WESTERN AUSTRALIAN
LOCAL GOVERNMENT ASSOCIATION

MWAC Response to The Productivity Commission Draft Report into Waste Generation and Resource Efficiency

PREPARED BY THE

MUNICIPAL WASTE ADVISORY COUNCIL
"Getting the Environment Right"

July 2006

Organisational Profile and Acknowledgements

The Municipal Waste Advisory Council is a standing committee of the Western Australian Local Government Association with delegated authority to represent the Association in all matters relating to waste management.

The Municipal Waste Advisory Council has been formed through collaboration with Regional Waste Management Councils who are not ordinary members of the Association. The resulting body effectively represents the views of all Local Government bodies responsible for waste management in Western Australia.

Decisions and positions adopted by the Municipal Waste Advisory Council are considered by a board of elected member representatives from each member organisation who are supported by an Officers' Advisory Group (OAG) which has officer representatives from each member organisation.

The Municipal Waste Advisory Council's member organisations are:

The Western Australian Local Government Association
The Eastern Metropolitan Regional Council
The Western Metropolitan Regional Council
The Geraldton Greenough Regional Council
The Southern Metropolitan Regional Council
The South East Metropolitan Regional Council; and
The Mindarie Regional Council

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Executive Summary

1. Resource Efficiency in preference to Economic Efficiency

MWAC reaffirms its view that environmental policy makers should continue to use both the concept and specific measures of resource efficiency. MWAC challenges the Productivity Commission's view that economic efficiency should always be used in place of resource efficiency on the basis of two main arguments. Firstly, MWAC disagrees with the Productivity Commission's assumptions about the high degree of substitutability of man-made and human capital for natural capital. On this basis, MWAC considers that the conservation of natural capital – as opposed to the conservation of the total stock of capital – is a necessary requirement of sustainability. Secondly, MWAC believes that it is vital that environmental agencies are able to use environmentally focussed indicators and that resource efficiency is an important environmental indicator. MWAC notes that the Productivity Commission acknowledged but did not respond to the same assertion in its draft report – a disappointing omission given that the Commission proceeded to recommend that the EPHC be reformed to focus solely on measures of Economic Efficiency in future. MWAC makes the point that other government departments regularly consider the productivity (ie efficiency) of individual production inputs such as labour and sees a constructive role for indicators of resource efficiency to assist policy makers to consider this aspect of the operation of our economy.

2. Tackling resource consumption upstream is unfeasible

MWAC reminds the Productivity Commission that its concerns about the limited feasibility of direct upstream interventions relates to resource consumption, rather than pollution externalities. MWAC deals elsewhere with the Commission's assumption that resource consumption results in no net externalities and argues that the Commission has an obligation to consider the feasibility of direct upstream interventions in relation to natural resource conservation. MWAC asserts that, irrespective of its conclusions about the legitimacy of resource conservation as a policy goal, it is proper for the Productivity Commission to separately address whether direct governmental interventions upstream to address resource consumption are likely to be effective and feasible. MWAC sets out its own doubts about the effectiveness and feasibility of direct upstream interventions later in the response. MWAC's key point here is that, in analysing the feasibility and effectiveness of direct, upstream interventions, the Productivity Commission should assume that governments will pursue resource conservation as a policy objective and suspend its scepticism about the legitimacy of this objective

3. Planning

MWAC shows in this section how the Productivity Commission's analysis regarding targets is limited by assumptions about both the sound operation of markets for natural resources and its faith in the ability of governments to correct any market failures. These two assumptions limit the relevance of the Productivity Commission's conclusions about targets because it has only analysed the potential benefits of targets within the context of markets which are efficiently allocating resources. MWAC asserts that the Productivity Commission's assessment of targets does virtually nothing to inform policy makers who do not endorse its assumptions about the market. MWAC encourages the Productivity Commission to consider the value of target setting where resource planning is identified as the most feasible and effective approach – for instance where substantial market failures are assumed and the ability to directly correct market those failures is limited.

4. Waste avoidance / consumption reduction

MWAC reaffirms its view that measures to address consumption patterns are a desirable second-best option for governments due to the difficulties associated with direct upstream interventions. MWAC rejects as irrelevant the Productivity Commission's argument that consumption focussed policies can only tackle the tip of the iceberg when Australia exports so much raw material and offers a more

appropriate frame of reference for analysing the contribution which consumption focussed policies may make. Cognisant that the Commission will not endorse consumption reduction polices, MWAC simply calls on the Commission to acknowledge that this is primarily because it rejects this as legitimate goal of government.

5. The role of Cost-Benefit Analysis

MWAC argues that the type of cost benefit analysis of all aspects of environmental policy making proposed by the Productivity Commission will not always be efficient, effective or in the best interests of the community. MWAC discusses in detail a range of problems associated with Cost-Benefit Analysis, including that: costs and benefits are frequently not evenly represented; the process is readily politicised; techniques for ascribing dollar figures to non-financial values are controversial; discounting is critically important to the result and remains controversial; it is difficult to maintain transparency when the process is technically complicated; doubts remain over the exchangeability of all values; and Cost-Benefit Analysis appears poorly suited to the development of high level policy goals.

6. Ability of Local Government to manage trans-boundary services

MWAC agrees with the Productivity Commission that Local Governments are often limited in their ability to manage projects for the delivery of services spanning multiple council areas. MWAC and the Productivity Commission may differ on the question of whether these limitations are internal or external. MWAC proposes that the Productivity Commission review some of the statutory limitations that hamstring Local Governments and regional associations of Local Governments in projects of large size and complexity. MWAC calls for the Commission to consider more fully the costs and benefits of shifting responsibility up and out of the hands of Local Governments before it makes a recommendation to that effect.

Appendix 1: The Feasibility of Direct Interventions

MWAC sets out a detailed rebuttal of the Productivity Commission's assumption that direct interventions upstream to correct market failures in the valuation of natural resources are feasible and effective. In particular, MWAC presents a strong case for viewing the international nature of markets for both natural resources and investment as significant hurdle for domestic resource policy. MWAC argues that individual governments cannot expect to affect the price of natural resources though unilateral changes in resource rents. MWAC further argues that governments cannot politically afford to make these unilateral changes in any event, because this would risk substantial capital flight. MWAC calls on the Productivity Commission to approach this analysis by suspending its assumptions about resource consumption being free from externalities and to consider the practical and political limitations that prevent governments from correcting market failures directly upstream.

Appendix 2: Resource Consumption

MWAC recognises the critical importance of the Productivity Commission's assumption that resource consumption presents no special challenges for sustainability. Accordingly, MWAC has provided a detailed analysis showing why this assumption is highly suspect. Firstly, MWAC refutes the Commission's assertion that resource consumption externalities equal zero by considering scenarios and takes a practical look at the how comprehensively companies might factor in predictions of future demand when setting current prices. Secondly, MWAC sets out good reasons why it does not share the Productivity Commission's confidence that there is a high degree of substitutability between human and manmade capital on the one hand and natural capital on the other. Thirdly, MWAC points to the evidence that there are clear limits to technology's ability to deliver gains in natural resource productivity. MWAC argues that the Commission must acknowledge and respond to these concerns if it is to make a credible case for abandoning resource conservation as an objective of policy makers.

Compiled Recommendations

- That the Productivity Commission provide additional analysis and discussion to justify its underlying assumptions regarding the effective pricing of natural resources and the substitutability of human and man-made capital for natural capital;
- That the Productivity Commission explain why the productivity of other inputs of production such as labour are legitimate to be measured and considered in other fields of government policy making whereas the productivity of natural capital should not be separately measured or considered by governments;
- That the Productivity Commission directly address the advantages of alternative definitions of resource efficiency and explain why these advantages should be discounted.
- That the Productivity Commission demonstrate how direct policy interventions aimed at promoting resource conservation would be both feasible and effective, in the context of a global market for access to natural resources;
- That the Productivity Commission adopt the following working assumption in addressing the foregoing point: the externalities associated with resource consumption are greater than zero.
- That the Productivity Commission reassess whether planning approaches which include the setting of goals and targets have any value, using the working assumption that there will be instances in which market failures are difficult either to properly define or correct.
- That the Productivity Commission state, in clear terms, that it rejects waste avoidance approaches on the basis that it rejects the idea that governments should aim to reduce resource consumption if it believes this to be the case.
- That the Productivity Commission provide a full discussion of how well cost benefit analysis can address or overcome the following problems:
    - uneven representation of values which emphasise financial costs over environmental benefits;
    - doubts about the efficacy and legitimacy of valuation techniques;
    - doubts about the appropriateness and rate of discounting;
    - doubts about the ability of cost benefit analysis to be made transparent; and
    - doubts about the exchangeability of different values.
- That the Productivity Commission assess the extent to which the present limits to the 'operational capacity of Local Government' in respect of large-scale waste management projects are intrinsic or extrinsic to Councils and Regional Councils;
- That the Productivity Commission provide a full cost-benefit analysis of the options for addressing present limits in the 'operational capacity of Local Government';
- That Productivity Commission, in the absence of a full cost-benefit analysis as recommended above, downgrade draft recommendation 12.2 to a comment.

