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# **The function of property in creating an effective legal regime for trade in environmental offsets**

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## **Abstract**

Market-based environmental regulation is becoming increasingly common within international and national frameworks. Environmental offset and trading regimes are part of the market-based instrument revolution. This paper proposes that environmental market mechanisms could be used to introduce an ethic of land holder responsibility. In order for market based regimes to attract sufficient levels of stakeholder engagement, participants within such scheme require an incentive to participate and furthermore need to feel a sense of security about investing in such processes. A sense of security is often associated with property based interests. This paper explores the property related issues connected with environmental offset and trading scheme initiatives. Relevant property-related considerations include land tenure considerations, public versus private management of land choices, characteristics and powers associated with property interests, theories defining property and the recognition of legal proprietary interests. The Biodiversity Banking Scheme in New South Wales is then examined as a case study followed by a critique on the role of environmental markets.

## **Introduction**

Current environmental regulation aims to ensure that natural resources are managed and used in a sustainable manner. In order to comply with the principles of sustainable development regulators must recognise the existence of all environmental values and then attempt to balance these interests against one another. Early environmental regulation often resulted in the promotion of one environmental value (for example economic values associated with natural resources) at the expense of other environmental values (for example ecological function and service values). The existence of competing or incompatible

environmental values has promoted the development of legal mechanisms which attempt to recognise all interests associated with a specified area. These more advanced methodologies seek to establish obligations for landholders and provide some form of incentive to induce compliance. More developed management methodologies allow for multiple environmental values to be managed and used in conjunction with one another. An example of modern environmental regulation is the advancement of market-based instruments promoting sustainable resource use and management. This paper will focus on the emerging environmental offset and trading frameworks which attempt to ensure that existing stocks of environmental values are not diminished as the result of development deemed necessary.

It is suggested that governments should attempt to ensure that development needs do not impinge upon the provision of ecosystem services. Many governments have adopted a three-step process to deal with this obligation.<sup>1</sup> The first step is to try to ensure that the development avoids interference with the provision of ecosystem services. If this is not possible, then the second step is followed. This step seeks to minimise damage caused to the provision of ecosystem services as a result of the development. If minimisation of damage is not possible, the third step is implemented. This step involves the offsetting of the damage caused to the provision of ecosystem services as a result of the development. Environmental offset policy is a tool that is utilised once it has become clear that no other remedial action will ensure the uninterrupted provision of ecosystem services.

It should be made clear at this point that this article does not advocate the use of environmental offsets as the ideal solution to address land and water degradation. From a purely practical perspective there is simply not enough land available to offset the negative environmental outcomes arising from

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<sup>1</sup> For example see Environmental Protection Agency, *Queensland Government Environmental Offsets Policy* (2008) Queensland Government <http://www.epa.qld.gov.au/publications?id=2501> at 9 July 2008.

development activity. Additionally from an ecological standpoint it is not a sufficient response to allow unsustainable practices to occur on the basis that these activities will be offset elsewhere. However in instances where the development will occur regardless of the ecological impact, the use of environmental offset practices may contribute to achieving more sustainable outcomes (for example instances of deemed necessary state development for example the construction of highways and public works or utilities services).

Environmental offset regimes are generally not about allowing or promoting development in areas in which development is otherwise restricted or prohibited. Rather environmental offset initiatives should operate to increase the liability of those developments that would have been approved under existing planning requirements and whose imposition will result in the loss of environmental values.

Environmental offset initiatives also have the potential to influence how private land holders manage of land, though this potential remains relatively unrealised at present. Current environmental regulation generally only prescribes what a land holder may not do with their land. This means that are very few positive environmental obligations placed on land holders. As a result of this, land under freehold title has remained largely unencumbered by environmental management prescriptions. This has resulted in little to no active management being carried out across a significant proportion freehold land.

Environmental offset programmes could be used to introduce management imperatives into regulatory frameworks by requiring a functional lift in the quality and quantity of environmental services upon the land. Environmental regulation needs to incorporate management objectives, performance standards and land holder responsibilities. This however, will be opposed by land holders unless an incentive is offered to induce land holders to participate in such schemes. Environmental offset and trading frameworks may be able to provide land holders with incentives to manage land actively for better environmental outcomes.

The incentive will come in the form of an economic benefit if certain environmental conditions are met. The government will need to create a new source of revenue to fund such environmental management programmes. Revenue may be generated from the imposition of a new tax. For example in Costa Rica a proportion of a new tax was targeted towards environmental payments.<sup>2</sup> An alternative approach may see the introduction of a charge which requires developers to financially contribute to offsetting the effects of their development. There are many ways in which revenue for environmental management could be created, but in essence this process should result in the creation of a new pool of money which is used to reward land holders who improve environmental conditions on their land. This new process would contribute to introducing a concept of land holder responsibility in addition to the well understood and perceived concept of land holder rights.

In order to create revenue and a market for environmental offsets the activity performed by the environmental offset framework must be recognisable by the legal system. Therefore if the environmental offset involves afforestation of an area the legal system will need to recognise this activity. One way to recognise interests associated with land is to attach a property based interest to the activity. Emerging market based environmental frameworks have taken varied approaches to defining the nature and rights associated with interests in environmental values. This article will examine the effect of land tenure upon environmental offsets and trading regimes, the rights and responsibilities associated with a property based interest in an environmental resource and some options for legal recognition of these interests.

### *Markets and Property Rights*

Market-based approaches to environmental management require the development of property rights in environmental resources. This is because markets are premised on the economic definition of property that property

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<sup>2</sup> Stefano Pagiola, 'Payments for environmental services in Costa Rica' (2008) 65 *Ecological Economics* 712, 713.

means ownership. According to this line of reasoning once ownership / property rights are established incentives are created to manage and care for the environmental value to which the property rights attach. Environmental degradation can therefore be viewed as an example of a market failure.<sup>3</sup> If this is accepted, then it could be suggested that the creation of property rights in environmental resources would result in an economic value being attributed to these environmental values, which in turn means that an incentive exists to manage and look after this environmental value.<sup>4</sup> Property rights therefore provide the holder of the rights with a sense of security which in turn acts as an incentive for better management or protection of the interest.

In support of a market approach are case studies which demonstrate a correlation between weak property rights and lack of growth and development.<sup>5</sup> There are examples of countries failing to define and enforce property rights over land, buildings and other resources and a corresponding result of poor economic growth and persistent poverty.<sup>6</sup>

Markets rely on secure and clearly defined property rights. The definition process must clarify ownership, duties, privileges and rights associated with the natural resource interest. Furthermore markets require the development of institutions and the establishment of processes for the institution to follow. Property rights determine the bargaining power of natural resource users and as such costs determine access and use rights. Thus the search for more efficient

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<sup>3</sup> See generally Nicholas Stern, 'The Economics of Climate Change' 2008 98 (2) *American Economic Review: Papers and Proceedings* 1 and Michael Richards, 'Can Sustainable Tropical Forestry be Made Profitable? The Potential and Limitations of Innovative Incentive Mechanisms' (2000) 28 (6) *World Development* 1001, 1003.

