A NATIONAL WASTE MANAGEMENT POLICY FRAMEWORK

A Submission to the Productivity Commission
By the
Business Roundtable on Sustainable Development
February 2006

KEY FINDINGS

- There are significant shortcomings in the current approach to waste management policy development and implementation in Australia which need to be addressed, such as:
    - the common adoption of concepts, objectives and targets which drive the waste policy agenda in a direction that is not productive, and
    - the failure of state-based environment agencies to follow principles of good practice policy development, which were designed to deliver productive outcomes and agreed to at COAG.

- A number of potentially significant interventions are currently being considered at the state environment agency level that are best designed and implemented at the national level engaging a wider set of government agencies than just the environment portfolio; these interventions have the potential to inflict significant cost on the economy and hinder the efforts of business to maximise resource efficiency.

- The proposed National Waste Management Policy Framework, prepared by the Business Roundtable on Sustainable Development, specifically:
    - reinforces the importance of rigorous pursuit of existing policy development guidelines;
    - proposes a shift to a risk- and value-based approach to waste management policy, away from the current approach that is based on volume reduction or waste minimisation;
    - identifies a series of ‘dimensions’ which need to be considered to ensure the development of policy based on assessment of risk, sustainable development principles and the particular circumstances of each situation;
    - argues that greater business engagement in waste management will be encouraged by pursuing a value focussed approach that incorporates good policy design, effective stakeholder consultation and ongoing policy review;
    - recommends that waste management policy should focus on downstream waste disposal impacts rather than seeking to drive upstream benefits; and
    - recommends a more informed public debate and understanding of waste management policy issues.

1.1 The Business Roundtable on Sustainable Development

The Business Roundtable on Sustainable Development (BRSD) was formed in 2003 by the Ministers of 'Industry, Tourism & Resources' and 'Environment and Heritage' to provide high-level advice to the Australian Government on sustainable development.

The BRSD is comprised of industry leaders representing a wide range of sectors, and seeks to contribute to the development of a sustainable Australia which recognises the interconnected goals of economic growth, social advancement and environmental protection.

The BRSD provides advice on what Australian industry is currently doing to achieve sustainable development and how government can best promote greater business sustainability. The BRSD provides an avenue for industry to speak to government about the most efficient and effective ways of encouraging sustainable development.

The BRSD has provided advice to the government on topics ranging from water strategy and changing demographics through to energy policy and business regulation.

In 2005 the Ministers requested that the BRSD make recommendations to the government in respect of a national waste management strategy framework. The BRSD has established a committee comprised of member companies and waste management industry experts to review waste management in Australia and to develop a proposed framework. The framework forms the basis for the BRSD submission to the Productivity Commission Inquiry into Waste Generation and Resource Efficiency and will also be presented to the Ministers in early 2006.

The BRSD believes that the proposed framework will provide for good policy development that will support sustainable solutions for waste management in Australia.

1.2 The Interests of Business in Waste Policy

Waste management costs represent a relatively small input to the cost of doing business, but on an economy wide basis it represents a very significant cost.

The relatively small impact of waste management costs on individual businesses and individual households has resulted in poor attention being paid, by individuals, to the cost of waste management.

In the process, waste management has become a neglected but significant economic activity, and a big business in itself.

In 2001, WCS (2001)[1] estimated that the cost of managing solid, non-hazardous waste in Australia, from other than the primary industry sector (mining, agriculture

[1] WCS (2001) - Industry & Market Report – Australian Waste Industry, WCS Market Intelligence, July 2001.

and forestry), was in excess of $2.8 billion per annum, of which wastes associated with business activity accounted for some 54 percent.

At that time, WCS (2001) also estimated that, if the then current waste policy settings remained unchanged, the real annual cost could reasonably be expected to increase at 10 percent per annum over the following five to six years. Thus, the real costs of waste disposal were expected to rise at a rate three times that of GDP. The main drivers of this expected escalation in costs of waste management were:

- policy preoccupation with reduction in the *volume* of material going to landfills;
- a narrow focus on environmental protection rather than sustainable outcomes that meet environmental, social and economic objectives (the triple bottom line of sustainability);
- increasing landfill operating costs associated with regulation imposts on disposal sites;
- increasing regulator demand for source separation of materials and processing streamed wastes;
- anticipated introduction of high-cost mixed residual waste processing (alternative waste technology – AWT) in lieu of low-cost landfill disposal; and
- tighter regulation of post-industrial waste, effectively preventing its reuse.

Subsequent in-house estimates by WCS[2], relating to waste management infrastructure in NSW, have concluded that a minimum additional investment of some $600 million would be needed to have in place the facilities necessary to achieve waste diversion targets in the years 2007 to 2012.

However, there has been a general shift in waste management policy in most jurisdictions in Australia, with greater attention being paid to upstream market issues and reducing waste disposal volumes and less attention on disposal externalities. In the process, governments are seeking to increase the level of involvement of business, to reduce the waste generated by business and to manage the post consumer fate of selected domestic sector wastes.

It is not the purpose of this submission to seek to redress past issues relating to waste management. Rather, this submission seeks to put forward a case for a more disciplined and rational approach to future waste management policy decision making, with particular regard to potential interventions that governments may be contemplating in business wastes and in post consumer product management by business.

The economic impact of waste management policy on business is substantial, and likely to increase significantly in the foreseeable future, beyond those estimates made by WCS (2001), if the current trend away from disposal management continues. In the case study on the impacts on the recent increase in the waste levy in NSW (included in the Support Documents) it has been estimated that waste generators will incur an additional economic loss of $133 million per year by 2010/11 or $1.4 billion over the next 30 years.

This inquiry by the Productivity Commission into Waste Generation and Resource Efficiency is therefore welcomed by business. For too long, waste management and

[2] Personal communication, January 2006

waste policy has been the preserve of environmental agencies and local governments and has been too narrowly focused.

It is vitally important that an economy-wide perspective be brought to the issues involved in waste management in Australia – a perspective that the Commission is uniquely placed to provide.

1.3 Sustainable Resource Use and Waste Policy

Waste is not an absolute – it is a matter of value, place and time.

A material is a waste when it ceases to have net value and purpose in the hands of its current owner. That material may be in gaseous, liquid or solid form. These forms are not fixed – gases can become liquids, liquids can become solids. And, that material may still be of value to someone else.

Thus, such materials should be seen as a resource, capable of being used efficiently and sustainably until such time, or in such a place, that the net costs of use by the economy as a whole, exceeds the benefits, and the material needs to be stored or discarded.

When no further value in use exists, it is appropriate to class the relevant materials as waste.

The business community is a key contributor to the sustainable management of the nation's resources. Under guidance and policy settings by governments, businesses harness the value in resources through trade in commodities and creation of manufactured goods, and then arrange for the safe and effective disposal of residual resources once they cease to have value or purpose.

The markets, within which resources and goods are traded, are the underlying mechanisms via which national wealth is created and businesses can generate profits to reward shareholders. It is in the interest of the business community to maintain those markets in a sustainable manner in order for long-term benefits to be created for all stakeholders.

Waste policy is one area where appropriate government intervention can help markets operate more efficiently, by targeting market failures such as environmental externalities and information failures. However, inappropriate intervention can lead to less efficient or even perverse outcomes. Some inappropriate policies lead to inefficient waste management and recycling activities. Others impede the operations of markets and prevent the maximum value being extracted from resources.

The business community is keen to see waste management policy developed and implemented in a nationally consistent manner, and in a way that contributes towards economic efficiency and sustainability – not in a manner that drives sub-optimal solutions.

There is much more to waste management and waste policy than is commonly supposed when people think of municipal waste collection, recycling and landfills.

To this end the BRSD is preparing a framework that can guide the development and implementation of sustainable, productive and effective waste management policy in Australia.

1.4 The BRSD Framework

The BRSD is preparing the framework in response to a request from Ministers for advice from the business community on issues relating to a national approach to waste management policy.

The advice being prepared is titled “A National Waste Management Policy Framework”. The framework is being developed within the context of Sustainable Resource Management. It takes a triple bottom line approach to the management of resources, from resource harvesting and conservation, through resource allocation and utilisation, and on to the safe and effective management of resources when they no longer have value or purpose and require disposal.

A draft copy of the framework is attached, which sets out the circumstances when policy intervention may be required in the sustainable resource management value chain to compensate for market failures in respect of waste management.

The business community is involved with a wide selection of natural and manufactured resources, and creates waste by-products that may be in gaseous, liquid or solid form. Those materials may pose little risk to humans and/or the environment within a properly conducted industrial setting. However, in the wrong situation, such materials can become detrimental to human and environmental health.

The proposed framework is intended to be quite general in its application to the analysis of wastes and waste issues. It covers all forms in which waste may exist and, through consideration of the various policy dimensions, drives value and risk based solutions. The BRSD is intent on testing the suitability of the framework for the full spectrum of materials that may be the focus for waste management policy.

Recognising that the Terms of Reference limit the scope for the Productivity Commission’s inquiry to solid, non-hazardous wastes, the BRSD invites the Commission to examine and test the framework in respect of those wastes that it considers are under reference.

Notwithstanding this, the Commission may wish to consider whether the restrictions in scope are necessary or desirable to analyse properly the economic issues involved in waste generation and resource efficiency – especially given the transformations that can occur to materials and resources in the manufacturing and waste management processes.

Indeed, one interpretation of restricting liquid and hazardous wastes from the Terms of Reference could be to exclude all materials that could cause negative externalities – the major reason for government involvement in waste management in the first place.

2. ISSUES IN WASTE MANAGEMENT POLICY TODAY

2.1 Waste Management Policy In Australia

Historically, public health was the key consideration for government in respect of managing wastes. The focus was on collection and removal of wastes from the immediate community and disposal at some distant location with the aim of protecting public health. Local government, under its mandate for maintaining local amenity and health, had primary responsibility for this activity.

From the late 1970's, more attention was paid to landfill disposal and the focus of waste management policy appropriately became the externalities associated with poor disposal practices. This thrust was taken up by state governments, which had the appropriate jurisdictional cover to address these issues.

Regulations were progressively increased by state governments and incentives introduced, leading to significant improvement in landfill operating and management practices and technologies with corresponding increases in landfill disposal costs and gate fees.

BDA Group (2004)[3] valued landfill environmental impacts in the Sydney metropolitan region in the range of $A2 to $A14 per tonne of waste disposed, with greenhouse gas emissions representing around half the estimated impact in the case of the upper bound estimate. With landfill levies in the metropolitan centres of Sydney, Melbourne and Adelaide now in excess of $A10 per tonne (and in the case of Sydney set to rise to $56.70 by 2010-11), it is reasonable to conclude that residual landfill externalities have been fully priced into the cost of landfill disposal of waste.

In fully efficient markets for sustainable resource management, this should represent full satisfaction of the public health and environmental care aspects of collecting and disposing of wastes. However, in a number of jurisdictions, these levies are not clearly targeted at overcoming or internalising the externalities. Indeed, in the case of NSW, they could be taken more as revenue raising instruments.

Increasingly the thrust for waste management policy has been focused on volumetric reduction of waste disposed, without strong or compelling argument that this is warranted by disposal externalities. The approach has become "less waste is better", without adequate evaluation of the economic issues involved or of the condition of the markets for materials removed from the waste stream.

The instances of kerbside recycling, organics collection and processing and the National Packaging Covenant are typical examples where the passion for a reduction in waste disposal has overtaken the primary role of waste policy intervention.

Historical recycling, as epitomised by the "bottelo" pre 1980's, originated as a market-driven activity to make more efficient use of resources. In the 1980's and 1990's it became a part of municipal waste management and was formalised into routine collections and processing. However, the thrust at that time was not matched by market development initiatives, leading to a supply-push situation with unstable markets for materials.

[3] BDA Group (2004), Analysis of levies and financial instruments in relation to Waste Management, report to Zero Waste South Australia

Today, recycling has been extended to such an extent that it can be inefficient, particularly when the costs of collection and transport are not considered adequately in areas that are remote from processing facilities and markets.

Regulation-driven systems, such as those mentioned above, can be costly to the economy without necessarily delivering commensurate improvements in resource efficiency or environmental well being.

A further regulatory-driven thrust in waste management policy is emerging as state governments have been looking to greater engagement of the business community in the post consumer fate of goods, such as used tyres, batteries and electrical and electronic waste, through extended producer responsibility (ERP) schemes.

The state jurisdictions acting alone cannot address a number of the issues associated with such initiatives, in particular avoiding free-rider problems, imports and levies. Therefore, there has been a trend for the states to seek involvement by the Australian Government in national initiatives that can be implemented cognisant of national market dynamics.

As the Australian Government ponders the challenge of becoming involved in waste management policy, long the domain of local and state governments, the opportunity is presented for a more structured and market-targeted approach to be adopted, with the benefits being national uniformity productive policy, and improved social, environmental and economic outcomes.

2.2 Waste Policy Misconceptions

The waste sector, and waste policy in particular, is impacted by misconceptions that affect the definition of objectives, the design of policy instruments, and formation of community attitudes. Some misconceptions have become so entrenched that they are no longer subject to the rigorous questioning that good policy making requires.

Some important, and opinion forming, misconceptions in the waste management sector include:

- The creation of waste is wasteful.
- Australia is running out of landfill space.
- The most important objective of waste management is to minimise the volume of material going to disposal.
- The community does not like landfills or incinerators.
- The ultimate policy objective should be zero waste.
- The best thing to do with green waste is to manufacture compost.
- Producers of goods should always be responsible for the products they make from cradle to grave.
- Waste disposal and recycling measures are essential to conserving Australia's natural resources.

The trend for waste management policies to be directed at upstream benefits, but still being implemented late in supply chains, has been supported by some of these misconceptions.

It is the view of the BRSD that waste management policies should be directed at waste disposal externalities, rather than resource conservation or other upstream objectives, and based on factual, evidence-based data.

2.3 Efficiency and Effectiveness of Current Policy

Good practice policy demands clarity in identification of the problem being addressed, alignment of policy instruments to objectives, and efficient and effective administration. The record of Australian waste policy has been quite patchy in all of these regards.

As waste policy has moved from a focus on minimising harm to the environment (through improper disposal of wastes) to one of minimising waste to landfills, two principles have now been adopted by most State and Territory Governments as the driving rationale for waste policy, namely:

- the adoption of a 'waste hierarchy' ideology – where reducing consumption is deemed to be preferable to waste re-use and recycling which in turn are preferable to energy recovery and waste disposal; and
- the setting of targets for the amount of waste going to landfills, with a broader vision of moving towards zero waste to landfill.

This has been inspired by overseas regulation, particularly from Europe, regardless of the suitability to Australian conditions, or, in some instances, the poor implementation record in Europe.

To achieve the waste reduction targets, a range of policy instruments has been pursued in the various jurisdictions, such as:

- banning of some wastes from landfills,
- banning of incinerators,
- subsidising the collection and processing of recoverable resources,
- use of advance disposal fees (container deposit legislation),
- introduction of landfill (disposal) levies, and
- initiatives seeking to commit producers of goods to some degree of post-consumer responsibility for wastes created and disposed.

By 2004, some of these instruments had ceased to reflect the fundamental objectives of waste management policy, and had become basic revenue generating tools for government, without materially impacting on the amount of waste generated or disposed.

It is the view of BRSD that good policy and regulatory process has been compromised in much recent waste policy development that has been dominated by the waste hierarchy and waste minimisation objectives, and by the shift from direct, observable impacts associated with waste disposal to postulated problems further up the supply chains. This issue has been exacerbated for business by environmental

and planning regulations that can impede the efforts of industry to make more efficient use of resources and to operate in a more sustainable fashion.

In the package of Support Documents accompanying the framework, case studies of the Kwinana and Gladstone industrial areas are used to demonstrate the environmental and economic gains that can be made when industries are able to trade in their by-products and wastes.

Unfortunately, in many industrial areas, businesses are being frustrated in their attempts to make more effective use of these resources. This leads to resources not used to their greatest advantage, more waste being generated, and resources not managed as efficiently and effectively as possible.

2.4 Responding to Social Aspirations

In 2003, 9% of NSW people surveyed by the EPA[4] saw waste management as the most important environmental issue in the State, while 19% saw it as one of the top two issues. At the same time, around 95% of Australian households recycled waste and some 83% re-used wastes. Household surveys by the ABS showed high levels of recycling and re-use in all states and territories, with the levels of recycling and re-use increasing over time[5].

Communities have been keen to embrace broader sustainability practices, and waste reduction is seen as a material way this could be done at an individual and household level with opportunities for everyone to contribute. The mantra "think global, act local" has real relevance for the community when it comes to waste and environmental management.

Such community aspirations have encouraged governments to broaden the rationale behind waste policy goals, beyond disposal externalities to include upstream life-cycle impacts associated with waste materials.

This change in policy focus, fuelled by misinformed community aspirations has had a snow-ball effect across the country, with significant negative ramifications in respect of productive resource utilisation efficiency.

2.5 Regulatory Failures

Preparation of the framework has been undertaken with the intention of avoiding in the future the regulatory failures that have plagued waste management in years past. The types of regulatory failure to be avoided may be:

- a failure to act,
- a poorly targeted policy, or
- an inappropriate intervention.

Examples of regulatory failure cited in the framework and support documents include:

[4] NSW Department of Environment and Conservation (2003), Who Cares about the Environment in 2003, a survey of NSW people's environmental knowledge, attitudes and behaviour.

[5] ABS (2003), Environmental Issues: People's Views and Practices (Cat # 4602.0)

- inappropriate labelling of resources as a waste, leading to the impost of environment protection regulations that would not otherwise be warranted if a risk-based approach had been adopted with that resource and competing resources;
- a waste reduction imperative, dissociated from disposal externalities, that:
    - limits the volume and type of waste that can be received at a waste facility and leads to inefficiency in the disposal of wastes,
    - forces resources into markets that are unprepared and leads to sub-optimal utilisation of those resources, and
    - is used to justify increases in disposal levies beyond that required to address externalities and leads to significant economic impost;
- the uplift and application of regulations that have been developed in overseas jurisdictions to address circumstances relevant to those jurisdictions.

3.1 Towards Sustainable and Efficient Waste Management Policy

A more balanced approach to policy development should take into account the complex dimensions in which policy must be developed. It should be based on welfare maximising criteria that are the cornerstone of good practice policy making, in particular, overcoming market failures, such as disposal externalities, provision of public good and information failures. It should also implement the COAG principles for good practice regulation based on an assessment of risks, costs and potential benefits.

Such an approach to waste management policy would focus on:

- minimising the social, economic, environmental and health risks associated with waste management; and
- promoting the beneficial recovery of resources where there is value in so doing.

Within a risk-based and value-focused waste policy framework the aim is to identify opportunities for efficiency gains through the recovery and re-use of resources, but only where it will contribute to an improvement in overall economic efficiency, including avoiding external costs such as pollution.

Consistent with the aim of improving overall economic efficiency, decisions by business on re-use and waste disposal/management should be based on a balanced assessment of economic, social and environmental factors.

This approach to waste management would deliver sustainable waste management solutions, with a nationally consistent framework. And, importantly, with such a shift in the approach to policy, opportunities for business to contribute to broader resource management goals would be increased.

3.2 Addressing Market Failures

Justification for government intervention rests on the failure of markets to deliver outcomes consistent with social expectations. As policy instruments need to be designed to address the specific failures, their precise nature must be determined.

Markets will not perform well if they are not competitive, if public services distort them, if they give rise to externalities or if they suffer from information failures. The markets that generate and deal with waste exhibit all of these characteristics to some extent. The critical issue for government is to identify the problem clearly, consider whether intervention can improve matters, and then align policy instruments appropriately.

The historical focus of waste policy on disposal impacts is appropriate. Municipal waste collection and management grew out of the need to provide waste collection and disposal as a public good, and to prevent harm to health and the environment. Thus, traditional waste management was clearly addressing market failures.

The rationale for more recent waste policy attempts to pursue upstream benefits is more tenuous. Waste policy requires, in the first instance, a focus on the environmental impacts that arise specifically from the act of disposal of wastes. Generally, the most efficient policy instruments will be directly targeted at the issue.

In certain circumstances, the most efficient way of addressing a disposal issue, such as disposal/recycling of used lead-acid batteries or tyres, may be through an upstream measure, such as an extended producer responsibility instrument. However, such indirect policies need to be very carefully designed, considering the benefits and costs of alternative policy approaches.

It is envisaged that there will be few instances where waste policy may contribute to promoting increased efficiency in resource utilisation in markets. Even where environmental impacts associated with manufacturing using recyclate and resource residues are lower than manufacturing using virgin materials, effective pollution management policies (eg: pollution discharge fees) can effectively signal these benefits to manufacturers.

Similarly, waste management policy will rarely be an efficient means for improving natural resource conservation when a significant portion of the associated natural resources are destined for markets other than those involved in waste streams in Australia. Resources policy generally needs to be pursued within resource sectors.

Efficient policy responses will depend on the circumstances, the issue to be addressed, the failure to be corrected and the different types of waste issues to be managed. The critical issue for government is to identify the instances where economic efficiency is being compromised, and then align policy instruments appropriately. And multiple market failures generally require multiple interventions to maximise effectiveness and compliance efficiency – one instrument simply cannot internalise multiple failures.

3.3 Developing Efficient Policy Measures

Waste management policy is one of several policy platform areas available to government to ensure that our society achieves sustainable resource management.

To be effective and efficient, waste management policy should focus on delivering value, not arbitrary volume targets, to ensure outcomes which deliver sustainable waste management solutions based on environmental, economic and social criteria.

Waste management policy is overwhelmingly based on prescriptive, often poorly designed, regulation, despite the adoption of the COAG principles of good regulatory practice by all jurisdictions. This is already leading to economically inefficient and environmentally perverse outcomes. Current policy trends can be expected to exacerbate this.

The BRSD submits that the Productivity Commission should examine current Commonwealth, State and local government processes for developing waste policy and regulation. It should consider whether the design of the regulatory framework is as efficient and effective as possible in achieving government policy objectives.

Design of the regulatory frameworks can be evaluated against principles of good public policy:

- *Are policy objectives clear and consistent?*

  The first step to good policy is to define the problem to be solved, clearly identify the objectives, and to make sure they are sensible. Preferably they should not conflict, but if they do, the policy framework needs to find ways to reconcile them or to make trade offs.

- *Will the regulatory measures chosen achieve these objectives in the most efficient way?*

  In an ideal world, regulation should only be used where the benefits gained exceed the costs incurred, i.e. they will be both effective and efficient. The measures should be appropriate to the issue and the risks involved, and be the most efficient available. Where Commonwealth and State policies interact or overlap, systems should be designed to operate seamlessly, avoiding duplication, conflicts and inconsistencies.

- *When the waste policy will impact on business operations, have the relevant industry and economic agencies of government been involved?*

  Waste policy has been the preserve of environment agencies and local governments, with little if any input from economic and industry-related agencies. As waste management policy objectives have increasingly sought upstream benefits and impacted the way that firms conduct their businesses, the economic implications have also escalated. For all waste policies it is vital that waste management objectives be agreed on a whole-of-government basis. And if upstream benefits are to be pursued, then the economic and industry-related agencies should play a leading role.

There is increasing recognition that there is a need for more consistent policies between governments. This is one reason why the Commonwealth is now being asked to get involved in waste policy, an area that has largely been the preserve of state/territory and local governments.

However, seamless and consistent but poorly developed policy is not necessarily an improvement. The BRSD observation is that good policy process is often not followed in waste management. Objectives are often not clear and consistent. Alternative policy options are often not considered, and benefit-cost analysis is rarely or robustly conducted. There is often little analysis of the effectiveness or efficiency of policy measures in achieving objectives.

As the costs of waste management rise, the costs to the Australian economy, and to the competitiveness of Australian industry, of poor policy will escalate. The BRSD submits that all Australian governments, Commonwealth, State, territory and local, should renew their commitment to implement the COAG principles for good policy setting.

3.4 Performance- and Risk-Based Regulation

A key feature of the COAG regulatory principles is that prescriptive regulation (black-letter law) should be used only where it is necessary and effective. Waste policy

should be based on risk and should use the full suite of instruments available for contemporary policy making.

Increasingly, waste policies are being developed using innovative approaches, such as voluntary measures, co-regulatory schemes, extended producer responsibility, advance disposal fees and the like. However, the selection of targets for such policies does not appear to be closely related to environmental or health risks, but rather to criteria of more dubious validity, such as the volume of waste and desires to minimise volumes going to disposal.

'Voluntary' arrangements entered into under threat of punitive, high cost instruments are not, in the view of the BRSD, voluntary at all. Such arrangements constitute very poor policy process, as they are almost always non-transparent and poorly targeted at issues of real significance to the sustainable use of resources or safe waste disposal. Generally, they start with a policy instrument, or an industry target, rather than a valid environmental, economic or social waste problem. Sometimes, the instrument is inspired by an overseas measure that appeals to the regulators, regardless of its actual performance or the applicability of the circumstances to Australia.

The BRSD supports the use of innovative quasi-regulatory measures, but only where they are attacking valid problems, and where the cost of the measures is commensurate with the risks. In some instances, it appears that policy making has been turned on its head, with the solution being grasped before the problem has been clearly identified.

The BRSD would like to see waste disposal policy clearly based on objectives related to value and risk. To support this approach, the proposed framework identifies a number of 'dimensions' – economic, environmental, political, time, geographic, technology – that should be examined for each intervention to fully quantify the risks associated with the specific circumstances surrounding the need for intervention. A thorough examination of the dimensions will also alert policy makers to potential unintended consequences of a proposed intervention.

The regulatory system should be designed to achieve these public policy objectives effectively and efficiently using the following key criteria:

- √ the regulatory system should be as clear, transparent and simple as possible and be readily understood;
- √ criteria for compliance should be clear, consistent and measurable or otherwise objectively verifiable;
- √ the system should avoid complexity, duplication and inconsistent, conflicting or unnecessary elements;
- √ information required should be limited to what is necessary to achieve the objective; and
- √ the system should be designed to enable efficient and effective administration and compliance.

Although environmental protection has been at the heart of waste management for many years, regulation is still evolving and is subject to considerable uncertainty, particularly in relation to practical implementation issues. Key issues include:

- lack of clarity in objectives, standards and codes, including conflicting objectives and overlapping responsibilities among governments and agencies;
- prescriptive rather then performance based regulation;
- regulation not proportionate to the risk;
- rules not based on good science;
- standards set at levels or in ways that cannot be measured or monitored;
- long-term regulatory use of draft standards, codes and guidelines;
- cost shifting from Government to companies; and
- inappropriate or excessive information requirements.

These issues have serious implications for the efficiency and effectiveness of implementation, administration and compliance throughout Australia's waste management system.

3.5 MAKING THE MOST OF RESOURCES AND SYNERGIES

Waste is not an absolute – it is a matter of value, place and time.

