

creative policy packages for waste:

Massachusetts

overview

The strategy in Massachusetts has been to set ambitious goals which, although voluntary, have been aggressively promoted and monitored. These have been reinforced by bans on disposal (incineration as well as landfill) of certain materials brought in with enough lead-time to enable local authorities and industry to provide alternatives. Financial support has been provided for local authorities through a range of grants, with the money coming from unredeemed deposits on beverage containers. Many local authorities have introduced 'pay-as-you-throw' programmes. The Massachusetts story is interesting for the UK because of its emphasis on incentives rather than regulatory mechanisms.

who did we interview?

- James Colman, Assistant Commissioner at the Bureau of Waste Prevention, and Greg Cooper, Deputy Director of Consumer Programs, both part of the Massachusetts Department of Environmental Protection (DEP)
- John McNabb, Clean Water Action (CWA), an NGO. Author of the Citizens' Solid Waste Plan, which pre-dated and was used by CWA to help shape the state's 2000 waste plan
- Iris Vicencio-Garaygay, Waste Advocate for Massachusetts Public Interest Research Group (MASSPIRG), one of the state's largest NGOs
- Greg Wirsen, Green Seal Environmental, an environmental consultancy specialising in solid waste management. He is also the Group Leader on the Construction and Demolition Processing Subcommittee of DEP's Solid Waste Advisory Committee

what kind of state is Massachusetts?

Massachusetts is a north-eastern US state, a little more than a twelfth of the size of the UK. It has a population of 6.4 million, giving a relatively high density of 297 people per square kilometre. There is no particular geographical constraint on landfill, but a moratorium on new landfill capacity between 1995 and 2000 means that in 2000 estimated remaining landfill capacity was seven to eight years.

what has been achieved?

Massachusetts has been trying to reduce the amount of waste generated, as well as trying to increase recycling rates. In 1990, the state set a recycling target of 46 per cent by 2000 for all municipal solid waste. The actual performance was an increase in recycling from ten per cent in 1990 to 38 per cent in 2000. However, there is currently a shortfall in solid waste management capacity, and the gap has been filled by an increasing amount of waste being exported to other states.

The Massachusetts plan defines waste reduction as including both source reduction (preventing waste from being generated) and recycling. The waste reduction rate is therefore based on potential generation, not actual generation. From the projections of waste growth made in 1990, the overall waste reduction rate is calculated as 54 per cent in 2000. For MSW, waste reduction is calculated to be 41 per cent, which includes 30 per cent recycling¹, plus source reduction of 11 per cent – meaning that although waste has grown, it has not grown as fast as might have been expected in 1990. Indeed, the figures show that the household component of MSW has been stable from 1994 to 2000.

what were the motivations behind the strategy?

Interviewees cited as motivations the growth in waste generation – Massachusetts' per capita MSW waste generation is about twice that of the UK – together with public opposition to the expansion of landfill and incineration. Landfills and incineration plants have caused groundwater and air pollution, leading to serious health concerns, particularly around mercury contamination of water. At the same time, there was a political desire to recycle and to realise the value in waste products.

Greg Wirsén also sees an economic driver: “Massachusetts, being a small, densely populated and industrialised state, has seen the price of real estate and the cost of permitting increase significantly. Therefore the cost of solid waste management has gone up. Increasing tipping fees has been very important in driving changes in waste management”.

what are the principal instruments?

James Colman describes the strategy as push-pull: “the big hurdle for programmes is the start-up of recycling infrastructure, so the state helps with that, creating a pull, then there are waste bans creating a push. The two work together”.

¹ When based on potential waste generation the recycling rate is 30 per cent. When based on actual generation the recycling rate is 35 per cent.

bans on disposal – both landfill and combustion – of certain materials

Bans have been successful on most of the waste streams they were applied to – nine are presently in place, including leaves and yard waste, whole tyres (shredded tyres can be incinerated), white goods, paper and cardboard, glass and metal containers, certain plastic containers, lead acid batteries and cathode ray tubes. In terms of total tonnage, the ban on leaves and yard waste has been the most effective. John McNabb: “Bans are a means of back-door recycling – recycling is not required, but materials going to disposal are prohibited. There is a debate as to whether it is best to require recycling, or to ban disposal – we decided on the latter.”

