Productivity Commission

SUBMISSION COVER SHEET

Inquiry into Waste Generation and Resource Efficiency

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Submission to the Productivity Commission's Inquiry into Waste Generation and Resource Efficiency

I welcome the opportunity to comment on the Productivity Commission's findings and recommendations in their draft report. Critique of current waste management policy is essential if we are to circumvent short-term and out-dated practices. I am concerned however about the direction in which the Commission's critique has taken them and the framework they have adopted for analysing waste policy options.

Waste policy frames a government's waste management goals, based on desired outcomes, relevant statute law concerning enforcement of any regulations such as environmental monitoring and non-compliance, and requirements to abide by inter- and intra-governmental agreements and policies. Many such agreements must comply with principles of sustainability.

The title of the enquiry, 'waste generation and resource efficiency in Australia' provided an opportunity to overcome the difficulties that hinder waste management where policy confines it to physical management of an edifice of discarded materials and monitoring environmental impacts of waste disposal practices. Without providing legitimacy for waste management to be concerned with the cause of the problem - wasteful practices or product lifecycles - sustainability issues such as waste generation practices and resource flows are ignored. This contravenes increasing recognition by local and state governments in Australia and overseas that such key concerns are central to waste management[1]. Local councils, for example, now focus on sustainable resource recovery rather than mere reduction of waste to landfill[2].

I wish to comment on a few aspects of the Commission's draft report which:

1. **Raise concerns regarding sustainability principles,**

2. **fail to provide reasonable criteria of assessment of recycling vs landfill by removing key factors from the domain of waste management, namely greenhouse gas impacts, upstream benefits, resource depletion and consumption patterns.**

3. **confine proposals for recycling to proof that a landfill alternative would cause a negative environmental impact,**
4. **do not support setting of waste reduction targets because it is not convinced of the benefits of waste reduction, thus providing no proactive direction for waste management and thereby impoverishing activity within the waste arena,**

[1] For example the objectives of the Zero Waste SA Act 2004 include elimination of waste or its consignment to landfill and advancement of resource recovery and recycling, guided by the principles of sustainable development and 'best practice'. [http://www.parliament.sa.gov.au/Catalog/legislation/Acts/z/2004.1.un.htm

[2] see for example Submissions to the Productivity Commission's Inquiry into Waste Generation and Resource Efficiency in Australia: Submission no. 60 Local Government Association of Tasmania; Submission no. 10 Southern Waste Strategy Authority.

1. **sustitute 'resource efficiency' with 'economic efficiency',**

2. **measure 'net social benefit' as 'privately cost effective',**

3. **impose an economic policy instrument using criteria of 'privately cost effective' and failing to endorse current policy instruments such as levies, rebates, deposit/refund schemes or product stewardship schemes.**

1. Concerns regarding Sustainability Principles

Sustainability principles embodied in government policies[3] are undermined by the Commission's recommendations regarding resource depletion.

The Commission recognises sustainable development to be 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs[4]'. It is clear that the Precautionary Principle[5] is ignored when the Commission adds:

> *'...sustainability might be achieved even where some finite resources become heavily*
> *depleted. However, some natural resources, such as clean air and water, are not substitutable.*
> *Apart from these essential resources, we do not know with any precision what the resource needs of future generations will be, so it is difficult to know what needs to be*
> *conserved. It is likely that technological change will mean that we will be able to do more with less, and we might be able to switch our dependence on some nonrenewable resources to some renewable resources. And as finite resources become scarce, prices will rise, stimulating exploration and development of new reserves, greater recycling, conservation through greater efficiency of use, and the development of substitutes (where this is possible).*[6] *'*

From this standpoint, the Commission declares that 'there is no externality associated with resource depletion[7]':

> *'Depletion of, for example, the total stock of iron ore is unlikely in itself to threaten biological diversity or essential ecological processes and life support systems.*

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[3] Department of Environment and Heritage. 2006. Ecologically Sustainable Development. Commonwealth of Australia, Parkes. [http://www.deh.gov.au/esd/].

