Chapter 7

Economic Instruments

Introduction

7.1 Even after reform in the urban water industry, water is generally said to be underpriced. This is because conventional economics disregards externalities and many of the costs of supplying water. The environmental cost of disposing of used water is generally not calculated nor apparent to water users. In consequence, the market forces that underpin major economic reforms of the past decade, cannot be relied on to encourage the changes needed for water consumption or use of alternative water sources.

Factoring in externalities

7.2 Water users are generally not charged for the water resource itself, but only the infrastructure costs of pipes and pumps as well as the costs of water treatment:[1]

> The current cost analysis for providing potable water supplies to cities, only considers infrastructure and distribution costs, maintenance and capital costs. The water resource itself is considered to have no value. The change of the flow regimes for the water resource and how it effects the receiving environment is not costed. The pollution input to the water resource, by storm runoff and sewage discharge, is not costed.[2]

7.3 When we harvest water; use waterways for waste transport; turn a wetland into an urban development; cause greater runoff of stormwater or dump effluent in the ocean, the costs are not recorded in the urban water management balance sheet. These costs are generally referred to as 'externalities'.

7.4 There may be costs to fishing and tourism, and cost shifting to future generations by, for example, increased future water treatment costs resulting from degraded catchments.

7.5 Past practices of separately managing the various water grades has meant that the economics of the system have been inefficient, and the economic values placed on the different grades has been flawed.[3] As the Stormwater Industry Association points out:

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1 Mr Rose, *Proof Committee Hansard*, Melbourne, 23 April 2002, p 332.

2 Stormwater Industry Association, Submission 37.

3 Stormwater Industry Association, Submission 37.

> unless one views 'stormwater' within the dynamics of the total water cycle, it is not possible to understand the economic and sustainable management of urban stormwater in our catchments. Stormwater is just one grade of water available to the community, and must rank in economic value with all the others. The value ranking is determined by economics, which is lead by the value of first quality potable water, with the lowest value being given to blackwater (sewage).[4]

7.6 Healthy ecosystems provide a vital 'service' in purifying water and absorbing waste.

7.7 These services are not acknowledged by our cost structures nor adequately recognised in economic markets, government policy and land management practices which can lead to their decline. Typically ecosystem 'services' are not rewarded for the benefits they provide, while those who deplete ecosystem services do not bear the costs.[5]

7.8 A number of witnesses pointed out the difficulties in including externalities in costs:

> If you look at externalities, you would have to say, 'Well, what impact has your water system had on the surrounding water regime by withdrawing water and interfering with rivers? What effect does your water system have on the environment with what you do with by-products and the waste water that you have produced?' Valuing those externalities is very difficult. There is work being done, but it is pretty intangible.[6]

7.9 The CSIRO is currently undertaking a major research program into ecosystem services with a collaborative natural resource management project between five CSIRO divisions and a number of other partners. The project's ultimate aim is for scientists and communities to learn together about how to deliver the right information to policy developers and decision-makers so as to move towards more sustainable land management practices.[7]

Implications of externalities

7.10 If the true costs of supplying and disposing of water were taken into consideration, improved management of urban water could occur as alternatives would become more feasible:

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4 Stormwater Industry Association, Submission 37.

5 G Murtough, B Aretine, and A Matysek, *Creating Markets for Ecosystem Services*, Productivity Commission Staff Research paper, AusInfo, Canberra.

6 Mr Davis, *Proof Committee Hansard*, Sydney, 18 April 2002, p 225.

7 Ecosystems Services project site, at: http://www.ecosystemservicesproject.org/html/aboutus/index.htm

> There has been a school of thought that the cost of water should include all the costs of supplying the water right through to final release to the environment, and that the cost should encapsulate all those costs rather than just the cost of supplying to a house. The belief is that if you did that, you would be able to see what the real benefits were of recycling and it would fall out of the equation. It is not really done that way in costing, but it would be something worth looking at. Some schemes fall down because, in isolation, they do not look economic as a recycling scheme. However, when you take into account the whole water cycle it becomes quite an attractive proposition.[8]

7.11 In the WRAMS project referred to in Chapter 3, the reuse of effluent is not justifiable on a strict economic basis. However, its cost disadvantage over conventional infrastructure is significantly lessened if the true cost of environmental externalities is taken into account. Despite reducing demand for potable water by over 50 per cent, reducing sewage discharge by 850 megalitres per year and stormwater pollution by 70 to 90 per cent, the WRAMS scheme cannot compete because Sydney Water is able to dump sewage into the ocean free of charge.

7.12 According to the Stormwater Industry Association, if water were given a true economic value, we could better understand and manage the total water cycle and approach a system equilibrium, which would be sustainable.[9]

7.13 Price increases will also increase the feasibility of other technologies:

> The impact of increasing the potable price of water means that in most Australian cities, wastewater re-cycling can immediately become an economic reality. With large volume water users quickly moving to a cheaper alternative supply source (both sewer mining and stormwater re-use) the volume of water processed at the sewage treatment plants reduces. This reduces or eliminates the impact of sewage overflows, reduces the cost of treatment and eliminates the need to amplify the main trunk sewers. It reduces the impact of secondary and tertiary treated sewer discharges to our rivers and ocean. It also opens up the commercialisation of sewage treatment, because private enterprise can tap into an economic resource, and hence sell both the water and the sludge. Private enterprise should be allowed to compete with utilities, to give a competitive return for the consumer.[10]

Costs of rainwater tanks

7.14 Chapter 4 examines the benefits of using rainwater in urban areas however, once the cost of the tank, pump and installation are calculated against a reasonable pay-back period, tank water is much more costly than reticulated water.

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8 Mr Lehmann, *Proof Committee Hansard*, Sydney, 18 April 2002, p 227.

9 Stormwater Industry Association, Submission 37.

10 Mr McRae, *Proof Committee Hansard*, Sydney, 18 April 2002, p 226.

7.15 Professor Mein points out though, that analyses showing rainwater tanks to be uneconomic are simplistic because they do not consider the additional benefits upstream from reduced loads on the water supply system and downstream from reduced amounts of stormwater run-off.[11] This point was also made by Councillor Ferrara from the Western Sydney Regional Organisation of Councils:

> rainwater tanks not only reduce the input of water required to a property—and if pricing was an issue that, as previous speakers have mentioned, might make that more of an incentive to the individual owner—but also local council areas are discovering that, apart from not having to build another dam, for instance, up in the Hunter Valley to provide extra water for new urban development, by using rainwater they also made an estimated saving of over 50 per cent in their stormwater run-off. That means that there is a double saving: there is a saving on the input side and a saving on the output side.[12]

7.16 State government subsidies provided for reticulated water infrastructure are generally not taken into account when comparing costs.[13]

7.17 The Australian Water Association told the Committee:

> we looked at a project in Queensland, just south of Brisbane, where the use of rainwater tanks was, in fact, economic because there was such a shortage of water. It got the development over the line, which would not have happened without the use of rainwater tanks. We looked at it from the total project point of view—the cost of water and sewerage together—and it did come out as a good solution. Sometimes I think things get dropped because they are only looked at as a water project or a sewerage project. When studies are done, they really need to look at the total water cycle in evaluating costs. That is one of the problems.[14]

7.18 The cost for rainwater supply (annualised capital and ongoing costs) is in the order of $2 to $6 per kilolitre. Although this is more than the present price of residential mains water, it is lower than the cost for bottled water. Furthermore the running costs for rainwater tank systems can be very low: the University of Newcastle, for example, has reported that the running cost of rainwater tank systems is 2 to 6 cents per kL.[15]

7.19 The size and (therefore the cost) of an integrated rainwater tank varies widely across Australia and must be calculated on the basis of rainfall distribution. The Alternative Technology Association suggests that a 20 kilolitre water tank will adequately supply the water needs of a family of four in Sydney and that around

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11 Prof Mein, *Proof Committee Hansard*, Melbourne, 23 April 2002, p 274.

