



Waste Avoidance in Australia

An Overview of Direction and Opportunities



Overall waste generation rates – where are we headed?



- A very common measure of successful government is economic growth.
- Economic growth is closely tied to increased consumption.
- It follows that most governments are reluctant discourage increasing material consumption and this is likely to result in a continuation of increased waste generation.
- So...get into the waste game!



Source: <http://prosecure.netgear.com/community/security-blog/2009/09/prosecure-stm-and-utm-hit-3-million-and-1-million-signatures-respectively.php>

How have *waste* policy makers around the world been responding to increasing waste generation?



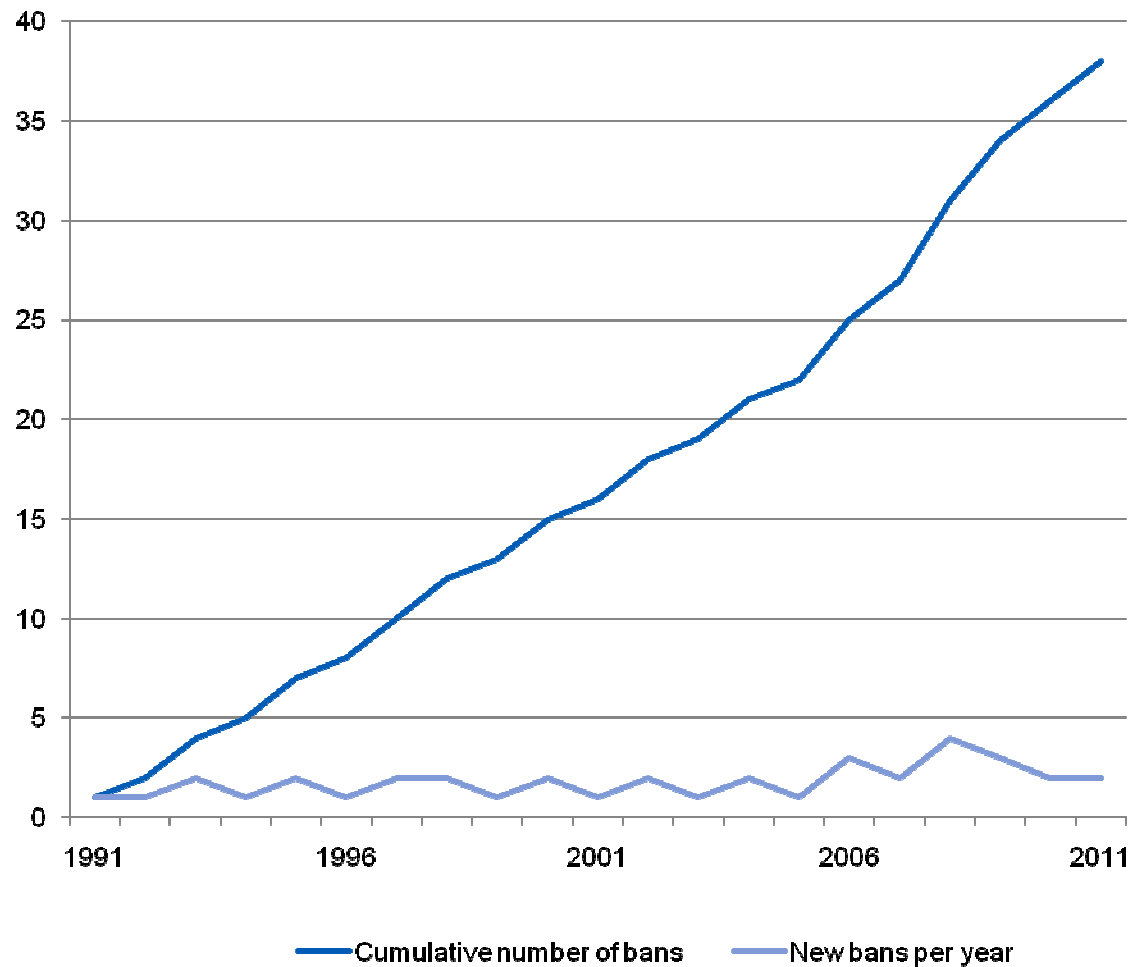
Policy makers in highly developed countries globally have implemented policies that fall broadly into:

- **Banning the disposal** of specific wasted resource streams from landfill disposal
- **Increasing the cost** of waste disposal by taxing (or levying) the landfilling of wasted resources
- **Mandating the pre-treatment** (or sorting) of wasted resources before allowing disposal
- **Regulating the management of wastes via product stewardship programs.**

