

Developing Renewable Energy for a Regional Economy

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Created in 1995 as a service of SEI to promote RE in Ireland

2004 Awarded Best European RE Agency by the EC

€ 20 Million Per Day spent on energy – almost all comes from imported polluting fossil fuels (over half from oil)

- Resulting in 70,000,000 tonnes of air pollution/year
- Fossil fuels – Local employment / investment opportunities??

Traditionally, we :

- Have had no control over energy costs
- Have had low awareness of where Ireland gets its energy or will get it in the future, but.....

This is quickly changing....



Why is Renewable Energy Important ?

- Energy import dependency → 91% in 2006
- Oil → 56% of TPER

Energy Price Stability - Affordable energy at long term competitive and predictable prices

Employment & Prosperity - New investment in modern equipment for long term, stable jobs and local fuels rather than costly imports

Energy Security & Flexibility - Reduces our over-dependence on imported energy [90 % imported], ensures our future energy supply..

Energy for our children's children- renewable energy will never run out....

Major Environmental Benefits- green & clean

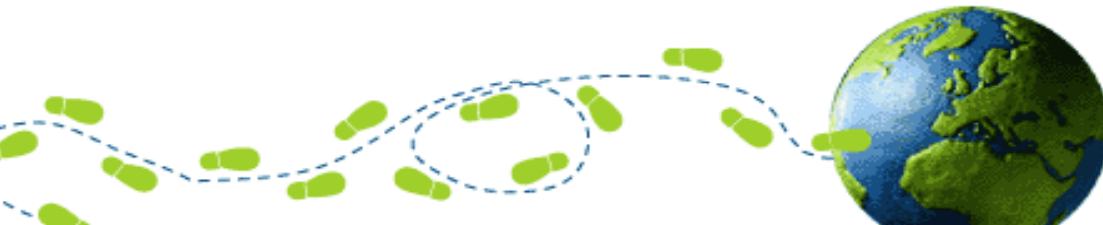


Recoil



The Solutions:

- Reducing energy demand
- Switching to Renewables.....
 - Wood heating e.g. district heating systems
 - Solar energy (thermal and PV)
 - Renewable heat pumps
 - Wind energy



Key targets for renewable electricity were set:

- 15% of Ireland's gross electricity consumption from renewables by 2010
 - 30% biomass co-firing at 3 peat power stations by 2015
 - 33% of Ireland's gross electricity from renewables by 2020,
 - 500 megawatt (MW) installed ocean energy capacity by 2020
 - 400 MW CHP (esp. biomass) by 2010 and 800 MW by 2020.
 - 2nd North South electricity interconnector by 2011
 - East-West electricity interconnector no later than 2012
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- Western sea-board county - wind climate is very good
 - Congestion developing on the grid in the north-west