12 Cr Ferrara, *Proof Committee Hansard*, Sydney, 18 April 2002, p 241.

13 Mr Woolley, *Committee Hansard*, Brisbane, 4 April 2002, p 13.

14 Mr Lehmann, *Proof Committee Hansard*, Sydney, 18 April 2002, p 227.

15 Government of South Australia, *Submission 51*, p 24.

Australia the range will be from 10 to 50 kilolitres. These tanks sizes cost between $2,000 and $5,000 installed.[16]

7.20 A part solution to the high cost of tanks is to develop standardised, 'all-inclusive' systems that encompass treatment, storage and use components for rainwater tanks, which helps to reduce unit costs. A collaborative partnership between Government, manufacturers and researchers would improve the profile of rainwater tanks and encourage development of complete rainwater tank systems.[17]

7.21 The Alternative Technology Association says that:[18]

> Preliminary cost estimates for [an] integrated rainwater tank arrangement … demonstrate a payback period of less than 10 years. …
>
> However, the full cost benefits of an integrated rainwater tank … will not be realized until water utilities and property developers are willing to offer discounts for reduced disposal and supply charges to those households with water tanks. Discounts should be: 33 per cent reduction in stormwater runoff and related infrastructure; 50 per cent reduction in peak sewer flows and related infrastructure; 75 per cent reduction in reticulated and transfer pipe sizes; 100 per cent reduction in minor service reservoirs; 50 to 74 per cent (average Melbourne figures) reduction in major dam costs; and 50 to 74 per cent (average Melbourne figures) reduction in water consumed from the reticulated system.

7.22 The Queensland Government's 'Local Governing Bodies' Capital Works Subsidy Scheme provides funds for local government to offer a rebate program for rainwater tanks provided it can be clearly demonstrated that they will result in the deferral of capital works and provided they are part of an overall water management approach.[19]

7.23 Many local councils and water authorities are encouraging the use of rainwater tanks by offering rebates and incentives to encourage residents to instal them. Some examples include:

- Brisbane City Council is offering a $500 cash back rebate for the first 1,000 residents who have purchased and installed tanks from 1 July 2002. Additionally it will waive Council approval fees that relate directly to rainwater tanks;[20]

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16 Alternative Technology Association, Renew, Oct-Dec 2002.

17 Government of South Australia, *Submission 51*, p 25.

18 Alternative Technology Association, *ReNew*, Issue 81, October –December, 2000, p 61.

19 Queensland Water Recycling Strategy October 2001.

20 Brisbane City Council site, at: http://www.brisbane.qld.gov.au/home_garden/water_sewerage/rainwater_tanks/index.shtml

- Sydney Water is offering a $150 rebate for tanks between 2,000 and 3,999 litres in capacity; $400 between 4,000 and 6,999 litres; and $500 for tanks greater than 7,000 litres. If a toilet and/or washing machine is connected to the tank, Sydney Water will refund an additional $150;[21]
- ActewAGL in Canberra offers a rebate of between $200 and $500 depending on the tank's size;[22] and
- Barwon Water in regional Victoria offers 12 month interest free terms on the purchase of tanks.[23]

Pricing

7.24 The COAG water reforms resulted in a two-part water supply tariff in all states except Tasmania.

7.25 For two part tariffs to be charged, water meters were installed and these allow water users to be charged on the basis of consumption. Meters give water managers the capacity to manage demand by raising the price of water.

7.26 The cost of 200 kilolitres[24] of water (including the fixed annual charge) in capital cities currently ranges between $191.80 and $264.00 a year, with an average cost of about $230.19.[25] Several witnesses point out that there are not many products that will be delivered to the household so cheaply.[26]

7.27 In spite of the difficulty in finding up-to-date comparative figures, it would appear that potable water in Australia is cheaper than in many other countries, as can be seen in the following table:

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21 Sydney Water site, at: http://www.sydneywater.com.au/html/wcr/garden/rainwater_tanks_rebates.cfm

22 ActewAGL site, at: http://www.actewagl.com.au/environment/rainwater.cfm

23 Barwon Water site, at: http://www.barwonwater.vic.gov.au/index.cfm?h2o=customer.marketing.outside.tanks

24 Because water suppliers impose different fixed and variable charges, the cost of 200 kilolitres of water is used to enable comparisons to be made between various suppliers. 1 kilolitre = 1,000 litres. Water practitioners also refer to a tonne or a cubic metre of water.

25 Costs in place as at 1 July 2002 taken from capital city water authorities web sites:

http://www.actewagl.com.au; http://www.brisbane.qld.gov.au; http://www.citywestwater.com.au; http://www.nt.gov.au/powerwater; http://www.sawater.com.au; http://www.sewl.com.au; http://sydneywater.com.au; http://www.watercorporation.com.au/; and http://www.yvw.com.au

26 *See* for example Mr Willett, *Proof Committee Hansard*, Melbourne, 23 April 2002, p 292.

Table 1

Household tariffs[27]

Country	Year	US$
Czech Republic	1997	-0.68
Korea	1996	0.34
Canada	1994	0.70
Hungary	1997	0.82
Italy	1996	0.84
Luxembourg	1994	1.01
Austria	1997	1.05
Spain	1994	1.07
Greece	1995	1.14
US	1997	1.25
Switzerland	1996	1.29
Scotland	1997-98	1.44
Turkey	1998	1.51
Australia	**1996-97**	**1.64**
Germany	1997	1.69
Brussels	1997	2.06
Japan	1996	2.10
Wallonia	1997	2.14
Flanders	1997	2.36
Sweden	1998	2.60
Finland	1998	2.76
France	1996	3.11
Eng&Wales	1998-99	3.11
Netherlands	1998	3.16
Denmark	1995	3.18
	Average price	*1.67*

Notes to table 1:

- Practices in countries vary considerably in terms of the costs that are included in these tariffs. For example, charges occasionally reflect some of the costs of connecting a property to the public water supply or sewerage system. Also, rainwater collection, treatment and disposal costs are frequently, but not invariably, included in sewerage and sewage treatment charges.

- Water abstraction and discharge charges, as well as other water levies, are reflected in tariffs.

27 OECD, *Household Water Pricing in OECD Countries*, Working Party on Economic and Environmental Policy Integration, May 1999, p 38.

- The Japanese consumption tax (5%) is also included; but VAT is excluded.
- High inflation rates in some countries (eg Turkey, Hungary and the Czech Republic) reduce the precision of cross-country price comparison.

7.28 Using price as a tool to encourage conservation is more complicated for water than for other products because firstly water is a fundamental necessity of life (and some even argue that for this reason, it should be free) and secondly it is low as a proportion of total household expenditure and only a significant increase would likely have a long-lasting effect on behaviour.

