Being wise with waste: the EU's approach to waste management

EUROPEAN COMMISSION

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Waste and the environment

Dealing with waste in the European Union

Waste is an issue that affects us all. We all produce waste: on average, each of the 500 million people living in the EU throws away around half a tonne of household rubbish every year. This is on top of huge amounts of waste generated from activities such as manufacturing (360 million tonnes) and construction (900 million tonnes), while water supply and energy production generate another 95 million tonnes. Altogether, the European Union produces up to 3 billion tonnes of waste every year.

All this waste has a huge impact on the environment, causing pollution and greenhouse gas emissions that contribute to climate change, as well as significant losses of materials – a particular problem for the EU which is highly dependent on imported raw materials.

The amount of waste we are creating is increasing and the nature of waste itself is changing, partly due to the dramatic rise in the use of hi-tech products. This means waste now contains an increasingly complex mix of materials, including plastics, precious metals and hazardous materials that are difficult to deal with safely.

EU waste management policies aim to reduce the environmental and health impacts of waste and improve Europe's resource efficiency. The long-term goal is to turn Europe into a recycling society, avoiding waste and using unavoidable waste as a resource wherever possible. The aim is to achieve much higher levels of recycling and to minimise the extraction of additional natural resources. Proper waste management is a key element in ensuring resource efficiency and the sustainable growth of European economies.

This brochure explains how the European Union is working to minimise the negative impacts of waste while maximising the benefits of good waste management, and the role individuals, households, businesses and local and national governments have to play.

Why the rising waste levels?

As European society has grown wealthier it has created more and more rubbish. Higher living standards mean that people are buying more products. There are also more single-person households which tend to produce more waste per person than families or groups.

Consumption has changed dramatically. Today, consumers have much more choice and products are designed to have shorter lifespans. There are also many more single-use and disposable products. Advances in technology mean that people own and use many more personal devices, and update them more often. These lifestyle changes may have increased our quality of life, but they also mean we are generating more waste than ever before.

The challenges of waste

Whether it is re-used, recycled, incinerated or put into landfill sites, the management of household and industrial waste comes at a financial and environmental cost. First, waste must be collected, sorted and transported before being treated which can prove expensive and result in greenhouse gas emissions and pollution of air, soils and water.

One major challenge is the fact that a large amount of the waste generated each year – some 100 million tonnes – is hazardous, containing heavy metals and other toxins. These substances make the waste particularly difficult to treat as special processes are needed to deal with the hazardous components.

The EU is working to reduce the hazardous materials used in products which then end up in our waste, as well as ensuring that hazardous waste is dealt with in the safest way possible. Several types of chemicals have been banned and the use of other materials has been significantly restricted. Waste treatment facilities are being improved across the EU to make sure hazardous material can be dealt with safely. There is also a risk that hazardous waste is exported abroad where it may be dealt with in unsafe conditions. The EU is working hard to support Member States in monitoring activities to stop illegal waste shipments.

No boundaries

The dioxin scandal that hit Europe in 1999 illustrated how a problem in one country can affect many others. The crisis occurred when a batch of animal feed became contaminated with waste industrial oil containing chemicals that are extremely harmful to human health. The batch was fed to farm animals. The problem was detected when animal food products across Europe, especially chickens and eggs, were found to have high levels of the toxin. Millions of animals and birds had to be slaughtered and farmers and businesses suffered catastrophic losses. The crisis highlighted the need for sustainable and coordinated standards of waste management in the EU.

The EU's approach to waste management

The EU's waste management policy

EU waste policy has evolved over the last 30 years through a series of environmental action plans and a framework of legislation that aims to reduce negative environmental and health impacts and create an energy and resource-efficient economy.

