

# CECODHAS 2006

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N. I. Housing Executive

8th November 2006



# Home Energy Conservation Act

- Operational 1<sup>st</sup> April 1996
- 34% energy efficiency improvement
- No statutory enforcement powers
- No additional finance
- No deadline specified
- Strategy – finance works to own stock and partner others to encourage and, in some cases, fund private sector works
- Progress measured in reduced fuel use



# DOMESTIC ENERGY USE

- Energy consumption in 1996 was 79,600T/J
- Average SAP in N.I. in 1996 was 41
- Solid fuel was main domestic fuel with oil growing steadily - no natural gas
- By 2004 there was a 17.2% reduction in energy consumption over 1996 figure
- Average SAP in N.I. in 2004 was 57

# DOMESTIC FUEL MIX

	1996	2001	2004
	%	%	%
■ Mains Gas	0	3.1	8.0
■ Solid Fuel	40.4	18.4	8.4
■ Oil	35.7	58.1	65.3
■ Dual	9.3	9.5	9.7
■ Electricity	8.8	8.3	6.9
■ Other/LPG	5.8	2.6	1.8

# Solar Water Heating

- Cross-Border Project – EU Funded in 2000
- Partner – Donegal County Council and Bryson House
- 6 Dwellings in Bangor and Buncrana
- Thermomax systems
- Independent Evaluation
- No problems after 6 years

# Solar Water Heating



# Solar Water Heating

- Very cost-effective renewable
- Clear Skies Grants
- Solar Smart Grants
- Encouraged many more local installers
- Housing Executive bid to Environment & Energy Fund – 600 installations



# Photovoltaic Panels

- DTI Funded – over £300k
- UK Wide Field Trial – 9 projects
- Partnership Project - NIHE, NIE, UUU & DTI
- Flats required new pitched roof
- Panels supplied by BP Solar
- PV panels providing 49kW of power
- Tenants using on average half
- Performance monitored by University of Ulster



# PV in Social Housing



# Hard to Heat Homes

- 4 Rural Cottages selected
- Independently Monitored
- New Technologies
  - Solar Water Heating Panels
  - Photovoltaic Panels
  - Solar Air Heating & Ventilation System
  - Ground Source Heat Pump
  - 2.5kW Wind Turbine
  - Prototype Oil Fired Condensing Boiler



# Solar Air Heating & Ventilation



# Solar Air Heating & Ventilation

- EU Grant of €700k
- 120 systems installed – 55 in social housing
- Warm air for heat and ventilation in winter and hot water in summer
- Particularly suitable where condensation is a problem



# Wind Turbine



# Wind Turbine

- Installed at rural dwelling
- Noise problem
- Relocated to another site
- Long delay with Planning Approval
- Performance being monitored

# PV Panels & Solar Water Heating





# Conclusions & Developments

- Solar water heating - cost effective – bid for large scale roll out
- PV panels – longer payback
- Wind Turbine – relocated
- Solar Air Heating/Ventilation – up to 120 installations now underway
- Oil fired condensing boiler – now available commercially
- Ground Source Heat Pump – too early to draw conclusions



# Micro-CHP Units

- 50 Unit Field Trial
- Generates electricity and heat
- NIHE, NIE, EST, Phoenix & DETI
- Monitored by Carbon Trust
- 10 in NIHE, 10 in Housing Associations and 30 private homes
- Whispertech units – New Zealand

# Micro Combined Heat and Power



# Other Technologies

- Air Source Heat Pumps – Fermanagh
- Wood Pellet Boilers
- Windsave Units (1Kw) roof mounted small scale wind turbine
- Swift Units (1.5Kw)
- Hydro-Electric – River Lagan Feasibility Study

# Environment & Renewable Energy Fund (EREF)

- €83 million over two years
- Funded by household rates (local tax)
- Encourage innovation
- Increase security/diversity of supply
- Develop new skills – underpin jobs
- Reduce energy costs & fuel poverty
- Aid industrial competitiveness
- Centre of excellence for renewables

# EREF Funds

- €21m for Research & Development
- €3.5 to Build Market Capacity and Supply Chain Development
- €49 for Accelerated Deployment
- €9.5 to underpin knowledge and raise awareness



# Solar Water Heating in Social Housing

- €2.5m available over two years
- SWH installations in 200 houses - 2006/07
- SWH in 400 houses in 2007/08
- Installations began in August 2006
- 200 completions to date – advancing next years programme
- One of biggest SWH programmes in Europe
- Both Evacuated Tubes and Flat Plate Systems being used



