TREASURY WORKING PAPER

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Conserving Biodiversity – Institutions, Policies and Incentives

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ABSTRACT

Biological diversity, a term that encapsulates all of life – the diversity of plants and animals and the places they live, has changed the way we think about nature conservation. The conservation of biodiversity demands that we understand the role of natural systems and ecological processes in sustaining landscapes. Landscapes and the issues embedded within them vary enormously from the protection of remote wilderness areas to maintaining the productivity of agricultural regions and the quality of life within cities.

This report seeks to answer questions from an outsider's perspective about the roles central government, regional councils and the non-government sector should play in conserving biodiversity; how effective working partnerships with landholders should be developed; what the most appropriate policy mix is; and who should fund biodiversity conservation programmes. It draws on Australian and international experience in the management of biodiversity.

In consultations with officials and stakeholders mixed views were expressed on whether holistic approaches to biodiversity conservation are required or whether a model of protection through dedicated public and private (covenanted) conservation reserves will be sufficient. The view taken in this report is that protection is necessary but not sufficient. Ultimately on-ground programmes are required that target and reward land managers who actively manage areas of indigenous biodiversity on their land. However, it is also necessary to understand the economic and social factors that are driving the land-uses and management practices that are causing the continuing loss of biodiversity.

Successful approaches to biodiversity conservation require coordinated responses from all scales of management. The critical role of regional planning in balancing the need for scientific assessment, leadership and centralised planning from the "top down" with strategies for engaging landholders and local communities from the "bottom up" is highlighted. The *Resource Management Act 1991 (RMA)* provides a solid framework for developing effective regional responses. However the challenges of coordination across spheres of government, clarification of regulation and engaging the non-government sector remain. A number of policy options, such as funding and tax incentives and capacity building, are suggested to address these.

CONSERVING BIODIVERSITY
INSTITUTIONS, POLICIES AND INCENTIVES

Final Report

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EXECUTIVE SUMMARY

New Zealand is at a cross roads in the management of its biological diversity – its most precious and valuable natural asset.

The New Zealand Biodiversity Strategy was released in February 2000 outlining an ambitious work programme that is targeted at halting the decline of indigenous biodiversity. Significant funding increases to biodiversity related programmes have been made in the Budget. A Ministerial Committee is reporting to Government on the role of private land in conserving biodiversity.

A number of important questions are being asked:

- *Can pests and weeds be effectively managed?*
- *What role should central government be playing in biodiversity conservation?*
- *Should regional councils be taking the lead?*
- *How can the non-government sector be engaged?*
- *How can effective working partnerships with landholders be developed?*
- *What is the most appropriate policy mix?*
- *Who should fund biodiversity conservation programmes?*

This report seeks to answer these questions from an outsiders perspective drawing on Australian and international experience in the management of biodiversity. It is one input to an ongoing debate on how to most effectively conserve biodiversity in New Zealand.

CHALLENGES IN BIODIVERSITY CONSERVATION?

New Zealand has a unique biodiversity shaped by over 80 million years of isolation and its comparatively recent human settlement. This means that many species of plants and animals are endemic – that is they are only found within New Zealand. Many are in sharp decline, from the impacts of human activity and introduced plants and animals.

In the past approaches to nature conservation have focussed on the creation and management of national parks and other public reserves for protection of areas important for water, soils and biodiversity conservation. Biodiversity conservation demands considerably more from all sectors of the community. Key challenges identified include:

- Recognising and accounting for the functional role of biodiversity in providing ecosystem services that support all land-uses ranging from agricultural production to nature conservation.
- Integrating biodiversity conservation across different land tenures and with other natural resource management objectives including pest, weed and catchment management.
- Successfully engaging private landholders, particularly in lowland and coastal environments where the most vulnerable and fragmented ecosystems are located.
- Managing across scales and clarifying the role of different tiers of government.

