

## **Rural Water Use and the Environment: The Role of Market Mechanisms**



### **SUBMISSION**

**From: Australian Dairy Farmers Limited**

**To: Productivity Commission**

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### **INTRODUCTION**

Australian Dairy Farmers Limited (ADF) is the peak industry body of Australia's dairy farmers constituted from the six state dairy farmer organisations (NSW Farmers' Association Dairy Committee, Queensland Dairyfarmers Organisation, United Dairyfarmers of Victoria, Tasmanian Farmers & Graziers Association Dairy Council, South Australian Dairyfarmers' Association and Western Australian Farmers Federation Dairy Section).

ADF's primary purpose is to represent the interests of dairy farming families and is the long established voice of Australian dairy farmers. One of our key aims is to better inform Governments and the wider community about key issues affecting dairy farmers and their communities.

In producing this submission we have consulted with industry organisations across Australia and have been supported by Dairy Australia through the provision of technical advice.

We believe this submission represents the views of the Australian dairy industry.

We commend the Productivity Commission for undertaking this review of market mechanisms in rural water use. Market mechanisms will affect the future of irrigation industries and the allocation of water resources on which our industry and subsequently our economy and community all depend.

We welcome the opportunity to make this submission and see it as another proactive step in addressing our industry's sustainability.

As the representative organisation for the major commodity user of water in Australia, ADF feels it critical to impress upon government the vital importance of water to the industry, and to provide viewpoints based on the industry's extensive recent experience.

#### **Water and the Dairy Industry**

ADF makes this submission in light of significant active participation and extensive experience in water market developments and other issues affecting access to and use of water resources across most of Australia.

The dairy industry believes that this review should be treated positively as an opportunity to:

- Improve the value that Australians realise from the efficient use of water resources;
- Enhance regional and national economic growth and the viability of agricultural industries and the rural communities that are so intrinsically dependent on them;
- Complement wider considerations about the community's desires for sustainability of economic, social and environmental values in a national context;
- Improve Australia's international image as a source of high quality produce, produced in sustainable manner;

The above opportunities are in the national interest and should be embraced as fundamental objectives. The dairy industry opposes policy developments and analyses that seek to split the debate into narrowly focussed issues in isolation. For example, the nominal efficiency of usage by different production systems or the primacy of environmental considerations independent of other factors. While these specific aspects can be important in particular contexts, they must be addressed within the broader framework of a sustainable nation.

The dairy industry contributes \$3.2 billion in the value of farm production, over \$9 billion in total value of production and \$2.5 billion in annual exports. These figures reflect the importance of the dairy industry's contribution to Australia's economy. The outlook for international trade in dairy products is positive, and opportunities to expand production in Australia are growing.

The dairy industry uses about 25% of the surface irrigation water in Australia. It is also a major user of ground water. The industry is acutely aware of the importance of water and other resources and is actively pursuing efficiencies in resource use as well as reductions in negative externalities associated with that use.

2000/01 figures presented by the CSIRO's Water for a Healthy Country National Flagship Program<sup>1</sup> showed that the dairy industry provides the single largest contribution to profit in irrigated commodities.

The industry accepts that water will trade into and out of dairy production according to the profitability of alternative commodities. However, this commercial market activity must be underpinned by large, reliable, sustainable irrigation industries such as dairy that can buffer the inevitable seasonal and annual fluctuations in economic conditions and international supply and demand. It should also be noted that ADF understands that dairy farmers have been net purchasers of water since trading began in the Goulburn-Murray system.

A further very important point is that better water use efficiency by agriculture – whether rain fed or irrigated – enables greater agricultural productivity. A good example of this was the first stage of the rural water use efficiency initiative in Queensland, Dairy Water Use for Profit which derived a water use efficiency saving over of 14% or 30,000 megalitres. It does not create "spare" water that is then automatically available for urban or environmental requirements. Similarly, the notion of moving water from one irrigation system or crop to another does not affect water availability – it merely affects the way in which the available water is used.

