



Renewable Energy – How to decide if it’s for you

INTRODUCTION TO RENEWABLES

Renewable energy is the term used to describe energy flows that occur naturally in the environment, such as energy from the wind, water or the sun. Unlike fossil fuels, these sources are essentially inexhaustible.

In contrast fossil fuels are a finite source of energy, and their combustion contributes to climate change. Prices for these fuels continue to be volatile and security of supply is becoming a major issue to the UK. Therefore the desire to find cost-effective alternative sources of renewable energy is increasing.

The key challenge is extracting usable energy as effectively as possible from natural sources, in the most practical and economic way. Energy conversion can be directly to heat as with solar water heating or indirectly to electricity as with hydropower.

This guide discusses how you might decide if a renewable energy project is for you.

THE ALTERNATIVES

There are a number of alternative systems for the production of renewable energy including:

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|--------------|---------------------|
| Hydropower | Biomass |
| Wind Solar | Water |
| Photovoltaic | Anaerobic Digestion |

What suits a particular site or business will be often dictated by the availability of the prime renewable energy source, and how it fits in with the local environment.

REASONS FOR RENEWABLE ADOPTION

Renewable systems might be considered for a number of different reasons.

Economic

The marginal cost of generating renewable energy is generally less than buying from a non-renewable source and in many cases is virtually free. However other cost issues have to be included to get a true economic picture of the viability of a technology. For example, capital and installation costs have to be paid for, and this need be amortised over the life of the system and the number of kWh to be generated to give a true energy unit cost.

Items which need to be taken into consideration are:

Installation	Ground works, buildings, interfacing the energy output with the current energy using system.
Purchase of the equipment	Either a one off purchase, lease or other finance deal.
Planning	Can be very expensive where objections have to be answered.
Ongoing maintenance	A realistic year on year assessment must be made.
Grid connection	If the system is to generate into the grid, the costs of connection can be extremely high because of safety, security and metering equipment required by the electricity company.

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Environmental

Many individuals or businesses may have environmental drivers which will lead them to look at renewable energy alternatives. Some of these drivers simply arise from general environmental concerns and have no particular underlying financial bases. In other cases, the business may conclude that to maintain their environmental credentials, it would be a good thing to become involved in renewable energy. For instance farming businesses with a high environmental ethic like organic or LEAF farmers may feel that a renewable generation is consistent with their general business position.

Rarely in business can an investment decision be made solely for environmental reasons without any regard for finance, and a balance needs to be struck between what is good for the business as a whole, and the underlying altruistic drivers which have led this type of technology to be considered.

In many cases the business can be 'green' without going the whole way down the renewable energy route and incurring disproportionately high costs. By employing a high level of energy efficiency and possibly buying energy from a 'green' source (many electricity suppliers offer tariffs which support green energy generation), an acceptable level of environmental responsibility can be demonstrated without it being a massive financial burden on the company.

Practical

In some cases a conventional energy solution is either impractical or too expensive, and in these cases a renewable solution may well be the most economic. For instance, buildings in remote areas which are some distance from an available electricity connection may be supplied cheaper from a renewable source than from a conventional electricity connection.

In these cases, it is usually worth spending some time in optimising the system which is using energy so that its energy demand is not so great that it makes the renewable solution too expensive. For instance, houses in remote areas using renewable energy are best to avoid large electricity loads like electric cookers and showers and instead use low energy appliances and lighting techniques so that the renewable generator can be kept to a minimum size and a realistic cost.

Other Reasons

Occasionally the adoption of a renewable energy solution helps to solve other costly problems like where a business has a large source of waste which could be processed in a renewable energy installation. In these cases the cost of the renewable energy system can be offset against the savings made in getting rid of the waste.

Where there is a polluting animal waste, for instance, this can be digested in an anaerobic system and the gas produced used for electricity generation. Similarly where an amount of waste wood is being produced, this can be burnt to produce heat.

GRANTS AND FINANCIAL SUPPORT

Various incentives are available for renewable energy schemes and may come in the form of capital grants or enhanced prices for energy produced. Sometimes grants are administered nationally by bodies like the Carbon Trust or Energy Saving Trust. In other cases they are available through local funding organisations.

Where electricity is being generated an enhanced price can be obtained through the renewable energy obligation which energy suppliers are legally required to comply with. Installations which generate electricity either to be used on the host site or for export, can sell a Renewable Obliga-

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tion Certificate to an Electricity Supplier. Effectively this provides a subsidy for each unit of energy generated.

Viability Appraisal

To make the necessary economic appraisal the following factors should be taken into consideration:

COSTS

- Capital and installation cost
- Planning costs
- Other infrastructure costs
- Maintenance and running cost including labour
- Cost of inputs (fuel)

ENVIRONMENTAL CONSIDERATIONS

- CO₂ emissions saving
- Image benefits
- Other pollution avoided

RETURNS

- Value of energy used to displace other energy inputs
- Value of energy sold
- Grants and subsidies
- Savings made in other areas

LONG TERM VIEW

- Cost of fossil fuel energy
- Fossil fuel supplies
- Taxation and carbon quotas

FURTHER INFORMATION

A good source of additional information on national grants is available at:

<http://www.lowcarbonbuildings.org.uk/home> or call 0800 915 0990

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