Upton says treat gases differently

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CUT THEM OFF: Fossil fuels emissions must be eliminated rather than offset with carbon credits, Parliamentary Commissioner for the Environment Simon Upton says.

MORE evidence is being given to policy makers that short-lived biological greenhouse gases should be treated differently to those from fossil fuels.

Parliamentary Commissioner for the Environment Simon Upton today urged a policy rethink in the treatment of short-lived biological emissions and the way forestry is used as a carbon sink.

That is consistent with the views of Myles Allen, a professor of geosystem science at Oxford University, who said that given methane lasts only 12 years in the atmosphere New Zealand will not have to reduce emissions to zero provided it makes reductions.

Upton says in his report Farms, Forests and Fossil Fuels: The next great landscape debate, any serious carbon action plan means eliminating fossil fuel emissions at the source rather than offsetting them with carbon credits.

"By contrast, biological greenhouse gases are removed more quickly from the atmosphere by natural processes.

"This means emissions do not need to go to zero to stabilise the atmospheric concentration and warming contribution of these gases."

Nitrous oxide has a longer life than methane but shorter than carbon dioxide and Upton says each of those gases affects the environment differently so they should be treated as separate environmental problems.

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> **Simon Upton**
> Parliamentary Commissioner for the Environment

Despite methane volumes increasing rapidly since pre-industrial times methane is still at least 200 times less abundant in the atmosphere than carbon dioxide and nitrous oxide is more than 1000 times less prevalent than carbon dioxide, the main driver of global warming.

Upton makes three recommendations: that we adopt separate emissions targets – zero for fossils and a reduction for biological emissions; allow access to forest sinks as offsets only for biological emissions and adopt a landscape approach for these biological carbon sinks.

He warns planting vast acreages of trees as carbon sinks won't last indefinitely and are susceptible to fire and disease. His approach is to separate the treatment of fossil and biological emissions and allow biological emissions to be offset, a move he says will accelerate the elimination of fossil fuel carbon dioxide emissions.

As part of that he advocates a landscape approach which integrates climate policy with other environmental and social objectives such as water quality, soil erosion, biodiversity and resilient rural communities.

"Having a co-ordinated climate policy approach for farms and forests makes sense because these sources and sinks are often co-produced and co-managed by landowners.

"Such an approach would promote a more integrated consideration of the competing uses of available land for providing climate change mitigation and other services."

Upton says this will mean a high emissions price for fossil fuels, from $25 a tonne CO2 equivalent now to up to $350 by 2075 but lower for biological emissions.

"The biggest land use change predicted under either climate policy approach is the shift from sheep and beef farming to forestry but the alternative approach results in far fewer trees to reach its targets by 2075 compared to the current approach."

Policymakers must decide whether they want to store carbon as forests over large areas, with modelling predicting up to 5.4m hectares by 2075 under current policies.

His plan still sees up to 3.9m hectares of new forest required to offset biological emissions with the greatest planting in Canterbury, Otago and Manawatu-Wanganui. Upton says under his plan the area of sheep and beef will be reduced but remain the dominant land use and he warns care needs to be taken about the impact of that land use.

"The potential for change is so profound that NZ would be well advised to understand the full consequences to the environment and the economy, in addition to what it would represent in terms of greenhouse gas accounting."

In 2016 half NZ's methane emissions came from dairy cows, a third from sheep and a fifth from beef cattle. Emissions of nitrous oxide rose by a third between 1990 and 2016 in hand with greater use of nitrogen fertiliser.

Silviculture management aims to maximise returns, which requires 25 to 30-year rotations for plantation radiata pine forests.

"The amount of carbon stored on this type of land will fluctuate as trees are established, mature and then harvested with new seedlings being planted among the decaying remains of the previous rotation."

Upton says extending that rotation or farming trees would increase carbon capture. By world standards NZ's pastoral soils contain large amounts of carbon with the potential to hold more.

Upton says research in to deep inversion tillage could increase the volume of carbon stored by shifting carbon-rich soil down the soil profile where decomposition rates could be slower while adding carbon-stable biochar could also help.

Planting forests to offset carbon emissions is not without risk. They are vulnerable to extreme weather caused by climate change, fire and disease. There is also an issue of permanence of carbon storage. While forests can be long-lived, they cannot be regarded as permanent given the increasing exposure to climate change impacts.

"Given the uncertainty that attaches to their temperature effects, a heavy reliance on forest offsets carries risks.

"As for carbon stored in soil, it appears that it will be some time before we can reliably include its management in climate change mitigation efforts."

The impact of the different approaches to climate change policy on rural communities was illustrated in a case study on the impact on the 2671 square kilometres Hurunui catchment in North Canterbury.

Based on the policy as it is now, Upton says by 2075 sheep and beef farming would reduce by 55,800ha, from 93,100ha to 37,300ha and forestry increase by 86,000ha from 10,100ha to 96,100ha. Of that 64,100ha would be plantation forestry.

Based on a 20% reduction in biological emissions and no offsetting allowed for fossil fuels, the area of sheep and beef would fall by 18,000ha and forestry increase 22,000ha of which 21,400 will be plantation.

Forest owners want clarity

FOREST owners want clarity on what they are expected to deliver for climate change targets.

Parliamentary Commissioner for the Environment Simon Upton downplays the contribution of forestry in sequestering atmospheric carbon and wants to cut fossil fuel use.

But the Forest Owners Association president, Peter Weir says Upton is contradicting the Productivity Commission's report that pointed to planting trees serving as carbon sinks as the main means of getting New Zealand to carbon neutrality by 2050.

Upton said long-lived gases from burning fossil fuels should be treated differently to short-lived greenhouse gases from biological sources.

Weir said Upton is correct in that forestry can't offer climate change solutions indefinitely.

"The industry has never suggested that we are a solution for all time.

"But in the immediate term we just can't wait for the development of a political will for a reduction in the use of fossil fuels or the evolution of technical solutions to reduce livestock emissions.

"We don't have time for either of those."

"Fast-growing exotic plantation trees are a quick fix for getting our net emissions down in the critical next couple of decades.

Farm Forestry Association president Neil Cullen also wants the Government direction to be clear.

"We have a concern that there is a proposal from the PCE to restrict forestry offsets. If the government decided to follow this and limit offsets to agriculture then this would have a dramatic, negative impact on the value of carbon units, reduce planting rates and perpetuate the seesaw policy that forestry has been experiencing for too long."