

# *Job Creation in Renewable Energy*

Lifetime Lab

18<sup>th</sup> June 2009

***Brendan Halligan***

***Chairman***

## Section One

# INFORMATION ON SEI

# SEI Mission



To make Ireland a global leader  
in sustainable development

## BUILT ENVIRONMENT

- Energy Performance of Buildings Directive (EPBD)
  - BER certification (domestic and non-domestic)
  - HARP database
  - Display Energy Certificate for large public buildings
- Home Energy Saving Scheme
- Greener Homes Scheme

# Built Environment continued



- Warmer Homes Scheme
- Renewable Heat Deployment Programme (ReHeat)
- Lower Carbon Homes Programme
- Public & Commercial Sector Programme
- Pilot Electricity Use Awareness Trial
  - Smart metering

## RENEWABLE ENERGY

- **Microgeneration pilot field trials**
- **CHP/Biomass**
  - CHP Deployment Programme
  - Biomass & AD CHP grant scheme
- **Wind Energy**
  - REFIT schemes
  - Guidelines for wind farm development
  - Irish Wind Atlas

# Renewable Energy continued



- **Ocean Energy**
  - Ocean Energy Development Unit
    - Ocean Energy Industry Forum
    - Galway Bay Wave Energy Test Site
  - Prototype Development Fund
- **Research and Development**
  - Sustainable Energy Incubator Programme
  - Research, Deployment & Development (RERDD)

# Role of SEI: Transport

## ELECTRIC VEHICLES

- Electric Vehicles Conference
- Buyers guide
- Promotional programme

## DUNDALK 2020

- Sustainable Energy Zone (SEZ)

# Role of SEI: Energy Efficiency



## ENERGY EFFICIENCY AND MANAGEMENT

- Energy MAP
- Large Industry Energy Network (LIEN) and for SMEs
- Accelerated Capital Allowance (ACA)

## COMMUNICATION & SUPPORT

- Renewable Energy Information Office (REIO)
- Energy Policy Statistical Support Unit (EPSSU)
- Annual events (Energy Show, Sustainable Energy Awards)
- Power of One campaign

# Role of SEI: Communication



## COMMUNICATION & SUPPORT

- Renewable Energy Information Office (REIO)
- Energy Policy Statistical Support Unit (EPSSU)
- Annual events (Energy Show, Sustainable Energy Awards)
- Power of One campaign

# Organisation



Head Office: Wilton Park House, Dublin

Regional Office: Dundalk

EPSSU: Cork

REIO: Clonakilty

Information Office: Sligo

Section Two

# CONTEXT

- Transformation to a **low carbon society** is now accepted
  - Programme for Government – 3% p.a. GHG reduction
  - EU 2020 commitment - 30% GHG reduction (baseline: 1990)
  - Both targets are identical for 2020
- 2050 target of 80% reduction on 1990 levels
- Electricity demand will double by 2050

