

# **Green New Deal for Northern Ireland**

## **Package 1: Housing**

### **1. Summary**

1.1. This paper sets out a costed and deliverable programme of housing measures to reduce waste in our use of energy, and particularly fossil fuels. This programme will maintain and create jobs; will reduce our current energy insecurity and safeguard our economic future; can be delivered using skills and companies already present in Northern Ireland; will reduce our CO2 emissions and assist in delivering carbon and renewables targets; will deploy mature, stable technologies that householders can trust; and can be afforded.

1.2. The Green New Deal housing programme:

- Can begin in 2009;
- Will sustain or produce 10,000 to 15,000 direct and indirect jobs – and skilled staff to fill these vacancies are already available in the Northern Ireland economy;
- Will save a net £700 million (NPV) over the lifetime of the measures, based on lifetime savings of around £3 billion (based on current energy costs) and a total financing requirement of £2.3 billion;
- Will be financed two-thirds by beneficiary households, with one-third from a Green New Deal finance package. This package might be purely government funding, of around £75 million per year. Work continues to assess scope for leveraging public money through bank borrowing. If this is possible, incremental public spend (over and above funding already available for some of this work from existing sources) might be small.

1.3. The maximum Northern Ireland Assembly contribution is therefore assessed as £75 million per annum. This means a maximum cost of £7,500 per job supported. In terms of a Recovery Plan for Northern Ireland, such an annual contribution is modest. This is particularly good value for money when set against the benefits to the wider economy and the environment, including meeting a range of existing departmental targets.

### **2. The Green New Deal**

2.1. This paper is an Annex to [reference the Vision paper] which sets out at greater length the case for the Green New Deal in Northern Ireland. The key points of that wider paper are:

2.1.1. Northern Ireland is 99% dependent on imported fossil fuels. This is an economic time-bomb, rendering us particularly vulnerable to rising prices for fuel and carbon. So we need to invest to use energy more efficiently, and to de-couple from fossil fuels;

2.1.2. We have a large construction sector, which is suffering badly in the recession. We have spare skills available, today that could be usefully deployed;

2.1.3. Public expenditure will not be adequate to the scale of this task. Programme spend must be used to prime the pump for private investment.

2.2. There is a strong case to give housing measures (and specifically, energy efficiency) a high priority as part of a Green New Deal. Recent work by Lord Stern and Alex Bowen<sup>1</sup> assessed various possible stimulus interventions against two criteria: economic benefit (scored out of 12) and climate benefit (scored out of 6). The top measures, scoring 12 for economics and 5 for climate, were: residential energy efficiency; public building energy efficiency; and boiler replacements<sup>2</sup>.

2.3. A note on sources. This paper has been produced by a group including the leading NI authorities on energy efficiency<sup>3</sup>. The key data source is the NI Housing Conditions Survey (NIHCS), one of the most robust surveys of its kind in the UK and Europe.

### 3. Current position

3.1. Overall, Northern Ireland's housing is at a similar efficiency level to the rest of the UK. However, our carbon footprint is the highest in

#### 40 per cent house

The 40% house project demonstrated how it is possible to reduce the energy consumption in a range of residences by 60% through energy efficiency measures, technological improvements and demand management. The scenario focused on improving the building fabric of existing homes and recommends a long-term strategy for refurbishing the entire building stock.

Key elements of the 40% house scenario include:

- Raise the energy performance of existing housing stock to what is currently best practice
- The worst homes are replaced
- Lighting and appliances energy consumption are reduced to 44%
- Low and zero technologies are installed

Case studies included an 18<sup>th</sup> Century cottage; Victorian semi-detached houses; a 1920s semi-detached home; a 1930s mid-terrace; and a 1980s development home. (See [www.40percent.org.uk](http://www.40percent.org.uk) for more information.)

<sup>1</sup> *An outline of the case for a green stimulus*, Nicholas Stern and Alex Bowen; February 2009

<sup>2</sup> The other priority measure is lighting and appliance replacement, but this is not included in the Green New Deal because of the limited labour input and benefits to the NI economy.

<sup>3</sup> Principally from the NI Housing Executive, Energy Savings Trust and the Utility Regulator, but the project has also benefited from input from Bryson House, NIE Energy Supply, Friends of the Earth, NI Federation of Housing Associations and the Construction Employers' Federation.

the UK, and energy costs are higher in part because of dependence on expensive heating oil (which is the main fuel for 70% of homes) and because of inefficient boilers. The current situation is described in Table 1 below.

