COLLEX SUBMISSION TO PC WASTE INQUIRY 20/2/2006

1 KEY MESSAGES

(a) We need better training and information for decision makers in relation to the economics and environmental outcomes of different waste management solutions

(b) We need to recognise that alternative waste treatments are expensive and in many cases experimental, or proven only in the context of a different waste composition

(c) We need well understood objective KPIs going beyond diversion of tonnage from landfill. There needs to be a "balanced scorecard".

(d) There must be reconsideration as to the role of government entities as commercial operators in waste collection and disposal.

(e) European experience is relevant but the different context must be recognised.

(f) Levies and subsidies should be determined with a clear understanding of comparable external costs and the benefits and costs of the solutions.

(g) In calculating external costs there must be care in classing like with like. Old fashioned dry tomb landfills and modern bioreactor landfills involve completely different environmental impacts and risks .

(h) Enforcement of regulation is critical in a context of high levies.

(i) To the extent that levies exceed the cost of externalities and are used to fund unrelated expenses they are a tax.

2 Introduction

Collex welcomes the Productivity Commission's inquiry into Waste Generation and Resource Efficiency. This inquiry provides an opportunity to review from an economy-wide perspective, the direction and strategies of waste management policies in Australia.

Collex submits that it is necessary to consider waste management from an economy wide perspective. Waste, efficiency in resource use and waste management are issues affecting all sectors of the economy. Waste management policy has been largely the preserve of local governments and environment agencies in State/Territory and federal jurisdictions. The economic effects of these policies have not been

realistically, systematically and rigorously considered. Collex hopes that the Commission will be able to do this, and that this in turn will assist local government and environment agencies in understanding the economic effect of their policies and therefore in judging between alternatives.

In addressing waste management we all recognise that in environmental terms the top of the hierarchy must be reducing the amount waste (or recyclables) entering the waste/resource recovery stream However the means of achieving this, and the economic cost, are beyond the scope of this paper (or our expertise).

The real costs as well as benefits of waste management options must be understood and evaluated if the right decisions are to be made. A large part of the costs of waste management is site acquisition and logistics, areas that are often underestimated. Failure to recognise these costs can lead to significant distortions.

Regulation is also a major issue in waste management in Australia. Despite the adoption by COAG of principles for good policy process and regulation, there is still room for significant advance in regulatory processes. The Environmental Agencies are caught in an interesting dilemma, where they have used a simple message to make the community aware of the importance of waste minimisation and resource recovery, but now need to be careful to ensure that policy measures recognise the complexities of the problems so that they are not in themselves wasteful.

While Collex recognises the importance of the precautionary principle, care is required lest policies being introduced distort waste management priorities, incentives, the waste management market and industry, and lead to sub-optimal environmental and resource utilisation outcomes. Although the primary focus of this reference is the generation of waste and its attendant resource efficiency, the inquiry will also be an opportunity to analyse the effectiveness of regulation and market arrangements. Industry players recognise the very significant strides made by regulators, but we believe there are more benefits to be obtained.

An independent economic analysis of the resource allocative effects, public policy framework and conflicting outcomes from market and non-market interventions associated with waste and resource recovery, is overdue. Similar work by the OECD in its 2004 report on waste management has been an important factor in refocusing the debate, particularly in Europe. Indeed this report must be considered as an important reference for the Commission (although its natural concentration on the European context must be recognised).

Collex hopes that the Commission will be able to apply dispassionate analysis to the issues so that governments will be encouraged to refocus and redirect their policies to provide a framework for economically efficient and sustainable waste management and resource recovery in Australia.

3 Collex—Introduction to the Company

Collex is one of the leading private sector waste management companies in Australia. It is part of the Veolia Environnement (VE) group, a world leader in environmental services in energy, public transport, waste management and water. Collex is expert in waste management technology as well as operations.

Collex has over 2500 employees throughout Australia and operates services and facilities in all waste streams, waste treatment and resource recovery. VE in turn has over 200,000 employees and operations throughout the world, operating

155	Landfills (including bioreactors)
83	Waste to Energy Facilities
97	Composting Centres
247	Sorting and Recycling Centres

The number of sorting facilities would, in fact, have increased as, in particular, a significant number of commercial and industrial waste sorting facilities were in construction at the time these figures were gathered.

Apart from the operational experience of the group VE commits over 10 million Euros annually to its CREED research facility which is one of the largest research facilities in the world in the area of waste, working in partnership with many universities around the world. Knowledge is also passed around the group through its "Campus Veolia" or internal university committed to teaching in our core areas.

This experience means that we understand waste management issues and are able to put Australian issues in world context. We also have a good sense of the business drivers and incentives operating in this market.

Collex is adaptable and works within the parameters that are set. However, our preference is to provide the most efficient and environmentally sustainable waste management and resource recovery services for our customers. This is made more difficult if the institutional framework does not provide a level playing field for all participants, and if policy settings are not consistent with efficient resource use.