ADF perceives that this last point – a direct product of the implementation of water markets within the NWI framework – is not well understood by the broader community. We recommend that the Commission highlight this in its final report. It is important that water use efficiency in agriculture be viewed in the context of enhanced agricultural productivity, economic growth, job growth and rural community sustainability, rather than as an opportunity to squeeze resources from one sector for the benefit of another.

Naturally, the dairy industry is very concerned about any possibility of a significant reduction in access to and security of irrigation water to meet demands of urban users or the environment. ADF wants to ensure that policy bodies understand the major consequences that would result – both for the irrigation industry as a whole, and for the national and regional economies and communities that depend on it. These consequences are significant because the irrigation industries embody such a large proportion of post-farm-gate manufacturing and processing in so many regions. In addition much of the regional and rural goods and service sector rely on the dairy industry for their own business and subsequent employment.

ADF's primary concern is to ensure that dairy farmers, and the industry as a whole, have secure access to water in the long-term. Without water security, there will be less confidence to invest for the future and therefore reduced ability for productivity growth in irrigated dairy farming regions. We are also focussed on ensuring that the terms and conditions applying to the management of water are fair and equitable, allowing dairy farmers to pursue the production of milk without unnecessary impediments.

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<sup>1</sup> Meyer et al 2005; "Irrigation in Perspective – Irrigation in the Murray and Murrumbidgee Basins".

ADF also contends that an important aspect of gaining more value from the use of water resources is to constrain the overhead and operating costs associated with water management by state agencies. Professional management of water and irrigation infrastructure is critical in minimising costs in the system, providing service and maintaining capital investment.

In summary the ADF represents farmers from an industry that is nationally involved in all forms of irrigation, from major reticulation schemes to river diversions, groundwater accession and re-use of effluent from various sources including on-farm washdown water and factory effluent. We make the point that detailed and deliberative consultation is essential at the regional catchment level to enable the industry to assist with achieving the objectives of the National Water Initiative.

## **KEY SUBMISSION POINTS**

The key points of our submission are set out briefly in the following section. These points are discussed further in the same order, in the subsequent, more detailed discussion section.

### **A. The Role of Markets in Water Re-Allocation**

Markets for water will result in longer-term changes in water use but markets will not address the uncertainty of ownership and allocation that still exist in some systems. Governments should be encouraged to provide certainty in these areas rather than focusing on revenue issues.

The dairy industry supports genuine water reform that is undertaken in an open and transparent fashion according to the principles of the National Water Initiative (NWI). However in some regional cases the NWI seems to be used as an excuse to raise water prices without transparency and the Australian Government should carefully monitor the interpretation of NWI by state governments.

The dairy industry strongly advocates that rules and procedures be prepared in advance for the allocation of water between urban users, irrigation and the environment. Efficient regional irrigation schemes require large, profitable industries to maintain them. It is essential that any movements of water between irrigation, urban and environmental uses be planned extremely carefully to ensure sustainability for all.

Further, the ADF strongly recommends that the focus on conserving urban water use be strengthened. While the economic benefit-cost associated with urban uses may prevail in market terms and purchasing power, the consequential national cost of deteriorating rural industries and communities is a very significant risk. A nationally consistent framework of objectives, rules and procedures must be established to enable rural and urban communities to resolve these issues in a constructive fashion.

The ADF supports regulatory restrictions on the amount of water that can be acquired by non-irrigators. It also strongly advocates for clear limitations on the manner in which Governments or their agencies seek to purchase irrigation water for urban or environmental requirements.

Security of access to water entitlements is critical and uncertainty around the intervention of urban users or governments will diminish confidence and reduce investment.

### **B. Priority Issues, Areas and Industries**

The ADF strongly advocates that priority attention be given to those large irrigation industries such as dairy, that have the greatest potential to:

- Improve their profitability, environmental sustainability and international competitiveness;
- Provide the revenue required to sustain and improve regional irrigation schemes and other rural infrastructure;
- Underpin the viability and prosperity of rural communities; and

- Research, develop and adopt the most efficient and sustainable resource use technologies and practices.

It follows that different industries will be important in different regions – the challenge is to design approaches that will enhance sustainability efforts on a regional basis rather than adopt a one-size-fits-all approach.