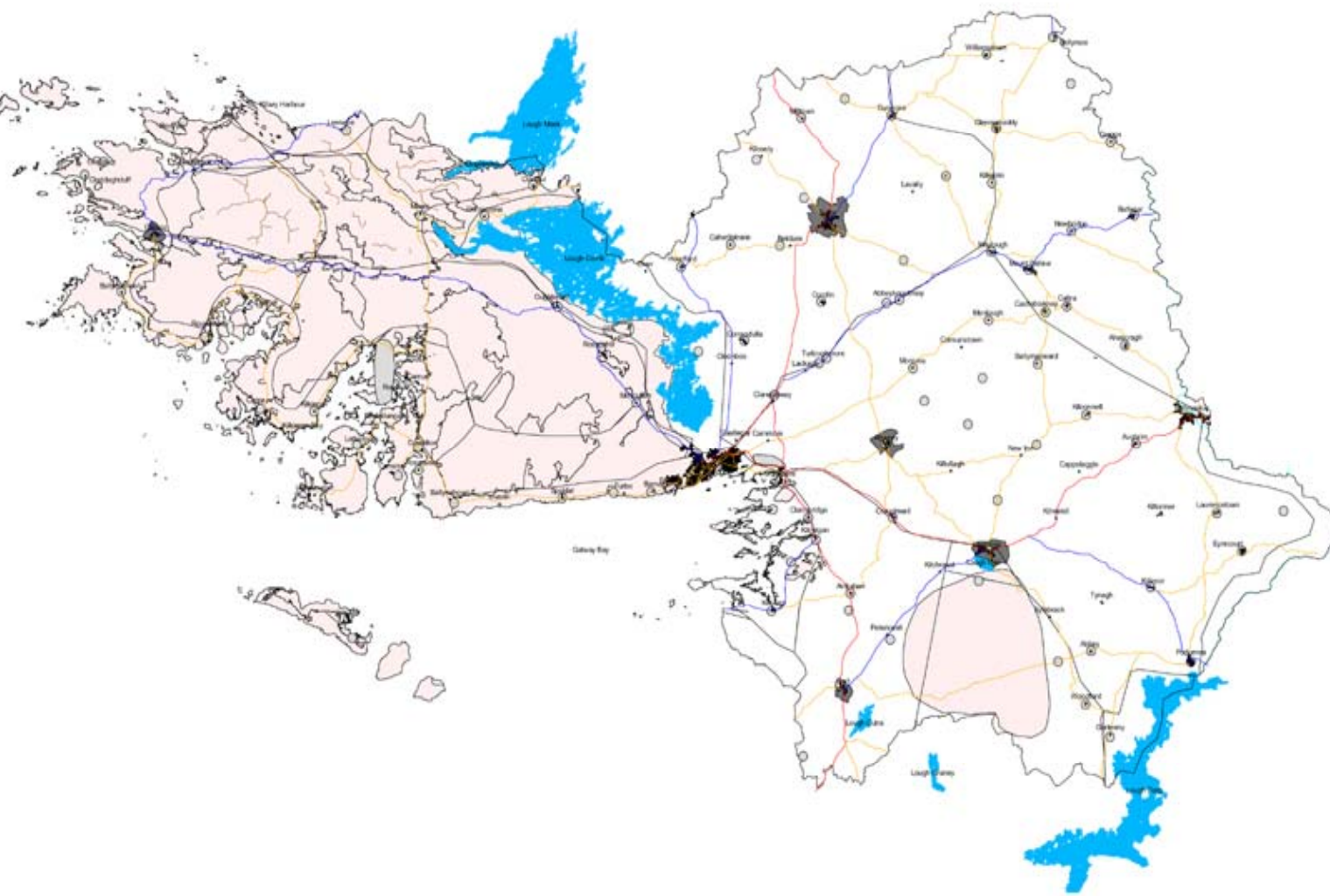
Wind Energy Offers Development Options



Landscape and Landscape
Character Assessment of
Galway County

Areas of Wind Farm
Potential

Figure 5a



Legend

- Urban Areas
- Zone of Settlement Potential
- National Primary Roads
- National Secondary Roads
- Regional Roads
- Towns
- Character Areas
- Lakes
- Rivers
- Ridge Lines
- Scheduled Towns
- Area of wind resource potential - wind speed estimated at 6m/sec or above, based on preliminary mapping, accuracy is not guaranteed

Landscape Character Areas

- 1 - North east Galway (Ballisodare to Tuam)
- 2 - Shannon and South River Valley between Moyne and Subisodare
- 3 - East central Galway (Athenry, Ballinacree to Roscommon)
- 4 - Southwest Galway (Clontarf to Corl)
- 5 - Northeast Galway (Tuam westwards)
- 6 - Slieve Aughty Mountains
- 7 - Northwest Lough Derg
- 8 - Lower Burren (Co Galway portion)
- 9 - Inverness to Galway City coastline
- 10 - East Connemara Mountains (Moycullen, Rosna to Dink)
- 11 - Lough Corrib and environs
- 12 - South foothills of east Connemara Mountains (west of Galway to Roscommon)
- 13 - East Galway Bay (Crannagh to Kinvara Bay and inland to N18 road)
- 14 - West Connemara
- 15 - Letterkenny and Gortnace Islands
- 16 - West foothills of east Connemara Mountains
- 17 - Connemara (Castle Bay to Glenties)
- 18 - Bannaghilly bays and eastern bays
- 19 - West Coast (Corrib bay to O'Flaherty)
- 20 - West Coast (Cliffen to mouth of Kinvarra Harbour)
- 21 - Kilary Harbour and Eastern bays
- 22 - Connemara National Park (including Lough Fee, Lough Inagh and O'Connell's Lough)
- 23 - Inishowen (including Lough Linn and south Lough Mask)
- 24 - Aran Islands
- 25 - Lough Ros

