

# Getting *more* ▶▶▶▶ from our recycling systems

## Assessment of domestic waste and recycling systems

### *an overview*

#### Comparing the performance of NSW recycling & waste systems

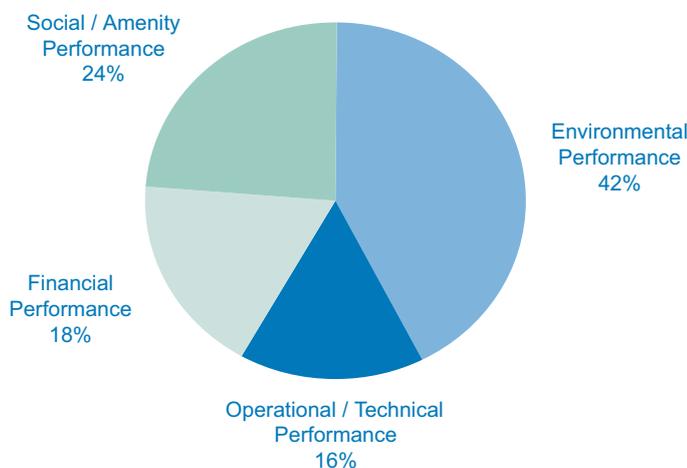
NSW households are recycling more, supported by improved environmental performance of kerbside collection systems - according to the results of New South Wales' first cost-benefit analysis of the environmental and economic benefits of kerbside recycling systems.

Under the best-performing recycling system households are now effectively recycling more than 300 kilograms each year. Recycling systems which maximise separation of materials generate more environmental benefits than systems which mix recyclables with garbage.

And while landfill costs have risen, the annual net financial cost of kerbside recycling per household to Councils has not increased since 2001.

But while financial performance of recycling systems was the most important criteria to Council officers, significantly, environmental performance was found to be the single most important aspect that the community wants to see their waste management system delivering - well ahead of financial performance.

**Figure 1:** Overall Weightings by Metropolitan Community (Second Survey)



# recycling systems ▶▶▶▶





The Assessment of Domestic Waste & Recycling Systems (NSW JRG-14), was jointly funded by the NSW Government and industry under the National Packaging Covenant<sup>1</sup>, and the Publishers National Environment Bureau (PNEB). It provides an up-to-date analysis including the estimated environmental costs and benefits of collection, transport, disposal and reprocessing of four common recycling collection systems used in NSW, as well as two less common systems.