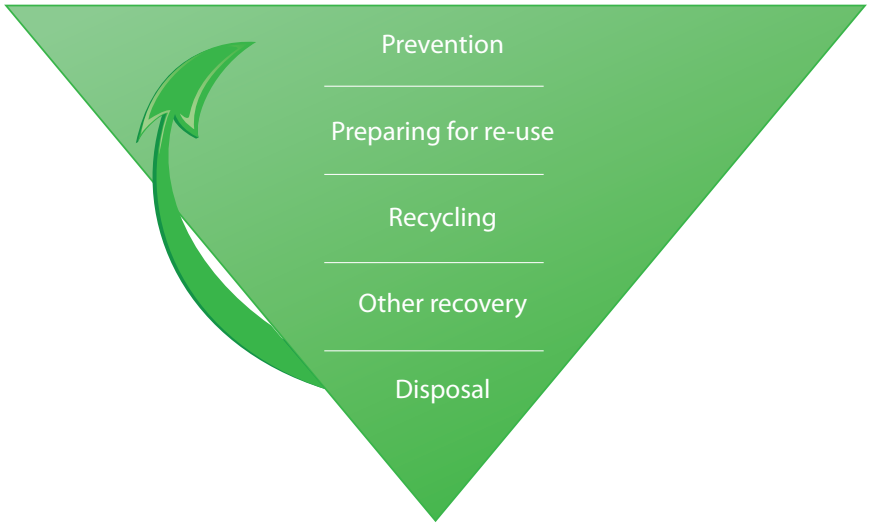
The EU's Sixth Environment Action Programme (2002-2012) identified waste prevention and management as one of four top priorities. Its primary objective is to ensure that economic growth does not lead to more and more waste.

This led to the development of a long-term strategy on waste. The 2005 Thematic Strategy on Waste Prevention and Recycling resulted in the revision of the Waste Framework Directive, the cornerstone of EU waste policy.

The revision brings a modernised approach to waste management, marking a shift away from thinking about waste as an unwanted burden to seeing it as a valued resource. The Directive focuses on waste prevention and puts in place new targets which will help the EU move towards its goal of becoming a recycling society. It includes targets for EU Member States to recycle 50% of their municipal waste and 70% of construction waste by 2020.

The Directive introduces a five-step waste hierarchy where prevention is the best option, followed by re-use, recycling and other forms of recovery, with disposal such as landfill as the last resort. EU waste legislation aims to move waste management up the waste hierarchy.

Moving up the waste hierarchy



Waste legislation

The Waste Framework Directive, revised in 2008, streamlines waste legislation, incorporating rules on a number of issues such as the management of hazardous waste and waste oils.

Other pieces of EU waste legislation:

- The Regulation on waste shipments aims to ensure the safe shipment of all types of waste, including hazardous waste;
- The Packaging and Packaging Waste Directive sets standards for the design of packaging and lays down specific targets for the recycling and recovery of waste packaging;
- The EU's Landfill Directive and the Waste Incineration Directive set standards and limits for the release of pollution into the air or into groundwater;
- The End-of-Life Vehicles Directive sets rising re-use, recycling and recovery targets and restricts the use of hazardous substances in both new vehicles and replacement vehicle parts;
- Waste Electrical and Electronic Equipment (WEEE) legislation lays down collection, recycling and recovery targets for electrical goods;
- The Directive on the Restriction of Hazardous Substances in electrical and electronic equipment restricts the use of hazardous substances in electronics;
- The Batteries Directive sets collection, recycling and recovery targets, thereby ensuring their proper waste management;
- Legislation also targets specific waste streams such as sewage sludge, batteries, polychlorinated biphenyls and polychlorinated terphenyls (PCBs/PCTs).

More information: http://ec.europa.eu/environment/waste/legislation/index.htm

A life-cycle approach

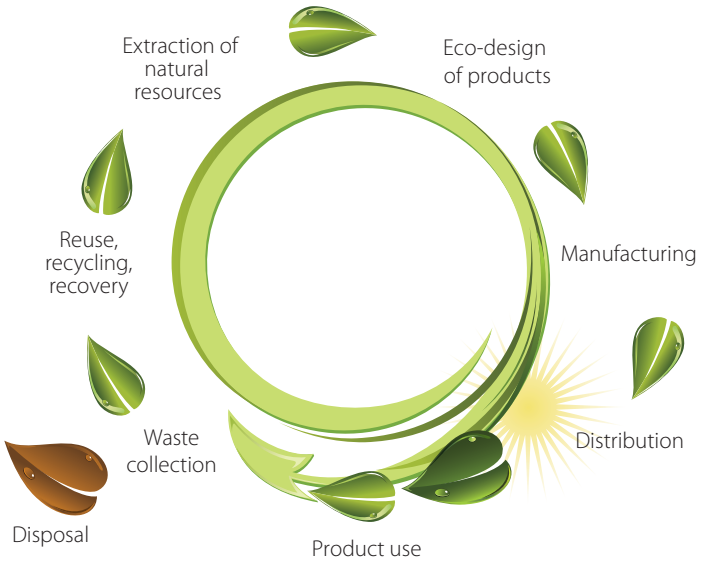
All products and services have environmental impacts, from the extraction of raw materials for their production to their manufacture, distribution, use and disposal. These include energy and resource use, soil, air and water pollution and the emission of greenhouse gases.