The DEP considers the bans to have been successful but agrees they need to be enforced at the disposal facility. Greg Cooper: “We have begun to enforce the bans more aggressively and are seeing positive impacts”. Iris Vicencio-Garaygay cites a recent example of the State Attorney General cracking down on the town of Wayland, an affluent suburb of Boston, for trashing their recyclables, but is concerned that: “this type of action doesn’t happen often enough. And now that the DEP’s budget has been cut quite severely, the chances decrease even further for these enforcement actions”.

The bans, in addition to moratoria on landfill and incineration capacity, made recycling more cost-effective.

moratorium on additional landfill capacity, 1995-2000

John McNabb: “The reason for the 1995 landfill moratorium was that two million tons per year landfill capacity was being applied for, and the state had a need for only a small fraction of that. Approving five to ten times as much capacity as needed is bad planning policy”. At the same time, “the DEP rationale was that it would increase cost of disposal through limiting supply and this is what appears to have happened.”

However, the moratorium has been lifted and the state recently approved the expansion of about 15 landfills to accommodate an increasing amount of waste.

moratorium on additional incineration capacity, 1990 to present

John McNabb explains that incineration is not seen as having a role in the strategy: “In 1990, the DEP was pressured by citizen groups to decide that they would no longer permit any more facilities. In 2000 there were management rather than environmental grounds for continuing the moratorium – the state had committed to reducing the amount of waste generated and increased incineration capacity would make that harder”.

financial support to municipalities to create the right infrastructure

Money to support local authorities' recycling initiatives came from the state's Bottle Bill. This directs the money from unredeemed bottle deposits to recycling and a hazardous waste clean-up programme (50 per cent to each). It has produced a fund that increases year-on-year as soft drink consumption increases. The fund receives more than \$30 million of revenues each year, of which approximately \$25-30 million is spent annually. The sum of \$14 million was appropriated from the Clean Environment Fund for waste reduction programmes last year. There are different grant programmes like grants for equipment, or the performance-based grants (Municipality Recycling Incentive Program (MRIP), where municipalities get a flat fee of between \$4 and \$105 per tonne recycled and a bonus payment of \$20 per ton for tonnage increases. This is not the only state money going into recycling – each municipality can raise its own money as well.

pay-as-you-throw programmes

The response of roughly a quarter of local authorities to the financial incentives on offer has been to establish pay-as-you-throw (PAYT) programmes, where householders are charged according to the amount of waste left over after separation for recycling. Some communities have actually asked for these to be introduced as it is seen as a way of reducing waste charges. Greg Wirsén comments: "PAYT seems to be working well. There is no evidence of fly-tipping being a problem, but then PAYT is only for honest people!"

creating demand for recyclates

There are various grants and loans to manufacturers for using recyclates, as well as recycled product procurement schemes for municipalities and state agencies. Greg Cooper also suggests that: "state procurement policies and assistance to industry on increasing processing capacity have been important in creating demand".

what have been the key factors in success?

an ambitious target

John McNabb sees this as essential: "It gives impetus to the DEP to take stronger action. It helps non-profit organisations to apply pressure. The US EPA did a study on the most successful states and cities on recycling – it showed that a high recycling goal is crucial to success".

high level political support and monitoring

Trudy Coxe, the Secretary of Environmental Affairs from 1993-98 pushed the target of 46 per cent recycling by 2000. James Colman comments: “She pushed the municipalities a lot and instituted the publication of recycling report cards where municipalities received grades from A to F on their recycling efforts. The reports helped to get state appropriation to fund municipalities to support their work – which made a big difference”. Greg Wirsen also comments: “The state has started a snowball rolling and it’s collecting momentum”.

lead times for implementation of disposal bans

James Colman stresses the importance of allowing sufficient time between announcing and implementing a ban, to allow recycling capacity to develop: “We tried to get enough infrastructure in place prior to implementing bans. Lead time is key, and conviction from government to increasing recycling is essential for companies to act. If industry sees the ban coming, they see it as an opportunity and they have enough time to mobilise capital and infrastructure”.

what were the major problems for the strategy?

