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Waste Generation and Resource Efficiency in Australia

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Introduction – Visy's corporate "no waste" philosophy

Visy welcomes the Productivity Commission's investigation into resource efficiency as it relates to the waste sector. It is hoped the Commission will recommend measures and approaches which will lead to greater investment in recycling manufacture in Australia, which will bring economic, social and environmental benefits.

Visy Industries is an integrated packaging manufacturer and recycler.

As a packaging manufacturer, Visy produces recycled-content cardboard boxes, recycled-content plastic PET bottles, recycled-content aluminium cans, recycled-content steel food cans and a range of other packaging.

As a recycler, Visy collects and process materials from about 2.3 million households and about 35,000 businesses.

Through its six main operating divisions, Visy employs about 6700 people working at 139 operations located at more than 100 sites around Australia.

Visy has developed its businesses, comprising major manufacturing investments, technical capability and product flow, based on a philosophy that all materials are resources to be secured, processed and manufactured into commodity products needed by customers. The entire resource flow thus becomes a productive, wealth-creating enterprise.

As such, Visy believes fundamentally that the very concept of "waste" is misplaced. Conventional thinking should be reframed and recast to place a greater onus on society's obligation to totally eliminate its redundant residue. In effect, what is typically characterised as "waste" by the Australian public must be seen as a by-product of an activity, which logically becomes someone else's resource.

Australians have developed an unhealthy and misplaced reliance on waste disposal (particularly landfilling) as a means of dealing with their waste. Whereas other societies and countries have developed a range of value-adding end-of –life management systems, Australia still landfills about 18 million tonnes of material a year. This is a short-sighted approach to resource management. Landfilling should be seen by progressive and innovative societies as an extreme "last resort" for recalcitrant materials for which no alternate useful purpose can be found or invented.

While many in Australia have *talked* about waste management, recycling, environmentally-sensitive industry, etc, few have actually succeeded in establishing and maintaining significant profitable businesses based upon a resource reuse/recycling philosophy. Australia needs an economic climate and market structure

that encourages investment in this area as it has multiple economic and environmental benefits.

Visy believes it is important to draw a distinction between recycling materials *collectors and handlers* on the one hand and *recyclable remanufacturers*, on the other. While assemblage and transport of recyclable feedstock is vital in the "closed loop" system, it is the investment in remanufacturing facilities and new product development which provides the greatest level of economic benefit to Australia.

Recycling Achieves Significant Environmental Gains

The resource efficiency realised by recycling has multiple environmental benefits. It reduces reliance on harvesting or mining other resources, saves greenhouse gases, it reduces energy use and it reduces water use.

This is true across all the materials that Visy collects and processes – paper, plastics, glass, aluminium and steel.

Paper recycling acts to "short-circuit" the paper cycle and reduce reliance on forest harvesting for that part of the national paper supply provided by recycled paper.

Further, the paper collected in Australia that is sent overseas for paper production also reduces the need to harvest timber of any sort in those countries.

The recycling of paper also has significant other environment benefits. As mentioned earlier, such process require less energy and water than virgin production and thus contribute to Australia's environment and the achievement of Government policies.

Keeping paper out of landfill by recycling it also reduces greenhouse gases. Studies show that paper fibre in landfills breaks down and gives rise to methane.

Visy's current performance in materials recycling and reuse

Table 1 summarises Visy's current performance in materials use and recycling, and demonstrates that for most physical materials, it operates as a "net sink" for manufacturing resources. As this shows, Visy recovered / recycled more than twice the amount of material that it produced and put into the market place. Of a total of 884,500 tonnes of packaging materials used and/or produced in 2004-2005, Visy

recovered and/or recycled over 1.6m tonnes of the same classes material. This represented a net material gain from the "waste stream" of over 700,000 tonnes and therefore Visy has a recycling rate of about 180%.

Table 1 - Visy Industries' Packaging and Recycling Statistics 2004 – 2005

Material	**Visy Packaging Used / Produced (tonnes)**	**Visy Recovery and Recycling (tonnes)**	**Visy Recovery and Recycling Rate**	**Australian Recovery and Recycling Rate***
Paper and Cardboard	655,000	1,200,000	183%	64%
PET plastic	64,000	14,000	22%	27%
HDPE plastic	18,000	8500	47%	20%
Other plastic	1000	11,000	1100%	12%
Aluminium beverage cans	17500	3000	18%	64%
Steel	113,000	12,000	11%	44%
Liquid paper board cartons	16,000	2200	14%	10%
Glass	0	365,000	n/a	35%
Total	**884,500**	**1,615,700**	**183%**	**48%**

In Sydney, as an example of its activity, Visy currently operates to recycle over 94% of all materials collected from the Sydney waste stream through the various types of infrastructure designed to capture such materials (see Figure 1).