These challenges are acknowledged in the New Zealand Biodiversity Strategy. However, there remain significant impediments to the adoption of new approaches. In our consultations with officials and stakeholders mixed views have been expressed on whether holistic approaches to biodiversity conservation are required or whether a model of protection through dedicated public and private (covenanted) conservation reserves will be sufficient.

The view taken in this report is that protection is necessary but not sufficient. Ultimately on-ground programmes are required that target and reward land managers who actively manage areas of indigenous biodiversity on their land – be it private or public land. However, it has been revealed that the pathway to this outcome is rather more complex. Rather than focussing exclusively on land managers, it is necessary to understand the economic and social factors that are driving the land-uses and management practices that are causing the continuing loss of biodiversity.

INSTITUTIONAL CHALLENGES

Successful approaches to biodiversity conservation require coordinated responses from all scales of management. At a national scale broad objectives are set and defined. At regional and local scales these broad objectives are interpreted in the context of local circumstances. Finally at property and paddock scales pragmatic decisions are made about management needs and how these can be dealt with on the ground.

The critical role of regional planning in balancing the need for scientific assessment, leadership and centralised planning from the "top down" with strategies for engaging landholders and local communities from the "bottom up" is highlighted. The *Resource Management Act 1991(RMA)* provides a solid framework for developing effective regional responses to natural resource management. However, a number of critical challenges remain.

Coordination across spheres of government It is not possible to develop a single model that clarifies roles and responsibilities of the different tiers of governments for biodiversity management. District and regional councils have different capacities and willingness to conserve biodiversity in different regions. Responsibility is shared and concurrent. There is a critical challenge for central government in resourcing and building the capacity of poorer regions.

Clarification of regulations There is great uncertainty over the responsibilities of landholders in protecting and managing indigenous biodiversity. A careful balance must be struck between regulation and voluntary stewardship by landholders. Ultimately certainty can only be delivered through strengthened regional and local planning structures. The issue lies in managing the transition with central government needed to provide leadership in programme design, funding incentives and capacity building.

Engaging the non-government sector A number of organisations, most notably the QEII National Trust, are effectively engaging landholders and delivering biodiversity conservation at arms length from government. However, a different challenge is to engage non-landholders in biodiversity conservation, particularly urban New Zealanders. A number of policy opportunities ranging from tax incentives to formal government-business partnerships are identified.

POLICY INSTRUMENT CHALLENGES

The importance of using a balance of policy instruments covering the full suite of instruments: education and motivation, financial incentives and land-use regulation is highlighted. This raises a number of challenges as the policy debate has been dominated by consideration of regulatory instruments in recent years.

Facilitating Landholder Stewardship The importance of one-on-one extension with private land managers is highlighted. It is noted that farms are managed holistically, meaning that conservation programmes must be integrated with other natural resource and farm management objectives. A number of organisations are providing effective landholder facilitation. However, these are under-resourced and require further support.

Sharing Costs with Land Managers Incentives for secure protection of high conservation value sites are in place and operating relatively effectively. However, a critical gap lies in providing incentives to share the cost of biodiversity management with private landholders. This is a critical gap that must be filled.

Developing Model Programmes There are many examples of innovative policies and programmes for biodiversity conservation. There is an urgent need to document these, develop model policies and promote their uptake more broadly.

Broadening Options for Land Managers Land managers are generally required to enter "in perpetuity" conservation covenants prior to receiving incentives. To facilitate greater landholder uptake there may be a role for smaller incentives to be tied to voluntary non-binding or fixed term agreements.[1]

MEASURING SUCCESS

Policies for biodiversity conservation seek to achieve a number of objectives including: building institutional capacity, engagement of the private sector; raising landholder awareness and strategic investment in on-ground works. Given these multiple objectives a range of social, economic and environment indicators will be required to measure the success of biodiversity policy and programs.

However, above all else monitoring must be pragmatic and outcomes focused. A conceptual framework for adaptive management and policy learning is put forward highlighting the critical role of research and development in improving our ability to manage through time.

