



# Water Reform: Who pays for the environment?

Paper prepared for the National Competition Council

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# Preface

Pirac Economics has prepared this paper for the National Competition Council. It discusses a possible framework for considering how to allocate the cost of mitigating the environmental damage that results from water use – in particular allocating costs between taxpayers, regional communities, water users and various groups within water users. The paper does not analyse the most appropriate policies for dealing with environmental costs, rather it looks at the various policies governments have adopted and considers who should meet the cost of complying with that regulation. It is designed to stimulate debate on the important and complex issue of managing the environmental impact of water use.

The views in the paper are those of the author and do not necessarily reflect the views of the National Competition Council. This paper is separate from the Council's assessment process, which is governed by the provisions in the Council of Australian Governments Water Reform Agreements. The contents of this paper do not in any way affect the approach taken to those assessments.

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# 1 Introduction

The balance between providing secure water entitlements to water users and preserving the environment is one of the most important issues being addressed through the implementation of the NCP water reforms (NCC 1998). Defining property rights, providing water for the environment and managing the environmental impacts of water use are all interrelated. For instance:

- the amount of water allocated to the environment affects the amount of water available to water users;
- the probability that the amount of environmental water will need to be increased in the future affects the level of certainty in the water property rights;
- if a precautionary approach is taken to the allocation of water to the environment this decreases the need for environmental conditions on water use, that is if relatively large amounts of water are retained for the environment the restriction needed on how and when water is used would be less onerous; and
- action that reduces the environmental impact of water use improves water quality and the long-term health of the water system. This increases the value of property rights by ensuring good quality water will be available to water users in the future.

In 2001, the National Competition Council released a background paper on *Water Property Rights* (NCC 2001a)<sup>1</sup>. This paper extends that analysis to discuss who should pay for restrictions on water allocations and subsequent expenditure on reducing the environmental impact of water use.

There is debate about the basis on which the costs of meeting environmental objectives should be split between water users and the general community. This debate is discussed in section 1 of this paper. That section focuses on the two most common approaches to allocating environmental costs – impacter pays and beneficiary pays. The second section analyses the debate about who should meet the costs of any reductions in water allocations needed to meet environmental objectives. The third section analyses the debate about who should meet the costs of constraints placed on water use or investment in works to mitigate the environmental impact of water use.

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<sup>1</sup> The background paper was prepared with the assistance of the Department of Agriculture, Fisheries and Forestry Australia and the Australian Bureau of Agricultural and Resource Economics in consultation with State and Territory government agencies.

Governments have a wide choice of policies that could be used to reduce the environmental impact of water use. Options include market based solutions such as environmental pricing and tradeable quotas and regulatory solutions like setting licence conditions. This paper does not analyse the most appropriate policy responses. Rather it looks at the policies governments are adopting and, given those policies, discusses a framework for deciding who should bear the cost of complying with those policies.

Government policies are based on assumptions about the acceptable levels of environmental risks. Strategies are then developed to reduce environmental impacts above the acceptable level. This paper recognises that development does affect the environment and it is unrealistic to expect river systems to be pristine. As noted by the High Level Steering Group on Water in draft guidelines for managing externalities:

*While it may be possible to identify an externality it may not always be possible to identify and target its cause. Furthermore, even where the cause can be identified the benefits of taking action may not exceed the costs. Therefore, these guidelines have been formulated in the context of the following general goal:*

*The goal for all jurisdictions is to achieve an efficient and acceptable level of externalities in water resources rather than to eliminate such externalities altogether. (HLSG 2001, p.4)*

Hence, the paper is based on an assumption that governments use the best information available to estimate acceptable levels of environmental impact given current community expectations.

## 2 Beneficiary pays and Impacter pays

In February 1994 the Council of Australian Governments agreed that an Expert Group be established to report on asset valuation methods and cost recovery definitions for the Australian Water Industry. The Expert Group produced pricing guidelines that were endorsed by ARMCANZ<sup>2</sup> Ministers and Senior Officials. The guidelines have been endorsed by most Premiers and Chief Ministers and await final endorsement.

Those pricing guidelines refer to both beneficiary pays and impacter pays approaches to pricing environmental water requirements. They appear to support an approach where impacter pays is used in cases where there are environmental costs and these costs can be attributed to particular water users (see box 1). The guidelines make the following comments:

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<sup>2</sup> Agriculture and Resource Management Council of Australia and New Zealand.

8.10 *The Expert Group considers, consistent with the principles outlined in paragraph 3.13 [box 1], that one-off costs associated with the implementation of new resource management initiative should be borne by beneficiaries/impactors. Where, however, the beneficiaries are the wider public, consistent with the principle contained in paragraph 3.14 [box 1], these costs would be borne by government. Any one-off costs occasioned by the proponents of new water developments should, however, be borne by the proponents. (Expert Group 1995, p.45)*

**Box 1: Views of the expert group on pricing environmental costs**

<p>3.13</p>	<p><i>The full cost of all water services attributable to specific identifiable beneficiaries or impactors be recovered by way of charges on them commensurate with the level of services provided in generating the benefit, or required to manage/offset the impact of their activities.</i></p> <p><i>For example:</i></p> <ul style="list-style-type: none"><li>(1) <i>the cost of services to deliver water supplies and services to beneficiaries should be met by all those who benefit from them – the user pays principle. Users might include metropolitan, non-metropolitan and rural water corporations/authorities, irrigation companies, local government water supply authorities, individual domestic consumers, landholders and industry and commerce; and</i></li><li>(2) <i>the cost of services to manage declining identifiable water quality, such as salinity works, should be borne by all those contributing to its decline – the polluter pays principle.</i></li></ul>
<p>3.14</p>	<p><i>The costs of public benefits/impact management which are unable to be attributed and charged to specific beneficiaries/impactors, should be treated as community service obligations.</i></p> <ul style="list-style-type: none"><li>(1) <i>the cost of services that benefit the community generally and not specific individuals, which may include maintaining recreation facilities/opportunities (at avoidable costs) or contracted activities such as management of some water resources management tasks, for example, stream gauging in non-service provision areas; and</i></li><li>(2) <i>pensioner rebates.</i></li></ul>

Source: Expert Group 1995

There are various views on how the costs of achieving environmental goals should be distributed between the various stakeholders.

The Wentworth group considered that a mix of approaches was appropriate:

*We need to provide financial support to landholders who supply environmental services to the rest of the community above agreed definitions of duty of care...Whilst we expect farmers to accept a duty of care to protect the environment, it is not fair to expect them to bear all of the costs when the benefits of their actions accrue to others. (Wentworth Group 2002, p.13)*

Often environmental groups express a preference for more of the environmental costs of water use to be recovered using the impacter pays approach (see box 2). For example in a submission to the Council the Australian Conservation Federation (ACF) argues that:

***ACF accepts that legitimate equity concerns demand a ‘cost sharing’ solution ... funded on the following principles:***

- ***Application of the ‘polluter’ or ‘impactor’ pays principle, reflecting the sustainability responsibilities of land holders to manage both on-farm and off-farm impacts.***
- ***Contributions of public funds from both Commonwealth and state governments are also warranted where regulations impact beyond private sustainability obligations to benefit the wider national interest. (ACF 2001, p.7)***

Similarly the World Wide Fund for Nature makes the following comments:

*There is also reluctance by jurisdictions to attempt to allocate responsibility for activities to specific water users and landholders. The beneficiary is frequently required to pay, and is generally considered to be the broader taxpayer represented by the government. Possibilities to allocate the responsibility to the catchments according to the impacter pays principle have virtually been ignored. ... WWF considers that at least a proportion of costs attributed to the water reform program should be attributed to water users in recognition of the impacter pays principle. (WWF 2001, pp.5 and 9)*

## **Box 2: Impacter pays**

Under the impacter pays approach the people whose actions affect the environment are required to pay the cost of activities that ameliorate or prevent environmental damage.