This statement, which was used earlier in this paper, becomes highly significant when considering resource utilisation efficiency within the business context, and a common failure in waste policy management that can hinder efficient use of materials.

The Support Documents accompanying the BRSD framework include a case study on the significant improvements in resource utilisation efficiency and creation of value that can be achieved through businesses trading by-products, that are no longer required by the seller, but have value and purpose for the buyer – "By-Product Synergies".

'By-product synergies'[6] develop in industrial clusters where one producer uses another's by-products or wastes (materials, water or energy) as inputs. Such synergy programs aim to maximise the net value from utilisation of resources, including achievement of environmental and social as well as economic objectives. Synergies may exist between related companies, and indeed, have influenced the product scope and organisation of firms for many years. More generally, however, they can arise among a wide range of industrial enterprises.

Facilities utilising synergies are generally located in the same area to minimise transport and storage costs and to enable perishable inputs such as heat and volatile materials to be used in real time. However, co-location is not a necessary condition for some by-product synergies where the value of the costs avoided and/or benefits can justify the transport costs.

[6] By-product synergies are one element of what is known as 'Industrial Symbiosis' that also includes supply synergies between manufacturers and input suppliers, and utility synergies involving shared use of utility infrastructure.

Instances at Kwinana and Gladstone are used to highlight what is possible. The Centre for Cleaner Production at Curtin University[3] has estimated that the Kwinana industrial synergies have delivered a wide range of benefits, including:

- Economic benefits:
  - $115 million estimated revenue generated annually,
  - $16 million estimated environmental cost avoided annually, and
  - $3.7 million estimated wages paid annually.
- Environmental benefits:
  - 72 GWh of electricity saved annually (equivalent to a 10 MW plant);
  - 377,000 tonnes CO_2 emissions avoided annually;
  - 11 million tonne-km estimated transport cost avoided annually;
  - 6GL water consumption avoided annually; and
  - 260,000 tonnes landfill avoided annually.
- Social benefits
  - 67 permanent jobs created;
  - $6 million estimated company and income revenue annually;
  - $500,000 research funded annually; and
  - $110,000 community support.

Benefits such as these, can be subverted or prevented by waste policy systems that tag, or label, resource streams prematurely as wastes. Once a resource is labelled a waste, different sets of regulatory conditions come into play from those which apply in the manufacturing phase, such as:

- transport of the resources,
- trade of the materials between parties,
- handling and management controls, and
- planning controls that permit types of business activity.

For example:

- there are significantly more regulatory implications for a business dealing with "spent pickle liquor" than for a company buying and using "hydrochloric acid" in its manufacturing process; and
- a forestry company that decides to compost "woody materials" in lieu of manufacturing wood chips, would be unlikely to face the regulatory imposts facing a company planning to compost organic garden waste.

The label "waste" is retrospective in nature and is based on historical management of materials. As such it has an adverse impact on the extraction of remaining value from materials and resources. Allowing the "waste" label to remain attached to a material stream once new value and purpose have been ascribed to the material can condemn potentially value-creating activities to the scrap heap.

The label “waste” should only be applied to a material when it is finally disposed of by the present owner, and has no further value or purpose for the current or any other owner.

The BRSD believes that waste policy systems must be pro-active in recognising changes in process and technology that provide new opportunities for the way resources are managed and traded by business.

3.6 THE NEED FOR GOOD SCIENCE AND INFORMATION

Waste management is not generally seen as a knowledge-based industry, despite its size and the need for increasing technical sophistication.

The technical base of waste management and policy in Australia could be improved. The local governments and environmental agencies responsible are not well resourced, and there is little R&D activity in this area. As a result, they rely on overseas research, with little investigation of its applicability to Australia’s circumstances – our geology, hydrology, soils, and climate.

While Australia’s unique environment has been recognised as requiring special R&D effort in other environmental areas, little has been done for waste management. Given the size of the sector, its expected growth, coupled with the potential economic, environmental and social impacts from waste management, this neglect should not continue.

Furthermore, environment agencies do not appear to have good knowledge of technical advances in waste management, particularly in landfill technology, the major form of waste disposal in Australia. There is a need to enhance the skills and knowledge of those engaged in the waste management industry.

Better information is also needed to overcome current market failures that restrict the development of trade in industrial by-products and wastes. Developing these synergies can provide commercially viable means of reducing industrial wastes. The experience at Kwinana is that industries need to know what local demand there might be for their wastes and by-products, and which of their inputs might be able to be supplied from by-products of others. Improving this knowledge appears to be a necessary condition to develop markets for industrial wastes and the synergies that can extract the greatest value from resources used by industry, and thereby reduce waste.

Experience shows that simply establishing a website where potential buyers and sellers list their offers and requirements is unlikely to be sufficient. Harnessing synergies cannot be done opportunistically. It requires the development of relationships and alliances among enterprises, based on understanding of each other’s production inputs, outputs and processes. Some infrastructure, such as pipelines, or changes to production processes, may also be required. Factory managers are focused more on their main production than on their waste products, so they need assistance in identifying and developing waste management alternatives. Knowledge brokers who can overcome all of these issues will be critical to success.

Improving public information about waste management is also critical to the development of more sustainable waste management and policies. Currently, little effort is being made to correct popular misconceptions about waste management,

such as those outlined previously. Sensationalising waste issues also misinforms the community and does not contribute to rational debate. This practice of misinforming or under-informing the community about waste issues should cease.

Governments and waste managers may be reluctant to discuss sensitive waste issues, such as those relating to hazardous materials or pollution. However, not talking about the issues will not fix the problems. Greater transparency is more likely to engender rational discussion of risks and alternatives as well as commitment of appropriate resources to solving waste management problems.

3.7 Community Values and Preferences

Recognising that the aspirations of the community represent a significant input to government for waste management policy, the knowledge base of the community must be changed before the policy framework proposed in this submission can be effectively implemented. For example, moving to a value-based system from the current approach that is driven by waste minimisation will not be realistic until community belief in the concept of zero waste has been changed.

For sensible input to waste management policy, the BRSD believes that the aspirations of the community must be well informed. And those expectations must be determined properly, not just assumed and asserted, particularly by vested interests.

Leadership and effective consultation by government and business is required to appropriately inform the community, to provide the lines of logic and to establish the evidence base that will inform the community and allow sensible aspirations to evolve.

4. ROLES FOR GOVERNMENT AND BUSINESS

Waste management used to be the preserve of local government and industry. As the scale of metropolitan waste disposal has increased, it has outgrown the capacity of all but the largest councils to manage alone. Accordingly, State Governments have become increasingly involved, as policy makers, regulators and, in some instances, as facility owners and/or operators.

Today we are faced with some current and some emerging waste management issues that go beyond the capacity of State Governments to manage and control. In these instances, for effective policy interventions to be developed and implemented, a nationally consistent and nationally focused approach is needed.

The desire to involve industry in product stewardship schemes is one example that requires action at the national level, and has stimulated the calls for Australian Government involvement. This Inquiry by the Productivity Commission provides an opportunity to re-examine the appropriate roles of the various levels of government and the relationships between governments and the business sector.

The Inquiry also affords an opportunity to recommend a framework within which efficient and effective waste management policy can be developed and implemented with a national consistent approach.

The BRSD will be highly supportive of recommendations from the Productivity Commission Inquiry that promote such an approach to waste management policy.

4.1 Roles for the Business Sector

The business sector is involved in the creation, trading, management and disposal of a significant amount of waste, without involvement by government.

To the maximum extent possible, government policy and regulation should be targeted at creating and maintaining an environment that facilitates this activity, recognising the interconnected goals of economic growth, social advancement and environmental protection.

The business sector has a clear advocacy function to play in the delivery of sustainable waste management policy in Australia. To this end, key roles for the business community in future national waste management policy initiatives include:

- involvement in consultation on policy development both as individual companies and through industry associations;
- taking the opportunity to communicate with stakeholders and local communities on issues of waste management which reflect the value-based approach.
- providing examples of good practice policy to highlight the functionality of the framework;
- promoting the benefits of the framework to business within business circles and along supply chains;
- ensuring that waste is managed in a responsible manner;

- critically reviewing benefit-cost analyses used by government to support policy initiatives;
- being pro-active in the development of new policy initiatives, not passively waiting for and then accepting policy initiatives;
- adopting clearer corporate messages that convey the shift to value-based policy, and not mirroring the mantra of government in terms of a volume fixation with waste, the waste hierarchy, and the view that waste is automatically bad.

4.2 Roles for the Australian Government

In the face of new waste management challenges, the roles of governments around Australia are being re-examined. Should the Commonwealth take greater responsibility in this area that has traditionally been the preserve of local and State/Territory governments? The BRSD submits that the principle of subsidiarity should determine any reallocation of responsibilities, i.e. responsibility should fall where it will be most effectively and efficiently exercised.

There are certain things that only the Australian Government can do. Dealing with international trade in wastes is one area that has always been a Commonwealth responsibility. Constitutional limitations mean that certain product stewardship arrangements, such as legislative support for compulsory levies (such as for used oil) require Commonwealth action, similar to its role with agricultural R&D levies. If new schemes are to be successfully introduced, the Commonwealth must provide the institutional framework.

The Commonwealth has also been active in brokering product stewardship and extended producer responsibility schemes more generally. Such schemes are unlikely to be effective if implemented by individual States. These sorts of schemes can affect the operations and viability of industries. The BRSD submits that they should only be developed when the net benefits to sustainability are clear, and such schemes are the most efficient and effective means of achieving those benefits.

In examining appropriate roles for the Commonwealth, it is useful to consider its roles in allied fields that are constitutionally the province of the States, such as agriculture and natural resource management. Research has been an important Commonwealth function in these areas because of the public good nature of information, and the relative financial strength of the Commonwealth vis-à-vis the States and local government.

Inadequate information and research are issues in a number of areas of waste management. Support from a Commonwealth funded Cooperative Research Centre has been instrumental in achieving the gains in resource utilisation in Kwinana. Otherwise, there is relatively little research into waste management technology in Australia. This leads to reliance on overseas technologies that may not be applicable to Australian conditions. Little independent, dispassionate research is available to help governments make decisions about important policy issues and choice of waste management techniques.

The BRSD considers that the Commonwealth could make a significant contribution to improving the information base for waste management decisions if it were to fund additional research in this area. The Commonwealth already funds environmental

research, but primarily in relation to “green” issues, such as biodiversity conservation. Waste management is not just about environmental protection, however. It relates to resource utilisation and in some circumstances, can be a vehicle for environmental remediation. Funding research into waste management does not fit neatly into the current research funding streams.

Above all, the Commonwealth should use its position of leadership as Chair of the Environment and Heritage Ministerial Council, to improve the standards of policy-making and regulation in the field of waste management. The current waste minimisation objective should be replaced by a value and risk based framework as outlined in this submission. The Ministerial Council should insist that all jurisdictions fulfil their commitments to the COAG Regulatory Principles when developing waste policies.

5. IN SUMMARY

The submission is very clear that the primary purpose for waste management policy is to internalise the externalities associated with inappropriate disposal of unwanted resources. And it goes on to suggest, that while there may be situations in waste management policy intervention that warrant intervention higher up the sustainable resource management value chain, these will be limited in frequency and almost always on an exception basis.

The submission highlights a disturbing trend over the last two decades for waste management policy interventions to be attempting to rectify issues higher up the Sustainable Resource Management value chain, with less than optimal outcomes in terms of economic efficiency.

The BRSD is very concerned at the escalating cost of managing waste in Australia. Accordingly the BRSD encourages the Productivity Commission to stress the significance of transparency in process and adherence to existing policy formulation principles, to ensure that efficient and sustainable resource utilisation is achieved in our society.

The BRSD recommends that, in the course of its current Inquiry into Waste Generation and Resource Efficiency, the Productivity Commission undertake research on the impacts on efficient resource allocation of the following waste management related interventions to highlight inefficiencies with the current approach to waste management policy:

- regulatory impediments to more efficient utilisation of industrial wastes and by-products;
- waste disposal levies;
- the National Packaging Covenant;
- container deposit legislation; and
- product stewardship initiatives that are under consideration.

Accompanying this submission is a draft of the policy framework that the BRSD intends recommending to the Australian Government for broad implementation and application. The BRSD would welcome review and analysis of that framework by the Productivity Commission as a part of its Inquiry into Waste Generation and Resource Efficiency, and endorsement of this framework, if such is seen fit by the Commission.

A PROPOSED NATIONAL WASTE MANAGEMENT POLICY FRAMEWORK

1. Introduction

Over the last two decades, there has been a progressive shift in the focus of waste management policy away from environmental issues associated with waste disposal, towards pursuit of benefits associated with resource conservation and resource utilisation.

This shift in policy focus has resulted in some initiatives and interventions that have been poorly targeted and have not maximised the gains that might have been achieved through efficient intervention.

The economic and productivity imposts that can arise from sub-optimal interventions may materialise as social, environmental or financial impacts, and can be avoided if good practice policy making process is followed (see Box 1).

> ***Box 1:*** *The dead weight cost of the recent increase in the NSW waste disposal levy is estimated at $260 million on the NSW economy in present value terms. (Ref: case study on the disposal levy).*

This document presents a national framework that is intended to inform and guide the formulation and implementation of effective and efficient policy for waste management at all levels of government.

In this regard:

- the term "*waste*" is used to describe resources that cease to have value or purpose in the hands of the current owner,
- these resources may be solid, liquid, gaseous and/or hazardous in nature, and
- waste management is intended to cover activities associated with handling, processing and disposing of waste materials.

The policy framework is presented in four components:

- Context — waste policy is but one of several policy platform areas available to government to ensure that our society achieves ***Sustainable Resource Management;***
- Purpose — waste management policy should focus on delivering value, not arbitrary volume targets, to ensure outcomes which deliver ***Sustainable Waste Management Solutions*** based on environmental, economic and social criteria;
- Process — effective and efficient policy requires discipline of process and clarity of purpose following the elements of ***Good Practice Policy Making***;
- Dimensions — a ***Risk-Benefit Approach to Waste Management Policy*** should be based on a number of dimensions and should recognise the relative significance of the various dimensions in any specific set of circumstances.

Implementation of the framework in developing waste management policy involves:

- the pursuit of good practice policy making,
- guided by a drive to create value,
- tested with a risk-benefit analysis of the circumstances,
- all conducted within the context of sustainable resource management.

Following discussion on the framework components, a section is presented bringing together the critical issues relating to engagement of stakeholders. Many of the issues presented in the stakeholder engagement section appear in other parts of this document, but this separate compilation is considered necessary to highlight the role of effective stakeholder engagement, in efficient policy development and implementation.

To conclude presentation of this document, recommendations for moving forward with the introduction and implementation of this national framework for waste management policy are presented.

In support of the arguments outlined in this document, a further set of documents has been prepared reviewing key matters that provide context and detail to the views and issues covered by the framework, along with case studies that highlight successful and less than successful policy interventions in waste management in Australia. These support documents are presented as a separate compilation.

2. *The Context* – Sustainable Resource Management

Sustainable resource management relates to the management of resources through their full life cycle, over three distinct phases:

- ***Sustainable Resource Conservation*** – the sustainable level of exploitation of the nations resources.
- ***Sustainable Resource Use*** – the efficient allocation and use of resources.
- ***Sustainable Waste Management*** – the safe and effective handling, processing and disposal of waste materials.

The mechanisms for managing the flow and utilisation of resources through the full life cycle are markets where:

- value is ascribed to resources,
- the shape and form of resources is changed,
- valuable products are created and exchanged, and
- residues with no further use, value or purpose are disposed (see Box 2).

> ***Box 2:*** *The intrinsic and potential value of resources can be destroyed if they become tagged or labelled a waste prematurely. (Ref: case study on by-product synergies).*

To guide sustainable resource management, governments may implement policies that cover instances where market mechanisms cannot fully cater for the aspirations of society in respect of sustainable resource management – i.e. instances of market failure.

The fundamental objective of waste management policy is to address market failures associated with the generation and improper disposal of wastes. This is often referred to as "internalising the externalities" or ensuring that market prices truly reflect all costs associated with proper disposal of wastes.

However, the shift in policy focus over the last two decades away from environmental issues associated with waste disposal, has seen instances where waste management policy has been justified on the mistaken rationale of delivering upstream resource benefits.

Waste management policies justified on intended upstream benefits in resource conservation and resource allocation and use are generally not appropriate, because:

- market signals generated by interventions lower down in the sustainable resource management value chain often will not reach and/or influence production processes and resource managers,
- such interventions will be a poor surrogate to more direct interventions in resource sectors or processing markets - a well recognised principle for policy intervention in markets is that interventions should be targeted as closely to the point of market failure as possible to maximise the beneficial impact (see Box 3), and
- inappropriate interventions higher up the sustainable resource management value chain can result in significant unintended downstream cost imposts.

> ***Box 3:*** *Inappropriate downstream regulation can impede sustainable, efficient and effective utilisation of industrial by-products and wastes (Ref: see case study on by-product synergies).*

Good practice policy making is acknowledged as the preferred approach to support correctly and effectively targeted policy interventions. This document highlights economic, social and environmental benefits of consistent adherence to good practice policy making principles in respect of waste management policy

In Support Document 1, some background notes tracing the shift in focus of waste management policy are presented in more detail.

3. *The Purpose* – A Shift from Volume to Value for Sustainable Waste Management Solutions

The community's aspiration for sustainability has often been interpreted as 'doing more with less'. This has prompted a drive to promote the technical efficiency of resource use. To this end, waste policy has been broadened from the management of disposal externalities to drive greater technical efficiencies in materials use, reuse and recycling in an attempt to deliver benefits higher up the sustainable resource management value chain.

However the pursuit of technical efficiency in itself cannot ensure sustainable resource management – indeed in some instances it may have perverse impacts on the wellbeing of current and future generations unless all elements of sustainability are comprehensively addressed.

A more balanced approach to policy development, taking into account the complex dimensions in which policy must be developed, and based on welfare maximising criteria that are the cornerstone of good practice policy making, is one that is focussed on an assessment of risks, costs and potential benefits.

A risk-benefit approach to waste management policy would focus on:

- minimising the social, economic, environmental and health risks associated with waste management; and
- promoting the beneficial recovery of resources where there is value in so doing.

This approach would deliver sustainable waste management solutions. And, importantly, opportunities for business to contribute to broader resource management goals would be more targeted.

Increasingly government is turning to the business community seeking greater engagement in waste management activities. But the current unchecked drive for technical efficiencies (doing more with less) means that such engagement by business is highly unlikely since the costs and obligations frequently outweigh any potential value recovery.

However, if a shift can be made to a risk-benefit approach which is ***value-focused***, then increased interest and participation by business is likely.

To achieve this shift it is essential to move from the current paradigm of "*Waste Minimisation*" to one of "*Value Recovery*", where the policy focus is on value not volume (see Box 4). This shift would be promoted by policies that reduce barriers to efficient markets and allow business to identify opportunities for value recovery, taking into account:

- demand in end use markets,
- handling and reprocessing economics that identify the resources suitable for removal from waste streams, and
- fit for purpose environmental controls.

> ***Box 4:*** *Both government and business want the recovered organics industry to grow – but government wants to drive change through waste minimisation ideology, while industry wants to drive growth through market development and value recovery (Ref: see case study on organics).*

To facilitate policy formulation in such circumstances, four guiding principles are relevant.

Principle 1: ***Increasing economic efficiency will improve the wellbeing and living standards of the community and support sustainable solutions.***

Simple pursuit of material minimization, or doing more with less, may involve additional capital, energy, labour as well as other inputs and emissions that increase overall production costs and may not lead to overall economic efficiency.

Technical efficiency is only one component of *economic efficiency.* Pursuit of technical efficiency should not be at the expense of overall economic efficiency or value from a whole of community perspective.

Within a value-focused waste policy framework the aim is to identify opportunities for efficiency gains through the recovery and re-use of resources, but only where it will contribute to an improvement in overall economic efficiency.

Consistent with the aim of improving overall economic efficiency, decisions by business on re-use and waste disposal/management will be based on a balanced assessment of economic, social and environmental factors.

Principle 2: ***Waste policy should primarily focus on downstream waste disposal impacts***

The historical focus of waste policy on disposal impacts is appropriate. The rationale for waste policy to pursue upstream benefits is tenuous at best. Waste policy requires, in the first instance, a focus on the environmental risks and impacts that arise specifically from the act of disposal of wastes (see Box 5).

Efficient policy responses will depend on the circumstances, the issue to be addressed, the failure to be corrected and the different types of waste disposal impacts to be managed.

> ***Box 5:*** *A strong focus on the risk of detrimental impacts from inappropriate disposal of used oil was a significant factor in a successful intervention initiative (Ref: see case study on used oil).*

Principle 3: ***Interventions to promote resource efficiency need to be aligned with market failures and directed by the appropriate agencies.***

The critical issue for Government is to identify the instances where economic efficiency is being compromised, and then align policy instruments appropriately. Traditional examples of this targeted intervention across the three stages of sustainable resource management include:

- ***Upstream conservation of resources*** – Governments have been active in developing resources policy consistent with sustainability principles and the sound stewardship of Australia's resource base. This has led to major policy reform programs applicable to our forests, fisheries, freshwater and marine resources, climate change, land conservation, and mining, etc;
- **Upstream resource utilisation** – Governments have been active with a range of micro-economic reforms that remove barriers to the free operation of markets, and with developing appropriate regulatory and market infrastructure to ensure productive and allocative efficiency within markets. Part of this program has been the development of

environmental policies to manage environmental risks and impacts arising from normal market activity.

- ***Downstream waste disposal impacts*** – Governments have continued to intervene in markets to promote the efficient handling, management and disposal of wastes and to prevent inappropriate disposal such as dumping or littering.

In these traditional areas of policy intervention, the appropriate agencies of government formulate and implement the policies. The environment agencies have appropriately taken the lead in the areas of managing environmental impacts arising from market activity and in regard to waste disposal policy.

In the event that upstream market failures continue to impact the efficient and sustainable extraction and use of resources, then in the first instance policy responses should, to the maximum extent possible, be incorporated into existing policy processes, led by the relevant agencies of government.

There may however, be instances where resource efficiency goals cannot be wholly achieved through upstream interventions. In these instances, the potential for targeted and complementary downstream interventions may be considered. For example, the recovery of materials from waste streams -

- may lessen pressures on the exploitation of virgin resources and in doing so promote more sustainable levels of resource use; and
- may reduce environmental impacts associated with production processes where processes using recovered resources generate less impacts than those using virgin materials.

Equally, there may be instances where downstream impacts associated with waste disposal may be best managed through upstream interventions. For example, direct (downstream) interventions cannot be applied to an illegal activity such as littering or dumping (beyond enforcement actions), and so a policy intervention earlier in the supply chain may be warranted, such as through product stewardship approaches (see Box 6).

Box 6: *Reducing disposal impacts from tyres required a stewardship approach and upstream intervention. Effective engagement of stakeholders early in the policy development process can bring parties on-board with co-operative approaches and supported solutions. (Ref: see case study on used tyres).*

It is envisaged that there will be few instances where waste policy may contribute to promoting increased efficiency in resource utilisation in markets. Even where environmental impacts associated with manufacturing using recyclate and resource residues are lower than manufacturing using virgin materials, effective pollution management policies (eg: pollution discharge fees) can clearly signal these benefits to manufacturers.

While product stewardship programs at this stage of the sustainable resource management value chain may be appropriate, this should only be on the grounds of managing downstream disposal externalities, not as an alternative to industrial greenhouse or air and water pollution control policies.

Instances where waste policies can usefully supplement resource conservation policy early in supply chains are likely to be very limited. This is due to the inability of market signals late in the

sustainable resource management value chain (eg: landfill levies) to reach and influence resource managers, due to supply leakages (imports and exports) and alternative resource consumption avenues, such as waste to energy, exporting of wastes or illegal disposal.

Principle 4: ***Waste management policy interventions must focus on sustainable solutions by identifying the specific environmental benefits being targeted, the costs expected, then demonstrating how these will be achieved.***

This principle is already a feature of good practice policy agreed by Australian Governments. However waste policy development has rated poorly in this regard. Particular considerations are:

- regulatory assessments should seek to quantify targeted benefits in physical terms ahead of any valuation of them;
- policy interventions should be based on assessment of the dimensions that are relevant to the particular circumstances of any application;
- the costs of policy interventions should be fully considered; and
- the net benefits of an intervention need to be demonstrated.

In Support Document 2, these principles are discussed in more detail.

4. *The Process* – Principles of Good Practice Policy Making

The shift in waste management policy focus away from disposal externalities towards pursuit of upstream benefits has resulted in some waste management policy initiatives and market interventions that have been poorly targeted and have not maximised the gains that might have been achieved through intervention.

The imposts that arise from policy shortcomings may have been avoided if good practice policy making process had been followed.

Good practice policy making involves a number of elements that bring discipline of process and assist in maintaining clarity of purpose clearly linked to outcomes – aspects that appear to be missing in much of the current-day approach to waste management policy formulation.

The elements of good practice policy making, along with requirements for ongoing policy review, have been formally recognised by Australian Governments and are reflected in a number of guidelines and requirements, such as for regulatory impact statements, at both Commonwealth and State levels.

The elements have also been confirmed through the Council of Australian Governments' *Principles and Guidelines for National Standard Setting and Regulatory Action by Ministerial Councils and Standard-setting Bodies* (COAG 2004) and internationally (see for example OECD 1997).

In economies such as Australia, markets provide an efficient means for allocating resources and organising the production of goods and services. Price mechanisms within these markets can effectively ration scarce resources and provide incentives for the development of more efficient practices. However, for a range of reasons, markets can fail to deliver outcomes in sustainable resource management that are consistent with social aspirations, and appropriate intervention sometimes becomes warranted.

Environmental degradation has long been recognised a classic area of market failure in resource management where targeted intervention by government may greatly increase economic and social welfare. However, excessive, inefficient or inappropriate regulation of environmental impacts has the potential to generate economic costs of its own, by delaying or preventing beneficial economic activity or imposing compliance costs that are not offset by wider benefits (see Box 7).

> ***Box 7:*** *When interventions exceed their intended purpose, unintended consequences multiply the cost to the economy. (Ref: see case study on disposal levy).*

The challenge for policy makers is to find the right balance between regulatory costs and benefits. The systematic pursuit of the recognised elements of good practice policy making will identify the opportunities for improving social and environmental welfare and support a balance between regulatory costs and benefits.

The elements of good practice policy making assist policy makers to identify when and how markets are failing, so that policy intervention can be targeted to address these failures and deliver required outcomes.