<sup>4</sup> Michelle Passero, 'The Nature of the Right of Interest Created by a Market for Forest Carbon' (2008) 3 *Carbon and Climate Law Review* 248, 250

<sup>5</sup> This is referred to as rights based approach to address conservation and poverty. See Jeffery Sayer et al, *Local Rights and Tenure for Forests: Opportunity or Threat for Conservation Rights and Resources Commission* (2007). Also see generally For an examination of the Latin American experience see Anne M Larson, et al, *Tenure Rights and Beyond: Community Access to Forest Resources in Latin America* Center for International Forestry Research (CIFOR) (2008).

<sup>6</sup> Audan Sandberg, 'Property rights and ecosystem properties' (2007) 24 *Land Use Policy* 613, 619.

mechanisms for pricing of natural resources must be accompanied by a review of property rights arrangements.<sup>7</sup>

A report authored by the Secretariat to the Convention on the Biological Diversity has suggested that:

“It is well established that the existence of complete, exclusive, enforceable and transferable property rights is a prerequisite for the efficient management of natural resources. This is because rights must be complete and exclusive to avoid disputes over boundaries and access. They must be enforceable to prevent other from usurping them and they must be transferable. The effect of incomplete property rights shows up most clearly in the lack of incentive to invest in conservation and sustainable land uses”.<sup>8</sup>

## **Environmental Offset and Land Tenure**

### *Distinguishing Tenure from Property*

The concept of land tenure has been purposely separated from the preceding discussion concerning “property rights”. This is because, while property considerations are broad enough to include discussions of tenure it is important to emphasise that “property” considerations and “tenure” considerations are not the same. An analysis focused on tenure related issues examines the different types of land holdings (i.e. freehold, leasehold and other land interests) and the regulatory regimes recognising these property based interests.

The term “land tenure” describes the relationship that exists between the government, the user of the land, and the relevant parcel of land and other land holdings. The law has developed to recognise a number of different interests in land, sometimes resulting in the one parcel of land having a number of tenure

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<sup>7</sup> Onko Kingma and Warren Musgrave, ‘Economic Policy and Sustainable Use of Natural Resources’ in Stephen Dovers and Su Wild River (eds), *Managing Australia's Environment* (2003), 501, 505.

<sup>8</sup> Secretariat of the Convention on Biological Diversity, *The Value of Forest Ecosystems* Convention on Biological Diversity Technical Series No 4, 2001, 40

interests associated with it. This is because categories of tenure provide holders with different interests over the land and in some instances there may be compatible multiple interests existing over the land.

While property based analysis focuses on the “rights” that land holders obtain as a result of their tenure holding. A property rights based analysis will define participant’s rights and obligations within the environmental market context. Therefore a rights based legal analysis is an appropriate method to use when determining the interests of particular holders over land. For example one holder may have a freehold interest, another holder may an interest in the fruit provided by the trees on the land and third person may have in interest in the carbon stored by the trees on the land. This paper argues that holders of such rights should also accrue responsibility upon legal recognition of their interest in land. In order to introduce such obligations, an incentive should be given to owners who take on land management responsibilities.

### ***Environmental Offsets and Tenure***

From an environmental trading perspective, it is crucial to select parcels of land where regulatory conditions are compatible with environmental trading objectives. Environmental offset and trading regimes require:

1. Secure and long term access to the relevant parcel of land to carry out the offset activity; and
2. Regulatory permission which allows for the tenure holder to use the land in accordance with environmental offset and trading regime requirements.

The first consideration linked to secure and long term access to environmental offset sites is crucial for ensuring that the provision of the ecosystem services continues to exist undisturbed. This is because environmental offset policy requires the continual provision of a specified ecosystem services. Certain tenure holdings will provide the title holder with dependable access and use rights for a particular period. For example holders of freehold title would be in a



position to guarantee that the ongoing provision of the environmental service will be able to continue as long as they are the freehold title holders of the land; whilst holders of leasehold title would similarly be able to guarantee that during their lease period the provision of the ecosystem service will continue.

This is an important first step, however often the value of ecosystem service will be dependent upon ensuring that the ecosystem service continues undisturbed in perpetuity, regardless of alienations and transfers of tenure holdings. Therefore there needs to be legal recognition of the environmental offset. Legal recognition can be in the form of rights under contracts or rights associated with the creation of interest in property.<sup>9</sup>

The second consideration relates to the existence of sufficient regulatory permission to use land to carry out environmental offset activities in accordance with tenure holding rights is more closely aligned with “property rights” analysis. Put more succinctly the tenure holding must provide the holder with the necessary property based rights to carry out the offset activity. For example the right to access and manage the land in accordance with prescribed offset standards.

In addition to rules specifying the rights of tenure holdings to use land, an overlay of environmental regulation sits along side tenure regulation specifying if, when, and how, natural resources are to be managed and used. There has been some suggestion that the imposition of environmental regulation has reduced land holders rights.<sup>10</sup> This argument suggests that environmental regulations centralize decision making control over the land, thereby removing control and freedom from individual owners and furthermore undermines rights associated with private property.<sup>11</sup> The alternative argument is that centralised environmental regimes ensure that land is managed holistically and for the

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<sup>9</sup> Legal recognition of environmental offsets is discussed further on in this article.

<sup>10</sup>Joan McGregor, ‘Property Rights and Environmental Protection: Is this land made for me and you?’ (1993) 31 *Arizona State Law Journal* 391. For an American perspective see Bruce Yandle, *The Political Limits of Environmental Regulation: Tracking the Unicorn* (1989).

<sup>11</sup> Ibid.

benefit of present and future generations.<sup>12</sup> Furthermore rights associated with land have never been absolute in nature.<sup>13</sup>

The imposition of regulations whose parameters are defined by the form of tenure holding as opposed to ecological criteria has resulted in fragmented environmental governance. Under such a fragmented approach land that is ecologically similar but held under different tenure arrangements will be subject to different management prescriptions and standards. By way of example lot “x” and lot “y” may be situated adjacent to one another. Lot “x” is held under freehold title, lot “y” is held under leasehold title. Despite both lots sharing the same ecological criteria current governance frameworks would result in the application of different standards to these lots. This approach to regulation does not contribute to the implementation of an integrated ecologically sustainable development framework. The law should evolve to manage land according to ecological criteria regardless of tenure holding.

