THE LEADER PROGRAMME 2014 - 2020

CLIMATE CHANGE & ENVIRONMENT ADVISORY GUIDE

CROSS CUTTING OBJECTIVES FOR COMMUNITY AND ENTERPRISE PROJECTS

wexford local development
Forbairt Áitiúil Loch Garman

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DISCLAIMER

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Additional Note

The Environmental Protection Agency (EPA) has partnered with The Wheel to produce the Sustainable Communities guidebooks series, providing up to date advice on funding and governance for community-led groups throughout Ireland.

- *SUSTAINABLE COMMUNITIES: a funding handbook for community-led groups*
- *SUSTAINABLE COMMUNITIES: a governance resource book for small community and voluntary organisations*

Both can be downloaded from:
www.wheel.ie/download-free-sustainable-communities-guidebooks

Contents

Key
- ● applicable to Community Projects
- ▼ applicable to Enterprise Projects

Introduction

The Rural Development 2014-2020 EU Legislation sets out that all the Rural Development Priorities shall contribute to the cross-cutting objectives of **climate change, environment and innovation** mitigation and adaptation.

Accordingly, these three cross-cutting themes are central to the LEADER Programme 2014 - 2020 that will provide €250 million to rural communities over the next 4 - 5 years.

Addressing these Cross Cutting Objectives forms an important element of the LEADER Programme 2014-2020 application process.

This **Climate Change & Environment Advisory Guide** was created to assist LEADER applicants identify and implement models of best practice that promote the cross cutting objectives. It is intended to help you ensure you are getting the best overall value out of your project and the best chances of a successful application.

The information can be used as guidance on items to consider when incorporating the cross-cutting 'Climate Change' and 'Environment' objectives into any LEADER application.

An **Innovation Advisory Guide** is also available from Wexford Local Development by emailing hdempsey@wld.ie.

GENERAL GUIDANCE

The evaluation of your application will be influenced by the extent to which you can demonstrate you have considered the Climate Change and Environmental implications of your proposed project. Minimising the adverse effects, any maximising the positive ones, will enhance your chances of success.

Minimising energy use, water use and waste creation will also reduce the day-to-day operating costs of the proposed venture and make it more viable for the longer term. Financial and Environmental sustainability go hand in hand.

The following sections give information and guidance on the practicalities of building sustainability into a project. The aim is to give you some new ideas to help you improve your project; guidance on how they might be successfully incorporated; and sources of further help and information.

A recurring theme is the value to be gained from focussing on long term performance rather than just initial cost. Very often, a little extra investment at the beginning will yield major savings through the life of the venture. The evaluators will therefore be looking for projects which demonstrate sound long-term thinking rather than superficial first cost considerations.

Make sure that your submission makes clear all the improvements you are including. If you are already carrying out good environmental practice, make a point of highlighting that also. Don't sell yourself short. If you lack expertise in any given area, bring it in from outside (and include reports, assessments, recommendations etc. as part of your submission).

Apart from one or two, the following initiatives can be applied to community and enterprise project developments where applicable.

SECTION ONE

CLIMATE CHANGE

INSULATION

When considering a new building or a major renovation of an existing building, one of the most cost-effective things you can do is to incorporate a high standard of insulation. Insulation materials are relatively cheap, and increasing insulation thickness doesn't greatly impact on labour costs.

The smaller the U value, the better the insulation.

Insulation performance is measured by the 'U' value. For the technically minded, the U value is a measure of how many watts of energy will be lost by each square metre of surface for every degree of temperature difference between the inside and the outside. It is measured in watts per square metre degrees Kelvin (W/m2K). For the less technically minded, all you really need to know is that the smaller the U value, the better the insulation.

In general, any new building or extension to an existing building must comply with current building regulations - which include insulation requirements. In most cases planning permission will be required and your local planning office can be a good source of advice. If you are renovating an existing building, you should aim as far as possible to meet or exceed the current building regulations. If you are adding an extension, you should take the opportunity of also looking at the existing building to see if you can upgrade its performance. As a general guide:

- Loft spaces should have a minimum of 300mm of insulation roll installed. Ensure access hatches are equivalently insulated.
- Existing cavity walls can be injected with insulation and/or;
- Existing external walls of all types can be dry lined internally or have external insulation applied.
- If a new ground level floor is being installed, where possible, it should be insulated.
- If there is a hot water tank, ensure it is properly lagged.
- Ensure water pipes are properly insulated, especially hot water and heating pipes, and also any cold water pipes which are located in frost risk areas (e.g. in the attic above an insulated ceiling.)

If it is a listed building some of these improvements may not be possible and it is recommended that a conservation architect should be consulted.

The following table gives the normal maximum U values for new builds under the current building regulations. The requirements for upgrading existing buildings are rather less exacting. Also shown is a recommended U value to target for each location.

Location	**Part L Building Regulations** maximum U Value (domestic buildings)	**Part L Building Regulations** maximum U Value (non-domestic buildings)	**Recommended** maximum U Value (W/m2K)
Pitched Roof (insulation at ceiling)	0.16	0.16	0.16
Pitched Roof (insulation on slope)	0.16	0.2	0.16
Flat Roof	0.20	0.22	0.16
External Walls	0.21	0.27	0.16
Floors	0.21	0.25	0.16
External Doors, Windows, Rooflights	1.6	2.20	1.1

NB: The above is general guidance only.
Always take professional advice when contemplating building works.

Be sure to state in your application the U values which will be achieved for the different parts of the building - 'before' and 'after' if it is a renovation. Alternatively the building's overall expected Building Energy Rating (BER), also 'before' and 'after' if applicable.

Windows and Doors

If windows or doors are to be installed or replaced make sure you take into account their insulation performance.

- A door covers a big area, if it has poor insulation it will lose a lot of heat from the building. Check the U value before just deciding on the cheapest option.
- Multi-point locking doors and windows with good seals will eliminate draughts (and improve security).
- If installing sliding doors or self-opening & closing doors, make sure they have a good seal around them when in the closed position.
- For high usage exterior doors, consider installing two sets of doors with a porch area between them. This will help to reduce heat loss and improve comfort as the porch will act at a heat buffer.
- Triple glazing is now only a little more expensive than double glazing, and will give a better pay-back over its life.
- Speciality glass with improved insulation performance is now available. Check the U value of what is on offer before just deciding on the cheapest option.
- Existing window frames, if in good condition, can often be retrofitted with double or triple glazed units.
- Single glazed doors or windows are generally to be avoided unless compulsory e.g. in a listed building.

Air Tightness and Cold Bridging

Note that poorly installed insulation, doors and windows is a waste of your money. Gaps, draughts and cold bridging will all severely compromise the effectiveness of the finished job. Because these works are generally covered in afterwards, it isn't easy to see how well a job has been done. Consider;

- Ensuring stage and final inspections are carried out by an independent and competent person working on your behalf.
- Specifying an air-tightness test, and acceptance criteria, for the finished building. Typical acceptance criteria for a new builds to current building regulations would be;
  - 10 $m^3/(hr.m^2)$ for a commercial building
  - 7 $m^3/(hr.m^2)$ for a domestic building

HEATING

The method you choose for heating a building will have a huge impact on its annual running costs and on its carbon emissions. The following table gives an idea of the typical price and carbon emissions per kWh (unit of heat) for different fuel sources.