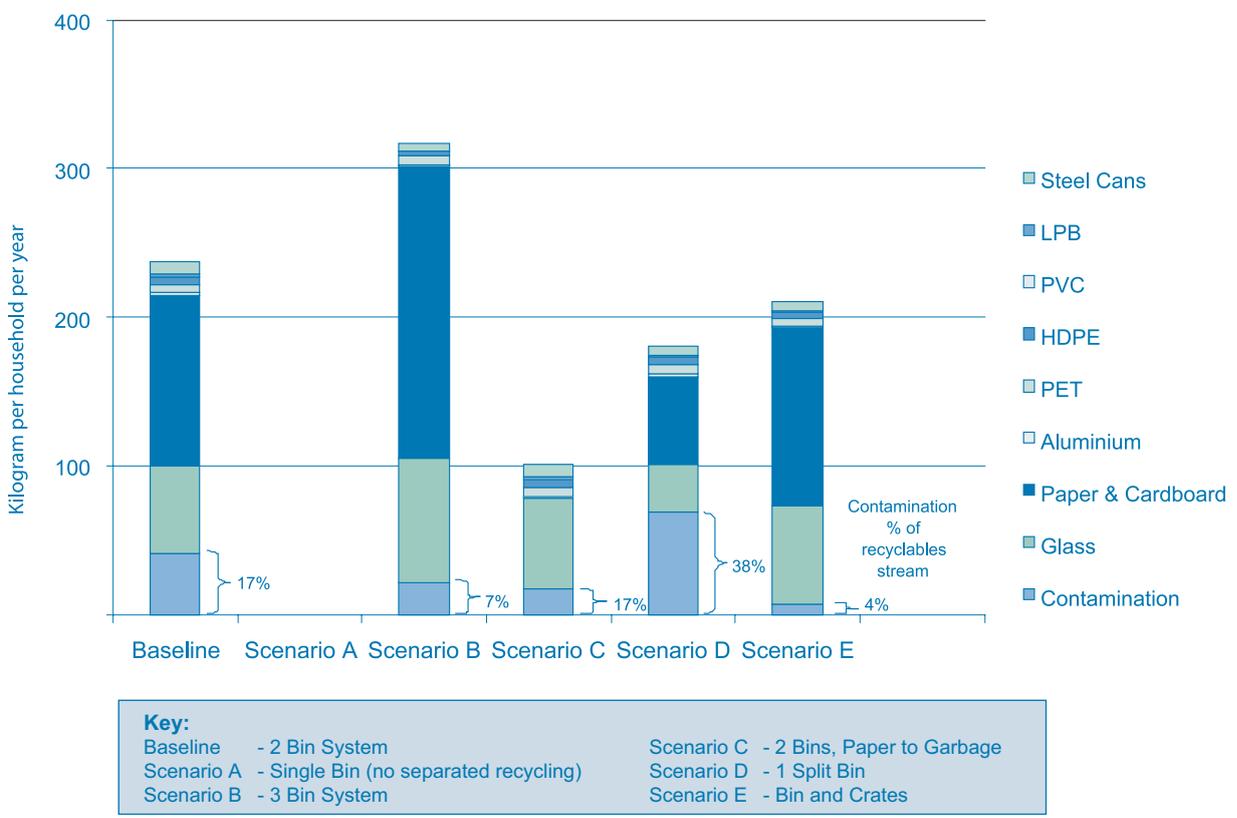
The four common kerbside recycling systems analysed by the study were:

- Co-mingled (mixed) recyclables in a 240-litre mobile bin collected fortnightly (baseline scenario);
- separate 120-litre bins for paper and containers collected alternate weeks (scenario B)
- split 240-litre bin incorporating garbage and co-mingled (mixed) recycling collected weekly (scenario D); and
- the two crate system (scenario E).

Currently, 37.5% of metropolitan Sydney Councils use the co-mingled recyclable bin system, 30% have the two-crate system, 10% collect in two separate bins and 2.5% have a single bin with split garbage and recyclables.

The performance of each recycling system was assessed for levels of 'contamination' of kerbside recycling materials by non-recyclable materials and their rates of diversion from landfill. The study found that the yield of recyclable materials from three of the collection systems is extremely high, with the best performing system of separate mobile bins for garbage, paper and container recyclables delivering more than 300 kilograms per household per year - with minimal contamination (see Figure 2).

**Figure 2: Performance of Kerbside Recycling Systems**



<sup>1</sup>The National Packaging Covenant, signed in August 1999, is an agreement between government and industry to promote efficient and environmentally sustainable management of used packaging materials. Projects which improve the efficiency of kerbside recycling are implemented by the Jurisdictional Recycling Group (NSW JRG)