### **C. Water and Land**

The ADF believes that, other things being equal, the water market will encourage the movement of water to land that is potentially the most productive and sustainable for irrigation purposes. However, means of facilitating this, e.g. technology use and extension, are worth further investigation because of the complex array of other factors that can impede the process. Similarly, means of securing the future of highly productive rain-fed agricultural areas will be equally important to long term sustainability considerations. Further analysis, consultation and strategy development are recommended.

### **D. True Value of Water**

The precise value of water differs enormously according to location, timing and its fitness for particular uses. The result is that the notion of an underlying “true value” is difficult to conceive once these dominant influences are disregarded.

The dairy industry opposes artificial or non-market-driven manipulation of water prices as a means of influencing the realisation of other directly or indirectly associated benefits. Blunt instruments like artificial market mechanisms will only increase the likelihood of unintended consequences and perverse outcomes.

Water is one of the inputs to agricultural production. It cannot be treated in isolation from other inputs such as energy, labour, equipment, fertilisers, chemicals etc. Provided there is a legitimate means of trading within a stable market, the value of the water will find its “true” level according to the particular local circumstances. Hence, the ADF strongly supports an open and transparent market for water, as this creates opportunities and incentives to pursue greater productivity gains – the core to long term sustainability and economic success.

### **E. Economic Efficiency**

Diverting water from dairy to allegedly “higher value adding” industries such as horticulture is often raised in the literature as a desirable outcome. It is also mentioned in the Issues Paper in the context of creating opportunities for technology upgrades.

However, in terms of economic efficiency, the greatest waste of all is to use water to grow produce that cannot be sold. This wastes not only the water, but also all the other inputs involved.

The dairy industry believes that references to “higher value-adding uses” can embody serious over-simplifications. Apart from the considerable differences in the proportion of value added pre- and post-farm gate across different agricultural industries, there are the very real market risks of domestic over-production (e.g. wine grapes currently) or producing products that are outpriced by cheaper imports (e.g. oranges currently).

The ADF supports water trading in agriculture as a valuable approach to the allocation of the resources, but strongly opposes the superimposition of the nebulous “value-added” consideration for two reasons. Firstly, the value added concept is currently weak on technical grounds – being quite different to total economic value – and hence can be quite misleading. Secondly, it has the potential to distort community views on the effectiveness of the water market in encouraging responsible, sustainable and profitable use.

## **F. Physical Water Use Efficiency**

The dairy industry submits that the greatest opportunities for investment in more efficient and sustainable irrigation systems will occur in large industries with strong prospects for economic growth in terms of productivity, employment, investment, and sustainability of farming systems. The confidence to invest capital in more efficient irrigation systems will only come with good profit prospects and strong security of access to water resources. Current trends towards fewer, larger dairy farms create opportunities for upgrading many elements of on-farm infrastructure, including those that influence water use.

However, we strongly recommend that on-farm efficiency of resource use be analysed over the spectrum of all inputs and outputs, rather than focussing on one component such as water. Interactions with other important factors such as energy and greenhouse on the one hand or root-zone salinity on the other must be taken into account in this process. The industry also activity supports and embraces initiatives that assist the industry to derive greater resource use efficiency and thus productivity.

## **G. Externalities**

Overall, the industry is opposed to the use of market instruments that do not deal directly and competently with the outcomes sought.

For example, using water market / pricing mechanisms as a means of influencing environmental outcomes – such as groundwater or downstream river quality – is likely to be controversial, complicated and quite ineffective compared to approaches that reward land owners directly for ensuring that rivers or aquifers are kept healthy.

Many factors in addition to water use affect downstream / deep seepage water quality, which will hence be relatively unresponsive to changes in water use practices alone. It can be deduced that introducing water price or access conditions as a means of controlling such externalities would place the majority of the burden on water users and allow non-irrigators to enjoy a free ride.

The industry supports a focus on policies that directly support the achievement of desired objectives rather than those that only indirectly discourage some aspects of the activities that compromise them.

