

AUSTRALIAN SUGAR INDUSTRY RESPONSE TO WATER PRICE INCREASES

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Abstract

The Australian sugar industry has come under significant pressure in recent years as a result of low sugar prices and an increase in the cost of oil and water. National Competition Policy in Australia has overhauled many sectors of the Australian economy, including the electricity, water and transport sectors, in an effort to increase competition and eliminate subsidisation. The water policies being implemented in Australia due to National Competition Policy are highlighted in this paper.

Water prices for many Australian cane growers have doubled. The paper shows some impacts of water policies on the Australian sugar industry, including how the policies are jeopardising the viability of growing sugarcane in many regions. Increases in water prices were compared with overall business costs and the profitability of sugarcane growers in Australia.

The response from the industry has been to argue for fair and justifiable water prices that do not unjustly put growers out of business. Also, there has been a massive campaign through the Water Use Efficiency program to increase the efficiency of irrigating sugarcane. This has led to financial incentives being offered to improve farm practices including purchasing new centre pivot irrigation systems. Consequently, there has been a marked improvement in irrigation efficiency that has allowed growers to better cope with the higher water prices.

Keywords: sugarcane, water, Australia, Queensland, pricing, irrigation

Introduction

Around 40 million tonnes of cane and over 5 million tonnes of sugar are produced in Australia each year. Over 90% of this is grown in Queensland and the majority is exported to the world market. Irrigation is vital to the Australian sugar industry, with over half the cane grown being irrigated. Without irrigation, there would be a massive reduction in sugar production in Australia, since most of the irrigated cane could not be grown viably without irrigation.

There has been a massive increase in the price of water in recent years, with some growers paying 300% more for water - and this will likely continue in the future. The water price increases are putting extreme pressure on the viability of many sections of the Australian sugar industry. The impact of increased water prices on the Australian sugar industry and the response of the industry to these higher prices is the subject of this paper.

General

Water policies from National Competition Policy

In the past 15 years, there has been a massive push in Australia for increased competition and efficiency. As a result, government has overhauled many industries including sugar by removing protection and trade barriers. It has also overhauled many utilities, including electricity, gas and water.

A Council of Australian Governments agreement between all states and the Federal government in 1994 set the path for substantial change in the water industry throughout Australia. The changes covered many areas of water, including encouraging trading, institutional reform, water planning and water pricing.

With regard to water pricing, the reforms focused on four main areas, which were consumption-based pricing, full cost recovery, reduction or elimination of cross-subsidies and making subsidies transparent.

Consumption-based pricing means that all water users must be charged based on the amount of water they use. In the past, many water users, including most urban users, paid the same amount for water regardless of water use. This has now changed so that all water users pay a minimum charge and a charge per unit of water use to encourage water use efficiency.

Full cost recovery means that all water users are required to meet the full costs of operating, maintaining and refurbishing their schemes. In the past, there was no link between the amount water users were charged for water and the costs of delivering water, but now water users pay the actual costs. An extremely contentious issue relates to whether rural water users should pay a rate of return on irrigation scheme investments made in the past. That is, if a dam was built 100 years ago, should the water users of today be paying for the cost of building this dam? In most states of Australia, this does not occur; however, in Queensland a rate of return is charged and CANEGROWERS are fighting to ensure that this inequity is removed. Heated negotiations between government and CANEGROWERS are taking place in an attempt to remove this inequity.

Government is also reducing or eliminating cross-subsidies in water use. This is not always achievable, since many rural irrigation schemes were established for political reasons rather than economic reasons; so it is virtually impossible to charge water users in these schemes the full cost of supplying water without forcing all water users in the scheme out of business. As a result, some schemes will require ongoing subsidies in order to remain profitable, and these subsidies need to be transparent.

Water price increases

In 2000, the Queensland government set water prices for all rural water schemes that were consistent with the National Competition Policy reforms relating to water prices. As a result some growers were faced with a 300% increase in water prices. This has put an immense amount of strain on the viability of many schemes and rural industries.

The water prices set in 2000 are due to expire in June 2006. Rather than government setting prices for the next five years, water customers are negotiating water prices. The negotiations have been lengthy and difficult, and will result in much higher water prices. In many schemes

prices are likely to more than double in the next five years. The Queensland government is also attempting to impose a tax of \$4 per megalitre of water used for irrigation, and this could be merely the first of a series of such charges.

