Pricing rural water outside irrigation districts

Much of the focus of rural water pricing reform to date has been on prices within irrigation districts. Reforms have emphasised cost recovery and consumption based pricing.[1] In the case of regulated irrigation water these concepts are based on the cost of delivering water. Pricing does not take into account the value of the water itself, which is reflected in the value of the water rights rather than in delivery prices. (Traditionally, governments have not charged irrigators for the value of the water when they issue new water entitlements.)

For other types of rural water the CoAG obligations requiring consumption-based prices that reflect full cost recovery apply. The issues are more complex, however, and consideration of pricing questions in many areas is not well developed. Recognising that governments need more time to develop their approaches in this area, the Council will consider compliance with CoAG obligations on pricing rural water outside irrigation districts in the 2004 NCP assessment. By this assessment, all governments should have implemented most requirements on urban pricing and rural pricing in irrigation districts, and should have improved their consideration of externalities in setting water prices. They should therefore be well placed to consider remaining pricing issues.

Rural water use outside irrigation districts

The 2001 NCP assessment primarily considered pricing for water supplied by urban service providers and through irrigation districts. While these service providers account for most of the water used in Australia there are other significant sources and uses of water. These include:

- water extracted from regulated rivers for purposes other than irrigation (such as mining, local industry, power generation etc);
- water extracted from unregulated rivers;

[1] Cost recovery requires revenue to cover at least the cost of operating and maintaining irrigation assets. Consumption based pricing reflects the cost of delivering extra units of water.

- water extracted from managed groundwater systems[2] for purposes other than irrigation;
- water extracted from unmanaged groundwater systems; and
- water collected from overland flows.[3]

In New South Wales for example there are approximately 6500 regulated river licences, 12 000 unregulated river licences, 15 000 groundwater customers and 100 000 stock and domestic users.

In many cases, for example water extracted for stock and domestic purposes, the volume of water use is relatively low. In some cases, however, these other rural water uses are significant. For example, individual water users can be very large, such as mines or power generators like Hydro Tasmania.

In addition, the rules governing water prices and water use could affect the decisions of other water users in a region. For instance, in some regions farmers who rely on water supplied through irrigation infrastructure operate in close proximity to irrigators pumping water directly from the river or collecting overland flows in on-farm storages. In these regions different approaches to pricing water derived from different sources could affect farmers' decisions on how to source, store and use water. Moreover, in situations where a farmer does not have the option to access water from a different source, and there are price variations between the farmer's current source and other water sources, inequities and, possibly, inefficiencies can arise.

Current pricing information

The Council's 2001 NCP assessment provided a preliminary report on the pricing of water outside irrigation districts in each State and Territory. The information that governments provided to the Council for the 2001 assessment was not comprehensive making it difficult to assess different governments' performances against a common benchmark. The Council will therefore need more detailed information from governments if it is to conclude on compliance on this aspect of rural pricing in 2004. The 2001 report provided the following information on the use and pricing of rural water outside irrigation districts.

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[2] Groundwater is all water located below the earth's surface. In managed systems governments plan, monitor or regulate water use.

[3] Overland flows are defined as rainfall run-off from land captured in a farm dam.

New South Wales

In New South Wales all landholders are entitled to a basic landholder right that allows access to water for stock and domestic use and normal household purposes, a harvestable right (10 per cent of rainfall run-off captured in a farm dam) and recognition of native title rights. Basic landholder rights are not licensed and there is no charge for the water. These provisions apply to all potential water users regardless of property size or other characteristics. Hence, the same basic rights apply to 'hobby farmers', irrigators and broad acre farmers.[4]

All other water use is licensed under New South Wales's *Water Management Act 2000*. New South Wales is converting the current five-year water licences over to a new system of 15-year access licences. New licences will be specified volumetrically, allowing for the use of volumetric pricing and two-part tariff arrangements.