Guide to the Structure of this Response to the Draft Report

This Response to the Productivity Commission's recent draft report into Waste Generation and Resource Efficiency primarily considers the treatment by the Productivity Commission of key arguments raised by MWAC. The Response covers a number of key arguments and provides the following set of information in relation to each:

- a summary of the case made by MWAC;
- a summary of the response provided by the Productivity Commission;
- a response on the part of MWAC to the position adopted by the Productivity Commission; and
- a set of recommendations for the Productivity Commission.

MWAC has also used the opportunity to respond to the Productivity Commission's treatment of one issue that MWAC did not address in either of its first two submissions. The discussion under Section 6, *Ability of Local Government to manage trans-boundary services*, adheres generally to the same structure as outlines above, even though MWAC did not initially make any assertions on this issue.

This Response also includes two appendices which deal in detail with critical issues which emerged from the Productivity Commission's draft report.

References in this Response to the draft report produced by the Commission are not formally cited, rather they name the relevant section from the draft report followed by page numbers eg *Chapter 5, p106*. References to Appendices 1 and 2 relate to the appendices found in this Response. References to Appendices A – D relate to the draft report.

Finally, MWAC notes that constraints on time and resources prevented it from dealing with all topics of interest in this response to the draft report.

1. Resource Efficiency in preference to Economic Efficiency

The Case made by MWAC:

MWAC argued that resource efficiency should be treated as an indicator of the efficiency with which specifically natural resources are used in economic processes. MWAC based this view on other assertions, including the view that natural resources were fundamentally different to other inputs of production. MWAC asserted that "natural resources are distinct from other inputs by virtue of the fact that it is only the natural resource inputs which we must share with future generations" and it was on this basis that MWAC considered that natural resources have a special significance for sustainability. MWAC argued on this basis that environmental policy makers need to be able to consider how efficiently a given economic process is using these natural resources rather than being constrained to ask whether all resources (including, for example, capital and labour) are being used with optimal efficiency.

The Productivity Commission's Response:

The Productivity Commission restated its preference for Economic Efficiency instead of Resource Efficiency as the appropriate measure of the desirability of any situation or policy. The Commission stated this preference at the very outset in its Overview (pXXIV) and in its Introduction (p7). The Productivity Commission's preference stems from its belief that all regulation must consider its impact on all aspects of community welfare. Here, community welfare is a function of all social, economic and environmental factors. According to the Productivity Commission, only policy measures which improve the total welfare of the community should be pursued. In adhering to this definition, the Productivity Commission invoked its founding charter, the Productivity Commission Act, which requires all costs and benefits of different policy options to be considered (Overview pXXIV).

The Productivity Commission explained that the interpretation of resource efficiency preferred by parties such as MWAC, "ignores the costs of other inputs that are used in production and disposal processes, [and therefore] it is not necessarily consistent with maximising net benefits" (Overview, pXXIV). Consistent with its preference for the measurement of economic efficiency, the Productivity Commission also favours Cost Benefit Analysis as the appropriate means of determining if and when net benefits have been maximised. This is considered later in this review.

In relation to MWAC's contention that natural resources may be differentiated by the fact that they are the only set of resources which we share with future generations, the Productivity Commission presented an opposing view. The Commission suggested that different forms of capital may be substitutable (Overview, p28). In elaborating, the Productivity Commission identified a broader set of inheritable capital which it described in the following terms:

> "The stock of capital inherited by a generation from the previous generation includes human capital (knowledge and understanding), man-made capital (economic and social infrastructure) and natural capital (biodiversity, renewable and non-renewable resources, and ecological integrity)." (Chapter 5, p98)

Thus, the Commission would be expected to disagree with MWAC's view that natural capital is distinguishable from other types of capital because it the one form of capital that is passed through the generations and thus has a particular significance for sustainability.

The Productivity Commission mentioned but did not respond to MWAC's contention that forcing environment agencies to balance all values in their analysis of any problem, rather than focussing primarily on environmental values, neuters their role (Introduction p8). Nevertheless, the Productivity Commission proceeded to recommend that the EPHC National Waste Framework be amended to

remove all references to 'resource efficiency' and 'resource use efficiency' because it would not be appropriate to use these terms "to imply anything other than economic efficiency" (Chapter 6, p124).

MWAC's Response to Productivity Commission's Position:

Substitution

MWAC did not address in either of its two submissions to the Productivity Commission the question of substitutability. In its consideration of sustainability, MWAC focussed on the fact that future generations will, like the present generation, require material and energy resources in order to live. MWAC assumed that future generations will have enough natural resources, only to the extent that we leave enough for them. Upon reflection, this appears to have been stating the case too simply. Therefore, a detailed discussion of substitution and its implications for sustainability has been provided in Appendix 2. On the basis of its research in compiling Appendix 2, MWAC retains the view that we should consider the conservation of natural capital as being particularly important for the welfare of future generations. The points made in Appendix 2 establish a compelling basis for the Productivity Commission to revisit its assumption that human and man-made capital is highly substitutable for natural capital.

Natural resources remain critical to the welfare of future generations

MWAC does not consider that the existence of conceivable examples of substitution, such as in the case of oil, used as an example in Appendix 2, is sufficient to prove the theory that natural capital can be expended without unfairly diminishing the welfare of future generations. On the contrary, for reasons discussed in Appendix 2, the long term supply of natural capital seems more likely to remain critical to the maintenance of the material welfare of future generations. Consequently, MWAC considers that the Productivity Commission has failed to show sufficient evidence that we should simply be concerned with the total stock of capital. It is only sensible then, to monitor the way in which we use natural resources specifically.

Environment Agencies need environmental indicators

The Productivity Commission acknoweldged MWAC's view that requiring environmental agencies to exclusively use an economic efficiency approach would neuter their role as protectors of environmental values. However, the Commission did not directly respond to this view. This failure to engage with the argument was generally consistent with the Productivity Commission's descriptive, rather than analytical, approach to dealing with arguments it didn't agree with. In declining to properly discuss the possible advantages in environmental agencies using indicators of resource efficiency, the Commission has failed to fully assess the costs and benefits of a particular policy approach. This should be considered to be a material omission, in view of the Productivity Commission's recommendation that the EPHC abandon the term, 'resource efficiency' in favour of 'economic efficiency'.

MWAC reminds the Productivity Commission that measures of resource efficiency are a useful tool for environment agencies to consider how productively we are putting our natural resources to economic use. Just as other parts of government may consider it useful to measure the productivity of labour or the rate of investment in man-made capital, it is legitimate for environment agencies to monitor the situation with respect to natural capital. Monitoring the way our economy uses our natural resources is an excellent way for governments to learn how the market is valuing those resources and driving innovation and efficiency in their use. For instance, if the measurement of resource efficiency suggests that the productivity of our natural resources is falling or stagnating, perhaps this will be an indication of a market failure somewhere in the system.

In its determination to emphasise the importance of taking a net benefits approach, the Productivity Commission gives the impression that it believes that no other perspectives will ever add value to government decision making. MWAC takes the view that the Productivity Commission brings to bear on

the analysis of waste policy merely one useful perspective on the appropriate way to pursue what is in the best interests of the community. It is legitimate for other government agencies to apply different models and if they come into conflict and have to be reconciled periodically, so much the better. Higher quality policy will emerge, not from the subjugation of one government department's perspective by that of another, but as a result of robust debate from one issue to the next. Measuring resource efficiency is simply one way that environmental agencies will be better prepared to participate in that debate.

Need to measure consumption of natural resources separately

All of the forgoing discussion has been directed at making a case for the special consideration, by policy makers, of natural resources and their scarcity. For the Productivity Commission to properly make its case for doing away with resource efficiency as a policy consideration, it needs to demonstrate that natural resources really can be thought of as being no different to other economic inputs of production. The fundamental assumptions made by the Commission in concluding that economic efficiency is a sufficient metric for policy makers have not been adequately discussed and supported.

Recommendations

- That the Productivity Commission provide additional analysis and discussion to justify its underlying assumptions regarding the effective pricing of natural resources and the substitutability of human and man-made capital for natural capital;
- That the Productivity Commission explain why the productivity of other inputs of production such as labour are legitimate to be measured and considered in other fields of government policy making whereas the productivity of natural capital should not be separately measured or considered by governments;
- That the Productivity Commission directly address the advantages of alternative definitions of resource efficiency and explain why these advantages should be discounted.

