

creative policy packages for waste:

Sweden

overview

The Swedish strategy has relied on extended producer responsibility (EPR) creating mandatory recycling targets for producers of various waste streams. These have been successful in terms of largely meeting the targets, but the implementation has been criticised as being over-complex. A landfill tax and landfill bans have recently been introduced to try to further improve rates of recycling and composting, but the response from municipalities and industry is likely to be an expansion of incineration if there are no measures to discourage this. The Swedish Environmental Protection Agency is considering introducing an incineration tax.

who did we interview?

- Gunnar Fredriksson, Head of Section in the Division for Eco-management Strategies and Industrial Co-operation, which includes waste, for the Swedish Ministry of the Environment
- Gunnar Lind, Nordic Greenpeace
- Weine Wiqvist, Managing Director, Swedish Association of Waste Management (RVF), a trade association

what kind of country is Sweden?

Sweden has a land area of 449,964 square kilometres and a population of 8.8 million, giving a low population density of 20 inhabitants per square kilometre. There are no apparent geographical constraints on landfill.

Municipalities own most of the disposal infrastructure. Most landfills are publicly owned. Out of 22 incinerators, only one is privately owned, and there is only one private composting plant. However, energy companies are getting involved in the waste incineration sector. The private sector has mostly invested in collection systems and in recycling.

what has been achieved?

Municipal waste¹ recycling rose from 19 per cent in 1994 to 39 per cent in 2000. There are no overall recycling targets for municipal waste but there are targets for the specific waste streams dealt with by the EPR legislation. Incineration over these six years has decreased slightly from 41 per cent to 39 per cent.

¹ Municipal waste includes waste in dustbins and rubbish sacks, bulky waste from households, park and garden waste, waste separately collected for recycling and shop and office waste.

Industrial waste recycling rose from 40 per cent to 43 per cent between 1993 and 1998. Ten per cent undergoes 'other treatment' which includes pre-treatment and export. Industrial waste grew at an average of 4.6 per cent per annum during the same period.

Between 1997 and 2000, municipal waste arisings did not grow, while GDP grew by 3.9 per cent per annum on average. A slight increase in municipal waste has been seen since 2000, mainly bulky waste and waste electric and electronic equipment. However, interviewees could not say with certainty whether the stabilisation is due to the success of packaging measures or whether previous figures were over-estimated.

Municipal waste, or household waste, as translated in Swedish statistics is comparable to the UK definition.

what were the motivations behind the strategy?

According to Gunnar Fredriksson, waste is seen as an important part of overall environmental strategy – Swedes do not like to waste resources. There has also been a public reaction against landfill and incineration, including a dioxin debate in the 1980s. However, more recently, energy policy has become a driver – Sweden is trying to reduce its reliance on nuclear energy and incineration is seen as having an important part in delivering heat and electricity, particularly through district heating systems. For Weine Wqvist, waste is seen as important for encouraging citizen participation in policy, so has some symbolic value.

what are the principal instruments?

Extended Producer Responsibility

Under the legislation on EPR, producers of goods have to meet statutory targets for recycling. It is up to producers how they meet these targets, and in most cases they have relied on 'bring' systems, ie container parks, rather than doorstep collection of recyclables. Waste paper, tyres, and packaging were made subject to EPR in 1994, end-of-life vehicles in 1998 and electrical and electronic products in 2001. The collection and processing costs are passed on to the consumer in the price of the product.

EPR is viewed as a direct route to achieving recycling goals. Gunnar Fredriksson: "The recycling of household materials wouldn't be economic if it wasn't charged to the consumer. When metal and cardboard were collected, it was done because there was a market – but this isn't true for other streams. However, the main reason for EPR was to influence the design of products. You can see that packaging is changing – there is more and more refillable packaging, using less material. The legislation has led to better packaging". Weine Wqvist comments: "If you want something to happen quickly and include a maximum of participants, you have to make it a legal requirement".