Fuel Source	Price per kWh (unit) (excluding VAT)	Kg CO_2 emissions per kWh (unit)
Mains Gas	4 cents	0.205 kg
Woodchip/biomass	4 – 6 cents	0.005 kg
Bulk Gas (LPG)	6 cents	0.229 kg
Oil	8 cents	0.257 kg
Night Rate Electricity	8 cents	0.452 kg
Day Rate Electricity	15 cents	0.452 kg

Usually the cheapest 'first cost' for heating a building is to install wall-mounted electric heaters. A glance at the table will show you that the long term cost of this 'cheap' option is going to be up to four times more expensive than the alternatives (and twice as polluting).
It is therefore important to take a more balanced view when selecting your heating system. Typical choices are;

- **Central heating systems:** These run from a central boiler circulating hot water to radiators and hot water tank. The boiler can be fired by oil, gas or biomass. Efficiency and running costs will be greatly influenced by the choice of heating controls; the number and layout of heating circuits; the length of pipe runs; the standard of pipe insulation; and the insulation of the hot water tank.
- **Heat pumps:** These can run a central heating system as above, or possibly under-floor heating. Most heat pumps are powered by electricity, but gas powered air-to-air heat pumps are also now available. This type of arrangement provides a 3:1 (or possibly 4:1) coefficient of performance. That is to say, that for each unit of energy you put in, you get 3 or 4 units of heat out. It basically works like a fridge, but in reverse.
  If using a heat pump to run a central heating system, be aware that the temperature achieved for the circulating hot water is lower than would be achieved by a conventional boiler. This may mean that larger radiators are required in order to get enough heat into a given space.

*Note that **air conditioning systems** are often used unnecessarily for cooling.*

On warm (rather than hot) days it is often better to open windows and leave the air conditioning off.

On hot days when the air conditioning is really needed, windows and doors must be closed in order to avoid wasting energy.

- **Air conditioning systems:** These are usually seen in large buildings, are electrically powered and provide heat in the winter and cooling in the summer. This is basically another form of heat pump but with the distribution system through air ducts rather than pipes and radiators. These systems benefit from a similar coefficient of performance as a heat pump. Efficiency and running costs will be greatly influenced by the choice of heating controls; whether variable speed drives are installed for the fan units (called Air Handling Units); whether heat is recovered from the exhaust air ducts; and how well maintained the filters and coils are.
- **Air conditioning units:** These are individual stand-alone air conditioning units generally used for smaller spaces with localised controls.
- **Open fires:** The traditional solid fuel heating solution for point heating of rooms. They can be linked with a back boiler to supply hot water or even a small number of radiators. Apart from the work involved in keeping them going, the main disadvantage is that 70% of the heat disappears straight out the chimney.
- **Solid fuel stoves:** Enjoying something of a resurgence in popularity. All the benefits of an open fire (although arguably not as pleasing to the eye), but much more efficient. 70% of the heat is retained in the room.
- **Night storage heaters:** These take advantage of cheaper night rate electricity by taking in their heat overnight and gradually releasing it during the day, when it is needed. Standard night storage heaters are very difficult to control and very inefficient in that regard. If choosing night storage heaters ensure you select a thermostatically controlled model. These are a bit more expensive, but only put out heat when it is needed, and hence on milder days will have less heat to take in the next night.
- **Electric wall heaters:** Generally the most expensive option on offer. If choosing electric wall heaters ensure you select a modern digitally controlled version, which will be a bit more efficient than a standard unit.

Heat Recovery

Anything which produces waste heat is an opportunity for heat recovery. Assuming the building has a requirement for heat, every unit of recovered waste heat saves a unit of expensive bought-in heat. Typical opportunities are as follows;

Refrigeration: Fridge systems work by taking heat away from the refrigerated space and releasing it to atmosphere. By installing heat recovery, this waste heat can instead be used for providing hot water, for example.

Extractor fans: At the same time as they are taking out stale or moist air from a kitchen, bathroom or other location, they are also extracting heat which will probably have to be replaced by the building's heating system. Recovering this heat and putting it back into the building will reduce the need for extra heating.

Boiler flues: If there is a large boiler there may be scope to recover additional heat from the exhaust gases before they escape the chimney.

Compressors: Air compressors by their nature are very inefficient devices which have a high heat output. Any sizeable compressor (say 10kW or over) which runs long hours can be a valuable and steady source of heat for providing hot water or space heating.

Air conditioning systems: See section above. Heat recovered from the air extract ducts can be used to pre-heat the incoming air and hence reduce the need for extra heat to be input.

In order to evaluate heat recovery opportunities, and their possible cost-effectiveness, a specialist heating or refrigeration engineer should be consulted.

Combined Heat and Power (CHP)

Buildings which have a steady year-round need for heat can be very suitable for installing a CHP plant. This is an electrical generator (usually diesel or sometimes gas powered) which provides its waste heat for the building in addition to the electricity it generates.

Electrical generators (and power stations for that matter) are quite inefficient and typically produce four times as much heat as they do electricity. So if there is a use for this heat, it becomes a very efficient, and cost-effective, way of delivering both. CHP plants are generally sized to suit the background heat demand. There is no point in producing more heat than can be used. This usually means that the building will still need a mains electricity supply to supply the shortfall of the electricity generated on site and to cover for downtime on the generator.

Facilities suited for CHP plant include swimming pools & leisure centres, hotels, nursing homes, hospitals and manufacturing facilities where process heat is required. The correct sizing and design of a CHP system is critical if it is to be effective and specialist support should be engaged.

A good source of further information is SEAI. See www.seai.ie/Your_Business/Technology/Buildings/Combined_Heat_and_Power.html There are requirements for installing power generating equipment at a site which is connected to the national grid. See 'Connecting to the Grid' later in this guide.

INDUSTRIAL PROCESSES AND PROCESS EQUIPMENT

If your project involves any industrial processes and/or the purchase of new process equipment, remember to examine the operating efficiency of the available options and not simply first cost. For example, a gas oven or fryer will be 75% cheaper to run that an electric version. Also explore any opportunities for heat recovery to or from the equipment.

POWER GENERATION
(Renewables)

There are now various technologies available for supplying power on site from renewable sources. The main options would be;

Solar Thermal Panels

These provide hot water via solar panels and a pumped circulation system to the hot water tank. A typical pay-back time for this type of installation would be 7-8 years. This has the advantage of being a self-contained system which (in most cases) is exempt from requiring planning permission, and has no additional grid connection requirements.

