

Regulating our Natural Resources - Farmers Friend or Farmers Foe? Have Regulators got the mix Right?

Troy Colling and Warren Christensen[†]

There is growing community acceptance of regulatory compliance activities that address the misuse and poor management of our natural resources. However, in some areas and industries, there is still a significant degree of resistance to these programs.

Utilising Queensland's vegetation management processes as a case study, this paper explores a range of criminogenic factors, such as Rational Choice/Routine Activities Theory and Control/Social Bond Theory, that may promote regulatory non-compliance by landholders and the ongoing rejection of regulatory requirements as being excessively restrictive and intrusive. It is argued that this ongoing rejection of regulatory requirements provides evidence of an entrenched view in some areas, that the 'penalties do not fit the crime'. The paper will also consider how, as part of a balanced approach to compliance, strategies that promote 'trust' between regulators and the regulated may ultimately assist in altering these attitudes and improve levels of voluntary regulatory compliance.

Introduction

The ongoing debate into the effects of climate change is generating growing community concern that the continued misuse of our natural resources will have significant negative impact on our economy and quality of life. There is a growing awareness that land clearing and the use of precious fresh water reserves must be effectively managed for our and future generations.

The recently released Stern Review (2006) found that 'the scientific evidence is now overwhelming: climate change is a serious global threat' (Stern 2006, p.1). It was argued that climate change will affect the basic elements of life for people around the world and that if we do not act, the overall costs and risks will be equivalent to losing at least 5 per cent of global GDP each year. In a worst case type scenario, the review found that 'if wider risks and impacts are taken into account, costs in global GDP could be as high as 20%' (Stern 2006, p.1). Therefore, it was argued that, in relation to addressing the effects of climate change, 'the benefits of strong and early action far outweigh the economic costs of doing nothing' (Stern 2006, p.1). Stern (2006, p.4) recommended that curbing deforestation is a highly cost-

[†] Queensland Department of Natural Resources and Water

effective way of reducing greenhouse gas emissions and that urgent action needs to be taken in order to manage and preserve remaining areas of forest.

As regulators, society looks to government agencies such as the Queensland Department of Natural Resources and Water (DNR&W) to ensure that their compliance strategies will protect the environment now and into the future. Agencies such as DNR&W need to be able to demonstrate that they can effectively assist government to develop legislation, policies and regulatory strategies that encourage and, if necessary, enforce the use of natural resources in a manner that maintains a balance between society's current demands and the needs of future generations. However, in doing this, agencies must also ensure that they do not deny individuals their right to aspire to wealth and to derive that wealth from the lawful, responsible and sustainable use of our natural resources. In short, they must ensure that they are 'getting the balance right'.

To ensure that agencies tasked with managing our natural resources are meeting their regulatory obligations and maintaining public confidence in their activities, they need to regularly 'take stock' of how effectively they are 'doing business' with those landholders, key industries and other stakeholders who are being regulated. To maintain regulatory effectiveness, there are two fundamental questions that regulatory agencies need to ask. The first is 'Are our agency's rules being obeyed'? The second is 'If not, why not'?

Within the scope of these two 'simple' questions, we can engage in a wide range of criminological, legal, administrative, social and economic research and debate. However, the fact still remains that any measure of agency effectiveness must be couched in terms that reflect the level of compliance with the agency's rules.

Given the need for all natural resource regulatory agencies regularly to question the effectiveness of their compliance strategies, this paper will explore a range of issues that may impact on how compliance strategies and their associated penalties are accepted or seen to 'fit the crime' by those being regulated.

In doing so, this paper will canvas criminological theory exploring factors that may contribute to landholders' rejecting regulatory programs as 'not fitting the crime', through being excessively restrictive and intrusive. The paper will also discuss how these factors may erode the value of coercive regulatory strategies, creating a culture of resistance by landholders against the normative values underpinning those strategies. This will be followed by a discussion of the use of trust as a regulatory strategy. While the issue of trust will be a difficult one for those

being regulated to accept, it is perhaps even more so for those doing the regulating. However, it will be argued that the adoption of strategies that improve trust between regulators and stakeholders in tandem with compliance strategies that incorporate a continuum of compliance actions, can lead to an increased acceptance of compliance regulation.

The paper concludes with a number of research options that could be undertaken to better ensure that our penalties are fitting the crime, by asking the offenders themselves.

Why offend: A theoretical overview?

