Are market-based instruments delivering for Australia?

Market-based instruments (MBIs) have been widely promoted in Australia in recent decades to deliver environmental outcomes at lower cost than traditional policy approaches. Australian Governments are using pollution taxes to help manage urban pollution, landfill levies to reduce the amount of waste sent to landfill, and a range of subsidies and incentives to manage and conserve natural resources.

Trading schemes are also used widely as part of the environmental policy toolkit. They are used for example to control the extraction and use of irrigation water and to manage fisheries. Trading schemes also cap salinity in the Murray-Darling Basin and in the Hunter River, and nutrient emissions from a group of wastewater treatment plants in the Hawkesbury-Nepean River system. More recently, trading instruments have been applied as part of climate change policy to reduce greenhouse gas emissions and to promote the uptake of low greenhouse gas energy.

Development offsets, historically negotiated opportunistically with new developments in most Australian states, have now been formalised into state and national legislation to manage a range of impacts including those on water quality and biodiversity.

Although the use of market-based instruments in Australia has accelerated in recent decades, they are often applied in a piecemeal fashion and not always where they can provide the greatest gains. Others have been misdirected or narrowly applied – giving up the compliance flexibility and cost savings offered by efficient market-based instruments. And some simply have no real incentive force.

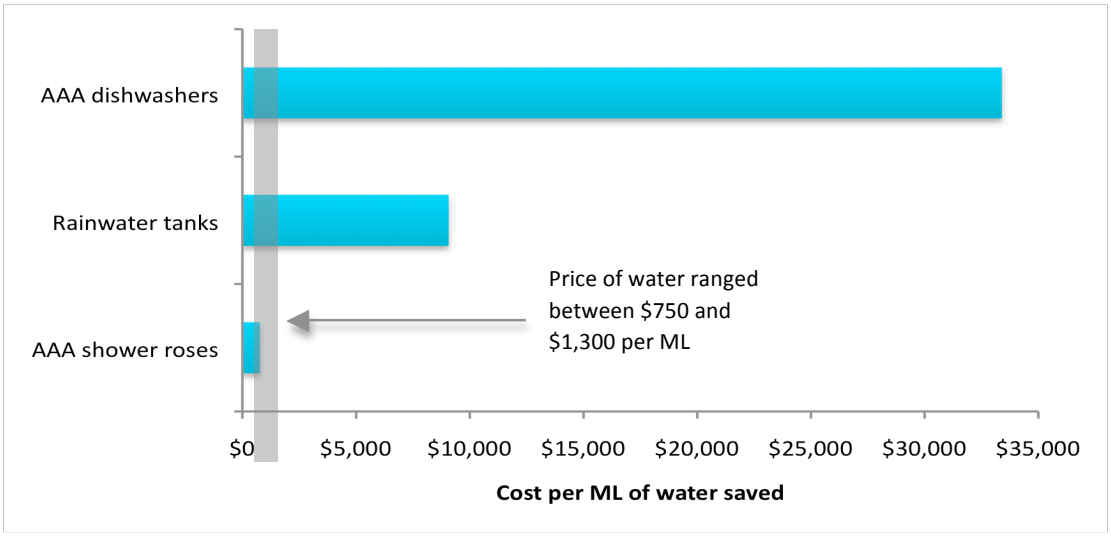
Although MBIs have the potential to contribute to efficient regulatory reform, regulatory assessments of MBIs themselves are sometimes sidestepped when politically opportunistic and ignored when not. This paper draws on recent examples to highlight a number of problems with how MBIs are being used in Australia.

Piecemeal or narrow applications of MBIs

Many MBIs directed at conserving water and energy have been narrowly applied. For example, a recent study by Crase and Dollery (2005) compared water conservation incentives in Melbourne (Figure 1).