Fig. 9

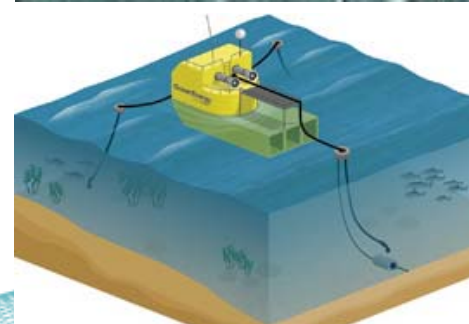
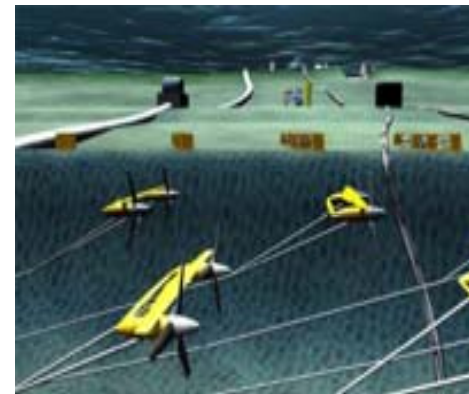


Factors to be considered :

- Cost effectiveness of wave energy technology.
- Amount of power which can be practically connected to the network from the western seaboard locations.
- Amount of capacity available on the network.

Recent developments :

- €2 million in grants - Ocean Energy Prototype Fund – to help developers to make their devices commercial.
- New feed-in-tariff - REFIT scheme for wave energy – €220 / MWh.
- €500,000 this year - Ocean Energy Development Unit as part of SEI.



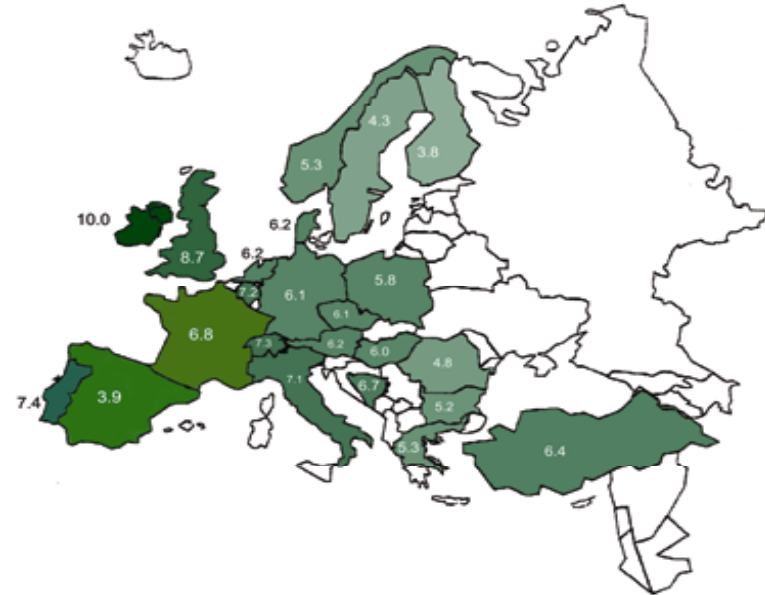
WOOD BIOMASS

Wood can supply heat with the potential to save about a third of a million tonnes of CO₂ emissions per year

COFORD currently working to stimulate sustainable forestry practices, rural development and prevent rural decline as wood fuel supply chains evolve to meet market demands.

Teagasc = first port of call for all landowners thinking of planting land.

Your local forestry development officer for free, independent and objective advice.