2. Tackling resource consumption upstream is unfeasible

The Case made by MWAC:

MWAC recognised the likely superior efficiency of direct interventions which tackle upstream environmental impacts at source which internalise externalities into the price of virgin materials. However, MWAC argued that these types of interventions are not politically or economically feasible at the present time. Critically, MWAC argued that these limitations (if accepted) necessarily change the way in which the 'sub-optimal' approaches should be assessed. MWAC submitted to the Productivity Commission that it should not simply declare that waste policy directed at upstream environmental impacts were an inefficient, indirect intervention. MWAC called on the Productivity Commission to consider what alternative interventions were realistically able to be contemplated.

The Productivity Commission's Response:

The Productivity Commission directly acknowledged the views expressed by MWAC and the Department of Environment and Heritage to the effect that direct interventions to correct market failures upstream are often not feasible (The Case for Government Intervention p95). However, the Productivity Commission apparently rejected the assertion that governments are either unwilling or unable to undertake interventions of this kind. On page 97, the Productivity Commission states that "It should not be presumed that governments do not intervene upstream. A host of policies are directed at upstream externality issues". The Productivity Commission gave examples of upstream government interventions aimed at correcting market failures, mainly in the form of measures to prevent or appropriately cost environmental degradation and pollution (Chapter 5, pp91-92).

MWAC's Response to Productivity Commission's Position:

The overriding environmental concern raised by MWAC in its two submissions was related to resource consumption. It was in relation to resource consumption in particular that MWAC expressed scepticism about the capacity of material and energy markets to appropriately price natural resources. It is worth noting that the examples given by the Productivity Commission here mostly did not concern measures aimed at reducing the rate of resource consumption. Elsewhere in its draft report, the Commission has attacked the idea that resource consumption presents un-factored externalities, so it was unsurprising that the Productivity Commission did not discuss direct interventions to promote resource conservation.

The Productivity Commission has dismissed in a few paragraphs (Appendix B, p351) the idea that the opportunity costs borne by future generations by present day resource consumption represents an externality not reflected in current commodity prices. MWAC has challenged this assertion in Appendix 2 and will look to the Commission's response to the issues raised therein with great interest. At stake is the question of whether resource conservation is a legitimate policy goal. However, irrespective of its conclusions about the legitimacy of resource conservation as a policy goal, it is proper for the Productivity Commission to separately address whether direct governmental interventions upstream to address resource consumption are likely to be effective and feasible.

MWAC sets out its own views on the feasibility of direct upstream interventions in Appendix 1. The key conclusion supported by Appendix 1, is that the direct policy interventions theoretically available to individual governments to encourage the repricing of natural resources are likely to be neither effective nor politically feasible. MWAC wishes to see the Productivity Commission demonstrate how direct policy interventions, like increasing resource rents, aimed at promoting resource conservation would be both feasible and effective. For the purposes of this specific analysis, the Productivity Commission should assume that governments will pursue resource conservation as a policy objective and suspend its scepticism about the legitimacy of this objective.

Recommendations

- That the Productivity Commission demonstrate how direct policy interventions aimed at promoting resource conservation would be both feasible and effective, in the context of a global market for access to natural resources;
- That the Productivity Commission adopt the following working assumption in addressing the foregoing point: *the externalities associated with resource consumption are greater than zero*.

3. Planning

The Case made by MWAC:

MWAC asserted the legitimacy of policy interventions based on achieving planned outcomes and set out reasons for considering goal and target setting to be an important part of planning in a waste policy context. The planning approach and the setting of goals and targets are closely related but separate matters. In relation to both, MWAC explicitly recognised the importance of the political process as a means by which values and priorities of the community should be realised and given effect to.

MWAC made a case for using a planning approach in order to safeguard general outcomes which the market does not appear to be likely to spontaneously deliver, because in some cases, correcting the market is simply not feasible. This argument was based on the notion that ensuring sustainability should be treated as an essential role for government, much as in the case of health, education and defence. That is, actions to secure sustainability will often be justified even before we can fully analyse the costs and benefits of our actions.

MWAC also made a case for using targets and goals within the context of a planning approach, as tools to assist in ensure that the broader outcome is achieved. MWAC claimed that government set goals and targets for waste minimisation and recycling/recovery were required to drive activity by both the public and private sectors.

The Productivity Commission's Response:

These two matters received substantial separate attention in MWAC's two submissions but the Productivity Commission considered on the question of target setting in any detail.

The Productivity Commission explicitly objected to targets and dedicated half a chapter to explaining why they are almost always a poor idea. The Productivity Commission stated that "targets are not sensitive to [a range of] changes and are, therefore, likely to be arbitrary and lead to net social costs" (The Waste Hierarchy and Target Setting, p130-132). The Productivity Commission argued that targets are insensitive to the cost of achieving the desired outcome – eg greater recycling and therefore tended to offend the net-benefit approach which would require no additional recycling past the point that costs outweighed the benefits. While the Commission recorded some of the statements made in submissions which described the advantages of setting targets, it did not actually endorse any of these advantages (p131).

The PC particularly objected to zerowaste goals set by a number of states. The Commission referred to these as 'targets', presumably in the belief that states would be requiring their environment agencies to literally achieve zerowaste, (eg p131). The Productivity Commission wrote that "Zero waste is neither technically nor economically sensible, and while such targets might be intended to be aspirational, they are simply not credible" (Overview, XXIX).

The Productivity Commission also criticised the way in which targets are set. The Commission noted with approval the claims of some submissions that "most targets appeared to be set more or less arbitrarily, with little or no analysis of the costs and benefits" (The Waste Hierarchy and Target Setting, p 132). In other words, waste policy targets are not set using Cost Benefit Analysis.

The Productivity Commission did not respond to the assertion made in MWAC's first submission that sustainability, like a select number of other policy imperatives, justifies a planning approach within which certain outcomes are safeguarded or guaranteed. It seems reasonable to conclude based on the other remarks made by the Commission in relation to targets, that it fundamentally disagrees with the idea that particular outcomes ought to be planned for. So, while the Productivity Commission specifically objected to the way in which waste targets have been set, it seems that in practice it would almost always object to targets no matter how they were set.

MWAC's Response to Productivity Commission's Position:

The Productivity Commission wrote that, rather than setting targets, governments should correct market failures, thereby "allowing establishing the conditions where the market will work it out based on prevailing prices" (p130). MWAC's response hinges on the fact that it does not share the Productivity Commission's faith that the production inputs derived from natural resources have been sustainably priced. In adhering to this position, MWAC reminds the Productivity Commission that it's draft report has paid only superficial attention to the question of whether today's commodity prices adequately reflect the cost to future generations of consuming finite resources today.

Target setting in the waste policy context can be seen as an important element of resource planning. The Productivity Commission has declined to consider whether target setting is a useful technique

within a planning framework, presumably because it fundamentally disagrees with the planning approach. Throughout its draft report, the Productivity Commission consistently compares waste policy interventions to the outcomes which can be delivered by the market. In these comparisons, the market (upstream at least) is generally assumed to be doing a reasonable job of reflecting the full environmental costs of consumption. Thus, the Productivity Commission's conclusions about targets should be understood as conclusions about how beneficial targets would be within the context of markets which are efficiently allocating resources.

The Productivity Commission has regrettably limited the relevance of its conclusions about targets because of its insistence that environmental policy makers should only concern themselves with correcting market failures. The Commission has declined to discuss the merits of targets asserted in several submissions, one assumes because the policy approach contemplated by those who advocate targets is irreconcilable with the Productivity Commission's market-based approach. The Commission's views regarding targets rely heavily on its prior assumption that markets can (and largely do) fully inform environmentally responsible decision-making. As a consequence, the Productivity Commission's assessment of targets does virtually nothing to inform policy makers who do not endorse that assumption.

Target setting, as an element of resource planning, is acknowledged by MWAC to make little sense if the market is able to determine the best allocation of all resources, including natural ones. However, the Productivity Commission has not established an especially strong case for believing that the market can and does adequately reflect the full cost of consuming natural resources (see Appendix 2). Accordingly, it seems sensible for the Productivity Commission to consider what value target setting might offer where we have limited ability to correct market failures directly and where resource planning is identified as the most feasible and effective approach. By refusing to accept that a planning approach might be even occasionally appropriate in environmental policy, the Productivity Commission risks being dismissed as doctrinaire and dogmatic.

Recommendations

– That the Productivity Commission reassess whether planning approaches which include the setting of goals and targets have any value, using the working assumption that there will be instances in which market failures are difficult either to properly define or correct.

4. Waste avoidance / consumption reduction

The Case made by MWAC:

MWAC made the case for giving emphasis to avoidance of waste through reducing the consumption of energy and materially intensive products. MWAC argued that sustainability requires such a reduction and that the actions suggested by the other levels of the waste hierarchy could not deliver sustainability without a substantial contribution from waste avoidance / consumption reduction measures.