# The Inevitable

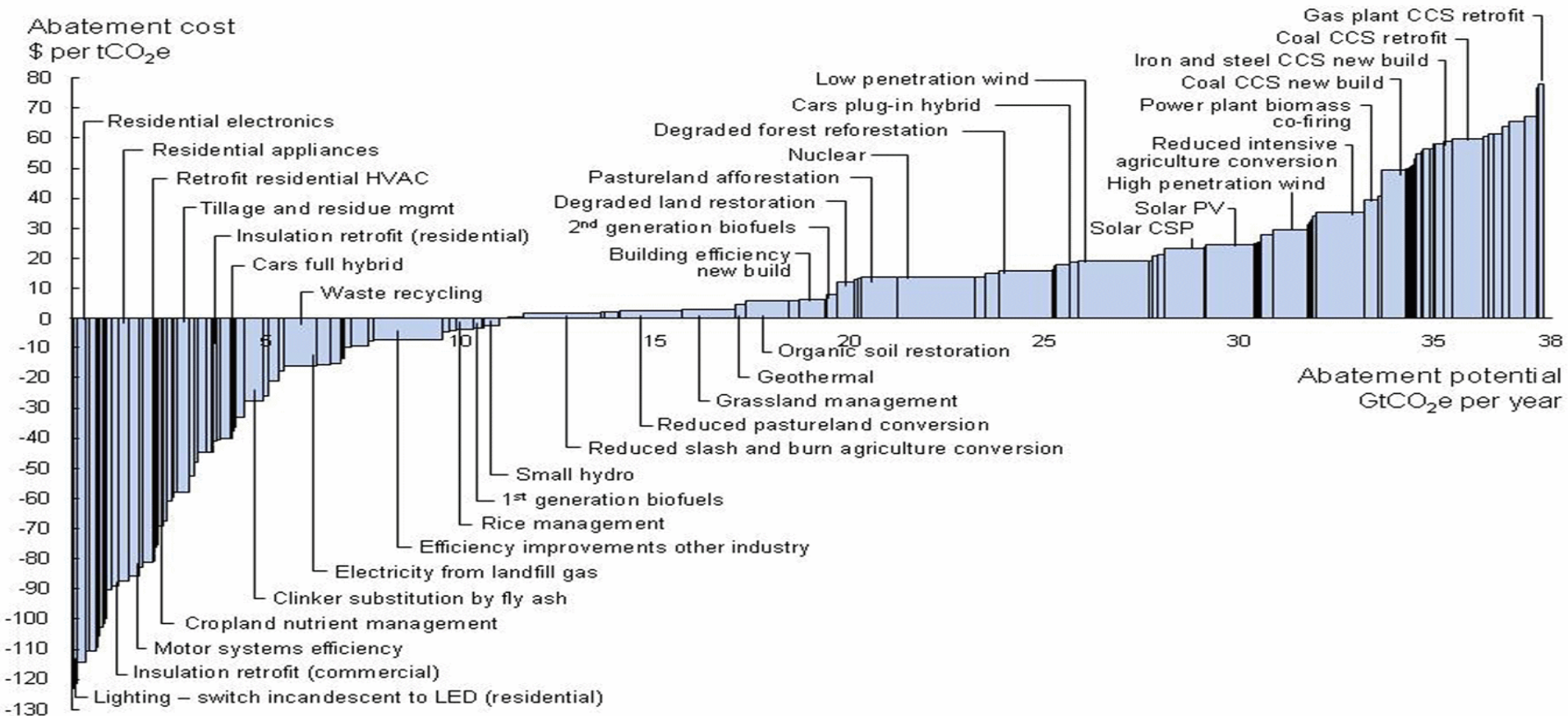
- Rule One: the inevitable always happens
- Rule Two: let it happen – don't fight it
- Rule Three: Embrace it – be ahead of the curve
- Rule Four: Claim credit for making it happen

# Internalising the Inevitable

- The 'low carbon' society is inevitable
- The biggest transformation since the Industrial Revolution
- Profound change in behaviour of both individuals and society on the way
- A vision of the inevitable is essential
  - A springboard for action

# McKinsey Cost Curve

## Global GHG abatement cost curve beyond business-as-usual, 2030



# The Electric Economy

- RE Power Generation
- Electric transport (cars, trains, metro, trucks, buses)
- Sustainable communities
- Smart buildings and grid
- No hydrocarbons!

# Vision for 2050

- All building stock retrofitted
- Positive carbon buildings the norm
- 100% RE power generation
- Distributed generation and distribution
- Electrified transport
- Holistic energy management
- Low carbon energy
- Energy security and self sufficiency
- RE exporter

Section Three

# RENEWABLE ENERGIES

# What are Renewable Energies?



Wind Energy: Onshore & Offshore

Ocean Energy: Wave & Tidal

Solar Energy: Thermal & Photovoltaic

Bio Energy: Biomass, Biofuel & Bioelectricity

Geothermal

# Surrounding Infrastructure

National Grid:	Deepened & Smart
Supergrid:	Interconnection with EU
Planning:	Streamlined
Regulation:	Certainty
Pricing:	Fixed Feed-In-Tariff
Finance:	Green Bank
	Green Bonds