This approach ensures that water users face all of the costs of their activities, including any environmental costs that are a consequence of those activities. In some cases these costs will be passed on to the water users' customers. Therefore, if applied appropriately, this approach encourages water users and consumers of products that use water to favour activities that have lower levels of environmental impact.

Over time the impacter pays approach can also encourage innovation that will reduce the use of scarce water resources or reduce the environmental impact of using that water.

Before the impacter pays approach can be used to reduce the environmental affects of water use it must be possible to identify: which water users are causing environmental damage; the amount of damage they cause; and a mechanism to transfer the cost of that damage back to the water user. The cost of damage must be attributable to individual water users or identifiable groups of water users for the impacter pays approach to encourage activities with lower environmental impacts. This occurs by increasing the costs and hence reducing the profitability of environmentally costly activities.

However, these incentives can be relatively blunt. For the impacter pays approach to be fully effective it is also necessary for: water users to be able to change their behaviour in order to reduce their environmental impact; and for such changes in behaviour to be rewarded by a fall in the level of environmental costs faced by the water user.

In addition, for the impacter pays approach to deliver the benefits envisaged, it needs to be possible to enforce the requirements placed on water users. Otherwise the incentives are for water users to avoid the costs by evading the regulations, rather than changing their behaviour.

In contrast, water users often argue that many of the environmental costs of water use that are now being dealt with are not the fault of water users but, rather are the result of poor government policies in the past. Previously, governments have actively encouraged irrigation development and increased water use. Macquarie River Food and Fibre notes this point in respect of overallocations of water (MRFF 2001, p.10). Further, water users tend to favour a beneficiary pays approach (see box 3) to recovering the environmental costs of water use and criticises governments for not adopting such an approach.

*Governments have not identified community service obligations by considering environmental requirements and other non-user beneficiaries (eg: flood mitigation) prior to moving towards consumption based pricing. – That is to say other consumers and beneficiaries besides irrigators have not been collated and apportioned appropriate cost sharing ratios. (MRFF 2001, p.2)*

And further the MRFF argues that governments should recognise:

*... the community's role in funding water that is for environmental purposes and hence the public good. (MRFF 2001, p.9)*

### **Box 3: Beneficiary pays**

Under the beneficiary pays approach the people that benefit from activities to ameliorate or prevent environmental damage pay for the costs of those activities.

This approach is often seen as a more cooperative and, therefore, it is argued that it encourages compliance. It involves water users (including irrigators) paying for the private benefits they receive from environmental works. This includes long-term benefits such as improved water quality and avoiding salinity and land degradation. While the general community, through the government, pays for broader benefits.

One argument used to support the beneficiary pays approach is that it recognises that conserving the environment is not costless. Consequently, it ensures that consideration is given to whether benefits to the environment are worth the cost of the environmental works.

For the beneficiary pays approach to be effective, research is needed to identify the environmental improvement achieved by the various environmental works and who benefits these improvements. This is necessary to ensure that beneficiaries are not disadvantaged. That is, they are not required to pay an amount greater than the benefits they receive.

The approaches adopted by state and territories to meet the costs of the environmental consequences of water use appear to be relatively ad hoc. In some cases a beneficiary pays approach is used and in others it appears that

an impacter pays approach has been adopted. However, it is often difficult to discern the reasons why one approach has been chosen over the other.

South Australia appears to adopt an impacter pays approach to funding Catchment Management Boards. Catchment Water Management Boards charge water-based levies to cover both increased monitoring and public awareness programs, where there is more intensive use and expenditure on management of the water resources. The levies also cover remediation projects to mitigate adverse environmental impacts.

Land based levies are raised from landholders who do not pay a water-based levy to cover the environment externality from the incremental contribution to diffuse source pollution of each landholder. The water-based levy is generally considerably higher than the land based levy in each area. (NCC 2001b, p.40)

Most states and territories impose environmental obligations on their water authorities. Such an approach is based on the concept of impacter pays as these obligations increase the costs of operating the business and consequently increase water prices. These obligations can also increase the incentives to reduce the environmental impact of water use. If environmental obligations are set effectively, the water authorities will reduce their impact on the environment in order to reduce the cost of complying with environmental requirements.

In Victoria when environmental externalities are directly attributable to water users and rural water authorities have incurred costs to carry out remedial works to address these externalities, these costs are fully recovered from rural water customers. For example, the costs of operating salinity mitigation schemes in Northern Victoria are reflected in the operating costs of the relevant rural water authorities and thus prices. (NCC 2001c, p.43)

It appears that environmental obligations will be included in the water services agreements for both rural and non-metropolitan urban service providers. For non-metropolitan urban service providers these agreements would include environmental management obligations, effluent management, emergency management and incidents response, water conservation, drought response and security of supply. The agreements will also reflect the obligations of these businesses to comply with performance standards for wastewater, effluent and sludge reuse.

Also, in Western Australia, bulk water prices reflect environmental costs to the extent that the Water Corporation's costs are increased by the need to meet environmental requirements. (NCC 2001d, p.40)

In the ACT an abstraction charge of 10 cents per kilolitre is used to reflect catchment management costs, environmental costs of water supply and use and a scarcity value of water.

The Northern Territory requires that water and wastewater providers, including PAWA, comply with a range of environmental and resource

management operational standard. Other resource management activities are paid for from general revenue, rather than levying water users. The Northern Territory Government notes that this is consistent with a beneficiary pays approach that would lead the government to paying the bulk of these costs. (NCC 2001e, p.32)

IPART in New South Wales considered both the beneficiary pays and the impacter pays approaches to recovering resource management costs, as part of its price determination for bulk water prices levied by StateWater. IPART commissioned ACIL to review the existing approach to cost allocation and recommend an appropriate way forward. ACIL recommended an impacter pays approach except where the environmental costs are a consequence of past water use.

*ACIL proposed a methodology for allocating costs between extractive users and the Government, with the latter effectively representing the broader community and the 'shareholder' of State Water. This approach involved the application of two key principles:*

***Legacy costs** – principally current and future costs attributable to past activities. Current and future water users should not be required to meet the expenditure necessitated by the activities of past users. This approach is consistent with the Tribunal's prior decision to write infrastructure assets values down to zero at July 1997. ACIL recommended these cost be fully allocated to the Government.*

***Impactor pays** – Non legacy cost were allocated to current stakeholders in proportion to the contribution their current and future actions have on the need to incur these expenditures. (IPART 2001, p.30)*

After considering submissions IPART decided to adopt the following approach.