[4] World Commission on Environment and Development. 1987. *Our Common Future*. Oxford University Press. Oxford, p8.

[5] *Principle 15 :In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.*
United Nations Conference on Environment and Development. 1992. *Rio Declaration on Environment and Development*. Rio de Janeiro.
[http://www.unep.org/Documents.multilingual/Default.asp?DocumentID=78&ArticleID=1163&l=en]
The Precautionary Principle is one of three core principles of Australia's sustainable development policy, (the other two being intergenerational equity and biodiversity conservation). 'Together these approaches aim to prevent and reverse adverse impacts of economic and social activities on the ecosystem.'
Department of Environment and Heritage. 2006. *Ecologically Sustainable Development*. Commonwealth of Australia, Parkes. [http://www.deh.gov.au/esd/].

[6] Productivity Commission. 2006. *Waste Management*. Draft Report. Canberra. p XXVIII

[7] ibid p 77

Accordingly, it would appear to be consistent with the NSESD, to regard stocks of mineral resources as generally being able to be substituted for by human and man-made capital.[8]'

These comments re-inforce a disregard for the Precautionary Principle and remove a basis for any Product Stewardship/Extended Producer Responsibility initiatives, which, it should be noted, the Commission is reluctant to support unless they are economically efficient[9].

In a sleight of hand regarding equity in intra- and inter- generational sustainability, the Commission's report on waste management implies that linking waste policy to resource conservation could disadvantage the poor:

'It should not be automatically assumed that actions taken in the interests of environmental protection will always contribute to sustainability. It is possible that such protection could impose costs that lead to reduced investment in human or man-made capital that would have been more valuable to future generations. Such costs might also reduce the community's capacity to respond to present day equity issues (such as assisting people who are currently poor).[10]'

It should not be implied that funds that provide environmental protection would come from funds used to address equity issues.

2. Failure to provide reasonable criteria of assessment of recycling vs landfill by removing key factors from the domain of waste management, namely greenhouse gas impacts, upstream benefits, resource depletion and impact on consumption patterns.

The Commission views landfills as cost effective as evidenced by finding 4.3[11]:

'DRAFT FINDING 4.3
Taking into account private and external costs and benefits, landfills operated to best practice standards and incorporating gas capture and electricity generation, are likely to be much less costly than 'alternative waste technology' plants, in most, if not all, circumstances.'

External costs and benefits referred to, however, are not permitted to include the full gamut of impacts - greenhouse gas emissions, upstream impacts, resource depletion and consumption patterns - these are virtually removed from cost evaluation:

-Draft Recommendation 8.2

'Greenhouse gas externalities should only be addressed within a broad national response to greenhouse gas abatement, not through landfill regulation or levies.[12]'

-As mentioned previously, '*the Commission's view is that there is no externality associated with resource depletion.*[13]'

-Upstream impacts are unlikely to be considered:
DRAFT FINDING 5.1

'Upstream environmental externalities associated with waste are most appropriately addressed through directly targeted policies. Waste policies should

[8] ibid p 103
[9] ibid p 245
[10] ibid p 99
[11] ibid p 79
[12] ibid p 170
[13] ibid p 77

only be used where more direct policies are not able to be used, and then only if there are reasonable prospects of such intervention being effective and producing net social benefits. These circumstances are unlikely to arise.[14]*'*

- Consumption patterns are also outside waste policy and unlikely to be considered in cost-benefits:

'Consumers will only buy things they expect to derive some benefit from. On occasions they may end up not using something and throwing it out. In the Commission's view this raises no particular public policy concerns because consumers are generally best placed to make their own consumption decisions.[15]*'*

Generally, few criteria apart from environmental harm are left for assessing the costs/benefits of an alternative to landfill such as AWT or recycling. This is a huge departure from the paradigm under which waste managers have been operating in recent years where, under sustainability principles, waste as an urban resource has displaced the disposal mentality.