**Table 1**

<b>Current situation</b>	
<b>Measure</b>	<b>Number of Properties</b>
<b>Insulation</b>	
<b>Cavity wall insulation</b>	75,000 homes have none
<b>Solid wall insulation</b>	75,000 homes have none
<b>Loft insulation</b>	500,000 homes have only up to 150mm 30,000 have none
<b>Double glazing</b>	130,000 have partial 98,000 have none
<b>Heating type</b>	
<b>Oil</b>	500,000
<b>Coal</b>	30,000
<b>Electric</b>	35,000
<b>Dual/other</b>	40,000
<b>Gas</b>	115,000
<b>Wood pellet</b>	2,000

Source: NIHCS 2006

*Notes*

- 3.2. There is considerable scope for improving energy efficiency through loft and cavity wall insulation. Few homes have the recommended depth of loft insulation (270mm).
- 3.3. Of the 500,000 homes using oil, around 400,000 have older, inefficient boilers. There is scope to replace these boilers with more efficient A or B rated oil-fired boilers, or convert to gas or bio-mass where appropriate.

### **Calderdale and Kirklees**

The Calderdale and Kirklees Energy Savers (CAKES) scheme was launched in September 2000. By providing advice, registered installers, fixed discount prices, preferential credit facilities and cash backs this scheme offered householders in Calderdale and Kirklees financially viable, easily accessible and energy efficient heating and insulation measures. 1455 households were involved in the scheme and 2080 energy efficient measures were installed by 2003, saving home-owners £272,946. Estimated lifetime CO<sub>2</sub> savings are 34,304 tonnes.

The scheme concentrated on:

- Cavity wall and loft insulation
- Draft proofing
- Installing condensing boilers
- Heating controls

Alongside the fuel bill and CO<sub>2</sub> savings, CAKES has helped to develop an approved discount local installer network.

Building on the success of CAKES, Kirklees launched the Warm Zone project in 2007 to both tackle fuel poverty and contribute to further reductions in greenhouse gas emissions. Savings made from energy and water efficiency measures are reinvested in efficiency measures in other buildings thereby giving a continuous funding stream. In the first 18 months the scheme created 84 full-time jobs.

Sources: ManagEnergy Newsletter, Directorate-General Energy and Transport, European Commission, April 2009; and Kirklees Council.

## **4. Proposed programme of work**

4.1. Table 2 below lists the recommended measures and technologies. We would stress again that none of these measures is technologically “cutting-edge” or experimental. These are stable, mature technical approaches that can be accurately costed and whose benefits are well known.

4.2. The side-bars in this document (on the 40% house and CAKES) describe previous projects that have successfully achieved similar consumer and economic benefits.

4.3. This paper is a pragmatic proposal – it focuses on immediately deliverable measures that will boost employment as well as cutting waste. The programme described is not a full response to the challenge of UK and EU targets, nor is it large enough for Northern Ireland to deliver its full share of savings to meet the Climate Change Committee’s carbon budgets. Moreover, it does not deal with all possible energy efficiency and renewable measures. The programme will need to be kept under review as technologies “cross the bar” to being mature and stable, and as the scale of the challenge we face in the housing sector is confirmed.

Table 2

<b>Recommendations</b>				
<b>Measure</b>	<b>Proposed no. units</b>	<b>Future heat mix</b>	<b>Cost per unit</b>	<b>Total</b>
<b>Insulation</b>				
<b>Cavity wall</b>	75,000		£500	£40m
<b>Solid wall (internal)</b>	75,000		£6000	£450m
<b>Loft (270mm)</b>	500,000		£300	£150m
<b>Heating conversion</b>				
<b>Oil – A &amp; B rated boilers</b>	150,000	250,000 A or B rated	£1,000	£150m
<b>Gas</b>	250,000	350,000	£2,500	£630m
<b>Wood pellet</b>	55,000	57,000	£5,000	£280m
<b>Other</b>	-	50,000	-	-
<b>Renewables</b>				
<b>Solar water panels</b>	200,000		£3,000	£600m
<b>Total:</b>				<b>£2,300m</b>