CONCLUSION

All of the elements of a successful approach to biodiversity management in New Zealand are evolving. The Biodiversity Strategy represents a shift in emphasis toward more integrated management of New Zealand's landscapes.

The challenge for governments is to create an environment where innovative policies and organisations are actively supported, grown and transferred to other regions. This is essentially a role of capacity building, a role that will remain a critical challenge for central government for a number of years.

[1] It is noted that demand for in perpetuity covenants from the QEII National Trust is outstripping their capacity to deliver. The issue of adequate resources will need to be addressed.

POLICY OPTIONS

INSTITUTIONS FOR MANAGING BIODIVERSITY

Policy Option 1 – Integrating approaches to biodiversity conservation

The framework of a Conservation Management Network is adopted to coordinate management responses to biodiversity conservation across all land tenures.

- Processes are put in place to ensure biodiversity values are integrated into existing natural resource management and statutory land-use planning processes; and
- Regional data-bases recording the status of and existing conservation efforts to manage key ecosystems across all land tenures are put in place;
- A progressive review of public land classifications are put in place with emphasis placed on pragmatically resolving issues of regional and district land management responsibilities;
- Linkages are made with the research community to ensure the development of conservation priorities is undertaken on a scientific basis.

Policy Option 2 – Clarifying roles and responsibilities

Consistent with the framework of the *Resource Management Act 1991*, clear responsibility is given to regional councils for the coordination of strategic planning for biodiversity conservation in an integrated fashion with other natural resource management issues. This will require increased commitment from all spheres of government over the next 3 –5 years.

- There is an urgent need to facilitate and build the capacity of regions to successfully integrate biodiversity management into their existing natural resource management objectives.
- Central government should actively monitor land-clearing rates across New Zealand to guide future policy development in this area.

Policy Option 3 – Building institutional capacity

Incentives that build institutional capacity will be required to give district and regional councils access to and the ability to implement the full suite of tools required to achieve the outcomes established in the Biodiversity Strategy.

- A small team of facilitators is employed to provide advice and expertise on biodiversity planning and programme design to local governments and non-government organisations operating at a regional scale.
- A contestable fund is established to which local governments can apply to implement innovative programmes for biodiversity management. The programme would provide establishment funding for 3 years after which the programmes would be required to become self-funding.

Draft Policy Option 4 – Engaging the non-government sector

Given the emergent nature of the role of the non-government sector and private investment in conservation activities in New Zealand there is a need to review existing arrangements, to identify and address impediments to private investment and to foster opportunities for large-scale partnerships which deliver effective leverage of scarce public sector funding. Consideration could be given to:

- increasing support for voluntary conservation programmes to meet the demand of landholders wishing to enter conservation covenants;
- establishing a roundtable between relevant ministers and community and business leaders to review existing arrangements and facilitate engagement of the non-government sector, with particular focus on urban New Zealanders;
- reviewing taxation arrangements to provide positive incentives for environmental philanthropy and the creation of private conservation reserves; and
- review property rates to confirm the capacity of local government to provide ongoing exemptions to land covered by a conservation covenant.

POLICY TOOLKIT

Policy Option 5 – Facilitating landholder stewardship

In order to achieve greater uptake of biodiversity conservation programmes by land managers it is recommended that a network of landholder facilitators be established to provide advice and facilitate access to incentives for on-ground works.

- A review of existing extension services available to landholders is required to determine how existing resources can be most effectively targeted to a more integrated service across all public policy objectives, including biodiversity.
- Where new services are required, the provision of these services should be contestable and preferably delivered at arms length from government.
- Facilitation networks should be closely aligned to any financial incentives (see finance).

Policy Option 6 – Incentives fund

To support the transition to sustainable management of indigenous biodiversity on private land, a new contestable incentive fund is established or the scope of existing funds is broadened.