### *Public versus Private Ownership*

Another issue connected to tenure is the issue of public versus private ownership and the debate which exists as to which form of ownership produces the best environmental outcomes. There appears to be no definitive answer to this question. Rather it would appear that a range of political, social and economic factors influence the management of the environment and that no one form of ownership will ensure improved environmental outcomes.

Theories have been postulated which suggest that private ownership of land creates a vested interest in preventing environmental damage to land.<sup>14</sup> These theories are based on the view that private interest acts as an incentive for better management.

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<sup>12</sup> This aligns with the one of the key principles of sustainable development being the principle of intergenerational equity. For further information see Edith Brown Weiss, *In fairness to future generations: international law, common patrimony and intergenerational equity* (1989).

<sup>13</sup> See generally William Howarth, ‘Property rights, regulation and environmental protection: some Anglo-Romanian contrasts’ in C.M. Hann (ed) *Property relations: Renewing the anthropological tradition* (1998).

<sup>14</sup> *Ibid*, 182.

For example in countries where tenure rights are insecure and unclear, environmental resources will often be mismanaged.<sup>15</sup> However in instances where tenure rights are secure and clearly defined there is no concrete evidence to suggest that environmental resources are managed badly by public authorities. Rather there is a commonly held belief that public authorities will manage resources for wider community purposes and that their actions will be more accountable and transparent than the actions of private individuals. This accountability and transparency is then linked to improving environmental standards. This type of argument could be supported by examining the ever expanding development of obligations placed on States by international and state-based law.

This article argues that environmental offset and trading regimes could be used to introduce land management responsibilities and management imperatives into property regimes to improve environmental conditions on both publicly and privately owned land. There is no one correct management regime that will perform better in all instances. The most important consideration will be to use a system which increases transparency, accountability and which delivers improved environmental outcomes.

## **Environmental Offsets and Property Rights**

### *Property Rights and Sustainability*

Environmental trading regimes have started to create new property interests in environmental resources.<sup>16</sup> The extension of property based rights to environmental values will afford stronger legal recognition and protection to the holders of these interests. Benefits of recognising property in natural resources can include constitutional protection such as exists in the USA Constitution

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<sup>15</sup> There is a wealth of literature linking poor environmental standards with insecure property rights. An international organisation called the Rights and Resource Initiative has published a number of reports linking the two issues. See for example Anne M Larson et al, *Tenure Rights and Beyond: Community Access to Forest Resources in Latin America* Center for International Forestry Research Occasional Paper No 50 (2008).

<sup>16</sup> See generally Ross Ashcroft, 'Carbon Capture and Storage: A need for re-conceiving property interests and resource management in the Australian Legal System' (2008) *Journal of the Law Association for Asia and the Pacific* 48.

against interference with private property (USA), ability to prevent trespass, conversion, or nuisance under the common law, to mortgage the thing in question, to freely convey it or split it between present and future interests, to receive special treatment under federal or state tax laws and to impose or avoid trade constraints.<sup>17</sup>

In order for rights associated with land to evolve to meet the objectives of sustainability a demand within society must exist to promote this change.<sup>18</sup> Scott suggests that in order for an existing property right to change, society requires a set of interested stakeholders who voice their interests in property reform and an authority which has procedures designed to respond and act upon such demands.<sup>19</sup> Therefore only when there are stakeholders requesting change and institutional capacity to respond and act upon such requests will property rights develop and change. This theory of property rights developments is aligned with theories that suggest that institutions are not deliberately created, rather that they evolve in line with societal preferences.<sup>20</sup>

### *What is Property?*

Academic analysis around the concept of property has focused on examining the rights associated with particular property based holdings as oppose to establishing a definition or criterion of what constitutes property. Within legal frameworks the term property is affixed to interests which society deems as requiring this level of legal protection and recognition. Society's expectations evolve over time and there is constant evolution of what the legal system recognises as property. Therefore within legal frameworks property recognition is a socially approved power-relationship in respect of socially valued assets.<sup>21</sup> This technical definition and application of property and property rights is generally misunderstood. This suggests that there are practical implications associated with such an abstract definition. For example

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<sup>17</sup> Sandra Zellmer and Jessica Harder, 'Unbundling Property in Water' (2007-2008) 59 *Alabama Law Review* 679, 682.

<sup>18</sup> Anthony Scott, *The Evolution of Resource Property Rights* (2008), 3.

<sup>19</sup> *Ibid.*

<sup>20</sup> *Ibid.*

<sup>21</sup> *Ibid.*

in economist's language, the phrase 'property right' is typically little more than a synonym for 'ownership' or perhaps possession.<sup>22</sup> This general misunderstanding of what constitutes property could be used as basis for redefining the legal definition of property.

The dominant metaphor to describe property is the "bundle of rights" approach. The bundle of rights analysis as the name suggests merely examines the individual rights associated with the property holding. Due to these limitations it has been suggested that the bundle of rights metaphor fails to assess either the character of the thing in question or the nature of the human relationship with it.<sup>23</sup> Arnold has suggested a new metaphor to describe property described as the "web of interests" paradigm. This approach places property at the centre of the web and examines relationships with the things and incidents of private ownership as well as public and communal rights from the internal strands of the web and surrounding webframe.<sup>24</sup>

Zellmer and Harder take this web approach one step further and suggest that the starting point should be consideration of whether property exists in the first place.<sup>25</sup> In relation to recognising property in natural resources it is therefore necessary to examine if the resource is capable or being classified as property. This type of analysis requires us to identify and re-examine the values that society associates with property interests.<sup>26</sup>

### *Powers Associated with Land*

Holders of land do not have the right to determine what can and can not take place on their parcel of land. Legislative restrictions and planning regimes dictate the level of development that can occur on land. <sup>27</sup> There are six characteristics associated with property rights. These are exclusivity, duration,

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<sup>22</sup> Scott, above n 18, 4.

<sup>23</sup> Zellmer, above n 17, 684.

<sup>24</sup> Craig Anthony Arnold, 'The Reconstitution of Property: Property as a web of interests' (2002) 26 *Harvard Environmental Law Review* 281, 291-295.

<sup>25</sup> This analysis is examining the nature of property rights in water.

<sup>26</sup> The scarcer the resource the tighter the enforcement, as long as the resources are in abundance, societies find no need to invest attention in them. See Kant, above n 9.