The 1999 recycling targets for packaging waste for paper, card and cardboard (30 per cent), corrugated cardboard (65 per cent), plastic (30 per cent), steel (50 per cent) and glass (70 per cent) have all been met or exceeded. The 50 per cent target for aluminium (not including aluminium covered by deposit refund systems) was not met and plastics have also been problematic.

compulsory sorting of waste

In 1994 legislation was passed, requiring householders to sort waste into separate streams to facilitate collection under the EPR legislation. However, as Gunnar Lind points out: “Since the Swedish system relied on bring systems it is not really compulsory”. Gunnar Fredriksson admits that it is “regulated but not enforced”.

landfill tax and landfill bans

The landfill tax was announced in 1996 and introduced in 2000. It is presently at SEK 250 (€26.4, £18.10) per tonne. It is designed to divert more waste from landfill and, together with landfill bans, is likely to increase the amount of waste incinerated. There is not, as yet, a tax on incineration.

The bans on landfill of combustible waste (from 2002) and organic waste (from 2005) were designed to use the resource in the waste better than landfilling and to ensure that waste that could go to incineration with energy recovery did go down that route. Since they are combustible, organics are effectively also covered by the 2002 ban.

variable charging

Municipalities are allowed to charge households according to the volume of waste produced, its weight or the frequency of the collection. Also, householders can get reduced waste charges for composting or accepting lower frequency collections.

what were the main problems for the strategy?

the system is complex and not user-friendly

Responsibility for organising recycling is divided among the different producers dealing with the different waste streams, but municipalities also do some collection and recycling. Producers and municipalities have tended to rely on ‘bring’ systems. Gunnar Lind explains the problems: “People separate packaging into different waste streams: metal, hard plastic, soft plastics, paper, glass, PET bottles. In addition, people also separate hazardous waste - collected by the municipality, organic waste for composting, newspapers and other types of paper such as letters, magazines. Then they have to take all these different waste streams to container parks located in different places. They are not always well maintained, and a lot of the time the containers are full. There is an increasing unwillingness to do the separation. We need a simpler system, especially for paper which is now separated into three different fractions”.

Gunnar Fredriksson agrees that there have been problems: “The container parks were not cleaned up properly. Municipalities and producers have not been able to work together. In the new categories of EPR, eg electronic and electrical waste, they have better co-ordinated their efforts. Maybe the focus has been too much on environmental targets and recycling, and has not considered enough whether the system was user-friendly.”

slow development of infrastructure

Infrastructure has been slow to develop to meet the target date of 2002 for the landfill ban on combustible waste. The target date of 1 January 2002 for implementation of the landfill ban on combustible waste was earlier than the Swedish EPA suggestion of 2005. The necessary infrastructure has been slow to develop, and there is some doubt as to whether adequate composting and incineration capacity is in place. Weine Wiquist suggested that it can take five to seven years to get a new incineration or composting plant up and running. Gunnar Fredriksson: “The problem is that it is hard to say who is responsible for fulfilling the ban – municipalities and companies all waited for each other to do something. There was no national planning. In Denmark the government plans on a national level how many incinerators etc. But there is nothing like that in Sweden, so nothing was done in the first year or so”.

The municipalities are starting to develop infrastructure, but industrial waste remains a problem. Gunnar Fredriksson: “Every company is responsible for its own waste and it is left to the market to provide infrastructure. But this is not happening. We now have a system that requires companies to have a permit to keep on landfilling. In order to get the permit they have to show how they will fulfil the ban”.

variable charging has had only a temporary effect

Weine Wiquist comments: “Recycling increased quite a bit in the first few years of implementation of variable charging, but now the situation has gone backwards. People have realised that they were only saving the equivalent of the cost of a coca-cola per week so don't bother separating at source as much as before.”

what are some of the issues for the future?

the economics do not fully reflect the waste hierarchy

Gunnar Fredriksson: “We are trying to ensure through the landfill tax that landfilling waste is not good business – but the landfill tax might not be high enough. The need for an incineration tax is being discussed”. Gunnar Lind comments: “As the system's economics are pushing towards incineration, the mandatory recycling targets within EPR legislation are absolutely necessary for recycling to happen. If they disappeared, paper and plastics would go to incineration, due to their high calorific value, and glass and metals would go to landfill”.

unclear role of incineration

There is not a clear policy on how far incineration, as against recycling, should develop. Municipalities are likely to fund additional incineration capacity to meet the landfill ban rather than funding recycling or composting infrastructure, because burning waste offers an alternative to using other fuels in district heating, which is widespread in Sweden and is thus cheaper for municipalities. Gunnar Fredriksson: “Municipalities can decide if they should incinerate or compost. The EPA has suggested a goal for treatment of biological waste and, depending on the response, one possible measure is an incineration tax to ensure that composting is not ruled out by incineration”. A target of 25 per cent composting by 2010 may be adopted.