3. A decision-making framework for assessment of proposals for recycling or AWT is more or less limited to proof that a landfill alternative would cause a negative environmental impact,

The outcome of assessment depends upon which assessment model is selected[16] and, in the framework of the Commission's recommendations, is more or less reduced to demonstrating that the waste will cause environmental harm if deposited in landfill (provided it is not classified as a hazardous or controlled waste).

While proof of environmental harm is required, no indication of which body of knowledge they consider credible for such purposes is provided. It seems the potential of hazardous chemicals to cause harm must be greater than an undefined 'inevitable low level' in what they view as the inert conditions of a modern, compliant landfill. There is no attempt to apply any precautionary principle in consideration of alternatives. The Commission recognises that some wastes may become hazardous when they enter the waste stream - such as mobile phones, televisions, batteries, household chemicals and pesticides, domestic smoke detectors and copper chrome arsenate timber[17]. It says that small amounts of hazardous waste *'must be accepted as a reality (albeit undesirable), as it is very difficult, and possibly too costly, to prevent such items entering the waste stream or to completely remove them.*[18]*'*

Interestingly, some submissions such as from the Consumer Electronics Association demonstrated significant progress that they had undertaken to organise recycling of TVs and, later, other e-waste. This progress had been carried out voluntarily with their request for government intervention limited to development and strong enforcement of national regulation[19]. Similarly, Planet Ark already conducts a printer cartridge collection scheme[20].

[14] ibid p 97
[15] ibid p 111
[16] Nixon, W., Murphy, R. and Stessel, R. 1997. An empirical approach to the performance of assessment of solid waste landfills. *Waste Management and Research*. 15: 607-626.
[17] Productivity Commission. 2006. *Waste Management*. Draft Report. Canberra. p5
[18] ibid p5
[19] Product Stewardship Australia and Consumer Electronics Suppliers Association. 2006. Submission to the Productivity Commission's Inquiry into Waste Generation and Resource Efficiency in Australia, Submission no. 66, p2.
[20] http://www.planetark.org/index.cfm

The Australian Mobile Telecommunication Association (AMTA) has been operating,, under its own initiative, a collection of used mobile phones for recycling[21], initially paid for by a 40 cent levy on every purchase of a new mobile phone. The scheme began in 1999 but by 2004 recycling rates had dwindled despite the industries enthusiasm and organisation. Regulation banning mobile phones (which contain cadmium and nickel) going to landfill would have made a significant difference [22] by providing the necessary message required to stimulate behaviour change. The experience demonstrates the value of policy instruments requiring sustainable recover of resources from landfill, to enable producers to meet sustainability targets for which they have demonstrated they are willing to bear the costs.

4. Removal of the setting of targets as a policy tool:

DRAFT RECOMMENDATION 7.2
'Governments should not directly or indirectly impose waste minimisation and recycling targets as part of waste management policy[23].'

DRAFT FINDING 7.1
'Targets for waste management are virtually impossible to set at an optimal level and are almost always arbitrary. Broad targets do not account for regional differences in waste management costs, nor are they sensitive to changes in market or institutional settings. Whilst they might be argued to have some aspirational virtues, targets such as zero waste to landfill lack credibility and appear to be unachievable. More importantly, the pursuit of recovering resources at any cost can be highly inefficient and result in perverse outcomes. A better approach is to address relevant market failures through other instruments, including regulation of landfill. The right incentives will then exist to guide the emergence of relevant markets for waste reduction and recovery. [24]'