7.29 One of the clearest messages from this inquiry is that reticulated water is underpriced and funding for better water management practice and new technology is not readily available.

7.30 The low price of water is an impediment to recycling and utilising stormwater, it does not discourage wastage nor encourage the take-up of water efficient devices and it does not reflect the vulnerability and variability of supply:

> We live in a highly variable and unpredictable climate but this is not reflected in the way water is supplied to us. We must understand about the NEED to better manage our water – we scarcely receive any indication that water is scarce. It is very cheap (1 kilolitre – 2,333 stubbies – of reticulated water sells for approximately $1, whereas 1 kilolitre of bottled water sells for $1,000) and restrictions on its use in times of drought are rare and politically resisted.[28]

7.31 In Western Australia which is experiencing a prolonged drought, the Water Corporation concurred:

> Yes, we do think that water is undervalued. With the current range of pricing, we do not see very much evidence at all of there being any economic dampening of water use, and that is partly relating perhaps to the billing cycle as well.[29]

7.32 Mr Davis from the Australian Water Association suggests that the price of water should be $2 or $3 a kilolitre instead of the current average of around $1 a kilolitre: an amount that would send a much better demand signal to the consumer:

> So there is a thought in the industry that water on the retail market should be somewhere around $2 or $3 a cubic metre to really make people think before they squander it on the driveway or in long showers.[30]

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28 Sunshine Coast Environment Council, *Submission 17*, p 4. [emphasis in original]

29 Dr Humphries, *Proof Committee Hansard*, Perth, 29 April 2002, p 418.

30 Mr Davis, *Proof Committee Hansard*, Sydney, 18 April 2002, p 218.

7.33 The Stormwater Industry Association suggests that even if the price of water were raised by as little as 10 per cent, this would be enough to allow alternative supplies such as recycled effluent to become more feasible:

> One of the problems is that we have new technologies and we have new approaches to treat and manage our good quality waters and recycling our grey waters and stormwater. It is absolutely marginal at around 90-odd cents a kilolitre in our major cities for that water to be treated. But we are very close to reaching a point where the economic balance will be tipped. All we are saying is that a small change—and we believe 10 per cent is probably not insignificant—will tip that balance. If industry in particular or large water users have to pay, say, a dollar for their potable supply and if they have to use large volumes of water which do not require potable water treatment, these people would find immediately that it would be much better to use recycled water.[31]

Awareness

7.34 Dr Essery told the Committee that water usage in non-metropolitan urban areas had dropped without significant price rises and this could be attributed to a greater understanding of the issues of water shortages in those areas:

> I am not saying that price is not the main driver, but a lot of people, particularly economists, will think price is the key driver. I would reiterate that the reason is that the [non-metropolitan] community is more aware, they are closer to their decision making, they can grab the Mayor in the local pub and they can actually express themselves and complain about particular things. That is one simple thing. But, in reality, they are closer to understanding the issues of shortage. They are closer to understanding the impact because they are closer—they do not have an outfall that discharges it somewhere 80 metres deep offshore; they know the impact downstream, they know the impact a discharge will have on a local swimming hole. So that awareness is one of the reasons. Awareness and scarcity are more important drivers. Equally, there has been a certain degree of better understanding of the system because they have had to start with a septic tank and a rain tank and then moved on to a luxurious water supply and an effluent reticulation system, so they actually have experience of the practical realities of water and effluent.[32]

7.35 The Government of South Australia notes that past practices in developing major potable water supply infrastructure have given many urban communities a perception that there is an over-abundance of high quality water and that water is freely available from year to year and season to season. Despite public awareness campaigns, and water use statements in mail-outs, most home owners continue to have little concept of how much water they use, how much they use in comparison with

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31 Mr Wood, *Proof Committee Hansard*, Sydney, 18 April 2002, p 156.

32 Dr Essery, *Proof Committee Hansard*, Sydney, 18 April 2002, p 189.

other water users in 'similar' circumstances, or how much they should be using to water efficiently.[33]

7.36 Mr Woolley from the Brisbane City Council also points out that:

> In some jurisdictions we are running into the wealth syndrome, which means—I have seen it happen—that people do not care about the cost of water or whether a dam is running out; they will just use it. You see the same in motor vehicles: we know that oils cannot go on for hundreds of years, and what do people do? They go out and buy a 5.7- litre Commodore just for fun. The wealth syndrome in this community is a real barrier, and that is where I see the cost leverage is probably quite important—but also the psychological change that rainwater tanks can bring.[34]

7.37 Mr Harvey from VicWater is more optimistic that people's perceptions are changing. He told the Committee:

> I would not underplay the benefits of education and the willingness of the public to change the way in which they deal with things. Water consumption is price sensitive to a point but also the value of water and the need to conserve water is increasingly in people's minds. The figures for metropolitan Melbourne were that, up to five or six years ago, water usage per capita was increasing at about three per cent per annum. Since we have introduced volume charging, but also since we have done a lot of work in terms of education, that is now increasing at about one per cent per annum. So the rate of increase has declined and that demonstrates that we can make a difference.[35]

7.38 In general, it is said that users in the large cities do not value water as highly as people living in rural areas perhaps because there is a more acute awareness of the risk of water shortages in communities economically dependent on natural cycles.

7.39 Installing rainwater tanks in urban areas could change those perceptions. Mr Woolley observed:

> The other thing that rainwater tanks do … is change your mind structure as to how you treat water. Jenifer Simpson's comments about education and changing people's mindsets about water are extremely important. Right now, I do not think we value water.[36]

7.40 Dr Fleming suggests:

> There is also a need to change people's perceptions of risk, so that the benefits of a slightly lower security of water supply can be explored. Many

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33 Government of South Australia, *Submission 51*, p 23.

34 Mr Woolley, *Committee Hansard*, Brisbane, 4 April 2002, p 608.

35 Mr Harvey, *Proof Committee Hansard*, Melbourne, 23 April 2002, p 285.

36 Mr Woolley, *Committee Hansard*, Brisbane, 4 April 2002, p 608.

> Australian cities have a remarkably high security of supply when compared to other cities around the world. Accepting a *slightly* lower level of risk, and conveying that risk to consumers, provides the basis for more informed decisions by consumers about how they will manage that risk. It is likely to serve as a driver for change, leading people to adopt more efficient water use practices, and to value water more highly. It will also provide substantial economic benefits through lower operating costs and deferral of infrastructure augmentation.[37]

Solutions

7.41 Options for increasing the cost of water to take account of externalities include setting a charge for resource extraction; raising the price of water; applying charges for water that provide greater incentives for conservation; varying rates regimes and charges for development; and using the taxation system to implement more sustainable water management.