It is nevertheless advisable to contact your local planning authority for guidance on any planning requirements or restrictions. Your prospective installer should also be able to advise on planning issues, as well as ensuring the system is sized correctly to suit the needs of the site. A good source of further information is SEAI.
See www.seai.ie/Renewables/SolarEnergy/Solar Heat

Photo Voltaic (PV) Panels

These panels generate electricity from the sun and feed it directly to the building's electricity supply. They have advantages over solar thermal in that they have no moving parts and no pumps or seals to fail. The electricity can also of course be used to heat water through an immersion heater. A typical pay-back time for this type of installation would be 10 years. Key points to consider when installing a PV array are the planning and electricity network restrictions;

- Generally, domestic buildings may erect roof panels up to 12 m^2 without the need for planning permission. This equates to a 1.8 kWp system. (kWp means kilowatts peak, i.e. the maximum generating output of the array)
- Generally, commercial buildings may erect roof panels of up to 50 m^2 without the need for planning permission. This equates to a 7.5 kWp system.
- Generally, a free standing array of up to 25 m^2 may be installed at a domestic or commercial premises without planning permission. This equates to a 3.75 kWp system.
- The requirements and permissions for connection to the national network also depend upon the generating capacity of the installation. You should also carefully consider the way in which you will use the generated power. See 'Connecting to the Grid' below. A good source for further information is SEAI.
See www.seai.ie/Renewables/Solar_Energy/Solar_Electricity

These PV panels generate electricity from the sun and feed it directly to the building's electricity supply.

Wind Turbines

These now come in virtually all sizes and can be selected to suit the given application. Payback times are generally poorer than for PV arrays and there is the issue of reliability to consider.

Subject to certain conditions domestic wind turbines may be exempt from planning requirements up to a maximum hub height of 10 m and total (tip) height of 13 m. For commercial installations and the agricultural sector an exemption up to the maximum (blade tip) height of 20 m, again subject to conditions, is possible.

The location of the turbine will be critical to its performance. Generally speaking, the ideal location is on top of a high mast on a south westerly facing hill with gently sloping sides surrounded by clear countryside which is free from obstructions such as trees, houses or other buildings. Here the wind flows relatively smoothly and steadily enabling it to drive wind turbines with greater efficiency.

Ideally, the turbine should be 10 m above any obstacle within 100 m. As a rule of thumb, a wind generator should be installed no closer to an obstacle than at least ten times the object's height, and on the down-wind side. The preferred distance is twenty times the height of the object.

Your prospective turbine installer should be able to provide guidance on the suitability of the site, the expected generating performance and any planning or technical issues. Other good sources of information are;

- SEAI. See www.seai.ie/Renewables/Microgeneration and
- The Irish Wind Energy Association. See www.iwea.com

The requirements and permissions for connection to the national network also depend upon the generating capacity of the installation. You should also carefully consider the way in which you will use the generated power. See 'Connecting to the Grid' below.
For larger scale installations, it is usually necessary to carry out extensive feasibility, environmental and technical assessments, including site wind measurements over a significant timescale, to evaluate the project, e.g. see www.seai.ie/Renewables/Wind_Energy/Wind_Farms/Wind_Farm_Development/Guidelines_for_wind_farm_development

Water Turbines (and Water Wheels, Archimedes Screws)

If the site has a local source of flowing water, with a sufficient head, this may have the potential to be tapped for electricity generation.
A good source of further information is SEAI.
See www.seai.ie/Renewables/Hydro_Energy
See also 'Connecting to the Grid' below.

Biomass Fuelled Generators/CHP Plant

It is possible to run generators on biomass fuels such as rapeseed oil. Although not at present competitive in comparison to diesel or gas, it may be viable for a CHP plant. It is also greatly preferable from an environmental perspective. Assuming oil prices rise in the future, this type of approach will become more attractive economically.
See also 'Connecting to the Grid' below.

Connecting to the Grid

If generating electricity on a site which is connected to the national grid it is essential that the necessary permissions are in place and approved equipment installed. Sites classed as 'micro-generators' can avail of a stream-lined, one page application process with ESB Networks. A micro-generator is;

- A site with a single phase supply and a maximum generating capacity of 6 kWp, or
- A site with a three phase supply and a maximum generating capacity of 11 kWp.

Guidance can be found at www.esbnetworks.ie/new-connections/generator-connections/connect-a-micro-generator

Customers who exceed this generating capacity must engage in a more demanding application and connection process. Guidance can be found at www.esbnetworks.ie/new-connections/generator-connections/connect-a-renewable-embedded-generator

Also, you need to consider if you can always make full use of the electricity generated, at the time it is generated. Otherwise, unless you have an agreement with your electricity provider to buy your surplus capacity, you may just be supplying free electricity to the grid. In previous years there was a Renewable Energy Feed-In Tariff (REFIT) scheme by which surplus capacity did attract an automatic payment from ESB Networks. It is anticipated that sometime in the future a REFIT scheme will be re-instated, but that is far from certain, as is the level of payment it will provide.

If you have a hot water requirement, surplus capacity can be diverted to an electric immersion heater. After that, an option would be to store the excess electricity in on-site batteries. However this type of battery installation is expensive, and normally is used for sites which are off-grid.

The above is general guidance only. Expert advice should be sought before planning and implementing any power generation installation.

LIGHTING

If new lights are to be installed, either in a new or refurbished building, as a general rule LED lights would be your choice. If for any reason you wish to install anything other than LED, you should include a compelling justification for this. Cheaper initial cost will not stack up as a justification.

LED lights are considerably more energy-efficient that any other lighting technology presently available. As a result they will pay back their cost very quickly. They also have a longer life than lights using other technologies, so there are additional savings in lamp replacement costs.

Be careful to ensure that your selection of lighting is appropriate for the areas concerned. Don't just aim to replace like with like. As a general guide, lighting (lux) levels appropriate to different typical situations are as follows;

Location	Illumination (lux)
Open car parks, roadways	30
Covered Car Parks	100 - 150
Corridors	100
Stairs	150
Restrooms	150
Warehouses,	150
Reception areas, counter areas	300
Filing areas, print rooms, packing, dispatch areas	300
Sports halls, swimming pools (leisure/training)	300
Sports halls, swimming pools (competition)	500 - 750
Offices, work desks, meeting rooms	500
Supermarkets, Workshops, Inspection Areas	750

For areas in which the lights are little used (e.g. boiler houses, archive stores etc.) there may be no real justification for replacing the lights at all, as the energy savings will be tiny compared with the installation costs. A good source of further information is SEAI. See www.seai.ie/Your_Business/Technology/Buildings/Lighting.html

Lighting Controls

Put thought into the way your lights will be controlled. The longer a light can be left off, the less energy it will use.

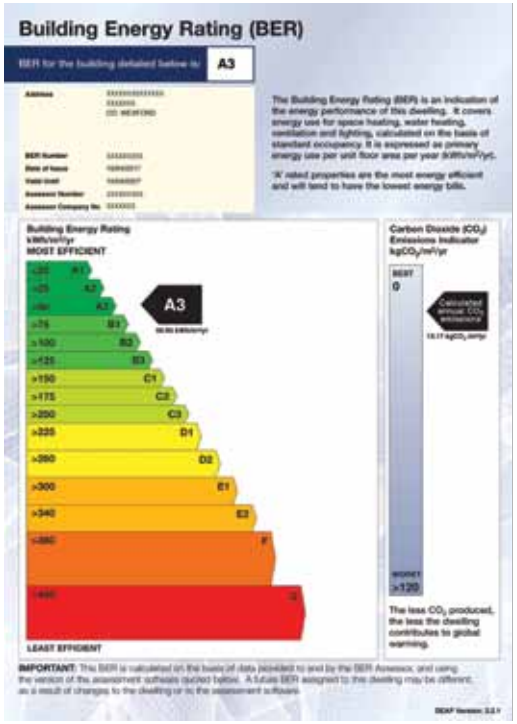
- Conventional light switches are usually fine for areas in continuous use.
- Motion sensors should be considered for low usage areas such as toilets, store rooms, corridors etc.
- Timers and/or light sensors should be considered for exterior lights.
- Dimmable lights in conjunction with sensors can be very useful for security lighting, stairwells, toilets which lack windows, etc.
- Light sensors should be considered for areas with good natural light during daylight hours.
- In large office areas, wire the lights in rows parallel to the windows, such that the ones by the window can be switched off while those furthest away can be on when needed.