4 Major Issues in Australian Waste Management

The Inquiry Terms of Reference specify that 'the objective is to identify policies that will enable Australia to address market failures and externalities associated with the generation and disposal of waste…'.

Governments have been involved in waste management for a long time to provide waste collection in the interests of public health and hygiene and to prevent environmental damage. In economic terms, these issues are considered externalities when they are not captured by market prices and costs without government intervention. Authorities responsible for waste policy have not traditionally seen these activities in an economic framework of market failure, public goods and externalities.

While economic analysis is now being applied to some aspects of waste management and policy, it does not yet have widespread influence on policy directions or on the

design of policy instruments. Economic concepts such as market failure and externalities are still not well understood across the sector.

For some years now, environmental agencies have been trying to change attitudes and behaviours about waste. Collex has supported the use of catchy or aspirational slogans such as ‘Zero Waste’ or the ‘Waste Hierarchy’s 3 Rs’ to capture people’s attention and focus them on the issue. It was always understood that the issues were much more complex than that, and that eliminating waste altogether was neither feasible nor economically practical for a long period of time. There is a point where the costs of reprocessing or reusing wastes exceed the value/benefit that can be obtained, even when all externalities and other market failures have been accounted for. However, there is a danger now that the economic and technical fundamentals are being lost sight of. The slogans are becoming policy objectives in their own right, without the qualifications.

There is also some evidence to suggest that waste management policies have been distorted to support particular waste management enterprises, including government-owned services. Some of these measures lack transparency, are discriminatory and involve providing poor or even misleading public information.

We need to ensure that waste policy does not veer down the wrong track, seeking unrealisable objectives at ever increasing costs to the community. It is useful to consider a number of issues that can be broadly grouped as follows:

These issues can be grouped under the following headings:

- information requirements;
- need for microeconomic reform, particularly in relation to opening markets, promoting competition and reforming government-owned enterprises;
- improving policy and regulation; and
- levies and subsidies.

5 Information

Information is important for the design and assessment of policies. Information on waste management issues is not readily available on a national basis. Without adequate national data, it is difficult to benchmark the performance of individual jurisdictions and to assess the effects of particular policies.

Information is collected from operators such as Collex by State and local government agencies (particularly relating to levy calculations), but it is not consistent nationally. .

Recommendation:

- **The Environment and Heritage Ministerial Council should establish a working party including representative of all jurisdictions, industry and the Australian Bureau of Statistics to review national statistics relating to waste.**

6 The Need for Microeconomic reform

Municipal waste management in some areas has been operated like a public utility, usually with local monopolies. Government-owned enterprises have been making way for private contractors in parts of Australia with benefits in operational efficiency and innovation. However, government owned enterprises are still dominant in certain jurisdictions, such as New South Wales, where there is still not a level playing field.

6.1 Local monopolies

While all jurisdictions were supposed to review legislation restricting competition under the National Competition Policy Legislative Review Program, waste management arrangements have not been subject to the degree of scrutiny applied to other public utilities such as electricity, gas and water. Local monopolies in waste management have been justified on the same basis they were in these other areas of public utilities. Arguments for local monopolies have included economies of scale in collection, transfer, treatment and disposal. However, these same considerations have not applied to commercial and industrial waste management where competition is allowed. The logic of this distinction escapes us.

Local monopolies are exacerbated by very long term contracts. For example, as the table below indicates, in New South Wales a number were for long periods such as 20 years, but others were for shorter times, such as 5 to 10 years. Some contracts are for separate services, such as collection or management/provision of transfer stations and disposal facilities, while others are bundled together. The longer contracts tend to be for bundled services, effectively precluding competition. Such arrangements can impede efficiency and innovation.

Collex does not dispute that in some cases relatively long period contracts are justified. For example setting collection contracts to the useful life of trucks. The situation with new “alternative waste treatment” plants is more complex. Small promoters need long term contracts to finance major upfront expenditure, while substantial companies such as Collex, with an easier ability to offer a range of technologies, are better placed to take some market risk. The risk for the community is that long range contracts may not live up to their promise, or may during the longer term contract become an obsolete (and otherwise unacceptable) technology. As a general principle, the length of contracts and contract conditions should reflect risk and commercial realities.

6.2 Government-owned enterprises

The operations of government-owned waste management enterprises are also a concern where they enjoy a privileged position vis-à-vis the private sector. Competitive neutrality should be built in to the operation of government-owned enterprises. There is also debate about the extent to which the service providers have been effectively, or even legally, separated from policy makers and regulators. The issues are more serious when their positions can be entrenched for such long periods.

In NSW the government owned waste management company, WSN Environmental (WSN), owns four of the five putrescible landfill facilities that service the Sydney region. The facilities are old, would not be likely to be approved today as new facilities on environmental grounds, and are operated as low cost repositories with diminishing provision for end of life rehabilitation.