Charging for resource extraction

7.42 State governments could charge a royalty on water which would be passed on to consumers. Dr Humphries from the Water Corporation of Western Australia remarked:

> If there were, effectively, a royalty for bulk water out of the environment which then simply got factored into the water charging for billing, reticulation, asset replacement and all those sorts of things, it would not be particularly difficult; it would just cause a stepped jump in people's costs. It would probably be quite a good mechanism for the state to get the revenue it wanted for other purposes. There is underfunding of water resource management in this state, and nationally there is no doubt about that; the national land and water auditors recorded extremely strongly that there was insufficient monitoring and insufficient exploration of new sources and so on. I think it is a major national issue and it has happened here too.[38]

7.43 The Stormwater Industry Association also called for a natural water resource charge on potable water, calculated by independent arbitration, using financial modelling that takes into account externalities. All funds collected would be directed to the stormwater manager (that is: local government, utility or stormwater/catchment authority) for catchment maintenance and repair. Additionally, an independent catchment authority would coordinate stormwater works, funding and distribution, so that the nexus between the utilities' vested interests and the local government urban development approval authority is broken.[39]

7.44 In some parts of Australia, this is beginning to happen.

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37 Dr Nicholas Fleming, *Submission 8*, p 8.

38 Dr Humphries, *Proof Committee Hansard*, Perth, 29 April 2002, p 429.

39 Stormwater Industry Association, *Submission 37*.

7.45 According to the National Competition Council, in New South Wales natural resource management costs are included under the Independent Pricing and Regulatory Pricing Tribunal process of setting water prices in the urban area. However, more work is needed to quantify what the level of costs is and to build them into full cost recovery. The National Competition Council is currently undertaking that work and told the Committee that fully accounting for externalities in urban pricing represents the next stage in urban water reform.[40]

7.46 The Committee also notes that the ACT has introduced such a charge for water abstraction:

> A water abstraction charge on all water use has also been implemented, which ensures that all costs of water supply and use are faced by consumers. This charge covers catchment management costs, a component to reflect scarcity of water and a component for environmental costs.[41]

7.47 Prior to the introduction of the charge, the cost of water abstraction and the catchment management costs were being absorbed by government.[42] When the amount was determined, it was based on the price at which water was trading in the Murray-Darling Basin and is currently 10 cents per kilolitre.[43] However, because the ACT draws high quality raw water from protected catchments, its treatment costs are low, and even with an abstraction charge, the water prices in the ACT are among the lowest of the capital cities.

Price increases

7.48 The most obvious solution to the underpricing of water is to increase retail water charges. While the COAG water reforms are supposed to be based on full cost recovery including externality costs, the underfunding of infrastructure upgrades, improving reuse opportunities, and better managing stormwater with water sensitive urban design, would suggest they are not.

7.49 Revenue collected by increased prices could be invested in environmental improvements or demand management to send a signal to consumers that water should not be wasted.[44]

Elasticity issues

7.50 The relationship between changes in price that result in changes in consumption, is referred to as price elasticity. If a large percentage rise in the price of

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40 Mr Swan, *Proof Committee Hansard,* Melbourne, 23 April 2002, p 296.

41 Ms Fowler, *Proof Committee Hansard,* Canberra, 23 May 2002, p 547.

42 Mr Robertson, *Proof Committee Hansard,* Canberra, 23 May 2002, p 554.

43 ACTEW website at: http://www.actewagl.com.au/water/network/charges.cfm

44 Mr Davis, *Proof Committee Hansard,* Sydney, 18 April 2002, pp 225-226.

a product does not produce a comparable reduction in consumption, the relationship is said to be 'inelastic':

> The only other issue which must be flagged is price elasticity – that is the expected decrease in water consumption from a given price increase. Various studies have attempted to estimate this relationship and have concluded that it is inelastic – that is a given percentage price increase will result in a somewhat smaller percentage decrease in water consumed.[45]

7.51 Melbourne Water has studied water price elasticity and found:

> Although [the studies] are old, I still think the study that was done in Melbourne, which was a contingent evaluation study, is probably one of the better ones. We were able to show there that there is a range of prices over which people will respond. At the time, if I recall correctly, the range was somewhere between 50c per kilolitre and $1 per kilolitre—which might translate today to something like 75c to $1.50—where people really do have opportunities to respond to price signals. Beyond that, there are few things that can be done. Price becomes inelastic beyond that point. I think that makes sense.[46]

7.52 The industry notes the phenomenon of 'bounce back'. According to Mr Woolley from Brisbane City Council, when two-part tariffs were introduced, consumption levels dropped by 30 per cent within one to two years. However, subsequent consumption patterns five to six years later, began to drift back to the initial levels.[47] This may be attributed to the overall cheapness of water relative to other household costs.

Equity issues

7.53 The Public Interest Advocacy Centre says water prices should not be increased to achieve lower water consumption, arguing that price increases are crude devices that often fail to deliver their stated goals while damaging the interests of the most vulnerable in the community.[48] Furthermore, price increases may have little impact on the water consumption levels of those on higher incomes.

7.54 The social equity issues were raised by a number of witnesses but the general conclusions were that other essential services are subsidised for people on low incomes and water could be added to these.[49] Holders of Health Care, Pensioner Concession, Gold Repatriation TPI and War Widows cards in Victoria are already

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45 Water Services Association of Australia, *Submission 55*, p 11.

46 Mr Rose, *Proof Committee Hansard*, Melbourne, 23 April 2002, p 333.

47 Mr Woolley, *Committee Hansard*, Brisbane, 4 April 2002, p 596.

48 Public Interest Advocacy Centre, *Submission 10*, p 3.

49 Mr Davis, *Proof Committee Hansard*, Sydney, 18 April 2002, pp 225-226; *and* Mr Bartley, *Proof Committee Hansard*, Melbourne, 23 April 2002, p 318.

entitled to claim a 50 per cent concession on water usage charges up to a maximum of $67.50 a year and the same applies to sewage disposal charges.

7.55 The water reform framework supports concessions to community groups, pensioners and those in rural or remote communities, and governments continue to provide substantial assistance to these groups. The framework aims to make this assistance transparent with clearly defined and separately funded Community Service Obligations.[50]

7.56 Councillor Johnstone advocated a mechanism similar to a step tariff:

> I suppose a sensible point would be for there to be an amount of water at an affordable price that is broadly accessible and that, over and above that, the price accelerates rapidly.[51]

7.57 Stepped tariffs could be based on a calculation of the average basic water needs of a household and consumption beyond this level be charged at progressively higher rates.

7.58 The Australian Conservation Foundation however, cautions that the mechanisms required to ensure that low income families and large families are not penalised may mean that the social and economic downsides of this approach outweigh the positives in water conservation terms.[52]

Smarter water charging systems

7.59 The proportions of fixed and volumetric charges vary across water providers. However, a common feature of two-part pricing has been an increased reliance on the volumetric component in an effort to reduce demand and this adjustment can be made revenue neutral.[53]

7.60 Mr Rose from Melbourne Water noted that there would be impacts for various groups of customers that would need to be considered and addressed, but from a revenue point of view it is possible to increase the volumetric charge as a percentage of the total charge without putting too much of the revenue of the business at risk.[54]

7.61 Melbourne Water told the Committee that in relation to two-part pricing:

> the variable charge is based on forward-looking costs, so it reflects the additional costs that we will incur in meeting future demand growth. We

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50 National Competition Council, Second Tranche Assessment of Governments' Progress with Implementing National Competition Policy and Related Reforms, Volume Two: Water Reform, 30 June 1999, p 268.