The Independent Pricing and Regulatory Tribunal (IPART) sets rural water prices through periodic price reviews. As part of this process the IPART assesses the level of resource management costs that should be included in water prices. These costs are those incurred by the Department of Land and Water Conservation (DLWC) for managing river and groundwater systems. They can include, for example, investment in dams, weirs, pumps, etc that is necessary as a consequence of broader water use.

All tariffs for a particular location are set in the same way. Thus, the tariffs for large bulk water customers are set in line with other user tariffs in the same valley.

As a result of the IPART's current determination, unregulated rivers in New South Wales are moving to two-part tariffs for town and industrial customers once entitlement volumes have been negotiated and determined under the water sharing plans. Under the IPART's current determination the two-part tariffs will have a ratio between the fixed and variable components of 60:40. The IPART believes this is a fair compromise between the need for consumption based price signalling and the DLWC's desire for a stable revenue flow, particularly given that the DLWC's costs tend to increase during dry periods.

Groundwater tariffs are set at $75 per property in nonmanaged areas and by a two-part tariff in managed areas.

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[4] The growth of basic landholder rights from rural subdivisions for unregulated systems has been recognised by New South Wales as an issue that could threaten the health of rivers and existing businesses. In drafting the water sharing plans, water management committees proposed restricting domestic and stock landholder rights in a number of water sharing plans. In the 2002 assessment, New South Wales advised that a whole-of-government approach is needed, and that this issue may be addressed as a target in the State water management outcomes plan.

The IPART did not charge licence fees in its current determination but allowed scope to reconsider licence fees prior to June 2004.

Victoria

Landholders in Victoria are not required to be licensed and are not charged for water used for stock and domestic purposes. Water used for all other purposes must be licensed. The *Water (Irrigation Farm Dams) Act 2002* extended licence requirements for taking and using water to cover all new irrigation and commercial water use in a catchment, including the collection and use of overland flows.

Water may be allocated by the Minister under a bulk entitlement granted to a water authority or a stream flow management plan using a take and use licence. All licences are volumetric but not all charges have a volumetric component.

The information provided by Victoria for the 2001 assessment does not provide the detail necessary to determine the extent of volumetric pricing or the inclusion of externalities in pricing for take and use licences, particularly in unregulated systems.

Queensland

Riparian rights in Queensland allow water to be taken by an owner of land adjoining a watercourse, lake or spring for stock and domestic purposes. Water may be taken without an entitlement for emergency or for watering travelling stock. All other use requires an allocation.

Annual charges apply to water licences in some unregulated areas, water harvesting in regulated areas, water licences for unregulated surface water and extractions in groundwater management areas. These charges are set, generally after consultation with users, to reflect the additional costs of resource management in those areas including, where relevant, the costs of metering, billing and reporting. Queensland is currently reviewing its pricing arrangements.

One issue in Queensland is that charges for licences for water harvesting are volumetric up to a maximum of 500 ML of overland flow extracted each year. There is no charge for water extractions above 500 ML per year. Irrigators in some regions argue that this is inappropriate as it encourages excessive water use, is not volumetric based and is inequitable.

In Queensland, SunWater is the major service provider, providing nearly all of the water for power generation, and much of the water for mining. Resource management compliance costs are included in SunWater's pricing.

Western Australia

In Western Australia a water licence is not required for water taken for household use and stock watering. For all other purposes the water user needs to hold a licence to take water. Licences specify how the water is obtained or stored, for example whether it is pumped from a stream or stored in an on-farm dam.

Western Australia has a few licence fees in some rivers around Perth, set some 20 years ago. These licence fees do not reflect cost.

There is no explicit provision for passing on to rural users the costs of addressing any broader effects of water use. Bulk water prices reflect environmental costs that the Water Corporation incurs in meeting its environmental obligations.

South Australia

South Australia only licenses prescribed water resources. Landholders can take water for domestic and stock watering purposes without a licence although, if necessary, domestic and stock uses can be included under the licence requirements. This is the case for the River Murray and North Adelaide Hills.

