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### Forests and climate change

Forests are well recognised as a key component of the global climate system, through their function as a store of carbon dioxide, one of the main greenhouse gases. Increases in the concentrations of these gases is now firmly associated with global warming trends. Removal of forest cover has of itself contributed a significant part of the 30% increase in carbon dioxide concentrations that have occurred since the early 1700s, from 280 to about 360 parts per million. Even today well over a third of carbon dioxide emissions are attributable to deforestation, and in many developing countries far exceed those from fossil fuels.

Tackling climate change is a huge challenge; sceptics would say an impossible one. The international community, in the form of the United Nations Framework Convention on Climate Change, has been wrestling with the problem for close on a decade. What it came up with at Kyoto was a proposal to reduce greenhouse gas emissions by a very modest 5%, based on 1990 levels. Despite this number being far below the 25-30% level many feel is necessary to halt climate change, countries such as Australia and the US have had second thoughts, and have effectively turned their back on the Protocol. Ireland, along with other EU Member States has ratified the agreement, and is firmly committed to meeting its target of keeping emissions at the 1990 level, plus 13%. however, we are well over target, some 30% over the 1990 level. Some analysts have estimated that to achieve compliance annual emissions will have to be reduced by over 9 million tonnes of carbon dioxide per year by 2008. Compliance will come at a cost; and achieving it will rely on a number of measures including forestry.

In the Kyoto negotiations forests were introduced at a late state in the process, as a bargaining chip by large countries. They argued that net uptake of carbon dioxide by forests (and other land uses) was a legitimate way of reducing greenhouse gas concentrations. While this is patently true, carbon stored in trees and other vegetation can also be lost back to the atmosphere through fire, other natural events, and harvesting. This is one of the reasons for the protracted sink negotiations that continued through from Kyoto in 1997 up to 2001, when the Marrakesh Accords clarified most of the main policy issues, and the rules to safeguard against this so-called sink reversal.

Detailed rules and guidance in relation to sinks have followed in the interim, with the final round of negotiations set for December in Buenos Aires. Many hours of negotiation time have been spent on defining the rules and in devising good practice. A good example of the scale of effort involved is the Intergovernmental Panel on Climate Change Good Practice Guidance for Land Use, Land-Use Change and Forestry launched in June. It runs to over 550 pages, and outlines best approaches to dealing with the land use activities permitted under the Marrakesh Accords.

So forestry is now an integral part of the climate change process and is likely to remain so. Too many countries have a serious national interest in sinks, either in using them to make compliance, or in avoiding penalties that arise as a result of deforestation, to drop sinks from the system. It also makes good sense to rebuild the global terrestrial

carbon sink, if for no other reason than to buy time until emission reduction measures start to make serious inroads. Another key reason is that sinks offer a way for developing countries to become involved in the climate process. At the moment countries such as Brazil, China and India have no emission reduction commitments, even though their emissions are climbing rapidly as their economies expand.

However they still have a long way to go catch up on the US. Although it has withdrawn from the Kyoto protocol, it may at some stage in the future take a decision to make legally binding emission reduction commitments. Whether this will be as part of renegotiated Kyoto or a new package is unclear. What is clear is that it will only be on the basis of the inclusion of sink activities. The US has always been one of the strongest advocates of using sinks to achieve reductions in greenhouse gas concentrations.

Constraining the use of sinks has exercised many countries in the negotiation processes. Green groups and environmental NGOs have also been highly sceptical of their role in addressing climate change, seeing them as an easy option that reduces the onus on countries to reduce emissions. Arising from these considerations the role of sinks is highly circumscribed, with caps on forest management and the use of sinks in developing countries.

Ireland, together with a relatively small number of developed countries, has a significant national afforestation programme. Since 1990 this has resulted in 226,000 ha of new forest being planted. All of this area is eligible for the issuance of removal units (RMUs – each RMU is equivalent to one tonne of carbon dioxide). The plan is that these units will be used as part of a range of measures to achieve compliance with Ireland's emission target. COFORD and a number of agencies are cooperating in putting in place the system to estimate RMUs and track the areas for which they are issued. As well as calculating carbon sequestration the system will track deforestation, as losses as well as gains must be reported. This system will also have to track harvesting, again removals are treated as a carbon loss to the system.

One must ask what benefit should accrue to the forestry sector from its contribution to achieving Ireland's international obligation under Kyoto? First of all the role of the afforestation programme should be recognised and supported by the state into the future. It is probably the only land-based activity that will positively contribute to achieving compliance with the Kyoto target. Maintenance and enhancement of carbon stocks is therefore a key issue; sustainable forest management has the key role here and deserves state support, on the basis that it is the state which will benefit from compliance with Kyoto targets.

Looking to the longer term there is a natural limit to the extent that land-based activities can contribute to climate change. Emission reductions are the only effective long-term solution. Switching to renewables is the technological answer but they are not cost competitive when compared with oil and gas, at least not using a simple energy return per unit of capital employed comparison. But there are risks associated with fossil fuels, apart altogether from climate change issues. Over reliance is one obvious risk – 98% of Ireland's primary energy requirement comes from fossil fuels. EU policy is to reduce reliance on fossil fuels and have renewables supplying 12% of total energy requirements by 2010, and 20% by 2020. Ireland's poor record on the renewables front

will have to be seriously addressed to achieve these targets.

The forestry sector must take a leading role as an advocate and implementer of renewable energy policy. It has a rapidly growing resource coupled with considerable know-how in cost effective harvesting systems. What is lacking is an effective national policy to support and develop biomass to a stage where it can contribute 10 to 15% of national energy requirements. This can be done over a 15-year timeframe, given continued investment in the afforestation programme and innovative policies for delivery of renewable energy.