51 Cr Johnstone, *Proof Committee Hansard*, Melbourne, 23 April 2002, p 358.

52 Australian Conservation Foundation, *Submission 68*, p 11.

53 Water Services Association of Australia, *Submission 55*, p 10.

54 *Proof Committee Hansard*, Melbourne, 23 April 2002, pp 323-324

> are only recovering what we have spent; we are not recovering what we have not spent. But what we try to do in the pricing structure is to reflect future costs, and the increasing costs incurred by growth in demand, to give a proper signal around the impacts of increased water consumption. That is the theoretical basis for a two-part tariff.[55]

7.62 The Australian Conservation Foundation strongly supports replacement of two-part tariffs with a single volumetric water and infrastructure tariff where this is applicable. Price signals to consumers would be more direct in that reductions (or increases) in water consumption would have a marked impact on bills overall. The ACF argues that while the task of averaging revenue may be difficult it is not impossible, and should be seen as a normal risk of doing business.[56]

7.63 Some water companies use step tariffs where successive blocks of water consumption are charged at higher prices. ActewAGL, in the ACT, attributes its step tariff, introduced in 1993 as being the most significant contributor to reducing water consumption, and to date this reduction has been maintained at 20 per cent below 1993 levels.[57] The ACT charges a low rate for the first 200 kilolitres of water and above this level the rate more than doubles. The volume of water that attracts the lower charge has been gradually reduced by about 25 kilolitres per annum for a number of years. Given current technology, the ACT expects 175 kilolitres per annum to be a reasonable consumption level for residential use and once this threshold is reached, it anticipates that the annual reductions will cease.[58]

7.64 SAWater employs the same approach but has set its first block of water consumption at 125 kilolitres. The Water Corporation of Western Australia has six steps in its tariff structure.

Seasonal pricing

7.65 Because the bulk of water consumption at the residential level occurs outside of the house and is somewhat discretionary, there is scope to influence that level of use through seasonal charging. Prices can be increased during periods of low rainfall and high consumption, and the higher charges could be offset by lower charges in other seasons for revenue neutrality.

7.66 Seasonal pricing is supported by Mrs Simpson:

> We should be possibly thinking about putting the price of water up in dry periods so we get a feeling that we have some times when water is abundant

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55 Mr Rose, *Proof Committee Hansard*, Melbourne, 23 April 2002, p 332.

56 Australian Conservation Foundation, *Submission 68*, p 11.

57 Mr Dymke, *Proof Committee Hansard*, Canberra, 23 May 2002, p 553; *and* Ms Fowler, *Proof Committee Hansard*, Canberra, 23 May 2002, p 547.

58 Mr Robertson, *Proof Committee Hansard*, Canberra, 23 May 2002, p 554.

> and relatively cheap, and other times when it is not and we need to be careful.[59]

Billing systems

7.67 Research undertaken in South Australia shows that consumption patterns are linked to the receipt of water bills.[60] When water usage was mapped in relation to the billing cycle, lower consumption followed the receipt of 'excess' water bills. The majority of water suppliers send bills four times a year. It is argued that consumption levels in Western Australia where bills are sent twice yearly, could be reduced by more regular billing.

7.68 A shorter billing cycle provides an additional tool for demand management, although the additional costs involved in reading meters and processing bills may deter some utilities from this approach.

7.69 Other methods of billing may also affect consumption. For example, in South Africa people prepay their water. The Committee was told that this method of billing reduced consumption by approximately 40 per cent.[61]

7.70 With greater knowledge of consumer behaviour, billing systems could be made more sophisticated to enable customers to select a plan that better reflects their usage patterns and creates a discipline to stick to that plan, in a similar way to mobile phone plans.

Stormwater charges

7.71 In its Land and Water Research Position Paper 1 which is one of a series of studies on Water Resources of ARMCANZ, the CSIRO suggests that:

> There should be reform of existing drainage rating systems, which should be replaced by charges on households and organisations which more accurately reflect the costs of planned stormwater management programs …
>
> More attention should be given to the design of polluter-pays systems under which the owners of urban stormwater systems should pay state governments according to the level of pollution discharged to receiving waters.[62]

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59 Mrs Simpson, *Proof Committee Hansard*, Brisbane, 4 April 2002, p 128.

60 Mr Daniell, *Proof Committee Hansard*, Adelaide, 30 April 2002, pp 504-505.

61 Committee briefing, CSIRO, Canberra, 8 August 2001.

62 JF Thomas, J Gomboso, JE Oliver, and VA Ritchie, Wastewater Re-use, Stormwater Management, and the National Water Reform Agenda, CSIRO Land and Water Research Position Paper 1, 1997, Reprot to the Sustainable Land and Water Resrouces Management Committee and to the Council of Australian Governments National Water Reform Task Force, at:
http://www.clw.csiro.au/publications/position/rpp1.pdf

7.72 The cost of maintaining current stormwater serviceability in Sydney is more than $300M per year and another related cost is that of road maintenance.

7.73 According to the Stormwater Industry Association,[63] the dominant reason for road maintenance expenditure is stormwater impact on pavements and roads. The vast majority of stormwater is discharged directly to road gutter systems for collection in pits. The lifecycle damage of streets from current stormwater practices is estimated to cost NSW over $500M per year.[64]

7.74 The Stormwater Industry Association points out that the real problem with stormwater asset management, is the lack of funding. The prioritisation of funding for infrastructure repair and maintenance is generally driven by a reactive response, and not strategic planning. Furthermore, funding for maintenance under the current system is not necessarily transparent and can be driven by political and socio-economic considerations, meaning that resources are not necessarily spent to best effect.

7.75 The Stormwater Industry Association says there are currently a number of methods adopted in different states and cities to fund urban stormwater infrastructure and management.[65] Generally however, stormwater charges do not take into account the area of the allotment, or the extent of the impervious surfaces on it. Such factors will largely determine how much stormwater flows from allotments and the extent of the pollution that may be swept from or intercepted on the site.

7.76 Currently, funding methods include:

- an annual levy charged by the authority/utility, often by way of a 'drainage charge' on the utility water supply and sewage rate notice to each landholder;
- local government levies for drainage services, charged as a flat fee or as a percentage of the property valuation;
- an annual fee per allotment, paid to a separate trust or commission to coordinate and carry out stormwater works;
- state government allocations or grants, drawn from consolidated revenue;
- developer levies; charges levied by local government on new development, to fund drainage infrastructure;
- subsidised funding allocated by authorities from revenue sources unrelated to drainage;
- statutory requirements placed on public and private infrastructure and service industries (main roads, railways etc); and
- federal government grants for special works or programs.

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63 Stormwater Industry Association, *Submission 37*.

64 Stormwater Industry Association, *Submission 37*.

65 Stormwater Industry Association, *Submission 37*.

7.77 As can be seen from this list there is presently no relationship between land use and drainage costs. Current charges do not provide any incentive for responsible and sustainable water management. Where fixed charges are levied, the small allotment pays the same rates as the large, and the allotment with high impervious surfaces generating maximum and polluted discharges pays the same as a landscaped pervious lot with minimum or nil stormwater discharge.

7.78 The Stormwater Industry Association argues that rates regimes could be based on impervious surfaces and resulting stormwater loads using the following information:

- the zoning for use: the activity can be rated for potential pollution generation;
- land area: generally this is already calculated or shown on current rate notices; and
- impervious surface areas: these can be taken from geographic information systems (GIS) generated mapping.