There are many criminological theories about why individuals commit deviant acts (i.e. offend). Three of these, Rational Choice, Routine Activities and Control/Social Bond Theory are briefly examined to provide a potential theoretical base for explaining, managing and assisting in the prevention of environmental/natural resource offences.

Rational Choice & Routine Activities Theory

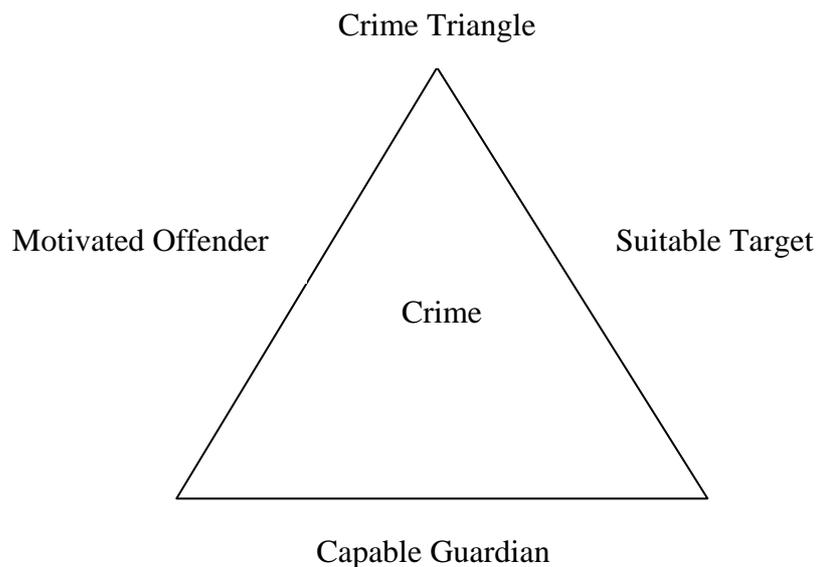
It is argued that 'the essence of rational choice perspective is that the individual will take advantage of an offending opportunity if the expected benefits exceed expected costs'. These benefits can be 'tangible gains such as money or avoided inconvenience' or they can be 'psychic benefits associated with the act'. The possible costs 'are determined by the likelihood and severity of externally imposed formal and informal sanctions and the strength of moral regret' (Nagin and Paternoster 1994, p. 582).

Put simply, the argument is this: a person who commits an offence has rationally weighed up the risks and benefits of the situation and has made a rational choice to commit that offence.

The routine activity theory of crime, which is closely associated with rational choice theory, directs its attention, not at the 'characteristics of offenders', but 'upon the circumstances in which they carry out predatory criminal acts' (Cohen and Felson 1979, p. 588).

The theory posits that 'most criminal acts require convergence in space and time of *likely offenders, suitable targets* and the *absence of capable guardians* against crime' (Cohen and Felson, 1979, p. 588). These three factors have become known as the crime triangle (see Figure 1) (Clarke and Eck 2003).

Figure 1 Crime Triangle.



This convergence in space and time is facilitated by the legitimate 'routine activities' of our daily lives that serve to bring us into contact with, or mask the activities of, motivated offenders, in effect allowing illegal activities to feed upon the legal activities of everyday life.

In summary, Routine Activities Theory explains how legitimate patterns of work and recreation can result in increased opportunities for illegal activities, while Rational Choice Theory identifies the factors that 'encourage' offenders to take advantage of those opportunities (Clarke 1999).

Control & Social Bond Theory

Control Theory is a theory of conformity which asks why people do not offend as opposed to why do they offend (Hirschi 1969). The answer is 'Social Bonding'. Put simply, Control Theory maintains that it is the strength of a person's social bond to conventional society that determines the likelihood of their conforming to societal norms or acting in a deviant manner. A strong bond to conventional society results

in greater conformity while a weak bond to conventional society results in a greater tendency to commit deviant acts (Hirschi 1969).

There are four core elements to Social Bond Theory:

- **Attachment.** People who develop strong attachments to significant others (i.e. parents, peers) are less likely to deviate from accepted community norms for fear of earning the disapproval of those significant others.
 - **Commitment.** This refers to the personal investment people make in areas such as their education, businesses and careers. The greater the investment in time and effort in these areas, the greater the reluctance to place this effort at risk by engaging in behaviour deemed to be deviant.
 - **Involvement.** This again involves the time and effort individuals place in accepted conventional activities. Put simply, the more time and effort an individual places into conventional activities the less time they have to commit deviant acts.
 - **Belief.** In effect, this implies that there must be a belief on the individual's part in the commonly held community norms prohibiting deviant activities.
- (Hirschi 1969)

Theory and 'real world' compliance 'offending'

How can these theories be used to explain 'real world' breaches of environmental law?