For industry, the EPA is keen that the solution to the landfill ban is not 100 per cent incineration, but does not want to tax it as yet as it wants some new incineration capacity to develop. Gunnar Fredriksson: “It is simpler to incinerate than to sort and recycle or compost. This has to be taken into account. If the government does nothing to provide incentives, the EPA thinks there will be more incineration than is optimal”. As with municipal waste, the EPA would consider a tax to correct this.

the targets for waste reduction will not be met

Industrial waste has increased by 25 per cent between 1993 and 1998, while the Swedish waste management plan set targets of 10 per cent reduction of waste arising by the year 2010, compared to 1993. Gunnar Fredriksson thinks that these targets are unattainable: “Stabilisation will not be met, let alone reduction – we haven’t found the measures to drive it. The landfill tax and landfill bans have led to some reduction of construction and demolition waste – but we don’t have detailed figures. The landfill tax and producer responsibility have led to more of a focus on waste, so it is possible that there will be slower growth, but not stabilisation”.

A lack of information on industrial waste makes it hard to set goals and monitor progress towards them. New responsibilities to make industry plan for its waste management may be required.

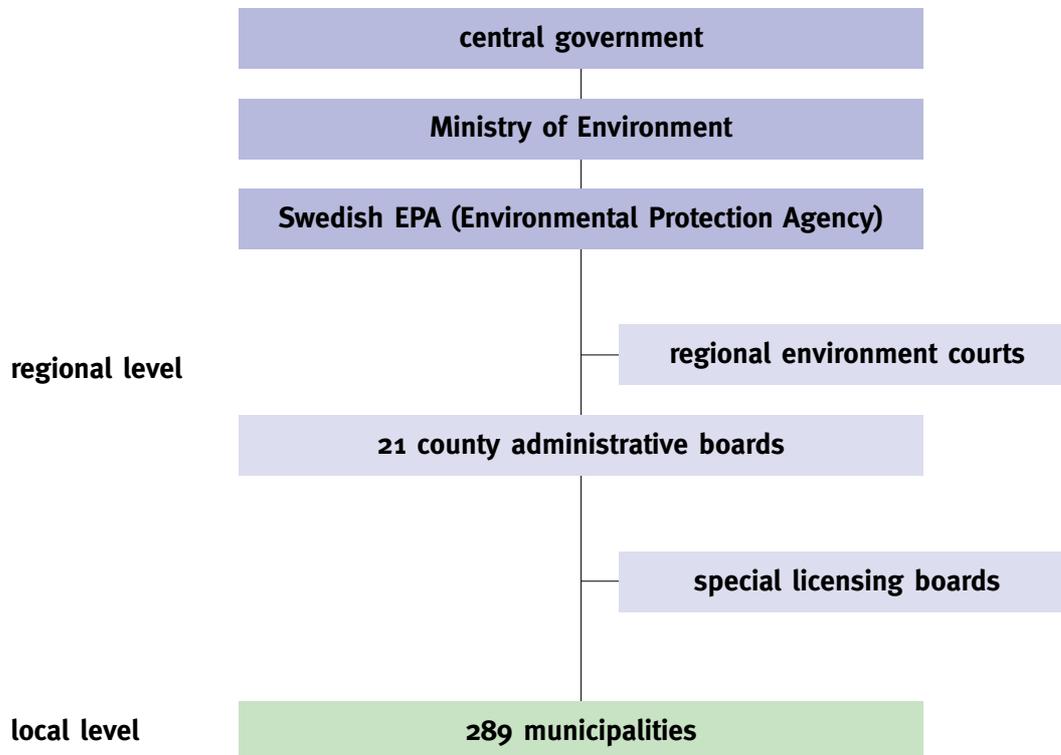
what are the lessons for the UK?

Gunnar Fredriksson: “Participation from the public is important. Sorting of waste takes time before it works; a lot of information is needed. This limits the speed of the possible changes and the number of fractions. You need a clear responsibility for all actors involved. Both material recycling and incineration with energy recovery is necessary to avoid landfill”.

Gunnar Lind: “EPR should be the key to decreasing waste and getting someone to take economic responsibility for it. Some figures from industry show that the weight of packaging has decreased by 25 per cent over an eight year period, which shows that there is potential. The system has to be user-friendly. Sometimes I feel it is not user-friendly on purpose.”