At the end of 2004, the Sydney putrescible market was open to contest and for the first time an independent disposal site could be considered by local government. The Woodlawn site, near Goulburn, an old open-cut mine site that requires remediation, was chosen. This is the only significant non-government owned facility accepting putrescible waste from Sydney. It is operated by Collex. It commenced operation in September 2004 and is serviced by rail. It is subject to significantly higher environmental standards than the conventional landfills operated by WSN, and will be a major waste to energy generator, and also includes rehabilitation of a badly degraded mine site.

On an annual basis WSN controls 75-80 percent of the approved putrescible landfill capacity to service the Sydney Metropolitan Area's approximately 2 million tonnes of annual disposal. The only substantial private alternative disposal facility for putrescible waste is Woodlawn which is limited by its conditions of consent to an annual input of 400,000 tonnes, although its effective capacity is over 25 million tonnes. (The Earthpower facility in Sydney accepts putrescible waste but is limited in the nature and volume of waste it can accept).

In 2005 the NSW Government approved an extension to the WSN Eastern Creek Waste Management facility of 2.9 million tonnes, despite the availability of significant capacity within the existing system.

During the last two years WSN has engaged in tendering practices which have had the effect of maintaining effective control of the Sydney Metropolitan Area putrescible waste market. It has tendered at prices and with conditions that would not have been justifiable by a commercial operator. By the end of 2005 WSN succeeded in tying itself to 66 percent of the Sydney market with only 29 percent remaining contestable.

Market control is also 'locked in' for a considerable period by long term contracts, limiting opportunities for market reform and innovation.

Council and Council Groups "won" by WSN	From:	To:
Blacktown	2005	2020
Canada Bay	2004	2011
Fairfield	2004	2023
Lane Cove	2005	2010
Parramatta (collection only)	2005	2006
Ryde	2005	2013
MACROC (Camden, Campbelltown, Wingecarribee, and Wollondilly	2005	2022
NSROC (Ku-rig-gai, North Sydney, Sydney, Willoughby	2004	2010
SHOROC (Manly, Mosman, Pittwater, Warringah)	2005	2015

SSROC (Botany, Hurstville, Kogarah, Marrickville, Randwick, Rockdale, Sutherland, Waverly and Woollahra with Canterbury still to commit)	2005	2010

Note: The above list is believed to be substantially accurate although detailed information is not available to Collex in all cases. Further Councils delivering waste to WSN on short term arrangements are not included.

The Commission should examine the issues involved in government-owned waste management services and monopoly contracts as part of its inquiry and commitment to microeconomic reform.

Recommendations:

- **Waste management should be subject to national microeconomic reform processes similar to those that have been undertaken for other public utilities such as electricity, gas and water.**

- **This review should include consideration of the roles of the public and private sectors and should develop a framework for allocation of responsibilities that enshrines a level playing field, competitive neutrality and clear separation of policy-makers, regulators and operators.**

- **Municipal waste management currently operates with local monopolies, either publicly owned or contracted. Contracts for a variety of services are often bundled together for very long periods. Just as electricity and gas markets have been opened to competition, municipal waste management markets should be made more contestable and competitive.**

7 Waste Management Policy and Regulation

Waste management policy and regulation involves a level of contradiction around Australia – in some cases required treatment in one state is unacceptable in another. There would be some benefit, through standardisation of systems and ease of training and equipment procurement and software development, if uniformity could be increased. It is recognised that there are real differences which justify some different regulation, but this should be minimised.

In general, however, Collex does not object to the extent of regulation in the industry. The key issue for all responsible players is that more effort is required in enforcement. This includes both

(a) ensuring the legislation does not contain loopholes which make enforcement difficult; and

(b) enforcing the legislation directly.

An example of this difficulty is where an exemption from levy is granted where resources are recovered. The regime must address stockpiling of “so called

recyclables" which do not have a market or a use. This is simply banking a future liability.

Other examples have been known when competitors have quoted collection and disposal rates which are below the levy.

The enforcement issues become more and more important as levies and regulatory burden increase. This will require additional commitment of resources and training. In this respect the recent commitment by the NSW of additional funds generated by the increased levy was pleasing.

7.1 Improving Waste Policy

Traditionally public policy focused on public health and environmental standards. However, this has given way to means of minimising the amount of waste sent for disposal and to an increase in recycling. This focus is reflected in the 'waste hierarchy' approach to waste management, adopted as the primary tenet of public policy. Australian jurisdictions are now all working to the same basic objective, to minimise the volume of waste, without full consideration of cost. Collex submits that a single waste management objective is inappropriate. It should be replaced with a more "balanced scorecard".

The goals should be sustainable and efficient resource use, involving optimal waste generation, treatment and management. KPIs should take into account the value of resource recovery including energy and the toxicity avoided. This involves a recognition that tonnage is a very limited KPI. A tonne of paper contaminated by food scraps and glass has nowhere near the recycling value of good quality sorted paper.