BUILDING ENERGY RATING (BER)

A BER is a standardised way of indicating the overall energy performance of a building. It takes into account space heating, water heating, ventilation, insulation and any renewable technologies which may be installed. Buildings are given a rating in the range A – G, in much the same way as for household electrical appliances. BER assessments are carried out by registered assessors.

If planning to upgrade an existing building, or add an extension, it is advisable to get the BER assessed. The assessor will also provide an advisory report containing recommendations on how to improve the energy performance and this can be useful in developing or fine-tuning the planned works. The expected improvement in the overall building's BER should be included as part of the application. It can also be used as a specification for 'design and build' contractors to achieve.

If planning a new building, ensure that the BER to be achieved is specified and that the BER assessment of the finished building is carried out. Again, include the BER specification as part of the application. For more information, see www.seai.ie/Your_Building/BER



TRANSPORT

Transport accounts for 20% of Ireland's greenhouse gas emissions (source EPA) and this share is expected to increase significantly by 2020. This is therefore an area which merits close attention. Any opportunities to reduce transport emissions would be a positive contribution to the project.

Electric Vehicles

Although a little more expensive in first cost than conventional petrol or diesel vehicles, electric vehicles have huge advantages in fuel and servicing costs, and in carbon emissions. An electric vehicle typically is 80% cheaper in both fuel and overall running costs. The lowest rate of road tax applies. As there is no engine oil, filters or timing belts to change, servicing costs are much lower, and servicing intervals are longer. Carbon emissions are typically 50% lower than the petrol or diesel equivalent. Harmful diesel particulates are eliminated completely.

The current generation of electric cars and small vans have a practical range of around 180 km, which is more than adequate for most purposes.

If there is a requirement for a road vehicle, an electric vehicle should be considered. This would be viewed much more positively than a plan to purchase a petrol or diesel vehicle.

Consideration can also be given to installing an electric vehicle charging point at the premises for use by staff and visitors.

Hybrid Vehicles

These combine a petrol or diesel engine with an electric drive. Hybrids deliver better fuel economy, and lower carbon emissions, than conventional petrol or diesel vehicles. A hybrid is probably most viable in situations where a longer range than 180 km is required on a daily basis.

ENERGY PERFORMANCE

In order to have proper control of your energy usage it is essential that you measure and monitor it. In addition to measuring your overall energy usage it is useful to benchmark it against a measure of your premises activities (e.g. bednights, covers, production quantities, turnover, visitor numbers, etc.).

You can then monitor your energy performance in terms of kWh or kg of carbon per bednight, per cover, or whatever your most appropriate benchmark happens to be. You can, of course, use more than one benchmark if that is useful.

Unless transport is an insignificant part of your energy usage, it should be included in your monitoring.

A good source of further information is SEAI. See www.seai.ie/Your_Business/Technology/Buildings/Monitoring_and_Targeting.html

SECTION TWO

ENVIRONMENT

WATER CONSERVATION

Mains water is expensive to produce, largely because of the processes needed to bring it consistently to safe drinking water quality. Yet only a small proportion of mains water is used for drinking or for food related use. Waste-water treatment is even more expensive. In some locations we can also have water shortages. It therefore makes sense to minimise our use of this valuable resource.

Rainwater Harvesting

If you have a sizeable roof area, this can provide you with a free supply of water. In Ireland every square metre of roof has the potential to collect almost one cubic metre of water each year. That is nearly one tonne of water!

This rainwater can be collected in a tank and used in a variety of ways;

- For gardening, car washing, wash-down and general cleaning purposes. Either gravity fed or pumped, this is the easiest way to make use of your free water. There is a minimal requirement for filtering and it is easy to intercept a downpipe and divert the rainwater to a water butt or larger tank.
- For toilet flushing and urinals. This is a little more involved. It means linking your collection tank into your building's plumbing system and accessing the pipes which supply only the toilets. Because it doesn't rain to order, it also means linking to the mains supply for times when the tank is empty.
- For uses requiring drinking water quality. This will involve a considerable investment in water treatment and monitoring, and in many cases it will be uneconomic to install. Often the best approach is to use mains water for this and harvested rainwater for as many 'non-critical' water uses as possible.

Wells

The other main option for providing an independent water supply is to sink a well and use a submersible pump to supply it under pressure to your building. The extent to which water treatment is required will depend upon the water quality and the intended use (i.e. does it need to be drinking water quality?). The cost of the well itself will depend upon the geology of the site and the depth of the aquifer to be accessed.

Dual Flush Toilets

Modern toilet cisterns give the option of a short flush or a full flush and therefore are able to use less water than traditional single flush toilets. If refurbishing or upgrading toilets, be sure to specify dual flush models. It is possible to convert single flush toilets to dual flush operation by means of a conversion kit. However the effectiveness of such devices is somewhat variable. If planning to convert a significant number of toilets it is advisable to trial one first before deciding to convert them all.

Urinal Flush Controls

Traditional urinals work on a fill-and-flush system which is incredibly wasteful of water. A cistern located above the urinals slowly fills with water, and when it is full it flushes. It keeps doing this 24 hours per day regardless of any actual need. One cistern can dispense anything up to a tonne of water per day. Modern flush control systems can be timer and/or sensor controlled, such that they only flush when there is an actual need. They can be mains or battery powered and so can readily be installed in any toilet location.

Waterless Urinals

Another option is to install waterless urinals. As the name suggests, these use no water at all, but they do need regular maintenance for the periodic replacement of filter cartridges. Generally, waterless urinals are most successful in locations where they get a lot of use. They don't seem to be well suited to locations which are little used or only sporadically used.

Flow Restrictors

It is quite common for taps and showers to have excessive water flow rates, which leads to wasted water and, in the case of showers and hot water taps, wasted energy. A simple way to avoid this is to fit a flow restrictor to the supply pipe. This will limit the maximum flow from the tap or shower to a set level, and hence reduce wastage.

Aerators

For hand washing taps and showers another option is to use aerating heads. These mix air with the water, which means that even less water can be used to achieve the same overall performance.

Recommended maximum flow rates for taps and showers:

Application	Without Aerator	With Aerator
Hand Wash Tap	4 litres / minute	3 litres / minute
Shower	9 litres / minute	6 litres / minute

To measure the flow rate of an existing tap or shower, just hold a kitchen measuring jug beneath the outlet, turn the tap on full, and measure how many seconds it takes to fill. From that information it is a simple calculation to get the flow rate. If you use a 1 litre jug, you can use the table below.