Life-cycle thinking involves looking at all stages of a product's life to find out where improvements can be made to reduce environmental impacts and use of resources. A key goal is to avoid actions that shift negative impacts from one stage to another.

Life-cycle analysis has shown, for example, that it is often better for the environment to replace an old washing machine, despite the waste generated, than to continue to use an older machine which is less energy efficient. This is because a washing machine's greatest environmental impact is during its use phase. Buying an energy-efficient machine and using low-temperature detergent reduce environmental impacts that contribute to climate change, acidification and the creation of ozone.

The new Waste Framework Directive has introduced the concept of life-cycle thinking into waste policies. This approach gives a broader view of all environmental aspects and ensures any action has an overall benefit compared to other options. It also means actions to deal with waste should be compatible with other environmental initiatives.

More details on life-cycle analysis can be found at:
http://ec.europa.eu/environment/pubs/pdf/sustainable.pdf



The waste hierarchy

The following sections highlight the work being done by the European Union, Member States and citizens to set and uphold minimum standards at each level of the hierarchy.

Landfill

Landfill is the oldest form of waste treatment and the least desirable option because of the many potential adverse impacts it can have. The most serious of these is the production and release into the air of methane, a powerful greenhouse gas 25 times more potent than carbon dioxide. Methane can build up in the landfill mass and cause explosions.

In addition to methane, the breakdown of biodegradable waste in landfill sites may release chemicals such as heavy metals resulting in run-off called leachate. This liquid can contaminate local groundwater and surface water and soil, which could pose a risk to public health and the environment.

Awareness of these risks resulted in calls for legislation at European level. Under EU legislation, environmental authorities are responsible for issuing permits, conducting inspections and ensuring standards are met. The Landfill Directive obliges Member States to reduce the amount of biodegradable waste they landfill to 35% of 1995 levels by 2016, which will significantly reduce the problem of methane production. In addition, methane gas must be collected in landfill sites and, if possible, used to produce energy.

EU legislation on landfilling is making a big difference. Thousands of sub-standard landfill sites have been closed across Europe and the amount of municipal waste put into landfills in the EU has fallen by more than 25% since 1995. However, while a handful of Member States landfill only a small part of their waste, this still remains the most common form of municipal waste disposal in the majority of Member States.

Landfill facts:

The airtight conditions of landfill sites mean that materials, in particular biodegradable waste, cannot decompose fully and, in the absence of oxygen, give off methane, a dangerous greenhouse gas.

The methane produced by an average municipal landfill site, if converted to energy, could provide electricity to approximately 20,000 households for a year.

An average municipal landfill site can produce up to 150 m^3 of leachate a day, which equates to the amount of fresh water that an average household consumes in a year.

It is estimated that the materials sent to landfill could have an annual commercial value of around €5.25 billion.

Energy recovery

Modern waste incineration plants can be used to produce electricity, steam and heating for buildings. Waste can also be used as fuel in certain industrial processes.

Poor or incomplete burning of waste materials can result in environmental and health damage through the release of hazardous chemicals, including dioxins and acid gases. To ensure hazardous substances are completely destroyed, incineration plants need to burn waste under controlled conditions and at sufficiently high temperatures. Where the emissions of hazardous substances cannot be prevented, additional measures must be taken to reduce the releases into the environment.

For these reasons, the European Union has set environmental standards for incineration and co-incineration plants. This legislation helps ensure that the environmental costs of waste incineration are minimised while the benefits are maximised. The legislation sets limit values for emissions from plants and requires these to be monitored. It also requires the recovery of any heat generated, as far as possible, and sets thresholds for the energy efficiency of municipal waste incinerators.