Collex is in the waste management and resource recovery business. Our parent company Veolia Environnement is in the wider business of providing sustainability for urban living. We can respond to any policy settings. However, we would prefer to have our business based on sustainable principles. Businesses that require government subsidies and other fiscal measures to be maintained are vulnerable to changes in policy. Furthermore, as citizens and taxpayers, we would prefer to see efficient and effective policies in place.

Many aspects of waste policy and management have developed in response to community perceptions or the beliefs of special interest groups.

For example, it is widely considered that 'the public does not like landfills'. While people do not want landfills next door, that is not the same as saying they do not want soundly designed and managed facilities somewhere, appropriately sited. Generally, people are not asked—their preferences are inferred from the NIMBY reactions to inappropriately sited and managed landfills. When they are asked, they are seldom presented with the costs of alternative waste management options or asked whether they are willing to pay for higher cost alternatives.

One frustration is that all landfills are judged by the standards of yesteryear, and grouped as one single category and treated as such. In 2004 Nolan ITU issued a paper

commissioned by GRL (the promoters of the UR3R technology). That report put an immense cost on the externalities of landfill relative to the promised results from the UR3R technology. The value of the report is limited by the confidentiality of information used by Nolan ITU, and its costing of externalities is significantly higher than the NSW EPA's (used in originally calculating the levy in accordance with its principles for load based licensing) and the figures quoted in the OECD 2004 report. However its general conclusion was that old urban landfills had very significant external costs, particularly relating to water and air emissions. This is not in dispute. What the report really showed was that modern bioreactor landfills with accelerated decomposition, extensive controls and gas recovery, such as the Woodlawn and Ti Tree Bioreactors, are modern technology which should not be confused with, or treated in the same way as, old fashioned landfills.

Regulators argue that intervention is necessary to correct for the increasing cost of environmental externalities. However, levies have now increased in some jurisdictions well beyond the level of estimated environmental costs for average landfill facilities. Bioreactor landfills are less polluting and therefore particularly disadvantaged by the current levy arrangements. The levy is much higher than any external costs that might result from their operation. Higher gate fees associated with higher environmental standards, effectively internalise what might have been externalities in the past. The levy does not provide any incentive to improve environmental performance, but could even be considered to penalise it.

The COAG principles for good policy and regulation specify that a regulation should only be introduced once it is clear that it is the most effective and efficient means of achieving an objective. Unfortunately, in the waste policy arena, such careful economic studies are the exception rather than the rule. Quality benefit cost studies are not common in this field.

Adoption of taxes and charges on landfill without reference to external costs, or using external costings which are clearly out of date, is a case in point. This is discussed further below.

Efficiency is further eroded by the failure to examine alternative proposals for managing externalities though market forces. The use of property rights is well advanced in most sectors of the economy. There is no reason to believe that a proper mix of market based instruments cannot result in better efficiency, internalising external costs, lowering costs, increasing investment in new technologies and achieving public goals.

7.2 European Experience – Consider but be aware of the differences

Australia is geographically an island but not in any economic sense. There are bigger economies out there experimenting in many technologies and policies. We need to consider experiences in other locations and to look at where we can use tried and tested solutions, rather than experiment with unproven technologies.

Europe has developed its own model of waste management which has particular concentration on the reduction of landfill and ensuring that all material going to landfill is inactive, with particular emphasis on landfill levies.

This model has been driven by the European Directive on landfills. It must be understood in the context in which it was developed:

(a) Europe has little available space and few remaining mining voids which can be utilised so that landfilling sterilises otherwise available land
(b) Europe had a history of burning waste to generate heat
(c) At the time the directive was instituted landfill controls were inferior to those now available and in use, and the dominant technology was "dry tomb" which delayed breakdown of wastes and thus required long term management of toxicity and emissions.
(d) Since that time capture of emissions from landfills and generation of sustainable power has developed considerably.
(e) European scale has in some cases made processing more economic (contrast the difficulties for Australia in developing plants to handle the different types of recoverable plastics).
(f) European homes generally have less room for domestic recycling bins.
(g) Closer settlement in Europe means that it was even harder to find suitable sites and also that illegal dumping is more difficult (for example the Sydney experience in recent years where it appears significant quantities of waste were trucked to the Blue Mountains for inappropriate disposal in a manner where it was difficult for the EPA to gather proof).
(h) Europe's higher population densities (in urban as well as rural areas) and street sizes lead to material differences in appropriate collection and transport of material vis a vis Australia.

Australia should respect European experience and models and can learn from them. However slavish following of those models must be avoided in view of our different circumstances and developments in landfill technology. Since the directive, new landfills have been developed that use bioreactor technology to concentrate on faster stabilisation of waste with better controls and capture of emissions..

The cost experienced in the European setting also needs to be recognised, with some treatment facilities involving a cost of up to $250 per tonne.