7.79 GIS mapping has been completed for Auckland, New Zealand through a series of aerial flights. Mr Boyden from the Stormwater Industry Association explained the value of these maps as follows:

> They can nominate an area, point to it and tell you exactly what impervious area is on that site. Relatively speaking it might cost, say, $150,000 but that is so cheap for a city that it is just not worth not considering. In terms of being able to manage impervious areas, with this system—let us say the Ku-Ring-Gai Council in Sydney has a 60 per cent site cover—it could tell whether it was 62 or 63 per cent without going within two kilometres of the site. So it is a way of managing, certainly from an external point of view. I know it tends to be Big Brotherish but that same information would also be extremely useful from an engineering point of view because impervious area does give a very good indication of the quantum of available water, be it water to be discharged to the street or water to be reused. So that particular system is currently available.[66]

7.80 Mr Bulstrode from the Water Corporation of Western Australia noted the difficulty in getting public support for reform of stormwater charges:

> Whereas we have a very good pricing structure for water and wastewater, that same pricing structure cannot be transferred to drainage in quite the same way, particularly as the community do not see themselves getting a service like the one they get when they turn on their tap and water comes out of the sink.[67]

7.81 However, the township of Dubbo did support funding to improve water management:

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66 Mr Boyden, *Proof Committee Hansard*, Sydney, 18 April 2002, p 168.

67 Mr Bulstrode, *Proof Committee Hansard*, Perth, 29 April 2002, p 426.

> They went from a $50,000 allocation for stormwater management to $500,000 in one year because people—if you explain it to them, if they see the reasoning behind it, and it is local so that they can see the investment—have no real problem in paying for it.[68]

7.82 As previously mentioned, the introduction of the Mosman Municipal Council Community Environmental Contract provides another example of ratepayers supporting a levy for improved environmental works.

Development charges

7.83 Charges are levied on developers, usually by local councils, as a contribution towards the cost of providing water or sewerage systems to the area being developed.

7.84 The Planning Institute of Australia (PIA) advocated that these charges more accurately reflect infrastructure costs, and that a rebate be provided for water sensitive design based on reductions in stormwater infrastructure costs that result:

> a developer who simply wants to take from a tap and send down a drain would pay the calculable proportion of the cost that that creates, and a developer who either does not want to take from the tap, or wants to send less down the drain and can accommodate it on-site somehow, would be freed up from those charges. Maybe there is a pricing mechanism that can work. Development charges apply to all developments now, so they can be tweaked one way or another. The mechanism already exists.[69]

7.85 The PIA says planners and urban developers should assess water inputs and outputs and apply headworks charges that are realistic.[70]

7.86 The Australian Conservation Foundation argues that it is possible to move further towards full cost recovery and eliminate cross-subsidies and that this could result in more creative on-site water supply and/or augmentation initiatives. This same principle would also apply to sewerage, encouraging more localised treatment and reuse.[71]

Taxation

7.87 Governments may also use taxes and levies to improve water management. The South Australia Select Committee on the Murray River recommended in July 2001 that:

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68 Mr Boyden, *Proof Committee Hansard*, Sydney, 18 April 2002, p 158.

69 Mr Head, *Proof Committee Hansard*, Canberra, 22 March 2002, pp 37 and 41.

70 Planning Institute of Australia, *Submission 61*, p 4.

71 Australian Conservation Foundation, *Submission 68*, pp 11-12.

> The Commonwealth Government introduce tax changes that will permit private investment in accredited water saving devices and technology to be 100 per cent tax deductible in the year of expenditure.[72]

Environmental levy

7.88 The House of Representatives Standing Committee on Environment and Heritage in its report of the inquiry into Catchment Management recommended:

> The Government examine the feasibility of introducing an environmental levy to pay for the public contribution to implementing the policy of ecologically sustainable use of Australia's catchment systems.[73]

7.89 Several municipalities have introduced environmental levies on their ratepayers. The levy funds environmental improvements, catchment repair and installation and maintenance of stormwater improvement devices. One example is the Community Environmental Contract which the Mosman Municipal Council has with its ratepayers where a 5 per cent levy is charged over 12 years and the revenue spent on major environmental infrastructure and asset management works that would not otherwise be funded out of the Council's core budget.

7.90 The Committee is supportive of levies being imposed in urban areas with the revenue used for better local stormwater management. However, it is also mindful of the comments of Dr Baden Williams, retired CSIRO Principal Research Scientist, that until a successful strategy for spending funds from an environmental levy is devised, there is little justification in introducing such a levy. He suggests that present taxpayers are not getting a very good return on the money spent on natural resource management, and the environment is continuing to degrade. He argues that the two main reasons for this is that: governments are tied to a philosophy of not using taxpayer money for the private gain of landholders; and the so-called 'incentives' for change in land management practices are of relatively little value to the majority of landholders.[74]

7.91 The Committee sees a role for the Federal Government in providing assistance and encouragement for local governments to develop long term stormwater management strategies, funded through ratepayer levies and Commonwealth grants.

Potable water levy

7.92 The Stormwater Industry Association (SIA) supports a potable water levy. Using Sydney as an example it estimates that if the cost of catchment repair were

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72 South Australian Select Committee on the Murray River, Final Report, July 2001, Pp 222, p 6.

73 House of Representatives Standing Committee on Environment and Heritage, *Co-ordinating Catchment Management*, Report of the inquiry into catchment management, December 2000, p xxi.

74 Dr Baden Williams, *Government fiddles while environment burns*, Canberra Times, 6 June 2002, p 20.

arbitrated to be approximately 10 per cent above the current cost of potable water supply, the current domestic price of water in Sydney would be approximately $0.99 per kilolitre. Upon its rough calculations, this catchment repair cost should bring in approximately $100 million per annum, to be spent on stormwater services.[75]

7.93 The SIA says water utilities should be required to redirect funds that they currently allocate and provision for water supply amplification and augmentation, to a new strategy for balanced demand managed distribution. It estimates that this would amount to around $100 million per annum and could be used, for instance, to subsidise the installation of rainwater tanks.

7.94 Mr Wood emphasised that it would not be necessary for such a levy to be applied across the entire country:

> The problems out in rural areas and in a lot of rural towns are not the problems we are facing in major urban centres. There need to be different approaches and we recognise that.[76]

Political imperatives in increasing water charges

7.95 While there was almost universal agreement among participants in this inquiry that the price of water is too low, it was also pointed out that political imperatives prevent water prices from being increased to reflect its true value.[77]

7.96 Mr Davis from the Australian Water Association, told the Committee that:

> The problem of course is that it is politically unpalatable to put the price up because a lot of governments measure their success by constraining prices. So you have environmental and demand management imperatives to charge more realistic prices that take into account externalities, but you have a political imperative not to charge too much more.[78]

7.97 Sydney Water's research shows that there is a willingness to pay for environmental impacts associated with water management. However, according to Ms Howe from Sydney Water, there needs to be more work done to understand willingness to pay relative to other services such as health, education and other needs.[79]

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75 Stormwater Industry Association, *Submission 37*.

76 Mr Wood, *Proof Committee Hansard*, Sydney, 18 April 2002, p 166.

77 See for example: Mr Gellibrand, *Proof Committee Hansard*, Sydney, 18 April 2002, p 170; Mr Harvey, *Proof Committee Hansard*, Melbourne, 23 April 2002, p 286; Cr Johnstone, *Proof Committee Hansard*, Melbourne, 23 April 2002, p 354; Dr Humphries, *Proof Committee Hansard*, Perth, 29 April 2002, p 418; and Dr Nicholas Fleming, *Submission 8*, p 5.