*Whilst the Tribunal considers the 'impactor pays' principle is appropriate for bulk water cost allocation, it notes that there does not appear to be a universally accepted understanding about its application. The Tribunal has attempted to allocate costs between extractive users and the broader community, represented by the Government, essentially in proportion to the contribution each group makes to creating the costs or the need to incur the costs. In so doing the Tribunal considers that the impactors causing the need for expenditure variously include both:*

- *the community, in changing the standards which natural and built infrastructure is required to meet and in requiring increased levels of environmental resources and asset management; and*
- *bulk water users, by creating the need for system management expenditure, environmental mitigation and, effectively, by*

*requiring ongoing bulk water delivery from assets which might otherwise be decommissioned rather than upgraded to meet contemporary standards.*

*The Tribunal stresses that the adoption of this approach to cost allocation does not remove the significant level of judgement necessarily inherent in much of the cost allocation process, particularly as the allocation splits occur across expenditure categories aggregated from a wide range of specific cost items. (IPART 2001, pp.32-33)*

Overall, arguments for adopting an impacter pays approach are strongest when such an approach would work towards reducing the environmental impact of water use. However, in other circumstances, where there are no such benefits from adopting an impacter pays approach governments should consider whether there are other policy or equity objectives that would be either enhanced or inhibited by adopting a particular approach to meeting the environmental costs of water use.

The appropriate approach to meeting such environmental costs is likely to vary depending on the circumstances of the particular environmental issues that are being addressed. The most common situations are discussed sections 2 and 3.

## **Impacters and beneficiaries in the water industry**

As noted in boxes 2 and 3 impacters are those whose actions affect the environment while beneficiaries benefit from activities to ameliorate or prevent environmental damage. The identity of impacters and beneficiaries in the water industry will vary depend on the particular reforms being assessed. In this paper there are some examples where the impacters are water users and the beneficiary is the general community but the examples where this distinction is clear are in the minority.

The identity of the impacters will depend on the nature of the environmental problem. In the case of overuse it is likely that all water users rural, urban and industrial would be considered impacters. For other environmental problems where the way water is used and how and when it is returned to the water system that drives the level of environmental damage, the impacter will depend on the specific problem being considered.

Similarly the identity of beneficiaries will depend on the nature of the problem being addressed. They can include examples like:

- the general community who benefit from improved biodiversity;
- future generations who will be left with a healthier and more productive natural resource;

- local communities who have the amenity of their natural environment improved;
- local industries that rely on long term environmental health such as fishing and tourism;
- water users that require high quality water like aquaculture and some manufacturing;
- irrigators with more productive irrigation and a slower rate of land degradation; and
- all water users who face lower costs of dealing with the consequences of poor water quality such as algal blooms.

Usually there are many beneficiaries that include the general community and water users, including those water users whose actions are affecting the environment. In some situations the benefits of correcting environmental problems will fall mostly on water users. In such cases the impacter and beneficiaries are the same group and the method chosen to allocate costs is largely academic.

### 3 Reducing the amount of water allocations

One way envisaged in the NCP water agreements to achieve a sustained reduction in the amount of water used is to reduce water allocations. Three aspects of adjusting water allocations are being considered:

- reductions in the level of overallocation;
- initial reductions the amount of water allocated to consumptive uses with adjustments made at the beginning of each planning period; and
- adjustments to the amount of water allocated to consumptive use made during the life of a water plan.

Each state and territory is taking a slightly different approach to how they manage and meet the cost of reducing water allocations.

In New South Wales regional water planning processes are developing water sharing plans that define the total amount of water and how much of that water should be allocated to the environment. There is then a process of refining water allocations consistent with the outcomes of the planning processes. Generally, the cost of reductions in water allocations is borne by the holder of the water licence. Although, as noted later in the section on reducing water allocations at the start of a planning period, assistance has been provided to licence holders in some areas where the reductions in

allocations are likely to significantly affect water users in the region. The *Water Management Act 2000* allows for compensation, equal to the market value of the licence, to be paid if water allocations are compulsorily acquired during the 10 year life of the water sharing plan.

In Victoria the amount of water available to water users is defined in 15 year bulk entitlements established for individual water authorities. Some increases in the amount of water allocated to the environment have been achieved through the process of setting the bulk entitlements. However, unlike other states, most of the costs of reducing water allocations will be met by the community, not licence holders, as the government has said it would not take back water entitlements. To increase the amount of environmental water the government intends to purchase that water from licence holders.

Queensland, like New South Wales, has a process of developing regional water plans, called Water Management Plans. Water allocations are adjusted to reflect the level of water uses identified within these planning processes. The licence holders bear the cost of adjustments to water allocations when these adjustments occur at the beginning of a planning period. If, during the 10 year life of a plan, monitoring indicates that further adjustments are needed to meet the plan's objectives then compensation is paid if such changes reduce the value of individual water allocations.

Water management plans in Western Australia are developed through the Water and Rivers Commission and specify how water will be allocated to consumptive uses. These plans are reviewed every five to seven years. There are only a few areas in Western Australia where water allocations should be reduced to meet environmental objectives. The *Rights in Water and Irrigation Act 1914* includes limited provisions for compensation to be paid by:

- the beneficiary where there is a forced reduction in the level of use as a result of granting increased allocations to others;
- the State where the change is made for the public interest; or
- the Water and Rivers Commission if a licence is altered or existing use refused unfairly or unreasonably.

Water allocation plans for prescribed areas in South Australia are the main vehicle for allocating water to users and the environment. These plans are reviewed every five years. The cost of reducing water allocations is borne by licence holders as long as the reductions are in accordance with the objectives of the Act. The provisions for compensation in the Act are very limited. Compensation only arises if the catchment management board causes loss or damage to a water licence holder by stopping reducing or diverting the flow of water. The Minister is liable to pay compensation to the owners of land if they are required to remove a dam, embankment, wall or other structure.

Tasmania's *Water Management Act 1999* requires the development of 10 year water management plans. Water management plans may require water rights to be reduced or the abrogation of water rights that had existed prior to

the Water Management Act. The holder of the rights meets the cost of change if they agree or where the reduction in rights is necessary to ensure that the environmental flow levels specified in the plan are met. Compensation is payable if rights are reduced for other reasons.

The *Water Act 1996* in the Northern Territory provides for the development of regional water allocations plans that set allocations for 10 years. The Act specifies that if any action under the Act is regarded as being an acquisition of property then that property must be acquired on just terms. Further, the Act exempts the Northern Territory from paying compensation in all other cases, except when the process of implementing the Act causes damage to land.

In the ACT the *Water Resources Act 1998* regulates the use of water. Under that Act a water resources management plan has been developed. That plan sets water allocation levels for 10 years. Compensation is only available for the removal of a water allocation where there is a need to remove a previously approved structure. There is no compensation for the loss of the water.

The following discussion analyses who should pay for reductions in water allocations to meet environmental objectives. It discusses three areas:

- first, whether an impacter pays approach is likely to reduce the environmental effects of water use and the implications of adopting beneficiary pays;
- second, whether there are any other policy objectives that would be affected by the decision on who should bear the cost of any reductions in water allocations; and
- third, whether there are any particular equity issues that should be taken into account when deciding who should bear the costs of any reductions in water allocations.