Wood Pellets

- Made from virgin wood with no contaminants, additives or bark
- Lignin – binding agent
- High Energy content
- Balcas & D-Pellet



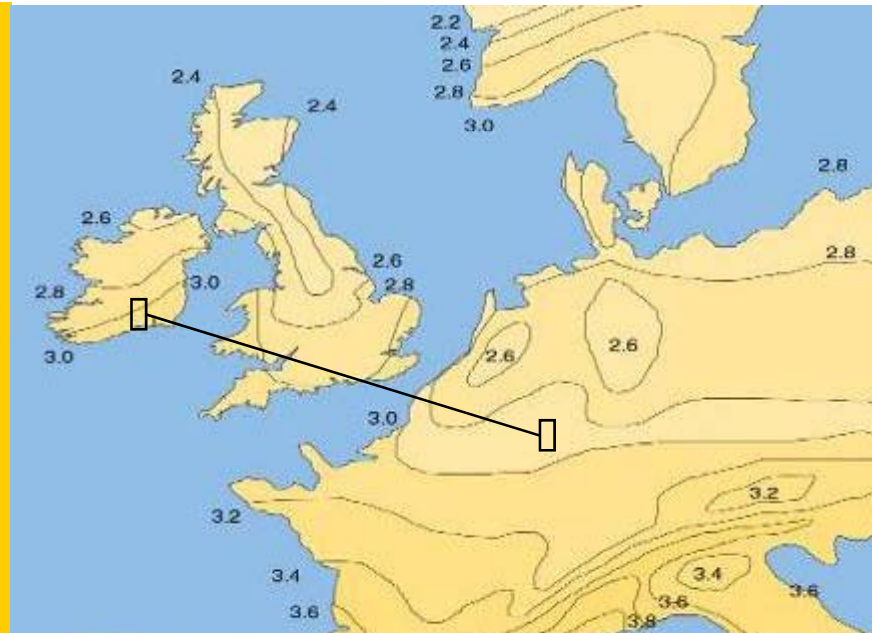
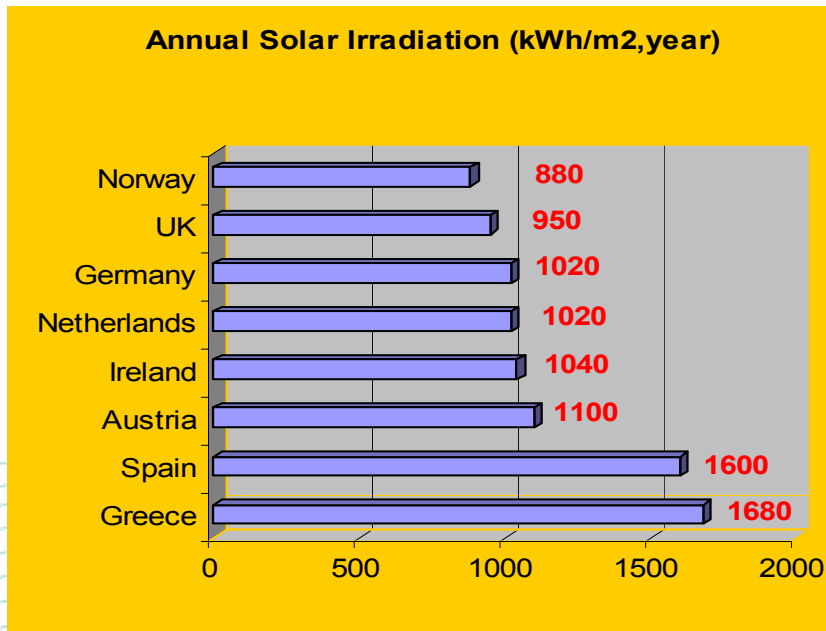
- **Large Buildings Market- hotels, hospitals, nursing homes**
- **New Housing Developments and the private market**
- **Industrial heat applications – high energy users**

- Greener Homes Scheme (Domestic) – Biomass / Solar / Heat Pumps
- REHEAT scheme (Non-Domestic) – Biomass / Solar / Heat Pumps
- Biomass / AD CHP