The nine elements of good practice policy making are:

- ***Clarify policy objectives*** – identify the problem to be addressed and articulate the objectives to be achieved.
- ***Identify underlying market failures*** – identify the nature and source of the market failure to be addressed and outline the community aspirations that are not being satisfied.
- ***Align policy instruments with market failures*** – identify the appropriate policy instrument to be applied to address the specific market failure.
- ***Target policy instruments*** – identify where the market failure is occurring in the resource management value chain and the appropriate point where the policy instrument will be applied.
- ***Assess the benefits and costs of alternative intervention options and targets*** – examine the social and economic tradeoffs of promoting environmental improvements within a benefit-cost analysis framework that compares various options for intervention and non-intervention. Where policy interventions are targeted at reducing risks to the environment or human health, risk analysis should be incorporated into benefit-cost assessments.
- ***Identify the incidence of costs and benefits across stakeholders*** – identify those stakeholders who will incur the cost of the intervention and those who will benefit from the intervention.
- ***Engage the stakeholders*** – throughout the process of policy development and implementation, engagement of stakeholders and impartial advisors can support appropriately targeted policy; and once policy is implemented, on-going engagement with stakeholders will build stakeholder buy-in.
- ***Resource the implementation*** – the quality and efficacy of new intervention measures will depend significantly on the quality and capacity of the resources allocated to both development and implementation of the intervention. With waste management policy becoming more complex, potentially more impacting, and being developed and implemented by all three levels of government, it is essential that responsibilities for the supply of adequate resources does not become a victim of inter-government issues.
- ***Review instrument performance and refine*** – intervention measures should be monitored for amendment or removal to ensure the intervention remains well targeted and justified in changing circumstances (see Box 8). Genuine attempts, rather than passively 'rolling-over' regulations, are needed in assessing instrument performance, discussing reform options with stakeholders and actively looking to refine instrument settings.

Box 8: *Incremental policy development with regular review and modification maintains contemporary policy and stakeholder commitment (Ref: see case study on used oil).*

The shift in waste management policy focus away from disposal externalities towards pursuit of upstream benefits has not occurred within a policy making framework that is consistent with these elements of good practice policy making. This has resulted in some policy initiatives and market interventions that have been poorly targeted, that have not delivered the intended outcomes, and possibly imposing greater cost on the economy than the potential benefits they were intended to deliver.

In Support Document 3, the elements of good practice policy making are discussed in more detail, while in Support Document 4 some of the issues surrounding the misalignment of current waste management policy with good practice policy making are presented.

The BRSD recognises that significant improvements in the management of downstream externalities, especially in relation to landfill sitting and operations, have been realised through sound regulatory interventions. The BRSD is also supportive of the move to an increasing use of market-based policy instruments, as these instruments promote innovation, efficiency and drive down industry compliance costs. Market-based policy instruments do this through creating value in the marketplace, and through this value, the greatest gains in waste management policy intervention are likely.

For this reason, the case studies presented focus on market-based policy interventions. They are organized in four documents:

- Support Document 5 – case studies on used oil and tyres illustrate policy interventions that have (or will) resulted in positive outcomes;

- Support Document 6 – case studies on recycled organics and the NSW landfill levy illustrate policy interventions that have resulted in negative outcomes;

- Support Document 7 – case studies on lead-acid batteries and synergistic use of industrial wastes illustrate where there is the possibility for future value enhancing interventions; and

- Support Document 8 – a case study on lead solder, which illustrates issues associated with implementing policy interventions based on policies in overseas jurisdictions.

With an increasing interest by Governments in product stewardship approaches, the case studies demonstrate where this type of market-based policy intervention will work well (used oil and tyres), where its merits will need to be demonstrated ahead of establishing any stewardship arrangements (lead-acid batteries), and where such arrangements may appear attractive based on overseas experiences but are unlikely to have merit in the Australian context (electrical products).

The complex nature of policy interventions is such that even within one policy instrument there may be elements which are less than satisfactory, even though the thrust and general purpose of the instrument is considered to be valid and broadly successful – and visa versa. For example, in the used oil case study, the instrument is considered to be a good example of well-developed and implemented policy; however, the variable benefit schedule for recycling activities is considered to have some drawbacks in that the schedule reflects hierarchical concepts of resource recovery over disposal, a decision that should generally be left for markets to determine.

Therefore, in putting forward the selected case studies, the BRSD is using these for illustrative purposes to demonstrate the benefits of adherence to the broad principles of policy development.

Collectively the case studies demonstrate that by adhering to good practice policy principles, good interventions can be crafted but that universal application of any particular approach is unlikely.

5. The Dimensions – A Risk-Benefit Approach to Waste Management Policy

Waste management policy is formulated within a complex context of social, political, environmental and economic circumstances. Whilst the elements of good practice policy making provide discipline of process and clarity of purpose to policy formulation, the benefit cost analysis process will not necessarily cover all of the dimensions that inform decision making.

The external dimensions that form the contextual settings can provide a foundation for a risk-benefit approach to formulation and evaluation of waste management policy.

The external dimensions provide a "check list" for policy makers that supports development of policy tailored to the specific circumstances that apply in the domain within which the policy is to be implemented. For example, in determining the level and type of environmental regulation appropriate in Australia, the decisions should reflect the country's own environmental needs and objectives, rather than the adoption of regulations developed and applied elsewhere, where different circumstances exist.

Typical of the external dimensions that should inform waste management policy and provide the basis for risk-benefit assessments are:

- ***Economic*** – markets within which resources are traded may not be conditioned to accommodate resources recovered from waste streams; intervention measures should avoid supply-push in the absence of demand-pull.
- ***Environmental*** – the condition of the receiving environment will significantly determine its capacity to accommodate discharges; intervention measures to limit discharges should be cognisant of the discharge load and the capacity of the receiving environment to carry that load (see Box 9).
- ***Social*** – the aspirations of the community will form a significant driver for waste management policy; interventions should respond to evidence-based rather than popular aspirations and should seek to inform the community as to the true benefits and costs of reforms and the ability of those reforms to drive sustainable solutions, which make the best use of available resources.
- ***Political*** – tradeoffs between national wealth, natural capital and social justice cannot be assumed at the bureaucratic level; interventions that involve distributional judgements should be made at the political level.
- ***Time*** – the imperative for action in waste management policy will relate to the imminence of potential harm; policy intervention to accommodate waste disposal externalities should be cognisant of time horizons for both the environment and society involved.
- ***Geographic*** – blanket policy implementation across widely differing or separated geographic circumstances is not productive; interventions for waste management policy should be cognisant of the geographical circumstances prevailing where those policies will be implemented.
- ***Technology*** – the ability of markets to respond will depend on the availability and alignment of appropriate technology; waste management policy interventions should be informed by the availability and practicality of suitable technologies to deliver the intended outcomes.

> ***Box 9:*** *Lack of data should not be an excuse for not considering intervention. An incremental approach, with monitoring, feedback and on-going adjustment can work. (Ref: see case study on used oil).*

All dimensions need to be considered when assessing impacts associated with policy intervention for waste management. The weighting applied to the individual dimensions will depend on the circumstances surrounding the need for policy interventions to be developed and implemented. In this respect, the following may guide that weighting:

- sustainable resource management outcomes will rely on detailed consideration and costing of the risk/benefits of the three primary welfare and sustainability dimensions – economic, environmental and social,
- the political sensitivity of many waste and resource management issues will necessitate consideration of the political implication of interventions, and
- the dimensions of time, geographic and technology will have varying influence, depending on the circumstances under consideration for intervention and allow for consideration of trade-offs between the primary welfare criteria.

In Support Document 9, these dimensions for risk-benefit waste management policy are discussed in more detail.

6. Stakeholder Engagement

The aspirations of the community represent a significant input to government for waste management policy. However, for sensible input to waste management policy, the aspirations of the community must be balanced and informed. Leadership is required to appropriately inform the community, to provide the lines of logic and to establish the evidence base that will allow sensible aspirations to evolve.

At the same time, government is turning to the business community, seeking pro-active input and engagement in waste management initiatives for both industry related wastes and post-consumer wastes at the municipal level. This engagement will be enhanced when the business community is convinced that the thrust of the policy is focused on value and not volume – i.e. the beneficial recovery of resources rather than, for example, the arbitrary diversion of material from landfill.

The degree of buy-in by these stakeholder groups, and the value of that buy-in, will depend on the quality of information disseminated, the extent of consultation and the ability of government to move towards a transparent and balanced risk-benefit approach in policy formulation.

COAG (2004) cite public consultation as a critical part of any regulatory development process with the express intention of:

- giving interested parties a firm proposal to consider, and
- identifying stakeholders who will bear the cost, and those who will benefit, from the intervention.

The phases and processes through which stakeholder engagement may be achieved are multiple, and could include:

- development of the benefit-cost analysis,
- consultation on the regulatory impact statements,
- direct consultation with parties immediately affected,
- engagement of impartial advisors,
- policy review panels, and
- consultation with representative organisations.

Consultation should occur whenever regulatory action is being considered and a draft impact assessment statement is being prepared, with the reasonable expectation that this might provide valuable feedback on the risks, costs and benefits of regulation and on the impact assessment analysis generally. Consultation will also provide feedback on the likely level of support for proposed policy interventions.

The interventions should recognise the aspirations of those involved and seek to accommodate and inform those stakeholders so that they will drive sustainable solutions that make the best use of available resources.

Notwithstanding the consultation activities undertaken throughout the policy development process, poor communication of the intent and application of the intervention can undermine well-intended policy.

The risks associated with interventions that are not based on adequate stakeholder consultation and communication need to be carefully weighed before policy decisions are taken.

7. Recommendations for Moving Forward

Implementation of the national framework in developing waste management policy involves – the pursuit of good practice policy making, guided by a drive to create value, and tested with a risk-benefit analysis of the circumstances, all conducted within the context of sustainable resource management.

Notwithstanding national agreement on the principles of good practice policy making, and the foundation that a risk-based assessment of policy can provide, there will be instances where waste-related policy decisions are made on a less balanced and complete set of parameters. Recognition that such decisions will occasionally be made does not diminish the significance of the framework or the value of the processes proposed. Indeed, in such circumstances, full analysis of such intended interventions via this framework will provide early warning on the challenges to be addressed in the implementation phase and the potential for unintended consequences if the intervention proceeds.

Five steps are proposed for moving forward with implementation of this framework for waste management policy:

- reaffirm policy objectives,
- confirm the evidence base,
- engage the stakeholders,
- demonstrate efficacy, and
- implement widely.

Reaffirm policy objectives – this document presents a case for changing the way waste management policy is developed and implemented in Australia; and a framework that can beneficially guide policy makers when developing market interventions relating to waste management initiatives.

Central to the framework is that waste policy, in the first instance, should focus on the environmental impacts that arise specifically from the act of waste disposal. This policy objective needs to be reaffirmed across governments and agencies within governments.

The rationale for using waste policy interventions to promote upstream resource conservation and utilisation benefits must be critically examined prior to any continued support. Generalised life-cycle assessments are not sufficient for this purpose. The limited opportunities for waste policy interventions to promote upstream benefits need to be identified from the outset, demonstrating;

- the priority Australian resources of concern;
- the extent to which current resources and industry policies have failed to ensure sustainable resource use;
- the extent to which a resource signal applied late in supply chains can be transmitted to upstream resource managers; and,

- the efficiency of achieving the upstream objectives through downstream interventions *relative* to alternative interventions or policy modifications that could be pursued more directly upstream.

Confirm the Evidence Base – to give weight to the need for change in the way waste management policy is formulated and implemented, and to secure broad involvement across all agencies of government, it is essential that the evidence base of the impacts on economic productivity is assembled and presented.

Economic impacts associated with interventions such as:

- container deposit legislation (CDL),
- waste disposal levies,
- product stewardship schemes, and
- voluntary agreements with safety nets,

need to be carefully prepared, analysed and understood before they are implemented, if serious disruptions to sustainable resource management and the productive economy are to be avoided.

It is important that such analyses be undertaken from a national perspective, by people experienced in economic analyses, to better inform all stakeholders of the potential for unintended consequences from inappropriately formulated and/or targeted waste management policy.

Recognising the economic significance of inappropriate waste management policy interventions, the BRSD has recommended that, in the course of its current Inquiry into Waste Generation and Resource Efficiency, the Productivity Commission undertake research on the impacts on efficient resource allocation of the following waste management related interventions to highlight inefficiencies with the current approach to waste management policy:

- regulatory impediments to more efficient utilisation of industrial wastes and by-products;
- waste disposal levies;
- the National Packaging Covenant;
- container deposit legislation; and
- product stewardship initiatives that are under consideration.

Engage the Stakeholders – application of the framework presented in this document will involve multiple stakeholders from government, business and the community at large; and successful implementation of the framework will lead to improvements in sustainable resource management in this country.

In this respect, leadership is required to inform the community with an accuracy that permits sensible aspirations to lead the change process. Both government and the business community have a role to play in this communication role, and both should collaborate to deliver nationally consistent, effective and productive waste policy.

To secure commitment to, and successful finalisation of, the framework, all stakeholders must be effectively engaged in the debate and made aware of the benefits and dis-benefits that can arise from waste management policy interventions.

It is recommended that a structured process of consultation, led by both government and business, be implemented at a national level involving:

- workshops with key parties from government, business and the wider community to review the framework and provide input on its application;
- selected expert review panels convened to critically analyse the framework, the inputs from wide consultation, and the implications for society, and then to finalise the detail of the framework; and
- a national forum to present the framework, disseminate recommendations for moving forward with full implementation, and clearly articulate how the framework can be utilised in all jurisdictions.

Demonstrate Efficacy – prior to full implementation, pilot demonstration and assessment of the framework will be essential to build confidence in its application and the benefits that can be derived.

A number of current and emerging waste management issues will demand a national focus, and also present the potential for significant dis-benefits if poorly managed. Such issues are considered good potential targets for pilot testing of the framework.

It is recommended that a limited selection of nationally significant emerging waste management policy issues be used for pilot demonstration and assessment of the framework.

Implement Widely – development of the proposed framework has been non-specific in respect of the classes of wastes for which it may be applicable – solid, liquid, hazardous, gaseous etc; and both the stakeholder engagement and efficacy demonstration steps should be used as opportunities to test whether these bounds are meaningful within the context of a National Waste Management Policy Framework that is directed towards resource use efficiency.

Implementation of the framework in developing waste management policy involves – the pursuit of good practice policy making, guided by a drive to create value, and tested with a risk-benefit analysis of the circumstances, all conducted within the context of sustainable resource management. Implementation therefore requires a change in rigor, rather than a change in methodology, from the practices already endorsed.

At the conclusion of foregoing steps, it is recommended that the framework be endorsed nationally and promulgated across all jurisdictions involved in the formulation and implementation of waste management policy in Australia.

A NATIONAL WASTE MANAGEMENT POLICY FRAMEWORK

SUPPORT DOCUMENTS

1. Evolution of the Current Approach to Waste Management Policy
2. Shifting the Policy Focus to Value Rather than Volume
3. Principles of Public Policy for Environment Management
4. Alignment of Current Waste Policy with Good Practice Policy Principles
5. Case Studies with Positive Economic Impact
6. Case Studies with Negative Economic Impact
7. Case Studies Examining Potential Future Interventions
8. Case Study Examining the Application of Policy from Overseas Jurisdictions
9. Dimensions for Risk-Benefit Policy Development

SUPPORT DOCUMENT 1

EVOLUTION OF THE CURRENT APPROACH TO WASTE MANAGEMENT POLICY

A Focus for Waste Policy

Historically, public health was the key consideration for government in respect of managing wastes. The focus was on collection and removal of wastes from the immediate community and disposal at some distant location with the aim of protecting public health. Collection and removal was the primary objective and management of disposal sites a secondary consideration. This resulted in effective waste removal, but tips that were often poorly sited and generally operated with less than satisfactory environmental controls, led to a range of deleterious social and environmental impacts associated with the disposal of waste.

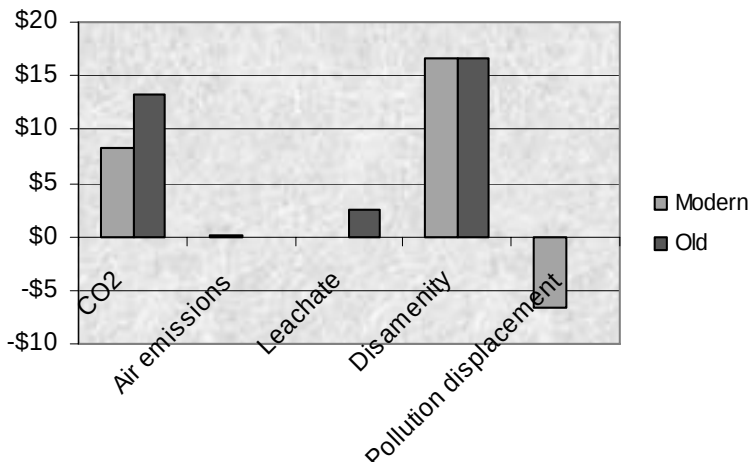
From the late 1970's, more attention was paid to landfill disposal and the focus of waste management policy appropriately became the externalities associated with poor disposal practices. Regulations were progressively increased and incentives introduced, leading to significant improvement in landfill operating and management practices and technologies with corresponding increases in landfill disposal cost.

In 2000, the European Commission investigated the impacts from landfill disposal of wastes[1]. The study was largely based on municipal waste generation and management practices in Europe, and used environmental impact values estimated in a US context.

Estimates were made of the environmental impacts for both old landfills and modern landfills, with the latter using advanced leachate collection and treatment plus landfill gas collection for electricity and heat generation.

The estimated cost of the impacts is shown at Figure 1[2] in terms of dollars per tonne of waste disposed.

Figure 1: European Landfill Externalities
($A / tonne waste)



The total economic impact per tonne of waste delivered to landfills in Europe at that time was estimated to be $A18 for modern landfills and $A33 old landfills.

1 European Commission (2000), A study on the economic valuation of environemental externalities from landfill disposal and incineration of waste.

2 Converted to $A using an exchange rate of $A = 0.6 Euro

In respect of the data at Figure 1, the following should be noted:

- due to the large populations and close settlement in Europe, a significant number of households can be expected to be directly impacted by each landfill, hence, the relatively large environmental cost attributed to disamenity impacts on local communities arising from factors such as noise, dust, litter, odour and vermin – a situation that is less likely to apply in the Australian context, and
- the overall impact identified for modern landfills in Europe is reduced by the estimated pollution displacement associated with reductions in (largely air) pollutants from coal-fired electricity and heat generation, by virtue of the energy capture at landfills – a situation that is likely to only apply at major metropolitan landfills in Australia.

In 2004, BDA Group (2004)[3] valued landfill environmental impacts in the Sydney metropolitan region, drawing on analysis undertaken by the NSW EPA in 1996. That assessment valued the impacts in the range of $A2 to $A14 per tonne of waste disposed, with greenhouse gas emissions representing around half the estimated impact in the case of the upper bound estimate.

With landfill levies in the metropolitan centres of Sydney, Melbourne and Adelaide now in excess of $A10 per tonne (and in the case of Sydney to rise to $56.70 by 2010-11), it is reasonable to conclude that residual landfill externalities have been fully priced into the cost of landfill disposal of waste. In fully efficient markets for sustainable resource management, this should represent full satisfaction of the public health and environmental care aspects of collecting and disposing of wastes.

A Change in Policy Focus

However, in the late-1980's the creation of waste became regarded as "wasteful" and a poor reflection on a consumption-driven society. Reducing waste disposal through recycling became a driving force across many communities in developed economies. Reducing waste was heralded as a further step in the move to sustainable economies.

In 2003, 9% of NSW people surveyed[4] saw waste management as the most important environmental issue in the State, while 19% saw it as one of the top two issues. At that time, around 95% of Australian households recycled waste and some 83% re-used wastes. Household surveys by the ABS showed high levels of recycling and re-use in all states and territories, with the levels of recycling and re-use increasing over time[5].

Communities were keen to embrace broader sustainability practices, and waste reduction was seen as a material way this could be done at an individual and household level with opportunities for everyone to contribute. The mantra "think global, act local" had real relevance for the community when it came to waste and the environment.

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3 BDA Group (2004), Analysis of levies and financial instruments in relation to Waste Management, report to Zero Waste South Australia

4 NSW Department of Environment and Conservation (2003), Who Cares about the Environment in 2003, a survey of NSW people's environmental knowledge, attitudes and behaviour.

5 ABS (2003), Environmental Issues: People's Views and Practices (Cat # 4602.0)

Such community aspirations encouraged governments to broaden the rationale behind waste policy goals, beyond disposal externalities to include upstream life-cycle impacts associated with waste materials.

BDA Group (2004) canvassed a number of studies of potential upstream benefits. The most comprehensive was undertaken by Nolan ITU and RMIT (2003)[6], building on a study by SKM (2003)[7] that investigated options for reducing municipal, construction and commercial solid waste streams using life-cycle assessment as the evaluation tool.

The life-cycle assessment drew on environmental damage costs developed in an earlier study on kerbside recycling[8]. Based on those values, it was estimated that for each tonne of waste diverted from landfill, an environmental benefit of between $A106 and $A182 was realised[9], comprising:

- air emissions - 46%,
- resource conservations - 28%,
- greenhouse gases - 16%, and
- water emissions - 10%.

With the support of such data, waste policy moved further from a focus on minimising harm to the environment through improper disposal of wastes, to one of minimising waste to landfills. A direct result of this shift in focus is that two principles have now been adopted by most State and Territory Governments as the driving rationale for waste policy, namely:

- the adoption of a 'waste hierarchy' ideology – where reducing consumption is deemed to be preferable to waste re-use and recycling which in turn are preferable to energy recovery and waste disposal; and
- the setting of targets for the amount of waste going to landfills, with a broader vision of moving towards zero waste to landfill.

One of the earliest targets set was in 1992 when a national per capita waste reduction target of 50% by the year 2000 was adopted by ANZECC. This was then followed by other targets on a jurisdiction basis in the following years.

A range of policy instruments have been pursued in the various jurisdictions to achieve such targets and promote reductions in waste disposed to landfill. Typical of the measures introduced are:

- banning of some wastes from landfill disposal,
- subsidising the collection and processing of kerbside recyclables,

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6 Nolan ITU and RMIT (2003)Life cycle assessment of waste and resource recovery options

7 SKM (2003), An examination of the economic, environemntal and social costs and benefits of strategic waste management options

8 Nolan ITU and SKM (2001), Independent assessment of kerbside recycling in Australia, report to the National Packaging Covenant Council

9 The BRSD neither endorses nor necessarily agrees with the data from these reports, but uses that data here to illustrate how it was used to support shifts in waste management policy focus.

- use of advance disposal fees (container deposit legislation),
- introduction of landfill (disposal) levies, and
- initiatives seeking to commit producers of goods to some degree of post-consumer responsibility for wastes created and disposed (extended producer responsibility or product stewardship).

By 2004, some of these instruments had ceased to reflect the fundamental objective of waste management policy, and had become basic revenue generating tools for government, without materially impacting on the amount of waste generated or disposed. BDA Group (2004) commented on the NSW experience with the evolution of waste policy and the landfill levy in that state:

"The levy was originally introduced to internalise the environmental impacts associated with disposal of waste to landfill[10]*. However in a Statutory Review of the State's waste legislation in 2001, the NSW EPA indicated that the levy no longer had a direct environmental purpose, rather it was directed at promoting the diversion of waste from disposal to other uses, and to generate funds for waste management programs*[11]*. The indirect rationale appears to be to promote upstream resource conservation. However the factors used in determining the levy rate do not address the nature, extent or price responsiveness of potential upstream benefits, rather they are revenue focussed and directed at industry support*[12]*. Indeed the levy rate increase has been directly based on the estimated cost difference to reprocess rather than dispose of common waste types*[13]*".*

In 2005 the NSW Government announced a further increase in the disposal levy almost trebling the levy to $56.70 per tonne of waste disposed in the metropolitan region by 2010-11, with no mention of landfill externality impacts[14]. The rationale was to drive further reductions in waste disposal to landfill and to increase reuse, resource recovery, recycling and waste avoidance – that is, the pursuit of 'upstream' resource benefits.

This same philosophy is now common in other jurisdictions and represents a significant shift in focus from what should be the primary objective of waste management policy, namely, addressing waste disposal externalities.

Today, the policy settings around the country vary considerably between jurisdictions, and despite these initiatives, targets are not being met. Waste generation rates continue to climb with consumption and, with some notable exceptions, only marginal gains are being made on total waste generated and disposed.

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10 NSW EPA (1996), Proposed Waste Minimisation and Management Regulation1996, Regulatory Impact Statement

11 NSW EPA (2001), Review of the *Waste Minimisation and Management Act* (1995), page 10

12 ibid

13 ibid; which in turn was dirived from analysis by Wright (2000), Alternative Waste Management Technologies and Practices Inquiry.

14 New South Wales Government (2005), City and Country Environment Restoration Program, published by Department of Environment and Conservation, Sydney

SUPPORT DOCUMENT 2

SHIFTING THE POLICY FOCUS TO VALUE RATHER THAN VOLUME

As noted in Support Document 1, many have interpreted the drive for sustainability as 'doing more with less'. This has prompted a drive to promote the technical efficiency of resource use. To this end, waste policy has been broadened from the management of disposal externalities to drive greater technical efficiencies in materials use (such as 'lightwieghting' packaging) reuse and recycling in an attempt to deliver benefits higher up the sustainable resource management value chain.

However as argued below, the pursuit of technical efficiency in itself cannot ensure sustainable resource management – indeed in some instances it may have perverse impacts on the wellbeing of current and future generations.

A more balanced approach to policy development, taking into account the complex dimensions in which policy must be developed (which are described in Support Document 8) and based on welfare maximising criteria that are the cornerstone of good practice policy making (see Support Document 3) is one that is focussed on an assessment of risks, costs and potential benefits.

A risk-benefit approach to waste management would focus on:

- minimising the environmental and health risks associated with waste management; and
- promoting the beneficial recovery of resources where there is value in so doing.

This approach would deliver sustainable waste management solutions. Importantly, opportunities for business to contribute to broader resource management goals would be more targeted.

Increasingly government is turning to the business community seeking greater engagement in waste management activities. However the current unchecked drive for technical efficiencies means that such engagement by business is highly unlikely since the costs and obligations frequently outweigh any potential value recovery.

However, if a shift can be made to a risk-benefit approach, which is ***value-focused***, then increased interest and participation by business is likely.

To achieve this shift it is essential to move from the current paradigm of "*Waste Minimisation*" to one of "*Value Recovery*", where the policy focus is on value not volume. This would be promoted by policies that reduce barriers to efficient markets and allow businesses to identify opportunities for value recovery taking into account;

- demand in end use markets,
- reprocessing economics that identify the resources suitable for removal from waste streams, and
- fit for purpose environmental controls.

To facilitate policy formulation in such circumstances, four guiding principles are relevant.