Sweden - competent authorities

7.6



- Overall responsibility for waste management rests with the Ministry of the Environment
 - Ecocycle bill enacted in 1993
 - Swedish Environmental Quality Objectives bill adopted by Parliament on April 1999
- The Swedish Environment Protection Agency (1967) is the central enforcement and supervising agency (it has no licensing powers). It is an independent authority whose Director-General is answerable to the Government
- Responsibility for regional environmental issues rests with the environmental protection departments of the 21 County Administrative Boards who are in charge of establishing regional waste management plans
- Sweden's 289 municipalities are responsible for the planning of all waste management, including the waste for which they do not have operative responsibility. Their responsibility has been increased to embrace packaging waste
- Since 1991, municipalities need to establish a waste management plan containing information on waste arisings, treatment methods applied and local methods employed to reduce both arisings and toxicity of waste (municipal waste only)
- Legal responsibility falls to municipalities for household waste and to producers for waste in the producer responsibility scheme

Sweden - waste management plans

7-7

	Action Plan Waste (1996-2005)	environmental quality objectives - interim targets for 2005
type of waste	<ul style="list-style-type: none"> • Consumption and production waste* 	<ul style="list-style-type: none"> • Consumption waste*
general objectives	<ul style="list-style-type: none"> • Promotion of ecocycle approach • Increase producer responsibility for goods throughout the product lifecycle 	<ul style="list-style-type: none"> • Reduction of the quantity and dangerousness of waste • Improvement of collection, sorting, recycling, treatment and disposal techniques • Recycling on a co-operative basis by urban areas and the surrounding rural areas
targets	<ul style="list-style-type: none"> • Consumption waste going to landfill should decrease by 50% by the year 2000, and by 70% by 2005, in comparison with the 1994 levels • Production waste** should diminish by an average of 10% by the year 2010, compared with 1993 • Specific objectives for individual branches of the industry 	<ul style="list-style-type: none"> • Reduction of the quantity of landfill waste** by at least 50% by 2005 compared with 1994 • No increase in the total quantity of waste generated between 1994 and 2005 • The total quantity of materials and energy used by goods and services during their lifecycle to be lower in 2010 than in 2000
results	<ul style="list-style-type: none"> • Household waste (a part of consumption waste) landfilled decreased by 7% between 1994 and 2000 • Production waste (industrial waste) increased by 25% between 1993 and 1998 	<ul style="list-style-type: none"> • No quantified result as yet

Note: * Consumption waste: waste derived from the use and consumption of consumer and capital goods; Production waste: solid and liquid waste arising as a direct consequence of industrial production

** excluding mining waste.

Source: Action Plan Waste (report 4600), The Swedish Environmental Objectives – Interim Targets and Action Strategies (Summary of Gov. Bill 2000 / 01:130).