<sup>27</sup> Scott, above n 18, 5.

flexibility, quality of title, transferability and divisibility.<sup>28</sup> In addition Fisher identifies stability as an important characteristic of property rights.<sup>29</sup> These characteristics can be viewed as providing land holders with a number of powers associated with an interest in land. These are:

- Power to exclude: The right of exclusion contains two components. Firstly, the owner of the land can exclude all others from entering the land. Secondly, the owner of the land can exclude others from using or enjoying the land.<sup>30</sup>
- Power to alienate: This right gives the land holder the ability to transfer the ownership of the land to another party. Alienation is a critical right as it enables land holders to buy and sell land to suit their purposes.<sup>31</sup>
- Power to use and enjoy: The common law right to the use and enjoyment of the land gave land holders much discretion in determining how they would use their land. Legislative reform concerning land use has restricted the once broad discretion that land owners had. Planning schemes and legislative environmental regimes will restrict land holders from using land in certain circumstances. Despite this, land holders still have residual rights to make decisions about how they will use and enjoy the land.
- Power of security: Interests registered on the Land Title Register, are provided with a high degree of tenure security. The system operates to provide certainty of title. This is achieved by providing a central register listing all registered interests in land. Security of title is a fundamental right associated with ownership of land in Queensland. Without secure

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<sup>28</sup> For further analysis of these characteristics Ibid at 6 -10.

<sup>29</sup> Douglas Fisher, 'Rights of property in water: confusion or clarity' (2004) 21 *Environmental and Planning Law Journal* 162, 211 and also Douglas Fisher, ' Markets, Water Rights and Sustainable Development' (2006) 23 *Environmental and Planning Law Journal* 100.

<sup>30</sup> Carmel Mac Donald, Les McCrimmon, Anne Wallace, Micheal Weir, Sally Sheldon, *Real Property Law in Queensland*, (2<sup>nd</sup> ed, 2005), 10-12.

<sup>31</sup> Ibid.

title, there is no incentive for investment in the land. Investment can take the form of economic investment in acquiring the land, skill and labour investment in developing and working the land or investing capital, time and skill to conserve or improve the condition of the land.

- Power to receive the income from the land: Land owners have rights to use their land to generate a profit. Unlike leasehold land, the State does not generally maintain an interest in the natural resources on freehold land.<sup>32</sup> This means that profit-making activities generated from the land or natural resources on the land belong solely to the owner of the land. From an environmental trading perspective, this is an important right as it allows land holders to benefit financially if they comply with environmental offset and trading requirements.

## **Legal Recognition of Environmental Offset Rights**

### *Form of Recognition*

All environmental offsets created and issued must also be secure in perpetuity. In order for an offset to be secure, there must be secure land rights over the area where the offset is created, and the offset must also be recognised at law. Permanence requires that the life of the offset is the same as the life of the development.<sup>33</sup> For example, if a development occurs in a forested area and an offset is created, the area over which the offset has been created must be legally recognised so that the offset area is not then developed.

In order to secure legally the offset, the legal system must in some form recognise the offset. Determining how the offset is recognised will be dependent upon the framework creating the offset. There are two general approaches used in the implementation of environmental offset and trading frameworks.

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<sup>32</sup> The State as discussed above has a reservation under the *Mineral Resources Act 1989* (Qld) as the owner of all gold and minerals in the State. The *Vegetation Management Act 1999* (Qld) also will restrict a land holder from clearing vegetation in some instances.

<sup>33</sup> For further information on the concept of “permanence” in relation to Kyoto guidelines see Patrick Graichen, ‘Can Forestry Gain from Emissions Trading? Rules Governing Sinks Projects Under the UNFCCC and the EU Emissions Trading System’ (2005) 14 (1) *Review of the European Community and International Environmental Law* 11, 11-12.

Firstly, there are frameworks which utilise existing legal mechanisms to enforce the legal rights and obligations associated with offset creation. Under this approach, contract law is utilised to create rights and obligations for all parties involved in the transaction. Unless additional steps are taken, the participant's rights will be based upon the scope of the contract between the parties. Parties may wish to increase their legal rights by obtaining recognition of their interests via a property based mechanism. This may involve registering their interest on the land title register.<sup>34</sup> Once an interest is registered on a land title register, legislative protection will be afforded to the right, and the right is enforceable against the current land holders and all future land holders. The level of protection afforded will be dependent upon the nature of the registration.

The second offset framework creates a central registry where all offsets created under the programme are registered. This registry may or may not be linked to other registers, such as the land register. An example of this approach is the Biodiversity Banking Scheme introduced in New South Wales.<sup>35</sup> This scheme has been created through legislative reform<sup>36</sup> and provides participants of the scheme with statutory rights to enforce all participants' obligations and rights. The scheme allows participants to register their biodiversity offsets in the land register in addition to the biodiversity banking register.<sup>37</sup>

### *Nature of Recognition*

A number of legal mechanisms exist which could be used to register environmental offsets on the land registries.<sup>38</sup> These include -

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<sup>34</sup> For example wetland mitigation credits in the United States of America are protected by registering an easement over the bank (offset) site. In Victoria, a Forest Property Agreement can be registered on the land registry. For further information see Australian Greenhouse Office, *Planning Forest Sink Projects: A guide to Legal, Taxation and Contractual Issues* (March 2005).

<sup>35</sup> See *Threatened Species Conservation Act 1995* (NSW) see Part 7A Biodiversity Banking, Division 9 Registers.

<sup>36</sup> See *Threatened Species Conservation Amendment (Biodiversity Banking) Act 2006* No 125 (NSW)

<sup>37</sup> *Threatened Species Conservation Act 1995* (NSW) s127ZZB

<sup>38</sup> For a discussion of other instruments such as leases, easements and mortgages see Justine Bell, 'Can the Torrens System Adapt to Ecologically Sustainable Development?' (2007/2008) 13 62 *Queensland Environmental Practice Reporter* 218 and Australian Greenhouse Office, above n 13, 66-68.



- Profit a prendre;
- Covenant; and
- Other Rights: Forest Property Agreements.

A “profit a prendre” is a right obtained by one party to remove something from another’s land.<sup>39</sup> This right confers a right to enter and a right to remove something from the land.<sup>40</sup> In order for this right to be created, an agreement is entered into between the landowner and the person interested in obtaining an interest in a product of the land. The agreement will specify the rights of removal and other obligations associated with this type of interest. This type of interest in land has been held to be a legal interest in land.<sup>41</sup> A profit a prendre can be registered on the Queensland Land Titles Register in order to obtain a legal interest in the land and hence obtain the benefits of indefeasibility.<sup>42</sup>

In order to create a profit a prendre there must be a grant of a specified interest, given to a specified person, for specified consideration and the action of taking (prendre) must also be present.<sup>43</sup> Profit a prendre agreements have been used to provide holders of carbon credits, generated from forest activities, an interest in the land.<sup>44</sup> On a strict interpretation, however, holders of carbon credits do not have a right to remove something from the land; rather they have a right to payment for a service that the environment performs (i.e. carbon sequestration). Conceptually, holders of environmental offsets will similarly, not have a right to remove something from the land (for example biodiversity), but will have a right to payment for a service that the environment performs.<sup>45</sup>

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<sup>39</sup> Law Book Company, *Property Law/ Land Titles Law and Practice (Qld)*, Division 4B – A Profits a Prendre [6.17950].