- The fund would be linked to existing funds aimed at securing protection of high priority lands for the Conservation Management Network (Policy Option 1).
- The fund would also provide catalytic funding for the establishment of new programmes by regional and district councils (see draft Policy Option 3).

Policy Option 7 – Model regional regulation, incentive and facilitation programmes

To facilitate improved design and acceptance of regulation at regional and local scales, best practice and model programmes are developed and widely disseminated to all local governments to facilitate early uptake of new and innovative approaches to biodiversity management.

- The model programmes could be tied to the capacity building and catalytic incentives fund described in Policy Options 3 and 6.

Policy Option 8 – Broadening the suite of management agreements

To facilitate greater voluntary uptake of property agreements and covenanting programmes a range of fixed term and non-binding agreements are developed and made available to landholders.

- Fixed term agreements (10 years) may be appropriate for catalytic funding for improved management such as fencing or pest control
- A non-binding programme modeled on the Land for Wildlife programme may encourage greater landholder uptake and stewardship.

MONITORING AND ACCOUNTABILITY

Draft Policy Option 9 – Measuring success

To ensure that scarce funds are invested wisely it is recommended that all programmes funded under the Biodiversity Strategy have clear project objectives and performance indicators associated with them to facilitate learning and improved programme design and delivery over time.

PURPOSE OF THIS CONSULTANCY

The purpose of this consultancy is to identify institutional structures and policy options for delivering the objectives of the New Zealand Biodiversity Strategy. The policy options to be evaluated include facilitation and education mechanisms, financial incentives and regulatory frameworks. Particular priority is to be given to options for engaging the community and land managers in biodiversity conservation.

TERMS OF REFERENCE

The CSIRO Wildlife and Ecology, Australia will provide a report by 31 July 2000 that will address the following:

1. **Explore approaches from a practical perspective for encouraging broad participation and community contributions towards desired outcomes including:**
   - **Factors that may make private sector and community participation work or not work. In particular:**
     - **How government can encourage and assist individual and community participation;**
     - **How individuals and interest groups could get others involved; and**
     - **Whether there is a role for government at the local level to encourage participation.**
   - **Approaches that encourage and enable innovation of New Zealand's management of biodiversity.**
   - **Implications for the design of self-organising and self-governing institutions.**

This reference requires the development of a conceptual framework for the New Zealand Government to develop partnerships with landholders, community groups and other stakeholders for on-ground management of biodiversity. Of particular interest is how authority and responsibility can be effectively devolved to regions in a way that empowers and resources local communities to take action that is consistent with the strategic objectives of the Biodiversity Strategy.

To deliver against this reference, a model for developing partnerships and devolving power and responsibility to regional and local scales will be developed. This will take account of the existing legislative and policy structures for natural resource management in New Zealand including the role of regional councils established under the *Resource Management Act 1991*. The model will be developed in a manner that seeks to foster innovation and the development of resilient and adaptive institutions at a local scale.

The role of government in fostering and creating institutions with these capacities will be the focus.

2. Identify and provide an assessment of the mechanisms available to encourage private conservation initiatives. In particular:

- **Financial incentives for private landowners (including compensation within a property rights framework).**
- **Communication. The need to provide relevant, timely and consistent information (skills, level of targeting, method of delivery etc.) to deliver it effectively.**
- **Any other mechanisms and how they could be applied.**

This reference will be addressed by identifying the range of policies and programmes available to conserve biodiversity. A particular focus will be on how to effectively integrate education/motivational incentives, financial incentives and regulatory mechanisms. The rationale for this approach lies in evidence that a suite of policy tools are required to engage landholders and motivate private conservation in a cost effective manner. Once again, emphasis will be placed on identifying innovative measures for engaging landholders and the private sector in sharing the costs of biodiversity conservation with government.

This component of the project will draw on experience from Australia and overseas.