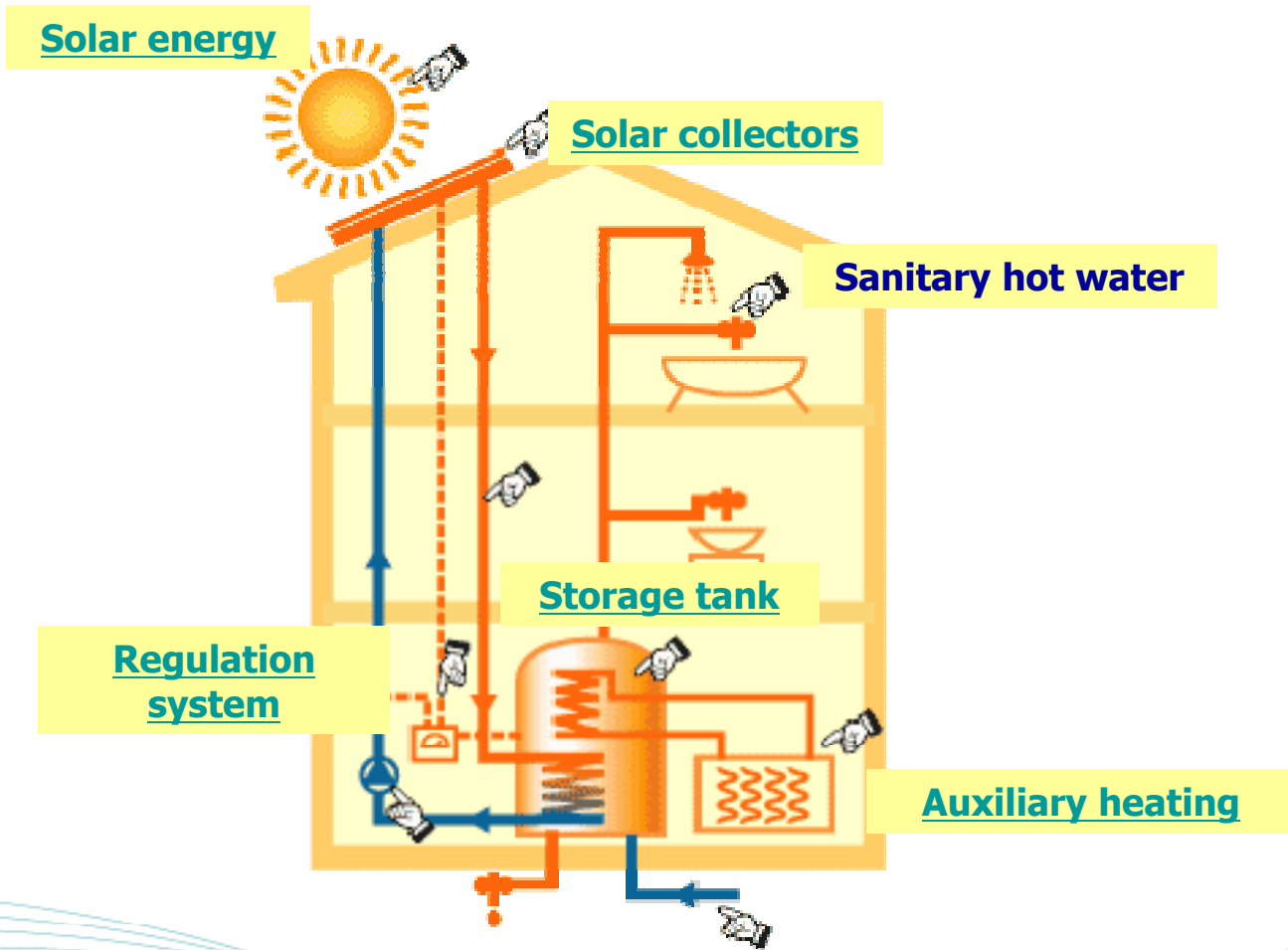
Ireland's Impressive Solar Energy Resource

On every square patch of ground, 1m x 1m, every year we receive :
 > 100 litres of oil per m² per year
 420 x Ireland's total annual energy consumption
 10 times annual heating consumption of a 200 m² bungalow

We can harness some of this free energy – Passive Design / solar thermal / PV



Simple solar water heater



Heat Pumps

Ambient heat from the environment

- COP = 4.0
- Can save up to 65% saving compared to oil
- Air / Ground / Water source
- Ideal with low-temperature distribution



Budget Announcement 2005	€65M
Included BioHeat Programme	€22M

**Budget Announcement 2006 to expand
BioHeat Programme to include Solar
Thermal and Heat Pumps** **€4M**

ReHeat Grants	€26M
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Renewable Heating Capital Investment grants

Up to 30% of the eligible cost of the heating system, including storage, installation and commissioning to a defined maximum as per table

Renewable Heating Feasibility studies

Up to 40% of eligible costs to a maximum of €5,000 per technology investigated

Plant owner typically in the industrial, commercial, services, or public sector or a community organisation

Renewable heating systems owned and operated under an energy services company (ESCO) also eligible

Plant located in the Republic of Ireland

Typical applicants are expected to be: hotels, leisure centres, nursing homes, offices, schools, sporting clubs, agricultural operations → **Anywhere with a need for Heat**

Buildings, the quiet energy guzzlers

Buildings in residential and tertiary sectors:

Largest primary energy user: 43% of TPER

Largest electricity user: 60% of total

Largest energy related CO₂ emitter: 47% of total

So how do we address this.....???