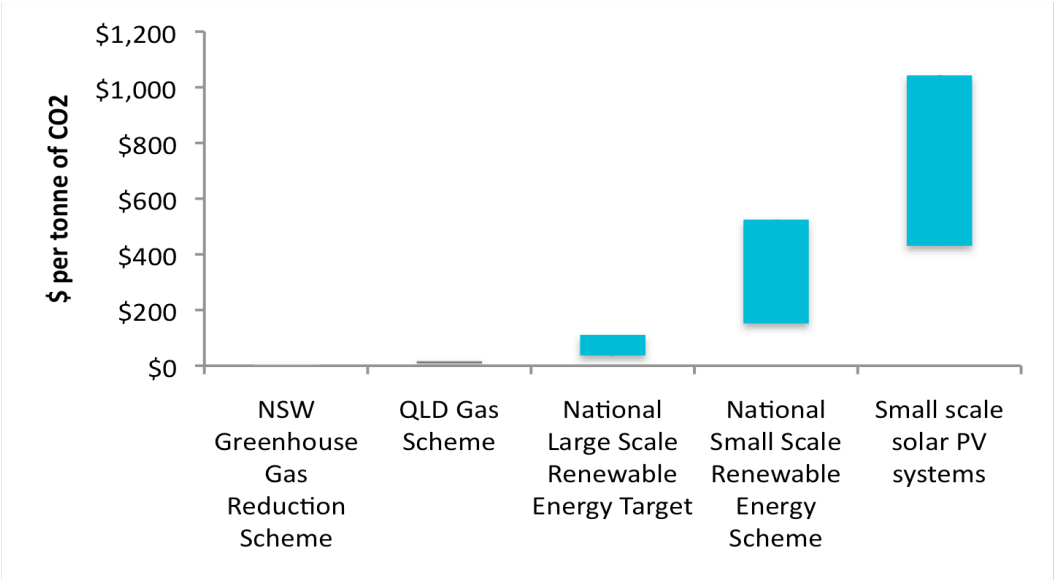
The study found that the subsidies for AAA dishwashers and rainwater tanks were many times greater than the value (price) of the water being saved. Only the subsidies for AAA shower roses were efficient, in that the subsidy per megalitre of water saved was less than the value of the water.

Figure 1: Subsidies paid in Melbourne on water-saving investments



Another example of where MBIs have been inefficiently applied in Australia is to reduce greenhouse gas emissions. The Productivity Commission (2011) compared the cost-effectiveness of policies to reduce greenhouse gas emissions from the supply of electricity (Figure 2).

Figure 2: Cost-effectiveness of greenhouse emission reduction policies



The Productivity Commission found that subsidising the installation of small scale solar PV systems (such as on households) had generated little abatement of greenhouse emissions for

substantially higher costs than other programs. In turn, many of the other programs have generated greenhouse gas reductions at a cost well above the carbon price of $23 a tonne under the Commonwealth's *Clean Energy Plan* which commenced on 1 July 2012.

Narrowly applied MBIs limit community responses just as much as prescriptive regulations that seek to pick winners. And economic assessments of the costs and benefits of policies are not often carried out for the narrow application of subsidies. The piecemeal application of MBIs for narrowly defined outcomes is a poor surrogate for fundamental pricing, property right and institutional reforms.

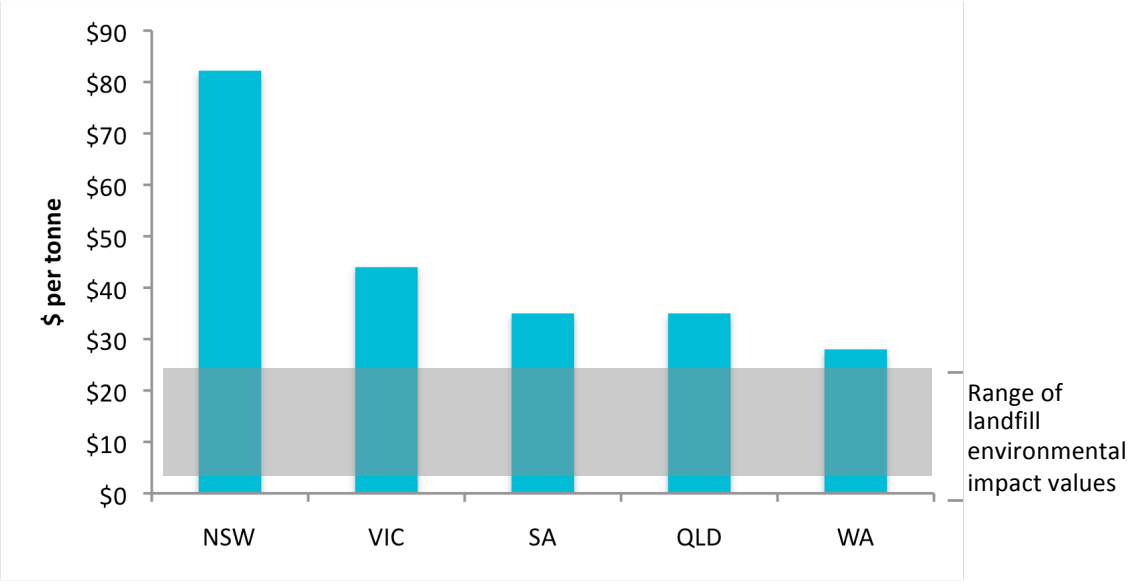
MBI objectives hijacked by revenue raising