<sup>40</sup> *Ibid.*

<sup>41</sup> *R v Toohey* (1983) 158 CLR 327 at 352

<sup>42</sup> *Land Title Act 1994 (Qld)* s97E and Law Book Company, *Property Law/ Land Titles Law and Practice (Qld)*, Division 4B – A Profits a Prendre [6.17971]

<sup>43</sup> Law Book Company, *Property Law/ Land Titles Law and Practice (Qld)*, Division 4B – A Profits a Prendre [6.17974]

<sup>44</sup> *Forestry Act 1959 (Qld)* s61 J (5), also see *The Natural Resources and Other Legislation Amendment Bill 2004 (Qld)* which amends a number of acts specifically to recognise the creation of profit a prendre arrangement on freehold and leasehold land.

<sup>45</sup> Two other commentators note this conceptual difficulty see: Paul Curnow, Louisa Fitz-Gerald, ‘Biobanking in New South Wales: Legal issues in the design and implementation of a biodiversity

A covenant is an agreement which restricts or requires that certain activities be carried out upon land. The person undertaking to comply with the agreement (the covenantor) agrees to certain conditions of use upon their lot. The person who obtains the benefits of the agreement is known as the covenantee.<sup>46</sup> In Queensland in order to create a covenant the following requirements must be satisfied. The covenant must bind future interests on the lot and: either

- Relate to use of a lot or building on the lot; or
- Be directly aimed at preserving:
  - i) a native animal or plant, or
  - ii) a natural or physical feature of the lot that is of cultural or scientific significance.<sup>47</sup>

An environmental offset may meet the above requirements. An environmental offset relates to the use of a lot, by requiring that certain requirements are complied with in relation to the ongoing management of the area where the offset is created. The term “directly aimed at preserving” in many cases will be consistent with the objectives of environmental offset initiatives. However, in some instances, the purpose of the offset may not be to preserve, but rather to enhance or provide a functional lift in the quality of the environmental service creating the offset. In Western Australia, interests relating to carbon rights are registered as a covenant.<sup>48</sup> A Queensland working group published a report in 2003 advocating the use of covenants for environmental purposes.<sup>49</sup>

There are some conceptual difficulties with utilizing existing legal property categories. Environmental interests do not conceptually align with the common law definitions of profit a prendre and covenant. However, if statutory

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offsets and banking scheme’ (2006) *Environmental and Planning Law Journal* 298 and Australian Greenhouse Office, *Planning Forest Sink Projects: A guide to Legal, Taxation and Contractual Issues* (March 2005).

<sup>46</sup> Law Book Company, *Property Law/ Land Titles Law and Practice (Qld)*, Division 4A Covenants [6.17764].

<sup>47</sup> *Land Title Act 1994 (Qld)* s97A (3)

<sup>48</sup> Australian Greenhouse Office, above n 50, 65.

<sup>49</sup> Queensland Government Department of Natural Resources and Mines Statutory Covenants Working Group, *Statutory covenants: guidelines for their use in Queensland* (2003).

provisions provide that certain environmental interests fit within existing legal instruments such as profit a prendre and covenants, then this will override the common law requirement, and as such the conceptual difficulties are overcome due to legislative intervention. New environmental interests (such as biodiversity and carbon storage) are different to traditional uses associated with land. This difference could be used to justify the creation of a new property based environmental interest in land.

Some of the States in Australia have dealt with the issue, by instead creating a “new interest” in land that can be included on the register.<sup>50</sup> Victoria and South Australia allow for the creation of *Forest Property Agreements* which include rights to plant, maintain and harvest forest property (which includes carbon sequestered by trees). These agreements can then be registered on the land register, which allows the owner of the forestry right to enforce contractual obligations concerning the forestry right. The registration of this interest in the land, also allows the owner of the right to enforce these contractual obligations against future owners of the land.<sup>51</sup> Australia is leading the way in developing forestry carbon based rights.<sup>52</sup>

The New Zealand government has introduced *The Forestry Rights Registration Act 1983* which enables an owner of land on which trees have grown to grant a forestry right over the forest to a third party. A forestry right holder has the ability to establish, maintain and harvest a crop of trees on the land. Forestry rights are recorded on the land title and classified as a profit a prendre interest. This classification ensures that holder’s right continue despite change in land ownership.<sup>53</sup>

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<sup>50</sup> Sandra Eckert, Richard McKellar, ‘Securing Rights to Carbon Sequestration: The Western Australian Experience’ (2008) (Winter) *Sustainable Development Law and Policy* 30

<sup>51</sup> Australian Greenhouse Office, above n 50, 59-61.

<sup>52</sup> Charlotte Streck, ‘Forests, Carbon Markets, and Avoided Deforestation: Legal Implications’ (2008) 3 *Carbon and Climate Law Review* 239, 246 and Michelle Passero, ‘The Nature of the Right of Interest Created by a Market for Forest Carbon’ (2008) 3 *Carbon and Climate Law Review* 248, 249, 252

<sup>53</sup> Peter Lough, Alastair Cameron, ‘Forestry in the New Zealand Emissions Trading Scheme: Design and Prospects for Success’ (2008) 3 *Carbon and Climate Law Review* 281, 285.

## **Environmental Offset and Trading Regime Concepts**

### *Environmental Offsets*

Environmental offset policy is an attempt to compensate for negative environmental impacts which occur as a result of on-going development. Offset provisions seek to ensure that environmental services are not diminished by on-going development. Instead, they require that any environmental service lost during the development of an area is replaced. Ideally this should lead to a “no net loss” of environmental services, while still allowing for essential development to occur. Offsetting can be defined as taking place off-site, that is distant from the geographical area of a development project.<sup>54</sup> Offsetting can, however, occur on site, taking place on an area not directly impacted by the developed but still on the project site.<sup>55</sup>

#### An Environmental Offset Example

Party “A” wishes to develop in an area where an environmental service will be lost as a result of the development. In order to obtain development approval for the project, the State requires that an environmental offset be created to replace the environmental values lost as a consequence of the development. Party “A” then has to locate a suitable area to recreate the environmental service lost, hence providing an offset.

### *Environmental Trading Programmes*

An environmental trading programme builds on environmental offsets policy. This mechanism allows a third party to create the environmental offset and be compensated for such efforts. Environmental trading programmes recognise that parties required to create environmental offsets generally do not have expertise in this field. Instead these parties may wish to purchase offset credits from someone who has expertise in the creation of environmental offsets. An

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<sup>54</sup> K Ten Kate, J Bishop and R Bayon, ‘Biodiversity Offsets: Views, Experience and the Business Case’ (2004) IUCN, Gland, Switzerland and Cambridge, UK and Insight Investment, London, UK, 10.