3. Provide input to assist with a review of existing mechanisms to best coordinate the actions of:

- **Central and local government;**
- **Central government, local government and the community; and**
- **Programmes that run across agencies and how these can best be managed.**

Officials involved in the New Zealand Biodiversity Working Group (the "Officials") will be undertaking the review. The Contractor will provide advice based on the Australian experience to provide a sound basis for more detailed work in this area. Discussions with key New Zealand contacts (to be advised by the Crown) during the one-week visit in May will be used to inform this process.

4. Identify best practice based on overseas experience. In particular, Australia, Canada, United States, United Kingdom and private land in European countries. Identify:

- **The common elements.**
- **What has worked and why? And what has not worked and why?**

A brief overview of international experience will be provided in addressing component two of the project. The focus will be on what can be learned from other country's experience. It should be noted that, as agriculture is heavily subsidised in both Europe and the United States, the level of incentive/compensation paid to landholders is much greater than that being considered in either New Zealand or Australia.

In this context best practice examples will be drawn on and highlighted in the context of individual instruments identified in the second component of the project.

5. Advice on the development of a proposed structure to encourage and co-ordinate the actions of central government, local government and the community. This work will be linked to the work on the "BioWhat?" report, and will draw on material and consultation undertaken for that project.

The design of institutional structures for biodiversity management across all spheres of government will be a core component of this project (see section 1 and 3). The work provided in this project will provide a solid basis for officials addressing this reference in detail. Discussions with key New Zealand contacts (to be advised by the Crown) during the one-week visit in May will be used to inform this process.

IMPORTANT ISSUES NOT ADDRESSED BY THE CONSULTANCY

The New Zealand Biodiversity Strategy is a comprehensive document addressing terrestrial, fresh water and marine biodiversity. The focus of this consultancy is to provide insights from Australian and international experience in relation to the issues of institutional structures and community participation and engagement.

Its focus is on the management of terrestrial ecosystems. To the extent that land management directly impacts freshwater and marine ecosystems, these issues are addressed. An important gap, however, relates to the management of these environments, particularly in relation to fisheries management. It is noted that these issues are the subject of a comprehensive report of the Parliamentary Commissioner for the Environment.

Most importantly, this consultancy has limited advice on the management of iwi and hapu interests in biodiversity. This is because of the limited experience and expertise of the authors - not because the issues are unimportant. Some of the concepts developed in this paper will be of relevance to establishing partnerships for conservation management. Where possible reference is made to relevant programmes such as the Nga Whenua Rahui. In our view it is best to recognise that we do not have expertise in this area and acknowledge that. However, it is recognised that the discussion of these issues is far from adequate and the findings of this report must be read in that light.

Management of genetic resources is also not addressed in this consultancy. The issues surrounding ownership and management of intellectual and genetic property are beyond the scope of the review.

The management of the existing estate of public conservation reserves is addressed to a limited extent. However, issues surrounding the detail and adequacy of existing arrangements are not.

Finally, the report is largely silent on the role of information, data and science in directing the process of priority setting for biodiversity management. The role of local communities and stakeholders in participating and contributing local knowledge on biodiversity issues is, however, addressed. This gap is purposeful, as the focus is on the implementation programmes that draw on information and research on biodiversity issues. The links between programme design, information and monitoring are discussed at some length.

APPROACH TO CONSULTANCY

This consultancy has drawn extensively on the research findings of a three year CSIRO project that has evaluated opportunities for the use of incentive based instruments for the conservation of native vegetation in Australia.[2]

The approach taken has been to provide a synthesis of the findings of the above project and assess their application to the New Zealand situation. This has involved:

- A desk top review of institutional issues and policy instruments relevant to the conservation of biodiversity – drawing on both Australian and international experience;
- Consultation with key researchers and decision makers in New Zealand to refine the review and develop recommendations;
- Submission of a draft report; and
- Incorporation of comments from agencies and stakeholders in New Zealand into final report.