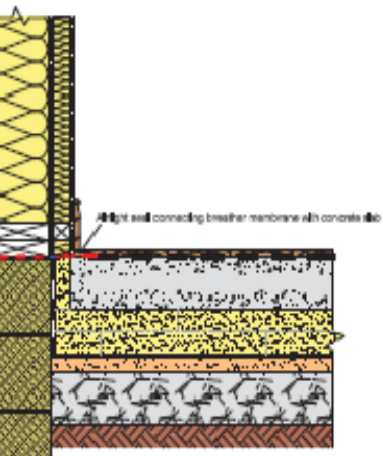


New Building Regulations - July 2008

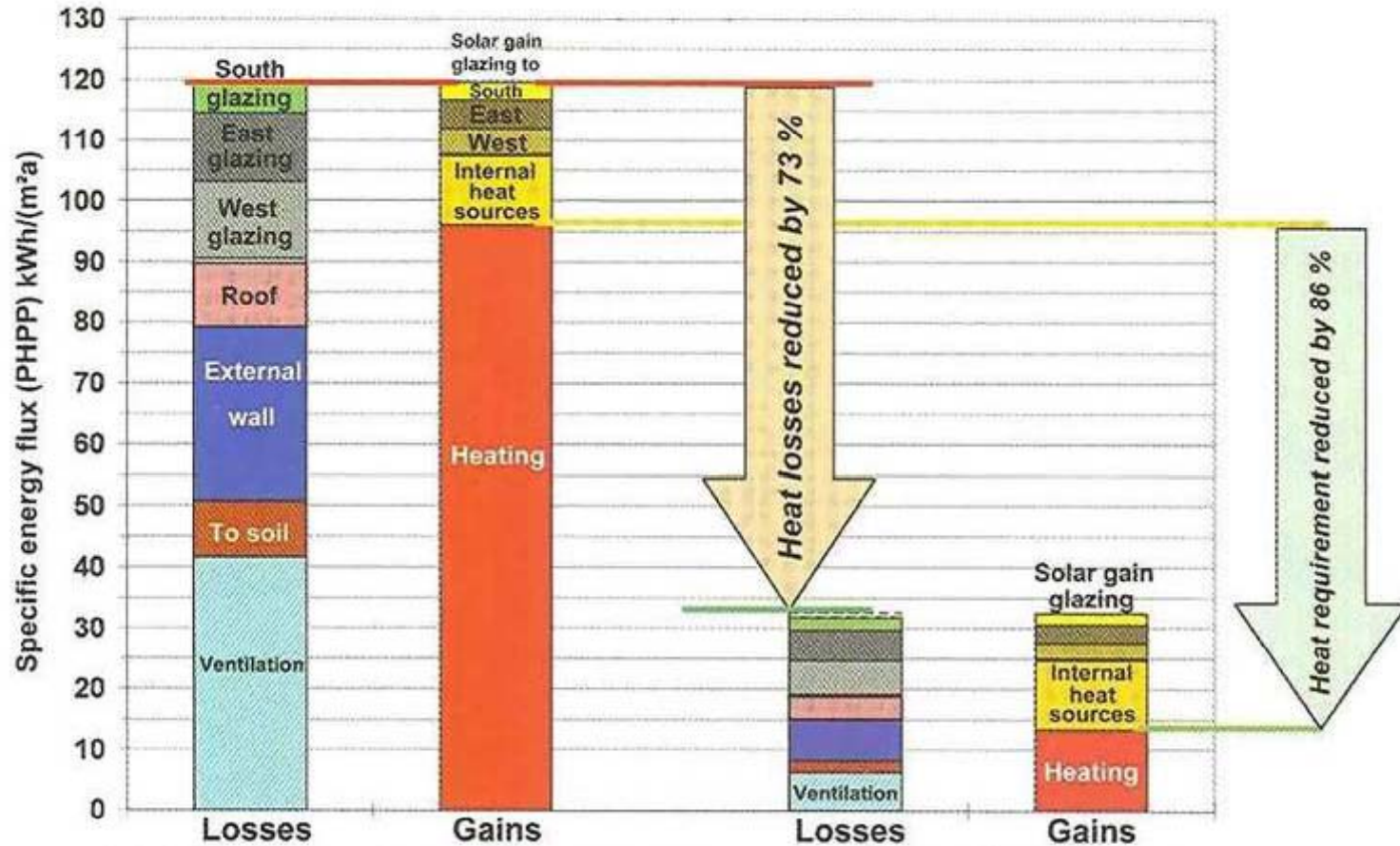
- 40% improvement on previous regulations in terms of energy saving.
- Minimum RE contribution (10kWh/m²a thermal OR 4kWh/m²a electrical)
- Energy and carbon performance applicable.
- Opportunity for developers and homeowners to move closer to “passive” buildings.
- Secondary driver – BER rating for all houses by 2009 will lead to existing housing stock improvement and encourage low energy design in new builds (A-rating)
- Home Energy Saving Scheme – Pilot (2008) – Full (2009)



