Coordination and Co-regulation: Natural Resource Management Governance in the Australian Cotton Industry

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This paper summarises the findings of a scoping study into the coordination of natural resource management (NRM) policy in the cotton industry, an industry which leads voluntarist environmentally adaptive farming systems in Australia. Interviews elicited assessments of the degree of NRM policy coordination in the cotton industry, as well as cotton growers' perceptions of current NRM policy, from professionals located within the cotton industry, Natural Resource Management Authorities, State and Local Governments. Interest among interviewees in the potential of co-regulatory arrangements to improve NRM policy coordination was identified. The advantages of co-regulatory arrangements for cotton growers, industry bodies and State Governments are discussed.

Introduction

Interviews conducted with grain and fibre growers and graziers for a series of social science CSIRO Sustainable Ecosystems projects have pointed to significant discomfort in agricultural communities regarding a policy shift at the State Government level towards legislative controls on farmers' use and management of natural resources. There appeared to CSIRO researchers to be a disjuncture between natural resource management (NRM) policy as conceptualised by Australian Governments and the pragmatic realities of farming. The opportunity to frame and conduct a scoping study for the Cotton Catchment Community Cooperative Research Centre (CCC CRC) allowed an investigation into how well current NRM policies are coordinated. This qualitative investigation afforded an overarching perspective of NRM in the cotton industry by eliciting the views of 37 well-informed professionals from 22 organisations involved in NRM in the cotton growing industry. Cotton growers' perceptions of and reactions to NRM policy were captured, largely indirectly, through the lens of the interviewees' experiences with cotton growers (two growers were interviewed).

While most of the Australian land mass is managed by agricultural landholders the bulk of Australia's population is concentrated in urban centres. Thus, the political will to address land and water degradation is derived from urban rather than rural electorates. However, it is difficult to see how this mandate will be translated into action without agricultural landholder cooperation, as policing the observance of new NRM rules among ill-equipped or hostile and remotely dispersed landholders will be both pragmatically difficult and expensive. The idea of co-regulation has been raised as a potential solution to this problem (Coglianese and Lazer, 2003, Cone, 2005, Gunningham, 2001). Co-regulation concerns use of industry bodies as an interface between governments and landholders through which to harness landholder cooperation to further to NRM policies.

The cotton industry is ayoung, dynamic and relatively profitable industry compared to other agricultural industries. It is supports highly coordinated agronomic research and development that is effectively extended to growers by liaison officers. The cotton industry is a particularly informative grounding from which to examine the effectiveness of NRM policy governance as its high degree of internal integration arose out of the industry's response to a badly tarnished environmental image. This image resulted from heavy reliance on agricultural chemicals that pose health risks for farm workers and communities as well as an environmental threat that has resulted in fish kills and the contamination of export beef. By the late 1990's the cotton industry was in open conflict with environmental NGO's and facing the prospect of tough legislative restrictions (Gunningham, 2004). Cotton Australia and the Cotton Research and Development Corporation proactively responded to this environmental critique of cotton growing with the Best Management

Practise (BMP) program. The BMP program is a modular handbook approach to the on and off-site impacts of cotton growing practices.

The industry's efforts to clean up its poor environmental reputation is understood here to have formed a *communicative hinge* between cotton growers and the Federal, Queensland and New South Wales Governments using BMP as a vehicle that *translates* regulatory requirements into manageable alterations to on-farm practices:

> Underpinning the industry's approach was a belief in the necessity of: a staged approach, engaging and directly involving producers locally, realistic time frames for adoption of new practices and systems, demonstrating the practicality and feasibility of recommended practices, being flexible and adaptable to local needs, demonstrating the tangible benefits to farmers, and engaging strong government support (Gunningham, 2004:199).

Because of the suasion over growers the cotton growing industry has demonstrated (Coutts et al 2003,); BMP programs form a potential implementation pathway for landholders' observance of the current NRM policy platform which emphasises environmental water flows and biodiversity.