Energy recovery through incineration is often not the most efficient way of managing used materials, particularly those that are difficult to burn or which release chemicals at high temperatures. Member States are encouraged to use life-cycle thinking to weigh up the possible environmental benefits and drawbacks when deciding whether to incinerate waste.

Primary energy production from municipal waste incineration has more than doubled since 1995.

Getting the best out of bio-waste

Bio-waste (garden, kitchen and food waste) accounts for about one-third of the waste we throw away at home – that is around 88 million tonnes across Europe each year. On average, 40% of bio-waste in the EU goes into landfills. However, bio-waste holds considerable promise as a renewable source of energy and recycled compost. Energy recovered in the form of bio-gas or thermal energy can help in the fight against climate change.

According to estimates, about one-third of the EU's 2020 target for renewable energy in transport could be met by using bio-gas produced from bio-waste, while around 2% of the EU's overall renewable energy target could be met if all bio-waste was turned into energy.

Compost made from bio-waste can also improve the quality of our soils, replacing non-renewable fertilizers. In 1995, more than 13 million tonnes of municipal waste was composted by Member States. By 2008, this had reached an estimated 43.5 million tonnes, accounting for 17% of municipal waste.

Recycling

Much of the waste we throw away can be recycled. Recycling reduces the amount of waste that ends up in landfill sites, while cutting down on the amount of material needed from the natural environment. This is important because Europe is dependent on imports of scarce raw materials, and recycling provides EU industries with essential supplies recovered from waste such as paper, glass, plastic and metals, as well as precious metals from used electronic appliances. EU waste policy aims to ensure that waste is used wherever possible as raw material to make new products. Recycling also saves energy: recycling an aluminium can, for example, saves around 95% of the energy needed to make a new one from raw material.

The EU has set recycling targets for many types of waste, including old vehicles, electronic equipment, batteries and packaging, municipal waste and waste from construction and demolition activities. Member States are working hard to put systems in place to ensure these targets are met. These systems include Extended Producer Responsibility, which makes producers responsible for the entire life cycle of the products and packaging they produce, including the last stage of the product life cycle, when it becomes waste.

Individuals have a very important role to play. In many Member States, householders are asked to separate their waste into different material types (paper, glass, plastics, metal, garden waste and so on). This approach helps to ensure that the highest possible quality material is produced at the end of the recycling process. This maximises the value of the materials and increases the number of products that can be made from them.

Producer responsibility

Extended Producer Responsibility makes producers financially responsible once their products become waste, providing them with an incentive to develop products which avoid unnecessary waste and can be used in recycling and recovery operations.

An example of producer responsibility is the 'Green Dot' system currently operating in many Member States. Producers placing material on the market pay a levy for the collection and recycling of a related amount of waste material. This forces them to consider the whole life cycle of the goods they produce.

10 tips on how to be less wasteful

Think before you buy!

1. Is the product recycled or recyclable? This will reduce the environmental impact as a new product has not had to be made from raw material.

2. Avoid packaging waste: food packaged into separate compartments or presented as a mini-kit is not only more expensive but also produces more waste.

3. Buy the amount of fresh food you will use and enjoy your leftovers by turning them into exciting new dishes.

4. Use reusable and high-quality batteries which last longer and produce less waste. Spent batteries in the household rubbish contain harmful chemicals that can leak into the earth and water. Collect them separately! Your local authorities, supermarkets or electronic retailers can dispose of them safely.

5. Reusable products are better than disposable products such as paper napkins, plastic razors and plastic cups which use more resources and energy than their reusable counterparts and quickly end up in landfill.

Think before you throw!

6. Old clothing has all sorts of innovative uses. As well as raising money for charity, clothing can also be shredded and turned into packaging, insulation or raw material for textiles.

7. Paint and other waste can be taken to a specialised recycling centre. If you do not have access to one then let the paint dry, add sawdust or cat litter, and place it in the dustbin.

8. Non-meat kitchen scraps can become fertile soil. Build a compost bin either in your garden or even a small one in your house. A good 'recipe' is to layer carbon materials (dry leaves, shredded paper, dead plants) with nitrogen materials (green weeds, grass, non-meat kitchen scraps) in a 3 to 1 ratio.