- Well Insulated Building Envelope
- High Performance Windows / Doors
- Minimised heat loss through thermal bridging
- Reduced structural air infiltration
- Use passive solar & internal gains
- MHRV – No rads / u.f. required, and waste heat recovery
- DHW – efficient system
- Use renewable energy to provide auxiliary heating



Passive House 'v' Conventional



Multifamily apartment building to reference standards (1995 German Thermal Insulation Ordinance WSV0'95) Kassel lot 1 HHS/ASP 02-Kassel

Multifamily apartment building to passive house standards, as built Kassel lot 1 HHS/ASP 02-Kassel



- Order free copy of PH design and construction guidelines from REIO

e.g. orientation

- Planning – Sell Concept



- PH, Building Regulations, BER – Same Goal
- Refurbishment – guidelines coming this year.....

The European Parliament.....

“Calls on the Commission to propose a binding requirement that all new buildings needing to be heated and/or cooled be constructed to passive house or equivalent non-residential standards from 2011 onwards, and a requirement to use passive heating and cooling solutions from 2008.”



- *Define a Strategy for the County - identify future energy needs and the role that RE can play in meeting challenges. For example:*
- Planning issues for wind farms (in line with the new DoE guidelines), biomass plants, low energy and passive houses
- Plan for the sustainability in local areas with regard to transport and housing, encouraging the use of public transport and RE products, technologies and concepts. Compliance with the EPBD etc.
- Showcase RE and sustainability in your own homes and Public Buildings – follow the Fingal CC example...

- Local employment & enterprise development
- Redirection of money into local economy
- Renewables offer competitive energy at stable prices
- The environmental benefits of switching to renewables are very significant
- It's time for the local government to provide leadership in renewables

BIOENERGY

A Growing Opportunity for Energy and the Environment

2008

in association with Farmfest

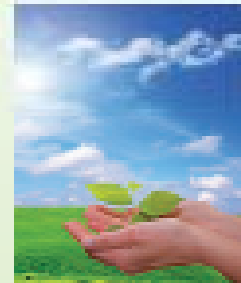
Friday, 20th June 2008

Teagasc Mellows Centre,
Athenry, Co. Galway.

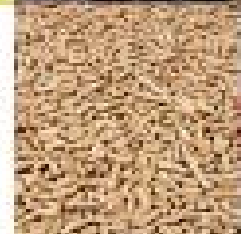
Time: 10am - 6pm

YOU ARE INVITED TO THIS UNIQUE AND FREE EVENT THAT COMBINES:

- Tented Village and Outdoor Product Exhibition
- Biomass Stove and Boiler Suppliers
- Equipment and Fuel Suppliers
- Expert Workshops
- Practical Demonstrations
- Field Excursions



Bioenergy 2008 offers something for everyone from homeowners to landowner, from hotelier to energy consultant... For further information: www.sei.ie/bioenergy2008



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