<sup>55</sup> Jane Scanlon, ‘An appraisal of the NSW Biobanking Scheme to Promote the Goal of Sustainable Development in NSW’ (2007) 4 *Macquarie Journal of International Comparative and Environmental Law* 71, 78.

environmental trading programme has three key participants. Firstly, the party who is required to provide the offset; secondly, the party who creates the offset; and thirdly, the regulator who ensures that the offset meets specified criteria. The first party will buy the offset credit from the second party, which leads to the attribution of an economic value to certain environmental services.

#### An Environmental Trading Programme Example

Party “A” wishes to develop in an area where an environmental service will be lost as a result of the development. Party “B” holds land but they do not wish to develop their land. Instead, they manage their land in order to meet certain environmental standards. Once these environmental standards are met, they are able to generate offset credits from their land. Party “B” is then able to sell these offset credits to Party “A”. Both parties gain from this transaction: Party “A” develops their land; Party “B” obtains a profit from maintaining certain environmental standards on their land. A final benefit is the public benefit enjoyed through the retention of essential environmental services.

#### *The Objective of Environmental Offset and Trading Frameworks*

Broadly speaking, the aim of any environmental trading programme should be to prevent any further loss of environmental services. In practice, this should mean that development should not occur in certain areas until it is guaranteed that the environmental services lost during the development have been replaced in another suitable area. This avoids a situation of retrospective offsetting which occurs when the development precedes the creation of the offset. In the United States of America the goal of the *Clean Water Act* is “no net loss and eventual net gain of wetlands”.<sup>56</sup> In Queensland; Australia the objective of the proposed policy for biodiversity offsets is that “biodiversity offsets must achieve an equivalent or better environmental outcome for the biodiversity values impacted”.<sup>57</sup> When assessing the credibility of environmental offsets the concept of functional lift should be applied. Functional lift focuses on the improved

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<sup>56</sup> Kevin Noon and Judith Ward, *Green Wealth: How to turn unusable land into moneymaking assets and save the world* (2007) at 33.

<sup>57</sup> Environmental Protection Agency, *Policy for Biodiversity Offsets Consultation Draft* (2009) Queensland Government <http://www.epa.qld.gov.au/publications?id=2761> at 26 March 2009.

health and functioning of an ecosystem, which can be compared with methodologies which focus on the quantitative values such as the area and type of environmental offset provided.

## Case Study

### Biodiversity Banking in New South Wales

The New South Wales government has introduced a voluntary biodiversity banking scheme. The purpose of the scheme is to promote the conservation of endangered animals, plants and ecosystems. Biodiversity loss in New South Wales is primarily caused by habitat destruction. The causes of habitat destruction are over grazing, clearing of land for agricultural purposes and the clearing of land for urban development.<sup>58</sup> The scheme seeks to improve the habitat for biodiversity by providing a compensation mechanism for land holders who improve or maintain biodiversity values on their land.

In 2006, the New South Wales government introduced the *Threatened Species Conservation Amendment (Biodiversity Banking) Act 2006 No 125*. Biobanking is seen as a mechanism which can tackle the challenge of balancing *development needs* which provide the community with new housing, jobs and amenities with *biological diversity needs* which are essential for current and future generations.<sup>59</sup> The scheme was introduced to formalise existing environmental offset arrangements in operation.

Biobanking is defined as a

“market-based approach to help slow the loss of biodiversity caused by development and simplify the development assessment process.

BioBanking allows 'biodiversity credits' to be generated by landowners

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<sup>58</sup> Department of Environment and Climate Change, *Biobanking: Biodiversity banking and Offsets Scheme, Scheme Overview* (2007) New South Wales Government <http://www.environment.nsw.gov.au/resources/biobanking/biobankingoverview07528.pdf> 1 July 2008, 2.

<sup>59</sup> Department of Environment and Climate Change, *Biobanking: Biodiversity banking and Offsets Scheme, Scheme Overview* (2007) New South Wales Government <http://www.environment.nsw.gov.au/resources/biobanking/biobankingoverview07528.pdf> 1 July 2008, 2.

who commit to enhance and protect biodiversity values on their land. These credits can then be sold. Developers can buy these credits and use them to counterbalance (offset) the impacts on biodiversity values that are likely to occur as a result of development”.<sup>60</sup>

Within the Act, biodiversity values include the composition, structure and function of ecosystems, and includes (but is not limited to) threatened species, populations and ecological communities, and their habitats.<sup>61</sup> The definition is limited by excluding biodiversity values as they relate to fish, or marine vegetation.

Biodiversity banking is a market based economic instrument. The scheme works on a trading basis whereby participating landowners generate biodiversity “credits” on their land and sell these credits to developers who are required by law to offset the impacts of their development. The credits represent an improvement in the condition of biodiversity values such as an improvement in the habitat or an increase in the habitat or population of a threatened species.<sup>62</sup>

It should be noted that the scheme is only voluntary in nature. Therefore particular regions of biodiversity loss are not targeted by such an approach.<sup>63</sup> The biodiversity values being improved upon under the scheme will be dependent upon the nature of the land used by landholders to generate the credits. The demand for biodiversity credits will arise from the areas being cleared for development. Therefore if a particular biodiversity value is of concern and as such a priority a different mechanism may need to be used in conjunction to target such areas.

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<sup>60</sup> Department of Environment and Climate Change, *Questions and Answers about the Biodiversity Banking and Offset Scheme* (2007) <http://www.environment.nsw.gov.au/threatspec/biobankingqa.htm> at 7 November 2007.

<sup>61</sup> *Threatened Species Conservation Act 1995* (NSW) s4A (1) and (2).

<sup>62</sup> Credits are created under *Threatened Species Conservation Act 1995* (NSW) s127V.

<sup>63</sup> For further information on the effect of implementation on development approvals see David Farrier, Andrew Kelly, and Angela Langdon, ‘Biodiversity offsets and native vegetation clearance in New South Wales: The rural/urban divide in the pursuit of ecologically sustainable development’ (2007) 24 *Environmental and Planning Law Journal* 427.

The biodiversity banking scheme does not have a clear environmental goal.<sup>64</sup> It does not focus on a particular biodiversity region or species, nor does it establish a particular target for biodiversity conservation. The schemes operation will as already discussed be determined by those who decide to participate in the scheme. The scheme should be amended to include a clear environmental goal or goals.<sup>65</sup> For example increase the population of species “x” or increase the quantity and quality of ecosystem service “x”.