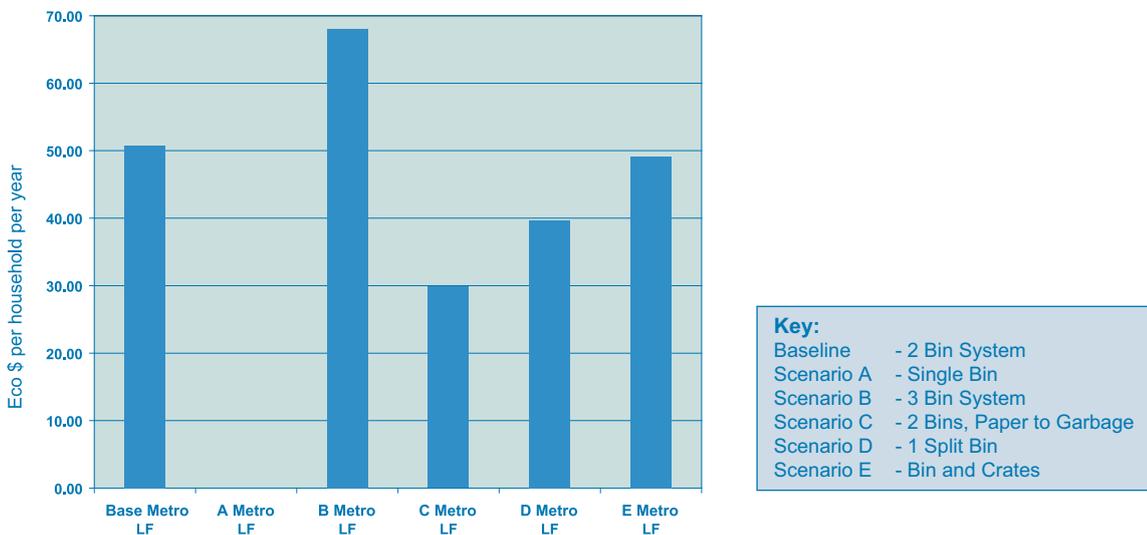


The co-mingled, or mixed paper and recyclables recycling system was also shown to have increased yields and better performance in comparison with the results of the National Packaging Covenant Council's 2001 nation-wide Independent Economic Assessment of Kerbside Collection & Recycling Systems for Used Packaging Materials in Australia.

In order of performance the best performing recycling systems were (see Figure 3):

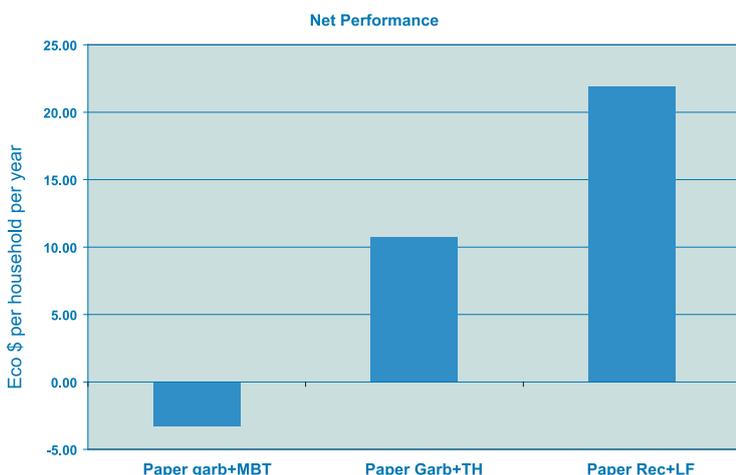
1. Kerbside recycling systems employing fortnightly collection of co-mingled containers in a mobile bin and fortnightly collection of paper/cardboard in a separate mobile bin;
2. Fully co-mingled collection in a mobile bin (co-mingled containers and paper cardboard) collected fortnightly; and
3. Separate crates - one for co-mingled containers and one for paper cardboard

**Figure 3:** Net Environmental Impacts/Benefits of Scenarios with different Recycling Schemes



By contrast, split garbage/recycling bins were found to have low yields and high contamination. The study also analysed a proposed 'containers only' recycling system, in which paper and cardboard would be included in the general garbage waste stream but this also delivered much poorer environmental benefits.

In a specific assessment of the merits of paper recovery and processing systems, the study found that recycling of paper to make paper [3] (instead of composting [1] or landfilling or energy recovery [2]) provides the most significant environmental benefits see Figure 4.