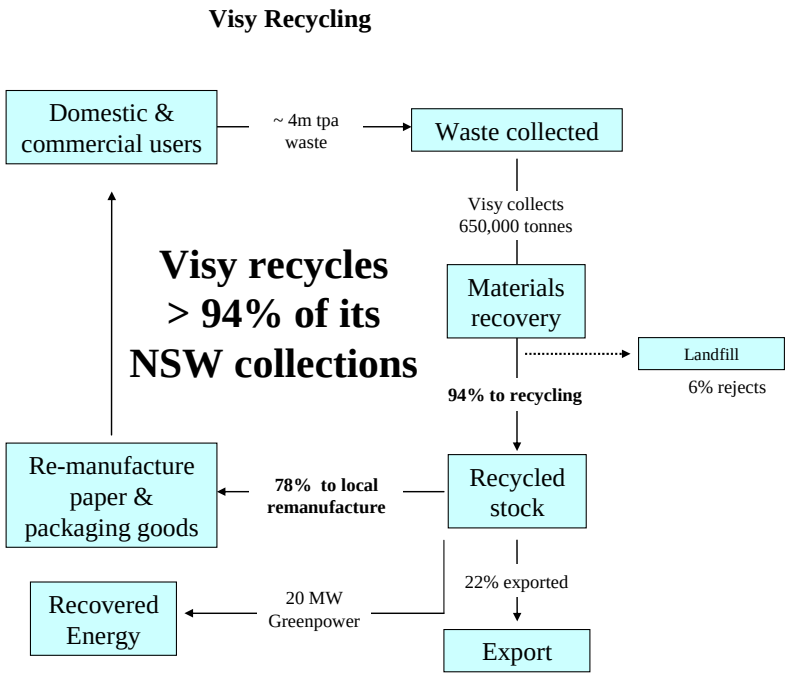


Figure 1 - Visy Recycling - Sydney Performance

In terms of energy use and recovery, Visy has undertaken a number of company-wide life cycle analyses that characterise the energy balance of the Visy Group. Importantly, the work has highlighted the benefits of proactive energy management and renewable fuels use in manufacture, and the significant benefits of recycling over landfilling of paper.

For example, for *virgin* paper production (at its Tumut mill), the total LCA greenhouse gas emissions in 2003-2004 were found to be 1.30 $tCO_{2(e)}$ per air-dry tonne of paper manufactured. Had the mill's manufacturing process relied solely on fossil fuel energy (electricity and gas), the $CO_{2(e)}$ LCA emissions would have increased by 52% to 2.7 $tCO_{2(e)}$ per air-dry tonne[1].

There is little current incentive to avoid landfilling

Despite the rhetoric of enforcing policies shaped around the "waste hierarchy", Visy is concerned at the trends in Australia towards continued, and in some cases escalating, disposal to landfill of otherwise useful materials such as paper , plastic, glass and metals. An over-reliance on landfills wastes resources and contributes to adverse externalities such as land and air pollution, reduction in amenity, and long-term land contamination.

From a direct business perspective, without a secure, predictable, long-term and cost-efficient source of recyclable feedstock, investments in remanufacturing plants cannot be justified. Further, the ability of companies like Visy to access reusable materials

[1] JTP Australia Pty Ltd – unpublished data

from the waste stream, for manufacture of recyclables, is determined by their ability to compete with landfill facilities for those materials.

While it may be asserted that "market forces" should direct materials to their highest value end use, this is not readily the case for recyclables flowing through the waste stream. Visy's $400m Tumut pulp and paper mill investment is underpinned by a long-term supply agreement for virgin wood fibre from forest growers in the mill's economic supply zone. However, this is a uniform, localised market with only a few participants, and the supply contracts for a critical mass of feedstock can thus be secured and maintained at relatively low transaction cost. To underwrite a, say, $200m investment in a recycled paper mill, however, a long-term contract for some 300,000 tpa of waste paper is required. This supply is highly dispersed, of highly variable quality, and subjected to considerable government/regulatory control.

