creative policy packages for waste: California

overview

California has achieved a high recycling rate by setting a mandatory 50 per cent target for 'diversion' of solid waste, while employing few other major instruments. Incineration has a very limited role. The mandatory target has been an effective driver of recycling but it has been contentious. Some organisations are looking forward to a more negotiated approach in the future.

who did we interview?

- Mark Leary, Executive Director of the California Integrated Waste Management Board (CIWMB), an agency of the California State Government
- John Davis, President of the California Resource Recovery Association (CRRA), a non-profit organisation dedicated to resource conservation through reuse, recycling and composting
- Kevin McCarthy, Manager of Waste Management's electronics recycling business unit. Waste Management is the biggest waste company in the US with a $9 billion annual turnover

what kind of state is California?

California is one of the largest states in the USA, with a population of 33.9 million, giving a relatively low population density of 82 inhabitants per square kilometre. Most of the population is concentrated in the metropolitan Los Angeles Basin, San Francisco Bay, greater San Diego, and Sacramento Valley areas. There is no apparent state-wide landfill capacity constraint – landfill capacity was estimated at around 28 years in 1997. However, in some regions of the state, capacity (on a daily tonnage basis) can be limited.

The majority of collection is in the private sector, and even local authorities that collect recyclables may sub-contract processing to the private sector. Disposal facilities are both publicly and privately owned. Public ownership is most prevalent in southern California.

what has been achieved?

California's 'diversion' rate for 'solid waste' increased from ten per cent in 1989 to at least 42 per cent in 2000. The data from municipalities is currently being evaluated and so the 50 per cent target for 2000 may have actually been met.

The categories of waste included in 'solid waste' are similar to those defined in the UK. However, solid waste is not broken down into municipal or household waste. Municipal waste is estimated to be roughly 40-50 per cent of solid waste.

The 1989 Californian Integrated Waste Management Act established mandated goals for solid waste diversion from waste disposal[1]: 25 per cent diversion to be achieved by 1995; 50 per cent diversion to be achieved by 2000 and subsequent years thereafter. Diversion includes recycling, composting and source reduction. Diversion rates are not measured but derived from the difference between potential waste generation and disposal. Disposal rates are measured by collection of data at disposal facilities. Potential waste generation is based on 1990 total waste generation figures adjusted for population change and economic growth. However, some cities can verify the amount of diversion directly. Other communities chose to document new base years, using more accurate information than the 1990 studies.

what were the motivations behind the strategy?

Interviewees cited as motivations a perceived shortage of landfill capacity; environmental concerns in the general population and difficulty of locating new landfills; a 'progressive' legislature's desire to enact something comprehensive on waste as part of environmental strategy; and some waste management industries seeing the legislation as a means to diversify away from landfill. Although state-wide there is adequate landfill capacity, in some regions of the state, capacity (on a daily tonnage basis) can be limited, forcing full waste collection vehicles to travel in search of a disposal location. Also landfills are difficult to site, particularly in metropolitan areas. The emerging trend shows reliance on remote, rail-served landfills.

1 Disposal includes landfill and incineration.

what are the principal instruments?

a mandated 50 per cent target

The 1989 Integrated Waste Management Act required cities and counties to divert 50 per cent of their waste from landfill disposal through waste source reduction, reuse and recycling by 2000. The state commitment to this target and the possibility of severe penalties – fines of up to $10,000 per day – has motivated the majority to strive to comply. Mark Leary comments: *"There was, and is, pressure and real fear about the consequences of not complying with the Act. Other states have goals, but no other state has penalties associated with not meeting those goals"*.

minimum recycled content requirements

The requirement for newsprint to have 25 per cent recycled content is seen as an effective instrument but the requirement for 30 per cent recycled content for plastic bags was less successful. There is a requirement for a minimum content of 65 per cent recycled material for glass by 2005.

There are also financial incentives, such as loans, to businesses that use secondary materials from the waste stream as feedstock for their manufacturing processes.

what have been the key factors in success?

flexibility of implementation

The Integrated Waste Management Act is flexible in terms of how both public and private sectors can meet the targets, so it has created diverse types of solutions and contracts between the public and private sectors. Mark Leary: *"Some private waste companies have guaranteed to cities and counties that they will meet the target, and have indemnified the local community against the penalty. There are some deals on profit-sharing of the proceeds from recycling. The mandate has created a dynamic waste sector"*.

recycling seen as a benefit

It is acknowledged that recycling is probably more expensive than landfill in direct costs, but it is seen as an overall benefit to the California economy in terms of employment. Kevin McCarthy: *"Recycling creates more jobs per tonne than disposal. It has created lots of jobs in collection and processing. These are good as first jobs and to get people into employment, but there are also some desirable white collar and driving jobs"*.