9. Recyclable glass can be taken to your local bottle bank, but do not leave it in your car until your next trip as the added weight will increase both fuel use and emissions.

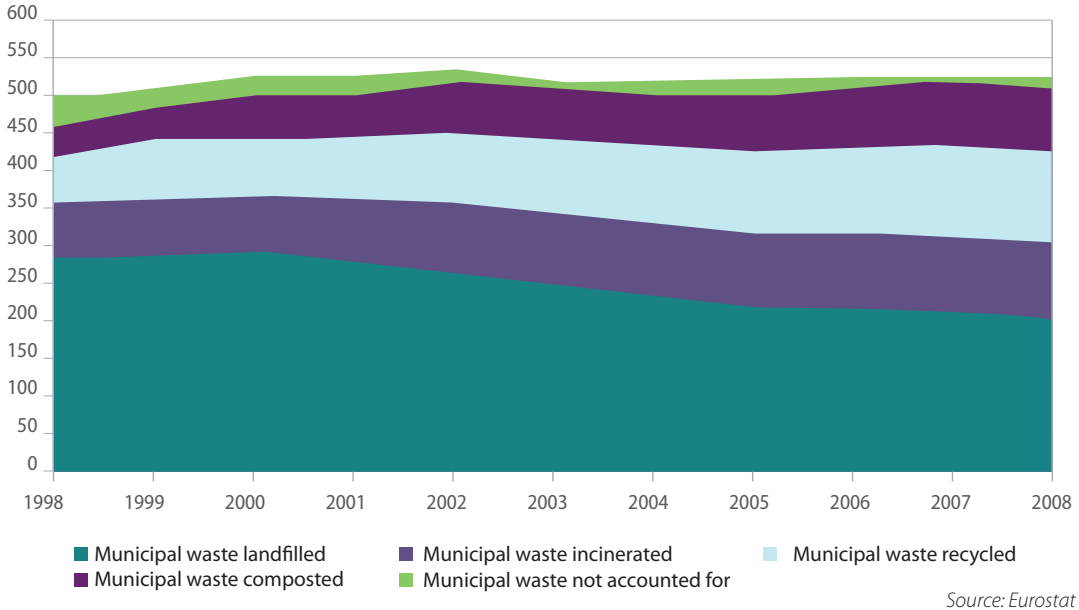
10. If you cannot give away or sell your old furniture, recycle it. Check if your local authority collects furniture for recycling or perhaps there are charities in your area that will be happy to take it off your hands.

Moving towards a recycling society

In some Member States, recycling and recovery are the predominant waste management options, with use of landfills being reduced to negligible amounts, whereas other Member States still use landfills for the majority of their waste. It will be a crucial task in the future to move these Member States up the waste hierarchy to achieve the EU's goal of becoming a recycling society.

This is also an economic opportunity. Solid-waste management and recycling industries currently have a turnover of around €137 billion which is just over 1.1% of the EU's Gross Domestic Product. Together, these areas create over 2 million jobs. Overall, municipal waste recycling increased from 19% to 38% between 1998 and 2007. If Member States recycled 70% of their waste, it could create at least half a million new jobs across Europe.

Trends in municipal waste treatment in the EU



Source: Eurostat

Re-use

Re-use involves the repeated use of products and components for the same purpose for which they were conceived. Refrigerators, ink cartridges and computer printers, for example, can all be refurbished for re-use.

The re-use of products or materials such as clothes and furniture that would otherwise become waste has social, economic and environmental benefits, creating jobs and making products available to consumers who could not necessarily afford to buy them new.

Many Member States are introducing policies which encourage re-use and markets in re-used goods.

LIFE project: re-use of second-hand car components in company car fleets

Damaged and end-of-life cars contain an enormous amount of used parts and materials such as metals, plastics, rubber and glass. The EU's LIFE programme supports a project in the Netherlands working to achieve the large-scale re-use of second-hand car components.