#### Notes

- 4.4. Solid wall insulation has been limited to internal measures to avoid potential planning and aesthetic difficulties often associated with external insulation.
- 4.5. For heating conversions it has been assumed around 50,000 home owners will be non-movers.
- 4.6. There is considerable scope for increasing the number of homes on gas. An ambitious target of a further 250,000 households using gas by 2020 has been adopted. This will require leadership from the Northern Ireland Assembly and Executive, and also from gas providers, if it is to be realised.
- 4.7. Efficient oil-fired boilers will be coming to the end of their useful lives during the course of the refurbishment programme. A rolling conversion of these boilers has been factored in. Building Regulations specify A or B rated boilers but in reality this is often ignored for retrofits in the private sector and it was felt that, in practice, enforcement was ineffective. An incentivisation scheme for replacing inefficient oil boilers would be very beneficial.
- 4.8. There is potential for increasing the number of homes with double-glazing but there are some difficulties with this measure. Not every home can cost effectively install double-glazing and there can be planning considerations, particularly with listed buildings and in conservation areas. In addition, the energy saving is at the lower end of the scale so the sub group felt it should not be a measure to take forward with the same emphasis that other insulation demands, hence it is not included in financial terms. However, it may be possible to consider a package which takes older homes with solid walls and

sash windows together.

4.9. The sub-group noted that extension of requirements for Energy Performance Certificates (EPCs) has scope to build consumer support for energy efficiency, as well as creating jobs. However, EPCs have not been included in the programme as a direct consumer benefit cannot be assessed.

4.10. Two technologies have been excluded at this stage, but should be kept under review:

4.10.1. Solar PV is considered not cost-effective at this time. However, introduction of a micro-renewables feed-in tariff is likely in GB and is under consideration in Northern Ireland. If such a tariff were to be introduced, consideration should be given to implementing solar PV in the programme (potentially, if some householders (of the 200,000 south facing roofs) wanted to use available funding for PV as opposed to Solar Thermal, they could be afforded that choice);

4.10.2. Heat pumps are currently undergoing trials by the Energy Savings Trust. Early indications are promising; if these are fulfilled, consideration should be given to including these in the programme.

## **5. Impacts**

5.1. The impacts of the work programme set out above would be of three main kinds: jobs, consumer financial savings and carbon savings. The programme would also contribute to meeting a wide range of NI Assembly departmental objectives (Table 4 refers).

### *Jobs*

5.2. Our overall view on employment impacts is that the programme could directly create at least 5,000 jobs, which might support a further 5,000 to 10,000 jobs indirectly. In total, 10,000 to 15,000 jobs.

5.3. We have found no direct assessment of employment effects in NI, but have triangulated to our view from the following:

5.3.1. The government of the Republic of Ireland plans to create 4000 jobs in fitting insulation to 50,000 homes through the investment of €100 million in one year<sup>4</sup>. Pro rata, an investment of €2.5 billion (£2.3 billion) over ten years would mean a programme 2.5 times larger, so 10,000 jobs;

5.3.2. Based on assumptions: that the overall cost of a medium-skilled employee is £40,000 all in; and that half of the total cost of a measure represents that labour cost, on average; we might calculate that £80,000 of spend supports one job for one year. So a programme delivering £2.3 billion over ten years - £230 million per year - might generate 2,875 jobs;

---

<sup>4</sup>, *National Insulation Programme for Economic Recovery*, Department of Communications, Energy and Natural Resources 2009

5.3.3. The Sustainable Development Commission calculates that a UK-wide stimulus of £30 billion per year could create at least 800,000 jobs. Pro rata, spending £2.3 billion over 10 years (£230 million/year) would support around 6,000 jobs;

5.3.4. According to the Renewable Energy Association (Stimulus Proposal 2009) job creation figures can be multiplied 2 to 3 times to account for employment up the supply chain.

#### *Carbon and Financial savings*

5.4. Expected carbon and financial savings are set out in Table 3.

**Table 3**

<b>Carbon and Financial Savings</b>					
<b>Measure</b>	<b>Proposed No of Units</b>	<b>Total Annual Carbon Savings (tonnes C)</b>	<b>Total Lifetime Carbon Savings (tonnes C)</b>	<b>Total Lifetime Customer Savings (£ million)</b>	<b>Assumed lifetime of installed measure</b>
<i>Insulation (including comfort)</i>					
<b>Cavity Wall Insulation</b>	75,000	14,600	585,000	£242	40
<b>Solid Wall Insulation (Internal)</b>	75,000	47,200	1,417,000	£674	30
<b>Loft Insulation (0-270mm)</b>	30,000	9,600	382,000	£158	40
<b>Loft Insulation (top-up)</b>	470,000	34,200	1,369,000	£567	40
<i>Heating Conversion</i>					
<b>Old Oil to A-rated Oil Condensing Boiler</b>	150,000	25,800	309,000	£211	12
<b>Old Oil to A-rated Gas Condensing Boiler</b>	250,000	102,000	1,219,000	£855	12
<b>Fuel-switching to Biomass heating (Wood pellet)</b>	55,000	57,599	1,151,979	£445	20
<i>Renewables</i>					
<b>Solar Water Heating</b>	200,000	18,973	474,326	£241	25
<b>TOTAL</b>		<b>294,522</b>	<b>6,426,805</b>	<b>£3,014</b>	