78 Mr Davis, *Proof Committee Hansard*, Sydney, 18 April 2002, p 218.

79 Mr Gellibrand and Ms Howe, *Proof Committee Hansard*, Sydney, 18 April 2002, p 177.

7.98 Dr Essery suggests that by engaging the community, the political difficulties in raising water prices may be overcome:

> In a comment on politics, I would suggest that the community is the way to resolve the blockage in the relationships with politics and sensitivity of price. Community awareness will remove that particular problem and, in many cases where I can give you examples, it has actually driven the decision and changed, in a truly democratic way, the mindset of some politicians, which I think is a good idea.[80]

Sunk costs of existing infrastructure

7.99 Radical changes in our water systems could deliver major improvements in water conservation and environmental repair but many billions of dollars have been invested in the existing infrastructure which is locked into nineteenth century technology. Mr McRae explains:

> The concept of sewer design was a sort of 19th century concept. You had to have a very big pipe that was idiot proof. If people put any imaginable item down the pipe, it was not allowed to block. It had to be gravity driven so that it would flow reliably under any conditions, so we have these huge systems of leaky pipes with manholes so that you can get in them to sort them out and the manholes leak. We have inherited this network, but who wants to chuck the whole network out and start from the beginning because that is too expensive? There is a real catch-22. You know that the system is really unsustainable, but nobody has the courage to actually break the loop and say that enough is enough, we are not going to do that any more.[81]

7.100 Urban water infrastructure in the older parts of our cities is reaching the end of its life and water managers must decide how it is to be replaced:

> When we do the reinvestment we have to think about whether we are going to reinvest wholly in what we have done before or whether we should be looking at doing some things differently. The work that we are doing out of the small group of people that we have is to challenge those options. In some cases we will deliver those systems in the same way or we may elect to do things in a different manner, and that could include rainwater tanks.[82]

7.101 Mr Davis from the Australian Water Association told the Committee:

> If you were serious you might go and put a small bore plastic pipe down the middle of an old sewer and then pump the sewage down that pipe so that it did not leak. But that is the sort of breakthrough that is quite a paradigm shift that a lot of utilities do not want to take. That is the whole issue. … If we really want to be sustainable, there are a few paradigm shifts that have to

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80 Dr Essery, *Proof Committee Hansard*, Sydney, 18 April 2002, p 186.

81 Mr McRae, *Proof Committee Hansard*, Sydney, 18 April 2002, p 221.

82 Mr Woolley, *Committee Hansard*, Brisbane, 4 April 2002, p 599.

> be made, but the industry is not structured in such a way that it is encouraged. There really needs to be some serious discussion now. Greenfield sites are fine, because you can go and do something a bit innovative if the council is amenable and the developer is courageous. In the massive urban infrastructure, we are stuck with all this old gear that is breaking down and is inappropriate, but where and how do you start changing? That is the dialogue that we need to have.[83]

7.102 Peak consumption levels are a significant driver of reticulation system design and cost. At non-peak times, therefore, reticulation systems are significantly under-utilised.[84] If demand management and other measures are successful at reducing these peak consumption levels, there may be scope to replace existing infrastructure as it breaks down, with smaller pipes and less capacity.

Firefighting

7.103 Water for firefighting places constraints on changing to lower pressure, smaller pipe systems.

7.104 The Australian Water Association notes that it is difficult to balance firefighting needs against other goals. Ideally, other means should be found for firefighting.[85]

7.105 According to Mr Woolley from Brisbane City Council consideration is being given to alternative methods of fighting fires:

> It may be that you can get better fire protection at a household level, with a rainwater tank or a facility at each house that could be appropriately used, and change the risk profiles of a house. Our current system works, you could say, fairly well, but you could quite well argue that different protection systems could perhaps work better. If you look around a room, you often find there are sensors and pop-down sprinkler heads. That is universal in high-rise buildings—or even low-rise commercial buildings—and that was not there 10 to 15 years ago. Already there is a recognition that we can fight fires better and we would like to explore that further.[86]

Perverse incentives

7.106 The Committee found that there were some systems operating in the urban water industry that could perversely encourage greater consumption of water, in spite of the stated conservation policies of governments and water corporations. These are

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83 Mr Davis, *Proof Committee Hansard*, Sydney, 18 April 2002, pp 221-222; *see also* Mr McRae, *Proof Committee Hansard*, Sydney, 18 April 2002, p 220; and Mr Till, *Proof Committee Hansard*, Perth, 29 April 2002, p 393.

84 CSIRO, *Submission 47*, p 21.

85 Australian Water Association, *Submission 41*, p 12.

86 Mr Woolley, *Committee Hansard*, Brisbane, 4 April 2002, p 604.

the dividend payments made to governments by the water companies, and the simple fact that water utilities earn their revenues from selling water.

Dividend payments to Governments

7.107 Although corporatised, water utilities in Australia remain in government ownership. As the principle shareholders, State Governments receive a dividend that is negotiated between the government and the corporation. In 2000/01 these contributions to government, derived from both tax equivalent regimes and dividend payments, amounted to approximately $1.04 billion from the Australian urban water industry.[87]

7.108 The Nature Conservation Council suggests that if the dividend payments were reinvested in infrastructure, we could move to a more sustainable future very quickly.[88]

7.109 Other witnesses are more sanguine about the payments:

> as a commercial business it is probably our shareholders' prerogative to require some dividend paid on the investment that is made in that business. You can argue the toss about what the level of that should be, but it is very hard to argue that no dividend should be payable.[89]

7.110 Mr Harvey from VicWater considers that the new economic regulatory regime in Victoria will go some way to address this issue in that State. The Essential Services Commission will manage the 2004 price review, taking into account the economics but also the social and environmental obligations that water authorities are required to implement.[90] Part of the charter under which the Commission will operate requires that consideration of long-term needs, such as long-term infrastructure investment, be taken into account in the pricing of water. Currently VicWater has concerns that not enough money is being invested in the long-term infrastructure assets, or there is not a price path that enables it to be done.[91]

7.111 The Committee did not receive sufficient information to be able to make a judgment on the merits or otherwise of arrangements relating to dividend payments. However, the practice is a perverse incentive in that greater water consumption and lower spending on infrastructure results in increased dividend payments.

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87 The Australian Urban Water Industry, 2001 WSAA*facts*, Water Services Association of Australia, pp 123 and 126-127.