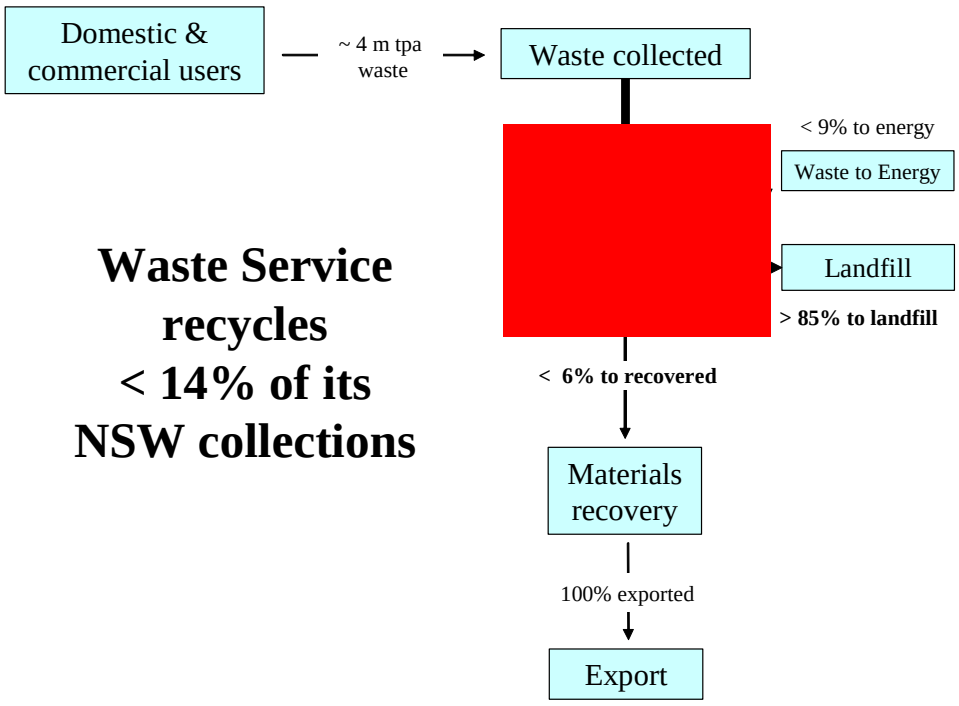
At present, there is generally greater commercial incentive for waste generators/collectors to direct their collections to landfill than to recycling manufacture. There are two factors contributing to this.

First, in NSW the "waste" sector is dominated by government-owned entities which, due to their exclusive infrastructure access and protected landfill capacity, actively exclude parts of the (private) market from waste management activities.

In Sydney, for example, Waste Service of NSW (or WSN) owns or controls access to four of the five putrescible-licenced landfills. The only non-government putrescible landfill facility is remotely located and has a government-imposed limit on the value of material it can receive. An aggressive low-price, Government underwritten stance of Waste Service tends to draw the larger part of the available "waste" material to landfills, rather than enabling alternative materials capture investments to become established. In short, there is no commercial incentive to recycle while the price of landfilling is lower than the reasonable ability of recyclers to capture and assemble recyclable feedstock.

Figure 2 shows the recyclable/recovery performance of Waste Service of NSW. This may be compared with Visy's Sydney performance (Figure 1) to demonstrate the impact of the different organisational philosophies of these two businesses.

Fig. 2 Waste Service of NSW



A second factor in the leakage of recyclable material away from remanufacture (and toward landfill) is the increasing trend to "commingle" recyclable materials within household collections. The highest valued recyclable feedstocks are those with the lowest entropy. Mixing recyclables early in the disposal cycle (such as in "single bins") increases entropy and consequently increases the cost of later refining the feedstock into usable components. Therefore, unless there are specific measures or incentives to maintain separation of recyclables, the option value of the material is severely diminished.

Another consideration is the nature of the pricing of domestic garbage collection services. The generation of waste at household level is *not* volume-priced. In general, local councils provide a single bin for garbage, and sometimes a single bin for recyclables and green waste. All households pay the same price for their waste collection services, with a unit bin ceiling imposed. No option exists for householders to request a "half-size" bin for a commensurate reduction in garbage fees.

There are grounds to introduce MBIs for recycling investment

Visy has actively participated in the examination of the merits of establishing new markets for recycling activity, through possible Market Based Instruments (MBIs). Visy believes that, in the absence of a balanced domestic market for recyclable

materials, and/or to achieve public policy outcomes that may lie beyond a natural market's reach, market based incentive arrangements may be warranted.

One "downstream" MBI model proposed by Warnken Industrial and Social Ecology[2] involves landfill owners/operators being nominated as "liable parties" and being required to divert increasing amounts of material away from landfill toward beneficial use. Visy supports the adoption of an MBI approach to "steer" recyclable/recoverable materials towards beneficial reuse, particularly domestic remanufacture.