Source: Energy Savings Trust 2009

### Notes

- 5.5. Savings are based on Northern Ireland fuel and property splits from the NIHCS 2006, financial savings are based on Jan 2009 energy prices and carbon savings assume the same carbon factors as the Northern Ireland Sustainable Energy Programme (NISEP, previously the Energy Efficiency Levy or EEL).
- 5.6. Energy savings are based on data modeled for Buildings Research Establishment (BRE) for the GB Carbon Emission Reduction Target (CERT) programme. All insulation savings include a reduction for comfort taking.
- 5.7. Top-up loft is assumed to be a weighted average of top-ups from 50mm and 100mm of existing loft insulation.
- 5.8. An 'old' oil boiler is assumed to be 80% efficient on average (current UK stock average), while any new gas/oil boilers are assumed to be A-rated (replacement efficiency calculated as the sales weighted average of new oil condensing boilers from Oftec).
- 5.9. A 12-year lifetime for the installation of a gas condensing boiler in the calculations above, as this is the estimated lifetime of the boiler itself. However, it has also been assumed that this measure actually will involve extending the gas pipelines to a number of these houses, therefore enabling them to continue to use the cleaner natural gas even after their new gas boiler expires. So there would be a case for attaching a longer lifetime to this measure (NISEP/CERT use 20 years) and increasing the total lifetime savings.

### Departmental targets

- 5.10. Table 4 sets out the wide range of departmental targets that would be furthered by implementation of the proposed programme.

**Table 4**

<b>Departmental Targets Addressed by the Proposal</b>	
<b>Department</b>	<b>Targets</b>
<b>DARD</b>	Rural poverty Biomass production
<b>DEL</b>	Employment Training and accreditation
<b>DETI</b>	Energy Strategy Job Creation Training and accreditation
<b>DFP</b>	Energy performance Reinforcing Building Regulations CMS Accreditation Register
<b>DHSSPS</b>	Health and wellbeing (includes objectives on Fuel Poverty)
<b>DOE</b>	Air quality

	Climate Change
<b>DSD</b>	Housing Fuel Poverty
<b>OFMDFM</b>	Sustainable Development Strategy Anti - Poverty Strategy

### *Summary of impacts*

5.11. In short, we consider the programme would:

5.11.1. Produce substantial financial benefits (£700 million NPV) from reducing energy waste and avoiding imported and expensive fossil fuels;

5.11.2. Maintain or create at least 10,000-15,000 direct and indirect jobs;

5.11.3. Require an investment of around £2.3 billion over 10 years.

## **6. Implementation and financing**

6.1. The sub group felt from experience that grant funding of around one third of costs is usually sufficient to unlock householder contributions for the remainder. Thus the sum requiring to be financed is one third of the total £2.3 billion i.e., around £750 million. (The actual contribution required from a householder would be less, if the household is economically vulnerable, but the average contribution will be around one-third.)

6.2. If the New Deal is to be wholly funded from public expenditure, then around £75 million a year over ten years might be required. However, a number of existing programmes provide some funding for energy efficiency measures (e.g., Warm Homes, Northern Ireland Housing Executive programmes, Northern Ireland Sustainable Energy Programme) and so incremental spending requirement might be somewhat less.

6.3. The Green New Deal Finance Sub-Group is in discussions with banks, whether existing or additional public funding could be leveraged through borrowing. Although this would increase the total long-term cost of measures, it might enable more to be deployed earlier and so bring forward the benefits. Given the additional benefits arising from maintaining employment through the recession, this merits consideration.

6.4. If bank lending is an important part of the Green New Deal funding package, this will affect implementation and governance. Given public sector borrowing rules, government is unlikely to be able to borrow itself without seeing an off-setting reduction elsewhere in its overall capital programmed. Lending would therefore be better arranged through an intermediary that could contract with government (as funding provider), with banks (as lender) and also with a range of delivery partners. (A PFI deal - where the public sector pays private contractors to achieve outcomes, and the contractor raises the capital itself – could be an alternative).

6.5. The identity and governance of this “intermediary” would be for further discussion. It must balance the need for general acceptability (which might rule out a profit-making body) with the need for a business-like and efficient approach. Housing Associations may be able to offer useful experience, given their substantial experience of “stretching” public money through private borrowing.