

FOREST ENERGY



Forest Energy 2007 - Overview

Tom Kent

Waterford Institute of Technology

Many Thanks to:

- COFORD
- Site Owners: Mr. John Jackson, Mr. Vivian Kenny, Mr. Tom Finn, Mr. John Dromey, Mr. David Walsh Kemmis, Mr. Peter Alley
- Forest Managers: Forestry Services Ltd, Forest Enterprises Ltd., Tipperary Forestry Services, Greenbelt, SWS, Mr. Jim Hurley
- Forest Service
- Contractors: Mr Willy Houlihan, Sylviron Ltd., Pat Neville, Tom Nixon, Clare Woodchip Ltd., Hededanmark, Linddana
- Teagasc
- Bord na Mona, Ecowood , SWS
- Coillte
- WIT staff & students

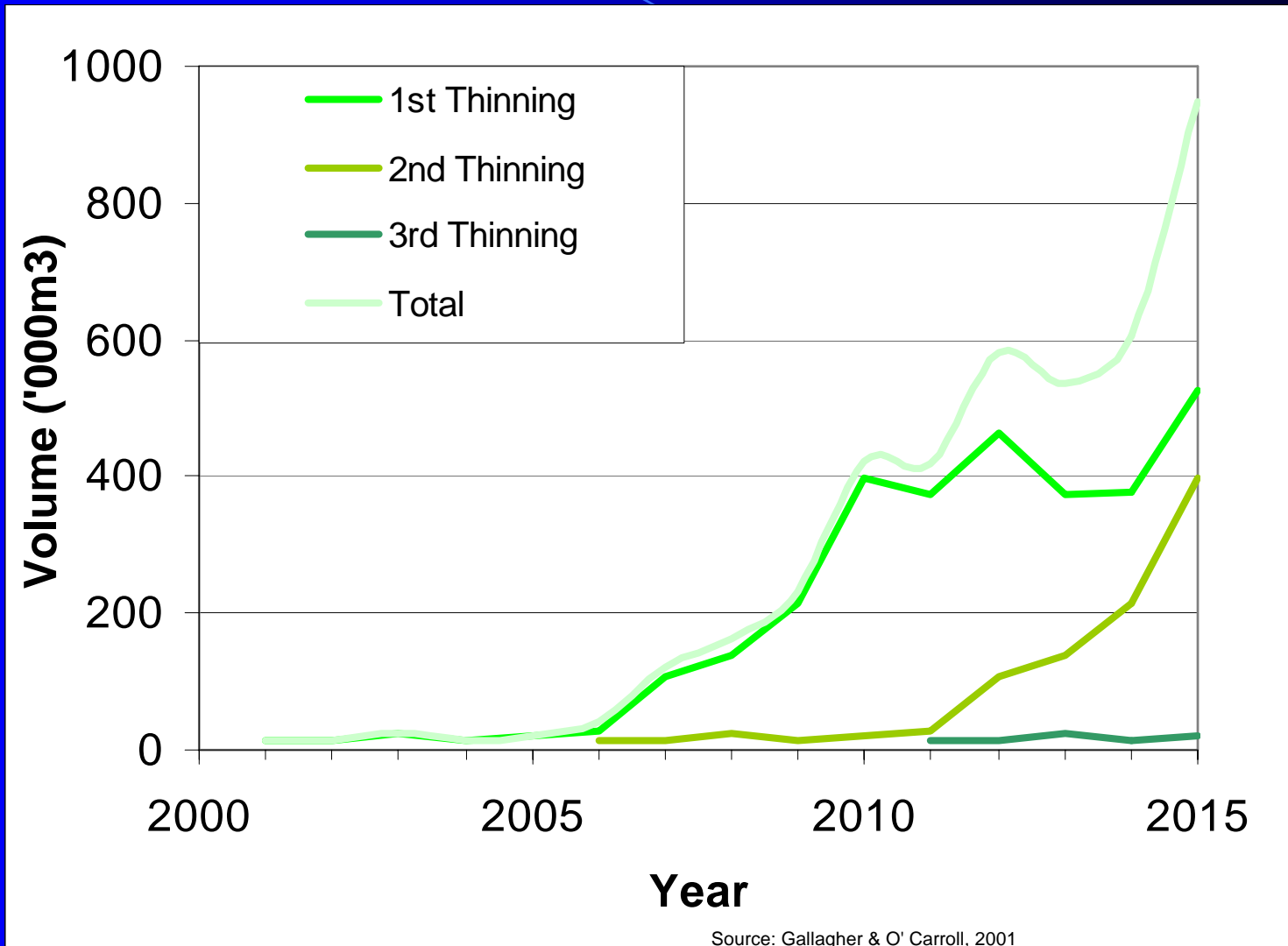
Context - Available Irish wood fuel

Source: COFORD, 2004



Source	Quantity 2010 (green tonne)
State & Private Forestry	
Thinnings & Clearfell residues	1,040,000
Wood Industry Residues	
Sawdust, Woodchip, Bark, Slabwood	250,000
Post consumer recovered wood	
Construction & Demolition Waste & Packaging	250,000