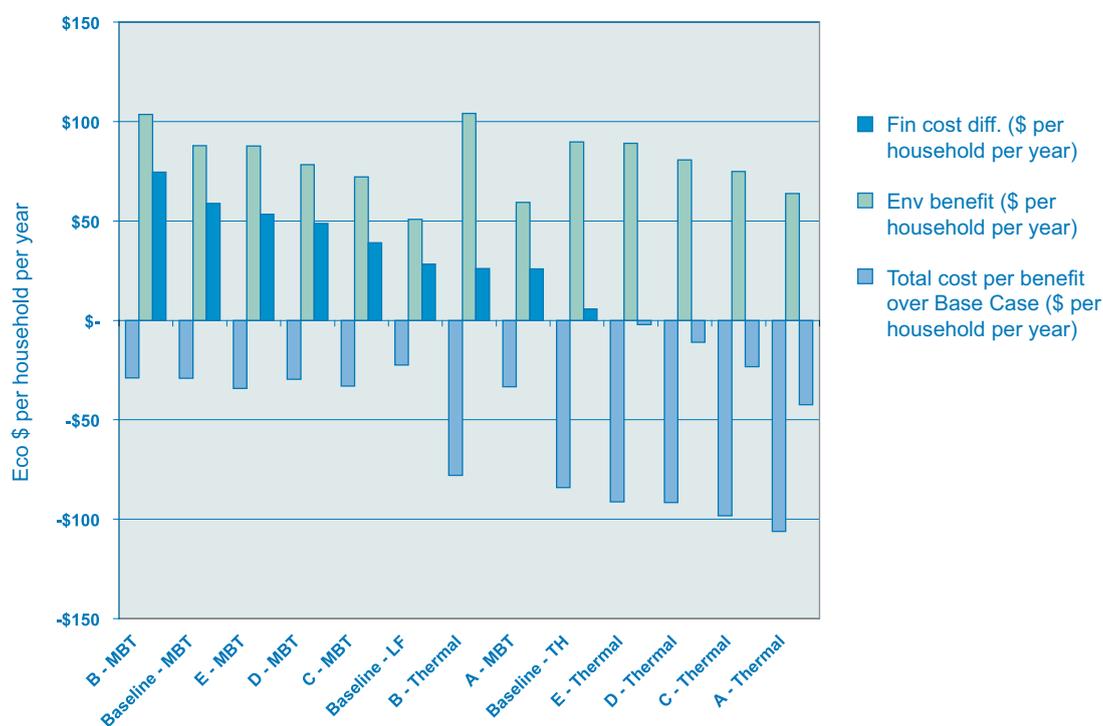
**Figure 4:** Net Environmental Performance of Paper Waste Management (Eco\$ Model)



Looking beyond kerbside collection systems the study also modelled the processing of residual 'non-recyclable' waste from each recycling system using two different Alternative Waste Treatment (AWT) technologies: Mechanical Biological Treatment (MBT) and Thermal Treatment technologies.

The study confirmed that both MBT as well as thermal technologies provide considerable environmental benefits over landfilling, with MBT providing the greatest net cost-benefit. The cost-benefit of each of the recycling systems combined with alternative waste technology is presented in the graph below:

**Figure 5: Cost-Benefit Summary of Metro Scenarios**



The study reinforced that the maximum environmental benefits are only achieved where the recyclable materials are separated at the kerbside by the householder. The more material that is recycled the higher the benefit. This is valid, regardless of the relative merits of the different residual waste treatment options.

The study also noted that the recent evolution of hybrid waste treatment/resource recovery technologies are likely to achieve better environmental performance.

The full study **Assessment of Domestic Waste & Recycling Systems** can be downloaded from [www.jrgnsw.com.au](http://www.jrgnsw.com.au) or [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au) and it is also available on CD.

For further information contact:  
 Local Government Team, Sustainability Programs Division  
 Ph: 02 8837 6000 Fax: 02 8837 6099  
 Email: [improvedpractice@environment.nsw.gov.au](mailto:improvedpractice@environment.nsw.gov.au)