convenience and cost-effectiveness

"Everything that Waste Management has done on recycling collection has focused on making systems easier for people to use." Kevin McCarthy

"The challenge was putting in recycling programmes that were cost effective in relation to prior programmes – the public was willing to recycle but not to pay unlimited amounts of money. Out of all possible methods of collection, the commingled programme proved to be the most cost effective." John Davis

Commingled recycling is used to collect all dry recyclable materials – paper and containers with materials being separated at a recycling facility. Typically paper is sorted into three grades – newspaper, cardboard, and mixed paper. Containers are separated into HDPE and PET plastic, ferrous, glass (by colour), and aluminium. California's beverage container deposit/redemption programme rewards high container recovery. Paper represents the biggest share by weight, driving diversion rates. Yard waste programmes complement recycling with separate collection for composting.

In the early to mid 1990s there was a significant increase in garbage bills to get schemes up and running. Now as companies and municipalities get better at recycling, people are getting more service for their money. Economies of scale, better systems and technologies for recycling are reducing the cost per tonne for recycling.

public information

CIWMB has run state-wide educational campaigns using TV and leaflets to households, as well as providing assistance for counties and cities for developing educational efforts. As Mark Leary comments: *"We have achieved a dramatic change in society's view of waste in ten to fifteen years"*.

what were the major problems for the strategy?

establishing a credible measurement methodology for the target

There has been much argument over the measurement of waste generated and its fate. This affected the evaluation of progress towards the target, particularly as the 2000 deadline approached.

"The use of the 1990 baseline was contentious. Accuracy of waste measurement in 1990 was much lower since many landfills didn't have weighbridges. Calculation is complex in that one waste company may provide collection facilities for several cities so it is difficult to attribute waste tonnage to one city rather than another. Cities have themselves changed – expanded or declined – changed from residential to industrial. The measurements from some jurisdictions were so poor that CIWMB has allowed them to change their base year. An amazing accounting system has been built around the 50 per cent target." Mark Leary

"In the early 1990s the requirement for every government unit to produce waste plans and characterise the waste stream resulted in large amounts of time and money being spent on planning and measuring rather than investing in infrastructure. Hence the methodology of estimating diversion as waste generated (including growth) minus disposal." Kevin McCarthy

markets

California has the benefit of substantial domestic markets for recyclates as well as Pacific Rim markets, but markets are still an issue: *"Market development is still needed. The programmes have tended to focus on supply – put the material out there and hope someone will take it."* John Davis

"There were problems with over-supply in some years, particularly in the early years for low-grade paper and occasionally glass, but there are more stable markets now. There are still problems with plastic except for soda and milk cartons. The glass bottle redemption scheme props up the glass recycling rate. The compost market is weak – it is the single biggest potential growth area." Kevin McCarthy

what are some of the issues for the future?

mandates or negotiation?

"CIWMB would like to move away from mandates and penalties towards viable markets that stand on their own. We are looking to embrace European models of product stewardship – ultimately we want to work with manufacturers towards more environmental preferable products." Mark Leary

"Recycling is firmly grounded in California and will not go backwards. The mandate will stay and we will see continued incremental growth in recycling. The next big quantum leap will be if they can get the organics collection system to work. For the future, I hope that we can move to product stewardship by negotiation rather than mandate." Kevin McCarthy

incineration

There was a general view that incineration was not a politically viable option in California:

"Incineration doesn't play a large part in waste management – there is quite a stigma around it. Californians are very sensitive about air quality. There are only three incinerators in the state." Mark Leary

"It's a taboo. There are fears around air quality impacts and toxics in ash and emissions." Kevin McCarthy

waste reduction

There are no specific instruments aimed at source reduction, but Mark Leary affirms that source reduction is strongly emphasised in education efforts to encourage Californians to manage their waste differently. Effort from CIWMB is largely in the commercial sector, working with industry to reduce packaging and encourage reuse of materials.