## **H. Stranded Assets**

The ADF strongly advocates that stranded asset considerations relating to irrigation schemes and water markets include non-water infrastructure such as productive land, processing plants, communications, energy, transport and other community and business infrastructure. This infrastructure has invariably developed around the availability of water and is likely to collapse if the water is traded away to another region or purpose. Substantial social costs could result from quite marginal improvements in market allocation.

## **DETAILED DISCUSSION**

### **1. The Role of Markets in Water Re-Allocation**

The issue of rural-urban water trading is critically important in the long term. The Water Services Association of Australia analysis argues that such trades are inevitable. It is also predictable that significant trades will occur between the irrigation sector and the environment. As a large irrigator, the dairy industry strongly recommends that a set of rules to govern these transactions and how they are managed must be prepared well ahead of the need for substantial trading.

The industry strongly opposes unfettered, opportunistic trading as a means of securing water for urban or environmental purposes. The resultant uncertainty will undermine confidence in investing in the very factors that are required for greater efficiency and sustainability.

Instead, the industry promotes a forward-looking, negotiated approach that distributes the impacts and benefits in an equitable fashion. This will underpin confidence in all sectors and foster realistic planning and assessment of trade-offs among the many alternatives.

The industry accepts that regulatory intervention will be required from time to time to protect social and / or environmental icons. The Murray River redgums are a topical example. However, there are opportunities to distribute the cost of such requirements across urban, agricultural AND environmental requirements in an acceptable and orderly fashion.

Overall, it is essential to ensure the sustainability of efficient and productive irrigation districts against the greater purchasing power of large urban populations. Buying-out the water allocations of a district that is closest to a major population centre may seem least-cost from an urban water perspective, but may have significant negative consequences for the district involved, and ultimately, the taxpayer in terms of increased requirement for support.

On the basis of the above, the dairy industry supports restrictions on the amount of water that can be acquired by non-irrigators. It also strongly advocates for clear limitations on the manner in which Governments or their agencies seek to purchase irrigation water for urban or environmental requirements.

Markets for water will not function effectively without clear ownership rights having been negotiated and without appropriate allocation of systems in the first place.

Markets for water will result in longer-term changes in water use but markets will not address the uncertainty of ownership and allocation that still exist in some systems. Governments should be encouraged to provide certainty in these areas rather than focusing on revenue issues.

ADF also supports mechanisms that ensure that the infrastructure costs associated with water that has been physically traded are appropriately covered in the long-term. Sometimes referred to as tagging, ADF supports the use of mechanisms such as exit fees to manage the distribution of capital costs on traded costs. These mechanisms can also reduce issues associated with stranded assets protecting part of the capital base of an irrigation system.

## **2. Priority Issues, Areas and Industries**

The discussion paper sets out the rationale for focusing on major catchment areas such as the Murray Darling Basin for immediate attention. However, it also seeks advice across the full spectrum in relation to priorities for reform,

*“Given the breadth of water efficiency issues relevant to the study, the Commission seeks guidance on the regions, types of farms and market mechanisms which are likely to offer the greatest potential net benefit from reform. The Commission is interested in information on possible priorities, including reasons for these priorities”*

The dairy industry recommends that top priority for attention be those major water-using regions and industries that have the most secure futures in the context of national and international agricultural commodity markets.

The major irrigation industries such as dairy are crucial because they are responsible for:

- Most of the water used - and hence the greatest potential for marginal improvements to aggregate into meaningful benefits;
- Most of the revenue required by water agencies to operate and maintain the irrigation infrastructure;
- Most of the demand for labour, services, goods and materials on which rural communities are so dependent;
- Most of the investment in research and development that will enable improvements in farming practices that leads to economic growth and synergistic reductions in negative environmental externalities; and

- Most of the other externalities associated with rural water use, and thus the greatest collective interest in addressing them as strategic industry issues;

The sustainability of the major irrigation districts / schemes will be determined by the success (including water use and other efficiencies and managing externalities) of the major water-users.

### **3. Water and Land**

The nexus between soil type and irrigation efficiency is very important on a regional scale. Optimising the allocation of water to soil types that are the most efficient in physical production terms is a significant challenge because of the compounding array of property rights and infrastructure issues involved. The key issue is that while water market signals may encourage such approaches, they will not facilitate them. Facilitation is the real need - the water price incentives already exist.