Rational Choice Theory maintains that:

- A person who commits an offence has rationally weighed up the risks and benefits of the situation and has made a rational choice to commit that offence; and
- Benefits can be defined as 'tangible gains such as money or avoided inconvenience'.

It can be argued that some landholders, particularly those producing high value products (i.e. beef cattle and irrigated food/fodder crops) or those struggling for financial survival may be tempted to breach vegetation and water compliance regulations for financial gain. This may include, for example:

- The illegal clearing of vegetation for fodder purposes, particularly in areas significantly affected by drought, to maximise the number of head that can be run;
- The illegal clearing of vegetation for the establishment of improved pasture to increase the head of cattle able to run on a property;
- The illegal taking of water for stock watering purposes; and
- The illegal taking of water by irrigators (i.e. illegal pumps, allocation overuse or other breach of permit) in order to produce high value food or fodder crops.

Indeed, it has been argued by a number of stakeholder groups that vegetation management legislation has cost agricultural industries many millions of dollars in forgone economic development. This view has been supported by farmer surveys conducted by the Australian Bureau of Agricultural and Resource Economics (ABARE) as part of their report, *Native Vegetation Public Conservation on Private Land: cost of forgone development in southern and western Queensland* (2006). This report argued that the cost of forgone development in the area covered by the study was in the order of \$520 million.

Landholders may also be tempted to breach compliance regulations in order to avoid inconvenience. Stakeholder groups have argued that vegetation management legislation has subjected landholders to complicated approval processes and difficult-to-understand permit systems and has also placed unfair restrictions on property management activities such as:

- Thinning of regrowth;
- Control of weed growth/spread;
- Establishment of farm infrastructure;
- Maintenance of farm roads and boundary fences; and
- The clearing of vegetation for fodder in drought conditions.

As stated above, Routine Activities Theory explains how legitimate patterns of work and recreation can result in increased opportunities for illegal activities. In this case, it would be a landholder who:

- while engaged in the legitimate 'day to day' property management operations (i.e. permitted take of water or vegetation clearing)

- is motivated to breach a 'natural resource compliance regulation' (i.e. illegal take of water or vegetation clearing for profit or to avoid inconvenience)
- in the absence of anyone who is likely to challenge the activity.

It can be argued that many potential breaches of compliance regulations investigated by regulatory agencies stem from activities that either were or are currently permitted as part of 'day to day' property management operations. These can include the establishment and operation of infrastructure for the taking of water or the clearing of vegetation for fodder and other ongoing purposes. Many of these potential breaches are likely to occur on properties in remote locations, far from the direct view of casual observers or regulatory agencies. Furthermore, even if they were casually observed, it would be difficult to tell (without further investigation) if the irrigation or clearing operations were being conducted unlawfully.

Therefore, it could be argued that it would be easy for a motivated offender to be presented with a likely target in the perceived absence of a capable guardian.

As a result of these observations, this paper would argue that Routine Activities Theory can be used to explain how legitimate patterns of work on many properties can result in increased opportunities for illegal activities, while Rational Choice Theory can be used to identify the factors that 'encourage' some landholders to take advantage of those opportunities.

We now turn to Control/Social Bond Theory which, as stated above, is a theory of conformity in which people develop self-control and conform to community norms (laws) if they are effectively bonded to the community. One of the four core elements of Social Bond Theory, belief, states that there must be a belief on the individual's part in the commonly held community norms prohibiting deviant activities.

In this case, for landholders to voluntarily conform to natural resource compliance regulations they would need to accept or be 'bonded' to broad community norms that vegetation and water resources need to be protected for the benefit of the whole community. If landholders do not share these norms and are not 'bonded' to broader community views, then there is a high probability they will reject laws based on those norms. Indeed, it can be argued that in attempting to enforce laws/regulations based on those rejected norms, landholders may develop a culture of resistance to perceived 'unjust' regulations forced on them by others who benefit at their expense.