Context - First Thinning of Conifers



Forest Energy 2007

- Primary Objective:
- To secure marketable wood fuel of acceptable moisture content for sale as wood chip and firewood

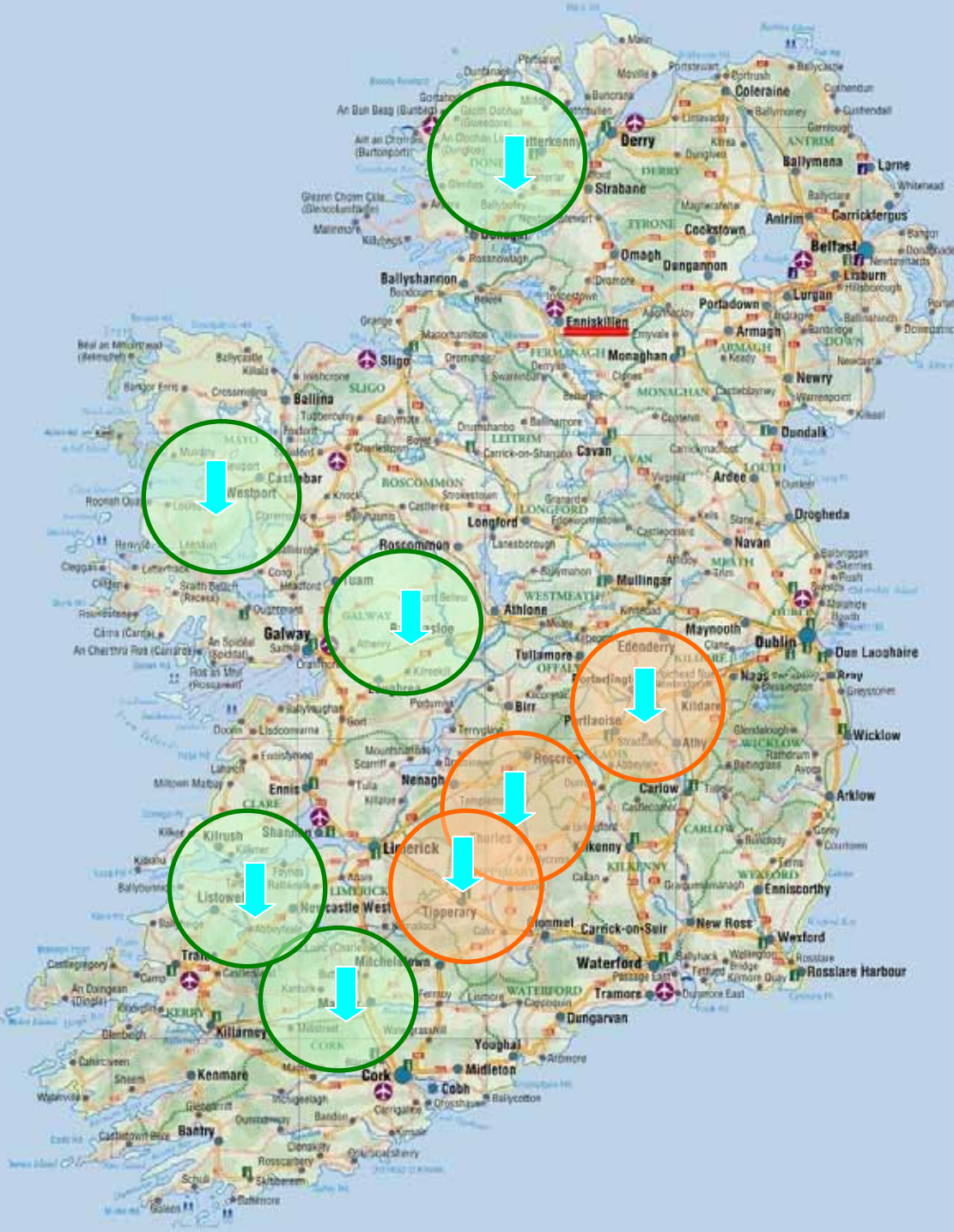
FE2007 – Detailed Objectives

- To demonstrate harvesting systems for wood for energy with particular emphasis on Western region
- To establish the productivity, fuel quality and delivered energy cost of these systems
- To investigate storage options and seasoning potential under various conditions over one and two summer seasons
- To track moisture content variation over the year in growing trees for a range of species
- To host public demonstrations of machinery and methods