Following the passage of the *Water Resources Act 1997* South Australia reviewed its existing licence fees. This resulted in the refinement of charges to more closely reflect administration costs. Catchment Management Boards charge water-based levies to cover increased monitoring and public awareness programs, where there is more intensive use and expenditure on the management of the water resource. The levies cover remedial projects to mitigate adverse environmental impacts.

Land-based levies are imposed on landholders who do not pay a water-based levy to cover the environmental externalities from their incremental contribution to diffuse source pollution – that is, pollution that is a consequence of agricultural activity but where the specific sources and causes of the pollution are difficult to target. The water-based levy is generally considerably higher than the land-based levy in each area. South Australia is conducting a review of arrangements for the Mount Lofty Ranges regulating farm dams and overland flows.

Tasmania

Landholders in Tasmania are entitled to take water for domestic and stock purposes without a licence unless a water management plan specifies that these uses need to be licensed. All licences are volumetric.

The *Water Management Regulations 1999* establish a new raw water pricing system for Tasmania. The Council understands that the new arrangements are designed to reflect the direct costs attributable to licences, including a standard administration fee to cover licence issue and a variable management fee to cover enforcement, compliance auditing, water quality monitoring etc. Tasmania noted that externalities are not covered in licence fees. Under this new pricing system water licence fees can vary according to the:

- quality of water taken;
- source of water;
- use to which the water is put;
- when the water is taken;
- degree of certainty of the water supply being available; and
- method by which the water is taken.

These arrangements would cover Hydro Tasmania's water licence. Overland flows are not an issue for Tasmania.

The Australian Capital Territory

In the ACT water can only be taken without a licence for domestic, stock and garden uses. Licences are volumetric in that they specify the rate and maximum amount of water that can be taken. All licensed users are required to install a water meter.

Externality charges are included in water charges. The Government has established a 10 cents per kilolitre water abstraction charge that is a proxy for the scarcity value of water and the environmental costs of water use.

The ACT advised the Council that licence fees are set to broadly reflect the cost to the Government of processing the licence. (The ACT noted that the larger the licence volume the greater the amount of analysis needed to ensure its environmental sustainability, and thus the annual licence cost is higher.) The ACT argued that a more rigorous determination of the actual cost of each licence is not warranted given the size of the ACT and the nature of its resource management system.

The Northern Territory

In the Northern Territory a licence is not required to use water for stock and domestic purposes and garden watering. All nonriparian surface water extraction must be licensed. All groundwater extractions exceeding 15 litres

per second in a declared water control district also need to be licensed. Water licences are volumetric.

Currently, groundwater is not priced. However, the *Water Act 2000* requires water allocation plans to ensure that, as far as possible, the full cost of water resource management be recovered through administration and operational charges to licensees. The first water allocation plans are currently in development. The Council understands that the Northern Territory is considering including monitoring costs in the licence conditions for some major water users.

Principles for pricing rural water outside irrigation districts

The CoAG water reform agreements require urban and irrigation water pricing to be set to include:

- operation, maintenance and administration costs;
- taxes and tax equivalent charges;
- an annuity for long term renewal of the assets; and
- environmental and natural resource management costs.

More specifically, the agreements require the inclusion of environment and resource management costs that are attributable to, and incurred by, water businesses. That is, the minimum requirement is for the cost of the environmental requirements on water businesses to be passed on to water users.

Many water users outside irrigation districts extract water directly from the water source and therefore do not buy water from a water business. In these cases the minimum CoAG requirements would mean that such water users would not face any environmental costs. The Council encourages all governments to take a broader view of environmental costs when considering pricing water supplied outside of irrigation districts than the minimum CoAG requirement.[5] Taking a broader view, prices should incorporate two aspects of the cost of water: the cost of delivering water; and the cost of managing the environmental consequences of using water where it is appropriate for these costs to be paid by water users. This approach to pricing generates a number of benefits including those listed below.