[2] The project was funded by the Commonwealth of Australia's Land Water Resources Research and Development Corporation and Environment Australia.

1. INTRODUCTION

The management of biodiversity is a complex task. Whilst the concept biodiversity – the variety of all life and the physical environment in which life is found – is simple and all embracing, it is the intersection between biodiversity and human systems that is complex.

Biodiversity pervades our everyday life to the extent that products directly derived from living organisms feed, clothe and shelter us. Indeed the functions performed by natural systems underpin the production of most of the goods of services that humans value. Examples of the services provided by biodiversity include nutrient cycling in soils, pollination, and the assimilation of wastes to provide clean water. More indirectly biodiversity provides services not as closely associated with the natural world, such as medicines and other high technologies (Daily, 1997). Further, industrialisation and urbanisation have made the connections between our everyday actions and biodiversity increasingly indirect. This is a critical because ultimately the economic and social drivers of society are the cause of the loss of biodiversity.

The term "threatening processes" is used to describe a wide range of physical processes and human activities that cause the loss or decline of biological diversity: that is loss in the diversity of genes, species and ecosystems. It is useful to distinguish between the various pressures or drivers that cause the loss of biodiversity. It is important to differentiate between the actual process that threatens biodiversity, the land-uses that contribute to this process and social and economic factors that drive these land-uses. For example, it is land-uses such as forestry or agriculture that are often cited as a threatening process, whereas it is the activities associated with these land-uses that ultimately cause a decline in biodiversity. Table 1 distinguishes between different categories of threatening processes drawing on the work of the OECD (1996) and Young *et al*. (1996).

> **Direct threatening processes:** relate to the physical and natural processes through which biodiversity values are lost or eroded through time. They include a wide range of factoring ranging from clearing of small areas of indigenous native, the impacts of pests and weeds, to the impact of global processes such as climate change.
>
> **Land-uses:** identify the human activity that is likely to lead to one of the direct causes of biodiversity loss.
>
> **Underlying causes:** relate to our ability to reflect biodiversity values in markets and decisions made by governments. A failure to take biodiversity values into account when developing a strategic land-use plan would be an example of a potential policy failure.
>
> **Fundamental causes:** relate to those factors that are often thought to be beyond our control, but which have a profound impact on the decisions that ultimately drive biodiversity loss.

Table 1: The processes that threaten biodiversity

Direct threatening process	Land-use	Underlying causes	Fundamental causes
• habitat modification or destruction • habitat fragmentation • over harvesting of species • environmental change	• urban development • infrastructure • agriculture • forestry • industrial processing	• lack of information • market failure • policy failure	• population growth • inequality • economic growth • consumption patterns

The fact that such a wide range of factors, which operate at different scales, drive biodiversity loss demonstrates that strategies for the management of biodiversity are complex and are linked to our everyday actions and activities.

Indeed in addressing the fundamental causes of biodiversity loss the OECD concluded:

> "Policies which attempt to conserve biodiversity without addressing the fundamental pressure that cause biodiversity loss cannot succeed in the long run." (OECD 1996)

This is particularly relevant in the context of planning for the conservation of biodiversity at a national scale. The first and most important role that policy makers can make to is to address the impacts and pressures that economic production and consumption have on biodiversity. This involves ensuring that impacts on biodiversity are integrated with other policies, including economic and social policies. This is essentially the challenge of sustainable development.

However, a range of the underlying and fundamental causes of biodiversity loss such as population growth and wealth distribution are intractable at a local, regional or even national level. Further, it would be naive to presume that we can work to fully integrate biodiversity into our decision-making and that this might suffice to address the underlying causes. Integrated decision-making implies an ability to be able to incorporate consideration of the values of biodiversity into market decisions, or in other terms to "get the price right". Tensions between economic activity and the objective of protecting natural ecosystems are likely to continue in the long term.