The Commission does not provide evidence for a purported lack of credibility of zero waste targets. Zero waste and waste reduction targets are policy instruments to drive policy in the direction that they indicate and provide a measurable indicator of progress in achieving the policy. A number of councils and some Australian states have developed' zero waste' strategies based on their own inquiries and community/stakeholder consultation. It is curious that this Inquiry should arrive at a cognitively dissonant conclusion. A goal for a small reduction in waste results in no structural change, but leads to a focus on 'increased efficiency' within a 'business as usual' framework. Zero waste is not a punitive goal, instead providing opportunities for producers. It requires a rethink and restructure of waste management and its underlying causes, drawing upon creative thinking to provide innovative technology and redesign solutions which boosts intellectual and marketplace dynamics[25]. A mandatory zero waste target is often preferred to voluntary reduction because it levels the playing field - competitors can't gain an advantage by not engaging in waste elimination.

To specify a 'lack of credibility' is to ignore the numerous case studies on the ground which are achieving a remarkable diversion of materials from landfill that would have seemed impossible 20 years ago. Overseas a plethora of examples of significant reductions (from

[21]AMTA. Mobile Phone Industry Recycling Programme. [http://www.amta.org.au/recycle/intro_what.htm]
[22]Bannerman, M. 2004. *Phone Recycling Claims Called into Doubt.* The 7.30 Report, Australian Broadcasting Commission, 8/12/2004. [http://www.abc.net.au/7.30/content/2004/s1260911.htm]
[23] Productivity Commission. 2006. *Waste Management.* Draft Report. Canberra. p 135
[24] ibid p 134-5
[25] Datschefski, E. 2001. *The Total Beauty of Sustainable Products.* Rotovision, Sussex. [http://www.biothinking.co]

business based achievements such as Ricoh, Fuji Xerox, Mitsubishi and Hewlett Packard to inspirational community achievements such as those of Nova Scotia, Canada[26] and Portland, Oregon[27]) would leave few in doubt that as a policy instrument, setting targets is the key to driving tangible actions to achieve unambiguous goals to be met in whatever way a local community or government or state authority may devise in conjunction with transparent consultation with stakeholders.

Zero waste even forms the basis of closed loop production adopted by the World Business Council for Sustainable Development, representing 160 International countries:

> *The biological designs of nature provide a role model for sustainability. The goal is to work continuously toward closed-loop production systems and zero-waste factories, wherein every output is returned to natural systems as a nutrient or becomes an input for manufacturing another product.*[28]

5. Substitution of 'resource efficiency' with 'economic efficiency'

The Productivity Commission was asked to report on 'waste generation and resource efficiency in Australia' but by page 7 of its draft report it argued for use of the term 'economic efficiency' instead of 'resource efficiency'.

> *'Economic efficiency is concerned with maximising the returns from using all resources — land, raw materials, labour and capital. This requires that no other combination of resource use could lead to a higher level of community wellbeing. Environmental and social issues must be brought into this framework by giving appropriate recognition to relevant externalities..... All of these should be considered in a cost–benefit framework, and quantified wherever possible.*[29]'

Economic efficiency based on cost-benefit obscures resource issues such as resource depletion and flows of materials. Economic efficiency does not reflect net community wellbeing (as suggested by the Commission[30]), but is a measure of how well market mechanisms have been harnessed to minimise the monetary costs of production[31]. Economic efficiency may be a component of resource efficiency, not the other way round. Removal of 'resource efficiency' undermines the basis for extended producer responsibility programmes and full LCA inclusions. 'Resource efficiency' should be re-instated in the report and the broader issues it entails included.

6. 'Net benefit to the community' is measured as 'privately cost effective'.