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[5] The Council commissioned a paper entitled *Water Reform: Who Pays for the Environment* that proposes a framework that governments could use for deciding which environmental costs should be borne by water users.

- The prices recover sufficient revenue to ensure the long term viability of the infrastructure so that water users no longer need to secure government funding to maintain or restore water infrastructure.

- Water users take account of the costs of delivering water and the costs of managing the environmental consequences of water use when deciding when and how to use water.

- When prices accurately reflect the efficient costs of different sources of water, water users favour water with low delivery and environmental costs over other sources of water where these costs are higher.

- Volumetric prices encourage water conservation and trading excess water so it is applied to its highest value use.

Volumetric pricing should at least reflect situations where either the economic or environmental costs vary significantly with the amount of water use. It is legitimate to take a long run view of these costs. Taking a short run view may lead to large fluctuation in price where costs rise dramatically when the system reaches capacity and new investment is needed, and then fall sharply after that investment is made.

In determining the approach to volumetric pricing it is important to use a consistent framework for calculating prices for competing uses of water. This does not mean that the prices should be the same, rather it requires that the treatment of different classes of costs is the same across all water uses.

Economic costs

Economic costs include infrastructure and delivery costs as well as administration costs. For rural water outside irrigation districts, the different types of cost that are relevant to water pricing will vary significantly between sources and uses of water. Whether in the first instance these costs fall directly on the water supplier or the water user will also vary significantly.

In the case of an irrigation district the irrigation authority supplies much of the water delivery infrastructure and users pay for it through water charges. In other situations water users may be directly responsible for infrastructure and delivery costs. For example, farmers collecting overland flows need to construct and maintain their own dams. Those pumping groundwater need to sink their own bores and purchase and maintain any pumping equipment. As a result the infrastructure and ongoing maintenance costs may not be reflected in the water price although they are directly borne by the water user and taken into account in decisions on how and when to use water.

In situations where all of the delivery costs are borne directly by water users the only outstanding economic costs are the administration costs of issuing, managing and enforcing licences. In these circumstances, unless there are high ongoing maintenance costs on pumping and storage infrastructure, then

the economic costs do not result in water users facing a strong volumetric pricing signal to conserve water.

Environmental costs

The extent of the environmental management costs will vary among regions depending on their location, the level of interruption to the natural flow of the river or groundwater system and the intensity of water use. It is unlikely that these costs would be constrained to a particular irrigation district. They are more likely spread over all water users in the catchment. Therefore, in regions where environmental costs are high for irrigation they are also likely to be high for other users of surface water, ground water or overland flows.

The environmental costs governments often focus on in water pricing are those associated with investment in infrastructure designed to mitigate the environmental impacts of water use and the cost of environmental planning, monitoring and management. They include the costs to water service providers of meeting environmental conditions placed on their operation and, in some States, the cost to water regulators of planning and managing environmental issues.

In circumstances where the economic costs of water are low or vary little with the amount of water used the environmental charge may drive the volumetric component of water pricing. This arises because environmental management costs may increase with the level of water use. Those who use more water are likely to place more pressure on the environment, and hence should face a greater proportion of environmental costs.

As with all costs and standards environmental costs need to be objectively analysed so that there is the right level of regulation and that regulation is delivered efficiently. This is necessary to ensure prices are based on efficient costs.

Licence charges under various scenarios

In determining charges for rural water users outside irrigation districts governments should ensure that there is consistency in the framework used to calculate prices for different uses of water. They need to balance the benefits of accurate charges that provide appropriate signals to water users, with the costs of accurately estimating economic and environmental costs and designing volumetric pricing arrangements. For example, the ACT abstraction charge represents a proxy for environmental costs, rather than a precise quantification of environmental costs for individual users. The situations where it is worthwhile to develop volumetric charges will vary. The following sections provide examples of how the appropriate approach to pricing could vary.

