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Why Should People Adopt Best Practice Stream Management

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Summary: This paper considers what it takes for people to decide to adopt best stream management practice. It explores the social and economic factors, as well as institutional arrangements, which drive adoption of best practice in the management of waterways. History shows that without an appropriate operating environment - the mix of institutional, economic and policy instruments that influence resource management behaviour - water resource managers are unlikely to adopt best practice management techniques at the scale required to sustain water resources.

THE MAIN POINTS OF THIS PAPER

- environmental problems are people problems;
- there are a number of options available to establish an effective operating environment to influence decision making behaviour for effective waterway management; and
- a market for environmental services combined with ISO14000 accredited environmental management systems for key farming systems offers a balanced way forward.

1. INTRODUCTION

The management of waterways has become critical as competition for the use of the land and water resource increases. Research and technology have provided us with waterway management options, but history shows that they are no use if they are not adopted by resource managers or the wider community.

Changes in stream health are caused by investment in waterway management by water users, landholders and other stakeholders. This implies an economic way of thinking about the environment, and this begins with the recognition that environmental problems are people problems (Wills, 1997).

River management must be seen in a wider context than just the river channel. The framework for river planning must involve the resource, its uses, stakeholders and institutional relationships for control and management (Day, 1986). This recognises the cause and effect relationships that exist within hydraulic and ecosystem functions. For example irrigation behaviour will influence the quantity of water available for environmental flows, as well as the quality of water down-stream from the discharge of any drainage.

The operating environment is the mix of institutional, economic and policy arrangements that influence resource management behaviour. The decisions people make about resource management - that may impact on stream health – are influenced by this operating environment. For example, the separation of agencies responsible for irrigation development (eg PIRSA) and monitoring stream health (eg DEHAA) may create inconsistencies which can be exploited by investors. The price of water will also influence the water management behaviour of investors.

There are a number of options available to establish an effective operating environment to influence decision making behaviour for effective waterway management. Some of these options are discussed.

2. OPTIONS AVAILABLE

2.1 Regulation

Laws, regulations and emission standard policies can be used to link rights and responsibilities, by establishing what society considers to be appropriate waterway management behaviour. History suggests that a regulatory approach is costly and often ineffective because of political expediency and administrative failure. For example, competing levels of government (local governments seeking regional development versus environmental agencies protecting a water supply for higher value urban, environmental or industrial uses) may provide opportunities for water users to obtain unreasonable outcomes from society's point of view.

Regulation can be cost effective for point source emissions where polluters are identifiable, but is rarely effective with diffuse source pollution. It is a much more difficult exercise to minimise or control the non-point source pollutants due to identification of the source.

Liban (1998) notes that in the US gross pollution of waterways by point sources such as industrial and sewage pollution have mostly been controlled through stringent legislation. This approach though has targeted the easy option first.

The cost of regulating diffuse source pollutants means that it is often cheaper to treat the symptoms rather than the causes. For example the use of gross pollutant traps in stormwater management does not consider upstream

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reduction of gross pollution, and even though the gross pollutants are generally not entering the waterway, there is a high maintenance cost incurred.

Apart from regulation, the policies of government agencies are often in conflict with one another and therefore require a review of the institutional arrangements if policies are to be effective (Day, 1986). The differential pricing of water between different water users is a classic example – with urban and industrial users, and some private diverters, paying more for the same water than irrigators in old irrigation schemes.

One way to overcome the weaknesses in the operating environment is to more clearly define rights and responsibilities with respect to water resources. The *Water Resources Act* (SA, 1997) has done this by codifying common law rights to water resources to establish general responsibilities for water resource management. These are linked with clear rights to water.

2.2 Resource Pricing

Pricing resources such as water, land and remnant vegetation as close as possible to the value that society places on them will reduce wastage and diffuse source pollution. For example, the increasing price for irrigation water in Australia has been a major driver for adoption of more efficient irrigation practices - with consequent improvements in waterway health.

Of course, it is impossible to put a definitive value on non-market goods such as biodiversity. However, negotiations between different stakeholder groups can arrive at a value which is effectively a tradeoff between the competing interests in a water resource.

2.3 Pollution Taxes

Where a polluter can be identified and pollutants measured, it is possible to tax emissions to provide an incentive for adoption of practices which will reduce pollutant emissions. For example, salt and nutrient loads in drainage water can be identified and measured. Taxes on the salt or nutrient loads in drainage water would provide an incentive for irrigators to reduce drainage water by increasing irrigation efficiency and reduce nutrient loads by changing fertilisation practices.

The costs of administering pollution taxes may be high at the moment, but cheaper monitoring and data collection technologies will make this form of intervention more cost-effective in the near future.

2.4 A Market For Environmental Services

Adoption of best practice techniques is unlikely to take place when a substantial proportion of the social and financial costs and benefits are picked up by the wider community - so called externalities.

Where polluters cannot be identified, or measurement is expensive, and the existence of pricing, taxation and regulatory systems do not effectively change waterway management behaviour, it may be necessary to share the costs of on ground works required for change.

Traditionally, Australia has adopted an input based approach to cost sharing - that is government programs have invested in inputs to projects rather than paying for outputs or outcomes. The National LandCare Program, Murray Darling Basin Commission and National Heritage Trust programs operate in this way.

Even with issues such as stream health, where outcomes may take 20 years to be measureable, the link between outputs and outcomes is generally understood. So it is possible to reward resource managers for outputs, measureable in the short-term, on the basis of expected outcomes, measureable in the long-term.

There is an opportunity for government programs to adopt an output based approach - where an agreed amount is paid for completed works (outputs) or actual outcomes that provide a quantifiable additional benefit to local, state and/or national communities.

This would effectively establish a market for environmental services, which could also be attractive to investors seeking sinks for greenhouse gases, alternatives for disposing of effluent, or opportunities for remediation of degraded resources.

For example, if science tells us that riparian zone fencing and re-vegetation to 20m either side of a stream reduces in-stream nutrient loads, we should be able to pay an annuity or once-off payment to landholders who implement such on-ground works. This is a much more effective approach than input based programs such as those mentioned above.

One reason for this, is that the focus is on outputs, and this is what people measure and monitor – rather than inputs. This focus on resource condition rather than process, is what many community members are crying out for.

2.5 Accredited Management Systems

ISO14000 Environmental Management Systems (EMS) allow best management practice to be specified and adopters to be accredited. Accreditation is a form of differentiation that can enhance market access and so provide an incentive for adoption of best practice. There is an opportunity for industry groups and regional communities to negotiate and self regulate best practice EMS for key farming systems in their region or catchment. This approach is likely to deliver a benefit for regional consistency to waterway management that allows extensive environmental benefits to be delivered.

3. CONCLUSIONS

To overcome impediments to adoption of best practice for management of diffuse source pollution it is necessary to change the operating environment for natural resource management in Australia.

A market for environmental services combined with ISO14000 accredited environmental management systems for key farming systems offers a balanced way forward. This integrates social, economic and institutional changes needed to achieve sustainable resource use at local, catchment, state and national scales.

4. REFERENCES

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