NRM policy has existed since European settlement, for example in water and soil conservation acts. However, of recent years it has become an increasingly discrete policy domain betraying an internal logic foreign to the established cultural milieu of farming (Vanclay and Lawrence, 1995). Federal Government initiatives such as the National Landcare Program (1989), National Heritage Trust Two (NHT 2) and the National Action Plan for Salinity and Water Quality (NAP) have tightened the terms under which landholders can apply for public monies to address water and land degradation. NAP addresses the shortcomings of the Landcare Program and NHT 1 by tackling the critique that the public expenditure extended to landholders did not result in the arrest or reversal of rural environmental degradation (Lee 2004, Lockie and Vanclay (Ed.s) 1997, Morrisey 1997, Page, 2002, Shankey, 2004). Under the auspices of the Coalition of Australian Governments (COAG) Intergovernmental Agreements (IGAs) for a National Action Plan (NAP) for Salinity and Water Control (2000) and National Water Initiative (2004), an institutional infrastructure to arrest and then reverse rural environmental degradation is being constructed.

These two IGAs have obliged participating State Governments to pass water and vegetation Acts that address the over-allocation and over-allocation to inefficient forms of irrigation at the expense of the environment and curtail the clearing of native vegetation that it is exacerbating the salinisation of land and waterways. State departments of natural resource management were consequently established to which to attribute responsibility for the implementation and policing of these new laws. Water authorities have been overhauled to accommodate the inauguration of water markets and the sharing of water with the environment. An entire infrastructure of regional organisations dedicated to NRM has been established under the NAP IGA in bilateral agreements between State and Federal Governments. These organisations institute regionally focused NRM planning and funding arrangements on a landscape and catchment basis.

The introduction of vegetation clearing controls, water trading, user pays pricing regimes and the re-dedication of irrigation waters to environmental flows have increased the uncertainties conditioning cotton farming. Deliberative forums including strong farmer representation convened to formulate regional vegetation and water sharing plans were themselves contentious (Bartel, 2005, Craig and Vanclay, 2005). As these plans must be reviewed on a 5 to 10 year basis, they increase rather than settle uncertainties for cotton growers. Uncertainties regarding NRM policy add to 'traditional' uncertainties for farmers such as climatic, cost and price variability.

Methodology

The interview sample for the scoping study was constructed on a sector basis and sought to capture a diverse range of perspectives on the topic of NRM policy coordination in the cotton industry from competent and experienced professionals. The interviewees were drawn from four sectors, namely:

Local Government, State Government, Natural Resource Management Authorities (NRM Authorities) and the Cotton Industry itself. Thus the informants deal with cotton growers from the standpoints of: catchment and landscape management; cotton growing research, development and extension; State government regulation; and local government mandates. The interviewees' names and contact details were collated from CSIRO and CCC CRC researchers familiar with the cotton industry. Some snowballing sampling was undertaken within the state agency sector in order to gather both head (policy formulation) and regional (policy implementation) office perspectives. The snowball sampling technique takes advantage of the in-house knowledge of the initial interviewee (Flick et al, 2004). In total, a list of 90 names was collated. Informants prioritised from that list for the purposes of scoping out the terms for a larger research project. Thirty two interviews were conducted with 37 informants (some interviews were with two people). The interviewees were drawn from 22 organisations. There were no refusals.

Table One Interview Sample

Sectors	**Includes**	**No. of Organisations Per Sector**	**No. of Interviews**
Cotton Industry	Organisations involved in cotton relevant R&D and its extension, state and national industry bodies, cotton growers active in industry bodies	8	12
State Agencies	Informants from Agricultural, Environment and Conservation and Natural Resources State Agencies of Qld and NSW (states relevant to cotton growing regions) at both the strategic (head office) and implementation (regional office) level	5	11
Natural Resource Management Authorities	NSW Catchment Management Authorities and Qld Natural Resource Management Authorities with jurisdiction over cotton growing regions	6	6
Local Government	Informants from local governments with jurisdictions within cotton growing regions in officer and CEO positions	3	3
TOTALS		**22**	**32**

The interviewees were asked which NRM issues they considered crucial in the cotton industry, how well NRM policy had been done in the past and the effect of policy effort on landholder cooperation. The second set of questions concerned what their organisation's NRM policies were and landholder responses to them. The interviewees' opinion of NRM policy coordination across organisations and sectors and landholder responses to the degree of coordination was then elicited. Finally, we asked how likely they considered it to be that the current policy set would resolve NRM dilemmas and what they considered to be useful further research concerning NRM policy coordination.

