

A Climate for Change

Forests and climate change: linking science and policy

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An Roinn
**Talmhaíochta,
Iascaigh agus Bia**

Policy context

IPCC Fourth Assessment Report

- *Warming of the climate system is unequivocal*
- *Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations*

Copenhagen Accord

... We underline that climate change is one of the greatest challenges of our time. We emphasise our strong political will to urgently combat climate change ...

Policy context -forests and climate change mitigation

Kyoto targets and national level policies and measures

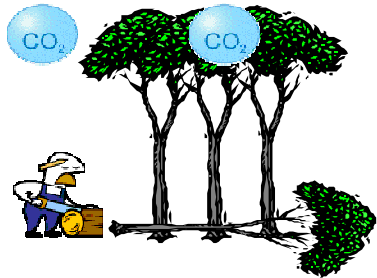
- Emissions reduction target to 2012 under Kyoto Protocol
- National Climate Change Strategy
- Forest policy reviews under *Renewed Programme for Government*

UNFCCC negotiation process – post 2012 policies and rules

- Land use land use change and forestry: LULUCF – developed countries **developing an incentive structure to enable the sector to effectively contribute to climate change mitigation**
- Reducing emissions from deforestation and degradation + afforestation: REDD + - developing countries

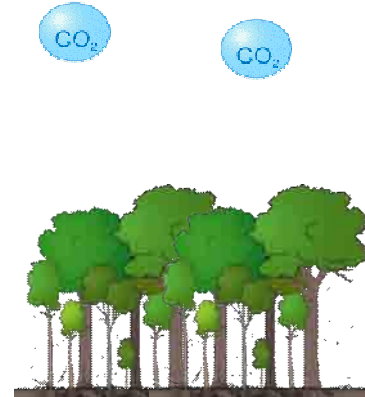
Why is LULUCF important ?

part of the cause



**LULUCF and
Agriculture ~30%
current emissions and
future mitigation
potential**

part of the solution



The mitigation potential of LULUCF

1. **C Sink** (afforestation, reforestation, sustainable management)
2. **Reduction of emissions** (conservation of C stock in forests /agriculture)
3. **C Substitution** (renewable source of energy replacing fossil fuel, wood replacing more carbon-intensive products) – links with other sectors

Furthermore, LULUCF offers opportunities for synergies between mitigation, sustainable development, biodiversity and adaptation

Climate change policy drivers and interlinked research needs

- Understanding of forest ecosystems and place in carbon cycle
- Policy options and scenario building - afforestation, forest management, use of wood products and wood energy
- Reporting and accounting to UNFCCC/Kyoto Protocol and other processes (e.g. FAO Forest Resource Assessment, Ministerial Conference on the Protection of forests in Europe etc.)

Understanding role in carbon cycle of forest ecosystems, and impact of climate change

Stand level fluxes of greenhouse gases to/from ecosystem pools,
deeper understanding of processes and rates - scaling up

- Need long term measurements for accurate assessment of carbon sequestration
- Forests are long-lived
- Inter-annual variation needs to be captured