Seconds taken to fill a 1 litre jug	Flow Rate
20	3 litres / minute
19	3.2 litres / minute
18	3.3 litres / minute
17	3.5 litres / minute
16	3.7 litres / minute
15	4 litres / minute
14	4.3 litres / minute
13	4.6 litres / minute
12	5 litres / minute
11	5.5 litres / minute
10	6 litres / minute
9	6.6 litres / minute
8	7.5 litres / minute
7	8.6 litres / minute
6	10 litres / minute
5	12 litres / minute
4	15 litres / minute
3	20 litres / minute

Water Taps

The type of tap which is installed will also have a bearing on water conservation.

- **Traditional screw taps** tend to be quite wasteful, because they are often left running for unnecessarily long periods.
- **Push taps** run for a set time only, after which they need to be pushed again. These are good options for both showers and hand basin taps. They also have a safety advantage in that they cannot be left on (either maliciously or accidentally). They do need to be maintained properly, as over time they can stick.
- **Sensor taps** are more expensive but are particularly good for hand basin taps, especially where hygiene is a key consideration.
- **Foot operated taps** are also available for hand washing sinks, usually used in food and pharma type industries for hygiene purposes.
- **Long handled twist taps** for operation by elbow, are commonly used in medical applications and disabled toilets.
- **Extendable sink taps** with trigger nozzles are commonly used in commercial kitchens.

Hoses

It is recommended that any hose is fitted with a tap at the nozzle end. This will avoid the tendency to leave a hose running because of the inconvenience for returning to the supply tap each time to turn it off. A trigger nozzle is best for most applications, as it will automatically switch off when not in active use. Hoses used for wash-down purposes should have suitable nozzles fitted in order to avoid waste. For power washers a trigger lance is usually the most suitable option. Low-flow lances are available which provide good cleaning performance with lower water use.

Measurement and Control

In order to have proper control of your water usage it is essential that you measure and monitor it.

- **Metering**. Water is expensive and water meters, when fitted, should be read routinely (at least monthly) and the results monitored. Any sudden increase in usage should be investigated. In more complex sites, fitting of sub-meters should be considered in order to improve control.
- **Leak Testing**. In addition to monitoring water use, a leak test should be carried out at least once per year. This is easy to do on most sites. Pick a time when the premises are dormant (e.g. at the end of the working day). Switch off any known background users (e.g. urinals) and take a meter reading. After a suitable length of time (e.g. first

thing next morning) take a second reading. The two readings should be identical. If not, we have a measurable leak, or an unknown water user. This should be investigated.

In addition to measuring your overall water use it is useful to benchmark it against a measure of your premises activities (e.g. bednights, covers, production quantities, turnover, visitor numbers etc.). You can then monitor your water performance in terms of litres per bednight, litres per cover, or whatever your most appropriate benchmark happens to be. You can, of course, use more than one benchmark if that is useful.

Well Water Leaks

If you have your own well, you might think your water is 'free'. The water itself may be, but the electricity to run the pumps and the water treatment you employ is not. So a leak on a well supply can still be expensive, and is in any event wasteful.

If installing a new well supply, it is recommended that you also fit a water meter. This will allow you to monitor your usage and carry out leak tests as described above.

If you don't have a meter, a good alternative is to install a light above ground, where it can easily be seen, and link it to the water pump such that the light is on whenever the pump is running. If the light seems to be on a lot of the time when no one is using water, there may be a leak present.

Wastewater Treatment

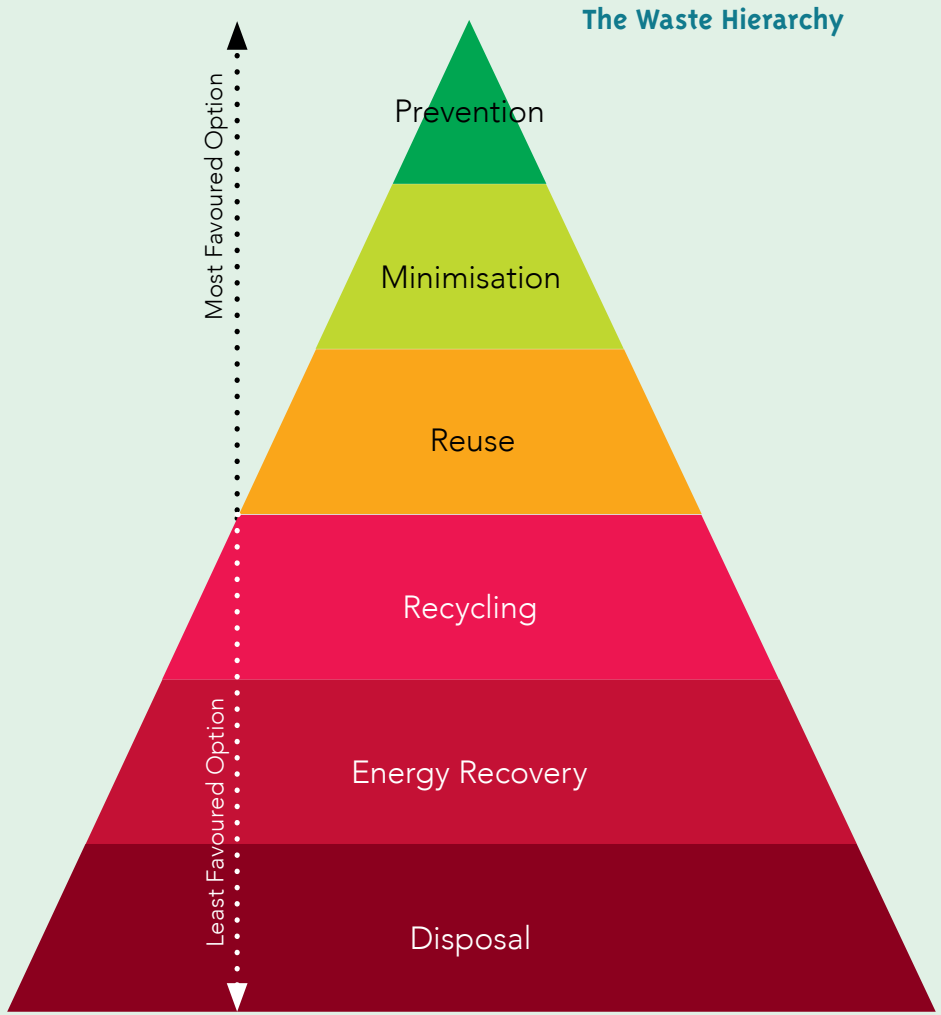
If you are not connected to the municipal sewerage system there will likely be planning issues for your new or renovated premises. Be sure to allow for any required upgrade of an existing system in your plans. If the existing arrangement is a septic tank it is likely that a new treatment system will be required.

Reed Beds (Constructed Wetland)

An environmentally friendly alternative to a 'packaged' wastewater treatment system is a constructed wetland. Constructed wetlands are engineered systems that use natural functions of vegetation, soil, and organisms to treat different water streams. Depending on the type of wastewater that has to be treated the system has to be adjusted accordingly which means that pre- or post-treatments might be necessary. Constructed wetlands can be designed to emulate the features of natural wetlands, such as acting as a bio-filter or removing sediments and pollutants such as heavy metals from the water. Some constructed wetlands may also serve as a habitat for native and migratory wildlife.

WASTE REDUCTION

When developing your project, consider the waste which will result from your activities and how it will be managed. A good place to start is to look at the waste pyramid which provides guidance on the most and least favoured approaches to handing waste. Seek opportunities for moving up the pyramid and build this into your plan.