The Productivity Commission's Response:

The Productivity Commission did not cover the issue of waste avoidance to the level of detail that MWAC would have preferred. However there are some issues which the Commission did deal with which provide some clues as to its views on the matter. The Productivity Commission has been critical of the Waste Hierarchy and seems to have satisfied itself that the Hierarchy has significantly influenced the thinking and work of waste policy makers (see for example Chapter 7, p128). Indeed, it has explicitly recommended the rejection of the waste hierarchy as a guide for policy makers because it is inconsistent with the net benefits approach (Draft Recommendation 7.1). It is clear that the Commission

does not view the consumption of resources, nor the generation of waste, as problems per se. The Productivity Commission may or may not agree with MWAC that waste avoidance (or consumption reduction) may be the best way of reducing both waste and resource consumption. However, because this approach will frequently involve invasive and disruptive types of interventions, we can expect that waste avoidance approaches will usually fail to meet the Productivity Commission's net benefits test.

MWAC found only one opportunity to test this hypothesis in the draft report. In Chapter 8, entitled 'Regulation', the Commission critiqued two proposed examples of regulatory intervention under the heading 'waste avoidance', namely recycled content standards and a ban on plastic bags. Only the plastic bag ban was actually an example of a waste avoidance measure.[1] In finding that the foreshadowed ban on plastic bags was probably a bad idea, the Commission was particularly concerned by the benefits that consumers would be prevented from enjoying if the bags were banned (Chapter 8, pp144-145). While this does not automatically reveal the Productivity Commission's general attitude towards waste avoidance, it does assist us to make an educated guess on this question. It seems reasonable to conclude that the Commission is generally opposed to waste avoidance being treated as an objective of government policy because the Productivity Commission considers that the only valid objective of any government policy is to maximise net benefit for the community.

MWAC's Response to Productivity Commission's Position:

MWAC recognises that government programs which aim to avoid waste before it is generated are unlikely to perform well in a cost benefits analysis carried out by the Productivity Commission. While waste avoidance is generally the most effective way of reducing resource consumption and pollution impacts, it seems reasonable to assume that effective government waste avoidance programs will often be quite economically disruptive. Indeed, to the extent that waste avoidance is synonymous with consumption reduction, such measures may sometimes be incompatible with economic growth.

It is a pity that the Productivity Commission did not engage with the question of whether consumption reduction could ever be a legitimate strategy for reducing the resource intensity of modern lifestyles. MWAC is aware that any policy which seeks to diminish markets for a particular class of goods is potentially very controversial. It would have been interesting to hear the Commission's views on the economic impacts of policies which aimed to do precisely this. For example, in reviewing the case for a ban on plastic bags, the Productivity Commission did not consider the economic impact of removing a large portion of the market serviced by the plastic bag manufacturing industry. Moving this set of considerations into the foreground is important, because such impacts can be expected to be foremost in the minds of the industry groups which oppose intrusive waste policy generally.

Demand side measures to reduce resource consumption have been dismissed by the PC as ineffectual. The Commission's example of our ratio of export vs domestic consumption of raw materials is used as a starting point for showing that upstream impacts can only be efficiently or effectively tackled through resource policy. MWAC's response is that policies oriented at changing the behaviour of Australian consumers offer a desirable second-best alternative for governments. The Commission's first preference – direct intervention aimed at primary producers – is likely to be unfeasible because of the extent to which this would disadvantage those primary producers in an international marketplace (see Appendix 1).

Turning to the Productivity Commission's remarks about the relative scale of our consumption versus our production of raw materials, MWAC finds that these comments amount to a weak argument against

[1] Plastic bags may have been an unfortunate example for the Productivity Commission to seize upon given the way in which this issue lends itself to being a mascot of the supposedly irrational fixations of the environment movement.

intervention. If direct market interventions to reduce resource consumption are politically or economically unfeasible, then we should assess a domestic program to reduce consumption without regard to the theoretical superiority of this larger intervention. Waste avoidance policy directed at reducing domestic demand for natural resources will tend to reduce consumption of both Australian and foreign raw materials, which is desirable. Moreover, if such a policy only reduces the consumption of natural resources by a small amount, perhaps this reduction will still be in proportion with our relatively small economy, compared to the world economy.

In closing its discussion of waste avoidance approaches, MWAC notes that is effectively impossible to make a case for policies of this class given the Productivity Commission's position on other matters. Most importantly, a discussion about waste avoidance is pointless unless the Commission concedes that our markets may not always be assigning our natural resources sustainably. If and when the Productivity Commission returns to the question of how to reduce natural resource consumption and assesses different approaches for achieving this, MWAC believes it will find waste avoidance approaches often provide effective solutions. In the meantime, MWAC simply calls on the Productivity Commission to restate, in the clearest possible terms, that its dismissal of these approaches rests most heavily on its rejection of the intention – ie reducing resource consumption – as a legitimate objective of governments.

Recommendations

– That the Productivity Commission state, in clear terms, that it rejects waste avoidance approaches on the basis that it rejects the idea that governments should aim to reduce resource consumption.

5. The role of Cost-Benefit Analysis

The Case made by MWAC:

MWAC argued that sustainability should be treated among a small number of core values, which are neither reducible to convenient economic units, nor appropriate to be traded-off against other values. Furthermore, MWAC argued that this reduces the scope for applying cost-benefit analysis (CBA) to determine whether protecting a value is worthwhile. MWAC did not argue against using CBA in order to determine the best option for achieving that protection.

The Productivity Commission's Response:

The Productivity Commission generally uses the term 'net social benefits approach' in preference to the term Cost Benefit Analysis. However in its interpretation of the Productivity Commission Act, which requires all costs and benefits of different policy options to be considered, the Commission has endorsed the use of the monetization approach which characterises Cost Benefit Analysis (Chapter 4, p59). In Appendix B, the Productivity Commission went on to discuss techniques for deriving monetary values for external costs and benefits (Appendix B, pp323-326).

The Commission applied Cost Benefit Analysis techniques in Appendix B in order to obtain estimates of the externalities associated with landfill and alternative waste management techniques. However, in other parts of the Draft Report, the Productivity Commission used the net benefits approach more loosely. For instance, when it analysed the foreshadowed ban on plastic bags, the Commission simply listed some of the costs and benefits without attempting to standardise them (Chapter 8, pp144-145). The Productivity Commission seemed to satisfy itself that the costs of a bag ban outweighed the benefits, although it stopped short of calling this a draft finding. It also stopped short of declaring that

the analysis of costs and benefits conducted by environment agencies always needs to be monetized or at least carried out in standard units.

The Productivity Commission considered the application of discount rates in cost benefit analysis and determined that standard discount rates should be used when conducting cost benefit analyses, even in the context of sustainability issues (Chapter 5, pp99-100). This then formed part of the Commission's recommended environmental policy framework (Chapter 6, p118).

MWAC's Response to Productivity Commission's Position:

MWAC recognises the general principle that the costs and benefits of political decisions have to be weighed and assessed. MWAC believes that the approach of environmental policy makers in developing policies in the area of waste management has demonstrated a reasonable understanding of the need to consider the costs and benefits of different options. For instance, MWAC reiterates views it expressed in its previous submissions, in relation to the application of the waste hierarchy. No environmental agency in Australia applies the waste hierarchy in isolation and all decisions which attempt to move current practice further up the hierarchy do take some account of the broader costs of that shift, not merely the environmental benefits. However, MWAC does not believe that the type of cost benefit analysis of all aspects of environmental policy making proposed by the Productivity Commission will be efficient, effective or in the best interests of the community. The reasons for this are multiple.

Costs and benefits have to be evenly represented

A cost benefit analysis which reduces everything to a common unit, typically dollars, has to be unbiased. This may seem an obvious and generalisable point, yet it is particularly important in the case of cost benefit analysis. The reason is that the dollar figure which emerges from a cost benefit analysis is presented as an objective fact, free from the vagaries of qualitative statements. Yet experience from other jurisdictions lead on to suspect that the even handed identification of costs and benefits is hard to achieve. For instance, completely accounting for environmental benefits from regulation is generally more difficult than providing a full assessment of the commercial costs caused by that regulation. This is what Ackerman and Heinzerling refer to as complete cost / incomplete benefits analysis (Ackerman and Heinzerling, 2004). Depending on the magnitude in the error, this can invalidate the results of a cost benefit analysis, yet its impact is completely hidden by the presentation of a simple dollar figure at the end of a study.

The Productivity Commission makes the point that environmental impacts are sometimes overstated in cost benefit analyses because "there has also been inadequate consideration of the least cost means of dealing with risks" (Chapter 4, p60). The Productivity Commission ought to be equally willing to point out that regulatory impacts are often overstated by industry because of inadequate consideration of the least cost means of implementation. An excellent example of this is provided by the analyses of Container Deposit Legislation that industry groups prefer to quote. The Beverage Industry Environment Council (now incorporated into the Australian Food and Grocery Council), used to strongly promote a C4ES study into CDL (see C4ES, 2002). BIEC chose to ignore other studies on the same subject because the C4ES work had calculated higher estimates of cost for almost every aspect of the scheme.