recycling targets set in 1990 were not reached

John McNabb thinks the failure to meet targets was primarily due to lack of a: “Comprehensive, on-going, state-wide public education programme”, as well as a lack of market development and only very small steps towards product stewardship. In his view, more of the Bottle Bill unredeemed deposits should be appropriated to be used towards these goals. James Colman agrees that the problems have shifted from being about municipalities’ participation to being about individuals’ participation: “In the 90s, the problems were linked to lack of infrastructure – in 1990 only ten per cent of states had access to recycling facilities – now it is 80-90 per cent. Today, the problems are linked to people’s participation – there are a lot of people who don’t recycle everything and think of separation as a ‘pain in the neck’”. Greg Wirsen agrees with the point about markets: “There just aren’t markets for some materials. Lead times for disposal bans can be as long as you want, but if the economics don’t change, you won’t get investment. Plastics is a good example of this problem”.

John McNabb highlights another reason for the targets not being met: “Recycling efforts have been directed against municipal recycling on homeowners. This gets to only about 50 per cent of the state-wide generation. Very little attention has been directed to business solid waste generation, which is about 50 per cent of the total. From 1990-2000, residents reduced their waste generation per capita, yet businesses actually increased their waste generation”.

waste exports

Due to the limitation on new disposal capacity and the fact that reduction and recycling targets have not been met, Massachusetts is now exporting around 15 per cent of its municipal solid waste, despite an aspiration that the state should be self-sufficient in waste management. Being self-sufficient does not mean that there should be no exports of waste, but that exports and imports should balance.

budget cuts

State funding for environmental programmes has been reduced, which has meant a decrease in support for local authorities and budget cuts at the DEP. Iris Vicencio-Garaygay agrees with the DEP's long-term goals but is worried about resources: "The plan they have is great, but I'm not sure they will have the resources to implement it". The cuts reflect a generally recessionary climate, which affects local authorities and makes householders and businesses reluctant to pay more for recycling.

public awareness

Better communication will be needed to drive further progress. Iris Vicencio-Garaygay: "Waste is removed from people's everyday lives. They see kerbside collection and the bottle redemption and think everything is okay as they don't see full landfills, pollution etc". Greg Wirsen also comments: "People are too busy to be bothered about waste but also they don't know how much it is costing them".

what are some of the issues for the future?

more effort is needed on reducing waste at source

A limitation of the disposal bans is that regulation is focused on the end-of-pipe and not on waste generation. James Colman: "Through the Toxic Use Reduction Programme, public disclosure on toxic chemicals was made mandatory, which had a powerful impact. Generators now have to report how much toxic waste they generate each year. It may be useful to have generators report amounts of solid waste. We are trying to get waste facilities to go upstream and talk to generators".

James Colman sees waste reduction as the focus of future efforts: "Between 1990 and 2000 we focused on setting up infrastructure and grabbing the stuff already generated. Now, the levels of effort needed to recycle more or to reduce waste are a bit closer. So resources are being shifted to source reduction activities. As an example, the Boston Globe has reduced the size of its pages". The Massachusetts' 2000 Solid Waste Plan sets new reduction goals and includes commercial waste in reduction programmes.

market development

Organic wastes need special attention according to James Colman: “Steel, aluminium and paper can go anywhere – they are easily baled and shipped. But yard and food waste need local solutions, and we are focusing attention on that. For instance, we are working with supermarkets, the largest generators of food waste, to set up collection systems. We are putting together a map of where organic wastes are generated, so that processors can locate effectively”.

product stewardship

Massachusetts is just starting out on product stewardship, with the creation of the Product Stewardship Institute at the University of Massachusetts. James Colman: “We are learning from the European producer responsibility model, but the approach in Massachusetts is likely to be different. Europe uses command and control and regulatory requirements. The US is never big on requiring industry to do things – we want to try to handle this in voluntary agreements. However, if it is not successful, we will move towards the European model”.

John McNabb is keen for the focus to be on producer take-back rather than the weaker stewardship approach: “Producer take-back is a product-oriented strategy which will both put the financial burden for waste management on the producer and consumer and off the taxpayer and establish a powerful financial incentive for the producer to reduce the volume and toxicity of solid waste generated by their products”.

what are the lessons for the UK?