“Biobanking is an extremely complex approach to the protection of biodiversity in coastal NSW. This complexity can be seen in the various disciplines that are necessary to operate the scheme including economic, financial, ecological, planning and legal expertise. Although this could be beneficial as it allows for a more integrated approach to sustainable development in NSW, there is so far no real understanding amongst stakeholders or experts about what their role will or should be. This is indicated by one expert who attended a briefing on the scheme, yet found the briefing almost unintelligible”.<sup>66</sup>

Biodiversity banking is therefore an example of a market mechanism that has resulted in increased regulatory requirements as oppose to a decrease in requirements as touted by early market proponents. This increase in regulatory requirements and the voluntary nature of the program means that engaging stakeholders could prove to be a challenging task. Furthermore if the requirements of biodiversity banking are complex and appear unclear to scheme participants the scheme will not address meet good governance requirements of accountability and transparency.

The Act prescribes in Division 2 of part 7A where biodiversity bank sites can be created. The Act itself does not prescribe suitable or non-suitable land, instead

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<sup>64</sup> See generally Shelley Burgin, ‘Biobanking: an environmental scientist’s view of the role of biodiversity banking offsets in conservation’ (2008) 17 *Biodiversity Conservation* 807, 808.

<sup>65</sup> In support of these Scanlon above n 4, 128.

<sup>66</sup> This quote comes from a response of NSW resident when interviewed on the Biodiversity Banking Scheme. For further information see Scanlon above n 4, 126.



leaving this to the *Threatened Species Conservation (Biodiversity Banking) Regulation 2007*.<sup>67</sup> Part 4 of the regulation provides that land will be ineligible to be a bank site if it is considered *unlikely to provide good conservation outcomes based on previous, current or future use of the land or of surrounding land*.<sup>68</sup> Certain land is expressly stated to be ineligible, such as: land which is already being used for conservation purposes, land where there is an existing duty to carry out biodiversity conservation, land which is already subject to an offset arrangement or land where conservation objectives would not be satisfied due to previous, current or future uses of the site or inconsistent uses on surrounding land. It is suggested that these ineligible land categories have been created to meet additionality concerns.<sup>69</sup>

The regulations do not provide that biodiversity banking cannot take place on public land; however the Act provides that biobanking agreement cannot be entered into over Crown without the consent of the Minister administering the Act.<sup>70</sup> The Act also expressly deals with prospecting and mining on bank sites. The Act provides that mining interests will override biodiversity banking interests on land.<sup>71</sup> The Act does not currently require that disturbance to biodiversity bank sites caused by incompatible mining interests be offset. However, it does provide that capital invested in the creation of a bank site is refundable, should mining activates commence on the bank site.<sup>72</sup>

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<sup>67</sup> *Threatened Species Conservation Act 1995* (NSW s127D (4)).

<sup>68</sup> *Proposed Threatened Species Conservation (Biodiversity Banking) Regulation 2007* (NSW), part 4.1.

<sup>69</sup> Additionality in the carbon context involves a number of different types of additionality. *Programme additionality*, which requires that emission reductions are additional to emission reductions required by law or government. *Financial additionality* is the requirements that funding for the implementation of projects must not come from overseas development or environmental assistance funds. And *investment additionality* is where a project might justify additionality by showing that the creation of carbon offsets will involve costs that would not be incurred in the business as usual scenario. See Peter Minany, Hans Bressers, Margaret Skutsh, Michael McCall, 'National forest policy as a platform for biosphere carbon management: the case of community forestry in Cameroon' (2007) 10 *Environmental Science and Policy* 204 at 206

<sup>70</sup> *Threatened Species Conservation Act 1995* (NSW) s127F (5).

<sup>71</sup> *Threatened Species Conservation Act 1995* (NSW) s127S (1).

<sup>72</sup> *Threatened Species Conservation Act 1995* (NSW) s 127ZE (4).

Division 2 of the Act also deals with provides that the duration of biobanking agreements,<sup>73</sup> the registration of agreements,<sup>74</sup> and the enforcements of agreements.<sup>75</sup> Biodiversity credits are recorded on a biobank site register,<sup>76</sup> and also on the land register.<sup>77</sup> The recording of all biobank sites in a single register provides a central body responsible for recording all biobanking interests in land. Registration of the interest on the land title ensures that the biobank site is managed in accordance with its requirements in perpetuity.

The Biodiversity Banking Scheme in New South Wales is the first scheme in Australia to combine the creation of environmental offsets with a trading component. The scheme is still in its infancy and the effect of the scheme on threatened species conservation is not yet known. However the voluntary nature of scheme is unlikely to products significant gain in biodiversity in new South Wales.

### **Critique of Environmental Markets**

“A better approach would seem to be to start our analysis with a situation approximating that which actually exists, to examine the effects of a proposed policy change and to attempt to decide whether the new situation would be, in total, better or worse than the original one. In this way conclusions for policy would have some relevance to the actual situation.”<sup>78</sup>

The above quote comes from Coase whose work is associated with creating the underlying theory used to justify the existence of modern environmental market frameworks. Coase’s work is used to justify the role of environmental markets. This is because Coase’s work has been interpreted to mean that the external

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<sup>73</sup> *Threatened Species Conservation Act 1995* (NSW) s127G, agreements to be in perpetuity.

<sup>74</sup> *Threatened Species Conservation Act 1995* (NSW) s127I, agreements are to be registered on the land titles register if the land falls under the jurisdiction of the *Real Property Act 1900* (NSW).

<sup>75</sup> *Threatened Species Conservation Act 1995* (NSW) s127L – the act gives standing for any person to bring an action to enforce a biodiversity banking agreement.

<sup>76</sup> *Threatened Species Conservation Act 1995* (NSW) s 127ZZB

<sup>77</sup> *Threatened Species Conservation Act 1995* (NSW) s127I.

<sup>78</sup> R. H .Coase, ‘The Problem of Social Cost’ (1960) 3 *The Journal of Law and Economics* 1, 43.

effects of an individual's actions can in some instances be addressed through private negotiation between affected parties.<sup>79</sup> Coase suggests that the exercising of one individual's right usually compromises others rights. A change within existing rights structures may lead to improvements in some instances, but this must be tempered against the reality that improvements to one interest may lead to worsening of conditions for other interests. Therefore Coase is an advocate for private negotiations between parties to settle disputes, but ultimately believes that any action taken should only be carried out once all ramifications of the action are understood. Fundamentally Coase believes that in devising and choosing between social arrangements one should have regard to the total effect of the change.<sup>80</sup>

Environmental markets have been praised for their innovativeness in addressing environmental issues. This is because markets are believed to promote efficiency and flexibility.<sup>81</sup> It is however suggested that environmental markets are neither flexible nor efficient.<sup>82</sup> This is due the complex myriad of institutions and instruments that have been developed to implement environmental market regulation.<sup>83</sup> The increasing complexity associated with creating new interests in the environment, regulating and controlling the use of these interests with existing interests, and the stringent monitoring, verification and other guidelines created by regimes is not only mind boggling but exceptionally time consuming and laborious.