Unfortunately, a quick scan of rural media articles and letters to the editor will quickly reveal, to even the most casual reader, the deep feelings of rejection and distrust of city 'attitudes' and rules that exist in some communities. In some areas, there is a fundamental rejection particularly in relation to vegetation management regulations of:

- The science underpinning the need for such regulations;
- The adoption of the precautionary principle in relation to resource management;
- The perceived benefits, both locally and for the wider community and;
- The compensation offered to those affected by natural resource management legislation.

Therefore, according to Control/Social Bond Theory, it should come as no surprise that landholders who do not trust or believe in (i.e. are not 'bonded' to) the regulations being imposed upon them will:

- View associated legislation with utmost suspicion - i.e. as a land grab, denial of rights etc;
- Not trust the regulatory agency; and
- View the agency's officers with suspicion and hostility (i.e. as tree police, bullies, act like Nazis etc).

Can a coercive 'deterrence' strategy be used to advance compliance activities?

It can be argued that the adoption of a deterrence strategy, utilising highly punitive coercive measures in combination with significantly elevated levels of observation and investigation, should be successful in reducing breaches of compliance.

In terms of Rational Choice Theory, a punitive deterrence strategy should be able to reduce illegal activity through:

- Increasing levels of investigation and observation; and
- Imposing severe punishments on those who breach compliance regulations.

Put simply, increasing the chances of being 'caught in the act' through increased observation; in combination with a highly punitive compliance regime, should make

potential offenders 'rationally' reconsider their actions, as the costs of committing the offence may now outweigh the gains.

In terms of Routine Activities Theory, the increased levels of observation and investigation, in combination with a punitive compliance regime, should serve to reduce breaches of compliance by:

- Disrupting the convergence in space and time of likely offenders and suitable targets (landholders are being watched) and;
- Enhancing the power of the capable guardians (punitive deterrence punishments).

However, as the above discussion on Control /Social Bond Theory demonstrated, this may not be the case. It was argued that, if landholders do not believe in (i.e. are not 'bonded' to) the norms on which compliance regulations are based, there is a high probability that they will reject those regulations. Furthermore, attempts to enforce regulations that are based on rejected norms may result in landholders developing a culture of resistance to the 'unjust' regulations being forced on them.

Therefore, while compliance strategies based on punitive measures may be successful in reducing breaches in compliance, they may be counter productive in the long term, creating entrenched resistance that significantly reduces the voluntary uptake of compliance activity.

This view is supported by a growing body of criminological research, which argues that regulatory agencies that significantly rely on coercive regulatory strategies to regulate 'industry', place themselves at risk of inadvertently encouraging a culture of resistance within that industry (see Cherney 1997). When this occurs, those within the industry may embark upon a deliberate process of legal resistance, counterattack and political/public action to undermine the regulatory tools, actions and credibility of the regulatory agency. Therefore, it could be argued that a deterrence only approach may be a very high risk approach to compliance enforcement.

Can 'trust' be used as a mechanism to advance compliance activities?

There are a number of criminological studies which argue that trust can play a vital role in ensuring compliance in a range of regulatory environments (see Cherney 1997). These studies have demonstrated that:

- Regulatory agencies can improve levels of compliance by building 'trust' relationships (Braithwaite and Makkai 1994);
- Corporations will respond positively, in terms of compliance, to regulatory strategies that are based on the assumption that the corporation wants to 'do the right thing' (Fisse and Braithwaite 1993);
- Regulatory agencies need to gain the trust of those being regulated in order to promote voluntary compliance (Pettit 1996); and
- Trust can form the basis of an effective regulatory strategy (Ayers and Braithwaite 1992).

Put simply, it is argued that in order for a regulatory agency to use trust as a mechanism to improve compliance, activities that promote trust and build trust-based relationships with stakeholders must be the primary focus of that agency. As stated by Professor Arie Freiberg (2000):

'The gap between regulatory theory and practice can be narrowed if extensive consultation between all the parties involved in the regulatory exercise is undertaken' (2000, p. 7).

Activities that focus on distrust should be kept in the background. It should be noted that while a trust-based compliance strategy attempts to improve compliance uptake by initially trusting stakeholders, it can shift to a 'hard headed' punitive response when trust fails (Braithwaite 1996).

As stated by Cherney:

'Rather than constraining the regulatory game, as is the habit of coercive strategies, a trust based strategy enables regulatory models to be designed around more dynamic and innovative frameworks. It can shift between praise and punishment, regulation and self-regulation, citizenship and self interest. It can hold out the possibility of nurturing virtue and it can respond aggressively when this fails'. (1997, p. 80)

Compliance Enforcement: A measured response.