88 Ms Ridge, *Proof Committee Hansard*, Sydney, 18 April 2002, p 250.

89 Mr Rose, *Proof Committee Hansard*, Melbourne, 23 April 2002, p 332.

90 Mr Harvey, *Proof Committee Hansard*, Melbourne, 23 April 2002, p 285.

91 Mr Harvey, *Proof Committee Hansard*, Melbourne, 23 April 2002, p 286.

Impact on revenue of reducing water consumption

7.112 A perverse incentive also exists with water supply agencies: the more water they sell, the greater the revenue flow. Successful implementation of demand management measures will reduce revenue to the business and may have an impact on funding for long-term infrastructure investment.[92] Dr Essery noted:

> Obviously, if you reduce demand, then you have to have a sustainable income stream for the infrastructure, replacement costs and operations so you have to increase price. So it is a matter of getting that balance correct. I would say the only structural or process step that prevents that is that sometimes people try to separate price from the demand. They have to be managed as a suite.[93]

7.113 The report of the Victorian Auditor General on non-metropolitan urban water authorities identifies the following as a constraint to better performance:

> Little financial incentive for authorities to practise water conservation. Revenue is tied to the amount of water sold and reduced usage will, at least in the short to medium-term, reduce the financial performance of an authority.[94]

7.114 The Committee was told of the significant decrease in revenues to government as a consequence of the prolonged drought in Western Australia:

> … the Water Corporation in fact lost a fair amount of revenue this summer. Because of the water restrictions, there was less water used. The Water and Rivers Commission has been very strongly pushing for an increase in the amount that people pay for water, which could have the added benefit of perhaps bringing the Water Corporation's revenue back up to what it was before. I do not know how to answer your question. It certainly is an issue for the Water Corporation because, as a corporation, it has to return money to the government. Of course, with water restrictions, its income drops but it recognises that, in order for long-term water resource management, that needs to occur.[95]

7.115 Another area where this perverse incentive has an impact is in leakage management:

> Pressure control provides water managers with a paradox. I think I heard this morning from Senator Tierney that obviously there is a financial interest in this for water supply managers. If areas that are on very high pressure

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92 Mr Harvey, *Proof Committee Hansard*, Melbourne, 23 April 2002, p 285.

93 Dr Essery, *Proof Committee Hansard*, Sydney, 18 April 2002, p 198.

94 Auditor General Victoria, *Non-metropolitan urban water authorities: Enhancing performance and accountability*, November 2000, Executive summary, p 2, at: http://www.audit.vic.gov.au/reports_par/agp6601.html.

95 Dr Leybourne, *Proof Committee Hansard*, Perth, 29 April 2002, p 399.

> reduce it that affects the income that they receive from these areas but the total cost of running the operation is still there. The outcome for the industry of better controlling water pressures and losses can be exactly predicted.[96]

7.116 Deferred augmentation of new water supplies arguably provides a counter-balance to incentives to sell more water. Mr Waldron told the Committee:

> It has really only been the deferment of capital expenditure on expanding the water needs for putting into a system that has been a driver for European and American water industry people. If you can prove a capital deferment on that then they tend to believe it is worthwhile doing demand management on your own system.[97]

7.117 This point was echoed by Mr Bulstrode from the Water Corporation of Western Australia who also noted that delaying capital expenditure can lead to lower water prices:

> I think it needs to be appreciated in that sort of costing model that it is a total water efficiency or system efficiency model that we are looking for. One of the system's efficiencies is being able to delay bringing on capital works. If you can get the right mix, so that you meet your customer's demands and needs without having to bring on those works, then that is a partnership where everyone benefits because you can keep the water price down. That is often forgotten: that the ability to hold back capital investment can be quite substantial.[98]

7.118 An option to deal with this perverse incentive would be to set conservation targets in operating licences and price regulation. Sydney Water's operating licence does this, requiring reduced per capita consumption, more water efficient plumbing appliances and the development of the market for recycled water.[99]

7.119 Revenue caps are another option that can be considered. They work by prohibiting the business from retaining revenues beyond a certain level[100] and effectively decouple the revenues earned from the volume of water sold. Business efforts to improve profit are then focused on reducing costs, whereas price caps may create an incentive to increase volumes.[101]

7.120 Revenue caps can assist water conservation by not financially penalising the water businesses when consumption is reduced. The business can increase prices to

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96 Mr Waldron, *Proof Committee Hansard*, Sydney, 18 April 2002, p 201.

97 Mr Waldron, *Proof Committee Hansard*, Sydney, 18 April 2002, p 208.

98 Mr Bulstrode, *Proof Committee Hansard*, Perth, 29 April 2002, p 421.

99 Sydney Water Corporation, Demand Management Strategy 2000-2005, December 1999, p 2.

100 Mr Rose, *Proof Committee Hansard*, Melbourne, 23 April 2002, pp 326-327.

101 Melbourne Water, *Submission 46A*.

continue to achieve the revenue specified by the cap providing an incentive to decrease water sales where this is consistent with reducing costs.

7.121 However, the disadvantages of revenue caps include:[102]

- they may not provide sufficient revenue if volume growth is in excess of forecast and which then leads to additional capital and operating expenditure requirements;
- volume risk is shifted from the company to the customer. If consumers reduce their consumption below forecast or volumes change for external reasons (say because of variability in weather), then the company is allowed to vary unit prices. This may be of questionable acceptability to consumers;
- if the revenue cap applies to a bundle of services, then there are also incentives to provide fewer services, not just to sell less water; and
- there may be incentives to provide less service to customers in areas with low average utilisation and high marginal costs.

7.122 Revenue caps alone are not enough to drive conservation outcomes and should be considered as part of a broader conservation strategy.

7.123 To overcome incentives to sell more water, the objectives of water supply companies need to shift from simply selling water to selling water services and meeting the water-related needs of people and businesses. According to Gary Wolff and Peter Gleick:

> People do not want to "use" water. People want to drink and bathe, swim, produce goods and services, grow food, and otherwise meet human needs and desires. Achieving these ends can be done in different ways, often with radically different implications for water.[103]

7.124 This approach encourages water companies to identify and satisfy their customers' demands for water-based services. The shift in focus would ensure that they promote water use efficiency as an essential task rather than in response to political whims and pressure from environmentalists.

7.125 Dr Humphries from the Water Corporation of Western Australia told the Committee that there has been much debate about improved pricing models and regulatory methods in that State but his view is that water utilities should make their money from providing water services, which would include water economy services and water use efficiency services. However, he acknowledged the difficulty in

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102 Melbourne Water, *Submission 46A*.

103 P Gleick et al, *The World's Water: The Biennial Report on Freshwater Resources*, 2002-2003, p 1.

earning revenue for that under the current model and any new regime would firstly require state government approval.[104]

Conclusions

7.126 It is fundamental that prices reflect the costs of providing urban water from the catchment, and treating the water in receiving waters. They must therefore include the costs of catchment and riverine, estuarine and coastal waters maintenance and repair. Water is currently effectively supplied free to water suppliers.

7.127 While the Commonwealth does not have the power to impose higher prices, it recommends that State authorities give serious consideration to raising water prices, and linking such increases with education campaigns to ensure community support for and understanding of this action.

7.128 The Committee considers that while COAG and the national competition policy reforms have achieved efficiency gains, there is still a need for policies that will push the next generation of change in the industry.

7.129 If environmental sustainability is to be achieved, recognising the real environmental costs of resource extraction must be the central driver of this next generation of economic reform. The most effective way of making the connection between these real costs and urban water use is to vest ownership of water supplies within a catchment in a statutory Catchment Management Authority (CMA) which would be given responsibility for the sustainable management of the water resource. Water utilities would then purchase their water supplies from the CMA, and prices would be calculated by the CMA according to the costs of funding catchment maintenance and repair. Prices would reflect the need to support research into local catchment hydrology, and community Landcare groups.

7.130 The Committee also strongly encourages States and Territories to adopt sewage and stormwater rates that reflect the loads placed on them (including pervious surfaces) rather than flat rates.

104 Dr Humphries, *Proof Committee Hansard*, Perth, 29 April 2002, pp 419-420.