Herein lies an important practical impediment to achieving the Commission's policy utopia in which a simple dollar value can adequately represent the net total of all costs and benefits for a given regulatory intervention. The existence of a framework for assessing net benefits does not prevent interested parties from attempting to influence the process by promoting their own perspective. Regulatory capture problems arise as the complexity of the cost analysis grows, since only involved persons will be able to meaningfully engage in the estimation and auditing processes. The more important and complicated the question, the more likely it becomes that the conduct of a Cost Benefit Analysis will be bogged down

in a political contest. Worse still, a Cost Benefit Analysis on an important question which affects large political or economic interests may be manipulated to fortify the outcome preferred by a single camp.

Valuation techniques are themselves controversial

The Productivity Commission presents two categories of techniques for assigning a dollar figure to non-financial values: stated preference techniques and revealed preference techniques. The Commission briefly notes some of the concerns about stated preferences and then explains how revealed preference techniques work. None of its analysis admits that these techniques are controversial, nor does the Productivity Commission give much consideration to the appropriate way to deal with uncertainty in valuation of costs and benefits. Yet these are subjects which need to be addressed if the Commission is to make a compelling case for abandoning other approaches to decision making exclusively in favour of cost benefit analysis.

The practice of discounting

The practice of discounting goes hand in glove with cost benefit analysis and in relation to sustainability, the case for using standard discount values is far from adequately made by the Productivity Commission. The Productivity Commission has adopted the view that concerns about the welfare of future generations should do nothing to alter the discount rate, which reflects the greater value we today attach to present costs and benefits compared to those experienced by future generations. The Productivity Commission's case here at least makes reference to the weight of opinion of economists, which is more than it has done to support other assumptions. However, the Commission has still failed to spell out the reasons why standard discount rates are appropriate, not withstanding the intuitive appeal of allowing future costs and benefits to matter to future generations just as much as today's costs and benefits matter to us.

The farthest the Productivity Commission advanced, in making a case for standard discount rates, was to cite the example of deciding to build a dam on the basis of a cost benefit analysis which sets discount rates low (Chapter 5, pp99-100). This example did nothing but demonstrate the disadvantage that discounting imposes on whichever values are gained/lost in the future. Since sustainability is predominantly a concern about how we treat future values, the Commission's point simply serves to reinforce the fact that setting discount rates low would give a boost to sustainability. Finding exceptional examples in which all of the environmental benefits are limited to the present while all of the financial benefits extend into the future is a disingenuous way for the Productivity Commission to promote standard discount rates as 'pro-environmental'.

The Commission's refusal to consider externalities from resource consumption and its assumptions about substitution conveniently avoided additional difficulties in relation to setting discount rates. To the extent that the Productivity Commission is wrong on these matters, discounting should be considered a very controversial concept indeed. If natural capital is insufficiently substitutable and if future scarcity is being inadequately factored into today's prices by markets, then how should discount rates be set in analysing the cost of intervention to protect natural resources? How should we discount the value of a net drop in living standards of future generations? Should it mean less to policy makers that a drop in living standards was set to occur in three generations time, instead of two? These are questions which are neatly avoided by the Productivity Commission's approach, but which remain important for governments in determining how useful is the practice of discounting in studying sustainability and the appropriate discount rates to use when considering intergenerational costs and benefits.

Transparency

In relation to lifecycle analysis, the Productivity Commission noted the risks associated with aggregating the results of such an analysis in order to establish a simple dollar figure (Appendix B, p348).

Elsewhere in its draft report, the Commission reiterated its concern for transparency in relation to waste management services pricing; identification of waste targets; selection of tender criteria and selection of performance indicators. These concerns are well received by MWAC, but it is also disappointed that the Productivity Commission did not discuss the tendency for cost benefit analysis to become so complicated as to be inscrutable to anyone but well funded experts. This in turn, leads to questions about the level of transparency which is practicable in using cost benefit analysis.

For most people, the methodology of a cost benefit analysis will be a black box. The more complex and important the issue, the less likely they will be able to inspect, consider and, if appropriate, challenge the conclusions of the cost benefit analyst. Even for an expert, someone with the necessary theoretical and field specific knowledge, auditing the analysis may take a significant amount of time and therefore funding. MWAC believes that cost benefit analysis will do nothing, in itself, to improve the transparency of government decision making. On the contrary and with particular regard to high level questions of policy, cost benefit analysis seems most likely to confuse and disempower both average citizens and active participants in the policy process.

Prices and exchangeable values

The Productivity Commission's net benefits approach assumes that all things that society values can have their respective values meaningfully compared to one another. It further assumes that having compared the values of these things, that society can trade them off against one another. MWAC articulated its belief that sustainability demands that society observe a range of conservatively estimated critical limits when exploiting its natural resources. Resources, habitat and assimilatory capacity beyond these limits need to be placed beyond the scope of cost-benefit analyses, because they should be considered un-tradeable. The Productivity Commission's adoption of the assumption that man-made capital can be substituted for natural capital is one of the ways in which the Productivity Commission has attempted to circumvent the dilemmas that sustainability creates for a cost-benefits approach. Yet there are real controversies surrounding the appropriateness of these assumptions and, consequently with the Commission's application of cost-benefit analysis techniques to the analysis of sustainability policy. These problems are discussed in greater length in Appendix 2.

Cost benefit analysis at different policy levels

In its oral submission to the Productivity Commission, MWAC distinguished between two levels of use for cost benefit analysis. At the lower level, one might use cost benefit analysis to determine the best value investment of government funds in pursuit of a clear set of objectives. Thus, in the pursuit of better health care for the community, we might use cost benefit techniques to identify the best value drugs to subsidise. Similarly, we might determine that one type of intervention, say a voluntary one, would deliver the best net result for the community in pursuit of the goal of reducing the amount of hazardous material disposed of inappropriately. In these types of analyses, because we are comparing like with like, whatever errors we make in valuing the components are more likely to be systematic and hence less likely to bias the conclusion. We may even be able to avoid reducing the values to financial values altogether.

At the higher level, one might try to use cost benefit analysis to drive government policy. Thus cost benefit analysis could be used to determine whether an environmentally oriented goal is beneficial for the community. This is a far more difficult task since it is more prone to suffer from all of the sorts of problems which have already been laid out in this section. Clearly, the Productivity Commission is most concerned with reforming the development of policy at this higher level. In fact, the Commission seems bent on nothing less than taking the politics out of policy, by making decisions about interventions a simple matter of numbers. The scale and ambition of the Commission's vision behoves it to provide all parties with a much fuller explanation of how the pitfalls set out in this section can be overcome.

Recommendations

– That the Productivity Commission provide a full discussion of how well cost benefit analysis can address or overcome the following problems:
  - uneven representation of values which emphasise financial costs over environmental benefits;
  - doubts about the efficacy and legitimacy of valuation techniques;
  - doubts about the appropriateness and rate of discounting;
  - doubts about the ability of cost benefit analysis to be made transparent; and
  - doubts about the exchangeability of different values.

6. Ability of Local Government to manage trans-boundary services

The Case made by MWAC:

MWAC did not comment on this issue in either of its two earlier submissions. MWAC did note that some of the waste management challenges which Local Governments had to deal with produced political externalities as a result of community disapproval for waste management decisions.

The Productivity Commission's Position:

The Productivity Commission quoted MWAC's first submission in relation to the impact on Local Governments of adverse community reactions to waste management decisions. The Commission went on to quote several other submissions from the waste management industry, which stressed the need for town planners to provide for central, accessible and affordable sites for the handling and processing of waste (Chapter 12, p267). The Productivity Commission identified a problem arising from the power of individual local governments to exclude development of waste management sites within their boundaries, even when the development might provide an overall benefit for the community well beyond the boundaries of that local government area (Chapter 12, pp266-8). The Commission wrote:

> The benefits of many waste management and recycling facilities… extend beyond the boundaries of a local government. In such circumstances, planning laws that only take into account local issues could lead to a development application being rejected even if it were to bring net benefits to the region or jurisdiction as a whole. (Chapter 12, p266)

The Productivity Commission quoted with apparent favour, a number of submissions which cast doubts over the 'operational capacity of local government' in relation to modern waste management processes (Chapter 12, pp268-9). In particular, the ability of Councils to deal with the development of large-scale processing facilities such as resource recovery facilities was cast into doubt.

The Productivity Commission went on to consider two options for responding to these problems. Joint contracting was briefly discussed but rejected in favour of transferring responsibilities to a larger, better resourced body that would be better able to deliver these services (Chapter 12, p269).

Finally, the Commission recommended that "State and Territory Governments should consider shifting the responsibility for waste management in large urban centres from local government to appropriately constituted regional bodies" (Recommendation 12.2).