# SWH in social housing

- Targeting fuel poor
- High visibility within social housing estates – SWH not just for wealthy
- Integrated into heating conversion programme – SWH panels fitted along with new gas or oil heating
- Reduced unit costs due to volume
- South facing roofs – no over shading
  - no dwellings with electric showers

# Carrickfergus





# Carrickfergus



# Dromore





# Dromore

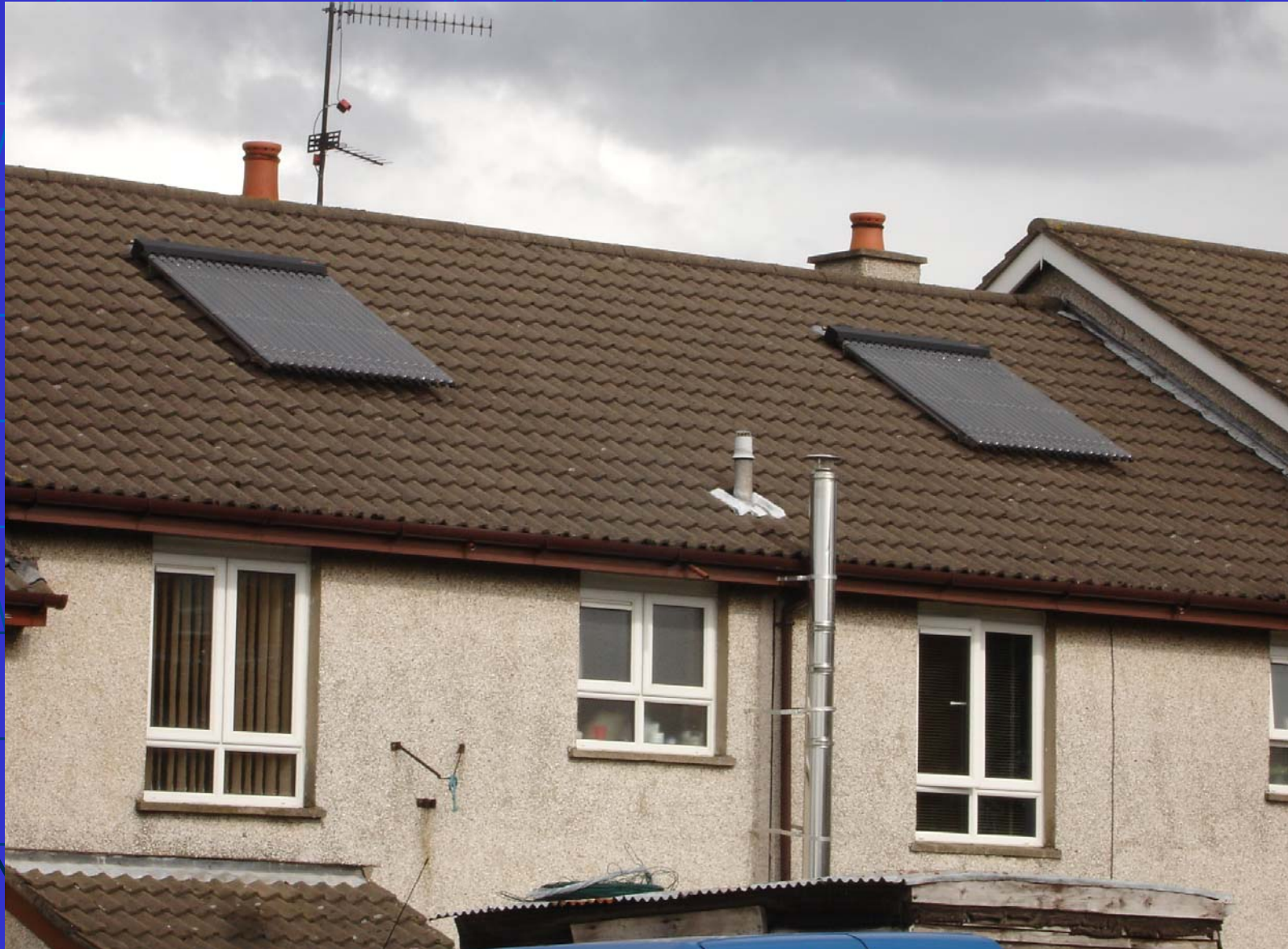


# Magherafelt





# Magherafelt





# Men at Work



# Other EREF Programmes in housing

- €11.2m in grants for private householders for renewable systems
- €2.1m for solar panels for fuel poor in private sector
- €0.7m for CHP in housing association stock