Principle 1: ***Increasing economic efficiency will improve the wellbeing and living standards of the community and support sustainable solutions.***

In a review of energy efficiency, the Productivity Commission (2005)[15] considered many issues relating to resource efficiency – much of which is pertinent to broader resource efficiency and, in respect of this framework, to the waste context.

As indicated above, contemporary waste policy has been dominated by the pursuit of *technical efficiency* – doing more with less – so as to reduce societal demands on the resource base. However the Productivity Commission notes that technical efficiency is only one component of *productive efficiency,* which is achieved when output is produced at minimum cost.

Simple pursuit of material minimization, or doing more with less, may require additional capital, energy, labour or other inputs that increase overall production costs that does not lead to overall economic efficiency.

The Productivity Commission (2005) discusses two other components of economic efficiency that also need to be considered in sustainable resource management:

- *Allocative efficiency* – ensuring that the community gets the greatest returns from its scarce resources, and
- *Dynamic efficiency* – allocating resources over time, and finding better products and better ways of producing goods and services.

Governments have a role in promoting improved technical efficiency, productive efficiency, allocative efficiency and dynamic efficiency. However pursuit of any one of these components should not be at the expense of overall economic efficiency or value from a whole of community perspective.

Improving economic efficiency by improving any one or more of its components may require intervention at various positions along the sustainable resource management value chain. Within a value-focused waste policy framework the aim is to identify opportunities for the various efficiency gains through the recovery and re-use of resources, but only where it will contribute to an improvement in overall economic efficiency.

Consistent with the aim of improving overall economic efficiency, decisions by business on re-use and waste disposal/management will be based on a balanced assessment of economic, social and environmental factors.

Principle 2: ***Waste policy should focus on downstream waste disposal impacts***

The historical focus of waste policy on disposal impacts is appropriate. The rationale for waste policy to pursue upstream benefits is tenuous at best. Waste policy requires, in

15 Productivity Commission (2005), The Private Cost Effectiveness of Improving Energy Efficiency, Inquiry Report No 36, Canberra

the first instance, a focus on the environmental impacts that arise specifically from the act of disposal of wastes.

Efficient policy responses will depend on the circumstances, the issue to be addressed, the failure to be corrected and the different types of waste disposal impacts to be managed. For example, in respect of impacts associated with landfill disposal of wastes and the policy responses applied:

- the transfer of wastes from a waste generator to a landfill in itself does not create environmental impacts and should not be the initial focus of interventions, such as disposal levies;
- environmental impacts at landfills will typically be related to amenity considerations, air and water emissions, all of which are greatly affected by the siting of the landfill, the management practices employed and the waste materials accepted;
- efficient and targeted policy responses should in the first instance focus on the emissions, such as through emission charges, or on regulations applied to landfill operations;
- unlike disposal levies or banning certain wastes from landfills, emission charges provide incentive for landfill operators to adopt efficient practices, including the appropriate siting of landfills;
- arbitrary constraints on the siting of landfills or on the volume of waste that can be accepted by landfill operators impede the economically efficient management of landfill externalities and are not productive.

Principle 3: ***Interventions to promote resource efficiency need to be aligned with market failures and directed by the appropriate agencies.***

The critical issue for Government is to identify the instances where economic efficiency is being compromised, and then align policy instruments appropriately. Traditional examples of this targeted intervention across the three stages of sustainable resource management include:

- ***Upstream conservation of resources*** – Governments have been active in developing resources policy consistent with sustainability principles and the sound stewardship of Australia's resource base. This has led to major policy reform programs applicable to our forests, fisheries, freshwater and marine resources, climate change, land conservation, and mining, etc;
- **Upstream resource utilisation** – Governments have been active in promoting efficient markets that will maximise economic efficiency. This has included a range of micro-economic reforms that remove barriers to the free operation of markets and developing appropriate regulatory and market infrastructure to ensure productive and allocative efficiency within markets.

  Part of this program has been the development of environmental policies to manage environmental impacts arising from market activity. At the national level, environmental standards have been agreed through the National Environment Protection Council, and states and territories are variously implementing strategies to deliver clean waterways and improved airsheds, to

minimise health and safety risks associated with the handling of hazardous substances, to protect native flora and fauna, and so on.

- ***Downstream waste disposal impacts*** – Governments have continued to intervene in markets to promote the efficient disposal of wastes and to prevent inappropriate disposal such as dumping or littering.

In these traditional areas of policy intervention, the appropriate agencies of government formulate and implement the policies. The environment agencies have appropriately taken the lead in the areas of managing environmental impacts arising from market activity and in regard to waste disposal policy.

In the event that there continues to be upstream market failures that are impacting the efficient and sustainable extraction and use of resources, then in the first instance policy responses should, to the maximum extent possible, be incorporated into existing policy processes led by the relevant agencies of government.

However there may be instances where resource efficiency goals cannot be wholly achieved through upstream interventions. In these instances, the potential for targeted and complementary downstream interventions may be considered. For example, the recovery of materials from waste streams;

- may lessen pressures on the exploitation of virgin resources and in so doing promote more sustainable levels of resource use; and
- may reduce environmental impacts associated with production processes where processes using recovered resources generate less impacts than those using virgin materials.

Conversely, downstream impacts associated with waste disposal may be best managed through upstream interventions. For example, direct (downstream) interventions cannot be applied to an illegal activity such as littering or dumping (beyond enforcement actions), and so a policy intervention earlier in the supply chain may be warranted, such as through product stewardship approaches.

As indicated at Table 1, it is envisaged that there will be few instances where waste policy may contribute to promoting increased efficiency in resource utilisation in markets. Even where environmental impacts associated with manufacturing using recyclate are lower than manufacturing using virgin materials, effective pollution management policies (eg: pollution discharge fees) can clearly signal these benefits to manufactures.

Product stewardship programs at this stage of supply chains may be appropriate, but on the grounds of managing downstream disposal externalities not as an alternative to industrial greenhouse or air and water pollution control policies.

Instances where waste policies can usefully supplement resource conservation policy early in supply chains are likely to be very limited. This is due to the inability of market signals late in sustainable resource management value chains (eg: landfill levies) to reach and influence resource managers, due to supply leakages (imports and exports) and alternative resource consumption avenues (such as waste to energy, exporting of wastes or illegal disposal).

Principle 4: ***Waste management policy interventions must focus on sustainable solutions by identifying the specific environmental benefits being targeted, the costs expected, then demonstrating how these will be achieved.***

This principle is already a feature of good practice policy agreed by Australian Governments. However waste policy development has rated poorly in this regard. Particular considerations are;

- regulatory assessments should seek to quantify targeted benefits in physical terms ahead of any valuation of them. Too often assessments refer to vague upstream environmental benefits and cite broad life-cycle valuations, without demonstrating the specific environmental gains being targeted. This simple step would ensure that policy interventions were not being directed at very small environmental dividends at the risk of significant long-term cost downsides;
- policy interventions should be based on assessment of the dimensions that are relevant to the particular circumstances of any application;
- the cost of policy interventions should be fully considered, including administrative and enforcement costs to government and business, as well as environmental damage costs associated with any increased illegal disposal of wastes arising from the chosen policy instrument;
- the net benefits of an intervention need to be demonstrated. As noted by COAG (2004), '*the burden of proof that a regulation is necessary remains with the proponents of regulatory action'.* This includes demonstrating that the proposed policy instrument is superior to all other available instruments, including those that could be employed more directly. Thus, if waste policy is to be used to target resource conservation objectives, the shortcomings of reforming resources policy in the first instance needs to be demonstrated.

Table 1: Moving to a Value-Focused Approach to Waste Management Policy

Resource Conservation	Resource Allocation and Use	
	Management of Resources in Markets	**Management of Resource Disposal**
Policy objective - Concerned with the sustainable level of use of the nation's resources. A core role for Government – promoting intergenerational equity and ecologically sustainable development. ***Policy requirements*** – policy consistent with sustainable level of resource use: - primary interventions via resources policy that limits resource exploitation, such as through regulation or market instruments (eg: tradeable resource rights); - secondary and highly targeted interventions in resource use and disposal markets where it can demonstrably reduce pressure on high conservation value Australian resources: ◦ focus on improving technical efficiency of materials utilisation and improving the level of resource recovery from waste streams.	***Policy objective*** - Concerned with allocative efficiency, or the efficient allocation and use of resources within markets. A core role for business – involves parties who can make best use of resources securing those resources through markets. ***Policy requirements*** – policy to overcome barriers to free operation of markets. - primary interventions focus on: ◦ micro-economic reforms including competition, trade and labour reforms across most sectors (resource and energy, transport, communications, etc), ◦ environmental policy to manage potential environmental impacts from market activity at point of impact, such as through planning statutes, pollution licensing, performance standards, etc; - secondary interventions generally not needed	***Policy objective*** - Concerned with disposal externalities, or the safe and effective disposal of waste materials. Core role for business and the community within government policy settings that seek to 'internalise' disposal externalities into private decision making. ***Policy requirements*** – policy to address the off-site social and environmental impacts when materials are disposed: - primary interventions via environmental policy to make those creating environmental damage accountable for the externality costs at the point of impact (eg: landfill regulations or pollution fees, landfill developer charges to compensate community for any amenity impacts); - secondary interventions in resource markets where it is impractical or inefficient to directly address at point of disposal (eg: cannot tax illegal actions), so seek alternative, less direct upstream interventions (eg: product stewardship approaches).

SUPPORT DOCUMENT 3

PRINCIPLES OF PUBLIC POLICY FOR ENVIRONMENT MANAGEMENT

In economies such as Australia, markets provide an efficient means for allocating resources and organising the production of goods and services. Price mechanisms within these markets can effectively ration scarce resources and provide incentives for the development of more efficient practices.

However for a range of reasons markets can fail to deliver outcomes consistent with social aspirations. In these instances, interventions by government may provide a mechanism to adjust for the market failure.

Environmental degradation has long been recognised as the classic area of market failure, where targeted intervention by government may greatly increase economic and social welfare. But, excessive or inefficient regulation of environmental impacts has the potential to generate economic costs of its own, by delaying or preventing beneficial economic activity or imposing compliance costs not offset by wider benefits.

Therefore, the regulatory challenge is to find the right balance between regulatory costs and benefits in the policy initiative that establishes the basis for intervention.

Good practice policy making involves a number of elements that bring discipline and consistency of process which assist in maintaining clarity of purpose clearly linked to outcomes – aspects that appear to be missing in much of the current-day approach to waste management policy formulation.

Sound public policy development will systematically identify opportunities for improving social welfare by:

1. Clarifying policy objectives
2. Identifying underlying market failures
3. Aligning policy instruments with market failures
4. Targeting of policy instruments
5. Assessing the benefits and costs of alternative intervention options and targets
6. Identifying the incidence of costs and benefits across stakeholders
7. Consulting with stakeholders
8. Resourcing the implementation
9. Reviewing instrument performance and refining as necessary

These elements of good practice policy making, along with requirements for policy review, have been formally recognised by Australian Governments, and are reflected in a number of guidelines and requirements (such as for regulatory impact statements) at both Commonwealth and State levels. They have also been confirmed through the Council of Australian Governments' Principles and Guidelines for National Standard

Setting and Regulatory Action by Ministerial Councils and Standard-setting Bodies (COAG 2004)[16] and internationally, see for example OECD (1997)[17].

Brief discussion of the application of these principles in the context of environmental and waste management policy is provided below.

1. Clarifying Policy Objectives

Clear identification of the problem is required to ensure the policy focus is on the underlying social objective.

COAG (2004) suggest starting with questions such as:

- why is government action being considered in the first place?
- what is the problem being addressed?
- what is the objective that the action is intended to fulfil - it must be stated in relation to the problem.

Care is needed that the policy focus is not directed at symptoms rather than causes. In the context of environmental policy, observed levels of resource use, activity or production are in themselves of limited importance. The key question is whether or not economic, environmental or social policy objectives are being deleteriously impacted. And these objectives should be in terms of the outcomes, goals, standards or targets which governments have determined are in the community's collective interest.

For this reason, subscribing to policy imperatives or regulatory reforms prevailing elsewhere is inappropriate. As noted by the Productivity Commission (1995), whether Australia's environmental standards are more stringent than those in other countries, or whether Australia spends more on environmental protection, in itself means little.

The appropriate nature and extent of environmental regulation depends on a number of factors. The structure and extent of industry varies considerably between countries, as do environmental problems and pressures, community aspirations and incomes, and so on. In determining the level and type of environmental regulation appropriate in Australia, the decision should reflect the country's own environmental needs and objectives, rather than the adoption of regulations developed and applied elsewhere where the conditions are different.

2. Identifying underlying market failures

Justification for government intervention rests on the failure of prevailing markets to deliver outcomes consistent with social aspirations. As policy instruments need to be designed to address the specific failures, their precise nature must be determined.

Market failures that may impede the economic efficiency with which resources are used, and hence reduce overall social welfare, include the presence of externalities, public goods, imperfect competition, information deficiencies or regulatory failures.

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16 Council of Australian Governments (2004), Principles and Guidelines for National Standard Setting and Regulatory Action by Ministerial Councils and Standard-Setting Bodies http://www.coag.gov.au/meetings/250604/index.htm#mincouncil

17 OECD (1997), Reforming Environmental Regulation in OECD Countries, Paris

Alternatively, efficient markets may fail to deliver a distribution of impacts deemed acceptable on equity grounds. Governments may seek to promote changes in markets so as to promote social objectives across the current generation, or in the case of environmental amenities, they may also seek to provide for inter-generational equity through promoting sustainable resource use practices.

The goal of balancing economic, environmental and social objectives has been captured in the concept of 'Ecologically Sustainable Development' (ESD). This concept emerged from the 1987 World Commission on Environment and Development (the Brundtland Commission) where it was defined as:

> **'… development that meets the needs of the present without compromising the ability of future generations to meet their own needs'**

Australian governments have adopted the goal of ESD, with the major relevant policy initiative being the National Strategy for Ecologically Sustainable Development (NSESD)[18] which was endorsed by all Australian Governments in 1992. The Strategy (CoA 1992b, p. 6) states that ecologically sustainable development:

> **... aims to meet the needs of Australians today, while conserving our ecosystems for the benefit of future generations.**

Three core objectives are articulated in the NSESD:

- enhance individual and community wellbeing and welfare by following a path of economic development that safeguards the welfare of future generations;
- provide for equity within, and between, generations; and
- protect biological diversity and maintain essential processes and life support systems.

The NSESD outlines a number of guiding principles. Important among them are:

- the need for decision making processes to effectively integrate long term and short term economic, environmental and social considerations; and
- that a lack of full scientific certainty should not be used as a reason for postponing action - known as the precautionary principle.

The NSESD also sets out the broad strategic and policy framework under which governments should pursue ESD. It acknowledges that governments need to change their institutional arrangements to ensure that ESD principles and objectives are taken into account in relevant policy making processes.

However, the Productivity Commission (1999)[19] found that there was a lack of clarity across Commonwealth departments and agencies regarding what ESD meant for government policy, and that the extent to which programs and policies had an explicit ESD focus varied widely.

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18 Productivity Commission (1995), Implications for Australia of firms locating offshore, AusInfo, Canberra Source: Box 1 Productivity Commission 1999

19 Productivity Commission (1999), Implementation of ESD by Government Departments and Agencies, Inquiry Report No 5.

The Productivity Commission noted that existing policy making mechanisms did not provide straight forward guidance on how economic, environmental and social considerations could be reconciled in decision making. However they concluded that ESD implementation is largely about good practice policy making -

> **'To the extent that this involves consideration of the foreseeable costs and benefits - short term and long term, private and social - good practice policy making is consistent with achieving ESD objectives. Indeed, many of the observed shortcomings in the context of ESD implementation can be traced back to failures to follow general good practice policy making.'**

Therefore environmental policy development will be well served through the systematic application of good practice policy making principles.

3. Aligning Policy Instruments with Market Failures

There are four main categories of government intervention (policy approaches). These are:

- Suasive instruments
- Regulatory instruments
- Market based instruments
- Provision of public goods

Suasive Instruments are policy tools that encourage changes in behaviour through the provision of information. Types of suasive instruments include general education programs, guidelines and codes of practice, training programs, extension services and research and development.

Regulatory Instruments require changes in behaviour by introducing penalties for parties who don't comply with the regulatory provisions. Types of regulatory instruments include standards (including planning instruments), licensing and mandatory management plans and covenants.

Market Based instruments (MBIs) are policy tools that encourage behavioural change through market signals rather than through explicit directives. There is a range of types of market based instruments including tradeable resource or production rights, emission trading or offset schemes, subsidies and grant schemes, stewardship payments, taxation and tax concessions.

Governments also ***Provide Public Goods*** as a policy intervention. Examples are often situations which favour a monopoly supplier, such as the provision of sewerage systems and other public utilities. However even in these situations, governments are increasingly privatising these services and allowing private monopolies to operate, albeit under close regulatory oversight. Examples include electricity, gas and water distribution infrastructure.

Different policies are suited to different market failures. It is important to ensure that policy makers have a good understanding of the market failure at play before developing policy interventions. Take the example of development of policies to address water pollution from agriculture. If the problem is information failure only, then

advice/extension services may provide an effective solution (say to address over-application of fertilisers). If there is also an externality, then the cost to the landholder of preventing impacts may be greater than the private benefit and therefore regulation or incentives would be required to change behaviour.

4. Targeting of Policy Instruments

As well as different instruments being suited to different market failures, the effectiveness and efficiency of an instrument will depend on how well it is targeted at the underlying market failure. Three issues are of importance:

- the policy metric chosen,
- the incidence in supply chains where it is applied, and
- multiple market failures usually need multiple instruments.

Optimal targeting will require a balance between maximizing the effectiveness and efficiency of instruments with the regulatory and administrative costs of so doing.

Policy Metric – the policy metric relates to the action, good or service that is the subject of intervention. Generally outcome (or performance) based metrics will be more effective than interventions applied to inputs, processes or outputs, as there will be a more direct relationship between the regulated metric and the underlying market failure.

In addition, performance based metrics will maximise available opportunities for compliance, and hence reduce the cost of achieving the environmental outcome.

Consider for example the market failure of the impact of greenhouse gases from motor vehicles on climate change. It is not technically possible to regulate climate impacts arising, and so the next best surrogate is likely to be the quantum of greenhouse gases emitted by vehicles. But the costs to monitor actual emissions from the nation's fleet of vehicles may be prohibitive. Therefore as an alternative, metrics could focus on inputs (fuels), processes (vehicle and engine type) or activity (kilometres travelled). These metrics would be more cost-effectively incorporated into policy instruments, but at the cost of lower effectiveness and compliance efficiency.

Incidence in supply chains – markets operate to guide the development and extraction of raw materials, production processes, transport, retailing, final consumption and post-consumer handling of materials. Market failures can occur at a number of points along production – consumption chains, often termed supply chains or value chains.

In general, interventions will be more effective the closer the intervention is to the incidence of a market failure in a supply chain. As policy responses become more broadly applied, the link between behavioural responses sought and environmental benefits becomes more tenuous reducing the effectiveness of the intervention.

Interventions will also be more efficient the closer the intervention is to the incidence of a market failure in a supply chain. As interventions become distant from the incidence of the market failure it is intended to address, there is potential for some targeted failures to be missed ('leakage') while some non-target activities may be affected leading to economic costs without commensurate benefits.

So, continuing with the greenhouse and vehicle example, a tax at the oil extraction stage ('upstream' in supply chains) rather than say at the retail stage ('downstream') would not capture vehicle emissions associated with the use of imported oil or petrol. A tax on all oil and petrol produced or imported would not prevent 'leakage' associated with gas powered vehicles and may also impact products not used in combustion (such as oil lubricants).

Generally downstream market failures associated with consumption need downstream policy interventions, while upstream failures associated with resource extraction and production processes need upstream interventions.

Multiple Market Failures – in many instances, environmental problems can arise due to a multitude of failures and often across many parts of supply chains. Because of the problems associated with targeting policy instruments with specific market failures and at their points of incidence in supply chains, multiple market failures generally require multiple interventions to maximise effectiveness and compliance efficiency.

Again, continuing the greenhouse example, market failures leading to greenhouse gas emissions are prevalent across many sectors and stages of supply chains. As well as emissions from vehicles, emissions arise from land use change and agricultural practices, from power generation and manufacturing processes, landfills, and so on.

There has been interest in whether broad-based policy instruments such as a carbon tax or emissions trading scheme could be extended beyond power generation and manufacturing processes to these other sectors. Clearly there are significant challenges in so doing. To expect any such instrument to then take account of other market failures across these diverse sectors (such as loss of biodiversity with land use change, amenity impacts with landfills, etc) would make the instrument unwieldy, ineffectual and inefficient – one instrument simply cannot internalise multiple failures.

5. Assessing the Benefits and Costs of Alternative Options and Targets

A range of possible instruments that might be effective should be identified, along with the targeting of those instruments and how they may mix into an integrated policy package. Following this, an evaluation of the relative performance of the alternative instrument options will be necessary, to assess the efficacy of each option in addressing the market failure(s) and delivering the policy objective,

In this process, policy makers must use the best available expertise to consider:

- the nature and extent of risks to the environment and/or human health;
- the expected changes in costs and benefits that will be incurred by market participants under alternative intervention instrument available;
- how the different intervention instruments will impact regulatory costs;
- the expected changes in non-market costs and benefits that will be incurred;
- the changes in resource use/consumption patterns that would be efficient – that is, at what point do marginal benefits and costs equate?

The evaluation of different policy interventions is concerned with the assessment of relative changes in economic welfare for society. The importance of robust evaluation

to support government intervention is saliently noted by the Productivity Commission (2004)[20]:

> ***Regulations are an essential component of a modern and well-functioning economy and society. The challenge for governments is to deliver effective and efficient regulations which can facilitate a wide range of community objectives without imposing unnecessary burdens on the community. Poor quality regulation can impose unnecessary costs, impede innovation and create unnecessary barriers to trade, investment and economic efficiency. It can also impede the capacity of society to achieve broader social, economic, regional, equity and environmental objectives.***
>
> ***Even where regulations are well designed and implemented, regulatory compliance costs can be significant. The Organisation for Economic Cooperation and Development (OECD) estimated that, for a limited set of regulations, such compliance costs for small and medium sized businesses in Australia exceeded $17 billion in the late 1990s.***

Risk-Benefit Analysis – COAG (2004) note that where a possible need for regulation is identified, quantitative analysis is needed to support this position and to establish the most efficient form that this regulation might take. The basic feature of economic appraisal is its systematic examination of all the advantages and disadvantages of each practicable alternative way of achieving an objective. COAG (2004) also note that the first principle of good regulation is that, as a general rule, the burden of proof that a regulation is necessary remains with the proponents of regulatory action.

While a range of quantitative evaluation approaches is available, the underlying framework is benefit-cost analysis (BCA). The essence of BCA is the estimation of the extent to which a community is made better-off by a resource reallocation. Based on welfare economics, it provides measures of economic efficiency which can be used to compare alternative instruments or suites of instruments.

The Commonwealth and several States have detailed guidelines available outlining how BCA should be applied to assess public policy and investments. In addition, a range of statutes specifically call for BCA to support reforms, often outlining minimum evaluation requirements. Nevertheless it is noteworthy that the OECD in its environmental performance review of Australia (OECD (1998))[21] recommended greater use of economic analyses in designing environmental policies at both Commonwealth and State/Territory levels.

Where policy interventions are targeted at reducing risks to the environment or human health, risk analysis should be incorporated into benefit-cost assessments. COAG 2004 note that risk analysis is useful in answering a number of questions, including;

- whether the risks that regulation is intended to address is of significant magnitude to warrant policy attention;

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20 Productivity Commission (2004), Regulation and its Review 2003-04, Annual Report Series, Productivity Commission, Canberra - references to 'regulation' should be interpreted in the broader sense as any government intervention

21 OECD (1998), Environmental Performance Reviews: Australia, Paris

- the extent to which proposed regulation may reduce the initial risk problem;
- whether the proposed measures are the most effective available to deal with the risk; and
- by comparing the risk associated with the status quo with that after government intervention, whether intervention is appropriate and/or worthwhile

Simple forms of risk assessment can involve assessing the mechanical impact of regulation on risks to estimating the cost-effectiveness of reducing risks. Risk-benefit analysis considers all risks, benefits and costs and evaluates the net benefits associated with a proposal in comparison with its risks. Where costs and benefits can be multiplied by probabilities to produce expected costs and expected benefits in dollar terms, risk-benefit analysis can be formally incorporated into cost-benefit analysis.

Setting Policy Targets – where a number of policy interventions are needed to address an environmental problem, especially where they may be administered by different agencies or jurisdictions, a target may be established in advance of individual policies, to focus incremental improvements.

However, as with the evaluation of individual interventions, the critical concern in target setting is to establish at what point do marginal benefits and costs equate. As the cost of progressive environmental improvements generally increases while the benefit of progressive environmental gains generally falls, it is rarely in the community's interest to eliminate all market failures.

Typical examples of issues where balance and trade-off between competing interests include:

- current reforms in the water debate seeking to identify an appropriate balance between environmental flows in rivers and the consumptive use of water,
- rural land use and native vegetation/biodiversity, and
- industrial production and vehicle use with urban air quality.

In such instances, target setting, based on technical criteria related to the incidence and extent of a market failure is insufficient. The social trade-offs of promoting environmental improvements must specifically be examined.

BCA is again the appropriate framework within which to consider social trade-offs and to determine appropriate policy targets. As such analysis will require assumptions on likely policy interventions, compliance costs and changes in resource use, the costs and benefits of achieving various target levels can only be postulated, and so ongoing evaluation of targets is required as successive reforms are introduced.

In addition, the most effective suite of interventions will seek to optimise across the suite to drive down compliance costs and maximise net benefits. This requires strategic planning and assessment by Government and, in the case of market failures prevalent across jurisdictions, the need for a national policy framework.

6. Identifying the Incidence of Costs and Benefits Across Stakeholders

Taking account of ESD considerations explicitly requires the integration of economic, environmental and social objectives and impacts. This demands not only information on economic efficiency impacts as determined through standard BCA techniques, but also a comprehensive assessment of equity implications including environmental impacts – ensuring intergenerational equity and consistent with precautionary principle – and social impacts – identifying who in the community will reap the benefits or incur the costs of interventions.

In terms of the relative weights that should be given to economic efficiency objectives and equity objectives, COAG (2004) directs that analysts should 'let decision-makers decide';

> ***'Distributional implications can be obscured by the aggregating character of the cost-benefit process. Analyses should include all the information available to ensure that decision-makers are aware both of the identity of the groups likely to gain and to lose as a result of government action, and of the nature and size of the gains and losses.***
>
> ***'Distributional judgements are properly made at the political level. In the interests of avoiding subjective bias, analysts should, by and large, refrain from attaching distributional weights to cost and benefit streams. Exceptions might be where there are unambiguous government policy objectives to assist specific groups in the community, and where the justification for special assistance to these groups relative to other groups is clearly established.'***

In short, an economic assessment of the relative merits of alternative policy interventions to address a policy objective must be presented to decision makers with supporting information on distributional consequences. Trade-offs between national wealth, natural capital and social justice cannot be assumed at the bureaucratic level.