In many cane growing schemes, the price of water is currently around \$57/ML, as it is in the Bundaberg scheme in southern Queensland. Many schemes are facing price increases of around \$20/ML over the next five years; this is what cane growers in Bundaberg must anticipate.

Impact of water price increases

There are many sugarcane irrigation schemes where extreme price increases are likely. This will put the viability of irrigating cane into question. In Table 1 the gross margin from applying 1 megalitre of water using current water prices and irrigation systems, as well as the water price in five years' time and new irrigation systems, is shown. A long-term sugar price of \$280/t and a CCS of 13.5 has been assumed for this analysis to demonstrate the impact of higher water prices on the viability of irrigating cane.

Table 1. Gross margin from applying 1 megalitre of water (\$A).

Revenue / Costs	Current water price and irrigation system	Water price in 5 years and new irrigation system
Marginal Revenue		
Tonnes cane per megalitre water (A)	8.3	10
Price per tonne of cane (B)	25	25
Total (A*B)	210	250
Marginal Cost		
Water price	57	77
Electricity	55	30
Harvesting	55	66
Maintenance	20	5
Labour	20	0
Total	207	178
Gross Margin	3	72

Impact of water prices on growers incomes under current water price and irrigation system

Initially, the scenario examined will be the current situation in Queensland, using the current water price and irrigation system (second column Table 1).

The tonnes of cane per megalitre figure of 8.3 is the average throughout Queensland, as calculated by the BSES by dividing the tonnes of cane grown by the total water applied from irrigation and effective rainfall. Although the cost of water does vary between different districts, the water price of \$57/ML used in Table 1 is indicative of the price of water in many channel irrigation schemes in Queensland, where cane is grown as discussed above.

The electricity price of \$55/ML is based on typical electricity costs to run a water winch to irrigate cane in Australia. Water winches are the common water application method in the Australian sugarcane industry. The harvesting cost of \$55/ML is derived by multiplying the typical harvesting price in Australia of \$6.60 per tonne of cane, by the tonnes of cane grown from each megalitre of water applied, which is 8.3.

The maintenance cost of \$20/ML is derived by summing the yearly maintenance costs of a water winch, which would include items such as replacing hoses, by the amount of water applied by the water winch per year. The total maintenance costs for a water winch would be around \$3000 per year, and application would be around 150 ML of water, which gives a maintenance cost per megalitre of \$20.

The labour cost is derived by dividing the total labour cost of changing winches by the number of megalitres applied by those water winches. Total labour costs for one person would be around \$50,000 per year and, typically, for half the year the worker would be spending the entire time irrigating cane using around eight water winches. That would equate to a labour cost for irrigation of \$25,000. Each water winch would apply around 150 ML, so in total around 1200 ML would be applied by the eight water winches. Dividing the labour cost for irrigation of \$25,000 by the amount of water applied of 1200 ML gives a labour cost per megalitre of around \$20.

The gross margin from applying a megalitre of water is very small - but it is still positive. At the current high price of sugar the gross margin would be much higher than shown in Table 1. But given the scenario that sugar prices will fall in the longer term, the numbers shown above would better represent long-term gross margins than if current sugar prices were used.

Drive to increase irrigation efficiency with increasing water price

Over the next five years a water charge increase of \$20 per megalitre would be typical for cane growers in Australia, as discussed previously. This would cause the water price to increase to \$77, and the gross margin would become -\$17 per megalitre. This indicates that, without some changes, it would not be viable to continue to irrigate cane.

In response to the likelihood that irrigating cane in many areas of the Australian sugar industry would not be viable given an increase in water prices, there have been a number of responses. Firstly, CANEGROWERS are working hard to convince government that substantial gains in efficiency need to be made in the way that water is delivered to irrigators, so that the price of water does not increase further. This may be achieved by restructuring some irrigation schemes, privatising irrigation schemes or potentially shutting down some irrigation schemes permanently where they are not viable. This will be a difficult challenge but very important for the future of the sugar industry.