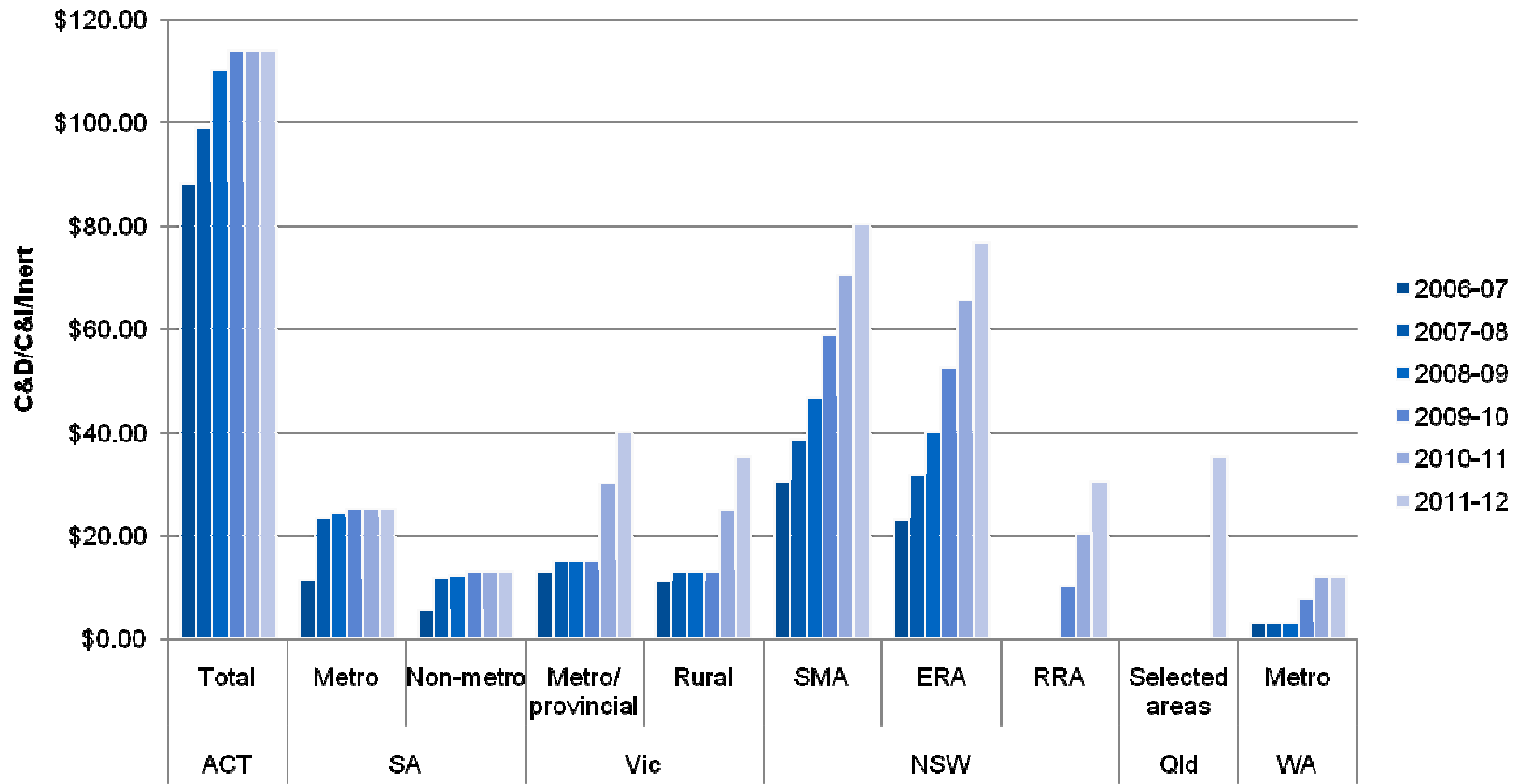
International Trends in Using Landfill Bans