Landfill levies are being used widely across Australia. Most levies are in addition to the gate fees charged by landfill owners to meet their private costs of operating facilities. Landfill levies were originally introduced to compensate communities for broader environmental impacts arising from landfills, which include air and water pollution, the generation of greenhouse gases and amenity impacts.

Despite management practices at Australian landfills significantly improving over recent years, levy rates and revenues to government have continued to rise. Current levy amounts are now greater than available estimates of environmental impacts at landfills, with levy rates in some jurisdictions scheduled to increase even further. For example, the NSW landfill levy will increase to $120 / tonne of putrescible waste disposed to urban landfills in 2015-16.

The range of landfill environmental impact values is shown in Figure 3, drawing on a BDA Group (2009) study commissioned as part of the Commonwealth's National Waste Report (Commonwealth of Australia 2010).

Figure 3: Metropolitan landfill levy rates for putrescible waste disposal, 2011-12



The aggregate revenues raised from landfill levies has become significant. For example, the NSW budget estimate for revenue from the landfill Levy for 2011-12 is $433 million. However, there appears to be a lack of regulatory impact assessments that properly assess the costs and benefits of introducing or increasing levies, or assessments that demonstrate their merits as a fiscal instrument.

As an example, in the assessment of the landfill levy introduced in Queensland, around half of the estimated benefits were estimated to come from "resource savings" calculated as the commodity values for materials diverted from landfill (Queensland Government 2008). The commodity values used were indicative values per tonne to represent potential financial benefits of waste diversion from landfilling. However, these values do not represent economic benefits as they do not net out the costs of, for example, contamination, transport, reprocessing, and residual waste disposal. The outcomes of the analysis were very sensitive to these values and if netting out the other costs reduced the total resource savings by 30% or more, the options considered would provide net losses.

Underutilised MBI frameworks

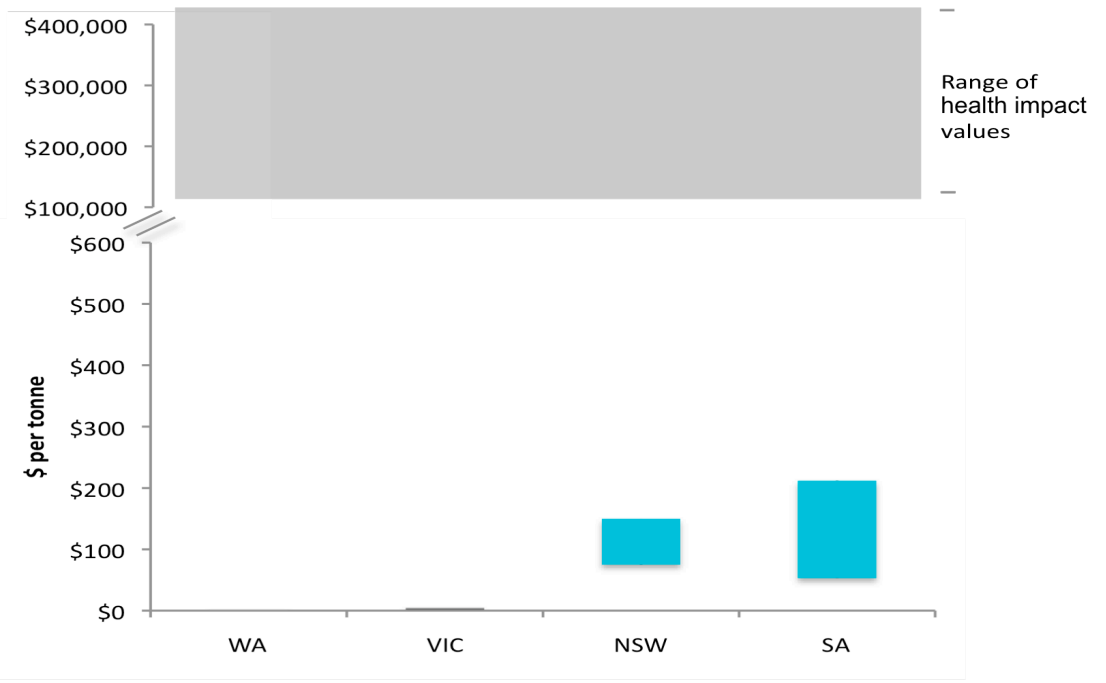
Four Australian jurisdictions have a pollution tax framework as part of their licensing systems for major industrial premises - NSW, Victoria, South Australia, and Western Australia. Tax rates under these frameworks are generally small compared with similar charging schemes overseas.