7.3 Case Study: NSW Waste Avoidance and Resource Recovery Strategy

During the 1990's NSW government policy was driven by actions to meet a landfill diversion target of 60 percent. To this end, kerbside recycling was increased from 30 kilograms per capita per year to 85 kilograms per capita per year in 2001.[1]

Price instability and the lack of sophisticated markets for many recycled components place a natural market barrier to significant increases. In some areas the export of recyclables to low labour cost markets has artificially influenced the recycling rate.

[1] EPA State of the Environment Report 2003.

Even where markets exist for recycled materials such as glass and paper, they are limited by the cost of source contamination, transport and separation after collection. Cost reduction and improved access to virgin resources has also influenced the benefits of accessing the waste stream. However, there are still gains to be made by adopting a more market integrated approach to resource recovery, treatment and disposal by allowing market forces to operate across the entire waste spectrum.

Since 2001, waste policy has been driven by the Waste Avoidance and Resource Recovery Strategy (WARRS) for implementing the Waste Avoidance and Resource Recovery Act. One of its major objectives is 'to encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecologically sustainable development'[2] .

Resource NSW (now Department of the Environment and Conservation) identified the challenge in achieving this goal and the broad intentions of the WARR Strategy, as "preventing waste and turning the waste we can't avoid into one of the most important and sought after raw materials of the 21st century"[3].

The strategy is aimed at:

- increased diversion of waste to recycling in order to reduce residual waste;
- increased processing of residual waste for beneficial outcomes; and
- disposal of residual waste at existing approved putrescible and non-putrescible landfill.

The performance target selected by the NSW Government is that by 2014, 66 percent of municipal waste should be diverted from landfill. The Strategy, based on the Wright Scenario 7 [4], identifies the tonnage diversion from landfill per year required to meet this target for the Sydney metropolitan area as 700,000 tonnes. In adopting the Wright Scenario 7, the Strategy is sending a signal to those considering new infrastructure that appropriate technology and practices should be adopted now to meet the 2014 planning horizon.

The Strategy specifies specific actions to reach this target, including increasing the range and capacity of resource recovery technologies and practices, and recycling and reusing more materials.

However, WSN market practices have not assisted in the achievement of that target of a 66 percent diversion from landfill.WSN forward projections for a total landfill capacity of 1.90 million tonnes for the Sydney region by 2014 [5] demonstrate that NSW Government's own waste corporation only expects a marginal (<10%) reduction in the tonnage of putrescible waste landfilled, compared to the current level.

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[2] Section 3 Objects of the Act (a), Appendix 4: Relevant provisions of the *Waste Avoidance and Resource Recovery Act 200*, p. 80

[3] Waste Avoidance and Resource Recovery Strategy, Section 2.2 Why "waste" matters, p. 8.

[4]Wright A. G. 2000. *Independent Public Assessment – Landfill Capacity and Demand,* p. 38. Scheme 7 estimates a six-year interval to move from the current position to the improved scenario and then a further six years to achieve the 66% recovery rate.

[5] Commission of Inquiry Report: Eastern Creek Waste Management Facility Commission of Inquiry 2005

The simple conclusion is that in four years, public policy has resulted in:

- an increase in the volume of low cost, low-tech landfill space over and above that assessed by Wright.[6]
- increased market rigidity by allowing the government owned waste corporation to maintain effective monopoly control and. reducing the size of the contestable market in municipal waste from 100 percent in 2003 to 20 percent in 2006.
- condoning a strategy of driving down 'gate rates' for landfilling at publicly owned landfills by 20 to 30 percent for a substantial portion of the market.
- engaging in 'facility based' pricing mechanisms which have the effect of minimising market competition and increase incentives for landfilling at publicly owned facilities.

The recent NSW government announcement of significant increases in the levy needs more refinement if it is to be seen as a positive contributor to the problem. It of particular concern to Collex that this levy increase could be seen as classing Woodlawn in the same category as other landfills and subject to the full levy, just over a year after its opening after the expenditure of some 80 million dollars on the entire project. This was an initiative which was included as part of the governments strategy for handling waste. Surprises of this nature are difficult to accept.

7.4 Recycling and Resource Recovery:

Collex strongly supports targeted incentives for the diversion of materials for recycling and reuse.

Low cost landfilling is a more cost effective option than investment in alternatives for all but the most valuable waste products. The lower the cost of landfilling, the greater the percentage of the waste stream that will not be commercially available for capture and reuse, particularly where the cost of landfill is below the costs associated with the separation, transport and processing unless benefits are aimed at the value of the recovery and in assisting development of markets.

Substantial increases in recycling require the development of sophisticated markets where sufficient information exists to enable participants to make appropriate long term decisions. There is clear variability within the market for recyclables. Few companies have been successful in establishing long term viability for many of the waste stream components. There are numerous examples of failures of markets dependent on government support.

Unless policy is supported by long term market instruments or self-reliant market factors there is unlikely to be substantial investment in recycling. Such investment needs to be supported by all elements of the production chain and free from public policy distortions. Imposing liabilities on the collection and disposal sector alone without amortising costs throughout the production cycle distorts the real costs of waste management.