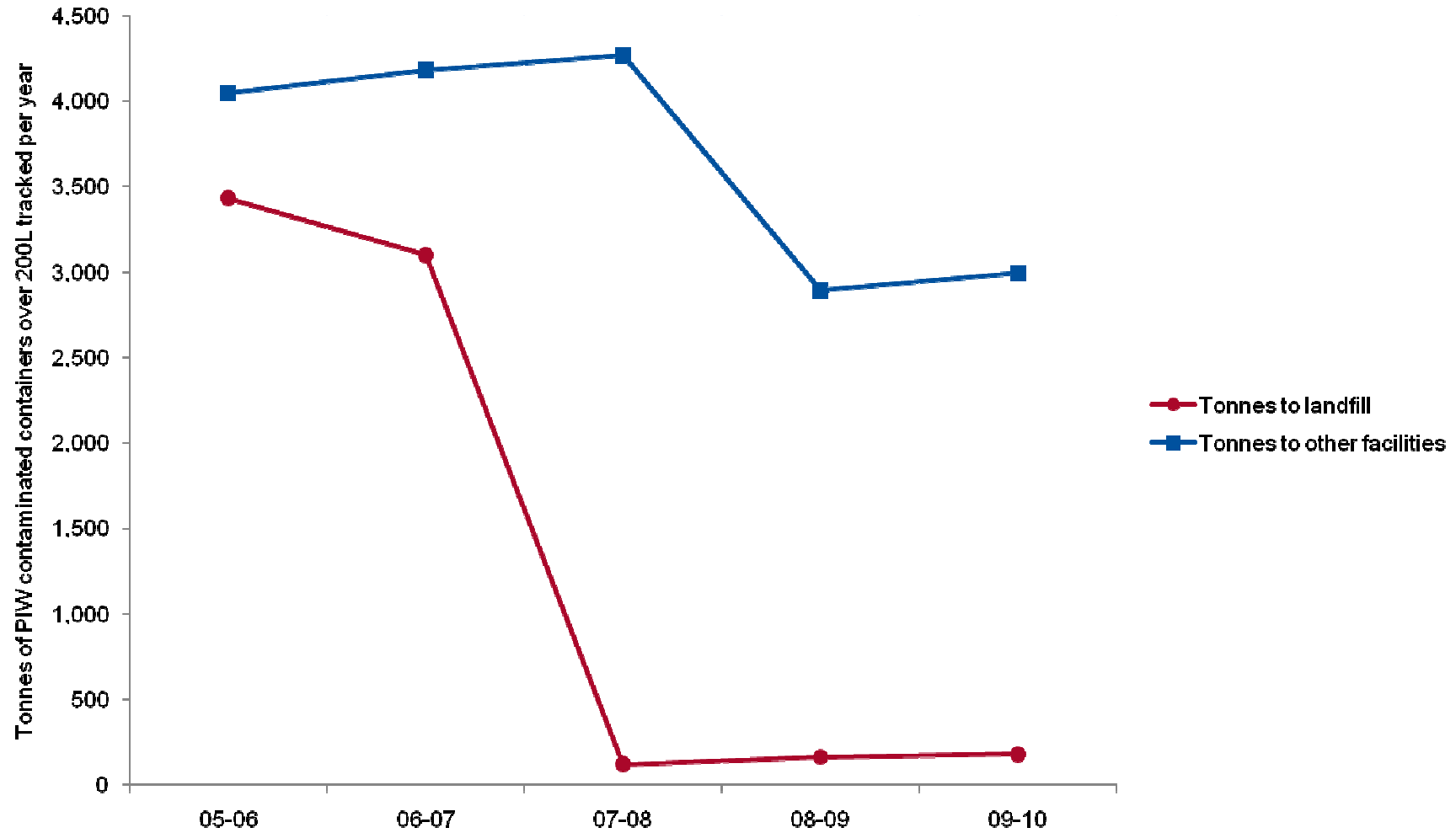
Number of Landfill Bans in Europe and the US



National Trends Using Increasing Landfill Levies



Targeted Landfill Bans – Victorian Example



In our opinion

- increasing rates of consumption and associated waste generation,
- increasing scarcity of non-renewable resources, and
- the likelihood of a price being put on carbon emissions

will continue to drive the trend of:

- increasing dollar value loss per tonne of wasted resources disposed to landfill,
- increasing costs of landfill disposal (via increased levies),
- increasing regulation of landfilling of wasted resources, and
- increasing pressure on product manufacturers to ensure viable post consumer recovery options for their products

Waste avoidance opportunities....



- will become increasingly important as wasted resources present a larger percentage of production costs
- are not static
- need to be continually reviewed in rapidly changing contexts (relative to history) of price and regulatory settings
- should be approached with an open mind and encourage simple ideas that often lead to the development of more sophisticated solutions.