It is this trust-based approach to regulatory compliance that has given rise to the development of the 'regulatory pyramid'. The 'regulatory pyramid' provides a range of compliance responses that can be escalated depending on the actions of those being regulated (Ayers and Braithwaite 1992; Braithwaite 1993, 1996). The aim of

this pyramid is to provide a measured response to compliance activity that helps maintain a balance between the trust and punitive elements of regulatory enforcement strategies.

At the base of the pyramid are activities that seek to promote compliance through dialogue, mutual goal setting, education and self regulation. If these mutual trust-based efforts fail, compliance responses can be escalated up the pyramid. Regulations can be enforced through a scale of harsher penalties, ranging from warnings and civil/criminal sanctions through to license suspension or revocation (Cherney 1997; Ayers and Braithwaite 1992).

However, it should be acknowledged that communication with landholders/stakeholders by compliance agencies to build trust-based relationships can be problematic. As suggested by Pannell et al. (2006) traditional methods of communicating with farmers (i.e. through the provision of agronomic extension services), unless carefully crafted, may not reach their target audience with the desired message:

‘Even with the most expert and persuasive extension, landholders are not likely to change their management unless they can be convinced that the proposed changes are consistent with their goals’ (Pannell et al. 2006).

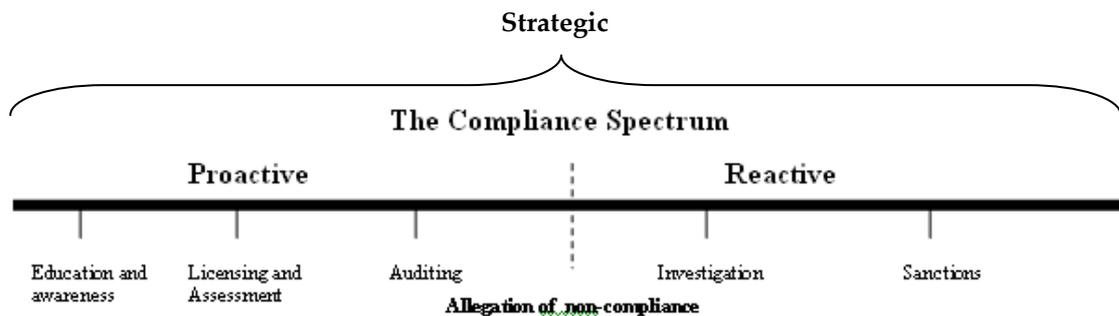
DNR&W compliance strategy: A balanced approach

The Queensland Department of Natural Resources and Water, like many other regulatory agencies, has developed a compliance strategy based on the escalations of the regulatory pyramid.

DNR&W’s compliance strategy recognises that compliance enforcement must encompass a range of activities, both proactive and reactive (see Figure 2). Hence, DNR&W has adopted a multidisciplinary approach that reflects the principles of the regulatory pyramid, incorporating three broad functions: namely,

- A proactive capability;
- A reactive capability; and
- A strategic capability.

Figure 2 Compliance Spectrum.



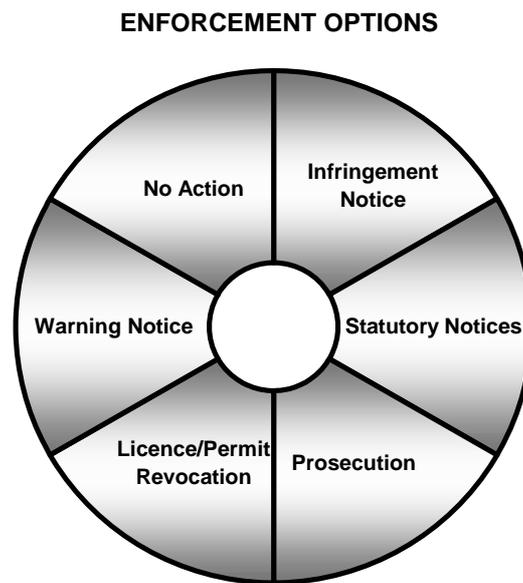
Proactive

DNR&W attempts to engage stakeholders to build understanding and trust through the adoption of education and awareness strategies, as well as a mix of incentives, licensing and auditing programs to promote regulatory compliance in the community. Such activities may be focused on specific groups or on the community as a whole. Proactive activities are designed to encourage voluntary compliance, thereby lowering the level of non-compliance with natural resource laws.

