IEA Bioenergy

Task 42 on Biorefineries

Country Report: Ireland

Presented by:
Patrick Walsh
Sustainable Energy Ireland

Second IEA Bioenergy Task 42 Meeting
4/5 October 2007, Vienna, Austria

1. Introduction

Ireland's dependency on imported energy has grown to around 90%, compared with the EU average of 50%.
Imported oil remains dominant energy source, with a large part of Ireland's power generation and industrial production critically dependent on gas and oil.

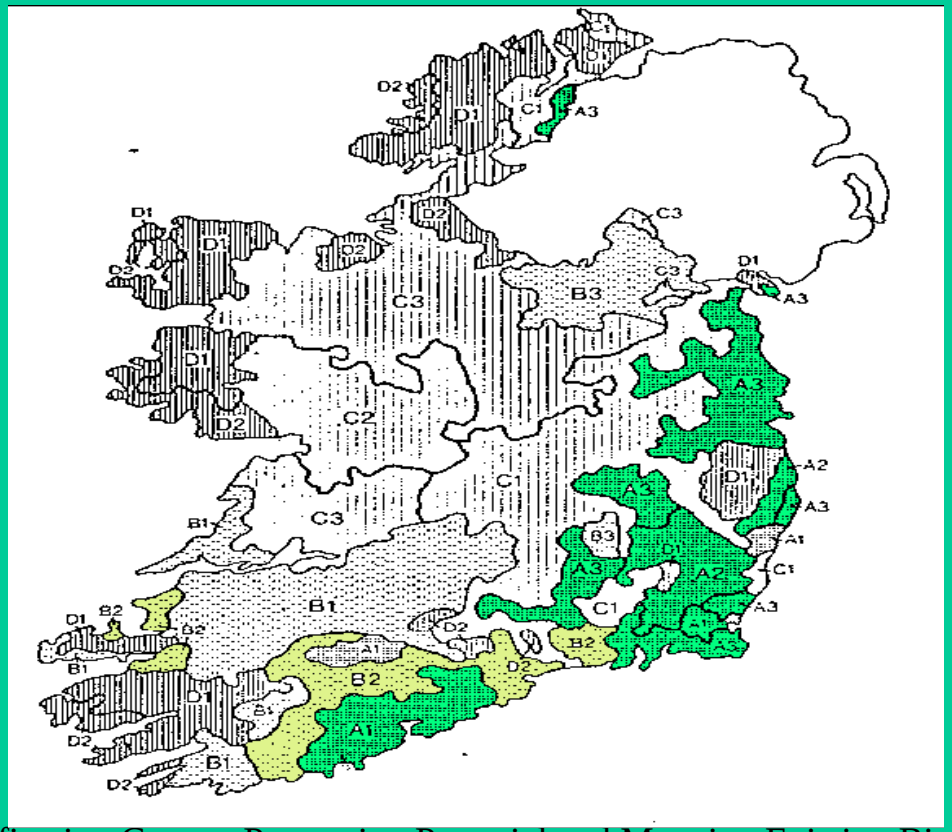
Threat of climate change, volatility of oil prices and need to secure supplies of indigenous energy.

Consumers in domestic and commercial sectors are looking for less expensive and more secure sources of energy.
Ireland has an excellent growing climate for wood fuel and grasses.
Ireland has been slow to recognise and develop the full potential of biomass for energy production, and even slower to recognise the loss of oil related products.

2. Current national biomass use

Agricultural land-use types in Ireland. The land use types A1, A2, A3 and B2 (coloured green) are suitable for arable production. A1: Arable, dairying, dry stockB1: Dairying (high), dry stock (average) A2: Arable, sheep, dry stock B2: Dairying, dry stock (low), arable (high)A3 Arable, dry stock B3: Dairying, dry stockC1: Dry stock, arable, dairying (low) D1: Hill sheep (high), hill cattle (low) C2: Dry stock D2: Hill cattle (high), hill sheep (low)

Grass has an average of 300 growing days in Ireland



Productive potential of Irish forestry is 10 cubic metres per hectare per year, compared to 4 in Spain or Finland.