NRM policies and landholder cooperation

Water was considered the most important natural resource management issue facing the cotton industry at the moment and likely to remain so in ten years time. The sub-issues nominated by the interviewees regarding water (security of supply, water policy implementation and review, river management and water-use efficiency) indicated that the water policy reform process that seeks to balance production and ecological use of waters is problematic for the cotton industry.

Twenty four interviewees believed that policy in the recent past regarding agriculture and natural resource management had been inadequate. Three reasons were nominated: politicisation of NRM policy; poor stakeholder consultation; and poor policy integration. Thirteen interviewees

commented on the high degree of politicisation of NRM issues that has encouraged aggressive stakeholder lobbying in the attempt to influence policy settings:

> The way we've dealt with the community in terms of their ability to influence policy, has not been good, it has ultimately ended up with a lot of political lobbying (Cotton sector).

Thirteen interviewees believed that there had been poor stakeholder consultation over policy design. The manner in which community consultation processes were conducted as part of the water and vegetation reforms led to a loss of trust and confidence by cotton growers and cotton industry organisations in the Qld and NSW Governments. A failure to clearly define the role the community consultations would play in policy making bred perceptions of a failure to deliver on what was initially promised:

> I think the biggest impact on the trust was that we were told that they were going to be community plans and then so many things that the community wanted to do they just said, "No, you can't do that, can't do that. If the government wants to go down that path, they just need to be very up front from the start and say: "This is what you've got power over. This is what you have got no power over. You provide us your advice on these things that we'll accept change on, and sorry but this is the way it's going to be on the others," and that would probably be a far more sensible way to go (cotton sector).

Conversely, the interviewees reported, landholders believed there was poor demonstration of the NRM benefits that would be gained by the reforms.

Ten interviewees viewed NRM policy as poorly integrated at four scales. Integration was viewed as lacking between: different levels of government; production and conservation; the natural resource management issues at stake:

> It's been done in a fragmented and less than integrated way. It might have been done, I believe, in terms of silos, if you like… it might be looking at water, in isolation from a lot of the other considerations that need to be made (NRM Authority);

and the cotton industry and the government :

> [There is] a lack of integration with the industry and industry having feedback into how policy is implemented (cotton sector).

Twenty-six interviewees, including at least one person from each organisation within the four sectors, believed that the way NRM policy has been formulated and implemented in the recent past will negatively influence future cooperation by cotton growers. In particular, they believed that past policy will affect landholders' willingness to listen, their motivation to participate in future consultations, and that future adoption rates of on-farm NRM practices will be reduced.

Organisational policies and landholder responses

The cotton industry sector, made up of multiple small organisations, is the most highly integrated of the four sectors from which the interviewees were drawn. The roles of policy formulation, grower consultation, agro-ecological research, packaging of research findings as best management practise modules, and extension of those findings are well defined in terms of complementary organisational responsibilities. Interviewees from the NRM Authority, State and Local Government sectors were positive about the coherence of the cotton industry's NRM policy, describing it as "sophisticated", "responsive" and "exemplary". The cotton industry interviewees saw grower responses to their policies as generally positive, noting that although growers run mixed cropping businesses they preferred to identify themselves as cotton growers.

In terms of NRM policies specifically, the cotton industry interviewees believed that to the extent that growers are aware of NRM, they view the need to better manage natural resources as reasonable. However, these interviewees report that as NRM has no economic or risk management rationale, the uptake of NRM practices on farm is likely to be driven by peer pressure and need for public credibility. Experience with the BMP program has demonstrated that practices that growers

first view as a ridiculous imposition become normalised as growers try to outdo each other in their implementation. However, the cotton sector interviewees averred that growers dislike bureaucratic tasks and BMP accreditation (formal review of adopted practices) can be difficult, particularly for smaller operators. It was reported that the large middle group of growers are generally supportive of BMP depending on how much effort is required.

The state agency sector is uniform across NSW and Qld in the sense that there is a clear division of responsibility between the compliance mandate of Environmental and NRM Departments and the role of the Departments of Primary Industries to facilitate economic development in an ecologically sustainable manner. The Departments of Primary Industries' mandate is to assist growers adapt to the environmental imperative while remaining profitable through research, development and extension (RD&E) investments. NSW and Qld DPI RD&E relevant to the cotton industry are currently focused on a water use efficiency program that has been independently evaluated as highly successful (Coutts and Bell, 2003). Grower responses to DPI policy in both states was reported to be positive, that cotton growers have a culture of learning to improve farming operations where other industries resist new information.

The Departments of Natural Resource Management policies concern upholding Water, Vegetation and Cultural Heritage Acts by formulating and implementing water sharing and vegetation plans, establishing water markets (by tightening rules regarding license categories, annual allocations etc) and investigating offences against these Acts. The NRM Departmental informants reported that landholder responses to these policies were on the whole negative. Irrigators reportedly viewed the regulation of water as a "largely unnecessary evil" and inequitable outcomes between irrigators had occurred as a result of the development of water sharing plans. The NRM department interviewees reported a grower perception of loss of access to water when license conditions and terms were over-hauled. The reception to investigations of possible offences were reportedly interpreted as an accusation of incompetence and treated with hostility. However, the interviewees noted that public and private opinions on water regulation are different. Quiet majority support for water reform was evident in a willingness not only to report breaches of Water Act and testify in court as to a breach.

The interviewees drawn from 2 Qld and 2 NSW NRM Authorities also demonstrated a common policy purpose and implementation methodologies (that is driven by the logic of federal funding). However, as they are relatively new and essentially experimental organisations, these interviewees thought it was too soon to assess farmer responses to their policies. Interviewees from the other sectors would not comment on NRM Authority policies, also stating that it was too soon to assess the sector's performance. The local government sector (3 interviewees) is driven by the logic of planning legislation and does not have an organisational view on NRM per se. However, one interview stated that the cotton industry was important to the Local Government Area and that State regulation did not adequately acknowledge the NRM efforts of cotton growers.

Competing theories of relationship between public/private interests

We asked the interviewees to explain how their policies sought to balance private and public interests in natural resource use. Competing definitions of the relationship between public and private benefits were evident in the interviewee remarks and reflected the different constituencies and mandates of the state government and cotton industry sectors. The idea that the public benefit is pursued exclusively by the state governments through water reform is regarded as doubtful by the cotton industry sector informants on two grounds. Firstly, it is disputed that unmanaged land is necessarily ecologically healthy as, for example, problems such as weed infestations may become rampant. Secondly, the notion that production and NRM are incompatible is viewed by the cotton industry sector informants as unproven if not false. Instead, it is the cotton industry interviewees' experience that long term production is in the first place dependent on good adaptive management practices and therefore public NRM benefits are best achieved through the pursuit of the private benefit. An unprofitable farming business is viewed by cotton industry informants as indicative that

time and money will not be spent on NRM and the property is likely to become degraded. In contrast, the state agency sector informants point out that rather than being opposite to growers in water and vegetation regulation debates, they are positioned between growers and environmental interests. The resistance to water reform on the grounds that it constitutes an erosion of property rights does little to ease the environmentalist/farmer polarisation that state agency bureaucrats are caught between.

NRM Policy Coordination

There was agreement across sectors (excluding NSW state agencies) that the primary reason for poor coordination in NRM policy and its implementation was the progression of policy through agency silos that fail to foster inter-agency communication. The instability of the silos themselves, constant alterations in agency names and mandates and reliance on contract rather than permanent staff, was reported as exacerbating this problem. Essentially the structural characteristics of state administration were critiqued by many interviewees as being too cumbersome and fragmentary to foster the degree of NRM policy coordination that would effectively address natural resource degradation. Poor coordination of NRM policy within and between sectors was viewed by 4 interviewees from the cotton and local government sectors as resulting in 'over-regulation' that negatively influenced farmer's responses to NRM policy:

> There's a great deal of disquiet in the farming community that… there's too much, too many directions and too much compliance instead of trying to concentrate it down into one good solid NRM framework that everybody agrees [on] instead of everyone adding their own bit and making it really unwieldy (Local Government sector);
> You just can't have multiple vehicles, it just won't work (Cotton industry).

A small minority of interviewees (4) believe that the current NRM policy mix will be completely unproductive. The majority of responses to this question were cautiously optimistic. The informants agreed across 3 sectors (excluding the cotton industry sector) that the water sharing planning process, however painful for all involved, had to be done:

> I think what the Government has done is made some very hard decisions. It may not have been implemented too well (NRM Authority);
> At least we have made some calls, rather than just all wander around and do nothing and hope (State agency);
> [E]veryone acknowledges that there has been an over allocation of the [water] resource (Local Government).

Seven comments were made across the 4 sectors that the NRM policy challenge now is to integrate landholder farming practices with the new state based NRM compliance regimes using industry bodies as the interface. The NRM Authority, local and state government sector informants all commended the cotton industry's proactive response to criticism of its environmental destructiveness by developing the BMP program and viewed it as the most innovative Australian agricultural industry in terms of environmental improvement of on-farm practices. Furthermore, the majority of research question suggestions (6 interviewees) focused on the BMP L&W module as the basis for co-regulatory arrangements in conjunction with state governments as part of the new State NRM compliance regimes (see also Cone, 2005). Better NRM policy coordination is what these interviewees called for and co-regulatory arrangements were viewed by them as a promising solution to the currently fragmented state of NRM policy. From the cotton industry interviewees' point of view, NRM policy fragmentation generates multiple NRM delivery vehicles that manifest as piles of red tape on growers' kitchen tables that engender uncertainty, resentment and resistance.

Discussion

There are two advantages of co-regulatory arrangements. Firstly, from a government's perspective, such arrangements may assist to drive the social processes capable of supporting compliance in agricultural communities. Bartel argues that regulatory agencies should

> … understand and use social enforcement factors to support the regulatory approach; we must draw upon social norms and reinforce those that are favourable to the regulation to build the necessary moral architecture for regulatory success (2005:9).

This is a matter of tapping into and supporting the views and reasoning of the "silent majority" identified by the state agency sector interviewees. Negotiating co-regulatory partnerships with industry bodies (such as Cotton Australia) that have *traction* with landholders through extension mechanisms emphasising environmental stewardship constitutes a methodology for leveraging silent disapproval into effective social sanctions:

> The prospects of such agreements are best where there is a history of cooperation and peer benchmarking and the presence of recalcitrants has the potential to undermine the image of the industry as a whole (Gunningham, 2003:14).

In effect, co-regulatory arrangements could furnish an infrastructure facilitative of the social change desired by governments.

Secondly, from a landholder's perspective, co-regulatory arrangements offer relief from multiple regulatory demands. By embracing one delivery mechanism that is written specifically for the farming system in use, landholders could assure governments that farming is being undertaken in a sustainable manner via adaptive management practices that are *continuously* updated via industry RD&E efforts (Gunningham, 2003:21). The Qld Farmers Federation Memorandum of Understanding with the Qld Government (2005) is motivated by such prospects. The Qld government has accepted farm management systems as "a key component of the policy mix is delivering sustainable and profitable agriculture" that can "enhance cooperative and effective working arrangements between the Qld Government and the intensive agricultural sector" (Cherry, 2005:3).

Co-regulatory arrangements seem to offer a converging advantage of *efficiency* in the face of the limited resources of the state (public monies) and farmers (attention). For both State governments and agricultural landholders, such arrangements may lower the transaction costs of contestation that result from the failure to establish the mutually agreeable middle ground. Such transaction costs result from lobbying battles over property rights versus the rights of the environment. Essentially, co-regulatory arrangements rely on industry bodies to form a communicative hinge between administrative systems and (rural) society.

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