MWAC's Response to Productivity Commission's Position:

MWAC is bemused by the Productivity Commission's concern about the operational capacity of Local Government to deliver large-scale waste management projects. This concern lies at odds with

Commission's scepticism about the value of the resource recovery projects being planned by Local Governments. After all, it's predominantly these types of projects that have proven difficult for regional associations of councils to bring to fruition. Nevertheless, MWAC is pleased that the Productivity Commission has given attention to the challenges faced by Local Government in delivering the next generation of larger, more efficient, more sophisticated waste management systems.

MWAC and the Commission agree that there are limits on how effectively Local Governments can presently manage large waste management projects. The Productivity Commission appears to support a view that Local Government is inherently limited in its ability to execute large-scale waste management projects. However MWAC takes the view that there are important external limitations which impede Local Governments in their efforts to responsibly manage projects of considerable magnitude and complexity. Thus, while the Productivity Commission has satisfied itself that regional associations of councils are not equal to the challenges presented by large-scale waste management projects, MWAC takes the view that these regional associations could be empowered to meet the challenges.

A clear example of how the statutory framework is shackling Local Governments in relation to large waste management projects is provided by the Local Government Act (WA) 1995, which imposes strict limitations on the Local Government tendering process. The legislation was designed to apply to individual Local Governments with contracting requirements of a modest scale. However, the legislation was subsequently modified so as to cover regional associations of councils, without substantially reforming the provisions relating to project tendering. These provisions allow councils (including regional councils) 6 months only to conclude the negotiations that may follow the submission of non-conforming tenders. In many cases, this will be an unreasonably short timeframe in which to expect complex negotiations between regional councils and multiple commercial parties to reach a satisfactory conclusion. Non-conforming tenders are common in this relatively new and constantly developing engineering field and hence this limitation on the negotiation time can easily become relevant. Granting regional councils greater freedom in cases such as these would assist these Local Government-based organizations to deliver the kinds of outcomes that the Productivity Commission seems to believe are generally beyond them.

The Commission reminds us that the precedents of water and sewerage services show how the service responsibilities of individual Local Governments can and have been passed over to state governments. The Productivity Commission appears to have forgotten to apply a net benefits approach to its analysis of whether this would be an optimal approach in the case of waste. The likely high cost of implementing the reforms recommended by the Commission should be weighed against what would be expected to be the lower cost of enabling Local Governments to meet the challenges presented by large-scale waste management projects.

MWAC agrees with some of the observations and assertions made or quoted by the Productivity Commission in section 12.2. However, MWAC encourages the Productivity Commission to consider whether it has been too quick to dismiss the potential of regional associations of Local Governments to manage large projects, given suitable reforms to their operating framework. The potential for structural reform to deliver the necessary boost to Local Government operational capacity should not yet be discounted, especially on the basis of a relatively brief consideration of the issue.

Recommendations

– That the Productivity Commission assess the extent to which the present limits to the 'operational capacity of Local Government' in respect of large-scale waste management projects are intrinsic or extrinsic to Councils and Regional Councils;

- That the Productivity Commission provide a full cost-benefit analysis of the options for addressing present limits in the 'operational capacity of Local Government';
- That Productivity Commission, in the absence of a full cost-benefit analysis as recommended above, downgrade draft recommendation 12.2 to a comment.

Appendix 1: The Feasibility of Direct Interventions

The Productivity Commission has argued that using waste policy as a means of tackling resource consumption is inefficient. The Commission has pointed out that Australia produces many raw materials in very much larger quantities than are required for domestic consumption (Table 5.1, p94). On this basis, the Productivity Commission identifies an important weakness in using waste policy to avoid upstream environmental impacts. Namely, that such an approach misses the opportunity to target the upstream impacts associated with materials which are exported (Chapter 5, p94). This is a valid point and coupled with the other reasons given by the Productivity Commission for preferring direct interventions, there is clearly a compelling case in favour of using direct interventions to tackle upstream impacts.

Whereas the Productivity Commission provided a number of examples of government policies aimed at correcting upstream externalities, none of their examples were apparently designed to address the impacts of resource consumption (Chapter 5, pp91-92). That is, none of the interventions appeared to be concerned with ensuring that the price of the raw materials reflected the full cost to present and future generations of forgone future consumption. It seems likely that the Productivity Commission is aware of this, which is why it has explicitly rejected the notion that resource consumption presents any externalities in the form of opportunity costs borne by future generations (Appendix B, p351).

MWAC considers that there are likely to be significant externalities associated with resource consumption and that direct interventions to correct these externalities remain a difficult and uncertain challenge for governments in the long term. Three of the challenges which would face any attempt at direct intervention to address resource consumption are listed below.

- *Precisely quantifying the externalities*
  Governments must develop sophisticated frameworks for valuing finite resources from the perspective of future generations. Rejecting the Productivity Commission neat solution of making all resource consumption externalities equal to zero then raises the challenge of precisely and comprehensively quantifying the externalities.
- *Effectiveness of government policy in affecting international markets*
  Assuming a domestic program to revalue resource rents was politically feasible, it is difficult to imagine how Australian resource management policy would bring about a revaluation of the price of commodities. Commodity markets are international in nature and any effort to force local commodity prices to fully reflect all externalities will fail unless the same efforts are made internationally. If the prices of Australia's natural resources become internationally uncompetitive, producers in other countries will simply fill the void, at lower prices. We should remember that domestic consumption decisions will continue to be based on world commodity prices. Thus, an Australian program to revalue resource rents would, in isolation, be generally ineffective in altering even domestic consumption patterns.
- *Restrictions on government policies imposed by international markets for capital*
  Setting aside the theoretical effectiveness of using direct upstream resource policy interventions, there are good reasons to doubt that such interventions are politically practical. Governments will need to overcome intense opposition in order to raise the cost of extracting raw materials by raising resource rents. Any sustained attempt to revalue resource rents upward would produce significant capital flight and here Milton Freidman's golden straightjacket will almost certainly stay the hand of government.

The latter two points above concern the international nature of material and energy markets and are pulled out for detailed discussion in this appendix. The Productivity Commission has urged its audience to appreciate the limitations of waste policy to influence resource consumption in a global context. MWAC thinks it reasonable to point out that similar limitations hold for direct interventions upstream aimed at internalising present externalities into the price of raw materials.

Effectiveness of government policy in affecting international markets

Let us consider first the limits to the ability of Australian policy to influence the international market for raw materials and the implications of those limits for domestic resource consumption. For the purposes of this discussion, we should assume that all of Australia's natural resources are extracted and priced such that:

- all environmental impacts are incorporated into the cost of production; and
- all opportunity costs for future generations associated with present resource consumption are known and considered by Australian producers.

Under the conditions assumed and in a closed market, Australian commodity producers would be expected to charge more of today's commodity consumers. In an open market, this only holds true if the same costs (and forward looking attitude) are assumed of other producers in other countries. However, the producers of other countries may not be forced to incorporate all environmental externalities, as is clearly the case in many developing countries. With respect to the 'delayed production' effect, MWAC points out that in other countries, circumstances may be such that immediate returns are valued far more highly than potential future returns. For instance, if a country is underdeveloped it may be especially eager to immediately improve the condition of its citizens and will structure access to its resources accordingly. Similarly, if a company operates in a country which is very unstable then it may treat future production as being highly uncertain and will heavily discount future profit opportunities.

If, in an open market, it is only Australian producers which both incorporate environmental externalities and take a long term perspective with respect to profit, then world prices will generally be only slightly influenced by these considerations. Australian consumers of commodities, for example the packaging industry or the construction industry, will take their cues from actual world prices, not the theoretical price that would be expected in a closed, domestic market. So, while Australian natural resource policy may be impeccable and the long term perspective of Australian natural resource companies may be flawless, the extent to which these things will inform the resource consumption decisions of Australian manufacturers and consumers (or those of any other nation for that matter) will be minimal.

Restrictions on government policies imposed by international markets for capital

Now, let us consider the limitations on the ability of Australian governments to institute policies which would ensure that:

- all environmental impacts are incorporated into the cost of production; and
- all natural resource consumption is appropriately offset by high levels of investment in future capital.

For the purposes of this discussion, we might assume that any Australian government would be cognisant of all potential environmental externalities and eager to impose terms on the exploitation of its natural capital which would see these offset. However, a large proportion of countries can reasonably be assumed to have lower expectations with respect to the environmental standards they impose or the

extent to which they would want to see offset investment. Indeed, there are all kinds of reasons why other countries may attach a lower value to their natural resources and environment.

The expectations of other countries with natural resources to exploit is not simply a matter of academic interest. In striking a bargain with any resource company, a government in Australia would have to present a package which made the exploitation of its resources attractive compared to the resources of other countries available for exploitation. If that government failed to make the local cost of resource extraction internationally competitive, then it would fail to secure investment. Since this type of investment is critically important to Australia's economy, we must accept that governments consider themselves politically obliged to negotiate favourable terms with resource companies. This creates the potential for environmental protections and resource rents to be traded down by Australian governments because other jurisdictions are willing to do the same.