# Future Formula



Nobuo Tanaka, Executive Director  
International Energy Agency

First Priority:	Energy Efficiency
Second Priority:	De-carbonise the Power Sector
Third Priority:	Electrify Transport (fuelled by RE)

Section Four

# DEVELOPING RENEWABLE ENERGIES IN IRELAND

# Re-inventing Ireland

- The need for a new Whitaker
- Public service: either a key to change...
  - or a clamp on progress
- Start here: legitimises vision for politicians and public
- But no sign yet of a Whitaker II

# Re-educate

- *Quis custodiet ipsos custodes?*
  - *Who will teach the teachers?*
- The public service must lead, and
- Engineer the change
- Lemass – semi-states became development corporations

# Re-invent

- The market needs supporting framework
  - Institutions, law, regulations, taxes, prices, etc.
- Physical infrastructure
  - grid
- Finance
  - Importance of financiability
- Little of this infrastructure exists today

# Re-orientate

- Personal behaviour
  - Heating/cooling
  - Appliances
  - Retrofitting
- Corporate behaviour
  - Energy Management
- Travel and transport
- Power generation and distribution

# Irish Strengths

- Comparative advantage in wind and ocean energy
  - Major producer/exporter of RE
- Architectural profession and construction industry
  - Leaders in energy efficiency
- Manageable communities
  - Leaders in sustainable living
- IT community
  - Smart electric economy

# Retrofitting

- New materials, fittings, design
- New managerial and craft skills
- New planning philosophy
- Retraining of professionals and crafts
- New financial products
  - Green mortgages, bonds and building societies

# RE Power Generation

- Limits to onshore wind...
  - But offshore is literally limitless
- New ports, shipping
- Ocean Energy is promising
- Also Solar Energy
- New manufacturing and construction plus
- IT support systems and
- Operations and maintenance

# RE Exports

- Vision of a ‘supergrid’
- Ireland linked to mainland Europe by three power superhighways:
  1. North: Scotland – Norway – Denmark - Germany
  2. East: Wales – England – Netherlands - Germany
  3. South: Cornwall – Brittany – France –Germany
- Enables Ireland to link up with the Mediterranean Solar Supergrid



Section Five

# GREEN COLLAR JOBS

# 1. DG TREN Study

“The impact of renewable energy policy on economic growth and employment in the European Union”

The Employ RES research agencies conducted on behalf of the European Commission –

April 2009

# EU Situation in 2005

Employment:	1,400,000
	0.65% of total employment
Value added:	€58,000,000,000
GDP:	0.58%
Direct Effect:	55%
Indirect Effect	45%

# Working Assumptions

- RES in Final Energy Consumption
  - 2020 – 20%
  - 2030 – 30%
- Oil Price
  - 2020 - \$100 per barrel
  - 2030 - \$109 per barrel
- Carbon (in EU ETS)
  - 2020 - €34 per tonne
  - 2030 - €44 per tonne

# Results – Gross Value Added



- Gross Value Added (ADP)
  - 2020 – €150 billion
  - 2030 – €200 billion

Ireland's potential share could be €16 billion in 2030

# Results - Employment

- Employment (ADP)
  - 2020 – 2,800,000 new jobs
  - 2030 – 3,400,000 new jobs

Ireland's potential share could be 270,000 new jobs by 2030

# Stronger Policies Needed

- Onshore Wind and Biomass to be sustained
- More short term financial support for:
  - Offshore Wind
  - Photovoltaic
  - Solar thermal
  - Several generation Biofuels
- Maintain EU's "First Mover Advantage"

# Ireland's Share (2005)

- Lowest percentage GDP and Employment in EU (except Malta and Cyprus)
- Denmark's share is 10 times higher
- Denmark Ltd 320,000 employment in RE
- Ireland Ltd less than 10,000

## 2. Copenhagen Climate Council Study

- “Green Jobs and the Clean Energy Economy”

Published by the Copenhagen Climate Council

- Thought Leadership Series: No. 4

2009

# 3 Reasons for Clean Industry



- Greater energy independence
- Improved environmental benefits
- Positive economic impacts

# Here's a thought...

...the **renewable energy** sector generates more jobs per unit of energy delivered than...