"It is a partnership approach, and not likely to change towards anything more draconian. We are looking to embrace European models for product stewardship." Mark Leary

"It's a very minor part of the strategy. More effort has been expended on communication of the need for recycling than reduction. Business will invest in reduction if it is economic but they are not driven by waste management costs as they account for a small fraction of overall costs. The public has not embraced source reduction except for home composting which is the only reduction scheme to have worked." Kevin McCarthy

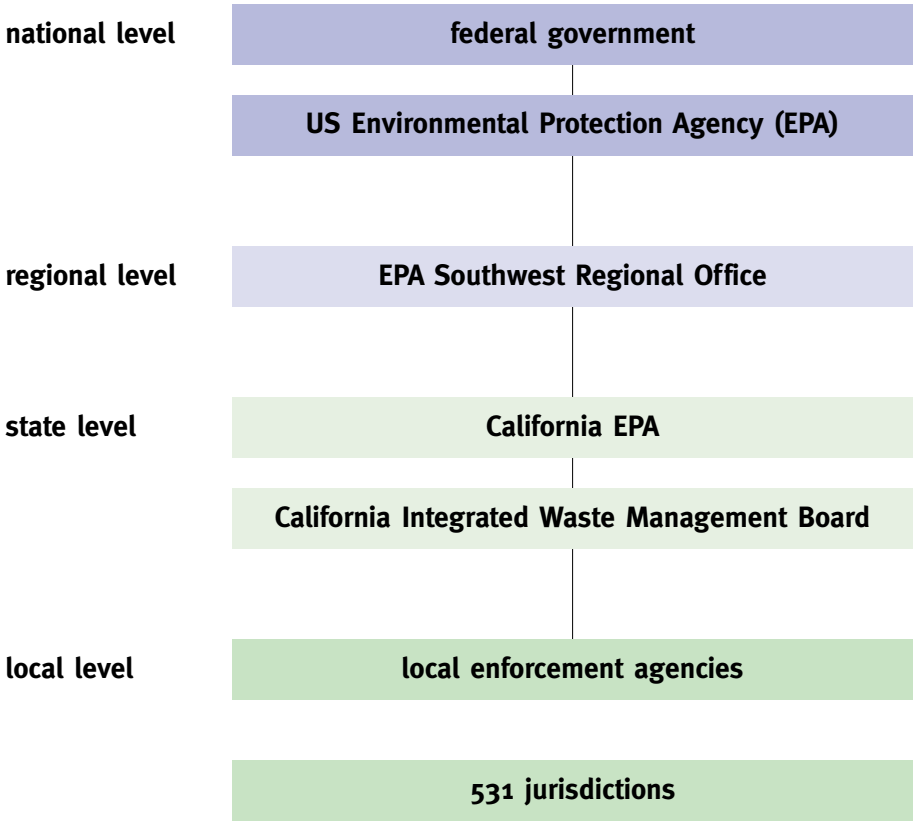
what are the lessons for the UK?

"California has made a huge effort to take the idea of 50 per cent diversion in ten years and give the numbers and penalties credibility. I'm not sure the effort is justified – in that there may have been a simpler way". Mark Leary

"People would rather do programmes than do numbers, but you need numbers – if there is only a checklist of programmes, there will be arguments about the effectiveness of the programmes. You need numbers to set goals." John Davis

"In the early years it is important to create local accountability and responsibility to get things going. Get buy-in from everyone. After that you need to think carefully about the efficiencies of local versus regional or higher level co-ordination." Kevin McCarthy

California - competent authorities



- The federal government is responsible for environmental legislation in the United States and together with the EPA - the environmental regulatory body - creates national minimum standards to be respected by all states
- The states however retain substantial independent authority to issue environmental protection laws applicable to their citizens and residents and are free to enact stricter environmental regulations
- States are responsible for issuing permits, monitoring and enforcement related to waste management
- In California, this is done through the California Integrated Waste Management Board (CIWMB)
- The CIWMB is responsible for waste management and disposal (solid wastes) and for the cleanup of illegal waste sites. These programmes are carried out primarily by certified Local Enforcement Agencies.
- CIWMB is mandated to develop and implement numerous strategic programmes through the Integrated Waste Management Act and other related statutes
- Jurisdictions are responsible for managing and diverting solid waste and have the power to tax, to enact and enforce local ordinances, and to administer the local aspects of certain state and federal programmes

California - waste management plans

	first period 1989-1995	second period 1996-2000
type of waste	• solid waste: see Definitions	
management plans	• Strategic Plan for CIWMB (1993) including state-wide Waste Prevention Plan (1993) • Meeting the challenge: a market development plan for California (1993)	• IWMB 1997 Strategic Plan • Meeting the 50% challenge: market development strategies through the year 2000 (1996)
general objectives	• Diversion of waste from landfill through source reduction, reuse, recycling (three R's) and composting as per AB939 Act • Waste prevention	
targets	• Each city or county has to divert 25% of all solid waste from landfill disposal or transformation by January 1, 1995, through source reduction, recycling, and composting activities	• Each city or county has to divert 50% of all solid waste on and after January 1, 2000, through source reduction, recycling, and composting activities • A market capacity for recycling, composting and energy recovery of 25 million tons per annum was identified as being necessary to achieve this 50 % diversion rate in 2000
results	• Most local governments met the 1995 goal as California surpassed 25% state-wide diversion • Significant investments were made during the 1989-1999 period by local governments and the solid waste industry to enable the collection, sorting, processing and transportation of recovered recyclables and create the required recycling infrastructure	• Many local governments met the 50% target, but state-wide California achieved at least 42 % diversion in 2000, below the 50% target