As mentioned elsewhere, judicious investments in regional planning and analysis, research and development and extension and adoption processes will accelerate the pace of change down the road towards greater resource use efficiency. The focus should be on making it easy for farmers to respond to the inherent market signals and regulatory requirements, so that efficiency and sustainability gains are realised sooner. Making the market more complex will only exacerbate the situation from this perspective.

The dairy industry believes that to be effective, future collective investment in irrigation infrastructure and R, D and E must include adequate funding for technical service provision, extension and administration.

Another compounding factor is the competition for rural residential land in high productivity rain-fed agricultural areas near large population centres. As highly productive land is subdivided for rural living, the agricultural production pressure is shifted further from the major population centres, which can often increase reliance on irrigation districts. If Australia is to prosper as a nation we must build confidence to invest in irrigated districts by providing markets that offer certainty and transparency.

While the issues of urban sprawl and resource competition go beyond the scope of the Commission' terms of reference, the dairy industry strongly recommends that they be acknowledged in the final report.

### **4. True Value of Water**

The discussion paper asks:

*“Are existing water markets providing clear signals on the ‘true’ value of water (including its value in social and environmental uses)? If no, why?”*

Water has no ready substitutes, which greatly reduces the likelihood that market trading will optimise the allocation of benefits. The specific value of water differs enormously in space, time and its fitness for particular uses. The result is that the notion of an underlying true value is difficult to conceive once these predominant attributes are disregarded.

It follows that water can only have an actual value in a particular set of circumstances. It seems unrealistic to expect that “existing markets” could provide clear signals across the whole quality / location / time spectrum. Behaviours in the different market segments will, however, provide signals to water managers, policy makers, water users and the general population, providing an opportunity for the best use of these signals.

The ADF believes that further artificial market mechanisms will be blunt, increasing the likelihood of unintended consequences and the risk of perverse outcomes. The dairy industry opposes any attempts to artificially manipulate water prices as a means of influencing the allocation of other directly or indirectly associated benefits.

Notwithstanding the above, the ADF strongly supports an open and transparent market for water within irrigated agriculture, as this creates opportunities and incentives to pursue greater productivity gains – the core to long term sustainability and economic success.

## **5. Economic Efficiency**

The distinction between economic and physical efficiency of water use and how these terms are measured and defined is important. A comprehensive definition of economic efficiency and a reasonably simple, standard and agreed technique for measuring it would be helpful.

Diverting water from dairy to allegedly "higher value adding" industries such as horticulture is often raised in the literature as a desirable outcome. It is also mentioned in the Issues Paper in the context of creating opportunities for technology upgrades. In terms of economic efficiency, the greatest waste of all is to use water to grow produce that cannot be sold. This wastes not only the water, but also all the other inputs involved.

The dairy industry believes that such references embody a serious over-simplification. Apart from the considerable differences in the proportion of pre- and post-farm gate value added across different industries, there are the very real risks of domestic over-production (e.g. wine grapes currently) or producing products that are outpriced by cheaper imports (e.g. oranges currently). As international trade increases, it is thought likely that high labour-using industries including some horticultural produce will be the most susceptible to pressure from cheaper imports. The fact that the horticulture sector may be assessed as adding more value to the water it uses is meaningless if the products cannot be sold.

This in no way insinuates that horticulture is an inappropriate use of water. Rather, it illustrates that economic efficiency requires a perspective that is much broader than water alone.

The big irrigation industries acknowledge that water (and land and other resources) will trade into and out of them according to the relative profitability of alternative crops and systems. However, the big industries effectively underpin the viability of the economic and social systems that allow this to occur.

## **6. Physical Water Use Efficiency**

The ADF strongly recommends that efficiency of resource use must be analysed over the spectrum of all inputs and outputs, rather than focussing on one component such as water. In the specific case of water efficiency, great caution is required in relation to implications for closely related factors such as energy and greenhouse on the one hand or root-zone salinity on the other.