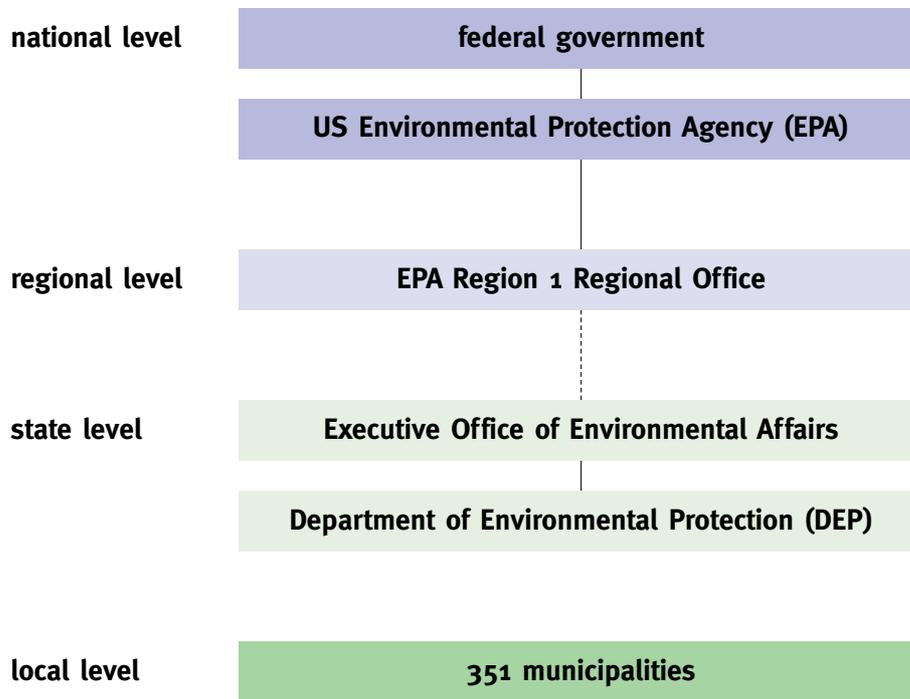
John McNabb’s recommendations can be summarised as:

1. Don’t expand disposal capacity or it will decrease the cost-effectiveness of recycling
2. Ban materials but at the same time establish markets.
3. Increase the number of materials that can be recycled via no. 2.
4. Public education and financial support for municipalities is essential.
5. Remember, the problem is not that we are running out of landfill but that we are generating too much waste and are not recycling enough.
6. The true long-range solution is Extended Producer Responsibility and getting onto the path for zero waste.

Greg Wirsen: “Listen to the people; take economics into consideration; understand that ‘change’ is the hardest thing for people to accept”.

Iris Vicencio-Garaygay: “You have to be well organised at the grass-roots level. How do you motivate people when it seems that the government is taking care of everything?”

Massachusetts competent authorities



Source: DEP, US EPA

- The federal government is responsible for environmental legislation in the US and together with the EPA - the environmental regulatory body - create national minimum standards
- The states however retain substantial independent authority to issue environmental protection laws applicable to their citizens and residents and in most cases are free to enact stricter environmental regulations
- States are responsible for issuing permits, monitoring and enforcing compliance related to waste management. In Massachusetts, this is mainly done through the Department of Environmental Protection (DEP)
- DEP is responsible, along with local Boards of Health, for regulating waste management and disposal (solid and hazardous wastes) and for the cleanup of hazardous waste sites and spills.
- DEP also establishes the state's solid waste management plans and strategies (a requirement of federal law)
- Municipalities have the power: to tax (limited); to enact and enforce local ordinances; and to administer the local aspects of certain state and federal programmes