According to the Commission, recycling or AWT should only be considered where there is proof that it will provide net benefit to the community. Such benefit is to be assessed on the basis of whether it is privately effectiveand on this basis they consider that[32]:

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[26] Nova Scotia Environment and Labour. 2004. *Status Report 2004 - Solid Waste Resource Management in Nova Scotia.* [http:www.gov.ns.ca/enla/waste/ docs/WasteResourceStatus2004.pdf]

[27]7Portland Bureau of Environmental Services. Portland,Oregon. Municipal Waste Reduction 50%. [http://www.ilsr.org/newrules/environment/portland.pdf]

[28] World Business Council for Sustainable Development. 2002. *Business Case for Sustainable Development*. WBCSD, Geneva, p5 [http://www.wbcsd.org]

[29] Productivity Commission. 2006. *Waste Management*. Draft Report. Canberra. p 7

[30] ibid p7

[31] Hawken, P., Lovins, A. and Lovins, L. 1999. *Natural Capitalism: The Next Industrial Revolution*. Earthscan Publications Ltd, London. p 12.

[32] Productivity Commission. 2006. *Waste Management*. Draft Report. Canberra. p 81

-Only recycling that is privately cost effective is likely to be of net benefit to the community.
-Only high value, easily sorted materials (metals, some plastics and paper) are likely to be privately cost effective.
-There is no circumstance in Australia where AWT would be of net community benefit compared to landfill.

The Commission focuses on 'privately cost effective' as a measure of net social benefit because it considers that there is 'an absence of reliable estimates of the upstream benefits of kerbside recycling'[33] This ignores the body of calculations of upstream benefits which form part of many measures adopted by producers and service providers such as Material Intensity[34], Material Flows Accounts[35], Eco Indicators[36], ISO14040[37] standards and Life Cycle Analysis.

Major factors that would normally be included in an assessment of net social benefit of recycling are reduction in greenhouse gas emissions, upstream benefits and reduced resource depletion however the Commission considers that these should be excluded. The result of measuring net social benefit as 'cost effective' is more likely to result in waste management options that are affordable rather than socially preferred or sustainable.

7. An economic policy instrument using criteria of 'privately cost effective' is imposed with failure to endorse current policy instruments such as levies, rebates, deposit/refund schemes or product stewardship schemes.

The Commission's recommendations require waste management to be based on market demand yet it removes instruments that would enable it to be player in market instruments. This is evident from recommendations that waste management policy should not support use charge levies, rebates, deposit/refund or product stewardship schemes:

> DRAFT RECOMMENDATION 9.1
> *'Governments should discontinue the current practice of using landfill levies since:*
> *• pursuing objectives, such as arbitrary landfill diversion targets and revenue generation, to fund waste policies, will lead to inefficient outcomes;*
> *• the external costs of disposal of a modern, fully-compliant landfill are believed to be small, and levies are a poor instrument for directly targeting those externalities; and*
> *• the objective of reducing greenhouse gas externalities should be addressed within a broad national response to greenhouse gas abatement, not through landfill regulation or levies.*[38] *'*
>
> DRAFT FINDING 9.3

[33] ibid p 81
[34]Bringezu, S., Fernandez, J., Moll, S. and Schutz, H. 2003. *Material Flow Analysis and Sustainable Resource Management*. Wuppertal Institute fo Climate, Environment and Energy, Wuppertal. [http://www.wupperinst.org/Sites/Projects/material-flow-analysis/index.html]
[35] Wernick, I. and Irwin, F. 2005. *Material Flows accounts: A Tool for Making Environmental Policy*. World Resources Institute, Washington. [http://www.wri.org]
[36] Pre Consultants. 2006. *Eco-indicator 99: Impact Assessment and Ecodesign Method*. Amersfoort. [http://www.pre.nl]
[37] ISO 14040. 1997. *Environmental Management – Life Cycle Assessment – Principles and Framework.* International Organization for Standardization, Geneva.
[38] Productivity Commission. 2006. *Waste Management*. Draft Report. Canberra. p 187

'Tradeable property rights can be useful means of achieving targets cost-effectively. However, as the use of targets in waste management policy is not supported, and tradeable property rights can be costly to implement, it is currently not clear what purpose they would serve. Further consideration should be delayed until a more comprehensive body of international experience regarding their capacity to deliver a net social benefit, and a legitimate application for them, emerges.[39] *'*

DRAFT RECOMMENDATION 10.2
'Product stewardship schemes for computers, televisions and tyres should not be introduced without robust evidence that:
• there would be a net benefit for the community
• other policy options would not deliver a greater net benefit.
This is particularly the case if a mandatory approach — involving either industry-government co-regulation or government regulation — is being contemplated.'