Prevention: The most effective way to reduce waste is not to create it in the first place. Do you have any waste which can be avoided from the outset? Have a critical look at what you buy in and why you need it. Explore if there might be ways to avoid the associated waste. Remember that everything you dispose of is costing you twice. The cost of buying it in, and then the cost of disposing of it.

Packaging is often a fruitful area in this regard. If you buy in individual portions of margarine, butter, jams, salt, pepper, sugar, coffee, sauce, condiments, soap, shampoo and so on, you might consider changing to bulk purchases and re-usable dispensers. If you accept deliveries in large boxes, pallets etc. which you don't need, can your supplier take them away again rather than leave them with you to dispose of? For catering related operations, look at how much prepared food is being disposed of. Consider adopting a portion control regime to avoid waste. It is usually easy enough to offer customers an extra portion of vegetables if they want it, rather than always give everyone more than they want. You can make a virtue of this by stating on the menu that you offer free extra portions.

For manufacturing related operations, look at your scrap rate for the materials you use. Are there ways in which this scrap rate might be reduced?

Minimisation: Consider, if waste cannot be completely avoided, can it be reduced? The same types of consideration as above can be applied.

- For materials which have a limited shelf life, how much of this is disposed of unused?
- Can tighter purchasing, stock control and stock rotation disciplines be applied?
- For stock which is approaching its 'sell by' date, can you offer it to customers at a reduced price?
- For stock which is on its 'sell by' date, is it still perfectly usable and can it be donated to someone (e.g. a local charity) who can use it?
- Maintain and repair products, like clothing, tyres and appliances, so that they won't have to be thrown out and replaced as frequently.

Reuse: Consider items which are used once and then disposed of. Could they be re-used instead? Is there a better alternative which could be re-used?

Once more, packaging can be a fruitful area. If you send out product to customers, can you make use of the packaging you have received from your suppliers, rather than always buying in new packaging?

Buy reusable items in preference to disposable items. Even the little things can add up. Paper cups are much more wasteful and expensive than the traditional alternative and there is no need to use them except in take-away situations. Likewise paper plates, plastic cutlery and so on.

If you don't have a use for some of your 'good' waste, is there someone else who does? Maybe a local business, charity or community group? There are also various organisations, on a local and national basis, who will be interested in your 'good' waste, for example;
www.smileexchange.ie
www.recreate.ie
www.camara.org
www.freetradeireland.ie
www.rediscoverycentre.ie

By the same token, when you are purchasing materials or equipment, don't automatically buy 'new'. Charity shops, architectural salvage yards, up-cycling businesses, web-based applications such as eBay and DoneDeal (as well as some of the above websites) are all potential sources of materials and equipment. Often, used items are less expensive and just as good as new.

Are you aware of anyone in the area who disposes of items which might be useful to you? If so, maybe you have found a free source of supply on your doorstep.

Recycling: Most household collections now have a bin for 'dry mixed recyclables' and as a general rule any business or organisational premises should at least have the same. Usually this is for plastics, metals, paper, cardboard and tetrapak cartons.

Glass is usually not allowable in these bins, so if the volumes justify it, a separate glass bin would be appropriate. If not, be sure still to segregate your glass and take an occasional visit with it to your local recycling centre.

Recycling charges are much lower than for general waste, so it pays to maximise your recycling and ensure that your segregation disciplines are good.

Cardboard and (especially) plastics, if clean and baled, have a commercial value. If the volumes justify it, consider investing in, or renting, a baler. This will allow you to be paid for your waste cardboard and plastics rather than being charged for them. If you have both cardboard and plastics for baling, a two-bay baler will be more practical than a single-bay baler.

Likewise, if the volumes of metal justify it, you can consider segregating this out into its own skip and getting paid for its value. In some cases it can be worthwhile to separate out higher value metals, such as copper. Again this will depend upon the quantities involved. If you prepare food on the premises, you also need a composting bin. The easiest way is usually to get your waste contractor to provide this, although on-site composting options are also possible.

It is a legal requirement for packaging waste to be recycled. Where food is prepared on the premises, it is also a legal requirement to segregate food waste for composting.

Energy Recovery:

We are now getting down to the lower end of the waste hierarchy. Energy Recovery simply means burning your waste as fuel. This can be done either on-site or (more commonly) remotely.

- **Remote Energy Recovery**. A significant proportion of general municipal waste is now destined for incineration in a 'waste to energy' plant (i.e. an incinerator which generates electricity) or as a fuel for cement kilns.
  These facilities are specifically designed to achieve the incineration temperatures required to safely burn plastics, waste oils and so on, and also have air scrubbers to remove toxins from the exhaust flow. Note that some waste contractors like to tell their customers that their waste is 100% recycled. Usually what they really mean is that the general waste is incinerated rather than landfilled. Incineration is NOT recycling as can clearly be seen on the waste hierarchy.
- **On-Site Energy Recovery**. A simple example of this would be burning waste timber in a solid fuel stove for space heating. Other options are possible at a more industrial level. If contemplating this approach, great care is needed to ensure environmental responsibility and legal compliance.

  Conventional stoves and burners do not achieve the high incineration temperatures required to safely burn plastics, spent engine oils etc., nor do they have the air scrubber technology to adequately deal with the exhaust.

  Unless significant quantities of waste are involved it is unlikely to be economically viable to install an on-site energy recovery facility.

  It is illegal to burn any waste without the appropriate license.

  Back yard burning as a means of waste disposal is illegal.

Disposal:

The last resort is disposal, usually by landfill. General waste which is not sent for energy recovery will be destined for landfill.

- **Hazardous Waste**. It is also important to identify any wastes which are classed as hazardous and to handle them appropriately. Hazardous wastes must not be allowed into the general waste streams, but must be segregated for the correct method of treatment and disposal.
  Note that fluorescent lightbulbs and batteries are classed as hazardous. So are spent oils, oil filters, oily rags, tyres, brake fluid, anti-freeze, solvents and oil-based paints. This is by no means an exhaustive list, and if in any doubt, seek guidance on whether a given material is classed as hazardous and the correct storage and disposal methods to be applied. Your waste contractor or local authority environmental section should be good sources of advice.

Commercial kitchens are required to have grease traps installed in wastewater outlets and these must be regularly serviced. Grease filters and extract ducting over cooking areas also need to be regularly cleaned and degreased due to the fire hazard.

If your premises release hazardous materials into wastewater or into the atmosphere you may require a licence from your local authority. If you do produce hazardous wastes, is there a non-hazardous alternative available?

- **Waste Electrical and Electronic Equipment (WEEE)**. This type of material also needs to be segregated for correct handling and disposal. Basically, anything which plugs into the electrical mains or which is battery powered is classed as WEEE.
- **Waste Measurement and Control**. In order to have proper control of your waste it is essential that you measure it. Your waste contractor(s) will provide the basic information you need via their invoices, either in terms of tonnages or numbers of bins, bales etc. Waste is best measured by weight rather than volume and the table below gives typical densities for most common types of waste. (Density data mostly sourced from www.wrap.org.uk)

Typical Waste Densities (kg/litre)	Loose	Compacted
General domestic waste	0.2	0.6
Mixed dry recycling	0.16	0.3
Composting waste	0.4	
Mixed plastics	0.04	0.12
Plastic bottles	0.02	0.045
Mixed glass (not crushed)	0.7	
Mixed paper & card	0.2	0.4
Mixed cans	0.04	0.4
Cardboard	0.15	0.4
Vegetable oil	0.92	n/a

In addition to measuring your overall waste quantities it is useful to benchmark them against a measure of your premises activities (e.g. bednights, covers, production quantities, turnover, visitor numbers etc.). You can then monitor your waste performance in terms of kg per bednight, kg per cover, or whatever your most appropriate benchmark happens to be. You can, of course, use more than one benchmark if that is useful.