## Overallocation

Prior to finalising a water plan there are two distinct but interrelated issues that should be considered and, where appropriate, dealt with. The first, overallocation, is discussed in this section. The second, increasing the amount of environmental allocations, is discussed in the following sections. Overallocation occurred in some areas when the amount of water specified in water licences is well in excess of the amount of water available in the water system. In the past, this meant that some water licences have not been used by the licence holder (sleeper and dozer licences) and other licence holders received a substantially reduced proportion of the water nominally specified in their licence.

Overallocation creates uncertainty as it makes it difficult to predict how much water will be available to each water user in future seasons. This

uncertainty is increased with the introduction of water trading. As water users sell previously unused (sleeper and dozer licences) and the new licence holders seek to use the water attached to those licences there is an increase in the call on water. This makes it even more difficult for water users to predict their share of available water in future years. Consequently, removing overallocation provides significant benefits to water users by reducing risk and, hence, increasing the value of property rights.

Overallocation may not necessarily have a detrimental impact on the environment. Even with overallocation, it is possible to set the level of actual use so it does not damage the environment. Overallocation is difficult to manage, however. It puts pressure on water managers to increase the water available for use and, hence, increase the risk of water use damaging the environment.

Assessing the level of overallocation is not a simple task. There are significant seasonal and annual variations in the amount of water available. Usually, this is dealt with administratively by specifying in each season the proportion of their water allocation water users can take. As a result, total allocations will exceed the average amount of water available in an average year to enable more water to be allocated in years when the amount of water available is substantially above the average. The difference between this usual variation and overallocation is that with overallocation the total amount of water specified in water licences is well in excess of what is likely to be available even in an unusually wet year.

Governments have several policy mechanisms available to reduce the level of overallocation. The different policies will affect who pays for the reduction in water allocations. If governments simply reduce the level of allocations held by existing water users then these water users pay for the cost of the reduction. If governments pay market price and buy unused allocations then the cost of reducing overallocation is borne by the general community, through taxpayers. If some payment is made for the reduction in water allocations then, depending on how the payment is calculated, the cost may be shared between water users and the general community.

## Impacter pays and beneficiary pays

In determining whether there are any benefits from adopting an impacter pays approach the critical question is whether using impacter pays would reduce the environmental impact of water use. In the case of overallocation it is the process of reducing the allocations themselves, not who pays for such reductions, that achieves the objectives of the policy. Therefore, the key efficiency justification for adopting an impacter pays approach is not relevant in these circumstances. The question of who bears the cost of removing overallocation should then be assessed based on other policy objectives and equity considerations.

Looking at the question from a beneficiary pays perspective. Water users are likely to be the key beneficiaries from reducing overallocation because reductions in risk and improvements in reliability will increase the value of water licences. Hence, the beneficiary pays approach appears to support water users paying for policies directed at addressing the problem of overallocation.

## Other policy issues

Other relevant government objectives are regional development policies, minimising the impact government policies have of the risks facing industry and reducing the losses to the economy that result from governments raising tax revenue.

In the case of regional development, most State and Territory governments have an objective of encouraging growth in regional areas. Groups, such as irrigators, often argue that any reductions in water allocations will reduce the size of the irrigation industry and the regional economy that relies on it. They argue that when the regional impacts are large regional communities should not bear the cost of reductions in water allocations.

The impact on the regional economy of reducing overallocation will depend on how the reduction is achieved. Reducing overallocation in itself does not change the level of water use overall. It simply removes the unused allocations in areas where these are excessive. However, the process for reducing allocations can disadvantage some regions or individuals<sup>3</sup>. If the reduction in allocations targets licences that are not being used or are under-utilised then such reductions will have a minor impact on the regional economy, as they will not affect the level of production.

If the reduction in allocations is not targeted, and results in some water being taken from irrigators using that water, it could have a greater impact on a regional economy. In water catchments that cover several regional areas the affects could be felt unevenly across those regions. The actual impact will depend on:

- the method chosen to reduce allocations and whether it affects the level of water use in some regions within the catchment;
- the impact on those water dependent businesses needing to buy replacement water; and
- whether water is purchased from within the region or from other regions within the catchment.

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<sup>3</sup> The impact on individuals is discussed in the following section on equity considerations and later in the section on adjustment assistance.

In the case of overallocation the regional impacts can be minimised by carefully managing the process used to reduce allocations. As noted in the later discussion on adjustment assistance, if difficulties are faced by particular communities, it is often better to deal with these issues through targeted adjustment assistance rather than changing the whole approach to managing reductions in water allocations.

Reducing overallocations can support the principles of good governance by reducing the risks associated with policies on water allocation. This benefits water users and enables them to make better investment decisions and, consequently, benefits the regional communities dependent on these activities.

If governments, on behalf of the community, decide to pay for reductions in overallocations this is not a costless exercise. Allocating money to pay water users for reductions in overallocations means that either the government cannot fund other projects or it needs to raise additional tax revenue. Raising revenue imposes administration, compliance and enforcement costs on government and taxpayers. It also results in costs associated with distortions in the activities of taxpayers as they move away from taxed activities towards those that are untaxed.

While the losses associated with increasing state taxes are difficult to estimate precisely the cost is not insignificant. The Commonwealth Government in its paper on *Tax Reform: Not a New Tax a New Tax System* (1998) quoted New South Wales, Victoria, South Australia and Western Australia as all recognising the inefficiency in the state tax base. A staff paper prepared by officers of the Productivity Commission (Gabbitas and Eldridge 1998) provided some estimates of the cost of collecting State tax revenue. Those estimates varied widely but many reflected that for a range of taxes every dollar of revenue collected could cost 30 to 50 cents in compliance and administration costs, and a loss in economic efficiency. The losses associated with some taxes were even higher.

## Equity considerations

It is the responsibility of governments to make decisions on how to balance equity considerations. Various groups, however, have presented points of view that are relevant to an equity based consideration of who should pay for the cost of changes designed to address overallocation. These include:

- the need for change is the result of government's past policy mistakes and, hence, taxpayers should meet the costs of change;
- those who benefit from the change should meet the costs of change; and

- the way change is implemented can have an unequal impact on individuals and government and government should ensure that particular individuals or groups are not disadvantaged.

In the case of overallocation the changes will tend to benefit water users overall. So that even if overallocation is the result of past mistakes by government, correcting such mistakes will not disadvantage the industry. On most of the measures of equity listed above it could be argued that water users should not be paid to relinquish water rights when the policy is designed to remove overallocation.

However, as noted with regional development, if the process used to reduce overallocation does affect water allocations that are currently being used it could affect the financial viability of some individual water users. In most instances this impact would be small or insignificant and offset by the benefits of the reduction in overallocations. Consequently, it is more appropriate to deal with any remaining problems through targeted, specific adjustment assistance (see the later section for a more detailed discussion of adjustment assistance).

Sometimes it is argued by water users that reducing unused licence allocations reduces the future business expansion options available to licence holders. However, in systems where water is already fully allocated or overallocated this water could not be used without a corresponding reduction in the amount of water available to others. Hence, it is an equity issue on whether people should be compensated for the loss of water that could only be used at the expense of existing water users.