Sweden - definitions

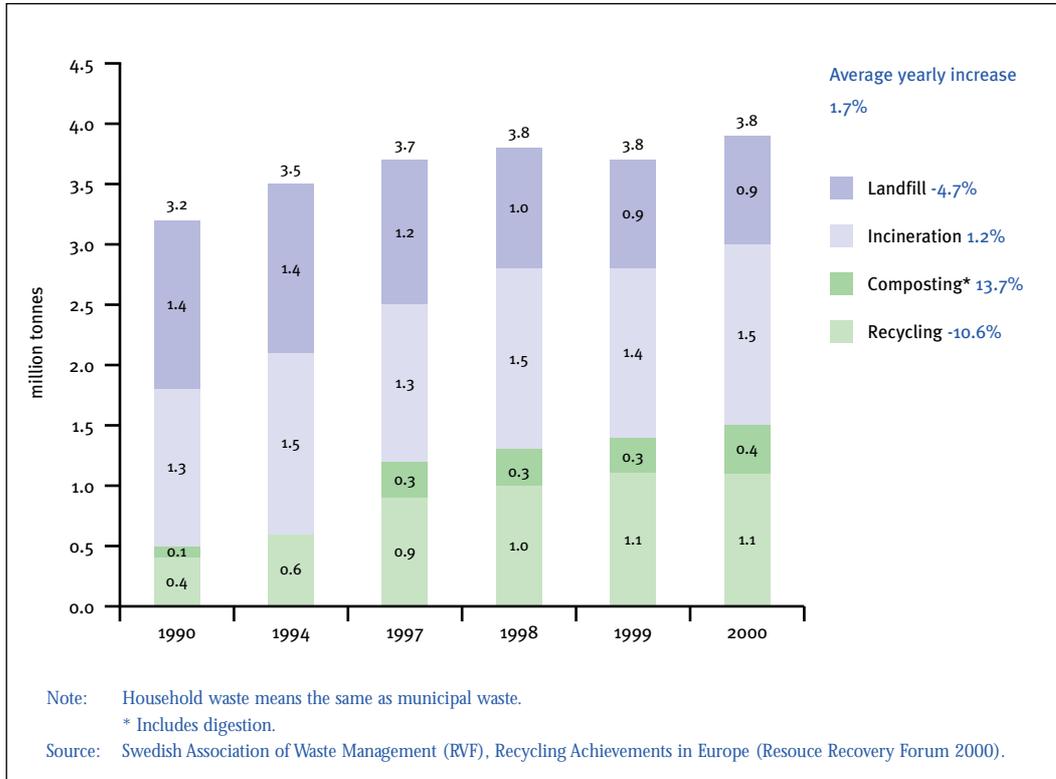
7.8

waste categories	waste management	measurement
<p>household waste or municipal waste: waste in dustbins and rubbish sacks, bulky waste from households, park and garden waste, waste separately collected for recycling, and shop and office waste</p> <p>industrial waste: metal, pulp & paper, wood, food, beverages & tobacco, textile, non-metallic mineral products, manufacturing of fabricated metal products, machinery and equipment</p> <p>mining waste</p> <p>construction and demolition waste</p> <p>non sector-specific waste: company waste in the form of packaging, pallets, etc.</p> <p>sewage sludge: from sewage treatment plants and private households</p> <p>scrap vehicles</p>	<p>recycling Reuse Material recycling</p>	<ul style="list-style-type: none"> • Every four years, the national board for statistics conducts a survey on main waste categories (household and industrial) • RVF (the waste trade association) publishes yearly figures for household waste • All waste flows occurring in the municipality are measured by the local authority, which also includes the waste streams covered by the Extended Producer Responsibility regulation • Recycling targets for waste streams under producer responsibility are also measured by the producers
	<p>biological treatment or composting Composting: including home composting Digestion (anaerobic treatment method for organic waste to generate biogas)</p>	
	<p>incineration EfW or CHP</p>	
	<p>landfill</p>	
	<p>hazardous waste treatment Requires special handling owing to its harmful effects on human health and the environment</p>	
	<p>temporary storage</p>	
	<p>export</p>	
<p>other waste streams Waste from power stations, gas works and heating plants Agricultural waste</p>		

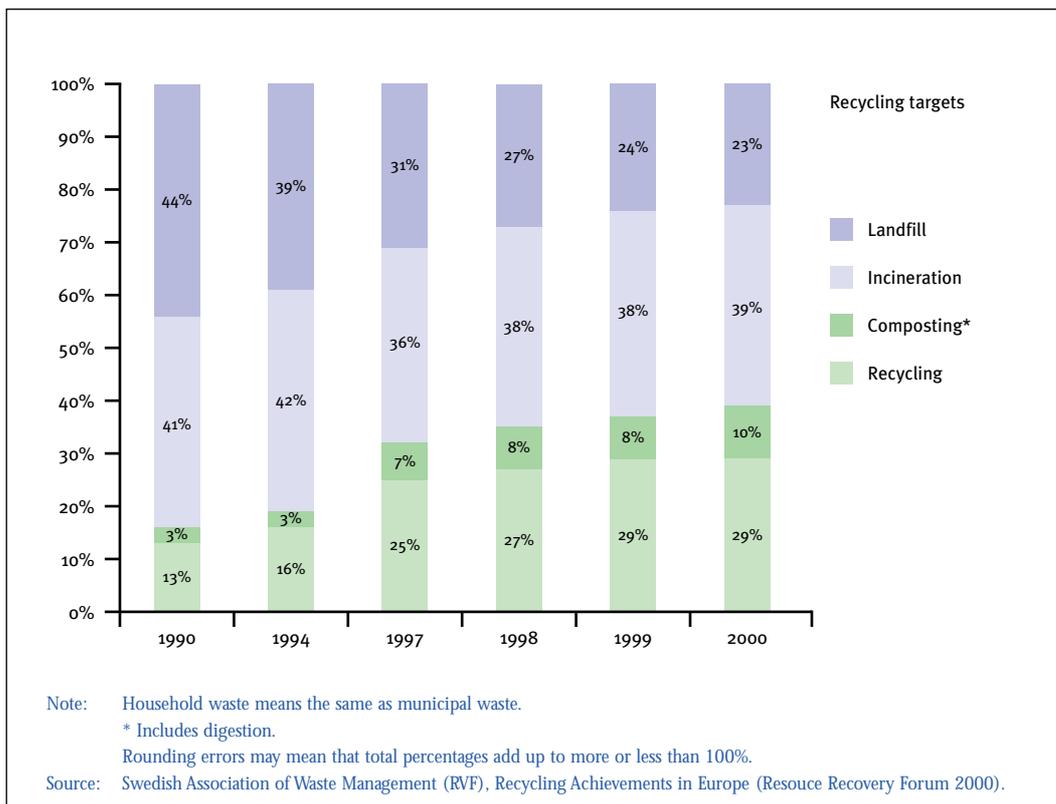
Source: Swedish Association of Waste Management (RVF), Statistics Sweden (SCB), Warmer Bulletin 66.

