Appendix 9: The Economic Environment for Community Energy Projects.

Until recently, the cost of energy was a relatively small and largely invisible drain on every community's finances. The figures in the table below show how much it might have cost to meet the energy needs of the proposed Cadamstown development until quite recently.

	Heating Euros	Electricity Euros	Transport Euros
Hotel	30000	15000	
Hostel	10000	5000	
Business Centre	10000	5000	
Leisure Centre	40000	20000	
36 Houses	45000	27000	54000
Total	135000	72000	54000
Total Annual cost			€261,000

Fig Appendix 9. How much it might have cost to supply energy to the proposed Cadamstown development had it been built in 2004

The annual total €261,000 would have been relatively trivial in terms of the operating costs of the hotel and other businesses to be set up by the development together with the incomes earned by the occupants of the 36 houses and, as a result, it was not worth spending very much to reduce the figure or to keep the purchasing power it provides within the community. This attitude is now out of date. Short of a global recession, energy prices are certain to rise significantly over the next few years as it becomes progressively more difficult to meet the world demand for fossil fuel and restrictions are placed on its use to minimise climate change. Oil prices have tripled since the late 1990s and it is impossible to say at what rate they might rise in future. Accordingly, Fig. Appendix 9.2 shows what the cost of providing energy for the Cadamstown development would be at various rates of increase. Under the most rapid rate of increase – annual rises of 25% - the energy bill would increase by €1m in just seven years provided that consumption stayed the same. Even if it did not, it would still be much more attractive than at present to produce the energy in the community.

But how much more attractive? How much more would it be worth investing in installing a renewable energy production and delivery system than it would have been in 2004? One way of assessing this is to calculate the Net Present Value (NPV) of a system to supply the development's energy and to see if the figure we get is greater than the actual cost of setting up the system. If it is, the system would be a worthwhile investment. (NPV is the value today of a stream of income, less costs, in the future. It is calculated by working out what sum of money invested today at a specified interest rate would grow to equal the net income in the year in which it occurs. This is done for each year in the future and the NPV is the total of all annual

investments).
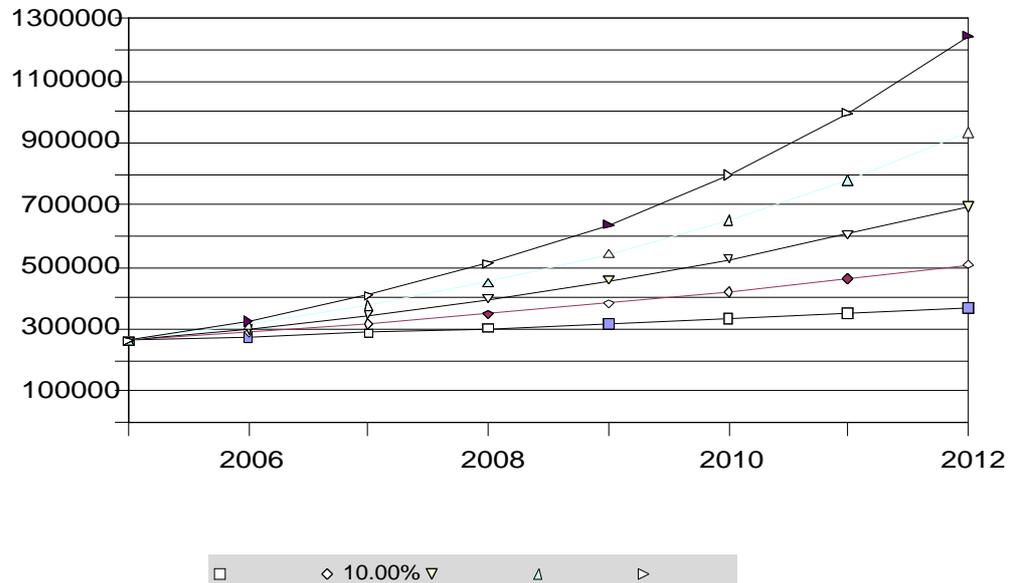
Let us assume that the development's energy needs can be met by an unspecified "black box" which produces the energy locally, charges its customers the same as they would have to pay if they bought their energy in from outside and which spent half of its sales revenue on capital repayments, 30% on fuel and 20% on management, billing, operation and maintenance. We'll look at three scenarios. one with energy cost inflation at 0%, one at 10% and one at 25% and work out the NPV.

Case one: No increase in energy costs above 2004 level
The reason that the majority of renewable energy projects have been seen as "non economic" is because of the low cost of fossil fuels. As the table shows, if prices revert to the 2004 level it would only be worth investing €875,000 in providing an energy source for the development. However, because €130,000 would be spent, theoretically, on local labour and fuel, the project would potentially create 3-5 local jobs.

	2006	2007	2008	2009	2010
Energy cost	€261,000	€261,000	€261,000	€261,000	€261,000
Capital Repayments	€130,500	€130,500	€130,500	€130,500	€130,500
O&M	€52,200	€52,200	€52,200	€52,200	€52,200
Fuel	€78,300	€78,300	€78,300	€78,300	€78,300
Net Present Value of Total energy cost over 10 years at 8%					
€1,751,331					
Net Present Value of Capital Repayments over 10 years at 8%					
€875,665.62					

Case Two : 10% annual inflation in energy prices

	2006	2007	2008	2009	2010
Energy cost	€261,000	€287,100	€315,810	€347,391	€382,130
Capital Repayments	€130,500	€143,550	€157,905	€173,696	€191,065
O&M	€52,200	€57,420	€63,162	€69,478	€76,426
Fuel	€78,300	€86,130	€94,743	€104,217	€114,639
Net Present Value of Total energy cost over 10 years at 8%					
€2,628,330					
Net Present Value of Capital Repayments over 10 years at 8%					
€1,314,165					

In this case, it would be possible to invest €1,300,000 in installing the black box. Local expenditure would be €210,000, enough to generate 5-7 jobs.

Case 3: Extreme energy cost inflation - 25% a year

	2006	2007	2008	2009	2010
Energy cost	€261,000	€326,250	€407,813	€509,766	€637,207
Capital Repayments	€130,500	€163,125	€203,906	€254,883	€318,604
O&M	€52,200	€65,250	€81,563	€101,953	€127,441
Fuel	€78,300	€97,875	€122,344	€152,930	€191,162
Net Present Value of Total energy cost over 10 years at 8%					
€5,087,697					
Net Present Value of Capital Repayments over 10 years at 8%					
€2,543,848					

Energy prices are currently inflating by over 20% a year and in the 1970s, world prices rose even more rapidly as a result of the OPEC cartel. A 25% rate of price increase is therefore not unreasonable, although the demand for energy would undoubtedly be reduced were it to happen. At this level, €2,500,000 could be invested and up to 9 jobs created.

It should be noted that these three NPV estimates are very conservative. First, no income occurring more than ten years in the future has been taken into the calculations. If it had been included for, say, the life of the energy-producing assets, the NPV would have been much higher. Second, the interest rate, 8%, is very high and if, say, a 4% rate had been used, the NPV would have been higher again. (Economists disagree on the correct rate to use in NPV calculations. If we adopt the opportunity cost approach, we would use the average between the rate of interest that those providing the capital for the equipment would have to pay on the amount they had to borrow, and the rate that they could get for the amount that they were providing out of their savings. This would be much less than 8%) Taking both corrections together, the amount that it would prove possible to invest could have doubled under each scenario.