[6] Wright A. G. 2000. Independent Public Assessment – Landfill Capacity and Demand

The availability of recyclable products from the waste stream is also affected by contamination during the collection process. With increasing emphasis on 'comingling' at source the opportunity to obtain uncontaminated material is diminishing. Equally, the costs of sorting 'comingled' material increases further down the waste stream. The market is quite clear that uncontaminated material is more valuable in recycling, and that early intervention (such as domestic sorting) reduces contamination. For example it is hard to obtain valuable cardboard out of municipal solid waste MSW after it has been stored in a domestic bin for a week, then compacted. There is a valid issue in considering the option of using it, in that context, in energy recovery.

The above comments have particular application to suggestions that recyclables and residual waste should be collected in the same bins for later resorting. It is accepted that many councils have elected to pursue commingling of different recyclables to minimise collection cost and to address OH&S issues. This involves a proper balancing of policies and cost.

The use of organics from MSW in composting also needs careful review and the NSW DEC has been working on this issue. Contaminants may be present which lower the value and the current European mood seems to be moving towards stabilisation and volume reduction prior to landfilling and use purely for energy recovery. Collex is pursuing the use of waste derived composted material for mine rehabilitation of degraded sites (as contrasted to general use). We believe however that the general use of waste derived compost will be limited to source sorted organics (as in Earthpower in Sydney and Collex's Melbourne operations). Obviously this can change if the community is willing to accept a very substantial cost (both in capital and operating costs).

The other uses of low value organics relate to energy recovery. These materials can be used for conversion to energy within well designed bioreactors which maximise the collection of methane. Methane (which has 21 times the greenhouse impact of carbon dioxide) produced low-tech landfills are vented to the atmosphere. There is no recognition within the landfill tax regime of the capture and utilisation of a major external cost of waste management (although this is now being recognised in UK and Norway).

The opportunity for turning residual wastes such as plastics, and even organic fractions, into refuse derived fuel also needs to be put into the balance, applying valid cost and benefit models. One of the key issues in this context is a proper understanding of the contamination and emission risk, with emissions control being a major proportion of the cost in waste to energy/incineration in Europe. Use of residual waste for fuel raises most of the issues associated with incineration.

In an environment where the marginal pricing of domestic garbage collection is zero and where there are limited market incentives for recycling (other than altruistic motives) at a household level it is likely recycling rates will plateau. The cost of accessing recyclables as a proportion of production costs will increase. It is noted that reduction in bin sizes appears to have been one driver in reducing general domestic waste in favour of recycling.

Consideration should be given to the benefits of energy recovery as an offset against fossil fuel equivalent generation. In NSW there is no distinction between landfills venting significant quantities of methane and high cost bioreactors maximising energy conversion (this distinction is now becoming recognised in Europe - see examples of the United Kingdom and Norway).

Consideration also needs to be given to other beneficial use. Collex is working to use waste in its remediation of a badly degraded mine site at Woodlawn (and Ti Tree although the degradation in that case is less extreme) in contrast to some operations which involve the digging out of virgin land. The Collex Woodlawn project also takes advantage of environmentally desirable rail transport (using less fuel and taking trucks off city roads).

We believe that an evaluation methodology needs to be developed somewhat in the form of a "balanced scorecard". The simplistic approach of "4 legs good, 2 legs bad" has valuable use as a "propaganda" tool, but is not a good basis for policy.

Recommendations:

- **Waste management policy and regulations should be developed using the COAG principles for good practice policy and regulation.**

- **Governments in all jurisdictions should set clearly defined, rigorous and realistic waste management objectives. These should be related to achieving economically efficient resource use and a broader set of health and environmental objectives based on a systematic consideration of risks, costs and benefits.**

- **Governments should move to a sustainable resource use framework for waste management, i.e. it should be based on achieving optimal environmental, economic and social outcomes, not simply environmental protection.**

- **Waste management projects and policies should be subject to comprehensive and rigorous assessment prior to implementation, and systematic monitoring and evaluation. These should include all significant benefits and costs.**

- **New Key Performance Indicators should be developed for waste management to reflect these sustainability objectives which reflect environmental benefit, value and cost, not just tonnage.**

- **The choice of waste management technologies should be based on what is most economically efficient (broadly defined to include correcting market failures) in respect to individual elements and opportunities of the waste stream.**

- **All costs and benefits of waste management options should be considered, including transport costs; greenhouse gases emitted or avoided; air, water, land and odour pollution created or avoided; speed of waste**

stabilisation; degraded site remediation; and production of any marketable co-products such as energy/electricity or compost/soil conditioner.

- **Government funding for experimental or innovative technologies should be transparent and contestable. Outcomes should be monitored and evaluated rigorously.**

7.5 Occupational Health and Safety

One cost of recycling which can be overlooked is occupational health and safety. Recycling and resource recovery tend to be labour intensive in a relatively dangerous environment, with manual sorting often a critical part of plants which are otherwise described as “high tech”.