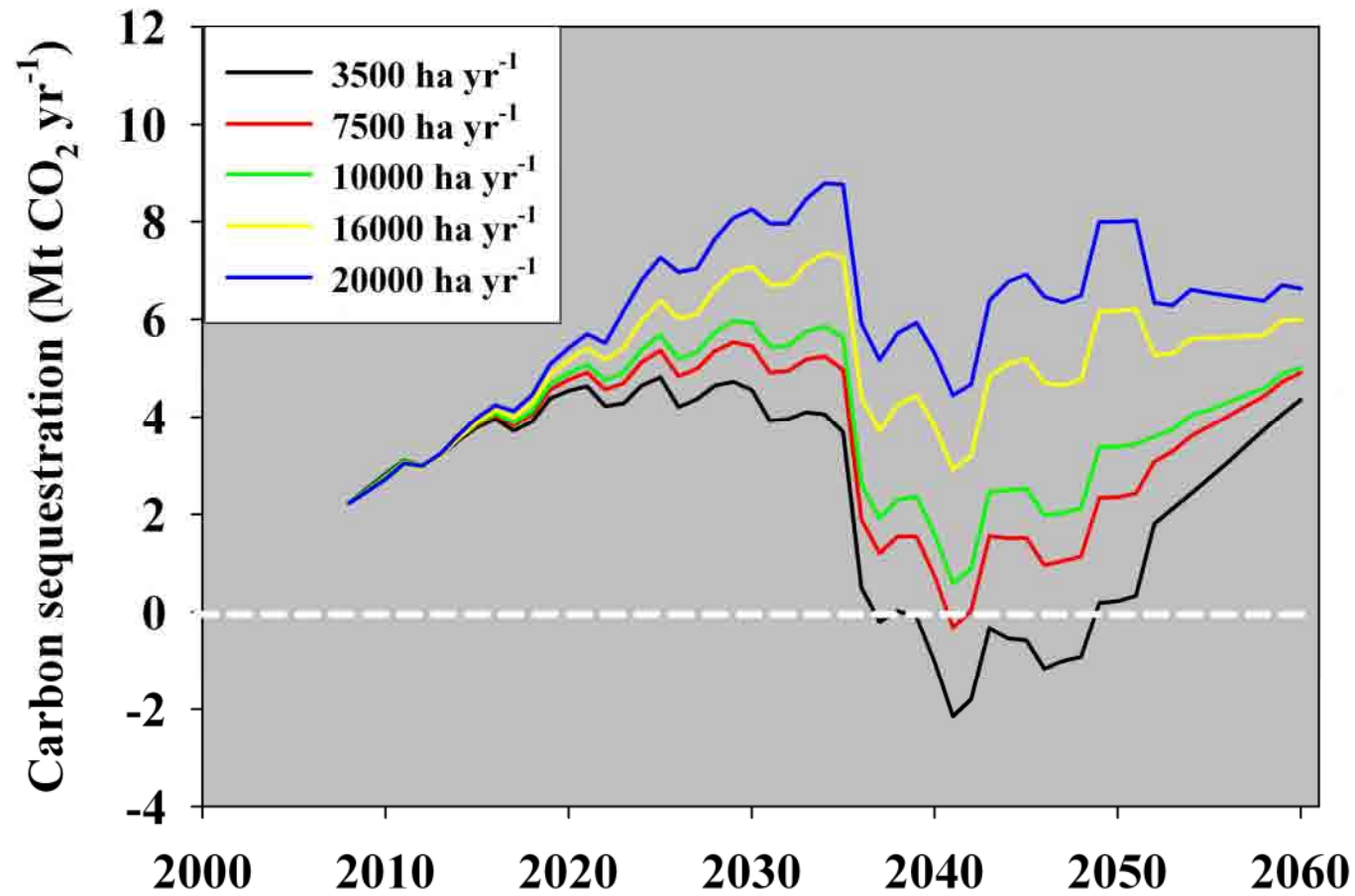
Climate change - responses and impacts - hypothesis testing - FACE
and other systems – collaborative approaches among EU Member
States

Policy options and scenario building

Afforestation, forest management, use of wood products and wood energy

- Impact of level of afforestation (new forests – post 1990) on national climate change mitigation potential and related costs/benefits
- Planned level of harvest and growth rates in pre 1990 forest – establishment of a national reference level
- Impact of use wood products (materials substitution) and wood energy in climate change mitigation
- ...

Scenario analysis example – net carbon sequestration and afforestation rate (CARBWARE)



Reporting and accounting to UNFCCC/Kyoto Protocol and other processes

LULUCF Accounting primer

Activity data – land area under the activity = A (ha)

Emission factors – annual net emission = E (t CO_{2eq}/ha)

A x E = Annual net emission for the activity = S (t CO_{2eq})

Most LULUCF activities require a baseline reference (t CO_{2eq}) = R

Accounted amount = S-R

Reporting and accounting to UNFCCC/Kyoto Protocol and other processes ctd.

- To implement LULUCF activities effectively need baseline activity data and other information at the national level – to “exploit the potential for forestry, biofuels and land-use change in contributing to climate change mitigation”
- National research funding/effort – needs therefore to be cognisant of the LULUCF accounting/reporting framework

LULUCF - a key source/removal category – leading to tiered reporting concept

Default emission factors based on published literature and IPCC Good Practice Guidance are Tier 1

LULUCF is a key category is key national greenhouse gas emission/removal, for IPCC recommends Tier 2, Tier 3 (country specific models and factors)

For forestry purposes most reporting is Tier 3, based on the national CARBWARE model and associated emission factors

CARBWARE – a core project under the COFORD-funded CLI-MIT programme

COFORD-funded CLIMIT programme

- Budget €3.8 m (2007-2011)
- Institutions involved UCD (+ PTR Ltd. & FERS Ltd. + Forest Service (National Forest Inventory))
- Builds on climate change research/reporting systems being funded since 1998

CLI-MIT ctd

Projects

- ***CARBWARE***
- ***CarbiFor II***
- ***FORESTSOILC***
- ***CLIMADAPT***
- ***WOODCARB***

See www.coford.ie for outline of CLI-MIT programme and projects

Posters - UCD forestry and climate change team

- Impact of afforestation on trace gas emissions - GIUSEPPE BENANTI et al.
- Impact of afforestation and reduced rainfall on carbon dioxide emissions - ERICA CACCIOTTI et al.
- Impact of low temperatures on C sequestration -MATT SAUNDERS et al.

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