Massachusetts - waste management plans

5-9

| | 1990 solid waste master plan (10 years) | 2000 solid waste master plan (10 years) |
|---------------------------|--|--|
| type of waste | <ul style="list-style-type: none"> • Municipal solid waste (MSW) | <ul style="list-style-type: none"> • Municipal solid waste (MSW) • Non-municipal solid waste (mostly C&D) |
| general objectives | <ul style="list-style-type: none"> • Reduce the amount and toxicity of waste • Recycle the maximum amount of waste possible • As a last resort, properly dispose of waste that is not recycled | <ul style="list-style-type: none"> • Reduce the quantity and toxicity of waste to the irreducible minimum, leaving as little waste as possible to be disposed • Dispose only residuals from recycling and other waste reduction efforts • Ensure that waste handling facilities are environmentally sound |
| targets | <ul style="list-style-type: none"> • 10% of MSW must be source reduced by 2000^a • For the MSW that is generated: <ul style="list-style-type: none"> - 46% is recycled^b - 50% is combusted with energy recovery - 4% is landfilled • Recycling rates^b are not mandatory although DEP encourages municipalities to adopt mandatory recycling ordinances as a means to increase recycling | <ul style="list-style-type: none"> • Achieve 60% of waste reduction^c for MSW and 88% for construction and demolition debris by 2010 <ul style="list-style-type: none"> - Flexible waste reduction milestones that may change in the future based on actual performance • Divert^b from landfill 60% of organic waste generated by the industrial, commercial, and institutional (ICI) sector by 2010 • The Plan does not set specific targets for recycling but notes that recycling is expected to be in a range of 45 to 55% |
| results | <p>2000 MSW source reduction^a: 11%</p> <p>Of the MSW generated in 2000: 34% was recycled (10% in 1990), 38% incinerated (44% in 1990), 13% landfilled (46% in 1990), and 15% net exported</p> | <ul style="list-style-type: none"> • 2000 waste reduction rates^c : 41% for MSW; 77% for non-MSW (mostly C&D) • 2000 recycling rates: 49% for total waste and 78% for C&D • Current rate of ICI organics diversion^b: 5-10% |

Note: a. Source Reduction rate = $\frac{\text{Source Reduction}}{\text{Potential Generation with Source Reduction} - \text{Actual Generation}}$

b. Diversion = Recycling + Composting; recycling figures here include composting (mean the same as diversion).

c. Waste Reduction rate = $\frac{\text{Source Reduction} + \text{Diversion}}{\text{Potential Generation}}$

Source: DEP, Beyond 2000 Solid Waste Master Plan.

Massachusetts - definitions

5.10

| waste categories | waste treatment | measurement / calculation |
|---|--|---|
| <p>municipal solid waste</p> <p>Residential solid waste: typical waste generated by households</p> <p>Commercial solid waste: all types of solid waste generated by stores, offices, institutions, restaurants, warehouses, and other non-manufacturing activities, or similar types of solid waste generated at manufacturing operations.</p> <p>It does not include solid waste generated in a manufacturing or industrial process</p> | <p>waste reduction</p> <p>Expressed as a percentage of potential generation</p> <p>Source reduction</p> <p>The design, manufacture, purchase, or use of materials to reduce the quantity generated and/or the toxicity of materials before they enter the solid waste management system - expressed as a percentage of potential generation</p> | <p>waste reduction = source reduction + diversion</p> <p>Source reduction = expected waste generation* - actual waste generation</p> <ul style="list-style-type: none"> Expected waste generation* = projected generation without source reduction initiatives, using 1990 as base year for generation and projections of gross state product Actual waste generation = diversion + disposal + exports - imports |
| <p>non municipal solid waste</p> <p>Construction and demolition waste</p> <p>Industrial waste and sludge</p> <p>Waste water treatment sludge</p> <p>Waste from energy production and MSW incineration</p> <p>Street sweepings</p> <p>Contaminated soil</p> | <p>Diversion</p> <p>The recycling and composting of waste, including residential on-site composting - expressed as a percentage of actual waste generation</p> | <p>Diversion = recycling + composting</p> <p>Estimated using municipal recycling surveys, bottle bill data, commercial processors' surveys, residential organic waste management study, composting facility reports, and C&D processors surveys</p> |
| | <p>disposal</p> <p>Landfill</p> <p>Combustion</p> | <p>Estimated by disposal facilities</p> |
| | <p>exports / imports</p> | <p>Estimated using data from annual facility reports and a survey of other states</p> |