Current European resource recovery involves OH&S risks which would not normally be accepted in Australia. The highest levels of recycling which we have encountered are achieved in scavenging exercises (such as the Zabaleen in Cairo Alexandria) at an extreme OH&S cost. Examples of the risks include glass, needlestick and similar injuries during sorting, disease, dust and similar problems, and all manual handling risks.

A recent problem experienced by Collex was the identification of asbestos in building waste material otherwise destined for recycling. A substantial quantity of material was condemned and disposed of at significant cost to Collex. New inspection protocols have been developed have had to take into account the balancing of safe inspection amongst moving machinery with the risk of asbestos contamination.

7.6 NIMBY

One of the biggest problems for the industry is the social issues surrounding wste management facilities. No one wants a waste or resource recovery facility nearby. The sad truth is that many forms of resource recovery in fact involve increased odour and similar risks compared to straight waste disposal (where the concentration is on disposing of the waste fast with minimal community impact).

The waste management of the Sydney region has been impacted for many years by the difficulty of obtaining new facilities (we believe the Collex Clyde rail transfer facility approved in 2004 was the first new putrescible waste facility in Sydney for some 15 years).

This problem needs to be addressed two ways:

(a) legislative action to depoliticise the planning decisions as much as possible and put them on a state significant basis (with recent changes in NSW being a step in this direction); and

(b) proving improvements in actual operations and facilities to the community so that resident objection becomes less strident (or even disappears).

Recommendation:

- **States should recognise the need for waste management facilities and plan for them so as to minimise potential adverse impacts on communities.**

7.7 Training, Information and KPIs

Decisions relating to waste, at local government level in particular, can be once in a lifetime environmentally important and multimillion dollar decisions by persons with limited knowledge of waste. While local and state government officers have done much to increase their level of skills over recent years, the treatment and disposal industry is still in its infancy.

Typical of this stage of a market there has been aggressive marketing, significant over-promising and under-delivery, technological problems and unexpected costs. This is a particular problem in an industry which involves facilities requiring substantial upfront costs and development time.

The industry needs to promote better training, knowledge and objective KPIs to achieve

(a) a better understanding of environmental outcomes from waste technologies,

(b) a better understanding of economic costs, and

(c) a better ability to judge complex outcomes.

We believe a better understanding will lead to more support for projects such as Earthpower (or Collex's own involvement in green waste composting in Melbourne) putting particular emphasis on careful sourcing and high quality outputs against technologies whose main justification is volume reduction and partial curing of material which has limited or no value (after taking into account contaminants).

A critical part of this education will be the development and acceptance of objective KPIs.

8 Levies and subsidies

Waste levies and subsidies are potentially useful economic instruments for internalising externalities. Levies can be a means of implementing the 'polluter pays principle'. Targeted subsidies can support provision of external benefits, such as degraded land remediation, and the provision of public goods such as information and

research. Such measures can also be used for targeting failures in markets for used materials and recyclables.

Collex has worked with a number of government organisations where subsidies have enabled beneficial outcomes in resource recovery, which could not have been achieved without that government support.

However, if they are not clearly targeted at these areas of market failure, they can be simply taxes and subsidies that may reduce economic efficiency rather than enhancing it. Governments throughout the OECD have been experimenting with such measures. Various waste disposal levies and subsidies have been tried in Australia, with variable results.

8.1 International experience of levies

A high proportion of western European countries impose landfill levies, some more sophisticated than others. Rates vary considerably as well. There is significant literature on the behavioural aspects of applying levies or taxes to landfills. Various attempts have been made calculate the relationship between the level of landfill taxes and the cost of internalizing negative externalities. One example is the UK landfill tax introduced in 1996. Originally intended to account for direct external costs, the rate has since increased substantially.

The OECD 7, calculated real external costs of landfill in the UK to be in the range of A$3.30 to A$30.15 per tonne of waste. Of that, climate change or greenhouse impacts of methane emissions were the most significant externality varying between A$1.88 to A$21.20 per tonne. Also included were leachate management, cleanup and monitoring costs for existing landfills at A$1.53 per tonne. New landfills were assumed to have already internalized external costs given the higher environmental standards and closure provisions required. US studies have attempted to estimate disamenity costs (nuisance from noise, odour, visual impact). Based on this data, the UK applied a cost of A$7.06.

Based on this analysis, total external costs would be in the range of A$10.36 to A$38.74 per tonne. The range is dictated by whether the landfill is located in rural or urban areas and the amount of energy recovery involved. Cost to industry was offset by a 0.2 percent reduction in business national insurance contributions.