Visy also believes that in cases where material which it recycles would otherwise be landfilled, waste paper recycling should also be afforded credit due to the avoidance of creation of methane at such landfill site(s). Retrieval or diversion of paper from landfill means a portion of the landfill methane is effectively prevented from entering the atmosphere. To the extent of that avoidance, such abatement should be recognised and credited to the action party's account. This could be achieved by an amendment of the (NSW) NGAC regime to recognise landfill gas abatement by Large Users (under the "LUAC Rule").

Visy's continuous improvement program will continue

As well as seeking to influence and reform government policies and processes to deliver better recycling outcomes, Visy continues to innovate and drive its internal management toward this end. For example, Visy's senior management has committed the Group to undertake specific in-house actions to enhance its recycling and environmental management performance over the next three years.

Those actions include:

- Reducing materials use intensity per average packaging unit by implementing down-gauging and light-weighting strategies
- Develop and test alternatives to beverage and food cartons that are currently difficult to recycle
- Develop a new plastic bottle that can replace PVC bottles
- Implementing water use reduction and enhanced water reuse programs in each Visy division
- Introducing at least ten new products with recycled material content
- Facilitate (with other stakeholders) the establishment and operation of public place recycling facilities
- Providing its customers with total waste management programs focussed on increased diversion from landfill
- Better understanding, through life-cycle research, the full lifecycle impacts of recycled and virgin papers

[2] Total Environment Centre, in association with Warnken Industrial and Social Ecology Pty Ltd. 2005. *Position paper: market based instruments & sustainable resource recovery*. WISE, TEC and The Pratt Foundation

Structural Issues

From Visy's perspective as a large-scale recycler, there are obstructions and inefficiencies due to the lack of national consistency in the regulatory framework for resource recovery and waste management. State jurisdictions employ a suite of different measures and even use different definitions for the same policy model. For example, the NSW Government uses the terms "product stewardship" and "extended producer responsibility" as inter-changeable and meaning the same thing. The following table is form an internal Visy discussion paper that sets out the generally agreed policy frameworks in resource recovery for used packaging.

Framework	**Stakeholders**	**Direct Levy or Financial Responsibility against Industry for Post-Consumer Waste costs?**
Product Stewardship	Packaging manufacturers, packers and fillers.	**No,** except in the form of manufacturers/re-processors who may choose to subsidise collection costs through material buy back prices, or otherwise.
Shared Product Responsibility	Packaging material suppliers, packaging manufacturers, packers, fillers, retailers, consumers, waste contractors, governments with each controlling direct impacts / costs.	**No,** with the same exception as above, as well as some targeted funding for system development, efficiency gains, education or similar endeavours that do not directly contribute to collection/sorting etc.
Shared Producer Responsibility	Packaging material suppliers, packaging manufacturers, packers, fillers, retailers, consumers, waste contractors and governments with those in bold partially offsetting costs.	**Yes,** for a proportion of the cost of some combination of collection, sorting, and reprocessing of packaging waste.
Extended Producer Responsibility	Packaging material suppliers, packaging manufacturers, packers, fillers, retailers, consumers, waste contractors and governments with those in bold primarily meeting costs.	**Yes,** for a higher proportion or full cost of some combination of collection, sorting, reprocessing and disposal of packaging waste.

Further, different jurisdictions also use different structures for the management of waste and resource recovery services. While local government is still responsible for the provision of all domestic waste and recycling utilities (competitively tendered in most cases), it is not the case when it comes to commercial and industrial materials. Many local governments provide no waste and recycling utilities to their commercial and industrial rate-payers.

Concluding comments

Visy Industries has an over-riding corporate philosophy that seeks to recycle and re-utilise all products and energy that can feasibly be utilised in its paper and packaging manufacturing business.

Visy believes there are major opportunities for additional investment in resource recovery and recycling in areas such as wood residue, waste paper, plastics, glass and metals.

Visy has a large capacity for undertaking new recycling/manufacturing investment within Australia if it can ensure a stable supply of feedstock from the waste stream.

In addition, and consistent with its closed-loop philosophy, Visy is committed to being as energy-efficient and water-efficient as possible. This includes, where feasible, installing new capacity to generate energy from "last resort" materials otherwise consigned to landfills or other non-use fates.

Further Information

Visy representatives would be happy to provide additional information and comment to the Commission during the conduct of its Inquiry.

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