For example, physical water use efficiency may favour sub-surface drip irrigation over other forms, including centre pivot systems. However, economic efficiency may favour laser-levelled, gravity-fed surface irrigation systems because of their low input costs including energy for pumping / pressurising.

Indeed, whole-of-life energy requirements of different water management approaches are becoming rapidly more critical because of greenhouse and climate change considerations, and water policy must come to grips with this issue as a matter of urgency. Analyses based on today's seemingly unsustainably low energy costs should be viewed with caution in relation to any long-term decisions – especially as related to market mechanisms.

Another example of trade-offs relates to root-zone salinity. If water is applied via sub-surface drip irrigation in just sufficient quantities to meet plant requirements, the possible result is that there will be a gradual build-up of salt in the root zone in proportion to the amount of salt in the irrigation water that is excess to plant requirements. Physical water use efficiency may be maximised, but economic water use efficiency may be reduced by the decline in productivity of the soil and / or the costs of remediating this problem in the long term.



Overall efficiency gain is the product of marginal efficiency gain and the total volume of water used. Large irrigation industries such as dairy present great opportunities for improvement, and the market price for water provides the incentive for them. Policy measures can assist this by judicious support for research, development and extension activities that not only create confidence in the required investments but also facilitate their smooth implementation.

## **7. Externalities**

The dairy industry does not agree with the use of water pricing to account for externalities, as doing so is considered cumbersome and potentially distorts proper environmental and economic responses.

As a generalisation, the industry is opposed to the use of input controls for the purposes of influencing externalities. Experience from the OECD and elsewhere is that such approaches are expensive, inefficient and ineffective. In this context, input controls encompass both regulation and market instruments.

For example, using water market mechanisms as a means of influencing environmental outcomes – such as downstream river quality – is likely to be controversial, very complicated and practically ineffective compared to approaches that reward land owners for ensuring that rivers are kept healthy. In other words, the focus should be on policies that directly support the achievement of desired objectives rather than policies that discourage only some aspects of the activities that compromise them.

However, the industry recognises that externalities are extremely important, and has made concerted efforts over recent decades to reduce the negative external impacts of both farming and processing.

The industry recommends that rather than trying to manage externalities at the input end of the system, they be managed directly as products at the output end of the system.

Direct payments for producing “green” outputs such as clean river flows or healthy streamside vegetation on an annual basis has been discussed in various scientific and academic circles for decades, but, at least until recently, has been popularly discounted in the quest for less expensive approaches for taxpayers and potentially more expensive for the landholder. The arguments for re-examining the possibilities and their potential to underpin real success are becoming more and more compelling as the failure of more indirect approaches becomes recognised. Recent press reports about current discussions between the NFF and the federal government are welcomed.

A comment on the Bush Tender program / approach is relevant. It seems the main success of this approach has been to minimise the public cost per unit of vegetation established / set aside for environmental purposes on private land. However, the question of the long term health and viability of these vegetation units has not been guaranteed by the approach. There is a clear market discontinuity between the low-cost input of “new” vegetation units on the one hand and the desired outcome of long-term, sustainable, ecologically healthy environments on the other.

## **8. Stranded Assets**

The discussion paper pays considerable attention to stranded assets – but mostly in the context of water storage and distribution assets. The parallel importance of asset values embodied in land, utilities, processing infrastructure and the like has been overlooked to a large extent – logically because this is beyond the scope of a discussion about water market mechanisms. However, these other assets are just as important as the core water ones, and regional planning of water resources and their use must take them into account.

## Case Study – Lower Murray Irrigation Area

The case of land in the Lower Murray Irrigation Area of South Australia being bought by a water authority stripped of its water right and then left vacant provides an important lesson. Without the water, the land is almost totally worthless for agriculture. It is apparently now vacant and becoming infested with weeds and vermin. Several negative externalities have resulted:

- Once productive land is now barren;
- An additional liability for costly stewardship has been created;
- The responsibility for stewardship is now “off-shore” in Adelaide, residing in an organisation that is not in the business of agricultural land management;
- It seems highly likely that public money will eventually be required to remediate / rehabilitate the land;
- Confidence in investing in improvements to the drainage systems in the LMIA has been eroded – at least to some extent.