California - definitions

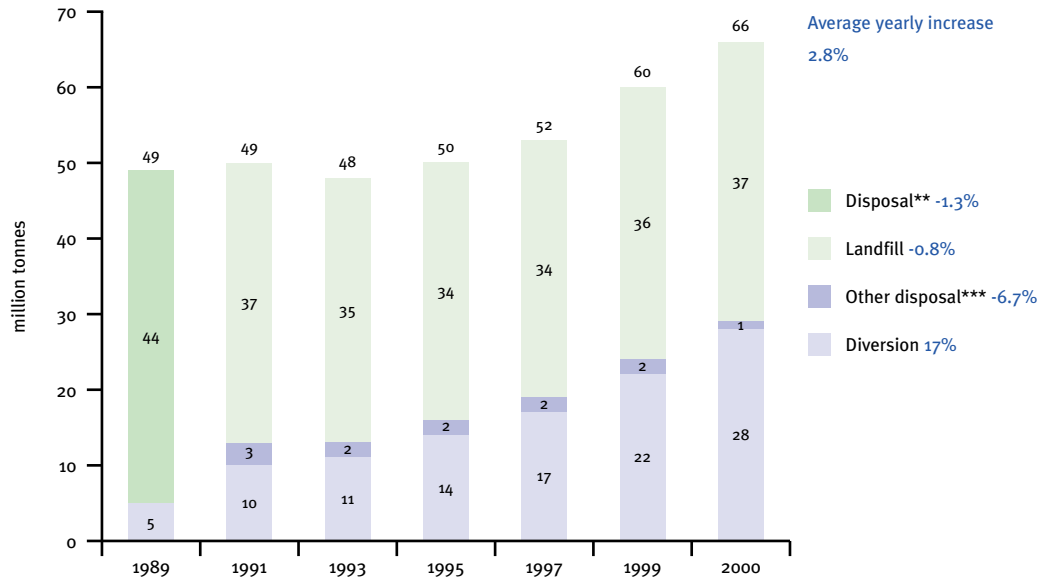
waste categories	waste treatment	measurement
solid waste Main characteristics: • Putrescible and non putrescible • Solid, semisolid, and liquid • Non-hazardous Includes: • Waste from households, offices, shops, and institutions* • Discarded home and industrial appliances • Construction and demolition wastes • Industrial wastes • Energy production: ashes • Sewage disposal: dewatered, treated, or chemically fixed sewage sludge** • Agricultural waste: manure, vegetable or animal solid and semisolid wastes	**disposal** • Landfill • Transformation: incineration of municipal solid waste (statutorily limited to pre-1995 facilities)	**disposal** • The measurement of disposal is reported by local authorities on a yearly basis
	diversion • Recycling • Composting • Biomass conversion (maximum of 10%) Controlled combustion, when separated from other solid waste and used for producing electricity or heat, can count towards diversion, eg agricultural crop residues; bark, lawn, yard, and garden clippings; leaves, silvicultural residue, and tree and brush pruning; wood, wood chips, and wood waste; non-recyclable pulp or non-recyclable paper materials • Source reduction	**diversion = estimated generation less disposal** • Estimated generation is calculated from the Base-Year Generation (1990) and adjusted for the reporting year, to take into account changes in population and economic activity • Diversion is not measured but calculated. • However, some local governments may measure both disposal and diversion • Some methodologies for measuring waste prevention have been developed but they are very specific to the type of waste or waste prevention programme
hazardous waste		
medical waste		
radioactive waste		

Note: * Defined in the UK as ''municipal waste".
** Excluding hazardous waste.

Source: Public Resources Code / section 40100-40201, IWMB (measuring diversion rate achievement for AB939).