7. Engage the Stakeholders

Throughout the process of policy development and implementation, engagement of stakeholders will help to deliver robust solutions that can be supported by the relevant parties affected. In this regard, both the business community and the community at large must be involved, as both will contribute to the solution and implementation.

The aspirations of the community represent a significant input to government for waste management policy. However, for sensible input to waste management policy, the aspirations of the community must, equally, be sensible. Leadership is required to appropriately inform the community, to provide the lines of logic and to establish the evidence base that will inform the community and allow sensible aspirations to evolve.

At the same time, government is turning to the business community seeking pro-active input and engagement in waste management initiatives for both industry related wastes and post-consumer wastes at the municipal level. This engagement will be enhanced when the business community is convinced that the thrust of the policy is focused on value and not volume – i.e. the beneficial recovery of resources rather than the arbitrary diversion of material from landfill.

The degree of buy-in by these stakeholder groups, and the value of that buy-in, will depend on the quality of information disseminated, the extent of consultation and the ability of government to move towards a transparent and balanced risk-benefit approach in policy formulation.

COAG (2004) cite public consultation as a critical part of any regulatory development process –

> ***'Consultation should occur when the course of regulatory action is being considered and a draft impact assessment statement is being produced. This will give interested parties a firm proposal to consider. Consultation should occur as widely as possible but at the least, should include those most likely to be affected by regulatory action (e.g. consumer and business organisations) which might provide valuable feedback on the costs and benefits of regulation and on the impact assessment analysis generally. Consultation will also provide feedback on the level of support for the proposed regulation'***

Additional input to the policy development process can be achieved through consultation with expert panels and impartial advisors. Such sources can provide both additional scientific and engineering expertise, and supplement the base of data on which the intervention strategy will be based.

A phase of consultation that has been accepted at COAG involves the use of a Regulatory Impact Statement (RIS). Traditionally prepared near the end of the policy formulation stage, the RIS provides opportunity for detailed stakeholder feedback on the ramifications foreseen in impending policy.

The utilisation of the RIS process is extremely patchy across the country, with some jurisdictions adhering to the principle, others ignoring it all together, and some only using a RIS when significant economic impact is anticipated. Regrettably, economic impacts relating to waste management policy are rarely seen by central agencies to be significant, leading to a common situation where the RIS is inadequate and rarely challenged. In this respect, it is worthy to note that the estimated dead weight economic cost of the recent increase in waste disposal levy in NSW is in the order of $260 million in net present day terms.

The process of preparing and consulting over a RIS for impending intervention is most likely to lead to:

- improved following of the principles of good practice policy making,
- better quality policy, and
- greater acceptance by stakeholders, with improved commitment to make the intervention work.

8. Resource the Implementation

Waste management policy is progressively becoming more complex and having significantly greater capacity for economic impact. To maximise the efficacy and efficiency of policy interventions it is essential that relevant agencies be appropriately resourced in both expertise and capacity.

To put in-place sound policy requires more than just theory and ideology. For policy interventions to be effective and broadly supported it will be essential for:

- the base data and evidence base to be collated and analysed;
- the initial thinking phase to be adequately resourced, drawing on expert capabilities in the science, the market sector and the policy practice areas;
- the parties responsible for delivery and implementation of the policy intervention to be experienced, resourced and monitored throughout the process of implementation; and
- independent resources to be made available for follow-up monitoring, assessment of efficacy and development of recommendations for future action.

With all three levels of government involved in the development and delivery of waste management policy and interventions, there have been instances where the party responsible for implementation, has been divorced from the development phase and is under-resourced and/or under-skilled to effectively introduce, what may well have been good basic policy. Despite the policy being appropriate, the delivery can totally undermine efficacy.

Finally, resourcing the policy agency for effective consultation and a thorough assessment of the impact of the intervention in the RIS, will be essential to achieve stakeholder confidence that the proposed intervention is well needed, has been well prepared and has beneficial outcomes across the community.

9. Review Instrument Performance and Refine as Necessary

When finalising policy interventions, there should be consideration of how the instrument will be monitored for amendment or removal. Increasingly, sunset provisions are regarded as an appropriate way of ensuring regulatory action remains justified in changing circumstances.

Importantly, review provisions will only promote efficient policy if genuine attempts are made in assessing instrument performance, discussing reform options with stakeholders, and actively looking to refine instrument settings.

Passively 'rolling-over' regulations does not constitute good practice. Instruments must be critically assessed in terms of net benefits and performance relative to alternative instruments. Examples of good policy processes often have parallel programs of data collection to ensure effective reviews and sensible policy evolution.

SUPPORT DOCUMENT 4

ALIGNMENT OF CURRENT WASTE POLICY

WITH

GOOD PRACTICE POLICY PRINCIPLES

Good practice policy firstly demands clarity of the problem being addressed. This has been lost in recent policy development, as the policy focus has shifted from direct, observable impacts associated with waste disposal to postulated problems further along supply chains. Proponents of new waste policy instruments do not identify specific environmental damages that will be mitigated, or the protection of specific high conservation resources they believe will be protected, through the policy measure. Rather, references to broad *potential* benefits across supply chains attributable to general waste reductions are usually deemed sufficient.

With resource conservation often touted as the rationale for waste minimisation, key questions that need to be considered include:

- Which resources are we trying to conserve? Locally consumed resources like sand, gravel and clay could be candidates, but, how scarce are they?
- What detrimental impacts could be avoided? Should conservation of resources be afforded the same attention as exploitation practices that result in impacts on biodiversity, land degradation or water quality?
- Would addressing one resource simply result in greater exploitation of other resources with perhaps worse environmental impacts?

Further, the existence of any upstream benefits presupposes that existing resources or industrial environmental policy is either inappropriate or insufficient. This may be so, but the identification of current policy failings should be made explicit ahead of any assessment of the merits of new policy positions.

Secondly, good practice policy demands that the nature of market failures that policies are to address be identified. If the use of specific resources is deemed unsustainable, why have markets not reacted with increasing resource prices signaling the scarcity?

Thirdly, policy instruments need to be aligned with market failures. As market failures are rarely identified, any alignment of policy instruments cannot be assured.

Fourthly and perhaps most critically is the lack of targeting of waste policy instruments. In this regard the metric of tonnes of waste to landfill is very coarse. Benefits associated with reduced waste disposal are poorly correlated to weight. Inferring a house brick and a large torch battery will have equal benefits if recycled just because their weight may be similar is nonsense. Factors influencing likely benefits will include:

- downstream landfill benefits – whether or not the waste is organic or inert, whether it contains toxic substances, the technology and management practices at the receiving landfill, etc;
- upstream resource benefits – will depend upon the component materials, their source, production processes, availability of virgin materials, the cost structures for waste disposal versus recyclate collection, etc; and

- economic re-use and recycling options – these options need to be considered relative to the full economic, environmental and social costs of disposal/storage.

Equally concerning is that current waste policies directed at upstream benefits are being imposed late in supply chains. In general, government interventions will be more effective (and efficient) the closer the intervention is to the incidence of a market failure in a supply chain. As policy responses become more broadly applied, the link between behavioural responses sought and environmental benefits becomes more tenuous reducing the effectiveness of the intervention.

As argued by BDA Group (2004), most agricultural, forestry, mining, and energy resources extracted in Australia are exported, and changing the price signals faced by waste generators in Australia will have little impact on the management of our resource base. For example, landfill levies that push wastepaper out of landfills will be of no consequence to the conservation of Australia's native forests when only around 3% of the embodied wood fibre in the wastepaper is derived from our native hardwood forests.

Also in relation to the targeting of instruments, multiple market failures generally require multiple interventions. It is unlikely that market failures impacting a resource at the raw material extraction, processing, transport, consumption and disposal stages can be efficiently tackled with one policy instrument. Not only may some failures be incompletely addressed, perverse outcomes may also arise.

Lastly, good practice policy principles require an assessment of the benefits and costs of alternative intervention options and targets, identification of their incidence across stakeholders and consultation with stakeholder groups. In this regard waste policy strategies and the justification of individual instruments are grossly deficient. There has been no genuine attempt to balance social costs and benefits, rather the ideology of waste minimisation has led to arbitrary disposal goals being followed by the inevitable end-point of *Zero Waste* targets!

In no other areas of public policy (eg; health, safety, crime, water quality, etc) are cost and benefit tradeoffs ignored in determining policy goals and targets.

Even where there are regulatory requirements for impact assessment, benefits are generally inferred and cost estimates incomplete. A case study of the NSW landfill levy demonstrates the lack of rigor being applied in assessing waste policy settings.

SUPPORT DOCUMENT 5

CASE STUDIES WITH POSITIVE ECONOMIC IMPACT

The following case studies highlight instances where waste management policy has been successful in delivering on its intended purpose. In each case study, observations are presented in respect of the four components forming the basis of the proposed framework for waste management policy in Australia, namely:

- Context — waste policy is but one of several policy platform areas available to government to ensure that our society achieves ***Sustainable Resource Management;***
- Purpose — waste management policy should focus on delivering value not arbitrary volume targets to ensure outcomes which deliver ***Sustainable Waste Management Solutions*** based on environmental, economic and social criteria;
- Process — effective and efficient policy requires discipline of process and clarity of purpose following the elements of ***Good Practice Policy Making***;
- Dimensions — a ***Risk-Benefit Approach to Waste Management Policy*** should be based on a number of dimensions and should recognise the relative significance of the various dimensions in any specific set of circumstances.

Case Study 1 – Used Oil Recycling

Case Study 2 – Used Tyre Recycling

CASE STUDY 1 – USED OIL RECYCLING

1. Introduction

The Australian market for lubricants is about 520 ML per year. Commercial customers, including automotive servicing, account for about 90 per cent of the market, which is generally supplied in bulk/drums/large packs. The remainder is supplied generally in five litre plastic packs or smaller.

Most lubricant oil sold on the domestic market is either lost in use (that is through combustion in engines, leakage, etc) or recovered for reuse. Collection rates of used oil in Australia are thought to be reasonably high compared with world standards, despite a variety of market factors constraining used oil collections.

Unaccounted for used oil may pose an environmental risk to soils and waterways, but the extent and costs of environmental damages associated with inappropriate disposal of used oil is difficult to determine.

The volume of used oil potentially available for collection has been estimated at between 280 and 300 million litres. Despite uncertainties as to the costs associated with environmental damages, a precautionary perspective has prompted interest in Australia in policy instruments that could encourage greater levels of used oil recoveries.

Product stewardship arrangements for the recycling, reuse and disposal of used lubricating oils were mandated under the Product Stewardship (Oil) Act 2000 and have been operational since January 2001. The arrangements fulfil a commitment made by the Commonwealth Government to the Democrats as an outcome of negotiations for the passage of the GST legislation through the Parliament.

The objectives of these arrangements as stated under the Act are to:

- develop a product stewardship arrangement for waste oils;
- ensure the environmentally sustainable management, re-refining and reuse of waste oil; and
- support economic recycling options for waste oil.

2. Current Policy Setting

2.1 Overview

The stewardship arrangements and transitional arrangements together comprise three components:

- a levy on all new and re-refined lubricant produced in or imported into Australia. The levy was initially indexed, but has been held at 5.499 c/L since 1 August 2002;
- benefits paid to used oil recyclers based on volume and, in the case of re-refined lubricant, the specifications of the re-refined base oil and its eventual end-use; and

- transitional assistance funding, available to 2006-07, for strategic initiatives to increase oil recycling and ensure a sustainable oil recycling industry.

The product stewardship levy is payable by oil producers and importers for petroleum-based oils and their synthetic equivalents. The Department of the Environment and Heritage (DEH) advise that 'the levy offsets the costs of benefits paid to oil recyclers as an incentive to undertake increased recycling of used oil. This ensures that some of the costs of used oil recycling are borne by the markets that gain the benefit from the production and use of that oil, rather than from public monies or other markets. In economic terms, it "internalises the externalities"'. [22]

The rate of benefit payment differs according to the level of recycling of the used oil and are presented at Table 1

Table 1: Benefit Rate Categories

Item	Rate (c/l)	Category
1	50	Refined base oil that meets specified health, safety and environmental criteria and is used as a lubricant or hydraulic or transformer oil.
2	10	Other re-refined base oils (e.g. chain bar oils, oils incorporated into manufactured products).
3	7	Diesel fuels to which the Excise Tariff Act 1921 applies.
4	5	Diesel extenders (where the used oil has been filtered, de-watered, and de-mineralised).
5	5	High-grade industrial burning oils (where the used oil has been filtered, de-watered, and de-mineralised).
6	3	Low-grade industrial burning oils (where the used oil has been filtered and de-watered)
7	0	Industrial process oils and lubricants, including hydraulic and transformer oils, (reprocessed or filtered but which have not been re-refined).
8	5.449	Oil consumed in Australia for a gazetted use
9	9.557	Recycled oil mentioned in item 5 or 6 that has been blended with a petroleum product that meets the criteria mentioned in Schedule 2

DEH advise that 'the benefit table is arranged in a descending hierarchy. This hierarchy broadly reflects the recycling effort and investment required to make products of better quality and with improved environmental outcomes'. In determining appropriate benefit categories, the principle is that benefits should only be paid where they might serve as an incentive for increased recycling activity - that is, not be simply rewarding existing good practice.[23]

22 See http://www.oilrecycling.gov.au/levy.html

23 See http://www.oilrecycling.gov.au/benefits.html

Differentiation of the benefit rate has apparently been determined by considering the environmental benefits and costs of recycling for each end-use. For example, the highest rate applies to lube-to-lube recycling to reflect perceived high environmental benefits and the high cost of re-refining lube oils. The rates also take into account current prices for these products so that recycling is encouraged but windfall gains are avoided.

Transitional assistance funding of $34.5 million has been provided for strategic initiatives to increase oil recycling and ensure a sustainable oil recycling industry. This funding commenced in July 2000 and will be available until June 2007. Transitional assistance is an interim mechanism to engender change that will underpin the long-term viability of the oil recycling industry.

Importantly, the development of the stewardship arrangements has been conducted with close stakeholder consultation throughout the development and implementation of the program. This has included:

- a discussion paper released to stakeholders in 1999, canvassed policy options and recommended that a producer stewardship program could best be instituted using a market-based hybrid system that utilised a levy on new lubrication products together with a tradeable certificate system;
- following consultation, the levy-benefit option was chosen, along with a commitment to further review the merits of a tradeable certificates system;
- an independent analysis of a tradeable certificates system was commissioned from BDA Group in 2003 that recommended continuing with the levy-benefit arrangements;
- an Oil Stewardship Advisory Council (OSAC) was established to advise the Minister for the Environment and Heritage on the general operation of the Product Stewardship for Oil Program, benefit rates, product standards, the recovery and recycling of used oil, and the state of the oil production and oil recycling industries;
- an independent review of the Transitional Assistance element of the PSO Program was completed in March 2004; and
- the Act requires an independent review of the legislation at intervals of not longer than 4 years. The first review was completed in May 2004.

The Government has responded to a number of review recommendations and introduced a number of amendments to the stewardship arrangements, including:

- exemptions for single-use oils such as food grade white oil, polyglycol brake fluids and aromatic process oils came into effect in April 2002. These oils are not available after use and do not present an environmental risk;
- the category 8 benefit was introduced in March 2003 to effectively allow exemptions for some uses of multi-purpose oils;
- automatic indexation of the levy was abolished in 2002; and
- the transitional assistance was extended to 2006/07.

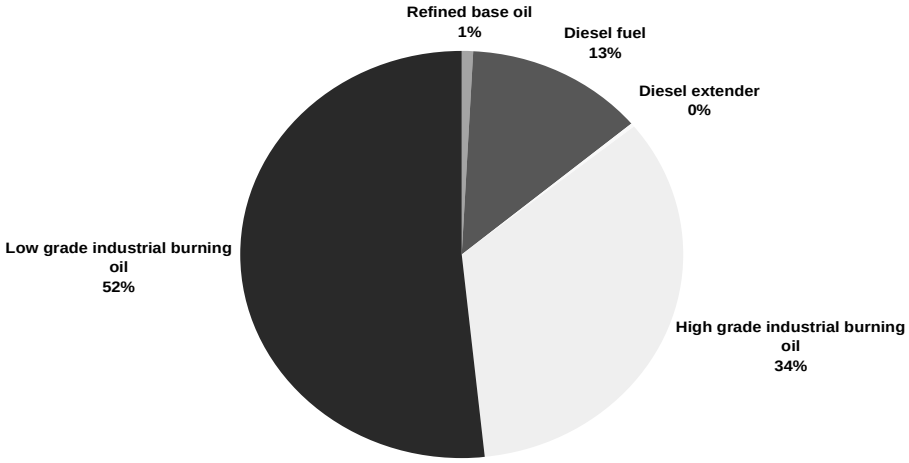
2.2 Outcomes

Based on the latest available data, $25.1m was collected under the levy in 2004-05 while $15.7m was paid out as benefits[24].

Benefit payments indicate that around 195 Ml of used oil was recycled in 2001/02 and 2002/03 (MMA / BDA 2003) and over 220 Ml in 2004-05 (DEH annual report 2004-05). This level of recycling is consistent with pre-implementation modelling estimates.

As shown at Figure 1, the majority of benefit payments have been paid for used oil recycled as burner fuel (that is where the used oil is used as high- or low-grade industrial burning oils (MMA / BDA 2003).

Figure 1: Amount of oil recycled under benefits payments (% of total recycled from 1 January 2001 to April 2003)



Note: 2004-05 figures are available in the DEH annual report.

During the 2004-05 financial year, $7.6m in Transitional Assistance funding for used oil collection facilities was provided through the Local Government Waste Oil Collection Infrastructure Small Grants Programme. Funding of over $5m was also provided for recycling of plastic used oil containers, re-refining through hydrogenation, and remote and Indigenous projects. In addition, DEH has commenced strategic partnerships for the provision of further used oil collection facility infrastructure valued at over $3.4m.

The 2004 Review of the Stewardship Arrangements found that the program had had some success in encouraging more used oil recycling, as demonstrated by:

24 DEH annual report 2004-05, http://www.oilrecycling.gov.au/publications.html

- strong local government support for the development of centralised used oil collection facilities;
- the majority of recyclers in the Australian industry being involved in the program;
- investment in recycling infrastructure, that otherwise would not have been made (specifically re lube to lube);
- the finding that the program is stimulating recycling from the annual flow of oil entering the market; and
- Australia is now achieving oil recycling rates comparable to leading European countries (Allen Consulting 2004).

2.3 Assessment

In broad terms, the policy intervention has been both successful and cost-effectively administered, using existing agencies and systems. An environmental risk was identified and a risk-based assessment justified the need for a policy intervention.

Policy options were broadly canvassed and stakeholders consulted in identifying the preferred instrument. Importantly, the government recognised the worth of engaging business and established an ongoing stakeholder advisory capacity.

The scheme has used a market-based policy instrument that has served to support value in the recycling market. The program has allowed industry to develop recycling capacity and increase recycling levels commensurate with developing market opportunities. This has provided the industry confidence to invest in recycling infrastructure and the orderly growth of the industry.

The program has been subject to on-going review and government has responded to refine the policy settings over time.

In terms of promoting product stewardship, the levy payments made by oil companies are based only on oil volumes sold onto the domestic market. There are no requirements or rebates linked with their participation or otherwise, in used oil recoveries, recycling or marketing (such as blending with virgin oils). However it should be noted that;

- the oil majors have supported the introduction of the levy, even though there is no guarantee of recovery of this money through the market;
- the oil majors have had direct involvement in the used oil recycling industry, for example through holding equity stakes in oil recyclers and through other types of partnerships. For example, Shell had a 25% stake in Nationwide Oil Pty Ltd until early 2005, and promotes Nationwide to its customers who are interested in oil recycling;
- Australian Institute of Petroleum (AIP) members have adopted a product stewardship role for their products and are actively supporting the collection and recycling of waste oil and its packaging. AIP is also a signatory to the National Packaging Covenant; and
- the market approach adopted provides an incentive for greater engagement over time while ensuring through the levy that oil suppliers are involved from the

outset in off-setting the cost of the program and managing the impacts of oil consumption, recycling and reuse.

3. Applying a Market Forces Policy Approach

The product stewardship program for oil has provided positive insights to good practice policy making. In particular:

- the benefits of relying on market forces, working within established standards and guidelines, in delivering a sound environmental outcome;
- the benefits of integrating volume and value drivers. The key aim of the program is to maximise the collection of used oil, so minimising any dumping of oil. This volume objective is underlaid, however, by the introduction of value drivers – through the incentive based hierarchy – to support a number of identified sustainable markets for products made from the recycling of used oil. This case study highlights the important benefits that can be achieved through the inclusion of value-based drivers in policy programs; and
- allowing market forces to determine the overall recycling outcome.

4. Conclusion

The product stewardship arrangements for used oil demonstrate the application of good practice policy principles. Policies developed in this are clearly risk-based, adaptive and have engaged business through the creation of value in markets.

CASE STUDY 2 – USED TYRE RECYCLING

1. Introduction

Some 15 million automotive tyres are discarded each year in Australia, many disposed of inappropriately. For many years, governments and the industry have been struggling with various options to address the issues arising from used tyre management.

Tyres at the end of their life create a waste disposal issue in both landfills and in the open landscape. Landfill has proven to be an unsatisfactory method of disposal, unless the tyres are pre-shredded; and the substantial quantities that are dumped in the landscape create health and environmental problems.

A further challenge for the industry lies in the widely held belief that the discarding of used tyres does not allow the substantial resource value embodied in the tyres to be utilised. While the cement industry has been using some used tyres as an energy source in a number of locations, the industry view is that higher value uses should be feasible.

There have been past attempts to overcome some of these problems. Some states have introduced disposal fee schemes to deter disposal in municipal waste, while some jurisdictions have imposed "environmental levies" that are charged on used tyres at the point of replacement and intended to facilitate safe and effective disposal. It is widely agreed, that none of the measures todate have adequately addressed the issues or delivered the desired outcomes.

Over the past eighteen months, the Australian tyre industry (producers and importers) has been working with governments, through the Ministerial Council on Environment and Heritage, to develop a scheme targetting areas of identified market failure.

Research undertaken for the project found that generally, the market does not realise the resource values embodied in used tyres nor the full potential of uses to which used tyres can be put. This in turn limits investment to recycle or reprocess used tyres, so that most used tyres are sent for disposal either legally or illegally where they create environmental problems.

2. The Policy Proposal

As part of the development of a national scheme, the Australian Tyre Manufacturers Association commissioned a detailed report[25] to analyse the complex issues that would need to be taken into account.

The report proposes a scheme to establish a self-supporting arrangement over a ten-year period using an Advanced Recycling Fee as the central tool. The scheme proposes that the funds collected be used to support a range of market development and waste management strategies, including the payment of benefits to transformers

25 *A National Strategy for Waste Tyre Management in Australia*, Australian Tyre Manufacturers Association, 2006, http://www.atma.org.au/

(manufacturers processing used tyres into other products) producing tyre derived products (TDPs).

The scheme envisages a sunset arrangement, after which both the advanced recycling fee and the benefits will no longer be required.

While governments have encouraged industry's efforts, the scheme has been developed and will be implemented on a voluntary, co-regulatory basis, commencing January 2007.

The project demonstrates the benefits of following the principles of good practice waste management policy development in that:

- it is targeted specifically at identified market failures;
- disposal avoidance was not a driving force;
- it clearly identified the benefits being sought;
- a considered, systematic policy development process was followed;
- the involvement of stakeholders in the development phase was extensive;
- the outcome measure is efficient and fully costed, and
- there are provisions to prevent 'free riders'.

The development process demonstrates how effective intervention measures can be realised through a practical, financially sound implementation scheme that arises from good policy development practice.

3. Adopting a Risk- and Value-Focused Approach

The environmental cost of used tyres in the landscape has been identified for many years. The problems they pose in landfills for waste managers are well known. The proposed scheme is designed to deal with both of these issues. The scheme is also designed to achieve greater resources productivity by informing the market about the real resource value of used tyres and the technological possibilities for transformation.

The process for developing the intervention measures was initiated by the industry, but has involved cooperation and participation by all three levels of government, with strong leadership from the Australian Government.

The scheme covers the main technologies and products currently available for reprocessing of tyres, and examines the subsidy that would be required to support those transformation activities. Preparation for the scheme involved several economic studies, the most recent of these, the URS Economic and Financial Analysis.

Key issues of risk and value that have been investigated in the studies include:

- the economic principles or market failures evident,
- development of measures of highest net resource value,
- investigation of the economics of the used tyre transformation industries,
- shifting the focus to valuing the resources contained in used tyres;

- initiatives to develop markets; and
- studies of transport and logistics cost and issues, with a particular consideration of regional areas of the country.

The aim of the scheme is to address both the environmental externalities, caused by landfill and illegal disposal of tyres, as well as the market failure issues of poor information and market power in vertically integrated reprocessing. By focusing on issues of risk and value, it has been possible to address these multiple areas of market failure simultaneously.

A significant issue that represented a risk to the scheme and a threat to value to be created and maintained, has been the possible free-rider problem. In addressing this issue several aspects had to be considered, including:

- consultations with Customs who oversee the importation of tyres in several guises;
- consultations with the ACCC on industry competition issues; and
- consideration of constitutional restrictions in respect of the proposed levy.

The industry is convinced that the scheme adequately addresses the various market failures, at the same time having the capability to create value in used tyres that can drive a reprocessing market.

However, the complexity and the nature of the issues that have to be managed through the scheme, mean that the scheme will need to be implemented nationally led by the Australian Government and involve multiple agencies of government to be effective.

4. Conclusion

The scheme represents five years of collaborative work by the tyre industry and governments. Whilst the scheme is yet to be implemented, the level of collaboration and agreement achieved during the development phase augers well for the implementation phase. The robust policy processes that have been followed provide a sound foundation for the policy and support expectation of a successful implementation.

SUPPORT DOCUMENT 6

CASE STUDIES WITH NEGATIVE ECONOMIC IMPACT

The following case studies highlight instances where waste management policy has been less than successful in delivering on its intended purpose. In each case study, observations are presented in respect of the four components forming the basis of the proposed framework for waste management policy in Australia, namely:

- Context — waste policy is but one of several policy platform areas available to government to ensure that our society achieves ***Sustainable Resource Management;***
- Purpose — waste management policy should focus on delivering value not arbitrary volume targets to ensure outcomes which deliver ***Sustainable Waste Management Solutions*** based on environmental, economic and social criteria;
- Process — effective and efficient policy requires discipline of process and clarity of purpose following the elements of ***Good Practice Policy Making***;
- Dimensions — a ***Risk-Benefit Approach to Waste Management Policy*** should be based on a number of dimensions and should recognise the relative significance of the various dimensions in any specific set of circumstances.