Implications for waste policy

The foregoing discussion is not presented as a challenge to the preferability of direct resource management policies. It is raised to suggest to the Productivity Commission that its preferred approach of correcting market failures may sometimes be beyond the capacity of domestic governments to pursue. MWAC takes the view that this limitation is pertinent to the question of whether sub-optimal policy approaches warrant consideration. Unless it can identify how national governments are to overcome the limitations imposed by the global nature of energy and material markets, then the Productivity Commission's dismissal of upstream directed waste policy is unwarranted. The assertion that waste policy approaches may be sub-optimal is irrelevant if the Commission cannot show how other interventions are feasible.

The Productivity Commission has sidestepped the challenges set out in this Appendix by assuming that resource consumption has no associated externalities and that natural resource scarcity problems can be solved through substitution[2]. These assumptions are addressed in Appendix 2. However, regardless of the Productivity Commission's response to the arguments laid out in Appendix 2, it has an obligation to concede that reducing resource consumption is likely to remain an important public policy objective. Accordingly, the Commission needs to show how this public policy objective can be feasibly pursued – to date, its analysis on this point has been inadequate and unconvincing.

[2] By making this assumption, the Commission was able to respond to MWAC's assertion that direct policy interventions were not feasible, using examples of resource policy aimed at addressing environmental externalities. With the exception of forest policy, none of the examples given were concerned with resource conservation.

Appendix 2: Resource Consumption

The Productivity Commission quotes a European study which concluded that "At present the environmental impacts of using non-renewable resources like metals, minerals and fossil fuels are of greater concern than their possible scarcity." (Chapter 5, p104). MWAC was unable to locate other sources, quoted in the draft report in support of this view. Yet this statement has been passed down as a finding of the draft report (Draft Finding 5.2).

The Productivity Commission appears to have satisfied itself that resource consumption is not a concern for sustainability on a number of grounds.

- *Plenty of natural resources*
  The Commission appears confident that we have plenty of natural resources and that higher prices will give companies the necessary financial incentives to find and exploit them (Chapter 5, p103). This has become something of an article of faith for many of those who wish to dismiss sustainability as a non-issue. However this faith relies on a short term perspective of human and ecological requirements and is of ultimately limited interest in any debate about long term sustainability.
- *Resource consumption externalities = zero*
  The Productivity Commission believes that markets are fully able to factor in the opportunity cost to future generations of present natural resource consumption. This belief relies on a range of assumptions including the capacity for higher prices to drive markets to find alternatives to natural resources and better ways of using natural resources.
- *Natural capital is highly substitutable*
  The Productivity Commission considers that natural capital can be readily replaced with substitutes within economic processes, i.e. highly substitutable. This justification for not seeing resource consumption as a major concern for sustainability is of particular interest to MWAC. This position is based on a still debated, theoretical attempt to reconcile economic growth based on resource depletion with long term sustainability.
- *Technological advances will sufficiently improve natural resource productivity*
  The Productivity Commission appears to believe that technological advancement can be relied upon to increase the productivity of natural capital to the extent that natural resource scarcity problems which cannot be solved by means of substitution will be solved by means of increased efficiency. In other words, if limits to substitutability do indeed leave us with less, then technology will always enable us to do more with less. This is an important assumption which is also controversial.

Plenty of natural resources

MWAC takes the view that ultimately time and growth in human population and wealth will gradually outstrip the earth's natural resources, regardless of their present abundance. This is admittedly an imprecise perspective, since MWAC makes no predictions about exactly which resources will come under greatest pressure, when and which order. MWAC recognises that an assessment of the relative urgency of different environmental challenges is relevant when prioritising the order and timing of environmental policy responses. On this basis, MWAC can see some sense in the Productivity Commission's endorsement of view that scarcity is a less pressing issue than the impacts of use, with respect to non-renewable natural resources (Chapter 5, p104).

Nevertheless, there are sensible grounds for governments not to proceed as though our natural resources are super abundant. Firstly, both the gravity and the complexity of challenges surrounding resource depletion suggest the need for long lead times in the development, implementation and refinement of these responses. So although scarcity may be a long way off, the response should begin sooner rather than later. Secondly, resource consumption is not only a question which concerns non-renewable resources like minerals and fossil fuels. Even renewable resources like water supplies, forests and arable land are subject to finite rates of renewal. Here, relative rates of consumption become important, as do larger questions surrounding the ecological thresholds for resource exploitation and the impact of depletion of one set of resources on the abundance of another, given the need to find substitutes when one resource becomes exhausted. Thus, in considering whether our natural resources are really abundant, we should consider the complete set of natural resources rather than only non-renewables (the European study quoted by the Productivity Commission considered only non-renewables).

Resource consumption externalities equal zero

The Productivity Commission states on p353 of the draft report that it "considers that there is no externality associated with mineral resource depletion and that therefore the appropriate value for the purposes of cost-benefit analysis is zero". The Commission's reasoning on this point is set out in a single paragraph on p351 in Appendix B. We can summarise the argument as follows. Companies extracting finite resources recognise that they will eventually exhaust the resource and further recognise that a portion extracted and sold today cannot be extracted and sold in the future when the price, due to increasing scarcity, may be higher. Therefore, companies will manage their extraction rates with a view to maximising the returns from the assets by assigning some of the finite resources to future generations (who will be prepared to pay more). This 'finding' is then referred to in Chapter 6 when the Commission sets out a policy framework for calculating externalities (p118).

MWAC expresses serious doubts about the sufficiency of this 'delayed production' effect as a market mediated means of ensuring sustainability. MWAC's concerns in this respect are amplified by the fact that the Productivity Commission has relied entirely on this effect in order to discount the possibility that resource consumption has associated externalities and has presented a single, ten year-old reference in support of this decision. Consideration of a hypothetical example serves to highlight some of the problems with the Commission's treatment of this issue, see *Speculated Future Prices and Resource Extraction Rates*, inset.

As natural resources grow more scarce, relative to requirements, these scarcity problems can be expected to begin to exacerbate one another. Markets may be highly effective in solving scarcity problems. However, the more complex and interrelated the scarcity problems, the more difficult it becomes a) to solve those scarcity problems at the point in time when they occur and b) to predict those scarcity problems prior to them occurring. Difficulty b) suggests that the ability of today's markets to make meaningful price predictions about the value of natural resources in the future may be severely limited. This, in turn, seriously undermines the Productivity Commission's argument that resource consumption presents no externalities because today's markets factor in future scarcity when setting prices.

Speculated Future Prices and Resource Extraction Rates

HyperOil has a resource lease permitting it to extract oil from a deposit in Australia. It has expended billions of dollars to build the facilities which allow it to extract and ship oil to world markets. In order to make good its investment it must always receive some minimum level of revenue at any given time. No matter how good it may expect returns to be in ten years time, sufficient extraction to achieve at least this minimum return would be expected. When the intercession of wars, natural disasters and political disruptions in other oil producing regions causes world oil prices to rise in the short term, HyperOil will ramp up production to make a short term gain in profit and impress shareholders at the next AGM. In the following year, world powers restore stability to strife-torn regions and provide assistance to restore oil production to previous levels and world oil prices drop back to disappointingly low levels, HyperOil will still need to sell sufficient oil to provide the necessary return on investment.

Meanwhile, the debate about future demand for oil rages and different experts predict different dates for the inevitable arrival of peak oil. HyperOil's energy market analysts accept that one day world oil prices will rise very much higher but they heavily discount the potentially much higher returns from future production because of significant uncertainties about when prices will rise and by how much. HyperOil's overriding obligation is to their shareholders, most of whom would reject a strategy of sitting on the oil lease for another 4 years while oil prices continue to rise. That is, shareholders would reject that strategy if it were available to HyperOil, but it isn't. HyperOil does not own the rights to exploit the oil in perpetuity so it has no reason to be interested in the price of oil decades into the future. Nor can HyperOil be confident that the government which granted the lease would allow HyperOil to delay extraction, since economic and political imperatives demand that the wealth from extraction royalties must continue to flow.

All of these hypothetical considerations and decisions point to the priority given to short to medium term returns over the potential future returns to be obtained from delayed production. MWAC would like the Productivity Commission to show how the profit motive of private companies would reasonably be expected to operate in a more farsighted fashion. This would help MWAC to accept the Commission's assertion that the market is already giving sufficient consideration to future requirements.

Natural capital is highly substitutable

Substitution is an important concept in the study of economics which has been the subject of strong and ongoing academic debate in relation to its application to the question of sustainability. Substitutability is simply the degree to which one type of productive input, such as machinery, can be used to replace another type of productive input, such as labour. In the study of sustainability, we are concerned with the capacity for the economy to substitute human or man-made capital for natural capital.