Secondly, CANEGROWERS are putting a lot of effort into lifting the efficiency of irrigation throughout the sugar industry. Around \$50 million has been invested in a Water Use Efficiency (WUE) program in Queensland since 1999, to improve the efficiency of irrigation. This has had a marked impact on the efficiency of irrigation in the sugar industry and will have ongoing benefits.

The increase in efficiency can be seen by the increase in both the tonnes of cane produced per megalitre of water applied and in the total number of tonnes grown.

The WUE program has focused on two main issues. Most of the focus has been on increasing the efficiency of existing irrigation systems, including furrow irrigation, winches, low pressure overheads and trickle. There has been marked improvement in the efficiency of all systems in all regions by changing furrow shape and flow rates for furrow and improving irrigation scheduling for all systems. There has been an increase in the use of irrigation scheduling tools such as enviroscans, minipans and tensiometers, and a much greater

understanding of crop water use, the amount of water applied to assist growers schedule their irrigation. These changes in grower practices are permanent and have led to a permanent increase in efficiency.

The second focus has been on changing irrigation systems by encouraging growers to change from winch and furrow irrigation to low pressure systems, including centre pivots and lateral moves. CANEGROWERS had an incentive program where growers were offered a \$20,000 grant to change irrigation systems between 2001 and 2003. Over 100 growers took up the grant and represented around 5% of irrigated cane growers in Australia. Many growers have purchased new systems since then, and CANEGROWERS are currently planning to develop another incentive scheme for growers to purchase new irrigation systems.

Impact of water prices on growers' incomes using water price in five years and new irrigation system

The scenario with water prices in five years and new irrigation system will now be examined (third column, Table 1). The revenues, costs and gross margin shown in column 3 of Table 1 are for a centre pivot irrigation system using a water price in five years' time of \$77/ML.

As a result of purchasing new irrigation systems and improving irrigation practices, growers can substantially improve the gross margins from irrigating cane. This is due to the increased yields from each megalitre of water applied and a reduction in electricity, labour and maintenance costs when moving, for example, from winch to low pressure.

The numbers in column 3 (water price in five years and new irrigation system) of Table 1 are the same as column 2 (current water price and irrigation system) except for the following differences. The number of tonnes of cane per megalitre has been increased from 8.3 to 10. This reflects the typical increase in production demonstrated on-farm after growers have changed from water winch irrigation systems to low pressure overhead irrigation systems such as centre pivots. The increase in the tonnes of cane per megalitre of water increases the marginal revenue from applying a megalitre of water to \$250 using the same cane price of \$25.

The water price is increased from \$57 to \$77 per megalitre as discussed above. The electricity cost is reduced to \$30/ML, which is typical of the electricity costs to run a centre pivot in the Australian cane industry. The harvesting cost is increased to \$66 per megalitre, and this is calculated by multiplying the harvesting cost per tonne of \$6.60 used in Table 1 by the revised tonnes of cane per megalitre of 10 used in column 3 of Table 1.

The maintenance costs are reduced to \$5/ML which is indicative of the maintenance costs of a centre pivot in Australia. Also, the labour costs have been reduced to zero, as there is virtually no labour required to run a centre pivot.

This shows that growers who are able to switch from winch to centre pivots, and operate their system efficiently, can make a profit from irrigating cane even with higher water prices. However, many growers will not be able to switch systems, largely because it will be uneconomic for them to do so. In general, it is only profitable for growers with restricted water availability using winch irrigation, which has high labour and electricity costs, and reasonable size farms with blocks of at least 60 hectares, to change to a more efficient centre pivot or lateral move irrigation system.

Conclusion

Water prices in Australia have increased substantially over recent years and there is every likelihood that prices will continue to increase. Without changes to the production system this will make it unviable for many growers to continue to irrigate and grow cane in Australia. However, many growers will be able to adjust and improve efficiency of irrigation, thus remaining viable into the future. Improvements are possible by either changing to a more efficient irrigation system such as centre pivots or increasing the efficiency of their irrigation system by adopting irrigation scheduling, changing furrow shapes or using winch irrigators only in low wind conditions.

There are some major constraints to making these improvements, especially when considering changing irrigation systems. Only growers with appropriate farm layouts and attributes will be able to financially justify a change. As for other growers, they will need to make the most of their existing system or consider changing crops or selling their farm.