A third key measure is the proportion of your total waste which is recycled. In order to establish the scope there is for improvement, take a sample general waste bin and look to see how much of the content is recyclable. Also look to see if any hazardous waste or WEEE is included.

ECOSYSTEMS

Consider the impact your project will have on the local wildlife and ecosystems. Are there opportunities to minimise any negative impacts or to actively promote biodiversity? Typical opportunities are described below. Further information and guidance is available from Wexford County Council (from which some of the content of this section is sourced).
www.wexford.ie/wex/Departments/Planning/BiodiversityNature

Habitat Protection

Try to maintain existing wildlife corridors. These include linear features such as hedgerows, ditches and stone walls, which offer shelter and protection to wildlife moving from one area to another. Vegetation should not be cleared from watercourses as they are important habitats and wildlife corridors. Preserve Trees. Mature trees add character to a site and provide shade, and shelter, and are an excellent wildlife habitat.

During construction works, fence off and avoid trees and hedges and any other habitat that should be protected e.g. nearby rivers or streams. Bees prefer to nest in south facing old walls so take care when carrying out re-pointing work.

If you need to destroy an existing area of habitat try to compensate by planting an equivalent in an alternative nearby location. If disturbing a wildlife corridor, try to re-establish the corridor by re-planting around the perimeter of the affected area.

Protected Species

Special care is required if there are protected species in or around your site. In these cases, it is necessary to take professional advice before proceeding with any activities which might have adverse effects.

Protected species include the Freshwater Pearl Mussel, the Marsh Fritillary butterfly, the Natterjack toad, the Common frog, the Common lizard. Protected terrestrial mammals in Wexford include a number of bats (Common pipstrelle, Soprano pipistrelle, Narthusius' pipstrelle, Natterer's bat, Daubenton's bat, Whiskered bat, Brown long-eared bat, Leisler's bat) as well as the Irish hare, Red squirrel, Otter and Pine marten. Protected plants include Scrambled Egg lichen, Perennial Glasswort and Moores Horsetail.

Indigenous Planting

If you are planting an area or creating a garden or outside amenity, the first choice should always be indigenous Irish species. These are plants that have developed, occur naturally, or existed for many years in an area (trees, flowers, grasses, and other plants).

Because native plants are well suited to the climate and conditions, they will be easier to keep and require much less time and care than exotic alternatives. They will also provide appropriate habitat for indigenous wildlife, including insects, which are essential for a healthy ecosystem.

Choose berry, fruit, nut & seed plants. These provide important autumn and winter foods for birds & small mammals. Plant native nectar-rich plants to provide food for butterflies, moths, bees, bumble bees and hoverflies. Try to have something in flower throughout the year.

Don't be too tidy. Leave some areas to grow 'wild'. This is good for amphibians and over-wintering insects as well as mammals and birds. Leaving log piles in undisturbed shady spots or laying flat stones helps pest predators such as centipedes, ground beetles, frogs and even hedgehogs.

Try to avoid using peat-based compost. Using home-made compost instead of peat saves important peat bog habitats, home to many of Ireland's rarest and most spectacular wildlife. Good sources of information should include your local garden centre, landscaping contractor or wildlife conservation group.

Bird and Bat Boxes

A feature of our move to more energy efficient buildings is the change from ventilated roof spaces to airtight ones. A downside of this change is the loss of habitat to bats and birds (such as swallows and swifts) which would normally nest there. Unless positive, proactive steps are taken, there is concern that future housing stock will hold no potential for bird nesting or bat roosts for several species.

A good way to help compensate for this loss of habitat is to incorporate suitable bird and bat boxes at appropriate locations. The design of the box, and its location, should be tailored to suit the target species. Designs for bird and bat boxes, and guidance for their location, can be found on various websites. Ready-made boxes are available from many garden centres and craft shops.

Consideration can also be given to providing bird feeders. Different bird feeds & feeders suit different species. Clean them regularly to prevent disease. Good sources of information should include your local garden centre or wildlife conservation group. National organisations include Birdwatch Ireland and Bat Conservation Ireland.
www.birdwatchireland.ie
www.batconservationireland.org

Insect Hotels

An insect hotel is a structure which is designed to provide shelter for insects, particularly during the winter months. Insect hotels are usually created from natural materials and can come in a variety of shapes and sizes depending on the species to be targeted. Most consist of several different sections to provide different species with appropriate facilities.

Many insect hotels are used as nest sites by insects including solitary bees and solitary wasps. These insects drag prey to the nest where an egg is deposited. Other insects hotels are specifically designed to allow the insects to hibernate, notable examples include ladybirds and butterflies. Insect hotels are also popular amongst gardeners and fruit and vegetable growers due to encouraging insect pollination. Designs for insect hotels, and guidance for their location, can be found on various websites. Ready-made boxes are often available from garden centres. Good sources of information should include your local garden centre or wildlife conservation group.

Water Features

Even the smallest water feature can benefit wildlife. Carefully positioned away from ambushing cats in a sunny position, with gently sloping edges, a water feature can provide a safe place for birds to drink, bathe and even breed. Don't add any ornamental fish as they will eat all the wildlife!

Avoidance of Herbicides, Fungicides and Pesticides

Herbicides, fungicides and insecticides (including slug pellets) kill beneficial species as well as harmful ones. Hand weeding, mulching, weed suppressant fabric and planting good ground cover reduce the need for sprays. By not killing pests we are also ensuring the safety of many beneficial insects and also maintaining a healthy balance on pests & insects which is important in avoiding the promotion of invasive species and the suppression of endangered species.

PURCHASING

The environmental impact of your activities extends way beyond the confines of your own premises. Every item you buy in and every service you engage has an impact. At the other end of the process, every item you sell and every service you provide has an impact. Sometimes these can be much greater than anything you are doing at your own site. It therefore makes sense to take account of these impacts and try to minimise them. Typical purchasing opportunities are described below.

Localising Supply Sources

Transport is usually a significant contributor to the carbon footprint of any product, be it natural or manufactured. Buying locally produced items, particularly food items, is a good way to reduce this. It is also, of course, of benefit to the local economy.

Organic Sourcing

Buying certified organic produce is a way of avoiding the use of herbicides, fungicides and pesticides which would otherwise be used on your behalf. Organic produce is also generally recognised as being a healthier option. Buying free range animal produce (turkey, chicken and eggs) also has a positive influence on animal welfare.