FE2007 Demonstration Site Locations

Softwood Sites:
Ballybofey, Co.
Donegal,
Toormakeady, Co.
Mayo, Woodberry,
Co. Galway,
Abbeyfeale, Co.
Limerick, Bweeng,
Co. Cork

Hardwood Sites:
Dovea &
Tipperary Town,
Co. Tipperary &
Stradbally, Co.
Laois



Progress to date: Systems

- Five softwood sites harvested
- Two hardwood sites harvested
- Complete chipping of one site: Bweeng
- Partial chipping on three sites: Abbeyfeale, Ballybofey, Woodberry
- Chipping of chemically thinned plots from 2006: Kilbrin, Co. Cork & Swan, Co. Laois
- Site, system & assortment measurements taken on all sites
- Production costs 2007 to be described later

Progress to date: Fuel Quality

- Analysis of physical and chemical parameters to CEN Solid Biofuel Technical Specifications
- Results on moisture content, physical and chemical parameters to be described later

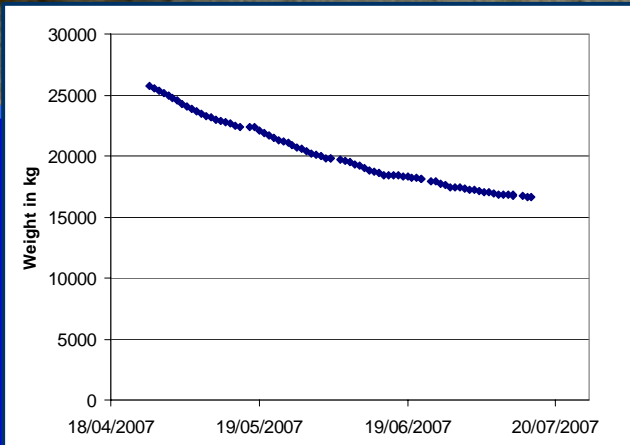


Progress to date: Storage Trial

- Construction of storage trial at Rochfordsbridge
- Climate and moisture content data collection on all sites



Preliminary modelling of
climate and moisture content
relationships



rochfort	RH (%)	Temperature (*C)	Rainfall (mm)	Wind Dir (Deg)	Wind Gust (km/h)	Wind Speed (km/h)
	HMD	TMP	RNF	WND	WNG	WNS
01/07/2007 00:00	87.3	14.1	0	60	11	1
01/07/2007 01:00	89.8	13.9	0	55	11	0
01/07/2007 02:00	89.8	14	0	141	8	1
01/07/2007 03:00	94.7	13.6	0.1	79	9	1
01/07/2007 04:00	95.9	13.4	0.3	42	4	0
01/07/2007 05:00	96.2	13.4	0.7	69	4	0
01/07/2007 06:00	97	13.3	0	74	6	0
01/07/2007 07:00	96.7	13.7	0	77	6	0
01/07/2007 08:00	90.3	14.6	0	201	6	0
01/07/2007 09:00	86.1	15.4	0	46	8	1
01/07/2007 10:00	83.5	16.3	0	176	8	0
01/07/2007 11:00	80	17.9	0.2	77	6	0
01/07/2007 12:00	87.8	15.6	2.7	39	4	0
01/07/2007 13:00	79	17.1	0	316	11	1
01/07/2007 14:00	72.4	17.7	0	283	11	1

Progress to date: Other

- Regular sampling of standing tree moisture content of several species on seven sites
- Secure archiving of all data sets
- Six public demonstrations during harvesting
- Three public demonstrations during chipping
- One demonstration of chipping for out-wintering pads

Work to do in 2008

- Harvest final hardwood site: Tipperary
- Further studies on firewood systems
- Further studies on moisture content of standing trees
- Complete chipping of all sites
- Complete system studies & fuel analysis
- Assess storage options and effects on drying
- Develop simple climatic indicators for predicting drying rate
- Report all

Summary

- This seminar represents interim results of a two year work programme
- Increase in scale and work packages compared to 2006
- Interim results on production costs, wood fuel properties, seasoning in 2007
- Benefits in securing wood energy markets for first thinnings