Retrofit for the Future

Renewable Energy - Does it Work?

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Home Energy Conservation Act

- *Target – improve energy efficiency 34%*
- *No statutory enforcement powers, additional finance or deadline specified*
- *Progress measured in reduced fuel use*
- *Average SAP in N.I. in 1996 was 35*
- *Solid fuel was main domestic fuel with oil growing steadily - no natural gas*
- *By 2006 there was a 20% reduction in energy consumption over 1996 figure*
- *Average SAP in N.I. in 2006 was 52*

Domestic Fuel Mix

	1996	2006
	%	%
• Mains Gas	0	11.9
• Solid Fuel	40.4	5.7
• Oil	35.7	70.3
• Dual	9.3	5.5
• Electricity	8.8	5.2
• Other/LPG	5.8	1.4

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Cavity Wall Insulation

	1996		2006	
	No	%	No	%
Full CWI	219,600	36	434,000	62
Partial CWI	0	0	58,200	8
Dry Lining/Ext	0	0	56,400	8
No Wall Ins	382,900	64	156,400	22
TOTAL	602,500		705,000	

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Loft Insulation

	1996		2006	
	No	%	No	%
Loft Insulation	460,500	76	602,200	85
None	70,000	12	33,400	5
Not Applicable	72,000	12	69,400	10
TOTAL	602,500		680,000	

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Sunderland Road

Solar PV Panels

- Cost £6,000 per kW
- Savings vary with pattern of use
- More savings where electricity used on site
- Household needs to apply for ROCs and fit import/export meter
- Technically works well
- Economically depends on circumstances

Solar Ventilation System

Solar Ventilation System

- £6k to install
- Savings on domestic hot water and oil heating
- Improved air quality
- Reduction in dampness, condensation and mould growth

Wind Turbine - Cushendall

Wind Turbine

- £11k to install 2.5kW turbine
- Savings 35% of annual bill
- Income received from ROCs

Ground Source Heat Pump and Solar Thermal

Ground Source Heat Pump and Solar Thermal

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Ground Source Heat Pump

- Installed with underfloor heating system and solar water heating panel
- Total cost £10k
- Total Energy Bill now £675 per annum
- Below previous annual electric bill and further savings as a result of no coal bill at all (average coal bill £1k per annum).
- Economy 7 tariff

Solar Roof Tiles

Solar Roof Tiles - Rathcoole

- Solar thermal and solar PV
- Total Cost per unit £12.5k
- Includes additional costs due to redesign
- Grants aided by LCBP, NIE, EST with balance from NIHE

Micro Combined Heat and Power

Wood Pellet Boiler - Fermanagh

Wood Pellet Boilers

- Installed costs approx £5000
- Annual heating bill £425 - coal and oil bills exceed £1k per annum
- Savings depend on price stability
- Need medium to long-term data on maintenance costs

Solar Water Heating

Solar Thermal in Social Housing

- ***£5.2m available over two years***
- ***SWH installations in 2,027 houses***
- ***One of biggest SWH programmes in Europe – now complete***
- ***Both Evacuated Tubes and Flat Plate***
- ***Integrated into heating conversions***
- ***Reduced unit costs due to volume***
- ***South facing roofs – no over shading - no dwellings with electric showers***

Solar Thermal Panels

- Costs vary - £2.5 up £4.5k per house
- Savings variable – number of factors
- Average £75 per annum
- Savings higher when displacing electricity
- NIHE don’t offer panels if tenant uses electric shower

Carrickfergus

Carrickfergus

Dromore

Dromore

Ballykelly

Lisburn

Men at Work

Reconnect Programme (Private)

Renewable Technology	Installations
• Solar Water Heating Panels	1,422
• Ground Source Heat Pumps	233
• Water Source Heat Pumps	4
• Air Source Heat Pumps	73
• Wind Turbines	152
• Wood Fuelled Boilers	830
• Wood Pellet Stoves	34
• Solar Photovoltaic Panels	67

Do they work?

- Technically – yes
- Environmentally - yes
- Economically – depends on;
  - the technology
  - heating, hot water and electricity demand
  - patterns of use, e.g. solar hot water
  - receipt of ROCs where appropriate e.g. PV
- Individual needs determine viability