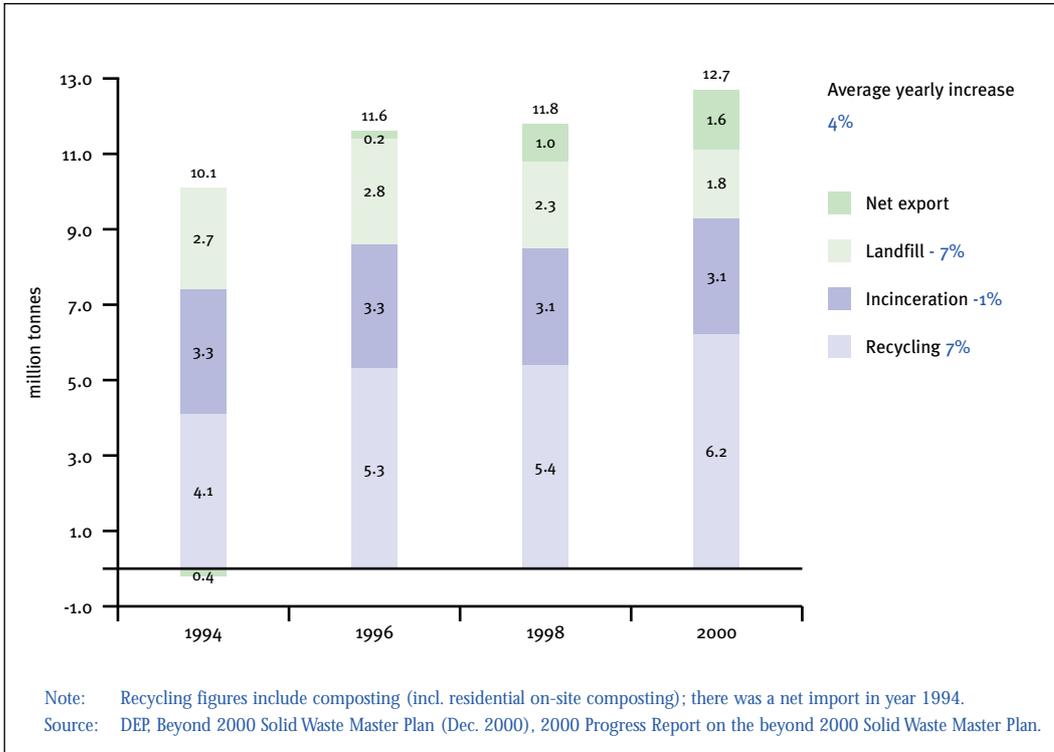
Note: * Also called Potential Waste Generation.

Source: DEP, Beyond 2000 Solid Waste Master Plan and related appendices.

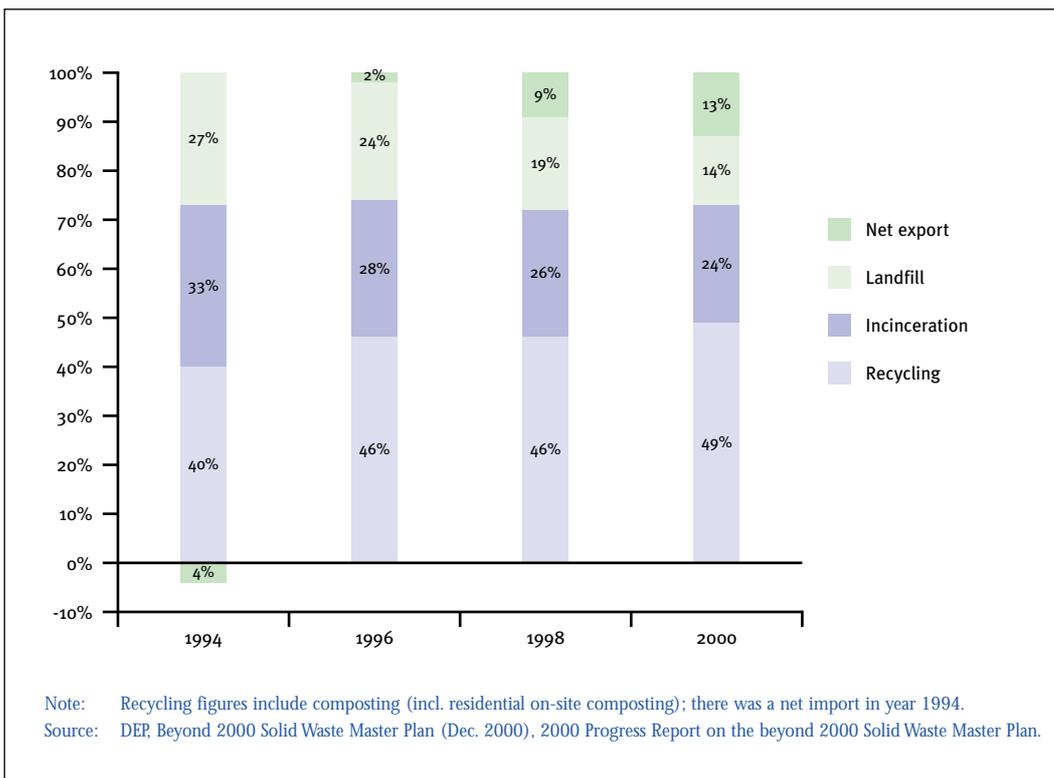
Massachusetts - total solid waste arisings and treatment