Pursuit of Avoidance Opportunities



- Ask your staff what they think
- Measure your waste streams and build a complete set of data
- Assess and choose your options with sound analysis
- Order materials precisely
- Aim for zero waste
- Explore 'light weighting' of your product
- Consider materials substitution
- Pursue 'closed-loop' systems
- Logistical planning for freighting efficiency and/or 'just in time' delivery
- Engage your supply chain partners
- Consult with government (find the passionate waste people in government!)
- Consult your local industry and explore options for materials exchange

The project stages were:

- **Stage 1** – Assess quantities of chromium rich wastes, primarily through a direct survey of chrome platers.
- **Stage 2** – Identification and preliminary evaluation of technologies for the recycling of chromium rich wastes.
- **Stage 3** – Pilot trialling of the selected technologies.
- **Stage 4** – Develop an implementation strategy and HazWaste Fund application.

Australasian Institute of Surface Finishing - Example of Assessing and Choosing your Options with Sound Analysis



Scoring scheme for criteria

Criteria name	1	2	3	4	5
PIW quantity reduction	0-19% (low)	20-39% (moderate)	40-59% (good)	60-79% (very good)	80-100% (excellent)
Resource efficiency hierarchy position	Disposal	Treatment	Recycling	Reuse	Reduction
Maturity of technology	Early R&D	Late R&D	Early commercialisation	-	Well established technology
Capital cost	Very high	High	Moderate	Low	Very low
Payback period	>10 yrs	4-10 yrs	2-4 yrs	-	0-2 yrs

Australasian Institute of Surface Finishing - Example of Assessing and Choosing your Options with Sound Analysis



Options assessment summary

	Option	PIW quantity reduction score	Resource efficiency hierarchy score	Maturity of technology score	Capital cost score	Payback period score	Overall score	Option rank
1	Trivalent chromium plating systems	5	5	5	3	3	21	3
2	Full counter current rinse	5	5	5	5	5	25	1
3	Interstage rinsing	2	5	5	5	5	22	2
4	Limited counter current rinsing	1	5	5	5	2	18	4
5	Electro-dialysis (membrane) separation	4	4	5	2	1	16	7
6	Ion exchange columns in series	5	4	5	3	1	18	4
7	Ion exchange (single column) with on-site resin regen	2	4	5	2	0	13	10
8	Evaporative system (atmospheric pressure)	5	4	5	1	0	15	8
9	Metal sulphide or metal sulphate recycling	5	3	3	5	2	18	4
10	Ion exchange (single column) with off-site resin regen	5	3	5	2	0	15	8

Lean+Green™ Lightweight Wine Bottle Range

- 18 and 28% lighter, but retain the premium cues of the Australian wine industry.
- This innovative designs will save almost 20,000 tonnes of glass packaging a year and could increase to 60,000 tonnes in future.
- In addition to less glass, the production process delivers strong environmental benefits such as:
 - ✓ 20% reduction in energy use to produce the same number of bottles.
 - ✓ carbon dioxide saving of more than 11,130 tonnes of CO₂ per annum.
 - ✓ an average 12% drop in water usage per container.
 - ✓ overall water savings of 4,720kL.

Toyota - Example of Engaging With Your Suppliers



- Companies with large purchasing power like Toyota are now seeking compliance / innovation from suppliers.
- Toyota has a **Supplier Environmental Management Policy**.
- This policy seeks that suppliers adopt an environmental management system (EMS)
- Toyota parts and products suppliers need to meet a range of Toyota requirements associated with cost, quality and delivery standards while also reducing the environmental impacts of their manufacture.

Sage – Example Achieving Zero Waste



- SAGE has a **Waste to Resource Management Plan** for head office at Melrose Park
- This plan identifies all waste streams
- It also specifies the treatment for each waste stream
- The aim for SAGE's **Waste to Resource Management Plan** is for zero waste to landfill
- This has been achieved as follows:
 - ✓ all waste streams such as paper, cardboard, plastic, printer cartridges, drinks containers, etc are either reused or recycled
 - ✓ general waste is recycled into a clean burning alternate fuel that can be used in a cement kiln
- SAGE's general waste is very dry which has made it possible to be recycled into an alternate fuel and achieving zero waste to landfill.

Hyder's Sustainable Resource Use Team Capabilities



- Environmental management plans
- Climate change strategy development
- Carbon accounting and greenhouse gas inventory
- Life cycle assessment
- Product stewardship planning and implementation
- Sustainable water resource management
- Waste and resource recovery policy and planning
- Recycling and waste data and resource flows
- Stakeholder and community engagement
- Corporate sustainability reporting
- Sustainability education and training
- Green Star accreditation
- Hazardous materials identification and management