Country Report “Identification Current Processing Potential and Mapping Existing Biorefineries”

Current national biomass use

- **Small scale rapeseed oil production**
- **Energy from forests**
- **Growing and harvesting willow**
- **Energy from agriculture - growing and using grain and miscanthus**
- **Small-scale pellet production**
- **Wood chip production**
- **Quality fire wood production**
- **Large and medium-scale pellet/chip use - demonstration of onsite wood chip/pellet/grain boilers.**

3. Biomass-related national policy goals

The following key targets with regard to renewable electricity were set (White Paper 2007):

• 15% of Ireland's gross electricity consumption from renewable sources to be achieved by 2010,

• 30% biomass co-firing at three State owned peat power generation stations to be achieved by 2015,

• 33% of Ireland's gross electricity from renewable sources to be achieved by 2020,

• 500 megawatt (MW) installed ocean energy capacity to be installed by 2020 and

• 400 MW CHP with particular emphasis on biomass fuelled CHP to be achieved by 2010 and 800 MW by 2020.

4. Mapping of Existing Biorefineries

Primary agricultural sector (small-scale initiatives)

Some small scale production of biogas on farms

4. Mapping of Existing Biorefineries

Food industry (sugar, starch, oleochemistry, bioethanol, biodiesel, …)

Lactic Acid production in Dairy Industry for food and cosmetics. Small Scale.

4. Mapping of Existing Biorefineries

Non-food Industry (materials, products, …)

NONE

4. Mapping of Existing Biorefineries

Feed Industry

NONE

4. Mapping of Existing Biorefineries

Pulp/paper Industry

NONE

4. Mapping of Existing Biorefineries

Petrochemical Industry, incl. Conventional Oil Refineries

•WHITEGATE OIL REFINERY, COUNTY CORK, (CONOCO PHILLIPS), 71,000 bpd

4. Mapping of Existing Biorefineries

Power Production Industry

NONE

4. Mapping of Existing Biorefineries

Others

Recycled Products Ltd, Donegal Farm Relief Services Group Co Donegal

Eilish Oils Ltd Co Wicklow

Kilkenny Cereals Ltd, Co Kilkenny

Biogreen Energy Products Ltd, New Ross, Co Wexford

Eco Ola, Galway Mayo Institute of Technology, Galway

Greyhound Recycling & Recovery Ltd, Co Meath

Conoco Phillips, Co Cork

Maxol Ltd, Dublin 1
(2005 excise relief: 6m litres pure plant oil; 1m litres biodiesel or other biofuel complying with diesel standard EN590; 1m litres bioethanol)

5. RTD-activities

National and EC Projects:NUI Limerick/NUI Galway, four Ph.D. students

1. **Analysis of products at different stages in biorefining processes**
2. **Catalysis of conversion of levulinic acid to petroleum and diesel additives; catalysis of hydrogen production from formic acid**
3. **Studies of biorefining processes (collaboration between UL, Biofine, and Scott, Convertech)**
4. **Supply of feedstock materials for biorefineries (collaboration between UL, NUIG)**
5. **NUIG has research into enzymes producing ethanol from various feedstocks**
6. **FP5 BESUB EU project, Iceland, Germany and Ireland. Green Biorefinery.**

5. RTD-activities

Pilot Plants

NONE

5. RTD-activities

Demonstration Plants

Application has been made to build an 8MW CHP plant utilising excess steam to power a Steam Explosion Bioprocessor in County Mayo Combined Bioenergies Ireland.

This will also provide research facilities for up to 30 scientists.

Two streams of production initially, Lactic acid and ethanol. Polylactide and optimisation of other 'platform chemicals'.

Teagasc (Irish agricultural and Research Body) has applied for €50M to build a demonstration and research facility

6. Major National Stakeholders

Industry, SMEs, Institutes, Universities, NGOs, GOs and their Interactions (scheme)

Biorefinery Ireland Ltd

Biofine

Bioverda

Combined Bioenergies Ireland

University of Limerick

University College Galway

Teagasc