Recommendations

The objective of this inquiry is to identify policies that will enable Australia to address market failures and externalities associated with the generation and disposal of waste, including opportunities for resource use efficiency and recovery throughout the product lifecycle (from raw material extraction and processing, to product design, manufacture, use and end of life management).

The following are some elements of a waste policy that would address some of the externalities identified with waste and resource management.

1. Support schemes for Extended Producer Responsibility

Proactive support for Extended Producer Responsibility (EPR) Schemes would validate efforts by some producers to improve their production cycle and reduce social impacts of their activities eg waste. Waste management is well placed to provide feedback to producers and consumers on waste types and quantities which may be one surrogate measure of progress towards closed loop production methods. Waste management is central to producers in their lifecycle solutions through collection and return of materials back into production loops or supplying waste materials from one process as material for a different producer.

EPR is only successful where they are mandatory as this puts all producers on an equal footing. Producers are capable of taking responsibility for the impacts of their products when required to do so but are less likely to do so when policy does not require it. For example, take-back/recycling programmes are operated by Apple computers in Germany but not the US or Australia; and by Dell in Germany, Sweden, Norway, Netherlands and Taiwan, but not the US or Australia[40].

Numerous examples affirm the success of EPR overseas. For example, Armstrong World Industries take back acoustic ceiling tiles of any brand in the US and reprocess them. The initial incentive came from renovation work being done for Microsoft who required that

[39] ibid p 214
[40] Strange, K, (ed). 2001. US Electronics companies pressed on take-back, *Warmer Bulletin, Journal for Sustainable Waste Management*, no 79, p 7.

half of demolition material be recycled. Thus, a contract which enforced recycling became an opportunity, not a disincentive[41].

National policy support for EPR would provide consistency to similar successful schemes flourishing all over Australia. Waste bodies have frequently managed these schemes, demonstrating that EPR lies within the realm of waste policy. In Tasmania a waste body - the Southern Waste Strategy Authority has been best situated to establish the Clean Business Challenge which has 63 participating local businesses including Australian Laser Charge, Cadbury Schweppes, Cascade Brewery, Juicy Isle, Norse-Skog Boyer and the Body Shop[42].

An example of the need to provide national support to EPR and voluntary initiatives by producers is provided by recent signs of failure of voluntary coding of plastic with recycling numbers which form the basis of diversion to correct recycling streams. Although not yet widespread, packaging sometimes bears recycling arrows but no code in the centre. This can be seen, for example, on Home Brand Long Grain Rice bags (Product of Thailand - packed at Yennora, NSW) and labels on PET bottles of Chemmart "Still" Natural Springs Water 100% Australian). Required labelling of all materials so they may be recycled would be an important key to resource recovery as it enables separation of mixed materials.

2. Base EPR on a modified Life Cycle Analysis (LCA) that includes impact on resource stocks, land use and biodiversity.

EPR often uses a measure such as LCA, ISO14040, or Material Intensity. Producers who use these measures have some flexibility about what they measure or don't measure so one assessment is not always consistent for all producers. A decision would need to be made about core assessment criteria for which there would not be flexibility. Many companies already participate in evaluations such as ISO14040, so there would not be an added burden if national policy required EPR.

The limitation of any of these measures is they do not assess impact on resource stocks, land use or biodiversity. Therefore these three impacts would have to be added into LCAs.

3. Establish a lifecycle label scheme with a 'sustainability tax' on poorly rated products and a reduced profit tax on highly rated products.

Failure in community information and education is a result of the lack of readily accessible information. Building on the success of the energy star rating scheme and water rating, waste policy should require establishment of a lifecycle labelling system for products in co-ordination with other relevant departments.

