

**Adapting to the impacts of climate change: The limits and  
opportunities of law**

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## Introduction

This paper examines the limits and opportunities of the law in conserving biodiversity in the face of climate change and enabling biodiversity to adapt to climate change. Climate change is likely to exacerbate existing pressures on ecosystems, habitats and biodiversity, as well as give rise to new pressures. Current, baseline pressures on natural environments, such as habitat and biodiversity loss, pollution, fire and the spread of weeds and introduced animal species, are likely to increase. Climate change could also cause new pressures on ecosystems, habitats and biodiversity. This could occur directly, for example, by rises in sea temperature, changed rainfall patterns or increasingly severe weather events including cyclones, fires and storm surges, or indirectly, as settlement patterns and economic activities adapt to climate change.<sup>1</sup>

There are four basic strategies to enable biodiversity to adapt to climate change: first, to reduce current or baseline pressures on ecosystems, habitats and species; secondly, to prevent, control and mitigate new pressures on ecosystems, habitats and species; thirdly, to take action to improve the general health of ecosystems, habitats and species so as to increase their resilience to pressures and maintain their capacity to adapt to climate-related changes; and fourthly, to take positive action to recreate habitat and introduce species in better adapted habitats.

The implementation and effectiveness of these strategies is dependent in part on the law. The existence of the current, baseline pressures that ecosystems, habitats and species face is evidence that the existing laws are inadequate. Hence, continuation of the existing laws, with their limitations, will not reduce the baseline pressures. The limitations in existing laws that result in the current baseline pressures will also inhibit the prevention, control and mitigation of new pressures that occur as settlement patterns and economic activities adapt to climate change. Therefore, identification and reform of the limitations in the existing laws are needed in order to reduce the baseline pressures and prevent, control and mitigate new pressures.

The weaknesses in existing laws also impede action to improve the health of ecosystems, habitats and species, recreate habitat and introduce species into adapted habitats. Hence, the identification of the limitations in existing laws highlights the opportunities for reform.

I will identify a baker's dozen limitations in the law and then explain the opportunities for the law to address these limitations.

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<sup>1</sup> Productivity Commission, *Barriers to Effective Climate Change Adaptation* (Draft Report, 27 April 2012) 213.

## 1. A focus on process, not substance

Environmental statutes in Australia prescribe conditional, but not absolute, rules of what can and cannot be used or exploited in the environment. Consider statutes concerning threatened species, populations and ecological communities. These statutes adopt the typical regulatory approach of first prohibiting the harming of listed threatened species, populations and ecological communities or their habitats<sup>2</sup> but then giving power to the regulatory authority to grant approval to persons who wish to harm a particular threatened species, population or ecological community or their habitat.<sup>3</sup> The statutes prescribe the process for making, considering and approving the application to harm the threatened species, population or ecological community.<sup>4</sup> At no point do the statutes provide that approval cannot be granted based on environmental, or other, impacts.<sup>5</sup> There is, therefore, no absolute rule protecting all or some particularly significant threatened species, populations and ecological communities against all or some particularly significant harm in all or particular circumstances. The prohibition on harming threatened species, populations and ecological communities is entirely conditional and provisional.

The solution to this problem is for the legislature to enunciate in the statute some absolute rule. This may be achieved by identifying those areas or components of the environment that are unconditionally to be protected from all harm. This could be based on researched findings about the most important and appropriate areas or components to be protected in light of expected climate change impacts. It may involve identifying environmental outcomes or standards that are not to be compromised or are to be achieved, as the case may be.

An ecocentric approach could inform the enunciation of these unconditional outcomes and standards. One example might be to enunciate the outcome of the maintenance of biodiversity and ecological integrity, including ecosystem services, processing and functioning.

Carbon dioxide emissions reduction standards in legislation are an example of these types of provisions and they are useful for highlighting some points about the benefits and feasibility of introducing outcomes-based biodiversity conservation legislation. Section 1 of the *Climate Change (Scotland) Act 2009* provides: '[t]he Scottish Ministers must ensure that the net Scottish emissions account for the year

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<sup>2</sup> See, eg, ss 118A(1) and (2) and s 118D(1) of the *National Parks and Wildlife Act 1974*.

<sup>3</sup> *National Parks and Wildlife Act 1974* ss 118A(3) and s 118D(2) provide that it is a defence to an offence in those sections if authorisation was granted under certain other provisions of that Act or other Acts. For example, s 120 of the *National Parks and Wildlife Act 1974* allows the Director-General to issue a general licence to harm protected fauna species and s 131 allows the Director-General to issue a licence to pick protected native plants. Numerous authorisations also exist under the *Threatened Species Conservation Act 1995*, the *Native Vegetation Act 2003* and the *Environmental Planning and Assessment Act 1979*: see ss 118A(3) and 118D(2).

<sup>4</sup> See, eg, *Threatened Species Conservation Act 1995* pt 6.

<sup>5</sup> The *Environment and Protection and Biodiversity Conservation Act 1999* (Cth) contains provisions for the Federal Environment Minister to refuse consent for an action if it is clearly unacceptable, however the precise circumstances in which such a decision should be made are not provided: see pt 7 div 1A.

2050 is at least 80% lower than the baseline [year of 1990]'.<sup>6</sup> This type of provision differs from the kinds of directives that are commonly passed in the European Union, which instruct government authorities on how they are to exercise their own, separately created, functions. In the case of the Scottish statute, a failure to fulfil the emissions reduction target amounts to a failure to achieve the outcome, so that any failure does amount to a breach of the legal duty.<sup>7</sup> The duty is not framed as one to 'endeavour' to reach a particular outcome, a distinction which carries legal weight.<sup>8</sup>

The introduction of outcomes-based legislation for biodiversity conservation would be groundbreaking not just because of the recognition it would give to the importance of the goal but also because of the enforceability of such laws. Since duties to take into account certain environmental matters tend to be framed against competing considerations, they do not ensure that a specific environmental outcome will be achieved. Even if a decision is judicially reviewed and found to have failed to take a prescribed matter into account, this has limited potential to change the environmental impact of the subject proposal since the decision can be re-made taking into account the neglected consideration. An outcome-based duty would potentially introduce an enforceable responsibility for designated decision-makers to reach specific results.

Two examples show the varying degree to which outcomes-based approaches can be incorporated into legislation relating to biodiversity. The European Union's Habitats Directive (Council Directive 92/43/EEC adopted 21 May 1992) incorporates an EU-wide network of nature protection areas (called *Natura 2000*) and provides limits on the granting of consent in those areas.<sup>9</sup> Development is not completely prohibited in the areas, but will only be allowed if there are no alternative solutions and it is in the overriding public interest. If development is permitted, compensatory measures to ensure the overall coherence of the network must be taken.<sup>10</sup> The outcome of a decision made under these provisions, therefore, is the maintenance of the overall coherence of the Natura 2000 network.

An example of a policy directive which dictates even more precisely an outcome based on the environmental assessment of a development is item 118 of the National Planning Policy Framework policy on biodiversity which states that planning

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<sup>6</sup> Similarly, the *Climate Change Act 2008* (UK) s 1 provides 'it is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 80% lower than the 1990 baseline'.

<sup>7</sup> Colin T Reid, 'A New Sort of Duty? The Significance of "Outcome" Duties in the Climate Change and Child Poverty Acts' (2012) *Public Law* 749, 753.

<sup>8</sup> *Ibid* 755.

<sup>9</sup> European Commission, *The Habitats Directive* (14 September 2012) <[http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index\\_en.htm](http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm)>.

<sup>10</sup> Art 6(4). See also Donald McGillivray, 'Compensating Biodiversity Loss: the EU Commission's Approach to Compensation under Article 6 of the Habitats Directive' (2012) 24 *Journal of Environmental Law* 417. Lord Carnwath noted the Directive 'is particularly significant for the town and country planning systems in the United Kingdom because it imposes obligations not only on how the decision-making process must be carried out but also on the decision making outcome': foreword to Gregory Jones (ed) *The Habitats Directive: A Developer's Obstacle Course?* (Hart, 2012), cited in Gregory Jones, 'The Impact of Environmental Law on Planning Decision-Making' (2012) 13 *Journal of Planning and Environment Law* 22, 23.

authorities should aim to conserve and enhance biodiversity by applying the following principles:<sup>11</sup>

- if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- ...
- planning permissions should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss.

The decision-maker is to undertake a structured assessment, including of whether significant harm, or loss or deterioration of certain irreplaceable habitats, would result from a grant of planning permission, and unless certain requirements can be met, to refuse planning permission. If such a policy were to be in legislative form, and if the decision-making authority was required to comply with the principles, rather than 'aim' to comply with them, this would be a strong outcome-based provision. By prescribing the key environmental considerations which would make planning permission unacceptable, this type of legislation is more likely to ensure certain environmental outcomes are met.

## 2. No priority is given to biodiversity conservation

Environmental statutes in Australia rarely articulate that priority or weight is to be given to conservation of biological diversity. This can be seen in objects clauses in legislation as well as prescribed matters to be taken into account by administrative decision-makers.

Objects clauses usually are either mere recitals or lists of multiple and often competing aims. For instance, the objects stated in s 5 of the main planning statute in New South Wales, the *Environmental Assessment and Planning Act 1979*, include '(ii) the promotion and co-ordination of the orderly and economic use and development of land' and '(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats'. No priority is assigned to any one object.

Provisions listing relevant matters to be considered in the exercise of discretionary statutory powers similarly do not assign priority or weight to the matters.<sup>12</sup> Rather, the weight to be assigned is left to the decision-maker.<sup>13</sup> Hence, even if the

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<sup>11</sup> Communities and Local Government, *National Planning Policy Framework* (2012)

<[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/6077/2116950.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf)>.

<sup>12</sup> See, eg, *Environmental Planning and Assessment Act 1979* s 79C.

<sup>13</sup> *Minister for Aboriginal Affairs v Peko-Wallsend Limited* [1986] HCA 40; (1986) 162 CLR 24 at [15] and [24] (per Mason J, Gibbs CJ and Deane J agreeing), [22]-[25], (per Brennan J, Deane J and Dawson J agreeing); *Sean Investments Pty Ltd v MacKellar* (1981) 38 ALR 363 at 375; *Minister for Aboriginal Affairs v Peko-Wallsend Ltd* (1986) 162 CLR 24 at 41; *Minister for Immigration and Ethnic*

conservation of biological diversity is included as an object or relevant matter in the statute, it will be but one of many objects or matters to be considered. Inevitably, it loses out in the balancing exercise against more powerful economic and social considerations.

The solutions to these problems are threefold. First, the conservation of biological diversity and ecological integrity, or other desired ecocentric considerations, need to be expressly and specifically identified as objects and relevant matters which must be taken into account in the exercise of powers and functions under the statute.

Secondly, if there is potential for conflict within or between objects or relevant matters, the priority or relevant weight to be accorded to each object or relevant matter needs to be stated.

Thirdly, if the object or relevant matter involves an outcome or standard to be achieved, then the statute needs to be drafted so as to require the decision-maker to exercise the relevant power or function so as to achieve that result and not merely to consider the matter in the exercise of the power or function. As an example, a statutory provision should state that powers and functions are to be exercised to achieve the conservation of biological diversity and ecological integrity and not merely to consider the matter in the exercise of a power or function.

An illustration of such a statutory approach identifying and assigning weight to biodiversity objectives, is in the national parks legislation in the United Kingdom, implementing the European Union Habitats Directive. The objectives of the national park management, as stated in s 5(1) of the *National Parks and Access to the Countryside Act 1949* (UK), include 'conserving and enhancing the natural beauty, wildlife and cultural heritage of the areas specified' and 'promoting opportunities for the understanding and enjoyment of the special qualities of those areas by the public'. Section 11A(1) of the Act states that '[a] National Park authority, in pursuing in relation to the National Park the purposes specified in subsection (1) of section five of this Act, shall seek to foster economic and social well-being of local communities within the National Park'. However, sub-s (2) of that provision states:

[i]n exercising or performing any functions in relation to, or so as to affect, land in a National Park, any relevant authority shall have regard to the purposes specified in subsection (1) of section five of this Act, and if it appears that there is conflict between those purposes, shall attach greater weight to the purpose of conserving and enhancing the natural beauty, wildlife and cultural heritage of the area comprised in the National Park.

Although s 11A does not allocate priorities to the different purposes in s 5, it is an important example of how weight can be assigned to different objectives in legislation.

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*Affairs v Teoh* (1995) 183 CLR 273 at 321; *Broad Henry v Director-General of the Department of Environment and Conservation and Australand Corporation (NSW) Pty Limited* [2007] NSWLEC 722 at [121].

### **3. Failure to adopt a holistic, ecosystem approach**

The failure of environmental statutes to accord priority to biodiversity conservation is reflective of a broader problem that the laws are not ecologically literate. The statutes adopt a Cartesian, reductionist approach, inevitably focused on the utilitarian benefit of environmental resources for humans. They fail to employ a holistic, ecosystem approach in addressing issues regarding the use and exploitation of the environment and its resources. The meaning of ecosystem is 'a biotic community or assemblage and its associated physical environment in a specific place'. The links between the biotic and abiotic features which form such an assemblage are pivotal in an ecosystem<sup>14</sup> and yet the importance of these links is not reflected in environmental legislation.

The solution to the widespread adoption of the Cartesian, reductionist approach involves addressing many of the weaknesses I identify in this paper. It involves changing the mindset of how we permit use and exploitation of the environment. This change could be assisted by, and reflected in, legislation.

The *Convention on Biological Diversity*<sup>15</sup> calls for a holistic ecosystem approach. It requires member states, as far as possible and appropriate, to '[p]romote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings'.<sup>16</sup>

The European Union Habitats Directive goes some way towards adopting an ecosystem approach as called for by the Convention on Biological Diversity. The stated main aim of the Directive is 'ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora in the European territory of the Member States'.<sup>17</sup> Annex I of the Directive contains a series of natural habitat types to be protected. These natural habitats are defined as 'terrestrial or aquatic areas distinguished by geographic, abiotic and biotic features, whether entirely natural or semi-natural'.<sup>18</sup> The Directive also establishes a strict system of protection of designated special protection areas for birds and special areas of conservation.<sup>19</sup> By requiring that measures taken under the Directive are designed to 'maintain or restore, at favourable conservation status, natural habitats' (as well as individual species), the Directive ensures that the overall health of a given ecosystem is better protected than if only individual species were protected within it. Nonetheless, the importance of the linkages between abiotic and biotic features of the habitats protected under the Directive could be explicitly identified in the law.

### **4. No burden of proof on users of the environment**

As discussed above, a common regulatory approach under environmental statutes is to prohibit some activity which uses, exploits or harms the environment but then

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<sup>14</sup> STA Pickett and ML Cadenasso, *The Ecosystem as a Multidimensional Concept: Meaning, Model, and Metaphor* (2002) 5 *Ecosystems* 1, 2.

<sup>15</sup> Opened for signature 5 June 1992, 1760 UNTS 79 (entered into force 29 December 1993).

<sup>16</sup> Art 8(d).

<sup>17</sup> Preamble.

<sup>18</sup> Art 1(b).

<sup>19</sup> Art 3.

permit persons to apply for some form of statutory approval enabling them to undertake such activity. The statute may also provide for a dissatisfied applicant seeking approval to appeal to a court or tribunal which undertakes a merits review of the decision and re-exercises the power to determine whether to grant or refuse approval for the activity.

Typically, the statute is silent as to the burden of proof, both in the original application for approval and on any merits review appeal. Judicial decisions have held that there is no legal burden of proof on an applicant for approval. There is, no doubt, a persuasive burden – the applicant needs to persuade the approval authority to exercise the power to grant the approval – but this falls short of a legal burden. The statutes also do not typically impose a burden on the applicant for approval to establish an absence of a particular type of environmental harm (such as a significant impact on threatened species, populations or ecological communities), or that the proposed activity will achieve some acceptable environmental outcome or standard (such as ecologically sustainable development (ESD)), or that the economic or social benefits of the proposed activity will outweigh the environmental cost.

In practice, especially for larger and more significant activities, there seems to be a presumption that approvals ought to be granted unless good reason is demonstrated to the contrary. This effects a transfer of the burden to those opposing an activity to prove that the approval should not be granted in the particular circumstances of the case.

The economic cost and inconvenience of taking measures to prevent environmental harm have also been used as reasons for not undertaking or postponing such measures where there is a lack of full scientific certainty as to the efficacy of such measures. This approach has led to the promotion of the precautionary principle. This principle provides that 'if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.'<sup>20</sup> The precautionary principle, once invoked, effects a transfer of the evidentiary burden to a proponent of an activity to prove that a threat of environmental damage does not in fact exist or is negligible.<sup>21</sup>

The issue of the burden of proof arises in another way. Persons who consume or exploit the environment will prevail over persons who do not consume or exploit the environment. This is simply because consuming users, by exercising their demands, foreclose non-consuming users from exercising theirs, but the contrary does not hold true. For example, a corporation that undertakes logging of native forests forecloses the ongoing recreational use of that forest by bushwalkers, but the (pre-existing) bushwalkers' use does not prevent the logging of that forest. This results in a loaded system. Even in a system with laws regulating the use and exploitation of the environment, the leverage exercisable by consuming users of the environment means that they can continue until they are sued and restrained by court order. Consuming users will, therefore, be defendants and non-consuming users or

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<sup>20</sup> See, for example, *Protection of the Environment Administration Act 1991* (NSW) s 6(2).

<sup>21</sup> See, *Telstra Corporation Pty Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 273; 146 LGERA 10 at [150]-[155].



persons wishing to preserve the environment will be plaintiffs. In our legal system, plaintiffs bear the burden of proving that the defendants' conduct is in breach of the law. In cases of doubt, the plaintiff will not succeed and use or exploitation of the environment will prevail.<sup>22</sup>

The solution to these problems concerning burden of proof is to allocate the burden to those who propose to use, exploit or harm the environment. This involves, firstly, imposing on an applicant for approval for an activity to use, exploit or harm the environment the burden of proving that: the activity will not cause particular types of environmental harm which have been specified as material; the activity will achieve some environmental outcome or standard specified to be acceptable; the economic or social benefits of the proposed activity outweigh the environmental costs; and the approval ought to be granted for the proposed activity. This would require administrative decision-makers to not merely take into account and balance a series of relevant factors, but determine whether the applicant for approval has discharged the various burdens of proof.

Secondly, the precautionary principle should be specified expressly to be applicable in the exercise of powers and functions under environmental statutes, including in the assessment and approval of applications to carry out proposed activities. This would not only remind decision-makers of the need to apply the principle, but its application would effect the transfer of the evidentiary burden to the proponent of the proposed activities.

Thirdly, in court proceedings, the burden of proof should be allocated to an applicant in merits review appeals to establish the same matters that I have suggested an applicant should be required to establish before the original decision-maker, including that approval ought to be granted to undertake the activity. An example of such a provision is s 40(2) of the *Valuation of Land Act 1916* (NSW), which provides that on a merits review appeal under s 37(1) of that Act, 'the appellant has the onus of proving the appellant's case.'

In civil enforcement proceedings to remedy and restrain a breach of an environmental statute, statutory provisions can raise certain evidentiary presumptions, such as the absence of lawful authority, unless rebutted by evidence to the contrary. This allocates the burden of proof to the defendant to rebut the presumptions raised. One example is under s 1703(1) of the State of Michigan's *Natural Resources and Environmental Protection Act* of 1994. When a plaintiff in an action has made a prima facie showing that the conduct of the defendant has polluted, impaired or destroyed or is likely to pollute, impair or destroy the air, water, or other natural resources or the public trust in these resources, the defendant may rebut the prima facie showing by the submission of evidence to the contrary. The defendant may also show, by way of an affirmative defence, that there is no feasible and prudent alternative to the defendant's conduct and that the conduct is consistent with the promotion of the public health, safety and welfare in light of the State's paramount concern for the protection of its natural resources from pollution, impairment or destruction.

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<sup>22</sup> J E Krier, 'Environmental Litigation and the Burden of Proof' in M F Baldwin and J K Page (eds), *Law and the Environment* (Walker & Co, New York, 1970); Brian J Preston, 'Third Party Appeals in Environmental Law Matters in New South Wales' (1986) 60 *Australian Law Journal* 215, 221.

## 5. Powers, not duties, of government

Environmental statutes are bountiful in bestowing discretionary powers on regulatory agencies but rarely burden them with duties and obligations. As I have noted, the typical regulatory approach is to start with a prohibition on an activity causing some environmental harm but then give power to the regulatory authority to relax that prohibition by applications being made, considered and approved. There is rarely a duty on the regulatory authority either of a positive nature, to achieve some environmental outcome or standard, or of a negative nature, to ensure that some environmental outcome or standard is not compromised. One rare instance of a public duty on a regulatory authority was judicially enforced in the Manila Bay case.<sup>23</sup> The Supreme Court of the Philippines issued a continuing mandamus compelling the Manila Bay Development Authority to perform its statutory duties in cleaning up and preserving the polluted Manila Bay and obliged the authority to submit quarterly progress reports to the court for monitoring.

Reform may, therefore, be usefully focused on statutes imposing more duties on regulatory authorities to achieve or prevent the compromising of specified environmental outcomes or standards. The duty to meet the emissions reduction target under the *Climate Change (Scotland) Act 2009* is an example of what can be done. These could relate to conservation of biological diversity and ecological integrity.

## 6. Negative, not positive, obligations on persons regulated by statute

Under the typical environmental statute, the obligations imposed on persons are usually of a negative nature, that is to say, obligations that a person not do certain acts. These may be obligations not to carry out an activity at all, not to carry out an activity in a certain way or not to carry out an activity with a certain consequence such as causing environmental harm of some kind. If persons wish to be relieved of this obligation, they need to apply for some form of approval authorising the activity.

Rarely do statutes impose positive obligations to conserve land and the biodiversity on it. Nevertheless, positive obligations do exist in some statutes. Landowners may be under positive obligations to conserve land and things on or attached to it.

A landowner may be required, in relation to a listed heritage item on the land, to undertake a minimum standard of maintenance and repair to avoid demolition of the heritage item by neglect.<sup>24</sup> A landowner may enter into a private property agreement, whereby the landowner undertakes to conserve the land and things attached to it. Examples are heritage agreements in relation to heritage items on land,<sup>25</sup> conservation agreements in relation to flora and fauna,<sup>26</sup> and property

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<sup>23</sup> *Metropolitan Manila Development Authority v Concerned Residents of Manila Bay* GR No 171947-48, 18 December 2008.

<sup>24</sup> *Heritage Act 1977* (NSW) s 118; *Heritage Regulations 2005* (NSW) pt 3.

<sup>25</sup> *Heritage Act 1977* (NSW) pt 3B.

<sup>26</sup> *National Parks and Wildlife Act 1974* (NSW) pt 4 div 12; *Threatened Species Conservation Act 1995* (NSW) s 126A.

vegetation plans.<sup>27</sup> An owner of land may also be under a positive obligation to control noxious weeds or prescribed alien species of fauna.<sup>28</sup>

Positive obligations will also arise where the land is the subject of a carbon offset project or a biobanking agreement. The owner of the land sells a credit for the native vegetation growing on the land either to an emitter of greenhouse gases (such as a coal-fired, electric power station) for the benefit the vegetation affords as a sink for the sequestration of carbon, or to a person who causes the loss of biological diversity in the course of development of other land. The owner, having sold the credit, will be obliged to maintain the vegetation on the land.

For example, pt 7A of the *Threatened Species Conservation Act 1995* (NSW) allows the Minister to enter into an agreement with a landowner for the purpose of establishing a biobank site. This agreement may require the landowner to carry out specified actions on the land, or remedial measures in the event that any contingency has a negative impact on the biodiversity values protected by the agreement, as well as restrict use of the biobank site. The *Carbon Credits (Carbon Farming Initiative) Act 2011* (Cth) allows for carbon credits to be issued for certain projects, including sequestration of carbon through replanting native trees on non-forested land. To be an eligible offsets project of this kind, the project must establish and then maintain through direct planting or seeding, trees with the potential to attain crown cover of at least 20 per cent of the area across the land and a height of at least two metres.<sup>29</sup> In addition to the positive requirement to establish and maintain the trees, several negative obligations apply following the commencement of such a project, including that plants must not be removed from the site for fencing, and livestock grazing must not occur in the area if it would prevent the regeneration of trees.<sup>30</sup>

Positive obligations may arise by consent authorities, in granting development consent, imposing conditions requiring the preservation or improvement of the environment on the land the subject of the development or requiring the carrying out of works on adjoining land.<sup>31</sup>

At common law, the situation is the same in that there are limited positive duties. Rather, the duties in the torts of negligence, nuisance and trespass are negative in nature, to refrain from causing harm to neighbours and their property.

The solution is to impose more positive obligations on landowners to conserve biodiversity and ecological integrity and to improve the health of the habitats on their land to improve the biodiversity's resilience and capacity for adaption.

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<sup>27</sup> *Native Vegetation Act 2003* (NSW) pt 4; see also heritage agreements under *Native Vegetation Act 1991* (SA) ss 23, 23A.

<sup>28</sup> *Noxious Weeds Act 1993* (NSW) s 12; *Natural Resources Management Act 2004* (SA) s 182.

<sup>29</sup> *Carbon Farming (Quantifying Carbon Sequestration by Permanent Environmental Plantings of Native Tree Species using the CFI Reforestation Modelling Tool) Methodology Determination 2012* cl 2.1

<sup>30</sup> cl 2.1.

<sup>31</sup> *Environmental Planning and Assessment Act 1979* (NSW) ss 80, 80A(1)(f).

## **7. Environmental law dependent on property law**

Environmental statutes and the common law relating to the environment revolve around the legal concepts of property, particularly real property, which leads to many limitations of environmental law, discussed in the next section. The dependence of environmental law on property law can be illustrated in three areas of the law: planning, resource and tort law.

Planning law revolves around land and regulates the use and development of land. Land is zoned to permit or prohibit development for various purposes and to control aspects of development. The zoning and development controls for land regulate the requirements for development consent for development to be carried out on the land. The process for development application is, and development consents are, land-specific and confer property rights to develop the land. Development consents are akin to a document of title, they run with the land and operate for the benefit of successors in title to the owner who obtained the consent.<sup>32</sup>

Resource law relates to rights and interests in property and is therefore also land specific. The resources, whether animal, vegetable or mineral, occur on, in or under land. Property in the resources is allocated to the owner of the land or reserved to the Crown. Resources law regulates the exploitation of the resources. Approvals to exploit the resources are themselves property rights.

Tort law, such as private nuisance and trespass, protects interests, generally private, in land. Nuisance is the unreasonable interference with the use and enjoyment of a person's land. Trespass is the unauthorised and unjustified entry onto a person's land. Public nuisance protects public and communal resources. Each of these torts can be invoked in response to behaviour on land which harms the environment, but the focus of the action is the impact on the owner's interests, as opposed to the environment itself.

## **8. Problems arising from real property ownership**

This dependence of the law relating to the environment on real property gives rise to many problems. I will identify six.

First, real property boundaries are not ecological boundaries. Hence, with the focus of environmental statutes and common law on each piece of real property, there is a failure to consider wider impacts of activities on ecological systems, processes and functioning, which transcend real property boundaries. There is also a failure to consider cumulative impacts. Australian environmental statutes typically fail to require a repository of power to consider the cumulative effects of an exercise of a power or function. There is a tendency for proposed activities to be assessed in a self-contained manner, independently of other past, present and future activities.

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<sup>32</sup> *Ryde Municipal Council v Royal Ryde Homes* (1970) 19 LGRA 321 at 324; *Leichhardt Municipal Council v Terminals Pty Ltd* (1970) 21 LGRA 44 at 51; *Auburn Municipal Council v Szabo* (1971) 67 LGRA 427 at 433-434; *Parramatta City Council v Shell Co* [1972] 2 NSWLR 632 at 637; *Winn v Director-General of National Parks and Wildlife* (2001) 130 LGRA 508 at 512-513, 545.

This failure to deal with cumulative environmental effects is particularly encountered in the fields of biodiversity, water and climate change regulation.<sup>33</sup>

Secondly, ownership of real property is fragmented and diverse. It is hard to co-ordinate action to conserve the environment and biodiversity across properties.

Thirdly, the small size of each property makes it uneconomic to conserve biodiversity on each property.

Fourthly, ownership of property does not include commercial natural resources (*res communis*) or wild animals (*res nullius*) including ants, earthworms and the like which are essential to ecological processes and functioning. This may mean that landowners do not place financial value on conserving these components of the environment. Even if a landowner does value these components of the environment, the fact that the state owns and can give permission for the exploitation of the resources means that they can be exploited by people who accord them no value.

Fifthly, although real property does include plants attached to soil, they are valued for their use for private, exploitative purposes, not for their ecological services, processes and functioning. The dominant value of property in contemporary legal practice is as a commodity.<sup>34</sup>

The rise of real property law marked the beginning of mass commercial exploitation of land resources. The origin of commercialised exploitation of land in England was the introduction of enclosure laws in the second half of the 16<sup>th</sup> century under King George III. Unlike under the feudal system, enclosed land was owned exclusively, without obligation or responsibility. The private and exclusive ownership of land transformed it into a commercial resource. Graham notes that enclosure laws wrought severe ecological consequences in England, including burning and felling of forests and woodland.<sup>35</sup>

When Australia was colonised, the imposition of England's land laws and land use practices quickly caused serious erosion, land degradation and species extinction on private land.<sup>36</sup> Purchases and grants of land in the early colonisation period were conditional upon 'improvement' of the land. Improvements were expected to begin immediately and were focussed on the short-term, and were without regard for local conditions. Graham notes that even where land 'improvement' practices yielded poor results or visible environmental damage, the perceived viability of the improvement approach was not subverted because abundant new tracts of cheap land were available.<sup>37</sup> In modern Australia, the lasting effect of resource depletion under real property ownership can be seen in the proliferation of forestry activity on private land in Australia. In recent times, logging of private native forests in New

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<sup>33</sup> Jacqueline Peel, 'Issues in Climate Change Litigation' (2011) 5(1) *Carbon & Climate Law Review* 15, 17–18.

<sup>34</sup> Nicole Graham, *Landscape: Property, Environment, Law* (Routledge, 2011) 7.

<sup>35</sup> *Ibid* 63.

<sup>36</sup> *Ibid* 128.

<sup>37</sup> *Ibid* 129.

South Wales has accounted for around 25 to 35 per cent of total sawlog production in the state.<sup>38</sup>

Sixthly, property is viewed as a bundle of rights of the property owner and ignores the collective interests in land and the attached plants. Collective interests can include the public trust in the land and its landscape and other non-consumptive environmental values. The right to use and exploit land tends to be valued more than the environmental values associated with the place. As a result, landscapes have deteriorated across the world, signalling an environmental crisis. Yet since property is a rights-based construct, the environmental crisis of deteriorating landscapes has not been linked with a crisis of property law.<sup>39</sup>

These problems arising from real property ownership affect the causes of actions persons can bring for infringement of their property rights, the remedies they can seek for infringement of their property rights, and the persons who have standing to bring such actions.

What are the solutions?

First, the increasing recognition of the first law of ecology – that everything is connected to everything else<sup>40</sup> – and that the Earth's ecosystem is, in a sense, a spaceship,<sup>41</sup> may precipitate the imposition of more sweeping positive obligations on landowners. Sax argues that 'property owners must bear affirmative obligations to use their property in the service of habitable planet'.<sup>42</sup> Sax recommends that:

We increasingly will have to employ land and other natural resources to maintain and restore the natural functioning of natural systems.

More forest land will have to be left as forest, both to play a role in climate and as habitat. More water will have to be left instream to maintain marine ecosystems. More coastal wetland will have to be left as zones of biological productivity. We already recognise that there is no right to use air and water as waste sinks, and no right to contaminate the underground with toxic residue. In short there will be – there is being – imposed a servitude on our resources, a first call on them to play a role in maintaining a habitable and congenial planet ...

We shall have to move that way, for only when the demands of the abovementioned public servitude of habitability has been met will resources be available for private benefits. To fulfil the demands of that servitude, each owner will have to bear an affirmative responsibility, to act as a trustee insofar as the fate of the earth is

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<sup>38</sup> James Prest, *The Forgotten Forests: the Environmental Regulation of Forestry on Private Land in New South Wales between 1997 and 2002* (PhD Thesis, The Australian National University, 2003) 116.

<sup>39</sup> Graham, above n 33 205.

<sup>40</sup> Barry Commoner, *The Closing Circle: Confronting the Environmental Crisis* (Jonathon Cape, 1972) 33.

<sup>41</sup> Kenneth E Boulding, 'The Economics of the Coming Spaceship Earth' in Kenneth E Boulding (ed) *Environmental Equality in a Growing Economy* (John Hopkins Press, 1966), reproduced in Garrett de Bell (ed), *The Environmental Handbook* (Ballantine Books, 1970) 96.

<sup>42</sup> Joseph L Sax, 'The Law of a Liveable Planet' in R J Fowler (ed), *Proceedings of the International Conference on Environmental Law* (National Environmental Law Association of Australia and Law Association for Asia and the Pacific, Sydney, 14–18 June 1989) 11.

entrusted to him. Each inhabitant will effectively have a right in all such property sufficient to ensure servitude is enforced. Every opportunity for private gain will have to yield to the exigencies of a life-sustaining planet.<sup>43</sup>

Sax's call for private gain to yield to the exigencies of a life-sustaining planet is encapsulated in the concept of ecologically sustainable development. The Australian National Strategy of Ecologically Sustainable Development defines the concept as 'development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends'. Statutes could enhance implementation of ESD by imposing positive obligations on landowners to achieve ESD, including by the conservation of biological diversity and ecological integrity.

Another solution is to recognise and enforce a landowner's trustee and stewardship role over their land.

The issue of compensation, will, of course, need to be addressed. If property owners are to preserve collective interests, they may need to be compensated for doing so. This could be done from monies collected from taxes, pricing pollution and other means of ensuring that users and polluters pay for their external, environmental costs.

## **9. Lack of individual ownership of communal resources and wild animals**

Communal resources, such as sunlight, air, running water and the sea, are not capable of appropriation and individual ownership. This leads to the problem of the tragedy of the commons identified by Garrett Hardin.<sup>44</sup> Wild animals are not owned by anyone, which leads to a lack of economic incentive to conserve wild animals. No-one is responsible for enforcing the conservation of wild animals or assisting their adaptation.

A solution, economists say, is to assign property rights in communal natural resources (*res communis*) and wild animals (*res nullius*) to the state, so as to make them publicly owned property (*res publica*).<sup>45</sup> The change in ownership would also necessitate allocation of responsibility to certain public trustees to protect and/or oversee the management of these natural resources. I explain this in more detail below. There may also need to be compensation for property owners on whose land wild animals live for any opportunity cost in preserving their habitat.

## **10. Inadequate valuation of environmental goods and services**

Current environmental law is inadequate in ensuring the internalisation of external environmental costs. For example, existing environmental law generally does not adequately implement the user pays and polluter pays principles.

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<sup>43</sup> Ibid 13–14.

<sup>44</sup> Garrett Hardin, 'The Tragedy of the Commons' (1968) 162 *Science* 1243.

<sup>45</sup> See Justice Brian J Preston, 'The Role of Property Rights and Intellectual Property Rights in the Conservation of Biological Diversity' in Ben Boer, Robert Fowler and Neil Gunningham (eds), *Environmental Outlook No 2: Law and Policy* (Federation Press, 1996) 197, 200-205, 217.

The law fails to properly value and price the environmental goods and services provided by ecosystems, habitats and species. The law contains disincentives to take action inimical to conservation and adaptation of components of biological diversity.<sup>46</sup> For example, tax deductions are only available for expenditure to earn an income. Thus, the cost of clearing native vegetation to create cropping land is tax deductible but the cost of restoring native vegetation would not be tax deductible. Similarly, as mentioned above, Crown land grants in Australia were made conditional on improving the land such as by ring barking or clearing trees. The law contains economic disincentives to conservation and adaptation of ecosystems, habitats and species. An example is the exemption from land tax for agriculture but not for conservation.<sup>47</sup> Conversely, the law does not contain economic incentives for conservation and adaptation, such as to establish links, corridors, offsets, or sinks, or improve the health of ecosystems and habitats.

The law does not value the capacity of ecosystems and habitats to provide environmental goods and services, including the capacity to ameliorate socio-economic impacts of climate change.

The solution is to reform laws so as to ensure the internalisation of external environmental costs. Reform could include removal of perverse economic incentives to destroy biological diversity and disincentives to conserve biological diversity and establishment of incentives to conserve biological diversity.<sup>48</sup> Reform could also include implementation of the user pays and polluter pays principle.<sup>49</sup> The polluter pays principle is increasingly being implemented in relation to carbon pollution in Australia and other jurisdictions. Carbon taxes or carbon emissions trading systems help to make businesses financially liable for current-day emissions of carbon dioxide or greenhouse gases which contribute to the future impact of climate change.

## 11. Lack of flexibility

Climate change leads to uncertainty as to impacts on the environment and biodiversity. Retaining flexibility allows for change to address uncertainty and enable adaptive management. Adaptive management is an iterative approach involving explicit testing of the achievement of defined goals or outcomes. Through feedback to the management process the management procedures are changed in steps until monitoring shows the desired outcome is obtained.<sup>50</sup> Adaptive management involves close integration of scientists and policymakers in the development of environmental

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<sup>46</sup> Justice Brian J Preston, 'The Role of Law in Protection of Biological Diversity in the Asia-Pacific Region' (1995) 12 *Environmental and Planning Law Journal* 264 at 272.

<sup>47</sup> *Ibid.*

<sup>48</sup> Neil Gunningham, 'Biodiversity: Economic Incentives and Legal Instruments' in Ben Boer, Robert Fowler and Neil Gunningham (eds) *Environmental Outlook No 2: Law and Policy* (Federation Press, 1996) 219, 220-227, 229-239.

<sup>49</sup> For illustrations of the implementation of the polluter pays principle, see Justice Brian J Preston, 'Sustainable Development Law in the Courts: The Polluter Pays Principle' (2009) 26 *Environmental and Planning Law Journal* 257 and Justice Brian J Preston, 'Ecologically Sustainable Development in the Context of Contaminated Land' (2008) 25 *Environmental and Planning Law Journal* 164, 176-181.

<sup>50</sup> *Newcastle & Hunter Valley Speleological Society Inc v Upper Hunter Shire Council and Stoneco Pty Limited* [2010] NSWLEC 48 at [184].



systems models that are adjusted in response to changing conditions.<sup>51</sup> The technique reconceptualises environmental regulation by incorporating scientists while activities are carried out, as opposed to merely in the initial environmental impacts assessment.<sup>52</sup>

However, the law is inflexible. Four examples illustrate this inflexibility.

### Land use consents

Development consents to carry out development on land run with the land. They are rarely time limited. They involve a once-and-for-all determination of the development application with no ability to re-consider and impose new conditions of consent in light of new information or changes in circumstances. The need for certainty in the exercise of the power to grant consent inhibits flexibility. There is also a tendency for prescriptive solutions rather than performance standards or outcomes to be included in development consents.

Solutions include imposing time limits with triggers which cause the consent to expire or permit a change of the conditions; making greater use of performance standards and outcomes, applying the subsidiarity principle whereby the developers who are best placed to maximise benefits or minimise costs develop their own solutions and responses to environmental problems to achieve the required performance standards or outcomes;<sup>53</sup> and requiring monitoring and adaptive management.<sup>54</sup>

### Resource security

Governments and resources industries push for resource security in legislation in a quest for certainty. For example, forests are guaranteed for harvesting or marine areas for fishing. Similarly, mining leases are granted over land for specified periods to provide businesses with certainty of access to resources.

Reform should be linked to securing ecological sustainability of whole ecosystems, not just harvested resources.

### Biocertifications on Environmental Planning Instruments

Environmental planning instruments can be biocertified for the purposes of planning legislation, such as the *Environmental Planning and Assessment Act 1979*. Under the *Threatened Species Conservation Act 1995* biodiversity certification will only be conferred on land with a biodiversity certification strategy in place. This is a policy or strategy for the implementation of conservation measures to ensure that the overall effect of biodiversity certification is to improve or maintain biodiversity values.<sup>55</sup> The

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<sup>51</sup> C S Holling, *Adaptive Environmental Assessment and Management* (John Wiley & Sons, 1978) 14-15.

<sup>52</sup> *Ibid.*

<sup>53</sup> *Jeffman Pty Ltd and Lawrence Dry Cleaners Pty Ltd v Environment Protection Authority of NSW* [2011] NSWLEC 89 at [85].

<sup>54</sup> *Newcastle & Hunter Valley Speleological Society Inc v Upper Hunter Shire Council and Stoneco Pty Limited* [2010] NSWLEC 48 at [183]-[187].

<sup>55</sup> *Threatened Species Conservation Act 1995* s 126K.

effect of biodiversity certification is to exempt proposed development or activities from legislative requirements for environmental impact assessment including assessment of the impact on biodiversity values, or a species impact statement.<sup>56</sup>

Biocertification, however, does not allow for the discovery of threatened species, populations or endangered ecological communities which existed but were not known at the time of biocertification, or which have been subsequently listed, or which have migrated or expanded their range into the area.

Reform to biodiversity certification should allow flexibility by requiring ongoing collection of information and data about the biodiversity of the subject area, and the input of this data into the biodiversity strategy.

### Protected areas

Protected areas, such as national parks and reserves, are beneficial in conserving ecosystems, habitats and species within their boundaries. However, the boundaries are fixed, not flexible. Fixed boundaries do not allow for species change and movements which may occur as a result of climate change. Consideration should be given to allow flexibility to amend boundaries, such as trading off the whole or part of an existing, protected area which has become sub-optimal in conserving species, populations of species or ecological communities by reason of climate change for new areas which may better conserve such biological diversity.

## **12. No guardian or trustee for biodiversity**

There is no public authority with responsibility for ensuring the conservation of biological diversity and ecological integrity, including adaptation to climate change impacts. Responsibility is diffused between different government agencies, which administer different environmental statutes, and even sometimes the same environmental statute. In New South Wales, for instance, the Environment Protection Authority, based within the Office of Environment and Heritage, generally oversees administration and enforcement of the *Protection of the Environment Operations Act 1997*, but other regulatory authorities are specified for certain activities in the regulations.<sup>57</sup> There is fragmentation of regulatory authorities and powers; lack of co-ordination and co-operation, both vertically and horizontally; differences in knowledge expertise and resources; inconsistency in decision-making; and enforcement only of the statute for which the public authority is responsible. No one public authority is responsible for specified outcomes. No one authority reports on overall performance of those specified outcomes.

What can be done? First, there could be legislative implementation of the public trust doctrine. The government should hold unowned natural resources (*res communis* and *res nullius*) and natural resources on publicly owned land (*res publica*) on trust for the benefit of the public and have a fiduciary duty to protect and preserve these resources. This would include an affirmative duty to take action to restrain, or recover compensatory damages for, injury to these trust resources.

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<sup>56</sup> *Threatened Species Conservation Act 1995* s 126I.

<sup>57</sup> *Protection of the Environment Operations (General) Regulation 2009* Ch 7 pt 1.

Under the *Comprehensive Environmental Response, Compensation and Liability Act of 1980*, 42 USC (CERCLA) in the United States, various government institutions are required to act on behalf of the public as trustees for natural resources. Liability for clean-up costs may be imposed on current and past owners or operators of facilities that release hazardous waste and transporters responsible for release of hazardous waste.<sup>58</sup> A trust fund was also established under the Act for when no responsible party can be identified for clean-up costs. In addition to response costs, trustees under the Act are able to recover compensation for injury, destruction or loss of natural resources resulting from the release of hazardous substances.<sup>59</sup> Money recovered by trustees under the Act can only be used 'to restore, replace, or acquire the equivalent' of the natural resources affected.<sup>60</sup>

Another focus of legislation which implements something akin to the public trust is specified habitat conservation. The European Union's Habitats Directive includes nature reserves as well as privately owned land, and the Directive is intended to ensure that future management is sustainable, both ecologically and economically.<sup>61</sup> As noted above, development is not completely prohibited in the areas, but will only be allowed if it is in the overriding public interest and there are no alternative solutions, and compensatory measures to ensure the overall coherence of the network must be taken.<sup>62</sup>

The public trust doctrine has been little used in Australia and there is no statutory basis such as CERCLA or the Habitats Directive. One instance where the existence of a public trust was successfully argued before a court was in *Willoughby City Council v Minister Administering the National Parks and Wildlife Act*.<sup>63</sup> The Land and Environment Court granted an injunction to demolish a building which was constructed contrary to the *National Parks and Wildlife Act 1974* (NSW). It found that national parks are held by the state in trust for the enjoyment and benefit of its citizens. The limited reference in Australian case law to the public trust doctrine could be remedied by legislation. Specified areas could be designated for ongoing conservation and similarly to CERCLA, provision could be made to allow recovery of damages for harm to natural resources caused by specified acts.

Second, greater use could be made of the *parens patriae* doctrine, as occurs in the United States.<sup>64</sup> This is a means of conferring standing on the state to commence proceedings on behalf of its citizens. Government could bring action on behalf of its citizens to protect its quasi-sovereign interests such as the interests the state has in the health and welfare of its citizens, its environment and natural resources. Again, the doctrine has been little used in Australia. The doctrine provides standing to a

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<sup>58</sup> CERCLA at § 9607.

<sup>59</sup> CERCLA at § 9607.

<sup>60</sup> CERCLA at § 9607.

<sup>61</sup> European Commission, *Natura 2000* (14 September 2012)

<[http://ec.europa.eu/environment/nature/natura2000/index\\_en.htm](http://ec.europa.eu/environment/nature/natura2000/index_en.htm)>.

<sup>62</sup> Art 6(4). See also Donald McGillivray, 'Compensating Biodiversity Loss: the EU Commission's Approach to Compensation under Article 6 of the Habitats Directive' (2012) 24 *Journal of Environmental Law* 417.

<sup>63</sup> (1992) 78 LGERA 19

<sup>64</sup> See, eg, *Massachusetts v EPA* (2007) 127 S. Ct. 1438 at 1454-55; *New York v. New Jersey* (1921) 256 US 296.

state to assert its claim under an existing cause of action, such as public nuisance or public trust. It is therefore dependent on other causes of action.

Reform could involve appointing public authorities or officials as public trustees or *parens patriae* to uphold and enforce environmental laws and protect ecosystems, habitats and species.

### **13. No performance standards or outcomes, monitoring or reporting**

As I have noted, the law does not set environmental performance standards or outcomes for property owners or government. There is no monitoring in relation to performance standards or outcomes. As has been noted in management theory, if there is no measurement, there is no management, or put the other way, what you measure, you manage. There is also no reporting to public authorities of environmental impacts, conditions or changes to conditions. As a consequence, there is no adaptive management in response. Reform needs to address these limitations.

## **Conclusion**

Identified above are a series of limitations on the capacity of law to respond to the problem of climate change impacts on biodiversity, along with some mechanisms for addressing these limitations. Dealing with the inadequacies in the law proactively and without delay will secure better outcomes, at a lower financial and environmental cost, than if the status quo is allowed to remain. A French allegory illustrates the greater difficulty in conserving the environment if action is delayed:<sup>65</sup>

Suppose you own a pond on which a water lily is growing. The lily plant doubles in size each day. If the lily were allowed to grow unchecked, it would completely cover the pond in 30 days, choking off the other forms of life in the water. For a long time the lily plant seems small, and so you decide not to worry about cutting it back until it covers half the pond. On what day will that be? On the twenty-ninth day, of course. You have one day to save your pond.

Considering the complexity of ecosystem function, the inter-dependence of many species and habitats, and the difficulties with anticipating precise impacts of climate change, pre-emptive and proactive action will likely yield better results for biodiversity, and at an ultimately cheaper cost, than if we continue to operate under the status quo.

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<sup>65</sup> Cited in Andrew Dobson, *Green Political Thought* (Routledge, 3<sup>rd</sup> ed, 2000) 66.