Sustainable Sourcing

Specifying sustainably sourced materials (and ensuring they are independently certified as such) is a way of avoiding unnecessary waste of limited resources on your behalf. The easiest place to start is with timber-based products (paper, cardboard, fibre-board and of course timber itself) for which there are a number of well-established certification schemes in place, notably;

- Forestry Stewardship Council (FSC) www.info.fsc.org
- Programme for the Endorsement of Forest Certification (PEFC) www.pefc.org

For a wider range of products, the European Union EcoLabel scheme covers a broad range of product groups and has clear, objective criteria for the certification of each classification. Product classifications include cleaning materials, oils, greases, electronic equipment, furniture, household appliances, growing media & soil improvers, paints, varnishes, heat pumps and sanitary ware. www.europa.eu/environment/ecolabel/index_en.htm

Beyond that, there is a plethora of 'green' certification schemes for all manner of products worldwide. So much so that it is hard to sort out which labels can be trusted and which may be little more than window-dressing. The 'best' labels are run by credible third party

independent bodies. A useful resource is the Ecolabel Index website which gives information on hundreds of certification schemes and their 'credentials'. www.ecolabelindex.com

Supplier Certification

In addition to considering the environmental certification of products, it can be very helpful to consider whether the supplier of goods or services has an environmental certification for his overall management controls. A credible Environmental Management System certification will help to give you confidence that you are buying from a company which takes its environmental responsibilities seriously, and (usually) is subject to periodic inspection by third parties. As with above, take care that you are happy with the both the certification standard and the issuing authority.

The most recognised Environmental Management Systems certification is the international standard ISO14001. This is however quite onerous for small companies to aspire to.

In Ireland, a simpler generic alternative, especially suited to smaller organisations is EcoMerit www.ecomerit.ie

There are also a whole range of sector-specific schemes, such as;

- The Green Hospitality Award for hospitality businesses www.ghaward.ie
- Origin Green, run by Bord Bia, for food businesses www.origingreen.ie
- The Green Schools award, run by An Taisce for primary and secondary schools www.greenschoolsireland.org
- The Blue Flag award, run by An Taisce, for beaches, marinas and boat owners www.blueflagireland.org

Through-life Performance vs First Cost

Before making any purchase, look beyond the first cost and consider the overall value it offers. It is often a false economy just to go for a low price. A cheaper item may have a shorter lifespan, may require more frequent repairs, or may cost much more to run than a more expensive, but better designed and built, alternative.

Design and build quality is, of course, hard to evaluate and must be subjective to some extent. The energy rating of a product is one clear objective way to compare alternatives on a like-for-like basis. A wide range of products, including lights, most white goods, space heaters, water heaters and tyres are required to have energy performance data available and be given a European energy label.

By knowing the price you pay per unit of energy (kWh) and the number of units of energy you expect to use per year (based on the energy label information) you can calculate the expected annual energy cost of the item.

Thus, for the fridge left, if you are paying 15 cents per kWh, the estimated annual energy cost will be; €0.15 x 280 kWh/annum = €42. This will be much less than the annual energy cost of a lower priced, but less efficient, alternative (which you can calculate in exactly the same way).

The same principles can be applied to any purchase. The bigger the purchase, the bigger the impact of your decision and the more care you should take in evaluating your options. If, for example, you are carrying out a major build, re-build or building refurbishment project, the decisions you make about design, heating, insulation etc. will have impact for years to come. At the other end of the scale, avoid buying 'single use' disposable items as much as possible.

Avoidance of Hazardous Materials

Wherever possible, avoid the purchase of items which contain hazardous materials. Seek more benign alternatives instead.

Use 'eco-friendly' cleaning materials in preference to harsh chemical and solvent based options. This is especially important if you have a septic tank, as bleaches and chemicals will interfere with its ability to function correctly.

Use water-based paints in preference to oil-based alternatives.

If you supply products to customers, consider the environmental impact these may have in use, and in final disposal. Explore if there are less harmful alternatives available.

POLLUTION PREVENTION

Much of this guide is concerned with minimising the adverse effects of day-to-day operations. It is also important to consider foreseeable pollution incidents and to put in place measures to minimise the likelihood of them occurring, and to mitigate their effects if they do. Typical items worthy of attention include;

Storage, Handling and Disposal of Hazardous Materials

- Bulk fuel tanks should be bunded and/or double-skinned
- Tank taps and filters should be protected from tampering
- Chemical and oil drums and containers should be stored on bunds
- Spill kits should be available to deal with minor incidents
- Upright gas cylinders should be secured by chains
- Hazardous materials' storage areas should be secure
- Appropriate personal protective equipment should be available
- Specialised handling equipment should be available as necessary
- Personnel should be trained in correct storage and handling procedures
- All hazardous waste must be segregated from other waste streams
- All hazardous waste must be disposed of legally by a licensed contractor

Fire Prevention

- Even if not legally required, it makes sense to have fire detection in place
- If upgrading a building for other reasons, take the opportunity to review and improve the fire detection arrangements at the same time
- Fire detection systems, and fire extinguishers, need to be regularly serviced

Risk Assessment

A good, and very simple, way of assessing pollution risk, and prioritising the level of preventative measures to put in place, is to rank each risk by;

- The likelihood of the event occurring (scored 1-5, where 5 is most likely)
- The severity of the incident if it does occur (scored 1-5, where 5 is the most severe)

In each case, multiply the 'likelihood' score by the 'severity' score, and rank them from highest to lowest. Then focus your effort on the items with the highest ranking.

No.	Description	Likelihood	Severity	Risk Rating
1	Fire on premises	4	5	20
2	Kerosene tank rupture	3	5	15
3	Oil spillage in garage	5	1	5
4	Kerosene spillage when filling tank	4	1	4

Having identified any requirements for improvements for pollution prevention, these can of course be included in the overall plan.

HEALTH & WELL-BEING

Perhaps more intangible, but nevertheless significant, can be the changes you make to help promote a healthier lifestyle for yourself, your staff and your customers. Possibilities to consider may include;

Promotion of Bicycles

Provide secure bicycle storage for your staff and promote the use of the 'Cycle to Work' Scheme, which gives employees the option of buying a new bicycle and cycling equipment from their salary, saving them 31 - 52% of the cost via reduced income tax. See www.revenue.ie/en/tax/it/leaflets/benefit-in-kind/faqs/cycle-work.html

Outdoor Access

Improve the amenity of outside areas by landscaping, adding picnic benches, paths, outside art installations or even outside gym equipment for staff or the community.

Grow your Own

Allocate unused land for the creation of allotments available for staff and/or the local community. A good source of information and support is the 'Grow It Yourself' movement. See www.giy.ie

Participation in Community

This is a whole subject in itself, which businesses and organisations now usually term 'Corporate Social Responsibility'. A good place to start exploring is www.csrhub.ie

Awareness

Do you have opportunities to promote environmental awareness, and your own standing as an environmentally aware organisation? If you measure your carbon footprint, your water usage and your waste performance (which you should!) you could consider making that information public, by posting it on your website and at a prominent location in your premises. Over time, these performance figures will demonstrate the results of your improvement actions.

If you are installing solar panels or a wind turbine, you could consider having a screen at reception which will show visitors the electricity you are generating 'real time'.

If you have an environmental policy and/or an environmental certification, have a framed copy at reception and make sure they are referenced on your website. If you don't, you should consider implementing one.

Ensure your staff are familiar with your environmental actions and are able to explain them to visitors when asked. It is also great for staff morale for them to be involved with your environmental programme.