5.11

total solid waste arisings and treatment - absolute terms



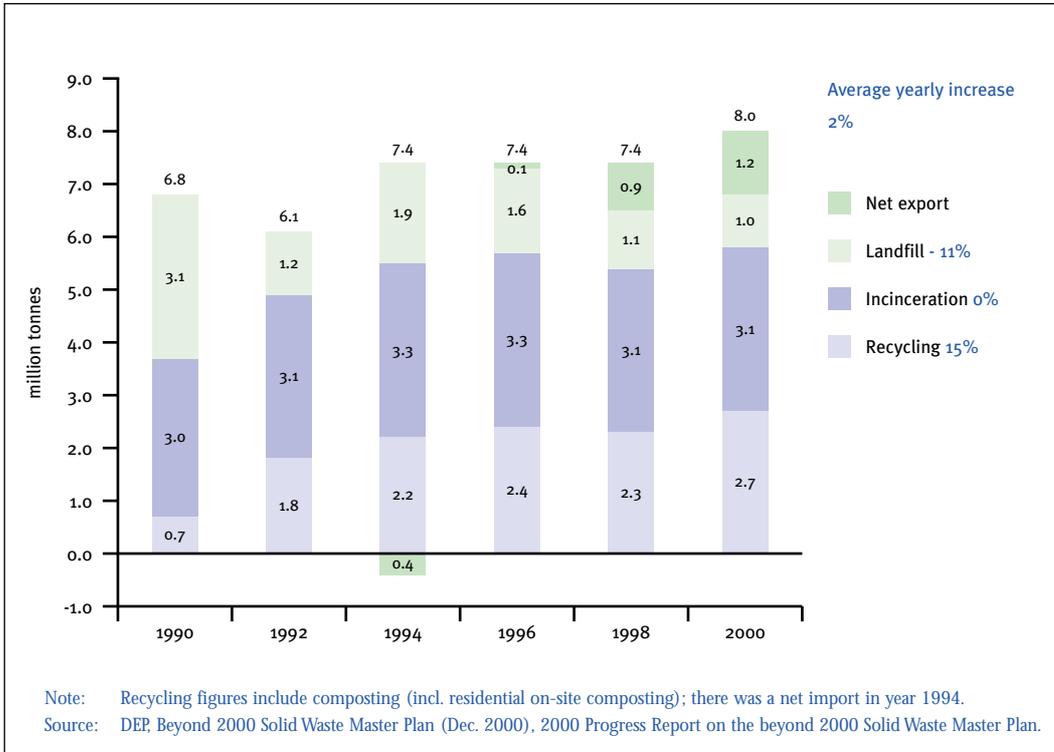
total solid waste arisings and treatment - relative terms