Whilst the tax led to a marked reduction in the amount of inert low value (construction and demolition) waste going to landfill, there was much less impact on municipal waste. The tax rate was later increased with an escalator from 2005 to reach a medium to long term tax rate of approximately A$115 per tonne. It is intended that the additional revenues will be redistributed to business to offset the costs of waste avoidance and recycling. On the other hand, some economists have estimated that this increase in the levy has resulted in a substantial dead weight loss to the UK economy, even though the levy is supposed to be applied in reducing compensation costs for industry.

[7] Assessing the Economics of Waste, OECD Report 2004

The Norwegian tax on final waste treatment introduced in 1999 was differentially applied according to the environmental harm assessed. For example, it applied a lower rate for landfills with high environmental standards and higher rates for low standard facilities. The standard was assessed in accordance with the level of energy produced and resulted in a diversion away from landfill to incineration. The tax is due to be replaced by a subsidy dependent on the amount of energy produced and will apply equally to incinerators and landfills.

8.2 The Underpinnings of Levies, Subsidies, Tradable Instruments and Regulation

The balance of levies, subsidies, commercial tradable rights and regulation is obviously very complex.

The existing predominant concept of a simple levy on landfill is already being challenged in parts of Europe (see for example the Norwegian experience). A landfill levy is a very blunt instrument. It has been very useful in attracting community attention to the issue of waste reduction and resource recovery. However it suffers from weaknesses which are likely to compound as the levy increases:

(a) it encourages illegal dumping and disposal
(b) it encourages manipulation of the system to qualify for exemptions which are not commensurate with the (in some cases limited) environmental benefit obtained (ie by claiming exemption for waste turned into alternative daily cover in landfills).

The recently announced landfill levies in NSW have clearly been set significantly beyond the cost of the externalities that they were supposed to treat.

In our view sensible policy might address the following

a. A landfill levy might recover external costs applicable to the landfill. This has been studied by the NSW EPA (in its context of load based licensing) and is the subject of considerable discussion in the OECD 2004 Report.
b. A levy might be imposed on total waste generated to seek to reduce waste.
c. A subsidy/rebate might be given to promote marketing of materials and energy recovered from the waste stream. This subsidy/rebate should take into account the value of the recovered material not just the tonnage. It should probably be set at a rate which at least puts the recovered resource on a par with virgin material by balancing any external costs associated with the virgin material.
d. A levy might be imposed on toxics entering the waste stream, or a subsidy/rebate given for extracting the same. However care should be taken not to double count with (a).

8.3 Australian levies

Levies and subsidies are the main economic instruments that have been tried in Australia to deal with waste management issues. Some have been more successful than others. Not surprisingly, where the measure has been specifically designed to deal with a clearly defined issue, they tend to be more successful. When they are broad-brush measures to deal with unclear or even misguided objectives, they do not enhance efficiency.

The Commonwealth's used oil scheme is an example of a levy that is well-targeted, was developed with full participation of stakeholders, and works well. The tyre industry is working with governments on a scheme that would use an advance disposal fee to support re-use of used tyres for various purposes. This scheme has been well researched, is well targeted and is an example of the appropriate use of levies and subsidies to deal with market failures in waste management.

General landfill levies are more problematic. New South Wales, Victoria, Western Australia and South Australia have introduced levies to reduce the volume of material going to landfill. Metropolitan municipal levy rates vary from $3 per tonne in Western Australia, through Victoria at $6 per tonne, South Australia at $10.10 per tonne, to $21.20 in New South Wales[8].

Evidence to date suggests that, as in the UK, the levy resulted in significant diversion of construction and demolition material primarily due to the ease of achieving recycling. It had a limited impact on the volume of putrescible waste diverted. It has also led to increased separation of recyclable materials.

The NSW government has since announced its intention to more than double the levy, well in excess of externality costs. Revenue is now being used for much broader environmental purposes, such as funding catchment management authorities, as well as going to consolidated revenue. Only part of the funds will be expended on waste reduction initiatives.

The level of the NSW waste levy now bears little relationship to the economic, social and environmental costs associated with waste management. It already generates more revenue than is spent on dealing with waste management issues. At the new rate, the surplus revenue will be substantial indeed.

Recommendations

- **Waste levies should be imposed to deal with market failures such as externalities and provision of public goods that would not otherwise be priced in the marketplace.**
- **Waste levies should be designed carefully to provide incentives for behavioural change to reduce the generation of externalities, not just crude targets such as reduced volumes to landfill, and to provide a source of revenue.**

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[88] New South Wales, Department of Environment and Conservation, *Protection of the Environment Operations (Waste) Regulation 2005, Regulatory Impact Statement*, p. 30.

- **Revenue should be directed to correction of market failures, such as externalities, and provision of public goods, and not be considered a general revenue source.**
- **Government administration of levies and subsidies should meet COAG criteria for efficient administration. Management fees should be commensurate with the administrative tasks required and should not be used as hidden sources of agency revenue.**
- **Waste levies should be applied on a consistent basis for each waste stream, at the same point of measurement. No operators should be exempt—any subsidies should be made explicit, transparent and contestable.**