...the **fossil fuel energy** sector!

# Energy and Emissions

- Electricity sector – 40% of worldwide CO<sub>2</sub> emissions
- Emissions are set to rise
- Essential to decouple economic growth and emissions ?
- The key is a **low-carbon economy**

# Policy Requirements

- Long term government commitment to significant and ambitious renewable energy targets
- Financial support to ensure these targets are met
- Access to transmission infrastructure and strategic expansion of this infrastructure
- Streamlined planning and permitting procedures

# Germany

1990 – fixed Feed-In Tariff for PV

1991 – subsidised individual PV installations

1995 – provided loans

Result: Germany is the top solar market in the world

# Denmark

- Was 99% dependent on imported energy
- Since 1980 has promoted energy efficiency and renewable energy
- GDP grew by 56%
- Energy consumption remained static
- 20% of domestic electricity now from wind
- Danish firms account for 40% global wind capacity
- 320,000 employed in RE
- 50% of turbines owned by 150,000 Danish families

# Navarre

Population:	620,000 (1/7 <sup>th</sup> Ireland)
Area:	10,000 km <sup>2</sup> (1/8 <sup>th</sup> Ireland)
GDP:	€16.5bn (6% of Ireland)
1996:	100% energy imported
2008:	70% self reliant
2010:	100% self reliant (target)
Wind:	6 <sup>th</sup> largest producer in Europe (900 MW)
Solar PV:	1.2 MW plant (previously largest in EU)

- Regional government strongly supports wind:
- 4 wind turbine assembly factories
- 4 blade factories
- 2 component factories
- One of the largest wind turbine testing labs in the world

# Fiscal Benefits

- Each MW installed produces more than €100,000 of tax revenue during its 20 years of operation
- So 1000 MW produces €100,000,000 tax revenue over 20 years  
i.e., €5,000,000 p.a.

Section Six

# WHAT'S HAPPENING?

## Direct Jobs in 2009

Energy Efficiency	3,140
Renewable Energy	840
Support Programmes	<u>395</u>
Total	4,375

Energy Efficiency Programmes	Direct Jobs in 2009
Home Energy Savings (HES) Scheme	2,400
Warmer Homes Scheme (WHS)	700
CHP Programme	40
Renewable Energy Programmes	
Greener Homes Scheme (GHS)	540
ReHeat	100
Ocean Energy	200
Support Programmes	
Renewable Energy RD&D	180
Electric Vehicle Deployment	40
Energy Performance of Building Directive (EPBD)	175
Total	4,375

New jobs	3,700
Sustained jobs	1,300
Engineers & Professionals	800
Apprentices	<u>300</u>
Total	6,000

# Private Sector

Open Hydro:	tidal energy
Wavebob:	wave energy
C&F (Athenry):	unique wind turbines
Gaeltech (Cavan):	wind farm
Glen Dimplex:	heat pumps
Kingspan:	buildings
IBF:	financing principles

# Macro-Strategy

- Comparative Advantage in wind and ocean energy
- Offshore wind potential limitless
- Combine wind, wave and tidal
- Aim to be a RE exporter
- Create the supporting infrastructure
- Build the Celtic Supergrid

# Jobs Potential

**Wind/Ocean:** R&D, manufacturing, construction, logistics, operation & maintenance, exports, IT

**Buildings:** R&D, retrofitting, materials manufacture, IT

**Transport:** R&D, infrastrucutre, car manufacturing, components manufacturing, IT

# Key Messages

1. Remove Barriers
2. Create Incentives
3. Impose Penalties
4. Set Legal Limits

# Key Insight

**Green** is the new **blue**....

....blue collar, that is.

We Are Trying to Prevent

**Catastrophic Climate Change**