anne suggests in the above reference "*Many farmers are already working with systems that include native forest, in gullies, on eroding slopes and on the banks of streams and rivers. A biodiversity credit that gave them an income from that land would be transformative.*" Surely suitable incentives for native reforestation within existing farms is the best policy setting - where biodiversity and water benefits can accrue whilst sequestering carbon yet avoiding the environmental risks imbued in 'continuing our trajectory' of exotic afforestation.



Figure 3 Holiday snap of Tolaga Bay from 2017

No doubt there are tradeoffs in any policy, but we are concerned that the Climate Change Committee has not been made aware of these significant local environmental risks in promoting more exotic afforestation of New Zealand. The next generation of New Zealanders will not thank the Commission for recommending policy settings that inadvertently substitute global air pollution with local water pollution. We suggest future generations do not want our beaches looking like this.

Social Impacts – unemployment and ‘tipping points’

As the Baker Report sets out – no cut pine carbon requires neither shepherds, truck-drivers, pilots, wool buyers, stock agents, bulldozer drivers, shearers, loggers, sawmillers, farriers, mechanics, cooks, fencers, nor dockers, - nor the ancillary industries of hardware, homeware, clothing and baking for all of these workers. It may provide some initial pencil work for accountants, and investment advisers, then some hefty commissions for real estate agents but thereafter will only ever, rip the heart out of community employment.

The Climate Change Commission draft advice to government p94, suggests there may be 4,000 job losses in sheep/beef/grain industries by 2035 with existing policy settings. It then goes on to say that its own suggested revised settings will reduce that unemployment burden by 10-17%. Whilst we welcome the acknowledgement by Climate Change Commission of the significant social costs likely and its proposal to slightly reduce that harm - the concept of offsetting fossil fuels emissions with largely rural communities is unacceptable and we believe will become politically unpalatable in the long-run. Whilst we are not privy to the Climate Change Commission underlying modelling we would question whether the full social cost of forestry offsetting has been properly accounted for. As with all communities, rural facilities require a critical mass to operate. Talk with people on the East Coast after Bola and Taupo after variation 5, where large amounts of land were put into plantation forestry, the gradual population collapse sparked a series of ‘tipping points’ for the farming families left behind. First their neighbours moved away, then the community hall folded, then the school bus stopped, then the school closed - it goes on and on. Of course, the process will be much

faster with carbon forestry speculation, as the employment per ha is much less than plantation forestry. As an example of social fallout from inappropriate policy settings one can look to the US rust belt, where one area was expected to carry the can for the whole country to enjoy the benefits of 'more efficient' Chinese steel production. There, mass unemployment in certain regions has resulted in on-going and severe social problems - opioid abuse, crime, and family dysfunction. Do we really want policies that will push regions of New Zealand down this same track? Adding insult to injury the displaced industry, in our case, **NZ lamb and beef production** is one of the most **efficient globally** and has one of the **lightest carbon footprints** per kg of product. Is the deliberate creation of huge swaths of economic wasteland and under resourced disenfranchised communities, necessary - or can we find a better and fairer way of reducing our emissions? **We believe that the long-term social costs on our communities have not been accounted for in the 'efficiency' of Carbon offsetting through afforestation.** That is before we even ask:

The Moral Questions

Is it right for commercial urban companies to use entire regions as their own private carbon sink? What if those communities don't want to become somebody else's carbon sink?



Figure 4

Aesthetics

How does NZ feel about living in a gigantic pine forest? Who has asked the people who live in our regions how they feel about their unique part of the country turning into a clone of Tokoroa?

New Zealand's beauty is inextricably linked to its diversity - a mosaic of farms, forests,



mountains, and plains. Will New Zealanders wake up in 20 years' time and say - "you know what? we don't really like it...we don't like that when we drive around our country we don't see much except bloody great pine-trees on both sides of the road?" Tourists, when they return, don't come to NZ to see Pine trees. Not the Scandinavians or the Canadians - but maybe not the Australians and the Chinese either.

iii Email Newsletter from Forest360 12th March 2021

What is becoming evident is the potential effect on NZ log supply with increased carbon returns. Carbon prices have skyrocketed in the past 12 months and now sit at around \$39/NZU.....While carbon can only be sold once it does give forest owners a viable alternative to harvesting. Considering many forest owners will only experience one forest rotation in their investment life, carbon will give consistent revenues throughout the growth cycle of the forest. As an example, if you had a forest planted in 1995 in the Southern North Island that had been registered in the NZETS since 2008, you would be sitting on \$18,000 of carbon per hectare as of today. Over the next 28 years this forest will continue to grow, and you will receive another \$32,000 based on today's prices. Obviously, you would end up with a 54-year-old forest which may have marginal crop value but by that time most investors would be in their 90's and probably not too concerned

Where carbon prices will head to in the next few years is anyone's guess but it would be fair to say a reduction is extremely unlikely. A report by the Productivity Commission in 2018 stated that 'All evidence points to the prospect that emissions prices may need to rise to at least \$75 a tonne, and possibly, if new emissions-reducing technologies are slow to emerge, to more than \$200 a tonne, over the next three decades.' Let's assume we get really good, really quickly at reducing emissions and carbon is at \$75/tonne, that's \$62,000 per hectare over the next 28 years in the above example – not too bad really and very unlikely that harvest returns on forests a reasonable distance from the port will be able to match or even come close to. ***If we are actually not that good at reducing emissions (more likely) then at \$200 per carbon tonne that figure is \$164,000/ha – we may as well pack up the logging toys and go home.*** Currently, around 30% of NZ's forests are planted post 1989 so this has the potential to have a huge effect on our harvest availability.

iv Email Newsletter from Forest360 12th March 2021 as noted above.