Sweden - household waste arisings and management

household waste arisings and management - absolute terms



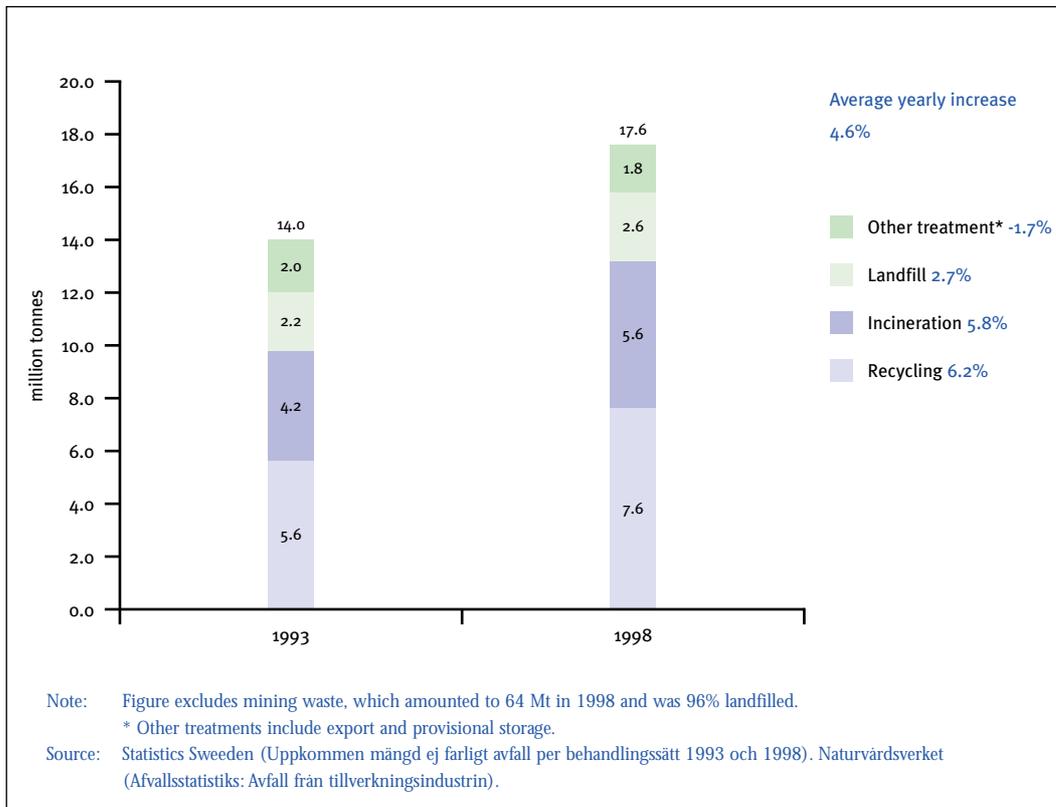
household waste arisings and management - relative terms