California - solid waste arisings and treatment

solid waste arisings* and treatment - absolute terms

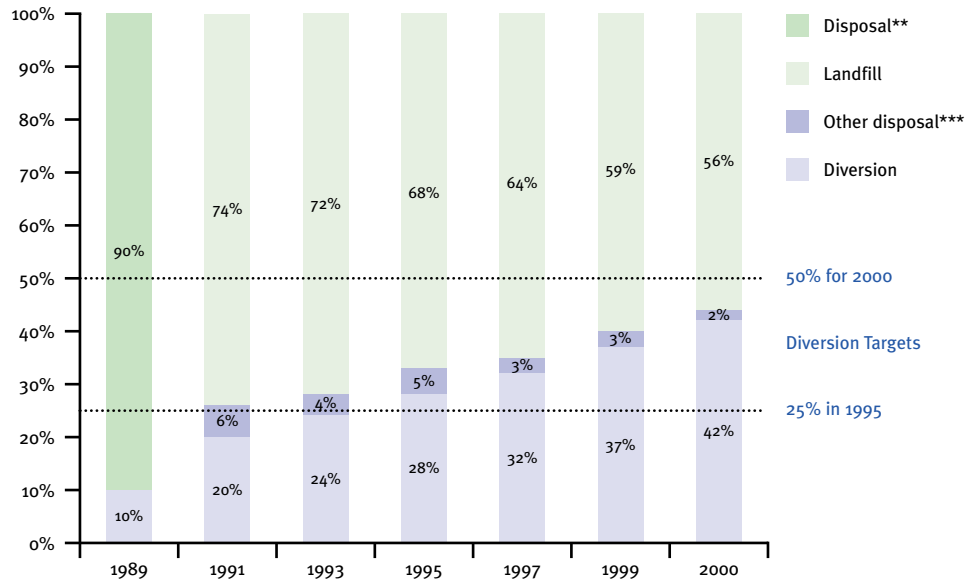


Note: * Solid waste arisings estimated for 1991-2000. Based on 1990 level and adjusted for population and economic growth.
** Combination of 'landfill' and 'other disposal'.
*** Other disposal has been deducted using the two sources noted below and is assumed to represent amounts of municipal solid waste incinerated (see Definitions); yearly increase is calculated for 1990-2000.

Source: IWMB press release 24/01/2001, IWMB Solid Waste Landfilling data.

California - solid waste arisings and treatment

solid waste arisings* and treatment - relative terms



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*** Other disposal has been deducted using the two sources noted below and is assumed to represent amounts of municipal solid waste incinerated (see Definitions); yearly increase is calculated for 1990-2000.
Rounding errors may mean that total percentages add up to more or less than 100%.

Source: IWMB press release 24/01/2001, IWMB Solid Waste Landfilling data.

California - overview of policy packages

tool ▼ target ▸	state agencies and facilities	local authorities	local enforcement agencies
legislative	• Recycled product procurement mandates (State Agency Buy Recycled Campaign) • Waste diversion goals (Project Recycle)	• Mandatory obligation to achieve diversion targets • CIWMB may fine a city or county up to $10,000 per day for failure to implement programmes and achieve diversion targets	• Must meet certification standards mandated by the IWMA
economic	• Diversion and recycling grants	• Local government assistance • Deconstruction grants • Sustainable building grants • Reuse assistance grants • CAlMax Partnership mini-grants • Household hazardous waste grants • Tyre grants • Used oil grants	• Local Enforcement Agency grant programme
agreement			
information	• Waste prevention programme	• InfoCycling • Office of local contact • Local government central web site	• LEA central web site
R&D	• Waste prevention studies, programmes, and demonstration	• State-wide waste characterisation for residential waste and business group waste	

California - overview of policy packages (continued)

tool ▼ target ▸	businesses	consumers
legislative	• Rigid Plastic Packaging Container Act (1991) • Minimum 65 %t recycled material content for glass by 2005 (1990) • Minimum 30 % recycled material content for trash/plastic bags by 1997 • Minimum 25 % recycled material content for newsprint (1989)	
economic	• Recycling Market Development Zone Program (1993): for businesses that use post-consumer or secondary waste materials to manufacture new products, or that undertake projects to reduce the waste resulting from the manufacture of a product • Tyre recycling grants • Technical assistance to the C&D industries • Facility compliance loans for waste management facilities	
agreement	• Alliances with industry around specific commodities and multiple materials to help overcome purchasing barriers (private buy recycled strategy)	
information	• CalMax: free service to help businesses find markets for materials they have traditionally discarded • Waste Reduction Awards Program (WRAP) • Farm shows to promote urban compost to agricultural users and compost demonstration projects • Business kits: printed waste prevention information tailored to each business's needs • Recycled content product directory database • Waste prevention information exchange	• State-wide "Leave Less Behind For the Future" campaign, which started in 1994 • Market research study to assess customer awareness and acceptance of recycled-content products • School education and assistance programme
R&D	• Waste prevention studies, programmes, and demonstrations • Research and development supporting markets for tyre-derived products	