Reactive

If these consultative trust-based approaches are not successful and DNR&W becomes aware of allegations of non-compliance, it will investigate and assess the circumstances surrounding the incident of non-compliance. The guiding principle in every case is that of *proportionality*; that is, the enforcement option chosen should reflect the seriousness of the offence. In some circumstances, as per the regulatory pyramid, lower level responses such as warnings, a negotiated response, increased surveillance auditing or issuing of an infringement notice may be appropriate. However, in other situations, because of the nature of the non-compliance, a prosecution or licence revocation may be the most appropriate response (see Figure 3).

Figure 3 DNR&W Compliance Enforcement Options.



Strategic

DNR&W also maintains a strategic capability, based on dialogue and consultation, to respond to changing community expectations and developments in the field of sustainable natural resource management. If the need for legislative or policy review is identified, the Department has the capacity to address this through:

- Internal review processes;
- Consultation with internal and external stakeholders;
- Policy reform; and
- Legislative reform (where requested by Government).

As part of its strategic approach to compliance, DNR&W has been engaged in a review of all of its legislation with a view to evaluating and extending the range of compliance remedies available. 'Best practice' remedies being utilised by any regulatory agency, environmental or other, will be considered. This may include a range of civil and administrative penalties, such as negotiated settlements, legal undertakings and administrative orders, along with punitive responses, such as commercial benefit penalties. DNR&W has raised with Queensland's Crime and Misconduct Commission the possibility of applying 'proceeds of crime' legislation to environmental offences.

It can be seen that DNR&W has been attempting to adopt the principles of the 'trust'-based paradigm in developing its compliance strategy.

However, the question must be asked: Has the adoption of a proportionate approach to compliance based on a trust paradigm succeeded in making the penalties associated with that strategy acceptable (i.e. seen to 'fit the crime') by those being regulated? Furthermore, irrespective of the compliance strategy adopted, does an agency really know if its rules are being obeyed and if not, why not?

Monitoring rural media may suggest that the answer is 'no' to both questions. But at present, there is insufficient empirical evidence to answer these questions with any degree of confidence.

Conclusion

What do offenders say? How can we find out?

'The whole art of war consists in getting at what lies on the other side of the hill, or, in other words, what we do not know from what we do know'.

(Duke of Wellington 1815)

This statement, by the Duke of Wellington in 1815, was made in the aftermath of his victory over Napoleon at Waterloo. It succinctly encapsulated the Duke's belief in the inestimable value of accurate intelligence in overcoming adversity on the battle field.

Regulators have been fighting a battle to improve levels of voluntary uptake of compliance by landholders. It is a battle in which victory has been elusive. This may, in part, be due to the fact that the level of research, the 'battle field' intelligence, is poor at best. Perhaps, they are just not effectively separating out what they do not know from what they do know and, as a result, are not getting a good picture of what lies 'over the hill'.

This paper has utilised Rational Choice/Routine Activities Theory and Control/Social Bond Theory to explore a range of factors that may contribute to landholders rejecting regulatory programs as 'not fitting the crime'. This paper also discussed how these factors can erode the value of coercive regulatory strategies and create a culture of resistance to compliance by landholders. The value of adopting a

trust-based compliance strategy that incorporates a continuum of proactive and reactive measures based on the regulatory pyramid design was also canvassed.

However, what this paper also attempted to demonstrate was that, while extensive literature and research are available on general criminological constructs (see bibliography), there is insufficient empirical evidence to genuinely know if:

- The use of the 'trust' paradigm will succeed in achieving greater acceptance that environmental penalties do 'fit the crime' by stakeholders; and
- Our agency's rules are being obeyed or not.

Therefore, in conclusion, this paper recommends that a coordinated research program be conducted that considers the following:

1. Develop a typology of repeat natural resource compliance offenders;
2. Conduct research with natural resource compliance offenders to understand their motives, methods and opinions;
3. Map environmental compliance activity, outputs and the incidence of natural resource compliance offending, to identify geographic and socioeconomic patterns in its occurrence;
4. Draw on the expertise of natural resource compliance investigators and litigators to respond to these incidences in a considered, and more consistent manner;
5. Develop preventative measures, including an incentive-based regime (in consultation with stakeholders) to assist in the voluntary uptake of compliance by landholders; and
6. Develop a model for determining the costs of non-compliance that reflects the economic and social impacts of non-compliance.