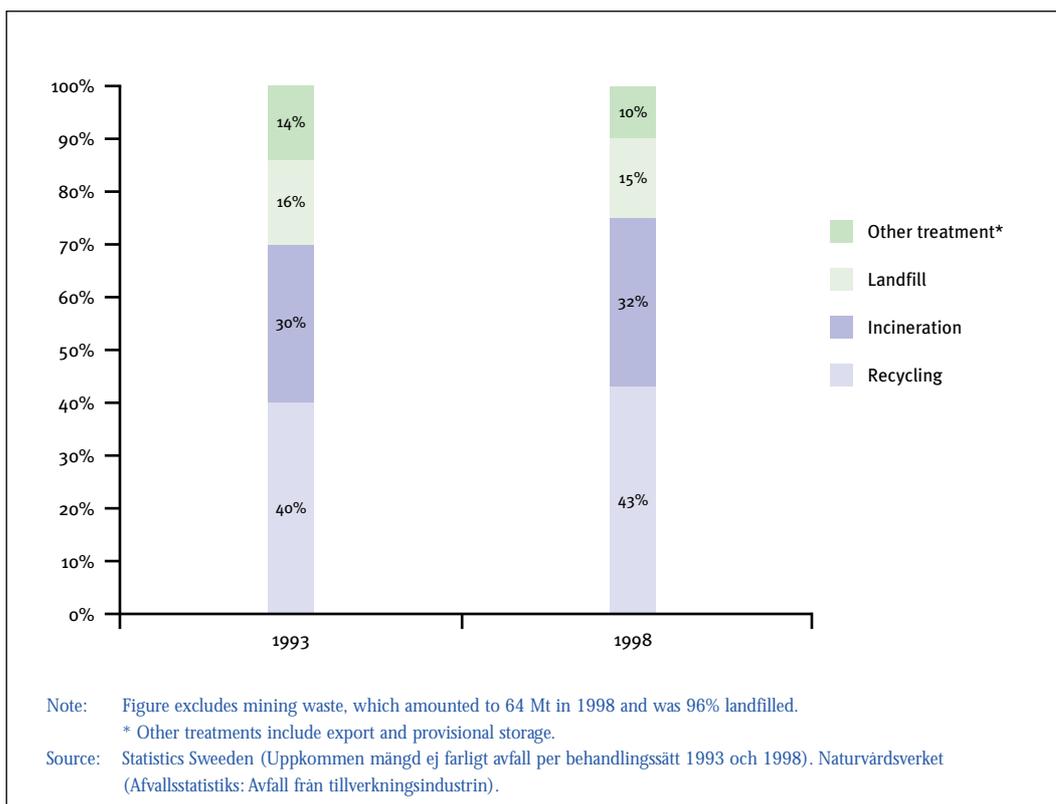
Sweden - production waste arisings and management

7.10

production waste arisings and management - absolute terms



production waste arisings and management - relative terms



Sweden - overview of policy packages

7.11

tool ▼	target ▶	consumers	municipalities	businesses
legislative		<ul style="list-style-type: none"> Compulsory sorting of waste by households (1994): regulated but not enforced 	<ul style="list-style-type: none"> All landfill sites to have attained a uniform standard according to the EC landfill directive by 2008 	<ul style="list-style-type: none"> Product regulation: eco-labelling EPR legislation: <ul style="list-style-type: none"> - Waste paper, tyres, packaging (1994) - End-of-life vehicles (1998) - Electrical and electronic products (2001)
			<ul style="list-style-type: none"> Requirement to separate combustible waste by 2002 Ban on landfilling of combustible waste by 2002 Ban on landfilling of organic waste by 2005 	
economic		<ul style="list-style-type: none"> Variable charging on household residual waste based on weight, volume or frequency of collection Deposit-refund systems covering beer and soft drink: glass and PET bottles, aluminium cans 	<ul style="list-style-type: none"> Landfill tax (2000): the tax is expected to lead to a 50-70% reduction of waste to landfill by 2005; wastes from mining and construction are exempted 	<ul style="list-style-type: none"> Aggregate tax (1996): tax on extracted gravel
			<ul style="list-style-type: none"> Product charges/taxes: scrapped vehicles, batteries, tyres, packaging (plastic, paper and metal) – used to finance collection and recycling of the materials – and oil discharged from ships 	
agreements				<ul style="list-style-type: none"> Voluntary agreements: <ul style="list-style-type: none"> - Recycling of office paper (1996) - NiCd Battery recycling (1993) - Hazardous building materials (1995)
information				<ul style="list-style-type: none"> Internet exchange market for construction and building materials
R&D				<ul style="list-style-type: none"> Research on design and recyclable products