Case Study 3 – Landfill levy

Case Study 4 – Organics Collection & Processing

CASE STUDY 3 – LANDFILL LEVY

1. Introduction

All mainland States except Queensland have introduced landfill levies. Most use flat fee landfill levies, although in some States different rates are applied to municipal, industrial and inert waste, while a range of exemptions and rebates provides a coarse differentiation in some other States. Some States also apply a lower rate in regional areas.

Most States impose levies at the landfill gate. The levies are paid as part of landfill charges by the council or waste management contractor and are recovered from waste generators through rates and waste management charges. States often use part of the levy funds collected for waste reduction projects.

The NSW landfill levy is significantly higher than in the other States and provides an interesting example of how waste policy objectives have evolved and is illustrative of poor policy processes.

Waste disposal in the Sydney metropolitan region (SMR) has been subject to a levy payable by waste facility operators since 1971. The levy was increased in 1997 from $7.20 to $17 per tonne in the metropolitan region (ie; within 75km of the CBD) and $10 per tonne in an extended area lying between 75 to 200 km from Sydney (ERA).

In 2001, the NSW Government committed to raising the levies until they both reached $25 per tonne. The commitment was brought into effect via the Protection of the Environment Operations (Waste) Amendment (Contributions) Regulation 2002.

In 2005 the NSW government announced a proposed further increase in the State's landfill levy. The levy has been set at $22.70 per tonne of waste delivered to landfill in the SMA and $15.00 per tonne in the ERA for 2005-06. The levy will be increased annually to 2010-11, when the levy will reach $56.70 in the SMA and $52.50 in the ERA.

2. Current Policy Setting

2.1 Overview

BDA Group (2004) comment on the evolution of waste policy and the landfill levy in NSW:

> *"The levy was originally introduced to internalise the environmental impacts associated with disposal of waste to landfill[26]. However in a statutory review of the State's waste legislation in 2001, the NSW EPA indicated that the levy no longer had a direct environmental purpose, rather it was directed at promoting the diversion of waste from disposal to other uses, and to generate funds for waste management programs[27]. The indirect rationale appears to be to promote upstream*

26 NSW EPA (1996), Proposed Waste Minimisation and Management Regulation1996, Regulatory Impact Statement

27 NSW EPA (2001), Review of the *Waste Minimisation and Management Act* (1995), page 10

resource conservation. However the factors used in determining the levy rate do not address the nature, extent or price responsiveness of potential upstream benefits, rather they are revenue focussed and directed at industry support[28]. Indeed the levy rate increase has been directly based on the estimated cost difference to reprocess rather than dispose of common waste types[29]".

Whilst a regulatory amendment[30] enabled the increase in levy rates from 2002, the sunset provisions in the original regulations[31] meant the regulatory provisions would be repealed on 1 September 2005. As an interim measure, the existing provisions of the 1996 Regulation have been carried over until 1 March 2006. In August 2005 the DEC released a Regulatory Impact Statement (RIS) for a new regulation to maintain the levy (with some minor amendments).

In the RIS, the NSW Government confirmed that

'*the objective of the landfill levy was to provide an incentive for waste avoidance and resource recovery by increasing the cost of waste disposal'*[32].

In December 2005 when announcing the intention to almost treble the levy, the NSW Government also makes no mention of landfill externality impacts[33]. Rather it is stated that the levy will:

- drive further reductions in waste disposal to landfill to 'recover, reuse and recycle our valuable resources';
- provide funding for new environmental programs; and
- provide rebates to support councils who meet 'waste collection and resource recovery standards'.

The rationale is clearly to drive further reductions in waste disposal to landfill, if not for its own sake, then in the pursuit of 'upstream' resource benefits. Councils that meet targets will be rewarded.

However, an over-riding rationale appears to be revenue generation. The environmental program announced by the NSW Government commits funding of $439m over 5 years, with the levy increase providing the necessary funds. The environmental programs are primarily river health and native vegetation programs, rather than waste programs. Some 55% of current levy revenues are already hypothecated to finance waste programs, and the NSW Government has not always been able to find suitable recycling investments to match this revenue stream, with some $40m allocated to waste programs recently redirected to consolidated revenue[34].

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28 ibid

29 ibid; which in turn was derived from analysis by Wright (2000), Alternative Waste Management Technologies and Practices Inquiry.

30 Protection of the Environment Operations (Waste) Amendment (Contributions) Regulation 2002

31 Protection of the Environment Operations (Waste) Regulation 1996

32 NSW Department of Environment and Conservation (2005), Regulatory Impact Statement and on the Protection of the Environment Operations (Waste) Regulation 2005

33 NSW Government (2005), City and Country Environment Restoration Program, published by DEC, Sydney

34 Australian Financial Review (2003), Greens see red over waste levy diversion**,** 11 July

In summary, the policy objective behind the NSW landfill levy has evolved from:

- internalising 'downstream' landfill externalities; to
- promoting 'upstream' benefits, with revenue streams assisting waste program funding; to
- general State revenue generation, with any loss in revenues from lower landfill disposal offset by potential upstream benefits.

2.2 Outcomes

The performance of the NSW landfill levy in promoting each of the three policy objectives variously put forward to justify it is considered below.

Reducing downstream landfill externalities - available assessments of likely landfill externalities indicate that they are likely to be relatively small, potentially in the range of $2 to $14 tonne of waste in the SMA, with greenhouse gas emissions the largest externality impact (BDA Group 2004). With the levy rate prevailing in 1997 of $17/tonne, it could be argued that landfill externalities were fully internalised at that time.

However the landfill levy has been a very blunt tool in performing this policy role. Firstly, there is no differentiation in the rate paid on organic versus inert wastes, yet it is organic wastes that would be resulting in most of the externalities (greenhouse gas emissions and amenity impacts). Hence the levy acts as a tax on inert wastes to cross-subsidise the impacts associated with organics.

Secondly, because the levy is paid on wastes received rather than externalities created, it provides no incentive for improved landfill management practices, such as methane capture or measures to reduce amenity impacts. Therefore low cost environmental gains are overlooked as the only opportunities targeted by the levy will be actions prior to wastes being received at landfills.

Promoting upstream benefits - it is argued that reducing waste volumes to landfill, either through reductions at source or redirection to reuse and recycling, can generate benefits in resource conservation and through lower pollution externalities associated with manufacturing processes. For general wastes, the only Australian study to estimate the extent of potential upstream benefits is that by Nolan ITU and RMIT (2003)[35], who put benefits at between $106 and $182 per tonne of waste diverted from landfill.

The DEC (2004) [36] argues that the landfill levy has contributed to reducing the overall volume of waste disposed through improving the viability of recycling materials, primarily construction and demolition waste but also green waste, metal, glass and plastics. Indeed while waste volumes disposed in NSW have continued to rise, volumes recycled have increased significantly.

35 Nolan ITU and RMIT (2003), Life cycle assessment of waste and resource recovery options

36 Waste Avoidance and Resource Recovery in NSW – A progress Report, DEC, August 2004.

For example, DEC indicate that organics recovery is estimated to have increased from 40% in 1998 to 50% in 2002/03. However other factors will have played a significant role in this increase, including a proposed ban on municipal green waste to landfill and restrictions on kerbside collections of garden wastes. Waste policy issues pertinent to organics are the subject of another case study.

Available data also shows that the rate of kerbside recycling of household waste in the Sydney Metropolitan Area has grown threefold from about 99,000 tonnes in 1991 to 320,000 tonnes in 2001 while recycling of construction waste has grown from 300,000 tonnes in 1996 to 1.2 million tonnes in 1999[37].

In the case of the growth in kerbside recycling of Municipal waste, BDA Group (2004) argue that landfill levies have probably made only a minor contribution, as charges by councils have generally been too blunt to pass-on landfill levy increases to the household level. Rather a range of other factors are likely to have led to the growth in kerbside recycling, including increased availability of kerbside recycling with source separation virtually compelled through two-bin systems, a proposed ban on green waste to landfill, education programs, subsidies to support collections and recycling activities, and government-funded initiatives to develop recyclate markets.

Overall, the landfill levy is likely to have been of most significance to construction and demolition (C&D) waste streams. Indeed the NSW Government acknowledges that

> '*the levy is not considered to be a major determinant of upstream behaviour by enterprises in the commercial and industrial sector or by households generating municipal waste'*[38].

That is, the levy is primarily targeted at influencing the upstream behaviour and resource conservation associated with C&D wastes.

Of the waste generated from building activity on an annual basis, approximately 10 million tonnes are reused or recycled, 2.5 million tonnes are reprocessed into building materials off-site, and 1 million tonnes are disposed of annually to landfills – representing around 22% of total wastes to landfill in the SMA.

Wright [39] states that the recycling performance of the NSW construction and demolition sector is high by international standards and that this is due to the impact of the waste disposal levy on the relatively heavy mass of C&D waste, and the homogeneity of these materials making collection and sorting relatively efficient.

However DEC notes that even for C&D, a large proportion is recycled due to other regulations rather than due to the levy. Large-volume VENM (virgin excavated natural material) generators, such as Government-funded infrastructure projects, generally have planning consent conditions requiring the recycling and reuse of VENM rather than landfill disposal. Many agencies and their contractors take steps to avoid the generation of waste. For example, in 2001 NSW Government agencies reportedly

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37 NSW Department of Environment and Conservation (2004), Producing and consuming efficiently to conserve our resources

38 Ibid, p36

39 Wright (2000), Alternative Waste Management Technologies and Practices

avoided the generation of, or reused and recycled, 7.5 million tonnes of C&D waste, most of which was VENM[40].

In summary, the landfill levy has provided modest assistance to other interventions to facilitate high levels of recycling of primarily C&D wastes that compromises only some 22% of total wastes. And this has occurred prior to the 2005 announcement of a trebling of the levy.
Given the high level of C&D recycling already, further increases in recycled volumes are likely to be small, yet the levy will be incurred across all waste streams.

Generating revenue - the landfill levy has been wholly successful in generating revenue.

Whether this indicates a successful policy instrument for this purpose is less clear. BDA Group (2004) argues:

> *'The use of charges or levies as fiscal instruments to raise revenue has received little attention in the economics literature directed at waste policy. This is because such instruments do not have an economic basis – they are not designed to promote behavioural change and 'internalise externalities'. Indeed taxation theory suggests that an efficient fiscal tax is one where behavioural changes are minimised, as this will impose less economic costs on the economy and ensure the revenue base is not undermined.*
>
> *'When using charges or levies on waste management practices to raise revenue for waste programs, the key economic question for government is whether or not established State fiscal instruments would be more efficient in raising revenue'.*

2.3 Assessment

The NSW landfill levy demonstrates both poor policy and the significant costs that can be imposed on the economy.

Policy process failings - the market failures associated with waste disposal have been poorly identified. The NSW Government has subscribed to the waste minimisation ideology and sought to reduce volumes to landfill in the belief that any reduction is a good reduction. Attempts to clarify policy objectives have at best evolved, with the most recent revenue-orientated increase of tenuous environmental merit. Not only are the levies likely to be an inefficient fiscal instrument, it is unlikely that the State actually has the constitutional powers for what is essentially an excise tax on landfill production.

The instrument is also extremely blunt. There is no differentiation in levy rates according to either downstream or upstream impacts. All wastes incur the levy despite some having negligible downstream impacts and with the Government anticipating that only around 20% of wastes (C&D) are likely to deliver upstream benefits in response to the levy.

40 NSW Department of Environment and Conservation (2005), Regulatory Impact Statement and on the Protection of the Environment Operations (Waste) Regulation 2005, p39

Adherence to good practice policy principles may have prevented over-reliance on the landfill levy. And good practice policy requires a robust assessment of net benefits and public consultation. This has not occurred with recent legislative changes to the levy.

Firstly, the increase in the levy from $17 to $25 per tonne was brought into effect via the Protection of the Environment Operations (Waste) Amendment (Contributions) Regulation 2002. As an amendment to an existing regulation, the statutory requirement for economic assessment is only for a 'Schedule 1' analysis. Since such analyses can only be sighted by the public through a *Freedom-of -Information* request, this is hardly conducive to good practice policy and open government.

Secondly, the August 2005 RIS accompanying the new regulation to prevent the repeal of the landfill levy regulations is of very poor quality. In the RIS it was recommended to maintain the landfill levy provisions, with some minor 'housekeeping' amendments. DEC concluded that:

> '*Although it proved difficult to accurately quantify the benefits and costs of the new Regulation … this analysis demonstrates that the new Regulation offers benefits to all sectors of the community compared with the base case of no levy. …. It is recommended that the new Regulation be made*. '

However such a conclusion cannot be supported by the analysis provided. The analysis presented fails to quantify the expected net benefits and actually indicates that the levy is unlikely to meet its stated purpose of supporting resource conservation – as the levy was considered only to be a major determinant of upstream behaviour by enterprises in the construction and demolition sector.

Costs of the new Regulation over 5 years *compared to no levy* were summarised in the RIS (Table 9, page 44) as:

To industry	Paperwork associated with levy reporting $118,000.
	Installation of weighbridges by three medium-sized landfills $150,000–$240,000 (one-off capital cost, not discounted)
To community	Increased illegal dumping or mistreatment of waste - not quantified.
	Increased waste management fees - about 11 cents per household - not fully quantified as subject to individual council rates
To Government	Administration and auditing of levy $4 million.
	Prosecution costs - not quantified.

This is grossly deficient. Firstly, the income effect on households (of 11 cents) is a revenue effect, not an economic impact per se, and the omission of all but paperwork costs on waste generating industries renders the RIS process virtually useless.

Secondly, some lower bound estimate of the costs of illegal dumping due to the levy could be inferred from the costs in policing such activities. In the main body of the RIS it is reported that local councils spent approximately $10 million a year on measures to

address illegal dumping and landfilling. The DEC spent $1,185,000 in 2003–04 on measures such as enforcement campaigns, RID Squads and clean-up of littering and dumping sites. Other agencies also incurred costs in cleaning up dumped waste on their premises (p39).

Benefits of the new Regulation over 5 years compared to no levy were summarised in the RIS (Table 8, page 43) as:

To industry	Supports recycling and recovery sector - not quantified.
	Promotes investment in alternative waste technology (AWT) - not quantified.
To community	Environmental benefits (for example, reduced greenhouse emissions, intergenerational costs, air pollution, water pollution and improved amenity) $935,000 to $10.6 million a year for every 100 000 tonnes of avoided waste disposal.
	Reduced risk to human health - not quantified.
To Government	Capacity to achieve waste targets and objectives - not quantified.
	More efficient levy collection - not quantified.

The 'statements of support' to recycling industries or investment in waste technology indicate the biases in the analysis, given no statements regarding the (larger and negative) impact of levies on waste generating industry are included under costs. Similarly, 'capacity to achieve waste targets' is a reference to a means not an economic outcome or impact for inclusion in a benefit-cost analysis.

And typical in waste RIS's is the reference to broad life-cycle studies in relation to upstream benefits. There is no mention that such analysis relates to an average tonne of waste, yet the wastes most likely to be diverted are C&D wastes which will have far lower benefits than other waste streams[41].

Also it assumes that the upstream benefits are realised merely because a tonne of waste is diverted from landfill. As argued elsewhere in our submission, there are many leakages and substitution possibilities in supply chains that mean resource use patterns may change little. Also, the Nolan ITU estimates are based on upstream externality impacts in the Sydney metropolitan area, yet an increasing proportion of wastes are being directed to landfills outside of the SMA (eg: the Woodlawn landfill near Goulburn) where impacts will be negligible.

Finally, it fails to recognise that many upstream externalities are already subject to 'correcting' interventions. In NSW in particular, industrial premises pay pollution discharge fees which should be netted out of any postulated upstream benefits.

41 The estimated upstream benefits are dominated by reduced air and water emissions. However organic wastes and wastes with hazardous components will contribute most to these impacts, with the largely inert, non-hazardous C&D wastes providing few benefits.

Cost of poor policy - punitive landfill levies can have substantial economic costs beyond paperwork and administration! NSW appears to be following the path of the UK landfill levy, and is likely to also incur significant economic costs.

The UK introduced a landfill tax in 1996 also based on estimated downstream environmental costs. The levy was initially set at £7 per tonne, but now the tax is being progressively increased to £35 per tonne to assist the UK to meet the EU Landfill Directive Targets for municipal waste – that is, to meet a landfill disposal reduction target.

A review of the performance of the tax indicates that while 'active' waste volumes landfilled have remained constant, volumes of inert waste (principally C&D) have fallen by 56% over 5 years[42]. However, it has been estimated that the introduction of the UK landfill tax at its initial £7 lead to an economic loss (ie; additional cost to industry of changing waste disposal practices) of £366m, or around 0.1% GVP[43].

Clearly the subsequent increase to £35 per tonne will impose very high economic costs on the British economy. This has led a number of commentators to question the efficacy of the levy, also noting that there has been evidence of increased illegal dumping of wastes and that rigidity in planning processes is preventing the delivery of new infrastructure to handle the volumes of waste being 'pushed' out of landfills[44].

As NSW moves to treble its landfill levy, it can only be hoped that when an amendment to the landfill regulation is introduced, the government chooses to prepare a public consultation document with a robust economic assessment, rather than only prepare a 'Schedule 1' analysis.

To illustrate the likely significance of the economic costs that will be imposed on industry and the broader community from a trebling of the NSW landfill levy, an indicative analysis of potential costs has been undertaken.

The economic impact of the proposed increase in the waste levy from 2006-07 was estimated using BDA Group's economic model of the supply and demand for landfill and recycling services. The model has been recently used to estimate levy impacts in South Australia[45].

The imposition of a waste levy on waste disposed to landfill will increase the supply cost of landfill services and increase the economic attractiveness of diverting waste for recycling. Waste streams include Municipal, Commercial and Industrial (C&I) and Construction and Demolition (C&D). Waste generators in these sectors would face higher prices for landfill services as a result of the levy, with price rises dependent on the extent to which landfill operators can "pass on" the increased levy to them.

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42 Davies and Dable (2004), The development and implementation of a landfill tax in the UK, in OECD (2004), Addressing the economics of waste

43 ibid

44 see for example, Frith and Brooks (2005), Developing New Technologies to Divert Municipal Wastes from Landfill: a Government Initiative for England, Proceedings Sardinia 2005, Tenth International Waste Management and Landfill Symposium, Italy 3-7 October

45 BDA Group & EconSearch 2004, Analysis of Levies and Financial Instruments in relation to Waste Management, Final Report to Zero Waste SA, October.

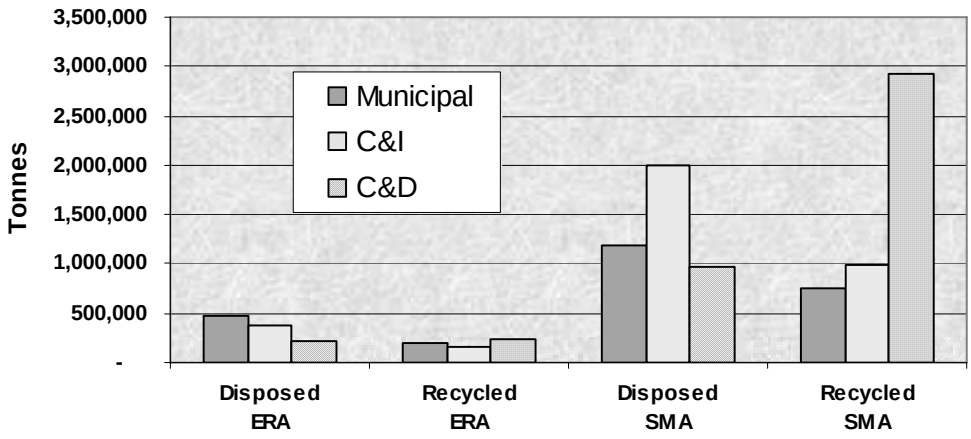
On the other hand, owners of recycling operations and AWT processing facilities would benefit from the imposition of the waste levy on landfill as their service would become more cost competitive. BDA Group's economic model was used to estimate the economic gains and losses across the different sectors and the net economic loss to NSW[46].

Gate prices for waste delivered to landfill were based on 2005-06 landfill prices at Lucas Heights (GST exclusive). These prices were $87 per tonne for Municipal and C&I waste and $107 per tonne for C&D waste.

The most recent data on the volume of waste disposed of at landfill and waste recycled was for 2002-03[47] as set out at Figure 1.

For evaluation purposes, it was assumed that for the base year of the evaluation (2005-06) waste generation and disposal patterns would be the same as in 2002-03.

Figure 1: Waste Generation by Waste Stream- 2002-03



Source: ***Derived from Waste Avoidance and Resource Recovery in NSW – A Progress Report, DEC, August 2004***

Annual economic impacts of the increased levy in the SMA and ERA were estimated for different sectors of the waste industry, including landfill owners, owners of recycling facilities and waste generators.

Increased revenue from the levy for the NSW government represents a transfer between different sectors of the waste industry and the NSW society at large. The value of this transfer has not been calculated.

46 Demand and supply elasticities were assumed to be the same as those used to model waste levy economic impacts in SA.

47 Waste Avoidance and Resource Recovery in NSW – A progress Report, DEC, August 2004. Data on waste generation by waste stream was not available for the ERA. Estimates were derived by assuming that the volume of waste recycled as a proportion of waste diverted to landfill in the ERA was the same as other areas outside the SMA.

The net social impact from the imposition of the levy represents the sum of gains and losses across the different sectors of the waste industry. Impacts for the SMA are reported at Table 1, with total impacts over 30 years reported in present value terms (based on a discount rate of 7%)[48]. Impacts for the ERA are reported at Table 2.

Waste generators were estimated to incur the greatest economic loss, some $133m a year by 2010/11 or $1.4b over the next 30 years. Landfill owners face an estimated $45m loss while owners of recycling and AWT processing facilities face an estimated $1.3b gain.

Overall, by 2010/11, the net social economic loss from the imposition of levy in the SMA was estimated at $18m a year and $177m over the next 30 years.

Table 1: Economic Impact of Increased Landfill Levy in SMA: By Sector ($m)

Year	Landfill Owners	Recycling Owners	Waste Generators	Net Social Impact
2006/07	0	23	-24	**-1**
2007/08	-1	47	-50	**-3**
2008/09	-2	72	-77	**-7**
2009/10	-3	98	-107	**-12**
2010/11	-4	120	-133	**-18**
2011/12	-4	120	-133	**-18**
. . to 2036	-4	120	-133	**-18**
Total	**-$45m**	**$1,277m**	**-$1,410m**	**-$178m**

Notes: 1. Total impact reported in present value terms using a discount rate of 7%.

2. Totals may be subject to rounding errors.

In the case of the ERA, waste generators were estimated to incur the greatest economic loss, some $24m a year by 2010/11 or $248m over the next 30 years. Landfill owners face an estimated $5m loss while owners of recycling and AWT processing facilities face an estimated $217m gain. Overall, by 2010/11 the net social economic loss from the imposition of levy in the ERA was estimated at $4m a year and $37m over the next 30 years.

48 As there is provision for increases the levy in line with the CPI monetary figures used in the analysis can be interpreted as current dollars.

Table 2: Economic Impact of Increased Landfill Levy in ERA: By Sector ($m)

Year	Landfill Owners	Recycling Owners	Waste Generators	Net Social Impact
2006/07	0.0	4	-4	**0**
2007/08	-0.1	8	-8	**-1**
2008/09	-0.2	12	-13	**-1**
2009/10	-0.3	16	-18	**-2**
2010/11	-0.5	20	-24	**-4**
2011/12	-0.5	20	-24	**-4**
. . to 2036	-0.5	20	-24	**-4**
Total	**-$5m**	**$217m**	**-$248m**	**-$37m**

Notes: 1. Total impact reported in present value terms using a discount rate of 7%.

2. Totals may be subject to rounding errors.

The annual impact of the levy in both the SMA and ERA on volumes of waste diverted from landfill (either reduction in waste generated or waste sent to recycling) was estimated at 1.2m tonnes in total, comprising 226kt of Municipal waste, 442kt of C&I waste and 570kt of C&D waste. This represents 24% of the 5.2m tonnes of waste currently disposed off in landfill each year.

Economic Cost of Enforcement - increasing the landfill levy will encourage more illegal dumping of waste usually with greater environmental impacts than if the waste had not been diverted from landfill. No attempt has been made to estimate what increase in the volume of waste being dumped could be attributed to the increased levy.

However, the NSW government has proposed an increase in enforcement costs of $18m over 5 years to address this issue. Assuming that these efforts are required on an on-going basis, it provides a minimum estimate of the social costs associated with illegal dumping. At some $3.6m a year, this cost would total $45m over 30 years in present value terms

Total Social Loss from the Increased Levy - the total social costs imposed on the NSW community from the proposed levy increase as estimated above is nearly $260m in present value terms.

This excludes the environmental costs associated with increases in illegal dumping that will not be prevented through the enhanced enforcement program. It is also on top of the costs associated with the existing levy (of $25/t in the SMA) and the current government levy administration and auditing costs of almost $1 million annually.

3. Applying a Value-Focused Policy Approach

Good practice policy development and a focus on value not volume would deliver a very different waste policy regime than the current one in NSW that has punitive disposal levies as its cornerstone.

Significant costs on the economy would be avoided through a better alignment of highly targeted instruments with market failures along supply chains. Rigorous policy assessment would provide a means to confirm chosen instruments as effective and efficient.

Under such a policy process, it is likely that landfill externalities would be effectively handled through a combination of planning consent conditions and landfill emission fees. Such emission fees could be incorporated into existing NSW EPA licensing regimes which already use load-based emission fees.

Pollutant emissions associated with market activity, be that processing activities utilising virgin or recyclate materials, would face the same emission fee regime. This would allow cost-effective emission reductions to be optimised.

Resource conservation objectives would need to be clarified. If specific NSW resources were found to be being exploited at unsustainable levels, then the Government's resources policies would need to examined and perhaps refined.

Highly inefficient policy interventions late in supply chains would no longer be used to convey a sense of resource stewardship to the community. Waste policy would focus specifically on disposal impacts and resources policy and administering agencies would be directly accountable for sustainable resource management.

4. Conclusion

The NSW landfill levy was overhauled in 1997 to specifically internalise the externality impacts associated with landfill disposal of wastes. This was a well-targeted policy instrument with the accompanying RIS providing quantitative analysis to support the chosen levy rate.