## Reducing water allocations at the start of a planning period

In addition to the problems of overallocation the level of water use should be reduced in many areas to allow more water to be allocated to the environment. In these circumstances the water systems are stressed. Such an increase in the amount of water allocated to the environment results in a real reduction in water use and can impose costs on water users. In the long run a more sustainable water industry also generates benefits for water users by reducing the rate of environmental degradation and, hence its impact on the productivity of irrigated land, and improving water quality. In addition, when the amount of water allocated to water users is decreased, the value of the remaining allocations will usually increase. Therefore, there is an offsetting benefit to the water users that hold the remaining water allocations.

Each State and Territory has a water management planning system in place that will regularly review the level of water use and the environment's need for water. This is a public process involving community consultation that draws on the best available scientific information. These processes are detailed and time consuming. This recognises that because there can be

significant costs in adjusting the amount of water available for consumptive uses it is important for planning processes to set environmental allocations as accurately as possible.

In some regions there are likely to be a significant increases in the amount of water allocated to the environment once these planning processes have been finalised. However, the scientific understanding of the environmental impact of water use is still being developed. Consequently, when the current water management plans expire and new plans are developed it may be necessary to rebalance the allocation of water between consumptive uses and the environment. Once the need to reduce water allocations has been identified State and Territory governments could, for example, reduce equally the allocations of all water users in the stressed system or target certain water users by, say, entering the market to buy water for the environment.

If water planning processes indicate that there should be reductions in water use this can be achieved by either improving the efficiency of water use or reducing water dependent activities.

When large reductions in water use have been necessary, particularly in the irrigation sector governments have sometimes sought to improve the efficiency of water use as part of their approach to reducing water allocations.

New South Wales provided a structural adjustment package for the Namoi giving landholders access to government grants of up to \$112 000 each to implement more water efficient practices.

Victoria allocated \$77 million in 2002-03 to build the Wimmera-Mallee pipeline to deliver additional environmental flows for the Wimmera and Glenelg rivers, subject to matching funding from the Commonwealth. Initial studies identified significant water savings that could be returned to the Glenelg River. Victoria has also funded water saving projects in the Macalister Irrigation District. For example, \$940 000 was allocated as part of the Water for Growth on-farm water efficiency program, for education training, information transfer and incentive grants for whole farm planning, water re-use systems and conversion of flood systems to piped systems. In addition, \$100 000 was allocated to achieve water saving by fixing leaks in the Macalister Irrigation District main southern flume.

In October 2000, the New South Wales, Victorian and Commonwealth governments announced that \$375 million would be spent to restore water flow in the Snowy River to 28 per cent of the average natural flow. It was intended that 21 per cent of this increase would be achieved primarily through water savings in diversions from the River Murray and in the Murrumbidgee and Goulbourn-Murray river systems. A further seven per cent may be achieved by additional major capital works program to achieve water savings in the southern Murray–Darling Basin.

When their water allocations are being reduced there are incentives for individual water users to improve their water use efficiency. The government

can facilitate this by disseminating information on how such improvements can be achieved.

## Impacter pays and beneficiary pays

Again in determining whether there are any benefits from adopting an impacter pays approach the critical question is whether impacter pays, that is water users bearing the cost of reform, would reduce the environmental impact of water use. As with reductions in overallocations, when water allocations are reduced at the start of a planning period, it is the process of reducing allocations, not who pays for such reductions that achieves the environmental objectives. Therefore, again the key efficiency justification for adopting an impacter pays approach is not relevant in these circumstances.

Identifying the beneficiaries of reducing water for consumptive use and allocating more water to the environment is not simple. Clearly there are environmental benefits. These would accrue to:

- the Australian community by reducing the pace of environmental degradation and preserving biodiversity and other environmental benefits;
- the local community by maintaining the long term environmental health of their region, the amenity of their natural environment and the potential for industries that rely on long term environmental health, for example fishing and tourism; and
- water users through increasing the productivity of irrigated land by reducing the rate of land degradation or by improving water quality (reducing production costs or improving product quality for those water users where water quality is a significant issue).

There are also benefits to existing water users from an increase in the value of remaining water allocations, once more water has been provided to the environment.

In all cases, there will be some benefits to water users, even if those benefits are outweighed by the costs of reducing water allocations. These benefits should be considered in any decision on how to allocate the costs between the various beneficiaries of reform.

## Other policy issues

The other relevant government objectives were identified in the previous discussion on overallocations. They include:

- regional development policies;

- minimising the impact of government policies on the risks facing industry (sovereign risk); and
- reducing the losses to the economy that result from the government raising tax revenue.

## Regional development issues

The effect of change on a region is a separate issue to the effect it has on an individual. The cost to the individual will depend on the size of the net loss<sup>4</sup> following the reduction in allocations and the method used to reduce those allocations. The cost to the region depends on whether the level of production in the region falls.

Consequently, some individuals may face significant hardship following a reduction in their water allocations, but if these cases are isolated or the regional economy is not dependant on water using industries then the flow-on effects to the region may be insignificant.

Alternatively, if taxpayers, rather than water users, meet the cost of reducing water allocations then water users will not be disadvantaged by the change but the region may still be affected. As a result of the changes in the levels of water allocations, individuals may change their business or leave the region. If a large number change the nature of their business then the other regional businesses that were supplying those water users may also need to change. The change should be managed but it is unlikely to result in a contraction in the region. If water users leave the region then there could be a contraction in the regional economy because of the flow on affect to other businesses.

The impact on the regional community is minimised if the reduction in allocations is managed to minimise the decline in production in the local area. The most obvious way of achieving this is by improving the efficiency of water use. Improving the efficiency of water use will decrease the impact on the region of reducing water use, as efficiency gains allow water users to continue the same level of production while providing additional water for the environment.

Water use efficiency can be achieved on farm or off farm. If water allocations have been reduced then there are strong incentives for individuals to improve the efficiency of on farm water use. They will capture the full benefits of these efficiency improvements as they will reduce the effect the reduction in allocation has on their business.

The incentives to improve off farm efficiency are not so direct. Off farm improvements decrease the need to reduce allocations overall, but it is

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<sup>4</sup> The loss in production caused by the reduced allocation less any gains due to improved productivity because of a reduction in the rate of land degradation or improved water quality, or an increase in the value of remaining water allocations.

difficult for any individual irrigator to predict the direct benefit they will receive from such savings. This is also the case when governments are trying to achieve on farm efficiency savings prior to reducing water allocations. Again any such savings would decrease the overall reduction in water allocations. Individual water users, however, will have to share the benefits of their efforts to reduce water use with other water users. In some cases there may be a role for government or industry groups to provide information to irrigators on how to maximise their water use efficiency. Sometimes a holistic industry or government approach with financial assistance would improve water efficiency as no individual irrigator would get the full benefits of any savings they make.

Both improving the efficiency of water use and adjusting production towards less water dependent activities takes time, capital, information and motivation. How governments manage the process of reducing water allocations will affect all these factors. Consequently, it will affect whether existing water users are able to adjust in a way that minimises any subsequent contraction in the regional economy.

The impact of reducing water allocations on regional development will be assisted by. First, providing water users with as much information as early as possible on what the long term reduction in water use will be. Once water users are aware of the long term changes required many will start the adjustment process long before the changes are implemented. Trying to hide the extent of future change would reduce water users' ability to plan for the long term and increase the chances that they will have insufficient time to adjust when the crunch eventually comes.