As a measure of its importance to the sustainability question, substitution is described by Ayres et al as "a key to sustainability" (Ayres et al, 1997, p5). They state the reason for the importance of the concept to sustainability in the following way: "a constant output can be maintained indefinitely only if there is a high degree of substitutability between manufactured and natural capital" (Ayres et al, 1997, p5). It is hardly surprising then that there has been long-standing debate about whether natural capital is generally replaceable or only rarely replaceable as an input in economic systems.

The Productivity Commission clearly endorses the view that human and man-made capital are highly substitutable for natural capital. The Commission states, "it would appear to be consistent with [ecologically sustainable development], to regard stocks of mineral resources as generally being able to be substituted for by human and man-made capital" (Chapter 5, p103). While the Productivity Commission notes other perspectives on this question which suggest that natural capital is frequently non-substitutable, it clearly does not support such views (Chapter 5, pp98-99). Proceeding on the basis

that the Commission endorses the 'highly substitutable' perspective of natural capital, we should consider both the basis and the implications of their support for this view.

A hypothetical substitution example

To consider a hypothetical example of substitution, we might expect that the quantity of oil required by future generations (especially *per capita*) will be far less than at present. The petrochemicals industry may gradually phase out the use of precursor chemicals derived from mineral oil in favour of plant derived raw materials as the price of oil rises due to scarcity. Energy supplies may increasingly use renewable energy sources as these become more reliable and cost competitive. Thus, while future generations may not have the advantage of fossil fuels in the ground, they might still be able to enjoy a comparable level of access to the goods and services which are presently supplied on the back of consuming fossil fuels.

Is substitution generally possible?

While there is little doubt that there will be specific instances in which substitution will be possible, the more important question from a macroeconomic perspective is whether natural capital will be substitutable in general. In addressing this question, MWAC has drawn heavily on the work of Ayres et al (1997) who supply a clear summary of the arguments against the general substitutability of human and man-made capital for natural capital. The work summarised by Ayres et al set out numerous flaws in the framework and methodologies used by advocates of strong substitutability. We will consider only some of these problems, simply to provide a sense of why the Productivity Commission's assumption of a high degree of substitutability in regards to natural capital should be viewed as controversial.

Whereas proponents of strong substitutability assume that man-made capital can do the job of natural capital, the principle of complementarity focuses on the common reality that most production processes use man-made capital to transform natural capital. In this sense, the concept of substitution can be represented as somewhat absurd, for example, "adding to the stock of pulp mills does not produce an increase in pulp unless there also is the wood fibre [sic] to feed them" (Ayres et al, 1997, p6).

Ayres et al also point out that the process of substitution, which may involve building factories, harnessing a workforce, taking up land etc, consumes energy and materials in its own right. "Thus, producing more of the "substitute," i.e. manufactured capital, requires more of the thing that it is supposed to substitute for" (Ayres et al, 1997, p7). For example, fuel derived from oil can be replaced by ethanol, the production of which requires land, fertilisers, chemicals and fuel. While not all of the substitutes are circular – e.g. using fuel to make fuel – most can be expected to shift resource pressures onto other natural resources. Examples such as this seem to confirm the frequent complementarity of natural and man-made or human capital in systems of production. That is, in whatever way we do things, we still need materials and energy to do them with.

Finally, MWAC considers that future natural resource scarcity problems will increasingly be characterised by the need to rapidly find substitutes. However, the most common method of solving scarcity problems in any economy is to invest in finding more of a given, scarce resource. Step-changes towards totally new methods of delivering a service or product in a way which reduces the requirement for that scarce product are the exception, rather than the rule. Notwithstanding that, in isolated cases, the rapid development of radical substitutes may be feasible, where multiple scarcity problems emerge more or less simultaneously, it would be unwise to assume that we can successfully make all of the necessary technological leaps in rapid succession.

On the forgoing basis, among other grounds, MWAC does not consider that there is currently sufficient basis to be confident that substitution will be possible in a sufficiently high proportion of cases. It seems

more prudent to provisionally adopt the safer assumption that human and man-made capital has only limited substitutability for natural capital.

Are we investing in substitution?

Pearce and Atkinson argue that sustainability is achieved if a nation saves more than the combined depreciation of human, man-made and natural capital (Pearce and Atkinson, 1993). Their argument effectively posits that the level of natural capital is unimportant in isolation and that what matters is whether society invests in enough human or man-made capital in offset any decrease in natural capital. Solow (2005), who the Productivity Commission refers to, argues that some concerns about sustainability can be reframed as a concern about the failure to invest in replacement capital, not the actual depletion of natural resources itself. Elsewhere, the Productivity Commission cites approvingly the views of some economists who argue against lowering discount rates in favour of requiring offset investments to improve the environment (Chapter 5, p100). The Commission's apparent support for all these views leaves it with some obligation to justify why it believes that investment in substitution capital is a) completely feasible and b) actually taking place. As MWAC has just laid out, question a) remains the subject of academic controversy, so let us consider question b).

If we do accept the substitutability argument, then we may be willing to believe that the opportunity costs felt by future generations can be avoided. This belief would require us first to be satisfied that we are indeed, appropriately investing in man-made and human capital to replace the finite resources which we consume today. In the absence of this investment, it appears that future generations will experience the full opportunity costs associated with being unable to use those finite natural resources which we consume today.

MWAC is not confident that offset investments, where they are technologically possible, will always be made. Where substitution is technically feasible, what evidence is there that the investment to actually realise this substitution is actually taking place. Wherever goods and services are not fully priced, we would expect to see insufficient investment in replacing the natural capital. The Productivity Commission has partly dealt with this problem by assuming that the externalities associated with resource consumption are zero (see Appendix 2 for further discussion on this point). Even if we accept the Productivity Commission's assumption regarding resource consumption externalities, which MWAC does not, there remain important unanswered questions regarding the public investment of resource rents into the development of substitution capital. The Productivity Commission has not elaborated on how and where offset investments are taking place and this omission undermines the legitimacy of its reliance on substitutability arguments.

Is the cost of this investment reflected in commodity prices?

A related but separate issue concerns the question of whether the cost of investment in substitutable man-made capital is being incorporated into the prices of raw materials. If governments make investments to add to the stock of productive resources but do not require that these investments are made using funds directly raised from the exploitation of finite natural resources, then the full costs of resource consumption cannot be reflected in the price of the goods. So, for example, if governments invest in enough renewable energy research and development to acquire feasible alternatives but do not set fossil fuel resource rents high enough to cover the cost of that research and development then the price of those fossil fuels will be set too low to reflect the full cost of consuming them.

The Productivity Commission may prefer to presume that the investment in substation capital will be funded and driven by the private sector. If this can be demonstrated to be the case, then the cost of developing alternatives may be assumed to be internalised into the prices of materials and energy. However, there are sound reasons to believe that where substitution capital is expensive to develop,

that private industry will seek substantial assistance from governments. An illustration of this tendency, in this case relating to the development of pollution abatement technology, can be seen in the dedication of large amounts of government funding to the development of geo sequestration technology to avoid switching away from coal. Where governments grant substantial assistance, the full cost of using a given resource cannot be reflected in the price of the commodities so produced.

Technological advances will sufficiently improve natural resource productivity

Faith in technologically driven increases in resource productivity abounds among 'weak sustainability' economic analysis like that showcased by Robert Solow in the 2005 article approvingly quoted by the Productivity Commission. Yet the magnitude and nature of technology effects in economies remains poorly understood by economists. For instance it can only be indirectly measured as the growth in production not accounted for by rising labour and man-made capital productivity (Ayres et al, 1997, p9). Moreover, there are sound reasons for believing that technological growth in productivity will not always deliver the necessary breathing space to maintain wealth despite declining natural capital.

One of the key reasons relates back to the question of whether natural resources are correctly priced. While the Productivity Commission seems to have satisfied itself that today's natural resource prices are a fair reflection of the total cost of use, the case they have made to show why this is so is weak. Unless we can be confident of the accuracy of today's prices, we cannot expect technology development aimed at increasing resource efficiency to be properly rewarded.

Another problem with assuming that technology will increase resource productivity is that there are generally upper limits to the efficiency that can be expected of any process. Consequently, investments in efficiency will produce diminishing improvements. At the point where particular natural resources need to be replaced with completely new substitutes, we should consider the fact that step change advances in technology are rare and unpredictable. The Productivity Commission seems to assume that scarcity in the marketplace will drive the changes necessary to find and develop new technologies to make the necessary leaps in efficiency. MWAC thinks it more prudent to note, as Ayres et al have noted in relation to fossil fuels, that "the timely development of backstop technologies is by no means a foregone conclusion" (Ayres et al, 1997).

Implications for waste policy

The points raised in this Appendix should reaffirm the legitimacy of the public policy objective of conserving our natural resources. All of the four assumptions adopted by the Productivity Commission in dismissing this objective are problematic, but only sparingly discussed in the Draft Report. The Commission must acknowledge and justify its adoption of these assumptions if it is to make a credible case for abandoning resource conservation as an objective of public policy.

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