However, since then, waste policy has moved away from its focus on disposal impacts, to an ideology of waste minimisation. This has led to a policy environment that is seeking to aggressively reduce disposal volumes, with apparently little concern for the costs imposed on the economy in so doing.

Arbitrary disposal reduction goals have been set, policy rational has been reinvented as necessary and policy assessment provided little more than lip-service, even where statutory impact assessment requirements exist.

This is characteristic of waste policy approaches overseas. For example, Professor McGlade, Executive Director of the European Environment Agency stated that:

> *Market instruments have been employed in the EU to get actors to comply with waste reduction & recycling targets, rather than to 'internalise environmental costs' per se. If targets are not met, instruments should be strengthened*[49]*.*

NSW and Australia deserve a more rational and evidence-based approach to policy, that will only come with better adherence to good practice policy making.

49 Professor Jacqueline McGlade, Executive Director, European Environment Agency (2004), European packaging waste trends and the role of economic instruments, European Voice conference PACKAGING OUR FUTURES Brussels, 1-2 March

CASE STUDY 4 – ORGANICS COLLECTION AND PROCESSING

1. Introduction

States' landfill policies are directed at minimising volumes disposed to landfills. Organics are a significant part of the waste stream with alternative 'beneficial' uses. This has prompted States to variously introduce policies to encourage the diversion of organics from landfill. And landfill policies in particular (such as disposal levies and in some instances bans on some organics to landfill) have been successful in increasing the diversion of organics from landfill disposal primarily to the recycled organics industry.

The organics industry comprises three major sectors, these are:

- *recycled organics* – nationally some 50% of green wastes are diverted from landfill, producing some 3 to 4 million tonnes of recycled organics per annum;
- *bio-solids* – are recovered from municipal wastewater treatment and recycling, with some 1-2 million tonnes per annum provided to end-users at a nominal cost;
- organic by-products – such as animal manures that are generally not composted but applied in a raw form, and represent some 2-4 million tonnes per annum into the market.

Notably, a range of environmental regulatory requirements have been placed on composting facilities, and recycled organic product as the feedstock has been labelled as a 'waste'. These extend beyond planning requirements to manage odour impacts, to also prescribe requirements for leachate management of recycled organics holding areas and in relation to handling and transporting recycled organics.
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The rapid expansion of the recycled organics industry has led to product surpluses and price pressures, threatening viability and industry growth. Associated problems expressed by the recycled organics industry include[50]:

- there is a presumption the "more is better", without regard to the capacity of the market to absorb compost:
  - there are other sources of materials for soil amelioration that are competing with compost – fertilisers, chicken and other animal wastes, biosolids,
  - the rapid expansion in compost supply has resulted in price cutting and eliminating margins;
- benefits of compost have been measured and demonstrated, but:
  - the message is not being adequately disseminated to potential users,
  - insufficient funds are being directed to market development initiatives, especially when compared to revenue streams collected from landfill levies;
  - compost is viewed with scepticism by many end-users, who generally do not acknowledge the contribution of compost in building up soil structure and carbon levels as well as providing nutrients;

50 Resource Consulting Services (2005), Compost Supply Chain Roadmap

- facilities producing competing materials – especially biosolids and animal manures – are not regulated to the same degree as compost facilities, nor are those products regulated to the same degree;
  - much of the regulation relating to composting and compost is prescriptive, is not outcomes focused and based on the labelling of the feedstock as a waste;
- organics industry approaches to governments for assistance with market development have received little support.

2. Current policy setting

2.1 Overview

As argued elsewhere in this submission, the rationale for minimising waste to landfill is increasingly being argued in terms of perceived 'upstream' benefits rather than to mitigate environmental impacts at landfills.

In the case of organics, there are environmental impacts associated with the disposal of organics to landfill (amenity, greenhouse, etc), but these have not been a direct policy focus. Analyses of the merits of organic recycling (such as by Nolan ITU [51]) generally rest on assessed 'upstream' agricultural flow-on benefits.

Most States have set quantitative targets for the reduction of waste disposed to landfill. In many instances, targets for specific waste streams, such as green wastes, have been established. Current landfill diversion of green waste and State diversions targets are shown at Table 1[52].

Table 1: Green Waste Diversion Rates and Targets

State	Current Diversion (tonnes p.a.)	Green Waste Diversion Target	Current Growth in Diversions (% p.a.)	Diversion Needed by 2010 (tonnes p.a.)
SA	127,000	25% in 10 years	14.52%	250,148
QLD	391,416	-	16.45%	838,301
VIC	216,882	75% by 2013	9.08%	616,882
NSW	550,000	66% by 2014	24.55%	1,648,630

Considering the diversion targets and current rates of growth, the Australian compost industry will have to find a market for much more product in the coming years.

Composts manufactured drawing on organics from waste streams as feedstock generally face higher processing costs than competing composts comprised of virgin raw materials or other competing products such as bio-solids and animal manures. Accordingly, policy interventions need to account for price differentials.

51 Nolan ITU & Access Economics (2002), Organic waste economic values analysis, report to SA Department of Industry and Trade and Environment Protection Agency

52 Resource Consulting Services (2005), Compost Supply Chain Roadmap, page 5

The key policy interventions adopted are bans on some organics to landfill, the imposition of landfill disposal fees, and restrictions on kerbside collections of garden wastes. These policies serve to 'push' organics out of waste disposal streams through either regulatory means or price penalties. Comparatively few interventions have been targeted at recycled organics market development.

2.2 Outcomes

Industry growth has arisen specifically due to the 'supply-push' policies of State governments. Around 85% of urban recycled organics are used in urban parks and gardens, but this use has become saturated. Far greater quantities could potentially be used in agriculture, but organic products are bulky and expensive to transport. This has limited the cost-competitiveness of urban recycled organics with agricultural organic wastes (crop residues and manures) and with artificial soil conditioners.

The NSW Department of Primary Industries[53] has estimated that the current economics of transporting urban recycled organics from Sydney to rural areas for agricultural uses limits its use to a radius of about 300km[54].

As the diversion of organics has run ahead of market demand, not all organics diverted from landfill are being taken up by the recycled organics industry. The failure of compost markets to absorb the volumes of urban organics being diverted from landfill reflects in part the cost-competitiveness of organics with competing products, but industry growth has also been constrained on the 'demand' side due to lack of quality assurance (transparent product standards) and market development.

Overall, growth of the recycled organics industry is stalling, which will:

- impact the ability of States' to reach ambitious organics landfill diversion targets, and
- lead to losses across the current industry with inevitable closures and job losses.

2.3 Assessment

Vague policy objectives – policy instruments have not been developed in response to specific and significant problems being faced by the community, rather organics have been targeted solely because they comprise a significant part of waste streams and it has been taken on faith that any waste diverted from landfill will lead to gains in social welfare.

The market failures have not been made explicit – recycled organics may deliver community benefits by way of lower greenhouse gas emissions or through soil productivity improvements, but the failure of markets to capture postulated benefits has

53 Scott-Orr (2005), *Organic recycling and sustainable food production*, in CSIRO (2005) Sustainability Network Update No. 54E, PP 7 - 10

54 It was also noted that increased landfill costs would serve to extend this radius. Since this article, the NSW Government has announced a trebling of the metropolitan landfill levy.

not been identified nor have the net benefits of government intervention to promote these benefits.

In particular, the postulated upstream user benefits rest on identifying a failure of landholders to manage land and soil resources in a sustainable way. If unsustainable land use practices are indeed the market failure, and grounds for policy interventions, it is not apparent why natural resource management policies and programs being pursued in jurisdictions are inappropriate or insufficient.

No demonstration that the postulated market failure can best be dealt with through waste interventions – as well as demonstrating the failings of current natural resource management policies, it would need to be shown that alternative interventions across supply chains could not provide a more efficient response.

Also, interventions to promote the greater use of organics to reduce greenhouse gas emissions would need to demonstrate efficiency relative to other prevailing or potential greenhouse gas policies. While climate change policies are still evolving, a more direct interim response would be to introduce greenhouse gas emission taxes at landfills (with levy rates reflective of the global warming potential of methane viz-a-viz CO_2), as this would provide an incentive for greater emission capture at landfills across all wastes (including organics mixed in with municipal and commercial wastes).

Poor targeting of policies – the lack of targeting of landfill levies for any postulated market failures is evident in that States are aware that policies have created a product in search of a market.[55] In the case of NSW, the Government has now realised that this will need to be rectified through product development[56].

However many in industry believe that recycled organics will still face a substantial price disadvantage in competing in the agricultural compost market – a market that will need to be exploited if landfill organics diversion targets are to be realised.

No economic assessment – while compost can provide a benefit to a range of land uses/activities, there are costs involved in manufacturing, transport and marketing. To date there has been limited analysis by governments of the competitiveness of recycled organics, particularly in the agricultural compost market, to support the aggressive organics landfill diversion policy positions taken by the States.[57]

Focussing on waste not resources – by classifying organics as 'wastes' they have become subject to a range of environmental protection regulation designed to provide the community protection from hazardous materials or inappropriate disposal practices. Organics as an input to composting processes pose few risks and should be treated as any other input, while composting facilities should be treated on a similar basis as other manufacturing facilities, rather than as waste processing operations.

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55 For example, NSW DEC in its 2004 progress report on its Waste Avoidance and Resource Recovery Strategy indicate that 'the Department has been working on a range of programs to grow markets for recycled organic materials'

56 NSW DEC (2004), Analysis of Markets for Recycled Organic Products

57 although one notable study by DEC (2005), Recycled Organics in Catchment Management, concluded that 'recycled organic products performed as well as the standard conventional method of using cereal straw in combating erosion and revegetating degraded land. In the final analysis, it would come down to economics ... Preliminary calculations suggest that the low rates used may be economic if used strategically in the most degraded situations.'

3. Applying a *Value-Focused* Policy Approach

Government objectives are to promote efficient industries, including industries that produce soil conditioners, and the safe and effective handling, processing, consumption and disposal of resources. Industry size, and resource and consumption patterns should not be of primary policy interest. Under a value-focused policy framework, government policy objectives will be to overcome market failures that reduce the ability of the community to maximise the value that can be realised from our resource and industrial base.

To an extent, there is a natural market for recycled organics. On a regional basis, there will be demands for fertilisers and competition between compost products and virgin materials. Cost-competitiveness will drive market shares. Efficient markets will ensure the recovery of organics from the waste stream commensurate with the societal benefits of so doing.

However, optimal organics recovery from landfills may not occur due to market failures – that may include regulatory and information failures or where land use practices are inconsistent with broader sustainability objectives.

1. ***Landfill externalities*** – these are relatively small and already accommodated through policy interventions including planning requirements, landfill operating licenses and modest landfill levies – although landfill emission fees would be superior and would provide a better link to the key pollutant (greenhouse gases) that will need to be aligned with broader climate change policies.

2. ***Regulatory failure*** – regulatory failure may arise if recycled organics face regulatory oversight disproportional with environmental risks faced and relative to competing compost products (eg; animal manures). This is an issue raised in the Compost Supply Chain Roadmap.

3. ***Information failure and promotion of inter-generational equity*** – landholders may not manage land and soil resources consistent with intergenerational equity objectives or in a way that would maximise broader social welfare given the full range of management options available to them. Governments have recognised this failure and have initiated a wide range of natural resource management policies and programs. Of importance here will be to demonstrate why policy intervention to promote the uptake of recycled organics would be an efficient complementary policy response.

Many in the recycled organics industry believe sensible and targeted policy interventions to manage landfill externalities and promote the stewardship of Australia's soil resources would not specifically target the recycled organics industry.

However, interventions to directly reform the unnecessary environmental regulatory imposts on the industry and to overcome the information failures constraining the uptake of recycled organics by rural industries are needed. Specifically, and as described in the *Compost Supply Chain Roadmap*, policy needs to deliver:

- fit-for purpose' environmental regulation to address externalities arising from any product, whether originating from virgin materials, industry by-products or diversion from landfills;
- recycled organics market development to overcome information failures – for example, analogous to Government support for no/low tillage systems which keep organic material in the soil, support for R&D, demonstration projects and communication activities; and
- recycled organics product quality assurance regimes – marketing a product not a waste.

These interventions would promote the orderly development of a viable recycled organics industry and markets for organics that maximised the value the community could realise from these resources. The resulting residual volumes of organics disposed to efficient landfills would be of no policy relevance.

4. Conclusion

Government *volume-focussed* organics policy has treated recycled organics as a waste product, resulting in a supply-push strategy to force organics away from landfill disposal and the imposition of substantial environmental regulation on compost production facilities and products. The result has been over-supply and difficulties for recycled organics to compete with other soil conditioners on a level playing field.

Alternatively, a *value-focussed* policy approach would seek to identify underlying market failures and to remove barriers to efficient markets that seek to extract value from resource streams, including available organic materials.

The resulting policy strategy would see greater emphasis on market development, 'fit-for purpose' environmental regulation and product quality assurance regimes.

The resulting recycled organics industry would not develop to any predetermined level of organics throughput drawn from waste streams. Rather the industry would develop to a size which reflected its inherent competitiveness and to one that maximised value to the Australian community**.**

SUPPORT DOCUMENT 7

CASE STUDIES EXAMINING POTENTIAL FUTURE INTERVENTIONS

The following case studies examine instances where there is potential that future interventions could be considered from a waste management policy perspective. These case studies explore some of the issues associated with such potential interventions and highlight possible benefits and dis-benefits of intervention. In each case study, observations are presented in respect of the four components forming the basis of the proposed framework for waste management policy in Australia, namely:

- Context — waste policy is but one of several policy platform areas available to government to ensure that our society achieves ***Sustainable Resource Management;***
- Purpose — waste management policy should focus on delivering value not arbitrary volume targets to ensure outcomes which deliver ***Sustainable Waste Management Solutions*** based on environmental, economic and social criteria;
- Process — effective and efficient policy requires discipline of process and clarity of purpose following the elements of ***Good Practice Policy Making***;
- Dimensions — a ***Risk-Benefit Approach to Waste Management Policy*** should be based on a number of dimensions and should recognise the relative significance of the various dimensions in any specific set of circumstances.

Case Study 5 – Lead Acid Batteries

Case Study 6 – By-Product Synergies in Manufacturing

CASE STUDY 5 – LEAD ACID BATTERIES

1. Introduction

The health risks of lead to humans and other animals are serious and well known. Over the years, governments around the world have developed or proposed policies to limit the release of lead into the environment. Actions have included bans on certain uses of lead, bans and regulation of certain types of waste disposal, compulsory and voluntary recycling schemes and product stewardship schemes.

In Australia, major initiatives include the replacement of soldered with welded cans in the food industry, replacement of lead in domestic paints and removal of lead additives from petrol.

In the case of used lead acid batteries (ULABs), EU and USA regulators have legislated mandatory recovery schemes, but no such arrangements presently exist in Australia. Some community groups have called for action on ULABs to ensure they do not create environmental hazards, and there are indications that state jurisdictions may respond with some form of intervention.

ULABs present an excellent opportunity for a nationally consistent approach to be investigated, and for the principles of good practice policy development to be tested.

2. Current Policy Setting

2.1 Overview

State and local government regulations generally prohibit disposal of used lead acid batteries in landfill. If used batteries are not collected, they are either stockpiled, sent to landfills (despite the prohibition) or illegally dumped in the landscape where their components, the lead, the lead sulphates, and any sulphuric acid remaining, can poison biota and pollute.

There is currently no national policy framework to support ULAB recycling in Australia. Used batteries are collected under industry initiated arrangements from major centres in Australia and imported from some South Pacific countries, then recycled at plants in Melbourne and Sydney, or exported to Exide's New Zealand secondary lead smelter.

Australia's international trade in lead waste is regulated under the Hazardous Waste (Regulation of Exports and Imports) Act 1989, administered by the Department of the Environment and Heritage. The Act implements Australia's obligations under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. The object of the Act is to ensure that human beings and the environment, both within and outside Australia, are protected from the harmful effects of hazardous waste. Export of ULABs come under this legislation.

2.2 ULAB Recovery Arrangements

In the USA, where a compulsory recovery scheme operates, it is estimated that over 99 per cent of automotive ULABs are recycled (Battery Council International 2005, p7) [58].

Available statistics for the EU vary considerably among member countries, possibly due to different recycling outcomes and differences in accounting methodology. In France, the reported recovery rate is 91 percent while in Germany and the UK the recovery rate is reported to be around 78 percent[59]. The EU is currently proposing action to increase battery recycling rates.

Australia operates voluntary recycling schemes through battery manufacturers and scrap metal collectors. Data concerning ULABs in Australia appears poor. Rigorous estimates of the supply and recycling of lead acid batteries do not appear to be available.

In recent legal proceedings,[60] estimates of annual ULAB recovery in Australia ranged from 65,000 to 76,000 tonnes, with the total annual volume of used batteries estimated at some 10,000 tonnes higher – i.e. possibly 85 percent of ULABs are currently being captured in Australia for recycling.

Two battery manufacturers operate collection and recycling scheme in the larger cities in Australia. One manufacturer exports its used batteries to its smelter in New Zealand, which also services recycled ULABs from islands of the South Pacific.

The current collection and recycling operations are voluntary and market driven. The recycling schemes are strongest and best developed in the larger capital cities. Rural and regional areas are not well covered, and the coverage of Brisbane and Perth is patchy. Even in Sydney, some ULABs end up in the municipal waste stream.

3. Examining Market Issues

3.1 Information

The technology of ULAB recycling is well understood. Collection, information and the lack of an evidence-base of adverse impacts are the issue. If evidence is produced that the outstanding quantities of ULABs are causing environmental impacts associated with improper disposal, then pressure will mount for the development of alternative approaches.

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58 Battery Council International, National Recycling Rate Study, Prepared by SmithBucklin Corporation Market Research and Statistics Group, June 2005, accessed from www.batterycouncil.org on 6/1/2006.

59 Commission of the European Communities, Commission Staff Working Paper, Directive of the European Parliament and of the Council on Batteries and Accumulators and Spent Batteries and Accumulators, {COM(2003)723 final}, accessed 6/1/2006.

60 Administrative Appeals Tribunal, Australian refined Alloys Pty Limited and The Minister for the Environment and Heritage and Anor [2003] AATA 247 (17 March 2003), accessed through www.austlii.edu.au/cases/cth/aat/2003/247.html, on 29/12/2005.

Statistics on new battery sales and ULAB collections for recycling, which should be easily obtained, are not readily available in Australia today. And information relating to negative environmental effects appears more anecdotal than evidence based. For example, operators of mixed waste processing facilities suggest that batteries are entering the municipal waste stream in Sydney and compromising process plant performance, but this has not been quantified.

Obtaining authoritative information about the annual output of used batteries, the extent of stockpiling and disposal of ULABs in landfills, process plants or in the landscape is the first step to determine whether Australia's ULAB recycling regime is adequate to prevent adverse environmental effects.

While there is plenty of overseas research on the environmental and health risks associated with improper disposal of ULABs, little research has been done in Australia to indicate that there is sufficient negative economic cost associated the current arrangements to warrant a more comprehensive system.

3.2 Commodity Markets and Capacity

Lead is valuable, so market forces have been driving ULAB recovery and recycling for many years. However, the incentives for ULAB recovery are related to the exchange rate adjusted world metal price. This price is quite volatile and can create short-term fluctuations in the market for ULABs, reducing incentives to collect from areas with higher transport costs.

It is reported that the smelters that receive ULABs generally operate at full capacity, on which basis it would appear that the current capacity is not adequate to deal with the total annual flow of ULABs if all were to be collected for recycling. Therefore, when prices rise, capacity constraints are likely to prevent short-term market response.

On this basis, any sustained increase in recovery rates would require significant capital investment. A comprehensive scheme would also entail significantly higher collection and transport costs, for the recovery of (perhaps less than) the 20 percent ULABs outstanding.

3.3 Markets and Competition

Evidence presented at the legal proceedings cited, pointed to less than complete collection of used batteries as well as competition policy issues, in the highly concentrated used battery/lead scrap market in Australia.

In this latter respect, industry concentration (two companies) in the ULAB recycling market has allowed strategic and anti-competitive behaviour that appears to be reducing or resulting in incomplete collection of ULABs. While the current scheme is entirely market driven, oligopolistic behaviour may be leading to less than optimal outcomes.

The development of policies relating to ULABs must recognise the structure and behaviour of the market. These issues have been reflected in administration of the Basle Convention controls on exports of used batteries to New Zealand.

4. Conclusion

If evidence reveals that the current ULAB recycling arrangements are not working effectively in Australia, or if enthusiasm develops for copycat policy making following the EU or the USA, then a rigorous analysis of options should be undertaken after the evidence base has established the size of the problem and the risk presented.

Any new policy initiatives must be able to deal with the competition policy issues, complex market issues and any environmental externalities. This will require involvement by more than just environment agencies and an approach that is nationally developed and implemented.

CASE STUDY 6 – BY-PRODUCT SYNERGIES IN MANUFACTURING

1. Introduction

1.1 Disclaimer with Rationale

The following case study is not about sustainable waste management and it does not discuss disposal externalities relating to wastes.

It is about sustainable resource use, i.e. the efficient allocation and use of resources.

However, this case study is presented to illustrate how the productive utilisation of resources, that might otherwise be classified as wastes and regulated as such, can operate when industry and markets are allowed to function efficiently.

Specifically the case study explores the issue of when a waste should be labelled as such and regulated as such, drawing on the definition for waste that has been adopted for the framework – where the term "*waste*" is used to describe:

> ***resources that cease to have value or purpose in the hands of the current owner, but in the hands of a new owner may find new value and new purpose.***

1.2 Introducing the Case Study

This case study presents two examples of regional synergistic use of by-products that would otherwise have gone to waste. 'By-product synergies'[61] develop in industrial clusters where one producer uses another's by-products or wastes (materials, water or energy) as inputs (Altham et al. p1)[62]. Such synergy programs aim to maximise the net value from utilisation of resources, including achievement of environmental and social as well as economic objectives. Synergies may exist between related companies, and indeed, have influenced the product scope and organisation of firms for many years. More generally, however, they can arise among a wide range of industrial enterprises.

Facilities utilising synergies are generally located in the same area to minimise transport and storage costs and to enable perishable inputs such as heat and volatile materials to be used in real time. However, co-location is not a necessary condition for some by-product synergies where the value of the costs and/or benefits can justify the transport costs.

By-product synergies harness market forces to make most efficient use of resources. Synergies sometimes develop through the operation of normal market forces, but the

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61 By-product synergies are one element of what is known as 'Industrial Symbiosis' that also includes supply synergies between manufacturers and input suppliers, and utility synergies involving shared use of utility infrastructure[61](Altham et al. 2004). Supply synergies involve suppliers of inputs co-locating with their customers to increase productive efficiency and have been a long-standing feature of industrial organisation. They are purely a response to market forces. Utility synergies arise where producers band together to provide infrastructure such as transport, energy, water and waste treatment. In this case study, the term 'synergy' is used to describe by-product synergies, unless otherwise indicated.

62 Altham and Van Berkel, (2004), *Industrial Symbiosis for Regional Sustainability: An update on Australian Initiatives,*

lack of synergy examples in most developed industrial areas indicates that this is not usually the case. The main factors contributing to this market failure appear to be related to information, transactions costs and institutional arrangements, including:

- lack of information about potential uses and users of by-products or waste materials and energy, or, conversely, about potential suppliers;
- lack of information about inputs and outputs of other producers in other local industries and their potential to provide economies of scale and scope for provision of collective services, such as utility infrastructure, waste management, etc.
- the market and full economic values of synergy opportunities may not be estimated or measured adequately, resulting in underestimation of the benefits and less than optimal utilisation;
- managerial focus on production of the firm's primary products, with less attention being paid to the potential use by other industries of by-products and wastes;
- high transactions costs;
- lack of institutions and infrastructure to enable trade in by-products;
- risk to reliability of supply of inputs derived from others' wastes as suppliers improve efficiency and reduce generation of waste;
- regulatory impediments to trade, transport or use of waste or 'hazardous' products; and
- legal, institutional and contractual issues.

These factors can be inter-related, contributing to vicious circles as opportunities to utilise waste products are unrealised. Conversely, overcoming some may improve others. Thus, improved information can reduce transactions costs and enable busy managers to include synergistic management of wastes as part of their routine management tasks.

These difficulties will be greater the larger and more diverse the industrial scope, the area occupied by the industrial premises and the number of firms, such as in cities like Sydney or Melbourne. On the other hand, the untapped benefits may also be commensurately greater.

Both by-product and utility synergies have been growing steadily in the Kwinana Industrial Area in Western Australia and are also developing in Gladstone in Queensland. This case study examines the experience of these two industrial areas.

The case study points to the potential economic, environmental and social gains from realising the full value of resources that currently end up in industrial waste, and to the roles that industries, regional and industry associations, all levels of government and research organizations can play to expand synergies in other industrial areas in Australia.

2. Kwinana Industrial Area

2.1 The Settings

The Kwinana Industrial Area is a high-density zone area located 30km south of Perth. Kwinana is home to an alumina refinery, a nickel refinery, an oil refinery, coal and gas fired power stations, a cement plant, three major chemicals plants, a pigment plant, a wastewater treatment plant and a number of small to medium sized manufacturing and industrial operations. Water is scarce and industries are reliant on fully exploited groundwater resources. Environmental concerns about air and water pollution and the status of nearby Cockburn Sound have increased the need to reduce emissions from industry.

There is considerable integration between industries in the area as a number of companies produce essential raw materials for the manufacturing and refining processes of other nearby enterprises. The Kwinana Industrial Area has taken advantage of regional synergy opportunities by implementing Industrial Symbiosis exchanges since the late 1980's.

A number of the plants were co-located in Kwinana to supply inputs to major customers in the traditional manner of industrial agglomerations or clusters. What is unusual about Kwinana has been the growth of synergistic uses of by-products and development of cooperative infrastructure, often involving multiple material, water and energy flows.

This policy of cooperation had, by the end of 2004 led to the development of 49 synergies, 35 by-product synergies and 14 involving shared use of infrastructure. This is reported to be the largest number of Industrial Symbiosis waste exchanges for an industrial area anywhere in the world (Bossilkov et al., (2005), p1.)[63].

By-product synergies in Kwinana Industrial Area can involve multiple exchanges among various plants in the region, although they tend to be straightforward and opportunistic from a technological point of view, involving little if any processing prior to (re)use by the recipient company. For example, a pigment plant supplies waste hydrochloric acid to a nearby chemical manufacturer to produce ammonium chloride for synthetic rutile production by the pigment plant. Previously, the ammonium chloride was imported at considerably higher cost.

Utility synergies involving the shared use of utility infrastructure include the reuse of recycled effluent from Kwinana Wastewater Treatment at the alumina refinery (Bossilkov et al., (2005), p5.)