Second, governments should consider how information could be provided to water users on how to save water and what alternatives are available to them.

Finally, water users cannot obtain, digest and act on information instantaneously, particularly in industries such as irrigation where there are often annual or biannual production cycles. Businesses may take several years to implement change. They still need full information on the magnitude of the change at the beginning of that period.

The section on adjustment assistance later discusses how to facilitate these processes and the options for those cases where there are still substantial impacts on the regional community.

## Sovereign risk

Sovereign risk is discussed in box 4 it is about the risks that future actions of government will impose a cost on the industry.

## Box 4 Sovereign Risk

Risk increases the costs of business and, therefore, reduces the level of activity below the risk free level. Sovereign risk is risk that results from government actions or changes to government policies. Hence, the government not the businesses has the power to control such risks. Unlike many other risks, usually businesses cannot insure against sovereign risks. Therefore, the businesses themselves must bear the full cost of the risk.

In most industries sovereign risk is not a major issue. There is always a chance that policies, for instance tax policies, will change in a way that disadvantages the business but the risk is not sufficiently large to constrain the industry. Irrigators are arguing that this is not the case with water policy. They claim the risks are such that they are significantly affecting business planning and access to finance.

Before it is appropriate for the government to compensate for the cost of policy changes it should determine that the cost of the risk to business is greater than the cost to government of mitigating the risk,<sup>5</sup> including any the cost of raising tax revenue to cover any compensation payments.

In cases where sovereign risk has a debilitating effect on the industry and it is demonstrated that the total cost of compensation if policy changes are made (including any revenue raising costs) is less than the costs to industry of the sovereign risk then removing that risk by (for example by paying compensation) will improve economic efficiency.

Sovereign risk is not an issue for one off changes in water allocations. It is only an issue if there is an actual or perceived chance that similar adjustments will be made in the future. Making the industry bear the costs now does not increase the risks of doing business unless it leads to a perception that a similar impost is possible in the future and that such an impost would have a significant impact on the business.

The issue of sovereign risk is more significant when water users believe that there are likely to be further reductions in allocations at the beginning of future planning periods. The uncertainty this generates and the cost of that uncertainty would be reduced by improving information on the timing and size of any such reductions. In many cases this can be achieved by ensuring that water users are compensated for any reductions in water allocations in the period while a plan is in operation and regular reporting against the plan to provide full information on the likely magnitude of any future adjustments. This extends the period of certainty and allows people to plan and adjust for any likely change. With improved information and a significant period of certainty risks are reduced and water users can more easily anticipate and plan for future changes. This weakens the arguments that guarantees of compensation are necessary to deal with the problem of sovereign risk.

### Cost of revenue raising

The issues associated with the cost of revenue raising are the same as those discussed in the previous section on overallocation.

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<sup>5</sup> In this case paying compensation if a policy change does impose costs on water users.

## Equity considerations

As noted in the previous section equity decisions are the responsibility of government. Various interested groups have raised equity questions in reducing water allocations to increase the amount of water available to the environment. These include:

- water users are responsible for the environmental damage and, therefore, they should meet the costs of mitigating that damage;
- the need for change is the result of government's past policy mistakes and, hence, taxpayers should meet the costs of change;
- community attitudes on the importance of the environment have changed and existing irrigators should not have to bear the cost of the transition to the new community standard;
- those who benefit from the change should meet the costs of change; and
- the way change is implemented can have an unequal impact on individuals and government and government should ensure that particular individuals or groups are not disadvantaged.

The questions of equity should look at water planning outcomes case by case. The difficult questions arise when there are net costs imposed on water users. The debate then evolves around whether individuals or taxpayers should bear those costs.

The various equity questions provide arguments for and against various groups meeting the cost of reform. They do not lead to an unambiguous case for any particular group meeting those costs.

## Reducing water allocations during the life of a water plan

Water planning processes generally envisage that adjustments to the amount of water allocated to the environment will usually occur periodically – announced at the beginning of the planning period. Governments have said that they intend to rely on periodic adjustments. Legislation does provide, however, for the option to announce adjustments during the planning period if such adjustments are necessary to meet the environmental objective of the plan.

All States and Territories expect that such adjustments are unlikely but the option is necessary to correct unforeseen problems that could cause permanent environmental damage.

The risk of unexpected adjustments to water allocations varies between jurisdictions. In some jurisdictions, the Northern Territory for example, the levels of over extraction of water are low and the risk that water allocations would need to be adjusted during the planning period are correspondingly low. Where there are higher levels of river stress the risk of unexpected adjustments to water allocations are also higher.

New South Wales, Victoria and Queensland all ensure that these changes would not disadvantage water users. New South Wales and Queensland provide for compensation to the licence holder if they would be disadvantaged by changes made during the licence period.<sup>6</sup> Victoria provides that the licence would be purchased at market price.

Reductions in water allocations will have the same effects and raise the same issues regardless of when they are made. Hence the discussion about reductions in allocations at the beginning of the planning period is relevant in considering reductions during a planning period.

The one area of significant difference is sovereign risk. Sovereign risk can be managed in periodic planning processes by setting the periods sufficiently far apart and providing regular reporting of outcomes against the plan. Reporting provides water users with information on what, if any, changes are likely. This reduces uncertainty about future adjustments and allows water users to anticipate and factor the likely adjustments into their planning.

If allocations could be adjusted more frequently, during the planning period, and the likelihood and cost of such adjustments are uncertain, then this significantly increases risk. It is then more difficult for water users to predict when and how large adjustments will be made and they have uncertainty about their planning and investment timeframes.

These problems are largest in New South Wales and Victoria, where over use of water is greatest and the risk of claw back is significant. The provision of compensation to water users who suffer a significant loss if allocations are changed unexpectedly, or buying back water rights deal with these sovereign risk issues. The community, through taxpayers pays for the cost to water users of any reductions in water allocations during a planning period. This recognises the high levels of sovereign risk would reduce investment in water dependent activities and retard growth and business activity in the regions relying on those activities.

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<sup>6</sup> Given that these provisions have not been tested stakeholders are still concerned about whether adequate compensation would be paid.

## Adjustment assistance

Governments may provide adjustment assistance to individuals, firms or communities to assist them to manage the process of change. In considering the case for adjustment assistance, governments should assess the ability of those affected by water reform to make the necessary changes, compare the adjustment costs to the cost of adjustment assistance and weigh up whether generally available adjustment measures<sup>7</sup> would meet the needs of affected parties. Additional adjustment measures may be warranted for the holders of water allocations where large scale changes will be needed and the water user's capacity to absorb the cost of change is low.

A water users' capacity to absorb the cost of change is higher when they have the opportunity to successfully change their own business or sell that business and leave the industry. This requires the availability of alternatives either:

- water users with the skills to change their own business, and assets, such as land, that is suited to alternative uses; or
- sufficient buyers interested in the water rights and/or assets to generate a reasonable price.

It requires water users to have a good understanding of the policy changes being made and the options available to them, and sufficient time to consider that information and implement their strategies to deal with the changes.

Additional adjustment measures may be warranted for communities affected by water reform where the changes being made by water users adversely affect the community and the community's capacity to respond to such changes is low.