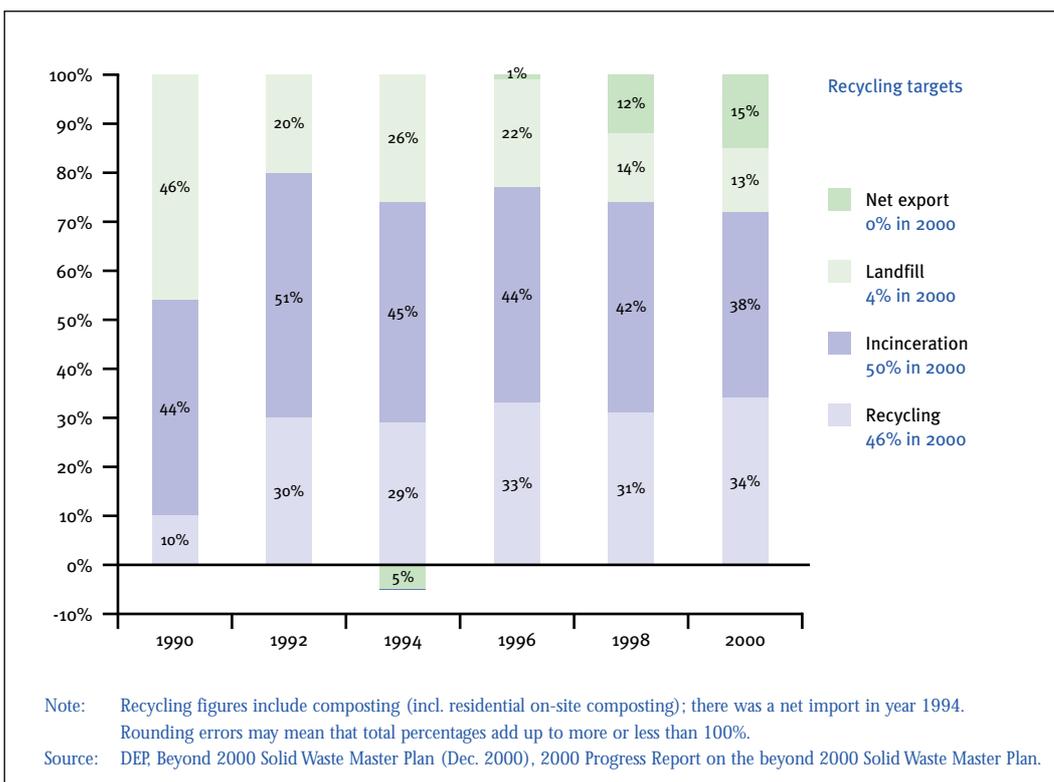
Massachusetts - municipal solid waste arisings and treatment

5.12

municipal solid waste arisings and treatment - absolute terms



municipal solid waste arisings and treatment - relative terms



Massachusetts - overview of policy packages

5.13

| tool ▼ | target ► | municipalities | businesses |
|-------------|----------|--|---|
| legislative | | <ul style="list-style-type: none"> • Moratorium on additional landfill (1995-00) and incineration (1990-present): imposed through DEP's licensing powers • Disposal bans for recyclable waste: leaves and yard waste (1991), whole tyres - landfill ban only (1991), white goods (1991), paper and cardboard, glass and metal containers (1993), certain plastics containers (1994), recyclable paper (1994) • Disposal bans for hazardous waste: lead-acid batteries (1990) and cathode ray tubes (2000) | |
| | | <ul style="list-style-type: none"> • Material separation plans for municipal waste incinerators (2000) • Recycled product procurement program (also for state agencies) (1990s) | <ul style="list-style-type: none"> • Landfill ban on unprocessed C&D material from 2003 • Bottle Bill: Beverage Container Recovery Law (1983), which includes a deposit-return system |
| economic | | <ul style="list-style-type: none"> • Promotion of recycling/ use of recycled products/ use of pollution prevention techniques in state and municipal construction projects (1990s) • Municipal Recycling Incentive Program (MRIP): performance based grant (1997) • Grants for recycling equipment, technical assistance, and to offset the extra costs due to separate collection of certain wastes (1990) • Pay-as-you-throw programmes (1990): 1/4 of municipalities | <ul style="list-style-type: none"> • Loans and grants to recycling businesses or businesses using recycled products (1996 and 1999) • Technical assistance to encourage recycled products purchasing (1990s) • Tipping fees (1987): required landfill operators to pay the city or town an amount based on number of tonnes disposed |
| agreements | | | <ul style="list-style-type: none"> • Voluntary agreement with the Newspaper and Yellow Pages Publishers Associations to increase the use of recycled newsprint (1989) • Rechargeable battery take-back scheme*(1996) • Product Stewardship*(2000) |
| information | | <ul style="list-style-type: none"> • State-wide campaign to educate consumers and businesses about waste reduction and recycling, raising awareness and increasing participation (1990's) | |
| R&D | | <ul style="list-style-type: none"> • Funding for innovative waste reduction technologies through the Chelsea Centre for Recycling and Economic development (1995) | |

Note: * Federal instrument

Under consideration: obligation to provide multi-family units with access to recycling; grants to municipalities that propose to take actions beyond conventional means to increase waste reduction and recycling.

Source: DEP, Beyond 2000 Solid Waste Master Plan.