Most rates are also a fraction of the estimated health costs these pollutants impose on Australian communities. Current tax rates and health costs are compared in Figure 4 for emissions of particulates, the key contributor to urban smog and cause of a range of respiratory ailments.

In most instances, the applicable tax rates take into account the risks posed by the emissions (such as in relation to the means, timing or location of discharges) while the range of health costs shown (derived from AEA Technology Environment 2002) reflects the range of estimated costs across the pertinent state capitals.

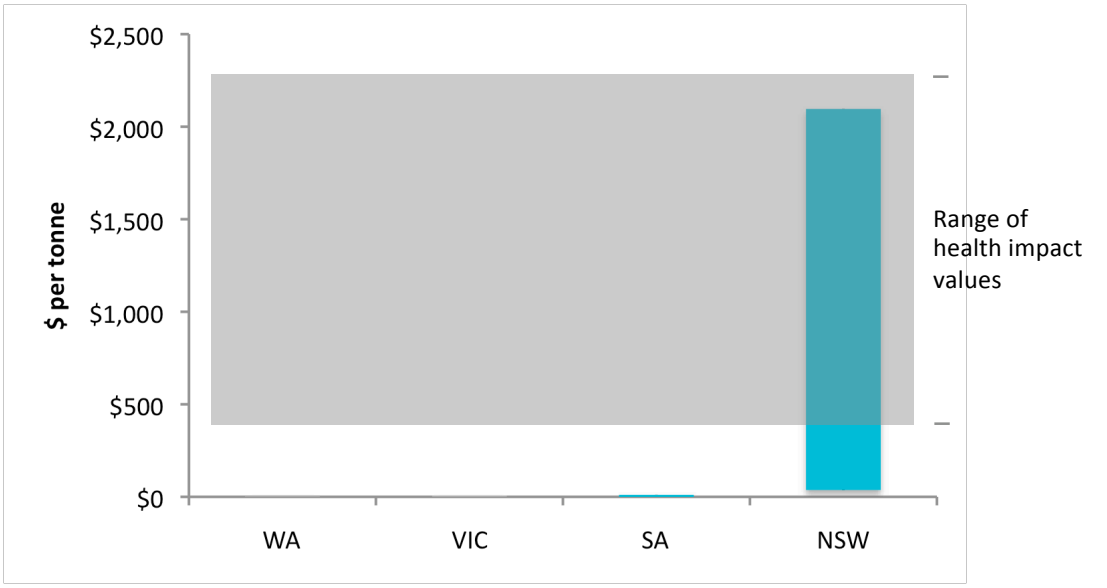
For particulate emissions there is an enormous gap between the taxes being paid and the estimated health costs.

Figure 4: Tax rates for emissions of particulate pollution across Australia, 2011-12



A similar comparison is made in Figure 5 for emissions of nitrogen oxides (again using estimates of the health costs derived from AEA Technology Environment 2002). For nitrogen oxide emissions, only the highest pollution tax rates applicable in NSW (for emissions in the Sydney metropolitan area over the summer months) are anywhere near estimated health impact values.

Figure 5: Highest tax rates for emissions of nitrogen oxide across Australia, 2011-12



As noted above, the pollution tax frameworks largely do differentiate fee levels to reflect the harmfulness of different pollutant discharges and the state of various receiving environments. However, in all cases except NSW, the overall level of taxes is capped at recovering the cost of

administering the pollution licensing schemes. There has been little attempt to establish or even move towards fee levels aligned with estimated health impact values.