In 2001 the Commonwealth government published a booklet urging consumers to move towards sustainability by seeking products with high environmental standards[43]. They outlined a checklist for a consumer to use for assessment of a product and this is one of many available starting points for devising an assessment of products for an environmental rating scheme which would need to apply nationally to provide consistency. Such labelling

[41] Strange, K, (ed). 2001: US Ceiling Tile Manufacturer launches take-back scheme for all brands, *Warmer Bulletin, Journal for Sustainable Waste Management*, no 76, p3.
[42]Southern Waste Strategy Authority. 2006. *Clean Business Challenge*. [http://www.southernwaste.com.au/business/swsaprograms/cbc/]
[43] Environment Australia. 2001. *Shop Smart Buy Green: A Consumer's Guide to Saving Money and Reducing Environmental Impacts*. Commonwealth of Australia, Canberra. p 21.

would indicate to consumers the environmental impact of a product as well as providing a basis for various types of reporting, for greenhouse gas abatement programmes, Cleaner Production, product stewardship etc.

A product with a poor lifecycle rating is likely to have a higher environmental cost such as a disposal cost if its materials are not recyclable. Thus, where a producer does not make the financial and intellectual investment necessary to minimise a product's social and environmental impact, a 'sustainability tax' should be imposed to mitigate the negative externalites of poorly rated products.

Correspondingly, where a product rates highly under the labelling scheme, an incentive such as a reduction in profit tax should be applied. This concept is supported by the World Business Council on Sustainable Development[44].

A labelling scheme with a tax on poorly rated products would also provide equity for imported products which would undergo the same assessment. Applying a national rating scheme to imported products does not violate any trade rights. Since July 2005, for example, under the national Water Efficiency Labelling and Standard Scheme importers and retailers of washing machines, dishwashers, showers, toilets, urinals and tapware are required to label these goods with energy and water efficiency labels[45]. This scheme would overcome the Commission's concern that EPR is limited by the fact that overseas producers may not be influenced by Australian waste policy. If an overseas product is taxed the producer may improve some of its processes, for example labelling parts with material codes so that at end of life they can be dismantled and diverted for recycling rather than disposal, and replacing a non-recyclable material with a recyclable one.

4. Require labelling of solid materials with a recycling code so they can be separated and diverted to the appropriate recycling stream.

National implementation of recycling codes would build upon the success of the voluntary plastics recycling codes which is itself about to suffer from non-compliance as evidenced by recent packaging appearing on the market.

5. Assist with the establishment of courses on sustainable waste management and fund research and development in product redesign, innovative material technology etc.

Courses, research and development in product redesign and innovative material technology would provide a resource of workers and knowledge to creatively engage in national waste policy outcomes. Resulting knowledge and expertise would benefit producers as well as waste managers, increase employment opportunitiers and increase sustainable practices.

In conclusion,

[44] Lehni, M. 2000. *Eco-efficiency: Creating more value with less impact.* World Business Council for Sustainable Development.
[http://www.wbcsd.org/web/publications/creating_more_value.pdf].
[45] http://www.waterrating.gov.au

Through a series of re-definitions and exclusions of what is deemed to be in the domain of waste management, the Commission has been able to argue for a waste policy based on non involvenment of federal government.

The Commission's draft findings and recommendations disempower waste management by assigning it to 'end of pipe' activity and incremental planning without vision nor engagement in tackling waste generation issues. The Commission has failed to identify pro-active waste management policies by arguing for non-intervention in most activity related to waste. No legitimacy is offered for waste management to engage in dialogue with producers and consumers about waste generation so that creative solutions may be developed This could have provided opportunities which could have stimulated market opportunities rather than what amounts to merely punitive monitoring of disposal practices for unwanted materials. In an age where issues of sustainability can no longer be ignored, 'waste' policy should be replaced by 'urban resource recovery' policy.