Before the start of the RESPECT (Re-use of Second-hand car comPonEnts in Company car fleeTs) project there was no organisation in the Netherlands that professionally repaired substantial parts of damaged cars with used parts. All insurance and car-lease company vehicles were repaired with new parts. There was no structure or system available for the management of the flow of used parts. The project set out to demonstrate that 80% of all car damage (of cars more than two years old) can be repaired with used parts without compromising quality standards.

Dutch firm Achmea designed a 'green' car insurance policy enabling clients to have their car repaired with used parts. This involved a partnership between Achmea Parts Service and key parts of the automotive chain (car dismantlers, body shops, owners of car fleets and insurance companies). The project has produced some excellent results: around 75,000 green policies were sold and 6,000 repairs were carried out with used parts.

Prevention

Good waste management begins with preventing waste being produced in the first place – after all, what is not produced does not have to be disposed of.

Waste prevention is becoming more and more important as the global population increases and we eat away at our finite supply of natural resources. However, this is a very challenging concept as it is difficult to measure something which, by definition, never existed.

One of the key tools being used to encourage waste prevention is eco-design, which focuses on environmental aspects during the conception and design phase of a product. Eco-friendly products should be made using recycled secondary raw materials and should avoid the use of hazardous substances. These products should consume less energy during the use phase and should be able to be recycled once they have been discarded.

Waste prevention is closely linked to improving manufacturing methods and influencing consumers so that they demand greener products and less packaging. Many Member States are running awareness-raising campaigns to educate the public and encourage consumers to demand goods that produce less waste and drive the creation of a more resource-efficient market.

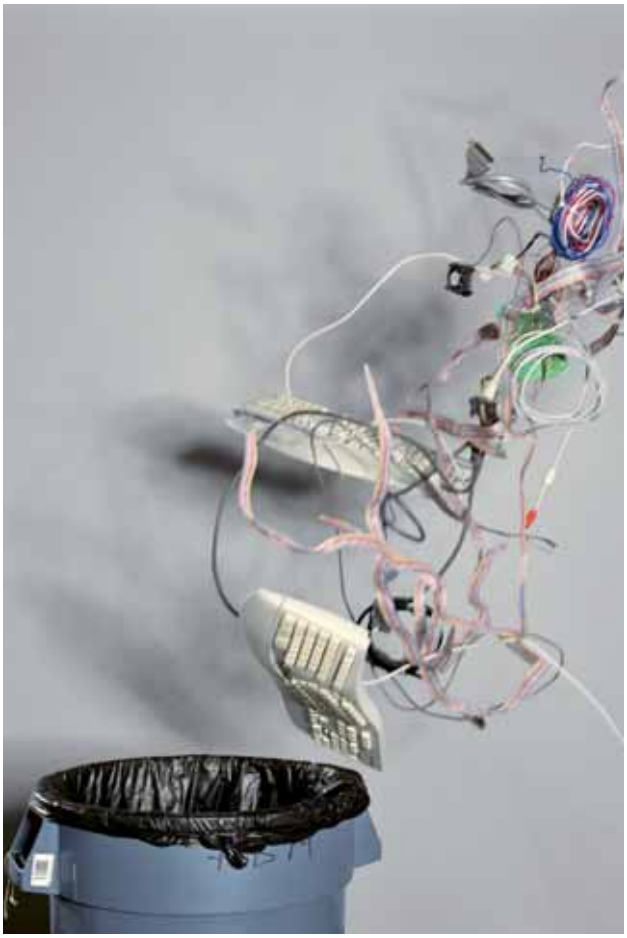
E-waste

Waste electrical and electronic equipment (WEEE) is the fastest growing waste stream in the EU, and is expected to reach 12 million tonnes a year by 2020. Safe collection and management of e-waste is essential as it often contains hazardous substances such as heavy metals which can cause pollution and health problems. E-waste also contains significant volumes of valuable raw materials, like gold, silver and platinum.

EU legislation restricts the amount of hazardous substances in electrical and electronic equipment making it easier and safer to recycle and to protect human health. The EU also sets targets for Member States for the volumes of waste electrical and electronic equipment they have to collect and recycle.

This legislation is currently being revised to make it more effective and enforceable, as well as setting new targets which will ensure the development of appropriate recycling markets. Member States are not told by the EU how to reach the targets. Each Member State devises a system suited to its own circumstances. Efforts by Member States and citizens to separate e-waste will mean that in future better use can be made of the resources which were previously being lost to landfill.