Regulatory assessments of pollution tax regimes have generally included comparisons of proposed fees with estimated damage costs of pollutants included. These comparisons demonstrate that higher tax rates would provide net benefits to the community. An independent academic review of the impact of the NSW load based licensing scheme on NOx emissions supports this – finding that the fees were set too low (Ancev and Betz 2006). There is not often the political will to impose higher rates on significant emitters (generally large energy and water companies).

Another MBI framework that is currently underutilised in Australia is water quality trading. While there have been some successes — the sophisticated Hunter River Salinity Trading Scheme in New South Wales and the 'bubble' nutrient trading and diffuse source offset scheme operating on South Creek — there has been little progress in implementing new schemes despite numerous investigations indicating promising opportunities.

For example, the potential for water quality trading was extensively investigated under the Commonwealth's Coastal Catchments Initiative, including in relation to Port Phillip Bay in Victoria; the Port Waterways in South Australia; Moreton Bay in Queensland; and the Swan Canning, Geographe and Peel-Harvey catchments in Western Australia. The further expansion of nutrient trading in the Hawkesbury-Nepean in New South Wales has also been investigated at the state level.

The merits of introducing nutrient trading are compelling given that many contributors of nutrients to waterways face little regulation, that established industrial premises currently face very low nutrient discharge pollution taxes, and the often high nutrient management costs imposed on new developments through planning requirements.

For example, new developments (such as housing sub-divisions) in Melbourne face a charge of $800 per kilogram of nitrogen that their developments are estimated will be discharged into Melbourne waterways each year (Melbourne Water 2006). The comparable charge paid by an existing licensed industrial premise in Melbourne equates to less than $1 per year. This raises both efficiency and equity issues from having disparate policy requirements across different sources attempting to address the same issue.

The existing frameworks for offsets for ecosystem protection and biodiversity are also underutilised in Australia. Ecosystem protection has traditionally been managed through planning instruments, however over the last few years state and national governments have made provisions for 'biodiversity offsets'. However the offset frameworks are not working well. For example, the NSW Biodiversity Banking and Offsets Scheme has been running since 2008, yet the first offset under the scheme was only approved in 2010 and only a handful have been approved since.

The national offset provisions under the EPBC Act were reviewed recently (Commonwealth of Australia 2009), highlighting concern that there is rarely any follow up to determine if the predicted mitigation and offset measures of proposed projects were successful. The Review also noted the important relationship between the development of market-based mechanisms to promote conservation and the operation of development control legislation. The government has agreed to lead consideration of a national system or standards for biodiversity banking and environmental offsets that is complementary to, and builds on, the successful elements of existing state schemes.

Conclusions

Market-based instruments have been widely promoted in Australia in recent decades. While there has been enthusiasm and a range of trials and new initiatives, these instruments are yet to live up to their theoretical potential.

Most MBIs employed to promote water and energy efficiency gains have been piecemeal applications for narrowly defined outcomes — a poor surrogate for fundamental pricing, property right and institutional reforms. To conserve resources, narrowly-based incentives will rarely be the best policy intervention, particularly those directed at influencing specific consumption choices rather than underlying resource management problems.

Significant revenues are being raised from landfill levies that are much greater than the current values of the external impacts of landfilling. These MBIs have been hijacked for revenue raising and there has been a lack of regulatory impact assessments that adequately canvass costs and benefits or demonstrate their merits beyond that of a fiscal instrument.

Appropriate pollution tax frameworks exist to help manage urban industrial pollution. However, with pollution tax levels capped at recovering administrative costs, taxes are simply not high enough to provide any real incentive to reduce industrial pollution. When the current tax rates are compared with the requirements and charges faced by new sources of urban pollution (such as new development) efficiency and equity issues are apparent. In the case of water quality trading, there have been numerous investigations, but a reluctance to move to an implementation or even pilot phase. MBI frameworks established for offsets for ecosystem protection and biodiversity are also underutilised in practice.

In conclusion, it is important to note that some efficient MBIs have been effectively employed to improve environmental management in Australia. In other instances, technical barriers and transaction costs have made MBIs a less cost-effective policy tool than more traditional approaches. Critical therefore to the effective targeting of MBIs are robust assessments of policy alternatives. Unfortunately, Australian governments have been inconsistent in this regard – for example, with regulatory assessments either sidestepped or carried out poorly when

politically opportunistic (eg: waste, water and energy savings) or simply ignored when not (eg: pollution taxes).

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