Large water customers providing their own infrastructure

In this case, the economic component of the water price could be very low. The water users would already face the true costs of service delivery through the need to provide their own infrastructure. The only remaining economic costs are administering, monitoring and regulating compliance with the licence. Such costs are unlikely to vary greatly with the volume of water used and, therefore, it is expected that they would be reflected in a fixed licence fee.

The environmental costs associated with many large water users, like mines and power generators such as Hydro Tasmania can be high. In many cases these costs will be reflected through licence conditions that require environmental mitigation work. However, often the costs of environmental mitigation work undertaken by the resource manager or planning and environmental monitoring and management costs should also be reflected in water charges. Where these environmental costs vary with the volume of water used a volumetric charge would be the best way of recovering such costs.

Farmer collecting overland flows in a catchment that also services an irrigation district

Again the farmer is likely to be responsible for most of the economic costs of collecting and storing water. The only remaining economic cost is the administering, monitoring and regulating compliance with the licence. Such costs are unlikely to vary with the volume of water used and, therefore, they should be reflected in a fixed licence fee where overland flows are licensed.

However, in a catchment where the river is regulated, there are several sources of water and, particularly if water use is high, there is likely to be significant environmental management costs. These environmental costs may be manifested downstream, affecting other water users and/or areas of environmental significance.

If environmental costs vary with the amount of water used, reflecting such costs in a volumetric price could be warranted. This is particularly important if environmental management charges are reflected in the volumetric price facing water users within an irrigation district. Otherwise, pricing will encourage water users to build their own storages to collect overland flows rather than to use the existing irrigation infrastructure. One area where this issue has emerged is the St George region in the Condamine-Balonne Basin of Queensland. In order to assess how licence charges for overland flows should be set in a region such as this information is needed on how environmental costs are incorporated into prices for water extracted from all sources and

whether the level of water use affects environmental costs in the region by, for example, significantly reducing the flow of water into the waterway.

Small water user extracting groundwater in an area of low water use

If the water user meets the cost of any bores and pumps then the only remaining economic costs would be the costs of administering, monitoring and regulating compliance with the licence. Again, it is expected that these costs would be reflected in a fixed licence fee.

In areas where water use is low compared with the sustainable yield of the resource, the environmental management costs of water use are likely to be low. In such cases volumetric charges may not be necessary.

In this situation a volumetric price signal is not needed to encourage water conservation. There are no efficiency reasons for constraining water use as long as mechanisms are in place to monitor the water source and identify when the potential for environmental stress begins to rise. Hence, the costs of establishing volumetric pricing are likely to outweigh the benefits.

Irrigation water users in an unregulated catchment where there is a significant level of water use

Again the economic cost of extracting, delivering or storing water is likely to be borne by the irrigator directly. The licence fee would then be expected to reflect the cost of administering, monitoring and enforcing the licence. In this case however there are likely to be environmental management costs associated with water use. The volumetric component in prices should therefore reflect these costs.

Assessing compliance with obligations on pricing water outside irrigation districts

The CoAG agreements require governments to report transparently on the treatment of externalities, including resource management costs, in setting water prices. In the 2004 NCP assessment, which will consider pricing outside irrigation districts, the Council will therefore need to:

- obtain comprehensive information from the States and Territories on their treatment of rural water prices outside the irrigation districts;
- focus on those States and Territories where independent processes to consider rural water pricing outside irrigation districts do not exist;
- look specifically at the arrangements for large water users such as mines, Hydro Tasmania etc; and
- focus on areas where there are high levels of water use and/or where water is extracted from various sources such as where farmers are collecting overland flows in catchments that also serve irrigation districts or where the downstream environmental impacts are high.

The principles applied in setting prices should be consistent with those established by CoAG. Accordingly, the Council expects prices to include, at a minimum, the cost of delivering water and the environmental and resource management costs that are attributable to, and incurred by, water businesses. To meet the transparency requirements set by CoAG, governments will need to report on how they treat other environmental costs when setting prices for rural water outside of irrigation districts.

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