The EU's waste management rules for electrical and electronic equipment promote producer responsibility. Manufacturers are responsible for the sound re-use, recovery or eventual disposal of the product.



Best practices in waste prevention

Successful waste prevention strategies are operating across the EU helping to reduce Europe's environmental impact and improve its resource efficiency. Below are some examples of the variety of measures at work across Europe.

National Industrial Symbiosis Programme (UK)

The National Industrial Symbiosis Programme has created a market which puts together those producing waste with those who can use it, and are willing to pay the most for it. By turning pastry waste into electricity, converting fatty acids into biodiesel, and so on, they estimate that the whole programme has boosted the UK economy by as much as €3 billion.

Eco-point initiative (Italy)

Dry food sold in bulk through dispensers at Italian supermarkets reduces packaging and allows customers to buy the amount they want. This is not only good for the environment but saves shoppers money – between 10 and 70% compared to the price of packaged goods. The 30 Eco-points in Italy and Switzerland prevent the use of an estimated 1 million packages per year.

Vienna waste prevention programme (Austria)

The focus is on spending public money on green products and services (green public procurement), helping small firms become more eco-efficient, the promotion of re-use and repair of goods, and awareness-raising for cultural services. As a result, citizens can buy and sell used appliances through an online flea market, preventing around 1,000 tonnes of waste annually. Around 400 tonnes of appliances are repaired annually at local repair and service centres, while eco-efficiency advice has helped save businesses around €34 million since 1998 and prevented over 100,000 tonnes of waste.

Menu Dose Certa (Portugal)

The pioneering Menu Dose Certa or Right-Sized Menu project aims to support restaurants in creating menus that generate less food waste. Porto's waste management organisation LIPOR aims to reduce food waste by 48.5 kilos per year per restaurant client by 2011 by promoting a balanced diet raising awareness of food waste. That means changing attitudes and behaviour to eating and encouraging restaurants to cut portion sizes and serve better-balanced meals.

Stop-Pub (France)

French households receive an average of 15 kg of junk mail each year, adding up to almost a million tonnes of waste. Operation 'Stop Pub' was launched as part of France's national waste prevention plan. The Ministry of Energy and Environment produced a postbox sticker expressing the resident's wish not to receive unaddressed mail. The stickers have led to a significant reduction in the amount of junk mail in household waste.

Kringloop Re-use Centres (Belgium)

Kringloop Re-use Centres extend the useful life of discarded clothes, appliances, kitchenware, furniture, books records and bicycles. Almost 50,000 tonnes of discarded items were collected in 2008, a 10% increase on 2007. Launched in 1992, the long-term aim is to achieve an annual re-use volume of 5 kg per inhabitant.

Details of good waste practices across the EU and beyond are available at: http://ec.europa.eu/environment/waste/prevention/practices.htm

Challenges ahead

Across the EU, the proportion of waste being recycled is rising, while the amount sent to landfill sites is falling. The impact of waste treatment sites on surrounding areas has been minimised, more energy is recovered through incineration, and hazardous waste and illegal dumping are being monitored more tightly. A lot has been achieved, but much remains to be done.

The amount of waste we produce in the EU is still increasing. Yet the materials supplying this growth in consumption are in scarce supply.

We need to ensure that our planet's resources are managed in a responsible way which also considers the needs of future generations.

We need to design eco-friendly products and encourage prudent and environmentally responsible consumer behaviour to reduce the amount of waste we produce.

And we need to improve recycling to increase the supply of raw materials to European industry.

Many Member States are making significant steps in this direction. However, it is clear a lot of work needs to be done to bring all EU countries up to the high standards currently being achieved by a small number.

We all have a role to play in ensuring that we get the best out of our waste. Householders can work to reduce unnecessary waste and separate waste to produce high-quality recyclable material. Member States must continue working to design appropriate schemes to meet ambitious targets, ensuring the correct incentives are put in place for businesses and households. And the European Union must ensure that Member States have the support they need to comply with EU legislation.

For more information on EU waste policy, visit: http://ec.europa.eu/environment/waste/index.htm

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