## 9. Other Issues

The discussion paper acknowledges that markets and market mechanisms in areas other than water may assist or hinder the achievement of better outcomes in terms of overall economic efficiency of water use.

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*Are there any changes to existing market mechanisms (in addition to reducing barriers to the water market discussed above), or new market mechanisms, that may either (1) help farmers make decisions regarding water use, or (2) address problems associated with a lack of enforceable property rights that might be leading to externalities from water use that reduce the economically efficient use of water?*

In general, the sustainability of water usage is dependent on the public and private investments required to underpin improved efficiency and effectiveness. This potential greatly depends on industry confidence in security of access and equitable approaches to market governance in the long term. It follows that these should be the primary objectives of market mechanisms and regulatory instruments.

Externalities are better dealt with directly via mechanisms such as direct payments for specific outputs such as native vegetation establishment and maintenance at an individual farm level, and / or payments to farmers in a catchment according to the quality of water achieved in surface or ground water resources.

The industry firmly holds the position that the focus should be on the outcomes required, rather than the artificial manipulation of input factors such as water prices or fertilizer regulations or animal stocking rates or tillage systems. Direct payments linked to production of public good environmental benefits / assets would greatly assist farmers in making decisions about farming practices and approaches in a tangible and business-like fashion.

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*In what regions and for what types of farm enterprises might these mechanisms be most appropriate?*

Basically, all regions and all types of farming enterprises. A market for sustainability outcomes could operate according to the normal rules of supply and demand.

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*What would be the likely costs and benefits of these mechanisms, and what key features could make them workable in Australia? Would they require changes to other existing policies or institutional arrangements and, if so, what changes would be required?*

Costs and benefits are both likely to be large, but the great advantage of a direct payments approach is that it would effectively deliver the outcomes sought. Further analysis and modeling is required to establish the numbers. Numerous other policies and institutional arrangements would be affected. The industry is currently developing the more detailed strategy necessary to contribute to this discussion.

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*How would developments in water markets, such as allowing river managers to trade in water and the development of rural-urban water trade, affect the efficiency of rural water use and the level of rural water-related environmental externalities? Would these effects be positive or negative, small or large? How might any adverse consequences of such developments be addressed?*

See previous comments in Sections 1 and 7.

The dairy industry does not support the use of water charges and catchment levies as a means of funding public good outcomes. This approach will distort markets and potentially exacerbate the movement of resources from productive operations to aesthetic / lifestyle purposes, having a negative effect on rural economies and communities.

Furthermore the dairy industry does not support the intervention of governments or their authorities into water markets established for irrigated agriculture. Rather, governments and authorities must work with agricultural leaders to develop science-based approaches to long-term allocations for environmental outcomes and urban use. Failure to address the key issues of ownership and allocation will result in uncertainty and reduce the ability of irrigators to achieve sustainable productivity growth.

## **CONCLUSION**

In conclusion, the ADF submits that:

- a. Economically efficient use of irrigation water will depend on the existence of large, progressive, internationally competitive irrigation industries operating in straightforward market environments.
- b. In turn, the future of these “backbone” industries will depend on the security of access to water above all, but also to other resources such as productive land, labour, technology etc.
- c. Rural prosperity and progress also depend on such industries, though in a broader context than irrigated agriculture;
- d. Investor confidence in agricultural industries that are heavily dependent on access to water will be very sensitive to the potential for security to fluctuate any more than it currently does in response to climate variability;
- e. Economic efficiency of water use must be considered in concert with other aspects of sustainability such as energy use, fertilizer use, transport, and the numerous infrastructure and other assets on which the large industries are dependent;
- f. The industry does not support the intervention of governments or their authorities into water markets established for irrigated agriculture. Rather, governments and authorities must work with agricultural leaders to develop science-based approaches to long-term allocations for environmental outcomes and urban use.
- g. Water markets and the signals they embody must be kept as simple as possible to enable them to operate effectively and practically, and externalities should be addressed by other mechanisms directly focussed on the outcomes desired.

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