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<sup>79</sup> Stefanie Engel, Stefano Pagiola, and Sven Wunder, 'Designing payments for environmental services in theory and practice: An overview of the issues' (2008) 65 *Ecological Economics* 663, 665.

<sup>80</sup> Coase above n 79, 44.

<sup>81</sup> Klaus Bosselmann and Benjamin J Richardson, 'Introduction: New Challenges for Environmental Law and Policy' in Klaus Bosselmann and Benjamin J Richardson (eds) *Environmental Justice and Market Mechanisms: Key Challenges for Environmental Law and Policy* (1999), 3

<sup>82</sup> In support of this see Scanlon, above n4, 88- Participants were interviewed about the Biodiversity Banking Scheme in New South Wales one respondent stated that banking schemes "especially if they are added to, rather than integrated into a planning system, further complicate and already complex system. This means that stakeholders, including local communities and government lose understanding and faith in both the system and administrators of biodiversity protection.

<sup>83</sup> The efficiency, flexibility and accompanying complexity of international emissions trading market is persuasive on this front. See for example some of the plethora of legal analysis of existing arrangements in the *Journal of Carbon and Climate Law Review*.

Following such processes and meeting the requirements of such regimes is often at the forefront of participant's minds. Likewise the regulatory bodies now specialise in identifying flaws with current policy design as oppose to actually changing society's relationship with the environment. This draws attention away from the fundamental purpose of the scheme which in most instances is likely to be associated with ensuring that there is an improvement in environmental conditions.

Market based regulation is appealing as it appears to be able to recognise and provide for all interests associated with the environment. There are indeed examples of successful environmental markets initiatives<sup>84</sup>, though sadly there are many more examples of environmental markets that fail to deliver on stated objectives.<sup>85</sup> Environmental markets seem to be developing at an exponential rate. There appears to be a widely held belief that environmental market regulation is the answer to all conflicts connected with environmental use and management.<sup>86</sup> This article suggests that a cautious approach should be taken before assuming that market mechanism will solve the problem.<sup>87</sup> Market regimes are not necessarily the most appropriate and effective mechanism for achieving desired outcomes and this must be considered by regulators when designing schemes to achieve environmental objectives.<sup>88</sup>

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<sup>84</sup> One of the most celebrated environmental markets is the market created for financing forest protection in Costa Rica. By protecting the forest, water, biodiversity can carbon sequestration rates were improved upon the land. Currently 10% of the land in Costa Rica is regulated by environmental markets. Stefano Pagiola, 'Payments for environmental services in Costa Rica' (2008) 65 *Ecological Economics* 712.

<sup>85</sup> For further information see the following work which discusses the dismal environmental outcomes of tradeable fishing rights, water trading and wetland mitigation banking schemes. Sharon Beder, *Environmental Principles and Policies: An Interdisciplinary Approach* (2006).

<sup>86</sup> As suggested by Bayon " Markets are tools, tools that are inappropriate for some situations, and tools that , when used incorrectly can backfire. As the saying goes, to a man with a hammer, everything starts to look like a nail". Ricardo Bayon, *Making Environmental Markets Work: Lessons from early experience with sulphur, carbon, wetlands, and other related markets*, Forest Trends, 2004.

<sup>87</sup> In support of this see Rosemary Lyster above n86, 57 , 'It is not suggested that the search for alternative methods of regulation be abandoned. However, policy makers in Australia need to ensure that before rushing to the market, they are confident that the services that are traded are properly evaluated and accounted for".

<sup>88</sup> Nathaniel Keohane, Richard Revesz and Robert Stavins, 'The Choice of Regulatory Instruments in Environmental Policy' (1998) 22 *Harvard Environmental Law Review* 313.

This is not to suggest that market regulation is fundamentally flawed.<sup>89</sup> However markets operate on the premise that a service will continue to be available and that current consumption levels are appropriate.<sup>90</sup> In relation to natural resources it is now well understood that environmental services will not exist indefinitely and that current consumption levels cannot be supported by the planet.<sup>91</sup> Current market design contributes to the belief that current consumption and development levels are appropriate. However in order to radically alter the human relationship with the environment, society expectations concerning quality of life need to be transformed. There are simply not enough natural resources for current consumption and development to continue. As stated by Gandhi in 1947 “The Earth has enough for everyone’s need but not for everyone’s greed”.<sup>92</sup>

Within society we need to manage our relationship with the earth much better so that future human and other biological populations have a future. Markets will need to play a role in this transformation due to their ability to provide incentives / disincentives to encourage specified outcomes. However in order to ensure this the design and underlying environmental objectives of the market must be clearly and appropriately defined.<sup>93</sup>

## **Conclusion**

The law has begun to evolve to recognise new interests such as environmental values. In some legal systems the law has tried to fit these new interests within existing property classifications such as profit-a prendre or covenant interests.

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<sup>89</sup> For an analysis of the failing of market failure and government failure see Mrinal Datta-Chaudhuri, ‘Market Failure and Government Failure’ (1990) 4 (3) *The Journal of Economic Perspectives* 25.

<sup>90</sup> See generally David W Pearce, *Economic Values and the Natural World*(1993), 1 where it is stated “that if the earth’s resources were available in infinite quantities, and if they could be deployed at zero cost, there would be no economic problem”.

<sup>91</sup> Norman Myers, ‘Consumption in relation to population, environment and development’ (1997) 17 *The environmentalist* 33 and Alex de Sherbinin et al, *The Annual Review of Environmental Resources: Population and Environment* (2007) Annual Review Org <http://arjournals.annualreviews.org/doi/pdf/10.1146/annurev.energy.32.041306.100243?cookieSet=1> at 6 May 2008.

<sup>92</sup> Myers above n94, 1.

<sup>93</sup> Carolyn Crook and Roger Clapp, ‘Is market –oriented forest conservation a contradiction in terms?’ (1998) 25 (2) *Environmental Conservation* 131, 142.

In other instances the legal system has deemed it more appropriate to create new property interests for environmental values. Regardless of the form or nature of the laws recognition it does appear that notions of property have evolved to include services performed by the ecosystems. Further harmonisation of policy is required in order to give full effect to these new environmentally based property interests.

In addition to this, in order to improve environmental outcomes land holders expectations need to evolve to a point where it is accepted that land rights come attached with land responsibilities. These land responsibilities could be used to introduce environmental management practices. If such land holder responsibilities were broadly accepted and implemented, an improvement in environmental conditions is likely. However such an evolution of land holding obligations is likely to be opposed by land holders unless an incentive is provided. Environmental market mechanisms may be able to provide such an incentive to reward those parties who accept the imposition of land holder responsibilities.