As stated at the commencement of this paper, society looks to regulatory agencies such as DNR&W to ensure that their compliance strategies will protect the environment now and into the future. Natural resource regulatory agencies need to demonstrate that they can effectively develop sophisticated regulatory strategies that both encourage voluntary compliance and, where appropriate, deter offenders through effective punitive measures. These parallel approaches are not mutually exclusive but complementary, and will enable us to better use our natural resources in a manner that maintains a balance between society's current demands and the needs of future generations.

Unless we can start to develop better research, or 'battle field' intelligence, within an environmental context, we will continue to be uncertain if we are 'maintaining the balance' by ensuring that deterrent mechanisms are effective and, in fact, do 'fit the crime'.

References

- Australian Bureau of Agricultural and Resource Economics (2006) *Native Vegetation: Public Conservation on Private Land – the cost of foregone rangelands development in southern and western Queensland*. Accessed on 21/09/06 at www.abareconomics.com/publications_html/crops/crops_06/native_veg.pdf
- Ayers, I. and Braithwaite, J. (1992) *Responsive Regulation: Transcending the Deregulation Debate*, Oxford: Oxford University Press
- Brantingham, P. and Brantingham, P. (1993) 'Environment, Routine, and Situation: Toward a Pattern Theory of Crime', in Ronald Clarke and Marcus Felson (eds.) *Routine Activity and Rational Choice, Advances in Criminological Theory*, Vol. 5, New Brunswick, NJ: Transaction Publishers.
- Braithwaite, J. (1996) 'Institutionalising Distrust, Enculturating Trust', in V. Braithwaite and M. Levi. (eds.) *Trust and Democratic Governance*, New York : Russell Sage Foundation.
- Braithwaite, J. (1996) 'Trust and Compliance', *Policing and Society*, Vol. 4, pp. 1-12.
- Cherney, A. (1997) 'Trust as a Regulatory Strategy: A Theoretical Review', *Current Issues in Criminal Justice*, Vol. 9 No. 1, pp. 71-84.
- Clarke, R. V. and Eck, J. (2003) *Become a Problem Solving Crime Analyst: In 55 small steps*, London: Jill Dando Institute of Crime Science University College London.
- Clarke, R. V. (1999) 'Reducing Opportunities for Crime', a paper prepared for the UN Workshop on *Community Involvement in Crime Prevention*, Buenos Aires, February 8-10. Accessed on 25/10/05 at www.edoca.net/Resources/Conference%20Papers/UN_workshop_1999/Clarke_Reducing_opportunities_for_crime_Buenos_Aires.pdf
- Cohen, Lawrence E. and Felson, M. (1979) 'Social Change and Crime Rate Trends: A Routine Activity Approach', *American Sociological Review*, Vol. 44, pp. 588-608.
- Cornish, D.B. and Clarke, R.V. (eds.) (1986) *The Reasoning Criminal: Rational Choice Perspectives on Offending*, New York: Springer: Verlag.
- Fisse, B. and Braithwaite, J. (1983) *Corporations, Crime and Accountability*, Cambridge: Cambridge University Press.
- Freiberg, A. (2000) 'Effective Compliance and Enforcement Policies', paper prepared for the *Smart Compliance for the New Millennium Conference*, Adelaide, 30-31 March 2000.
- Hirschi, T. (1969) *Causes of Delinquency*, Berkeley: University of California Press.
- Nagin, Daniel. S. and Paternoster, R. (1994) 'Personal Capital and Social Control: The Deterrence Implications of a Theory of Individual Differences in Criminal Offending', *American Society of Criminology*, Vol. 32, No. 4, pp. 581-596.
- Pannell, D. J., Marshall, G. R. Bar, N., Curtis, A., Vanclay, F., and Wilkinson, R. (2006) 'Understanding and promoting adoption of conservation practices by rural landholders', *Australian Journal of Experimental Agriculture*, Vol. 46, pp. 1407-1424.
- Pettit, P. (1990) 'Virtues Normativa: Rational Choice Perspectives', *Ethics*, Vol.100, pp. 725-755.

Stern, N. (2006) 'Executive Summary (Short)' *Stern Review on the economics of climate change*. Accessed on 01/11/06 at www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm.