



Australian  
**Conservation**  
Foundation

# **Productivity Commission Inquiry**

**Into**

## **Impacts of Native Vegetation and Biodiversity Regulations**

Submission in Response to the Draft Report

by the

**Australian Conservation Foundation**

**February 2004**

## Introduction

The Australian Conservation Foundation welcomes the opportunity to comment on the Draft report.

ACF is extremely disappointed with the draft report, which contains errors of fact, lacks rigour in analysis, and fails to challenge or verify much of the evidence put to it. More importantly, it puts forward little detail on any practical policy framework for consideration by governments that addresses the need for biodiversity conservation on the one hand, and the need to address what *may* be found to be *valid* equity concerns in both the process and practice of regulation.

In particular, the Commission has taken an unhelpful approach to regulation, giving inadequate consideration to the *merits* of regulation by comparison with a wide range of other potential policy instruments, or to *ways* of more effectively *complementing* regulation with a more comprehensive basket of policies and programs.

In making the recommendations in the draft report, the Commission also fails to consider important concerns relating to sustainability principles, as outlined in ACF's earlier submission.

Much greater rigour should be applied in preparing the final report, to maximise its credibility and utility.

We also hope that the final report provides greater pointers to tangible new initiatives which could complement native vegetation and biodiversity regulations, improving the effectiveness, efficiency and equity of the overall policy toolkit in this important arena.

## Principles and Demand for Ecological Sustainability

The Ethical imperative to allow for the needs of not only our own, but other species and generations, is ignored in the Commission's concluding assertion that "... *if the community is not prepared to pay for the costs of supplying the environmental public goods it apparently demands, this would indicate that the costs are considered to outweigh the benefits*" (p. 208).

Quite apart from the fact that the Commission has conducted no research and provided little evidence as to the community's willingness to pay for the provision of public goods in biodiversity and native vegetation, this assertion is entirely anthropocentric on the one hand, and ignores issues of inter-generational equity on the other.

We again draw the Commission's attention back to the sustainability definition provided in ACF's original submission, which appears to have been overlooked here. Any accepted definition of 'ESD', as you are aware, includes principles that cover protecting biodiversity and ecological processes, and within and between generations.

Questions to be addressed here include the following: How can future generations "buy" ecological services from this current generation of farmers? Why should the majority of the community be expected to "buy" from landholders what might be described as a 'duty of care' on the one hand, or the absolute human right to a healthy diverse ecological system, safe from land clearing and other gross artificial traumas? How can we assert that unless a species or community is assigned an economic use value by our species, then it has no necessary right to be protected from extinction?

The very fact that we do have a public discourse about the need for policies of ecological sustainability, in some cases translated into legislation, must surely be an indicator of market failure – that our community has a broader range of values than can be displayed on an economic dashboard.

It would be most disappointing if the Commission were to seriously propose that the costs of ecological sustainability – in this instance or in any other – outweigh the benefits.

The suggestion that, beyond regionally agreed responsibilities, the protection of natural assets required to "... *achieve biodiversity, threatened species and greenhouse objectives... should be bought from landholders*" (p. 208) reduces the natural world to a set of commodities having no value beyond that bestowed by current economic markets (and it is worth noting here that biodiversity loss is irreversible, as is most loss of native vegetation, with restoration being prohibitively expensive and all but technically impossible). The compromising of native vegetation and biodiversity values implicit in this recommendation is anathema to ACF, and, we believe, to the majority of today's Australians.

More attention should be paid to the question of whether refraining from land clearing amounts, in this day and age, to "*supplying public-good environmental services*" (p. 205), or merely to refraining from doing a public *disservice*. On this point, we were surprised and disappointed to read the Commission's statement that "... *it is not obvious why clearing of native vegetation by landholders for agricultural production is antithetical to community 'norms' and deserves punishment.*" (p. 205). Should the Commission be interested, ACF could point to an enormous mass of scientific and policy literature readily available to any desktop review that clearly outlines the environmental and public imperatives behind controlling land clearing (e.g. state of the environment reports).

And as we have drawn to the Commission's attention in our first submission, recent newspoll results clearly demonstrate the community's support for stronger laws to control land clearing.

Indeed, the community's views on protection of biodiversity and native vegetation, expressed through their elected representatives in parliament at both state and federal level, are evident in the very regulations this inquiry is examining. Presumably if the community did not feel that land clearing was "antithetical" to their "norms", they would not have demanded and supported legislation (albeit not always ideal legislation) through the democratic processes of parliament and government.

Finally, the Commission seems to be suggesting on page 205 that because the community continues to buy agricultural produce, the community could be assumed to support further land clearing. This is a long bow indeed! . One might equally suggest that because the community continues to buy cheap textiles, that they support sweat-shops and child labour. Perhaps the Commission is alluding here to a need for sustainability accreditation and labelling laws that would alert the consumer to all environmental externalities associated with Australian food and fibre! Only then might this assertion be testable.

## **The need for rigour in describing the current situation and verifying evidence brought before the Commission**

Unfortunately the Draft Report includes a series of apparent errors of fact on the one hand, and exaggerations on the other, that must be revisited in the final analysis and report. Examples include:

- "... *the New South Wales and Queensland Governments announced their intention to stop all broadscale clearing of native vegetation from 2004-2006...*" (p. XXIII). Neither Government has any intention of "stopping" the clearing of regrowth vegetation, and there are also large exclusions around bush in urban areas.
- "*Restrictions on thinning or clearing of woodland 'thickening' may promote soil erosion ...*" (p. XXVII). This claim is spurious and has no foundation in science. Trees and shrubs do not cause soil erosion. Where soil erosion occurs under native vegetation, whether thick or thin, it is most likely to be caused by over-stocking, or by other poor land management practices (such as land clearing elsewhere, leading to increased stream, surface or ground-water flows), not by any over-abundance of woody vegetation.

- "*Simply because governments may have the power to confiscate private property via regulation without paying compensation, does not automatically imply that this is a desirable course of action to take*" (p. 29). The suggestion here that native vegetation regulations amount to confiscation of private property is a gross over-statement of the rights that are afforded and understatement of the responsibilities in the ownership of freehold or leasehold land. ACF made this clear in attachments to our submission. The Commission's statement that it "*is not in a position to say whether or not governments have legal authority to regulate native vegetation on freehold land*" is surprising given the unambiguous, Constitutional authority of state governments in this regard, along with the Commonwealth's equally clear external affairs head of power relating to international agreements or corporate affairs (just terms provisions notwithstanding).
- "*Many landholders are being prevented from developing their properties, switching to more profitable land use and from introducing cost-saving innovations*" (p. XXII). We believe this to be a gross exaggeration. While native vegetation or biodiversity regulations may limit *some* options for *some* landholders, this sweeping comment ignores both the capacity of landholders to improve efficiency and productivity on already-cleared lands, or to access current – or potential – incentives to conserve vegetation and (in many cases) derive sufficient economic value from it (see Appendix one, below).
- The use of the term "compensation" throughout the report flies in the face of the Commission's own admission that "... there is no legal obligation on governments to compensate..." (p. 27), suggesting to the reader that the regulations under scrutiny comprise some "wrong" which must be righted through compensation. The use of the expression "regulatory takings" seems also to skew debate towards the notion that regulation is somehow improper or unjust (p. 27). This sort of politically-charged language should be replaced with more neutral terms (e.g. financial assistance, or structural adjustment, rather than "compensation").

### **Verifying assertions and quantifying impacts**

It is crucial that assertions in individual submissions regarding impacts on landholders be independently verified by the Commission, but it is unclear in the Draft Report as to whether and to what extent such verification has been attempted. The Commission admits that it "*relies heavily on the evidence provide [sic] by participants*" (p. 5). Several inaccuracies in landholders' submissions have been drawn to ACF's attention emphasising the need for the Commission to apply greater rigour in verifying claimed impacts of regulations.

Paragraph three on page 111 of the draft report points to broader weaknesses in the Commission's analysis regarding impacts on individual landholders, revealing:

- The likely unrepresentative nature of the information provided in submissions from landholders
- The impossibility of extrapolating to impacts on landholders as a group

Despite this admission, the Commission concludes the paragraph with the assertion that "*... a relatively large number of landholders have been affected and, for some of those, the impacts have been significant.*"

So on the basis of (unverified?) statements from an unrepresentative sample of 0.07% of the 140,000 farm establishments in Australia<sup>1</sup>, the Commission asserts that it is "*clear*" that a "*relatively*" large number of landholders have been affected. In our view this assertion remains untested. ACF suggests that the Commission could usefully undertake research to (a) quantify the extent of landholders impacted and (b) verify the extent of the impacts on those landholders. .

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<sup>1</sup> ABS data for 2000-01, Technical notes 7121.0 *Agricultural Commodities Australia*, November 2002

## Regulation, limits to rights, ‘compensation’, and the concept of ‘duty of care’

Without question, regulation can be an effective tool in delivering conservation objectives. Furthermore, there is absolutely no evidence to suggest that the nationwide, or statewide, rate of native vegetation clearance can be controlled in the absence of regulation – quite the contrary! To suggest that vegetation clearance can be controlled in the absence of regulation is to fly in the face of the facts. ACF reiterates that any attempt to control land clearing to date that relies on incentives, market mechanisms, education, or simple good will *in the absence of regulation* has failed to deliver even vaguely comparable outcomes.

The Commission further states that “... *underlying the current approach to conservation of native vegetation* [implicitly an over-emphasis on regulation] *seems to be a view that private landholders cannot be trusted to care for the land and that they will degrade it for short-term profit.*” (p. 201). Such an assertion is misplaced and grossly unfair on the advocates for biodiversity regulation, suggests an ulterior motive, and we reject it out of hand. The reason that regulation is used in controlling land clearing is not malevolent or disrespectful in any sense, but simply based on an acknowledgement that other approaches have consistently failed to reduce clearing rates.

A great deal of emphasis in the draft report is placed on regulation that ‘takes away’ the rights of private or leasehold landholders, or “confiscates” their “property” (p. 207; p. 29). The report places great emphasis on the rights of landholders, at the expense of discussion of their responsibilities, thus suggesting that landholders rights in native vegetation and biodiversity approach the absolute – a claim that is neither legally accurate nor ethically justifiable.

The draft report argues that landholders should only be expected to bear the costs of actions that largely benefit them as individuals or as a group (p. XXXVIII). This implies that, provided there were no net short-term economic impacts on an individual enterprise or the local *agricultural* community, landholders ought not to be expected to avoid causing:

- dryland salinity (whether affecting downstream farmers, water supplies, biodiversity or built infrastructure *now*, or manifesting itself 50 years hence);
- soil erosion and sedimentation (for example smothering estuarine or coastal marine habitats, perhaps hundreds of kilometres away)
- pollution of surface water resources or groundwater (e.g. causing algal blooms in downstream rivers or eutrophication of estuarine and coastal waters);
- degradation of in-stream and riparian habitat and biota and modification of stream morphology;
- generation of often very high levels of greenhouse gases (affecting future generations of landholders through reduced rainfall and/or increased climate variability);
- processes of species extinction (either immediate in effect, or amassed as “extinction debt” and rolling into the future as the ecosystems decay); and
- continuing loss and/or degradation of native vegetation and its habitat values.

Significantly, the costs of these impacts, whether off-site or on-site; immediate or delayed – are externalities, and all of them have an economic dimension to them in one sense or another. (ref. ACF’s 1997 submissions to the Industry Commission’s Ecologically Sustainable Land Management Inquiry – ‘A Full Repairing Lease’.)

Regulation of land use recognises that human behaviour, and/or ‘market forces’, (i.e. left to their own devices), cannot accommodate or address the collective good as it pertains to externalities such as these. It also recognises that to try to construct markets to address these externalities is invariably, in both a policy and economic sense, inefficient.

On the contrary regulation is, very often, very efficient.

In this way, a whole body of Land Use Planning and other legislation and regulation has developed which places limits to freehold and leasehold title.

- For instance, should the imposition of new residential planning regulations, such as 'Vic Code' in Victoria, attract compensation where it can be shown that it impacts on the potential commercial value of residential land? An excellent example that impacts on potential commercial returns related to controls on the approval, form and density of subdivisions and related issues that pertain to the amenity and value of surrounding properties, as well as the 'character' of the residential area in question, and the public's desire for sound urban planning.
- Should owners of peri-urban 'hinterland' or coastal bushland or farmland be free to subdivide their land at will, free of regulatory approval to do so, and hence realise the full commercial potential from their land regardless of public good aspirations for protection of landscape amenity and maintaining an appropriate balance of arable land and residential subdivision?
- Should owners of residential property *adjacent to* an urban waterway reserve be compensated for a road transport decision to construct a major road through the reserve *in the public interest*? Just as with owners of agricultural land, here is the case of a regulation impacting on the market value of land.
- Should those wishing to import exotic pest species be compensated for public good regulations preventing their imports (clearly not in the interests of them or their industry)
- Should industries incurring costs as a result of strengthened emission control or toxic waste management regulations be compensated for bearing costs for actions beyond those in the interests of themselves or their industry?

So one question the Commission must address is this: **Should all decisions in arenas that impact on the wealth – or potential wealth – of those who are regulated in the national or public interest require full 'compensation'?**

The Commission must address this question, because at its heart the idea of compensation for the impacts of all public good regulation is the same as that relating to the public good aspects of regulation of native vegetation and biodiversity.

That is not to say that in some instances the addition of a range of policy instruments, some of which may well include financial incentives or adjustments, are not appropriate in this arena. But this is not the same as compensation *per se*.

### **Duty of care**

In its ESLM Report the Commission highlighted the need to define a 'duty of care' in legislation. This concept recognises that a landholder has a duty of care to the environment to manage the environmental impacts of unsustainable land uses. The premise here is that up to a point – as yet undefined – a landholder has a responsibility in the public good.

The trouble with this approach, however good it sounds in theory, is that no-one has yet defined what sustainable agriculture is, or where a 'duty of care' in agriculture should begin or end. Such definitions are in any case likely to shift and change over time with emerging scientific understandings, environmental influences and community demands.

The main point to be made here is this: Rights to land are not total or unconditional, and there is no compelling reason why regulation of land use must entail compensation where the benefits of that regulation do not apply to the private landholder in question.

Fairness and equity are clearly considerations for government, but their application to regulation must not be considered just in a narrow and legalistic sense, and in isolation from both the aims of the regulation and the bigger picture. The challenge here is not one of making regulation *per se* perfectly fair, but to consider the whole suite of policy tools and options available, both now and into the future. It is this approach which can offer governments a way forward which is as far as possible effective, efficient and equitable.

## **A Complementary Approach to Policy and Regulation**

Without question, the last decade or more has seen a rapid growth in the industry of environmental and natural resource management. While we still have much to learn and even more to achieve, we are, as a nation, much better placed to address problems such as salinity and biodiversity decline than we were 15 or 20 years ago.

At the Commonwealth level, we have grant-based and incentives programs such as Landcare, the Natural Heritage Trust, as well as the National Action Plan for Salinity and Water Quality, and a range of minor – and usually ineffectual – taxation incentives.

Indeed the Commonwealth, through multi-lateral and bi-lateral agreements with the states and territories, has required as a condition of funding under NHT and NAP that states greatly increase their regulation of land clearing. The Commonwealth has required, for example, that states “ban” land clearing where it will lead to unacceptable land and water degradation, and that States provide for the protection of endangered and vulnerable vegetation types. The Commonwealth have required this in recognition of the fact that incentive, market and voluntary measures alone, in the absence of strong regulation, have never and cannot lead to a reduction in land clearing- one of the most critical aims of any rational NRM program.

These NRM programs are more-or-less mirrored at a state level, and further complemented by programs such as ‘land for wildlife’ in Victoria, and legal covenanting programs in a number of jurisdictions.

In this context the Commission must address (amongst others) two fundamental questions.

1. What policies and programs currently exist that complement the role of native vegetation and biodiversity protection regulations, and how might they be improved?
2. What policies and programs might be developed that can go beyond existing approaches to further complement vegetation and biodiversity conservation laws?

Specifically, programs such as the National Reserve System Program and, in Victoria, Bush Tender, offer great scope to complement the role of vegetation and biodiversity laws.

Obviously one question here is; do they go far enough? Are funding levels adequate? On one level, funding levels are clearly not adequate, either to encourage enough landholders to participate, or to ‘out-compete’ the market pressures – and perverse incentives – that encourage land clearing and biodiversity decline in the first instance.

And in recent years, the approximate ‘ratio of impact’ between proactive incentives for restoration of native vegetation on the one hand and land clearing rates on the other has been around 1:100. That is, for every hectare planted in attempts under the NHT to restore native vegetation communities, around 100 hectares have been cleared. An argument for more funding perhaps (at 100 times the expenditure of the NHT)? Perhaps more to the point, should public funds be spent on re-planting native vegetation when so much clearing is still permitted? Isn’t this a case of good money after bad?

One thing is for sure – there can hardly be a case for public funds to go to the expensive and inevitably compromised restoration of native ecosystems (or ecological functions such as salinity control) if – and where – land clearing continues to take place on a significant scale.

This does not mean, however, that all existing programs should be targeted to areas where land would otherwise be cleared. Such an approach would be wide open to rorting on the one hand, and would also distort the objectivity of catchment and biodiversity conservation planning and grant allocation methodologies respectively.

On the broader question of *what further policies can be developed*, ACF suggests the following as a conversation-starter in this exercise:

- **Leveraging Private Investment:**

Released by ACF, CSIRO and the Business Leaders' Roundtable, this Allen Consulting Group report found that an average 'outlay' of \$360 million p.a. could generate around \$1.3 billion in *additional* private commercial investment in land use change and sustainable land use.

Given the premise that most 'grant' programs address the periphery of commercial land use, combined with the fact that grants programs do not in themselves target the re-direction of both commercial investment and commercial land use, a policy initiative based on the Leveraging Private Investment could be highly successful in redirecting landholders to profit from the retention of biodiversity, rather than from its destruction.

ACF's assertion is that natural ecosystems offer a wide range of current and potential forms of land use that may well be more commercially viable if well-targeted investment subsidies are used to cut the cost of finance and/or equity.

A range of potential markets in environmental and natural resource management are described in Appendix one of this submission.

- **'Green Shears'**

Subsidies and perverse incentives (eg. tax laws) exist that actively promote the *destruction* of native vegetation and biodiversity rather than its conservation. ACF argues that a 'Green Shears' program of targeting and reforming such policies would do much to relieve the commercial pressures to clear native vegetation. Examples of such perverse incentives are:

- Depreciation on land clearing equipment for tax purposes
- Diesel fuel rebate on fuel used to operate land clearing equipment
- Capacity to claim other costs associated with land clearing, including labour
- Subsidised pastoral leasehold rents set well below market rates, and with few if any conditions that pertain to ecological sustainability

Indeed it is quite probable in many instances that land clearing, particularly on more marginal sites, would not be economic for the landholder in the absence of such distortionary subsidies. And in assessing the environmental impact of policies such as these, it would be worth calculating the amount of money spent (or income foregone) on these policies in comparison to the relatively modest amounts spent on biodiversity conservation and rehabilitation.

- **Review of Land Use Conditions on Pastoral Leaseholdings**

Given the very low rental currently returned on crown-owned leasehold land, ACF believes the opportunity now exists to formalise a conservation 'duty of care' on leaseholdings.

- **Increased 'cross compliance' conditions on Commonwealth environmental and natural resource management funding, and a whole of government approach**

Potential exists to achieve a greater alignment of regulation at the state level with a range of other policies and funding programs operating at national, state and regional scales (both



in the NRM arena and more broadly).

This may well require changes to the institutional arrangements at both Commonwealth and Federal levels. For example, the National Competition Policy Agreement (including the National Competition Council and Commonwealth competition tranche payments) has provided a relatively effective framework for delivering microeconomic reform in the states. A similar approach to National Ecologically Sustainability Policy may well prove more effective than the current mixture of approaches.

- **Stewardship agreements**

Largely untested, annualised (or capitalised) stewardship payments can have a role to play in some instances where (for example) very high cost management is necessary, entailing little if any private return, to retain the presence of very high conservation values. Another example may be to negotiate the revegetation, or re-flooding, of historically-cleared (or drained/leveed) land to meet a conservation outcome.

Thank you for the opportunity to comment on the draft report.

## Appendix one: Some Potential Markets in Environmental and Natural Resource Management

Potential Market:	Discussion and Examples:
<p><b>1. Water quality</b></p>	<p>Chemical/mechanical water treatment is not cheap, and hence there is a commercial incentive for water utilities to purchase ‘environmental services’ re improved catchment management. The recent purchase of a whole catchment upstream of a water storage in New York State represents one example here. Similarly, a key outcome of the review of Sydney Water after the 1997 ‘boil water alerts’ was to opt for improved catchment management rather than expensive water treatment plants as the best means of improving water quality for humans and the environment.</p> <p>Potentially, water utilities could be in the market for a range of services, including:</p> <ul style="list-style-type: none"> <li>• Revegetation of whole catchments</li> <li>• revegetation of buffer strips on streamsides and around reservoirs to prevent erosion and ‘filter’ nutrient and sediment laden runoff</li> <li>• installation of improved waste management from dairies or feedlots</li> <li>• Remedial works on irrigation &amp; urban stormwater drainage systems (eg.. wetland construction)</li> </ul>
<p><b>2. Fisheries habitat</b></p> <ul style="list-style-type: none"> <li>– coastal</li> <li>– estuarine</li> <li>– riverine</li> </ul>	<p>Fish stocks can depend on a range of factors, including habitat, water quality and environmental flows. Indeed these factors are often of far greater significance than fishing pressure in limiting stocks. Many coastal fisheries, for example, depend on healthy coastal habitats (seagrass, reefs, etc) and an abundance of food. However pollution, algal growth, depressed oxygen levels, sedimentation and even reduced groundwater inflows to seagrass beds (for example) can seriously degrade this habitat.</p> <p>Similar pressures often exist in estuaries, lakes and rivers. However, reduction in the volume, variability and seasonality of surface flows, or reduction in groundwater-sourced base flows, can also have a profound impact.</p> <p>In some inlets (eg. Corner Inlet, Vic; Coorong, SA) and estuaries (eg. Clarence estuary), structures exist to restrict tidal interactions within the estuary, or to cut-off estuarine floodplains and wetlands from tidal and flood flows. In the process, much extremely productive habitat is lost, whilst the returns to cattle graziers on these ex-floodplains is marginal. Similarly, riverine floodplains and wetlands have been artificially cut-off from river flood flows, (by river regulation, reduced flows, and levees), meaning serious reductions to fish breeding and feeding opportunities, as well as reduced food supplies flowing into rivers.</p> <p>Fisheries habitat is extremely valuable. Mangroves in Moreton Bay, for example, were valued at \$7,000 per ha, per year, in fisheries production terms alone.</p> <p>For commercial and recreational fisheries, markets may exist as follows:</p> <ul style="list-style-type: none"> <li>Purchase or rent of reclaimed tidal or floodplain wetlands, and restoration of more natural inundation patterns</li> <li>Removal or modification of weirs, floodgates and similar in-stream and floodplain structures</li> <li>Revegetation of reclaimed wetlands</li> <li>Payment for stock exclusion on riverine wetlands</li> <li>Payment for measurable improvements to water quality, such as a rate per tonne of organic carbon (i.e. generally ‘good stuff’) or per megalitre of freshwater entering an estuary</li> <li>Construction of fishways on weirs</li> <li>Contribution towards the cost of engineering warm water releases from deep dams that currently release cold water</li> <li>Contribution towards the cost of improved environmental flows</li> </ul>

	<p>Re-direction of freshwater fish rec. licence fees towards improved management of fish habitats (and away from stocking programs).          With coastal and estuarine commercial fisheries, however, <b>a major obstacle</b> exists in terms of the rapid transition to quota-based fisheries. Quotas mean catch limits – and even the decline in available catches – are disconnected from the quality of fish habitat, hence removing incentives to manage habitat, and destroying the potential for markets in environmental services..</p>
<b>3. Plantations and Farm Forestry</b>	<p>Timber plantations are an obvious commercial alternative to grazing and cropping on farmlands. While plantations clearly do not always produce any clear environmental benefits, in some instances they can play a role in salinity mitigation, erosion control, remediation of degraded soils, or improved management of water quality. While other benefits are sometimes rather dubious, the stand-out benefit is in salinity mitigation. Farm forestry has similar advantages, differing only in the intensity of plantings and the non-exclusion of cropping, grazing or horticulture. Trees can be grown for a variety of products, including:          Softwood or hardwood lumber (including speciality timbers)          Pulpwood for paper and fibre production, or for export as woodchips          Timber for medium density fibreboard production          Firewood production (currently produced in Australia in volumes only slightly less than export woodchips)          Oil production (e.g. oil mallee)          Pharmaceutical medicine production          Cut flower production from native shrubs (eg. banksia)          Biomass for energy production          Sandalwood</p> <p>Another market driver relates to over-allocation by state forestry agencies, such as in New South Wales and Victorian native forests, where RFAs over-estimate log production over coming years. It may be cheaper for Forestry agencies to pay private millers to use plantation timbers (ie New South Wales Govt buys plantation timber) rather than face compensation claims by mills when further supply commitments cannot be met.</p>
<b>4. Revegetation</b>	<p>Revegetation with local indigenous species need not be limited to biodiversity conservation objectives alone. Indeed the commercial – or semi-commercial – potential of revegetation may in some instances be considerable. For example:          Speciality timbers          Firewood          Seed production          ...as well as many other uses referred to elsewhere in this matrix.</p> <p>The main point to make, however, is that the difference between monoculture plantations on the one hand and revegetation on the other is not black and white; the differences are gradual, involving differences in intensity of management, expectations of commercial returns, and expectations of biodiversity and natural resource management outcomes.</p>
<b>5. Honey</b>	<p>In some woodland types (eg. some box or ironbark woodlands), extant native woodlands used for apiary can produce equivalent or higher returns than cleared grazing lands in the same locations. This raises the potential for revegetation with indigenous species for salinity and biodiversity conservation purposes, whilst over time becoming available for apiary purposes. Hence future commercial returns from apiary has potential as a commercial driver in revegetation.</p>
<b>6. Fodder crops</b>	<p>A wide range of shrubs and other perennials have potential as fodder crops. Lucerne, saltbush, leucaena, tree lucerne and other species can all be grown as fodder crops, whilst at the same time helping to manage salinity and soil erosion.</p> <p>In some instances, crops such as lucerne can be grown and harvested mechanically for use in feedlots, or to supplement pasture feeds. Indeed, un-grazed perennial native grasses may also be able to be managed in this way.</p>

	<p>Alternately, perennial shrubs such as saltbush can be grazed directly, provided short-rotation cell grazing systems are in place.</p>
<b>7. Wattleseed</b>	<p>Seed from some Acacia species is high yielding and high protein, and has potential as a perennial commercial crop. Used as a food staple by Aboriginal people in many regions, wattleseed is also beginning to be used as a crop in parts of Africa. It's potential in Australia is as a deep-rooted perennial crop well suited to many areas of high salinity risk. Major obstacles at present are that markets for wattleseed and flour are undeveloped and of unknown potential, and harvesting and processing technologies require development.</p>
<b>8. Tourism &amp; recreation</b>	<p>Many natural assets are used for tourism and recreation, and many others have potential for such use. And while tourism and recreational uses can have negative environmental impacts, sensitive and well-managed use can be compatible with the protection of natural values.</p> <p>In many areas the natural values that attract tourism and recreational uses are degrading due to unrelated 'upstream' impacts, undermining a range of economic values including:</p> <ul style="list-style-type: none"> <li>Number of visits, impacting on visits to hotels, caravan parks, camping grounds, bus-tour operators, restaurants, shops, etc.</li> <li>Property values for nearby real estate.</li> <li>Recreational fishing opportunities</li> <li>Sales by camping and caravan stores, water sport stores (canoes, water skis, rafting), etc.</li> </ul> <p>While such economic benefits are generally diffuse, it may be possible to provide sufficient incentives for tourism beneficiaries to aggregate their resources and pay for remedial environmental works and services. Local government rates, or Chamber of Commerce resources, for example, may benefit local industry in the long term by investing in such projects. For example, Barraba (west of Armidale, NSW) was a small sheep/wheat town undergoing rural decline until an influx of bird watchers from Australia and overseas commenced, attracted by opportunities to observe endangered and unique birds. A key reason for the presence of a highly diverse range of birds, such as the endangered regent honeyeater, was the presence of remnant woodlands, particularly the red flowering ironbark that has largely disappeared elsewhere.</p> <p>In some parts of Australia – eg. Kimberley, Cape York – pastoral leaseholdings and private landholdings are already being converted from pastoral uses to tourism, birdwatching, etc. This is happening even despite the fact that leasehold conditions generally require landholders to operate the leases for pastoral purposes only. The fact remains, however, that tourism – generally a far less damaging form of land use compared to cattle grazing and associated burning and clearing practices – offers potential to better protect, manage and restore environmental values over large areas of Australia.</p>
<b>9. Tree, shrub and grass seedstock</b>	<p>Already, some farms have moved away from traditional cropping and grazing to planting trees and shrubs to provide seed and plant stock to meet the regional demand for plants. Such enterprises may involve:</p> <ul style="list-style-type: none"> <li>Seed &amp; cutting orchards/native grass seed production</li> <li>Seed processing facilities</li> <li>Propagation facilities</li> <li>Wholesale and retail nursery sales</li> <li>Cut flower production (eg. banksia; waratah)</li> <li>Composting and potting mix production</li> </ul> <p><i>As well as incidental timber, fibre and apiary operations.</i></p> <p>Commercial opportunities have already led to many farms developing in this way, but if demand increases so too will the commercial opportunities.</p>
<b>10. Grazing systems</b>	<p>Typically, pasture-based grazing systems are 'leaky', (even when based on perennial pastures such as phalaris), and in areas of saline geology such systems are unsustainable.</p> <p>Opportunity therefore exists to develop commercial grazing systems that mimic natural landscapes in terms of water use. "Grassy woodland"</p>

	grazing systems, (for instance) using local tree species and deep-rooted perennial pastures and shrubs, may produce lower net returns, but negative externalities would be reduced in the process.
<b>11. Cropping Systems</b>	<p>Similarly, virtually all cropping systems in saline areas are ‘leaky’ and unsustainable in areas of saline geology.</p> <p>However some systems of deep rooted, dryland perennial crops – such as lucerne – may achieve real and measurable benefits in tackling salinity in some soil types and rainfall zones.</p> <p>Similarly, alley cropping – with rows of trees and shrubs alternating with dryland crops – may be useful in some rainfall zones.</p>
<b>12. Forest and woodland conservation</b>	<p>For public native forests that are currently made available for timber harvesting, rights to ‘access the resource’ are allocated exclusively to the hardwood timber and woodchip sector. Such access rights are currently not openly contestable by other competing economic interests, despite the fact that such alternative uses may derive greater value from the forest than is possible through timber harvesting.</p> <p>Examples of such markets include the following:</p> <p><b>Water yield management</b> – <i>Managed clearfell regrowth forest typically yields around 40% less surface runoff than old growth forest. Studies in Melbourne Water’s upper Thomson catchment show that if logging were to cease, this additional potential yield (equivalent to around 14% of Melbourne’s total current annual consumption) is worth far more than the timber currently sourced from the catchment.</i></p> <p><b>Water quality protection</b> – <i>Old growth forests with little or no human access yield water that requires little or no chemical treatment or filtration. Limited chloramination that is applied is principally targeted at ‘bugs’ living in distribution pipes.</i></p> <p><b>Tourism and recreation</b> – <i>In some regions, such as Victoria’s Otway ranges and New South Wales’ north coast hinterlands, tourism is a much more significant industry than forestry. In such areas forests and woodlands represent tourism drawcards; assets that are increasingly compromised as clearfell logging (and in some areas of Tasmania, replacement with plantations) reduces the forests to younger, less biologically diverse tree production farms.</i></p> <p><b>Apiary</b> – <i>Logging destroys productivity in key apiary sites by felling trees with high nectar yields. Typically, mature and senescent trees produce far more nectar than young regrowth, so forests and woodlands affected in this way can take many decades before yield can return to commercial levels. While timber harvesting licences are transferable property rights of sorts, apiary licences are not, and do not confer exclusivity over access to forest or woodland resources.</i></p> <p><b>Fisheries &amp; river management</b> – <i>Clearfell logging, combined with extensive forestry road systems, and (in some instances) grazing woodlands under leasehold, can all impact on fish habitat. Impacts include:</i></p> <ul style="list-style-type: none"> <li>– <i>infilling river pools</i></li> <li>– <i>smothering in-stream vegetation and eggs of native sport fish</i></li> <li>– <i>destroying floodplain vegetation and habitat</i></li> <li>– <i>increasing water turbidity</i></li> <li>– <i>increasing erosion of stream beds and banks</i></li> <li>– <i>silting-up estuaries &amp; their seagrass beds.</i></li> </ul> <p><i>Markets may therefore exist for fishing interests to acquire logging licences and retire native forest areas from production.</i></p> <p>Such markets may well extend beyond public native forests and woodlands and into private and leasehold lands.</p>
<b>13. Biomass for Energy Production</b>	<p>Whether through plantations (see above) or cropping systems (such as fibrous grasses or hemp, for example), biomass production may provide sufficient returns to justify commercial investment. This potential may be diminished in some areas by existing distortions in energy markets (such as subsidised electricity distribution services, for example).</p>
<b>14. Wildlife (&amp; habitat) conservation</b>	<p>Earth Sanctuaries Ltd. is one example of a company that finds it profitable to acquire terrestrial habitats and operate them for commercial wildlife conservation. Similarly, some pastoral or rural tourism ventures</p>

	<p>are also benefiting from conservation as a management objective. However, notwithstanding concerns re perverse conservation outcomes or animal welfare, other commercial drivers may also exist. For example:</p> <ul style="list-style-type: none"> <li>Management of pastoral rangelands for commercial kangaroo production</li> <li>Management of habitats exclusively for licensed and managed supply of native birds, mammals, reptiles, fish or plants to the apiary, pet, aquarium and nursery trades</li> <li>Management of wetland waterbird habitats to provide pest management service to surrounding farmlands, as well as for birdwatching and fisheries purposes.</li> <li>Management of remnant woodlands to support diverse populations of mammal, bird and insect pollinators to surrounding farmlands.</li> </ul>
<p><b>15. Rural lifestyle subdivision</b></p>	<p>In many farming regions, those wishing to acquire small land holdings for lifestyle reasons dominate land markets. While some low-level commercial grazing may take place, farming is rarely the motivator for buying the land, particularly as commercial farming returns rarely justify the prices paid for the land, and other sources of income are usually involved.</p> <p>In areas where salinity and/or biodiversity strategies demand revegetation of farming landscapes, an opportunity exists to tap this commercial pressure and direct it to conservation outcomes. However it requires the application of land use planning powers to:</p> <ul style="list-style-type: none"> <li>Designate areas for preferential treatment re subdivision applications</li> <li>Develop and apply revegetation conditions to subdivisions, where revegetation must be carried out beforehand to agreed and acceptable standards, and land sold as ‘bush blocks’ in the making</li> <li>Place covenants on the land to prevent further clearing</li> <li>Apply rules re on-going management of pest, weed and fire hazards</li> </ul> <p>Conversely in areas such as Coastal NSW, rural subdivisions now constitute the biggest single pressure to clear land of native vegetation. And these initial subdivisions may later be followed by further incremental subdivision and clearing as bushland gradually ‘evolves’ into a semi-urban environment, which in turn places further pressure on rivers and water resources, for instance. As such these subdivision pressures are not desirable from a conservation viewpoint, and should be discouraged.</p>
<p><b>16. Brokerage &amp; Project M’gement Services, etc.</b></p>	<p>With the development of an environment industry, scope clearly exists to develop a suite of commercial ‘middle man’ roles to:</p> <ul style="list-style-type: none"> <li>Identify projects</li> <li>Identify information and technology needs</li> <li>Evaluate costs and benefits</li> <li>Develop budgets and maintain balance sheets</li> <li>Pull-together commercial and government funds</li> <li>Manage investment risks (insurance, hedging, spreading risks...)</li> <li>Liase with landholders</li> <li>Manage the projects</li> <li>Monitor, interpret information and report</li> <li>Develop and tender R&amp;D projects</li> </ul>
<p><b>17. Philanthropic conservation</b></p>	<p>Many people simply want to acquire and/or preserve their bushland for philanthropic conservation reasons. When viewed broadly, this is a surprisingly large market.</p> <p>Whilst not traditionally regarded as a market, in reality it is: there is a demand for conservation – for whatever reasons – that involves real or opportunity costs.</p> <p>Management issues, however, remain as a problem. Sometimes people manage this land in inappropriate ways, leading to ‘clearing by stealth’ and progressive weed invasion. Putting a horse on a bush block, for example, can do an enormous amount of damage in the medium to long term. Similarly, the lack of covenanting means that the long-term future of such bush blocks is rarely secure, as future owners may have different management objectives.</p> <p>There is therefore a demonstrated need for more active intervention,</p>

	<p>advice and assistance, and incentives, to realise the full potential for these markets to realise conservation outcomes.</p> <p>In the meantime, the application of local government rates on such land serves as a disincentive for such conservation practices.</p> <p>The success of programs such as Victoria's 'Land for Wildlife' program, and of the Trust for Nature, mean that the potential for further market development – especially given the right incentives – is enormous.</p> <p>Along a similar vein, markets potentially exist for irrigators or corporations to donate water entitlements for conservation purposes.</p> <p>However a number of obstacles exist:</p> <p>Water law in most states does not provide for such donations, and lacks an automatic mechanism for lowering the 'cap' on water extractions and increasing environmental allocations accordingly.</p> <p>No ruling yet exists on the tax deductibility of such donations.</p>
<b>18. Revegetation services</b>	<p>Assuming commercial incentives for revegetation build, so too will the market for revegetation technologies and services. These include:</p> <ul style="list-style-type: none"> <li>Traditional propagation and tubestock production</li> <li>Direct seeding technologies</li> <li>De-stocking and fencing to encourage gradual outward spread of extant remnant vegetation</li> <li>Seed production, harvesting, processing and (in some cases) treatment</li> <li>Recovery of threatened plants for botanic gardens, conservation agencies</li> <li>Mechanised planting and seeding</li> <li>Cell grazing systems designed to promote spontaneous revegetation</li> <li>Activation of dormant native seedbanks within the soil and subsoil</li> <li>Cloning technologies</li> <li>Propagation technologies for difficult-to-propagate plants</li> <li>Wetland restoration, construction and design technologies</li> </ul>
<b>19. Research and Development</b>	<p>At present environmental R&amp;D is not recognised as a new and emerging area, and hence does not attract the same tax incentives as areas such as IT, communications and biotechnology.</p> <p>When viewed in its broad context, however, the environment 'industry' is already large, and growing rapidly. Hence existing commercial incentives to invest in environmental R&amp;D could be further enhanced by appropriate incentives.</p>
<b>20. Biodiversity services.</b>	<p>In some ways, Governments are in the 'market' for purchasing biodiversity and conservation services. While funds are limited, there is certainly scope to apply more in the way of market principles in helping to guide such purchases.</p> <p>For instance, tendering for conservation projects may well deliver much greater value-for-money than existing approaches of bottom-up grants generation.</p>
<b>21. Carbon credits</b>	<p>Potential for emerging markets in carbon credits to assist in financing conservation and NRM initiatives has already been quite well documented. At present, however, Australia – indeed the world – has no legal framework for such trades.</p> <p>In addition to trades, potential also exists for philanthropic donations of carbon credits to assist in financing revegetation projects, for example. However in the absence of any legal trading framework, and in the absence of any formal ruling on tax deductibility, opportunities are passing us by.</p>
<b>22. Salinity credits</b>	<p>Similarly, and in the Murray Darling Basin in particular, work is underway to develop markets in salinity credits. This work does have some potential to ensure funds are directed to the best returns, however the potential to attract commercially-motivated investors may remain to be seen.</p> <p>Some potential may exist where irrigators are, in the long term, threatened by rising in-stream salinity levels, or where dryland farmers on highly productive soils may derive benefit from paying for the 'retirement' of marginal lands upstream as a means of arresting rising groundwater levels that threaten productivity.</p> <p>Nevertheless ACF does hold concerns re salinity credits and associated markets. For example:</p>

	<p>What, precisely, does a salinity credit equate to?  Who will be in the market for such credits? Will government-to-government transactions be politically motivated rather than market driven?  Might salinity trades lead to outcomes that focus on the <i>expression</i> of salinity rather than on the causes? (eg. trading towards groundwater interception projects to buy time in the SA Riverland at the expense of addressing the root causes of dryland salinity)</p>
<b>23. Sediment/water quality credits</b>	<p>As with greenhouse, salinity, and tradeable emissions rights re air and water quality in urban settings, opportunities may exist to create markets in diffuse or semi-diffuse water pollution.  Here, potential purchasers (eg. water utilities) may wish to purchase an emission right in order to achieve a water quality outcome (see above).</p>
<b>24. Flood management services</b>	<p>Recently a major flash flood in East Gippsland highlighted the fact that clearing of river and stream frontages can significantly exacerbate damage to property caused by flooding, as well as damage to waterways that require active management to redress.  In the Lower Goulburn, for instance, many landholders will benefit from \$22m in public investment aimed at restoring a natural floodway.  However, the market value of this benefit was never tested as part of the proposal, and could have contributed towards the total cost.  Potential markets in preventative measures may include:  Strategic revegetation of river and stream frontages  Removal of levees in strategic locations and restoration of natural floodways  In-stream works designed to slow flows and control erosion.</p>
<b>25. Purchase water efficiency savings</b>	<p>Clearly considerable scope exists to improve the efficiency of:  Irrigation delivery systems, including through major piping schemes operated on a commercial basis  Channelled stock and domestic delivery systems  On-farm irrigation water use and re-use efficiency  Efficiency of on-farm stock and domestic water supply systems  Irrigation drainage systems  Urban wastewater re-use  Whether governments or the private sector are investing, commercial principles could be utilised to optimise return on investment.</p>