The Kwinana Industries Council was formed in 1991 to co-ordinate the activities of local industries. This appears to have been a major factor in the success of the scheme. Lack of communication is reported to constrain industrial symbiosis in other industrial areas where operators do not have a mechanism for regular information exchange on local resource flows and opportunities remain unnoticed (Altham et. al. 2004, p9).

63 Bossilkov, Van Beers and van Berkel (2005), *Industrial Symbiosis as an Integrative Business Practice in the Kwinana Industrial Area: Lessons Learnt and Ways Forward,*

2.2 The Outcomes

Commentators suggest that results to date are opportunistic and represent only the 'low hanging fruit' that does not require complex transformations. However, producers may be reluctant to invest in processing by-products or wastes whose supply may be unreliable.

One reason for the small number in by-product synergies examples in industrial centres, has been suggested to be that such inter-dependencies could compromise a firms' production and investment decisions if they are locked in to contracts for waste products - why this should be more of a problem than any other supply contract is not explained.

However, this does not appear to have been a problem in Kwinana, as companies have sought to improve the efficiency of their production processes, including reducing waste products that have been traded through the scheme. Similarly, the availability of cheap waste inputs has not stopped firms from improving production processes to reduce input requirements. WMC, for example, at its Kwinana Nickel Refinery, improved the utilisation of hydrogen in the leaching area, despite there being excess hydrogen available from other operators in the Kwinana Industries Council (*Bossilkov et al., (2005), p9.).*

The Kwinana scheme has been successful in converting previously wasted materials and energy into marketable inputs, increasing turnover and reducing both production costs and the costs of waste management and disposal. The Centre for Cleaner Production at Curtin University[64] estimates that the industrial synergies at Kwinana have delivered a wide range of benefits, including:

- *Economic benefits:*
  - $115 million estimated revenue generated annually (Note that total revenue in the Kwinana Industrial Area was $4.4 billion in 2004).
  - $16 million estimated environmental cost avoided annually.
  - $3.7 million estimated wages paid annually.

- *Environmental benefits:*
  - 72 GWh of electricity saved annually (equivalent to a 10 MW plant).
  - 377,000 tonnes CO^2 emissions avoided annually.
  - 11 M tonne-km estimated transport cost avoided annually.
  - 6GL water consumption avoided annually.
  - 260,000 tonnes landfill avoided annually.

- *Social benefits*
  - 67 permanent jobs created.
  - $6 million estimated company and income revenue annually.
  - $500,000 research funded annually.
  - $110,000 community support.

64 Centre of Excellence in Cleaner Production, *Industrial Symbiosis: Making it Happen*, IS41E 2005, Curtin University of Technology.

Estimating the *net* effects of industrial synergies is not straightforward. It has been suggested that the full benefits of these synergies have been underestimated (Altham et. al., 2004, p9).

Further, if industry and government do not appreciate the value of synergistic opportunities, some that may be economically efficient may not be realised. As a result, the number of resource synergies would be less than optimal.

Nevertheless, the growth in the Kwinana scheme speaks for itself, as the developments have been largely private sector initiatives and do not appear to have been significantly influenced by government policy – either support or threat of sanctions. A further 80 synergy opportunities have been identified in Kwinana, without considering more innovative and complicated synergies that might be technically possible.

3. Gladstone

3.1 The Settings

Gladstone is a relatively new heavy industrial area located 540 km north of Brisbane. Gladstone currently has nine major manufacturing facilities: two alumina refineries, an aluminium smelter, a power station, a cement plant, a chemical plant, an oil shale pilot plant, a water provider and the port authority (coal exports)[65].

The Gladstone Area Industrial Network (GAIN) is one of a number of industry and government bodies that promote development and provide services for companies operating in the region.

The Gladstone Area Industrial Network has pursued environmental initiatives, including regional synergies. Several by-product synergy projects are currently in place in Gladstone:

- domestic tyres are used at the cement plant as an alternative fuel to provide heating and iron;
- fly ash from the power station is used by the cement plant as a cement additive;
- caustic soda is recovered from the aluminium smelter's spent cell liners for reuse in alumina refining; and
- secondary treated effluent is used at the alumina refinery in place of primary water.

3.2 Comparing Gladstone and Kwinana

√ Gladstone has fewer operators and a smaller variety of industries compared to Kwinana and is a long way from the other major Queensland manufacturing industries and markets in Brisbane. Thus, there are fewer opportunities for resource exchanges and markets for relatively low value products derived from waste.

65 van Berkel (2005), *Industrial Symbiosis for Sustainable Resource Processing: The Cases of Kwinana and Gladstone*, 6th Asia Pacific Roundtable on Sustainable Production and Consumption, Melbourne, 10-12October 2005.

- √ Gladstone lacks the chemical and industrial gas plants that have played such a critical role in the synergy projects at Kwinana. This limits the scope for by-product synergies.
- √ The ownership of facilities is more concentrated in Gladstone, with Rio Tinto involved in the alumina refinery, aluminium smelter and the power station. This should increase knowledge of opportunities and reduce transactions costs among related companies.
- √ Implementing Industrial Symbiosis programs takes time. Gladstone has more recently started looking at the synergistic opportunities. Kwinana has implemented resource synergies since the late 1980's.
- √ There has been less external research support identifying possible resource synergies at Gladstone, until the last year or so. Gladstone is now receiving more attention.
- √ Communication between businesses at Kwinana has been assisted through the Kwinana Industries Council, that has fostered a favourable attitude towards cooperation. The Gladstone Area Industrial Network fills a similar role in Gladstone, but is still relatively new.

3. Applying a Value-Based Approach

If Australia is to use its resources more efficiently, and minimise industrial wastes and emissions in a way that is economically efficient, a change in policy is needed from a focus on waste to a focus on value, benefits and costs.

A more systematic approach to opportunities for synergies should be developed. That means identifying opportunities for the use of by-products and wastes from major industrial processes and sites, and identifying the obstacles that inhibit the productive (re)use of those resources.

This requires cooperation between the private and public sectors. Companies, governments at all levels, regional industry associations and technical advisers all have a role to play in overcoming the obstacles.

A range of government policies and regulations could affect the prospects for synergy projects to be developed, including environment, planning, transport and workplace safety. It may be necessary to change those regulations and policies that unnecessarily impede synergy development.

Exploiting synergies can lead to more efficient utilisation of resources, and reduce emissions and waste, but they reach a cut-off point where the costs of additional treatment/re-use exceed the benefits. Once initiated, with or without external intervention, the operating market forces should be allowed to maintain the momentum, until such time as those market forces deem that materials have finally become wastes and require management under a waste policy regime.

If synergistic re-use outcomes are converted to targets that are then increased by regulation, the result will become efficiency losses rather than gains, due to inappropriate forcing of the operating markets where the participating businesses establish and harness the value in the resources.

4. Conclusions

Key questions that emerge from this case study are:

- Why are efficiency-enhancing by-product synergies not being realised in every major industrial area?
- How can industry, governments and researchers work together to identify opportunities?
- What policy and institutional changes are needed to enable synergies to be exploited?

Waste policy in Australia does not deal specifically with industrial symbiosis issues and the opportunities for efficient resource utilisation and waste management presented by synergies, except to a limited extent through cleaner production initiatives in some states. And neither should waste policy be the avenue chosen for interventions that may facilitate greater resource utilisation efficiency, such as discussed in this case study.

Selecting waste policy initiatives as the vehicle for stimulating greater levels of by-product synergies is more likely to hinder than aid the industries involved. Interventions should more logically be designed and orchestrated through the industry portfolios.

Another factor that can inhibit development of industrial symbiosis activities appears to be the separate policy treatment of materials. Feedstocks to production processes are deemed to be resources, such as minerals, chemicals, water, and energy; while the "leftovers" from production processes are deemed to be wastes, such as emissions to air and water and unwanted materials.

A number of the synergies at both Kwinana and Gladstone arise from capturing and reusing these "leftovers", such as water, particulate matter, gases and energy, that might otherwise have escaped to the environment. In each case, none of the captured and traded resources are considered wastes, and they therefore escape conventional 'waste policy' consideration or attention.

State and local governments, have done little to facilitate synergies in their industrial areas, although there have been efforts at cleaner production initiatives in some states within business enterprises. The involvement of the Australian Government to date appears to have been limited to the support for a CRC, which happens to have provided information and research to identify and evaluate synergy opportunities.

The Kwinana and Gladstone synergies are private sector responses to the opportunities provided by the cluster of industries in those areas. They have been realised through the activities of the local industry association and, in the case of Kwinana, the CRC for Sustainable Resource Processing. These institutions appear to have overcome most of the information difficulties that deter by-product and utility synergies elsewhere. Once the blocking impediments are overcome, the Kwinana and Gladstone examples have demonstrated that the market value of potentially tradeable resources can be realised by industry.

Whilst it appears from these two instances that much can be achieved through market forces alone once the initial obstacles are overcome, there may be further synergies that could be economically efficient if the full costs and benefits were more widely known. Development and dissemination of such data could be a productive role for governments to stimulate greater up-take of this innovative and productive approach to resource efficiency.

In conclusion, it should be noted that synergy projects are not appropriate for all manufacturing industries. Significant economies of scale are required in developing by-product synergies, which means that they are particularly appropriate for large heavy process manufacturing where the by-products are of sufficient scale and homogeneous quality to warrant investment in re-processing.

This means that by-product synergies are less likely to emerge in mixed industrial parks that typically comprise a large number of relatively small enterprises with very diverse inputs and outputs (Altham et al., 2004, p3).

SUPPORT DOCUMENT 8

EXAMINING APPLICATION OF POLICY FROM OVERSEAS JURISDICTIONS

The following case study highlights an instance where waste management policy in an overseas jurisdiction could easily be up-lifted an applied in the Australian context, with potentially adverse results. Where appropriate, observations are presented in respect of the four components set out as forming the basis of a proposed framework for waste management policy in Australia, namely:

- Context — waste policy is but one of several policy platform areas available to government to ensure that our society achieves ***Sustainable Resource Management;***
- Purpose — waste management policy should focus on delivering value not arbitrary volume targets to ensure outcomes which deliver ***Sustainable Waste Management Solutions*** based on environmental, economic and social criteria;
- Process — effective and efficient policy requires discipline of process and clarity of purpose following the elements of ***Good Practice Policy Making***;
- Dimensions — a ***Risk-Benefit Approach to Waste Management Policy*** should be based on a number of dimensions and should recognise the relative significance of the various dimensions in any specific set of circumstances.

Case Study 7 - Dealing with Lead Solder

CASE STUDY 7 – DEALING WITH LEAD SOLDER

1. Introduction

Waste electrical and electronic equipment (WEEE) includes home and business electrical and electronic devices including computers, mobile phones, audio-visual apparatus and various other electrical and electronic goods.

The specific aspect in relation to waste electrical and electronic equipment that is discussed in this case study relates to lead solder and attempts to influence manufacturers to implement changes at source by substituting other types of solder or using other fixing technologies.

The European Parliament has passed the EC Directives on Waste Electrical and Electronic Equipment (WEEE) and the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS). Both of these instruments have an impact on the use of lead solder in electrical and electronic equipment.

The aim of this case study is to highlight the complexity of the issues being considered and managed and the challenges faced by policy developers and business alike. It is also presented to highlight the need for full and thorough examination of the issues when policy from another jurisdiction is being considered for uplift to Australia.

2. Background

Many governments are concerned about the quantity of electrical product waste entering the disposal stream and not being recovered, re-used or recycled. These concerns arise as a result of a number of issues that may be used as a basis for intervention in the markets, including:

- the environmental and health risks of some of the materials, such as heavy metals and certain chemicals, entering the environment through illegal dumping or affecting landfills when they are disposed in general waste streams – *this view is directed specifically at human and environmental health impacts from the disposal of such products, where the risks from heavy metals, such as lead, mercury, cadmium and chromium and chemicals, such as PCBs and brominated flame retardants, are serious, well known and well documented – intervention for this purpose would appear well justified*;
- a concern that these products contain valuable materials, including precious and other metals, that could be recovered with the value in them being realised – *this view is directed at resource conservation, and has led to some recycling, but the value of the materials recovered is often not sufficient to cover the associated costs*; and
- electrical and electronic goods represent a relatively large, and growing, post-consumer waste stream with a high proportion of items produced by a relatively small number of firms, providing an opportunity to achieve waste objectives through product stewardship initiatives and changes in product design – *this view stems from a volume-based focus on reducing waste disposal, which if used on its own to justify intervention, is likely to be inefficient and have wide-reaching negative economic effects.*

It is intended that the EU initiatives be rolled-out across the member states, and a number have been developing policies for the post consumer management of WEEE[66], including issues relating to lead solders. In addition, several American states have legislated for recycling of consumer electronics, and other states are considering some kind of 'e-waste' legislation[67]. In California, the follow-on approach has gone further, with legislation that prohibits the sale of electronic devices that are banned by the EU.

However, environmental authorities in the USA federally are not convinced that currently available alternative technologies represent an environmnetal improvement, and are concerned that they are much more costly to implement, for manufacturers and government alike.

Australian environment agencies have been exploring options for action as well, and the experiences overseas provide valuable knowledge, experience and information for crafting suitable policy for Australia.

To highlight some of the issues, overseas management of lead solder is discussed to reflect on how this might be better managed in a policy context, in terms of the dimensions that form part of the BRSD's framework for waste management policy.

3. Current Policy Settings Overseas

Lead has been removed progressively from many materials for good reason. More recently, EU attention has turned to the desirability of removing lead from electrical and electronic equipment, particularly through lead-free solders or alternative connection technologies.

One of the effects of the proposed EU directives has been a ban on the use of lead solder in consumer electronic equipment sold after 1 July 2006.

Moving forward with implementation of the wider EU WEEE directive, a number of European countries have implemented collection and recycling schemes for consumer electronic goods. However, the issue of banning lead solder has turned out to be difficult to implement.

In the UK it was intended to implement the Directive in 2005, but on 14 December 2005, the Minister for Energy announced an immediate review of proposals for implementing the WEEE directive in response to continuing concerns expressed by businesses and stakeholders.

In the United States, authorities and manufacturers are not convinced that the EU policy is necessary, or that substitute technologies represent an improvement in

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66 Perchards, *Transposition of the WEEE and RoHS Directives in Other EU Member States*, UK, Better Regulation Task Force Report, "Environmental Regulation: Getting the message across", November 2005.

67 Electronic waste: legislation has only dented the problem, *Sierra Club Yodeler*, Nov-Dec 2005, accessed at http://sanfranciscobay.sierraclub.org/yodeler/html/2005/11/feature5.htm

environmental terms. They are certainly convinced that the policy is not an improvement in economic terms.

4. Assessment

While the risk of adverse human and environmental health impacts from the improper management of lead are recognised as a valid reason for considering intervention, it would also appear reasonable that consideration be given to the technical and economic ramifications associated with banning lead solder. In this respect, a number of problems have been highlighted in the course of exploring alternatives to lead solder:

- the requisite technologies are not widely available or reliable enough to replace lead solder in all of its applications – this was recognised in the EU in the exemption of, for example, automotive electronics and electrical equipment from the ban;
- the substitutes for lead solder are considerably more expensive, with many involving the use of precious metals;
- a number of the substitutes require higher temperatures for working and application, and therefore more energy in the manufacturing phase, with commensurate greenhouse gas implications;
- many of the alternatives require re-engineering of a wide range of components that are temperature sensitive;
- alternative solders are not as reliable as lead solder, as they are subject to chemical reactions that lead to failure; and
- some of the substitutes use materials that are at least as, if not more, toxic than lead.

In the lead-up to the implementation of the ban on lead solder in consumer goods, a number of Japanese electronics manufacturers voluntarily began moving to lead-free solder - however, to date, this tends to be only for high-end equipment. While alternative technologies to soldering are being explored, they are still in the experimental stage and are in no sense suitable for widespread industrial application.[68],[69].

In addition to the technological limitations that are arising, the EU approach will also impose a high compliance responsibility on governments and industry, and require development and implementation of new standards for a wide range of equipment and processes. In this latter respect, Standards Australia reports that some 1800 EU standards would require revision, and many new ones would need to be developed. Authorities would also have to test all the equipment produced or imported into the jurisdictions imposing the ban, until a global certification system was implemented. They would also have to ensure that the exemptions did not provide loopholes for evasion.

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68 Erdmann, Jeanne, 'Getting the lead out of electronics', Standards Australia, June 2005, accessed at http://www.standards.org.au on 5 January 2006.

69 'Wide apart worlds of lead-free soldering', *Electroline*, accessed at http://www.electroline.com.au on 5/1/2006

These factors do not appear to have been adequately considered in the development of the EU policy directive, with the potential for significant effects on the economy and the welfare of consumers.

5. Conclusion

Regulating to ban a common and essential industrial material and process, when there are few if any substitutes with better environmental and health characteristics, does little to achieve the stated objectives of the ban on lead solder.

Such regulation has the potential to lead to significant increased costs for manufacturers, users and consumers, not only in terms of manufacturing and selling prices, but also in terms of reduced reliability and potentially greater environmental externalities.

The EU directive demonstrates failure to consider adequately the full environmental, technological, economic and social issues involved in replacing lead solder.

Importing such an initiative into Australia without critical review and comprehensive assessment has the potential to impose significant impact on the local economy and consumers.

As Australia imports most of its electronic and electrical equipment, Australia is not in a position to impose its own standards on suppliers. The divergent approaches to the issue in the EU, USA and Japan will affect the supply of goods to the Australian market. With new technologies under development, it is important that Australia not rush to follow the current unrealistic and uneconomic EU approach.

SUPPORT DOCUMENT 9

DIMENSIONS FOR RISK-BENEFIT POLICY DEVELOPMENT

Waste management policy is formulated within a complex context of social, political, environmental and economic circumstances. These "external dimensions" form the contextual settings within which waste management policy is formulated and also provide a foundation for a risk-benefit approach to waste management policy.

A risk-benefit approach to waste management policy formulation and implementation is considered essential so that issues are addressed on a reasoned and prioritised basis and sustainable solutions permitted to evolve.

The external dimensions provide a "check list" for policy makers that supports development of policy tailored to the specific circumstances that apply in the domain within which the policy is to be implemented.

Typical external dimensions that will inform waste management policy and provide the basis for risk-benefit policy are:

- ***Economic***
- ***Environmental***
- ***Social***
- ***Political***
- ***Time***
- ***Geographic***
- ***Technology***

All dimensions need to be considered when assessing impacts associated with policy intervention for waste management. The weighting applied to the individual dimensions will depend on the circumstances surrounding the need for policy interventions to be developed and implemented. In this respect, the following may guide that weighting:

- sustainable resource management outcomes will rely on detailed consideration of the three key primary welfare and sustainability dimensions – economic, environmental and social,
- the political sensitivity of many waste and resource management issues will necessitate consideration of the political implication of interventions, and
- the dimensions of time, geographic and technology will have varying influence, depending on the circumstances under consideration for intervention and allow for consideration of trade-offs between the primary welfare criteria.

These external dimensions should form a key part of the material presented in Regulatory Impact Statements, to clearly demonstrate the level of transparency with which the multiple and complex issues have been considered and accounted for in the development of policy.

In this regard, comprehensive risk-benefit analysis of policy against the external dimensions will require a degree of resourcing, both in numbers of people and the

technical calibre of those people, that is not always apparent in policy development today. For effective and targeted policy that resourcing will be essential, and may be sourced from within and outside government, possibly involving peer review and advisory panels for independent input to the process.

Factors associated with each of the dimensions, and their consideration in the risk-benefit assessment process are presented below.

Economic – sustainable resource management relies on markets that operate effectively to deliver highest value outcomes. Intervening in markets with policy measures aimed at reducing the externalities from waste generation and disposal may lead to the redesign of products, improved disposal practices or re-introducing resources into markets.

There have been recent instances with waste management policy where diversion of waste from landfill has been the driving priority, without consideration of the capacity for markets to absorb the re-introduced resources. This has led to a supply-push situation, without corresponding demand-pull.

Examples include kerbside recycling and organics collection and processing, where the approach has been "more is better", without adequate evaluation of the economic circumstances or condition of the markets. These have been costly to the economy without necessarily delivering commensurate improvements in resource efficiency.

The risks associated with market interventions that re-introduce resources to markets need to be carefully weighed before policy decisions are taken to ensure sustainable outcomes:-

- Is there adequate demand-pull to absorb additional resources? What is the capacity of the market to accommodate additional resources?
- Will additional resources in the markets have a detrimental impact on existing resources that are being effectively managed by the markets?
- Are there alternative forms for the additional resources that would avoid un-intended damage in existing markets?
- Can the resources be re-introduced in a way that generates net economic value and is sustainable?
- For how long should the intervention be "active" before markets operate without external influences?
- Does this decision adequately consider the other dimensions?

Environmental – the condition of the surrounding environment will vary with time and location and will significantly determine its capacity to accommodate discharges from waste generation and disposal activities.

The shift in pollution control regulation from discharge concentration to absolute pollutant load and the introduction of tradeable discharge limits within dynamic constraints related to the condition of the receiving environment, clearly recognise the importance of time and capacity of the receiving environment.

In managing the externalities associated waste generation and disposal, similar considerations can be taken into account when assessing the risk of non-intervention

and the economic consequences of inappropriate intervention. For example, the permeability of linings for landfills should be determined on a risk basis cognisant of the natural permeability of the surrounding ground and the condition and use of the natural groundwater that may be impacted. Arbitrary permeability levels based on decisions made in another jurisdiction are inappropriate.

The risks associated with market interventions that address environmental loads on receiving environments need to be carefully weighed before policy decisions are taken to ensure sustainable outcomes:-

- What is the risk of harm (probability and consequence) associated with the targeted discharge?
- What is the capacity of the receiving environment to absorb the targeted substance?
- How does this capacity change over time and location?
- How will this impact on economic productivity?
- Does this decision adequately consider the other dimensions?

Social – the aspirations of the community will form a significant driver for waste management policy, particularly in respect of the imperative or desire for politically led decision making. Equally, the degree of buy-in by stakeholders will depend on the quality of information dissemination and the extent of stakeholder consultation and involvement.

These aspects require thorough canvassing of community views and thoughtful information dissemination on key issues.

Interventions should recognise the aspirations of those involved and should seek to accommodate and inform them so that they drive sustainable solutions which make the best use of available resources.

The risks associated with market interventions that are significantly based on 'popular' rather than evidence-based community aspirations need to be carefully weighed before policy decisions are taken to ensure sustainable outcomes:-

- Is the aspiration reflective of a fully informed community?
- Are the interests of that section of the community most impacted by the intervention adequately represented?
- Are there adequate arrangements for information dissemination?
- What will be the extent of stakeholder buy-in and participation?
- How will the costs be borne and by whom?
- Does this decision adequately consider the other dimensions?

Political – political involvement and decision making in waste management is common practice and reflective of the high level of community interest in waste and resource management.

There are specific areas where the decision making has to be politically led, such as distributional judgements where there must be tradeoffs between national wealth,

natural capital and social justice. Equally, there will be instances where politically led interventions and decision making are inappropriate.

The risks associated with politically led decisions need to be carefully weighed before policy decisions are taken to ensure sustainable outcomes:-

- Does this truly reflect the aspirations of the community that will be directly implicated in the policy intervention?
- What is the (political) reputation risk if the policy is not effective?
- What are the potential unintended consequences?
- Will this intervention achieve wide stakeholder approval and participation?
- Does this decision adequately consider the other dimensions?

Time – the imperative for action in waste management policy will relate to the imminence of potential harm to the community and the environment. The potential for harm can be assessed through conventional risk management procedures, and can provide guidance on the immediacy for intervention.

There will be instances where wastes are created that can be safely and effectively stored, until such time as technology and opportunity arise to process, re-use or dispose of the waste. Immediate intervention to eliminate the waste at the time of generation could be counter productive and involve unnecessary economic impact.

Radioactive wastes could be considered an example in this instance. If immediate steps are required for encapsulation technology to secure the waste, this will most likely prevent cost effective subsequent use of those waste materials at some time in the future, should technology become available.

The risks associated with market interventions that deal with time-related issues in waste management need to be carefully weighed before policy decisions are taken to ensure sustainable outcomes:-

- Does the waste pose imminent harm or danger?
- Can safe and effective storage be achieved?
- Is it reasonable that future technology or opportunity could see the waste productively used?
- What are the alternative uses of the land/other resources likely to be over time?
- Does this decision adequately consider the other dimensions?

Geographic – blanket policy implementation across widely differing geographic circumstances is not productive. Interventions for waste management policy should be cognisant of the geographical circumstances prevailing where those policies will be implemented.

For example, kerbside recycling may be appropriate in major capital cities and regional centres where there are markets and capacities that deliver economical viability. But introducing recycling in areas remote from markets may not be appropriate. Similarly, landfill disposal of waste may not be appropriate within densely built-up communities in major cities, but quite acceptable and appropriate in remote regions with lower urban density.

The risks associated with market interventions that will be implemented in diverse communities and regions need to be carefully weighed before policy decisions are taken to ensure sustainable outcomes:-

- Are the interventions and expected outcomes relevant and applicable to the region?
- Can the region accommodate the impacts from the intervention?
- Would an alternative region be appropriate for this intervention?
- Does this decision adequately consider the other dimensions?

Technology – the ability of markets to respond to interventions that seek to recover resources will depend on the availability of appropriate and cost effective technology.

The emerging interest in product stewardship initiatives and greater engagement of business in the post-consumer fate of products and resources will be influenced significantly by technology availability and cost. From the initial phase of post-consumer aggregation of resources, through dismantling, component recovery, reprocessing and disposal of residuals, technology will play a vital role in the affordability and practicality of these schemes.

The risks associated with market interventions that depend on the availability of technology to manage recovery of resources need to be carefully weighed before policy decisions are taken to ensure sustainable outcomes:-

- Is there technology available to deliver the expected outcome?
- Is that technology viable, cost effective and affordable?
- Can the technology be sited and operated satisfactorily?
- Does this decision adequately consider the other dimensions?

In conclusion – these external dimensions form the contextual settings within which waste management policy decisions are made and provide a foundation for a risk-benefit analysis of waste management policy.

Notwithstanding national agreement on the principles of good practice policy making, and the foundation that a risk-based assessment of policy can provide, there will be instances where waste-related policy decisions are made on a less balanced and complete set of parameters.

For example, the banning of plastic shopping bags would be a most unlikely policy outcome if good practice policy making principles had been the basis for examining the situation, and a full risk-based assessment had been made of the external dimensions applicable.

But recognition that such decisions will occasionally be made does not diminish the significance of the framework or the value of the processes proposed. Indeed, in instances where such decisions are to be made, a full assessment of the issues of good practice policy making and a thorough assessment of the risks involved, will highlight the likely consequences from such decisions and provide decision makers with appropriate data and facts to better manage implementation of such decisions.