The community's capacity to absorb the cost of change is higher when:

- other businesses do not only rely on water dependent activities;
- licence holders are changing their businesses rather than leaving the region;
- the economic base of the community is broad;
- there is potential to expand or change the focus of the region's economy; and
- the region's economy is generally strong, rather than contracting.

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<sup>7</sup> As noted by the Productivity Commission "...Australia's taxation and social security systems provide some assistance to mitigate the effects of both market and policy-based changes" (PC 2001b, p.93), there are also agricultural support programs available through Commonwealth and State governments.

The appropriate type of adjustment assistance will vary. The most effective packages will be designed to meet the needs of the target group or community. In designing such packages governments could consider:

- The dissemination of information about the nature of the reforms, the options for adjustment, the availability of general assistance measures, and any proposed additional assistance;
- consultation processes undertaken while developing the water plan, including providing the community with scientific information on the health of their water way, to help people understand and accept the need for change and choose a change strategy that recognises the specific circumstances of their region;
- financial assistance to help fund investment in water use efficiency, changing water businesses, for example recropping with less water dependent crops, or assisting water users to move out of the industry altogether;
- financial assistance to communities to assist in researching or facilitating the establishment of alternative activities in the region; and
- phasing by announcing reform in advance, to allow businesses to make plans and begin their adjustment, or staggering the introduction of reform to moderating the pace of change.

The water planning process itself is part of the phasing process. Water plans give people warning about the types of changes that will be necessary. Often change is then implemented over the period of the water plan so that water users have several years to adjust.

The adjustment package should be designed to balance the competing objectives of maximising the ability of people and communities to cope with change, maximise the speed of achieving the environmental benefits of reform while minimising the cost imposed on taxpayers.

## **4 Actions to reduce the impact of water use**

Once the level of water allocations has been determined the next question is how to deal with the remaining environmental consequences of water use.

The CoAG water reform commitments specify that prices should include, among other things, the costs of externalities. At a minimum externalities include natural resource management costs that are attributable to and incurred by the water business. The commitments also require transparency in the treatment of externalities, including resource management costs. They

do not specify how governments should decide the level of resource management costs that they will attribute to water businesses. Nor do the commitments specify what, if any, obligations governments should place on water users. Hence the following discussion is not the basis for the Council's assessment of compliance with National Competition Policy water reform commitments. Rather it is designed to assist the debate on the most efficient way of dealing with allocation of environmental costs, given the regulatory frameworks that governments have already adopted.

## **Analysing the environmental costs relevant to water pricing**

Most states and territories address environmental issues by imposing conditions on water use, requiring licence holders to undertake activities to address environmental degradation<sup>8</sup> and the government undertaking activities to reverse past environmental impacts or reduce the effects current or future water use will have on the environment. Under this approach, including environmental costs in water prices is about who should pay for the compliance costs of meeting environmental regulation and the cost of projects to monitor, manage and reduce environmental impacts. This differs from externality pricing where the costs of the damage are quantified and charged back to the entity responsible for the environmental damage.

Because governments are basing environmental costs on the costs of monitoring, managing and reducing the environmental impacts of water use, they need to determine their environmental management policies before such costs can be attributed to either impacters or beneficiaries. Therefore, each government should use the best scientific information available to estimate as accurately as possible the level of environmental impact that is sustainable for each region.

Governments should then determine how environmental costs are going to be addressed. As with all costs to be paid by water users or other parties, environmental costs should be based on efficient costs. This involves using the most effective policy tools to solve environmental problems and implementing these policies at the least cost. Consequently, water planning processes are critical to environmental cost recovery as it is these processes that identify the benchmarks for environmental outcomes and the ways these outcomes will be achieved.

Generally, there are three groups of environmental costs that should be considered when analysing which costs should be reflected in water pricing.

1. Compliance costs resulting from conditions imposed on licence holders.

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<sup>8</sup> Some of these arrangements are discussed in section one of this paper.

2. The cost of government planning, monitoring, rehabilitation work and investment in environmental infrastructure designed to mitigate environmental damage that results from previous water use.
3. The cost of government planning, monitoring, rehabilitation work and investment in environmental infrastructure designed to mitigate environmental damage that results from current and future water use.

The High Level Steering Group on water noted that clearly defining property rights would assist in dealing with the environmental effects of water use:

*Property rights make explicit the economic opportunities associated with a specific resource. In doing so, they can be used to identify responsibility for maintenance of the condition of that resource. Further, property rights represent an 'enabling mechanism' by which a market may be 'created' and facilitated. As a result, property rights are particularly applicable to the management and control of both extraction and return externalities. (HLSG 2001, p.10)*

## Compliance costs resulting from licence conditions

The process of setting such requirements involves an analysis of those environmental obligations the community considers should be the responsibility of licence holders. This assessment can change over time but it is usually recognised that water users have some obligations to protect the health of the resource they are using.

While some of these concepts are already recognised in the common law duty of care the existing common law does not fully address environmental issues (see box 5).

### Box 5 Duty of Care

The concept of duty of care is part of common law in Australia and is still evolving in the Australian Courts. 'The concept that one person owes a duty of care not to injure the person or property of another is well in Australian law' (Bates 2001, p.15). This duty recognises a right to remedy if the environmental damage has resulted in an infringement to a person's property rights.

The right to remedy does not extend to environmental damage that does not affect the rights of a legal person.

*...the common law does not recognise, and never has recognised, that a duty of care may be owed to the environment per se. The common law action in nuisance may compensate a landholder for damage to the environment, but because the common law views this as an infringement of the landholder's property rights, not because it perceives a breach of a duty to protect the environment. (Bates 2001, p.15)*

Consequently governments need to explicitly consider how to identify who is responsible for maintaining the environment and develop mechanisms for delivering environmental outcomes. License conditions are one mechanism for identifying and specifying environmental responsibility. Such conditions can include:

- requirements for environmental monitoring;
- investment in environmental infrastructure, for example fishways; and
- conditions on water management or water use.

Licence conditions can be specified in either in bulk water licences or end user licences. The cost of complying with conditions on bulk water licences increases the costs of the bulk water provider and, hence, flow through to water prices so that the cost of meeting environmental conditions are met by water users. If the conditions are placed on end user licences, such as those held by irrigators, they will not affect water prices but they do affect the cost of water use. In effect this equates to an impacter pays approach to meeting environmental objectives. As noted in box 2 for the impacter pays approach to be effective licence requirements should be set following an assessment of which water users are causing environmental damage and the cost of remediating the damage they cause, ensuring that this damage can be attributed to the licence holders. It is desirable to set licence conditions so that water users can change their behaviour and reduce the costs of meeting environmental obligations.

If licence conditions have been appropriately set then the impacter pays approach is preferable because it will clearly identify the obligations of water users, ensure water users take into account the cost of the environmental consequences of their activities and implement strategies that will reduce the damage caused to the environment.

This is consistent with the High Level Steering Group on Water that has as one of its principles.

*As a general rule, resource users should be required to meet the full costs of achieving individual responsibilities. (HLSG 2001, p.5)*

Consequently the processes of water management planning and clearly defining property rights are critical to addressing this aspect of the recovery of environmental costs.

## Government work to reverse past environmental damage

Given the state of the current reform program, much of governments' environmental mitigation work is to address environmental damage that resulted from previous water use. This could involve:

- assessing environmental condition;
- infrastructure construction; and
- rehabilitation work.

In the case of past environmental damage it is not possible to reduce this damage by changing the way water is used. Such changes will only affect current and future water use and the environmental effects of that use. Consequently, the efficiency benefits associated with an impacter pays approach to pricing are likely to be low and beneficiary pays is more appropriate. In a staff research paper on biodiversity conservation the Productivity Commission drew on the work of Tilton (1995) to reach the following conclusion.

*From an economic perspective, there is little rationale to charge retrospectively for biodiversity loss because it is not possible to change past behaviour and correct past inefficiencies. As a result, the efficiency gains from apply the 'impacter pays' principle may not apply for the case of degradation caused by past activities. Further, it may be considered inequitable to penalise impacters retrospectively for complying with the accepted legal frameworks and policies of the past. (PC 2001c, pp.28-29)*

This is consistent with the views of the Wentworth Group, which argued that:

*...the current generation of farmers are not responsible for all the damage that has been done to our landscape over the past 200 years, and that if Australia wants this damage repaired, all Australians should be prepared to provide the financial assistance to help achieve this outcome. (Wentworth Group 2002, p.18)*

## Government work to mitigate current and future environmental damage

It is not possible to address all future environmental issues by clarifying property rights and imposing conditions within water licences. Projects may span across several licence holders so that the government is required to coordinate action. In other cases it may not be cost effective to monitor or enforce the environmental activity or it may not be possible to identify its cause and, therefore, effective licence conditions cannot be developed.

In such cases a decision should be made on how the costs of such work will be divided between stakeholders. In the case of environmental mitigation work that focuses on current and future environmental costs a mixture of "impacter pays" and "beneficiary pays" may be necessary.

Where it is possible to identify both the water users or groups of water users that are responsible for the environmental damage and estimate the costs of

mitigating that damage then the impacter pays approach should be used. As noted previously, this will ensure that water users take into account the environmental consequences of their water use.

When impacter pays is not appropriate beneficiary pays can be used but it is important to recognise that this still results in some of the environmental costs being met by water users.

In some cases activities may have the dual purpose of addressing past environmental damage and reducing the impact of future water use – for example, some infrastructure development or the development of information and monitoring systems. In these cases it may be impractical to split costs between past and future damage and, consequently, a beneficiary pays approach may be more appropriate, at least initially.

Over time the need to address past environmental problems will decline and the level of information on the links between environmental damage and its causes will improve. Therefore, the use of the impacter pays principle to allocate resource management expenditure and environmental mitigation work is likely to increase. If in the future, however, community expectations change and more onerous environmental requirements are introduced, again it will be appropriate to use a beneficiary pays approach to rehabilitating past damage to meet the new standard.

## Equity issues

As with policies that affect the amount of water that is available, governments may wish to consider equity issues when deciding who should meet the costs of regulations to reduce the environmental consequences of water use. Those equity arguments considered in earlier sections are all relevant. These include views that:

- water users are responsible for the environmental damage and, therefore, they should meet the costs of mitigating that damage;
- the need for change is the result of government's past policy mistakes and, hence, taxpayers should meet the costs of change;
- community attitudes on the importance of the environment have changed and existing irrigators should not have to bear the cost of the transition to the new community standard;
- those who benefit from the change should meet the costs of change; and
- the way change is implemented can have an unequal impact on individuals and government and government should ensure that particular individuals or groups are not disadvantaged.

There are two additional equity issues that have been raised in relation to regulations to reduce the environmental impact of water use. First, some argue that when licence conditions are set governments are, in effect, specifying those obligations that should be the responsibility of the water users and any debate on equity would need to take this decision into account.

Second, equity considerations can emerge in deciding how to deal with the environmental consequences of past water use. While under a beneficiary pays approach, when charges are set appropriately, beneficiaries are not disadvantaged because they do not pay more than the benefits they receive. In practice, this can be difficult to implement. Different beneficiaries will receive different levels of benefits and the ability to price discriminate between beneficiaries is limited. The costs of inappropriately charging beneficiaries will be highest when the costs of mitigating the environmental damage are large and the beneficiaries are concentrated in a particular region or state. This may be the case even when a more widely dispersed group caused the damage. Under these circumstances, some argue that governments should consider equity issues when deciding how to apply a beneficiary pays approach, and whether the beneficiaries should meet all the costs of mitigating environmental damage.

## 5 In Summary

This paper has discussed a framework that governments could use to decide who should pay the costs of strategies designed to reduce the environmental impact of water use. If governments adopted this framework it would involve looking at issues on a case by case basis, considering:

- first, whether an impacter pays approach is likely to reduce the environmental effects of water use and the implications of adopting beneficiary pays;
- second, whether there are any other policy objectives that would be affected by the decision on who should bear the cost of any reductions in water allocations; and
- third, whether there are any particular equity issues that should be taken into account when deciding who should bear the costs of any reductions in water allocations.

In the absence of any other policy considerations or equity issues, impacter pays will generate benefits when it is possible to identify:

- which water users are causing environmental damage;
- the amount of damage they cause; and
- a mechanism to transfer the cost of that damage back to the water user.

The cost of damage must be attributable to individual water users or identifiable groups of water users. Then the impacter pays approach can be used to encourage activities with lower environmental impacts by increasing the costs and hence reducing the profitability of environmentally costly activities.

Further, the benefits of the impacter pays approach will increase if it is implemented in a way that allows water users to change their behaviour in order to reduce their environmental impact and for such changes in behaviour to be rewarded by a fall in the level of environmental costs faced by the water user.

The impacter pays approach is most appropriate for expenditure designed to reduce current and future environmental damage from water use or for meeting the compliance costs of environmental conditions imposed on licence holders. In these cases there will be situations where it is possible to establish a direct link between impacters, environmental damage and impacter pays charges. In other cases impacter pays may not encourage improvements in environmental outcomes.

For strategies designed to reduce water allocations it is the process of reducing the allocations themselves, not who pays for such reductions, that achieves the objectives of the policy. Therefore, the key justification for adopting an impacter pays approach is not relevant in these circumstances. For past environmental damage it is not possible to reduce this damage by changing the current use of water, even if it is possible to identify who were the impacters.

In these cases a beneficiary pays approach is more appropriate. The distribution of cost then depends on the spread of benefits. Often government strategies will fall into one of three groups.

- For reductions in water entitlements that are designed to deal with overallocation, but do not affect the level of water use, the benefits will accrue to water users because reductions in risk and improvements in reliability will increase the value of licenses.
- For reductions in water entitlements that reduce water use the benefits will be spread between different types of water users, the Australian community and the local community.
- Strategies to rehabilitate environmental damage that resulted from previous water use will also have benefits for a broad range of interest groups.

Hence, in all cases you would expect water users to meet some of the costs, and in some cases a significant share of the costs, of government strategies to reduce the environmental impact of water use. In other circumstances a large contribution from taxpayers may be warranted.

As governments are implementing a range of policies simultaneously it is often impossible to split precisely the policies, their effects and their costs. Therefore, in practice, the above framework should provide only guidance for decisions about the allocation of costs between different groups. It cannot be applied as a rigid template.

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