This inherent tension can be alleviated by policies that target the direct pressure on biodiversity, such as vegetation clearance. Successful approaches to the management of biodiversity will therefore need to operate on a number of scales, ranging from national policies that address underlying causes to specific on-ground responses to direct pressures on particular sites.

Policies must also be applied across different land-use tenures, ranging from national parks, and other public lands, through to leasehold and privately owned land. There are two reasons why engaging private landholders in biodiversity conservation is a particularly important. Firstly, conservation policy has traditionally focussed on the allocation of public lands and neglected the fundamental role of private individuals; and secondly, private lands contain many of our threatened ecological communities because they are located on fertile soils with flatter topography where clearing and development has been most extensive. (New Zealand Government, 2000; Pressy 1995).

Developing successful policies for the conservation of biodiversity needs to account for this wide range of different conditions. This report addresses the issue of policy development in the four sections, which follow this introduction.

> **Section 2** addresses institutional issues focussing on clarifying roles and responsibilities between spheres of governments, the private sector and individual landholders.
>
> **Section 3** introduces the full suite of policy tools available for conserving biodiversity; ranging through education and motivation, financial incentives and property right-based instruments.
>
> **Section 4** illustrates the application of the policy tools at different scales using a number of Australian and international case studies.
>
> **Section 5** concludes the report by reviewing approaches to biodiversity management against the principles developed in earlier sections. Key policy options for the New Zealand Government in implementing its Biodiversity Strategy are identified.

2. INSTITUTIONS FOR MANAGING BIODIVERSITY

This section addresses the first term of reference of the consultancy and seeks to provide guidance to officials tasked with the definition of new administrative frameworks and coordinating mechanisms (covering components three and five of the terms of reference).

By institutions we mean the ways in which we (humans) organise ourselves. Institutions are made up of formal constraints (rules, laws, constitutions), informal constraints (norms of behaviour, conventions and self-imposed codes of conduct) and their enforcement characteristics. Institutions thus shape the incentives in human exchange, whether political, social, or economic. Institutions, such as property rights (the structure of rights to resources and the rules under which those rights are exercised) are mechanisms people use to control their use of the environment and behaviour toward each other (Folke, 1999).

Institutions have a profound effect on the ways in which native vegetation is managed. For example, the legal framework within which local government operates is a major determinant of how land-use planning and regulation can take place.

What is required is a review of existing arrangements and development of a conceptual framework for the New Zealand Government to evolve existing institutions and develop partnerships with landholders, community groups and other stakeholders who directly manage the on-ground conservation of biodiversity. Of particular interest is how authority and responsibility can be effectively devolved from central government to regions in a way that empowers and resources local communities and the private sector to take action that is consistent with the strategic objectives of government.

The section is structured as follows:

- First, the roles and responsibilities of governments are explored, placing particular emphasis on the role of action-oriented regional plans in bridging the gap between national policy and local communities.
- Second, the critical role of the non-government sector is discussed. This involves developing innovative programmes and forging partnerships with individual landholders.
- Third, key principles are developed for devolving responsibility from central government through development of regional biodiversity strategies.

2.1 CLARIFYING ROLES AND RESPONSIBILITIES OF GOVERNMENT

A critical set of questions to be asked in developing successful institutional frameworks for biodiversity management are:

- At what scale should different processes and threats to biodiversity management be managed?
- Who should bear responsibility for managing biodiversity?
- How should differing capacities for biodiversity management at local and regional scales be taken into account?

2.1.1 The challenge of managing across scales

Figure 1 highlights the different scales at which biodiversity can be assessed and management planned for – from both ecological and institutional perspectives. Conflicts in natural resource management often arise because managers at different scales have differing objectives. For example, a farmer or developer may be seeking to maximise the economic return from their property while a land-use planner at local government or state level may be seeking to retain a representative range of the different kinds of native vegetation found within the catchment. Hence it is not possible to plan for the conservation of native vegetation at a single scale because the types of actions required and the individuals and organisations responsible for taking them vary.

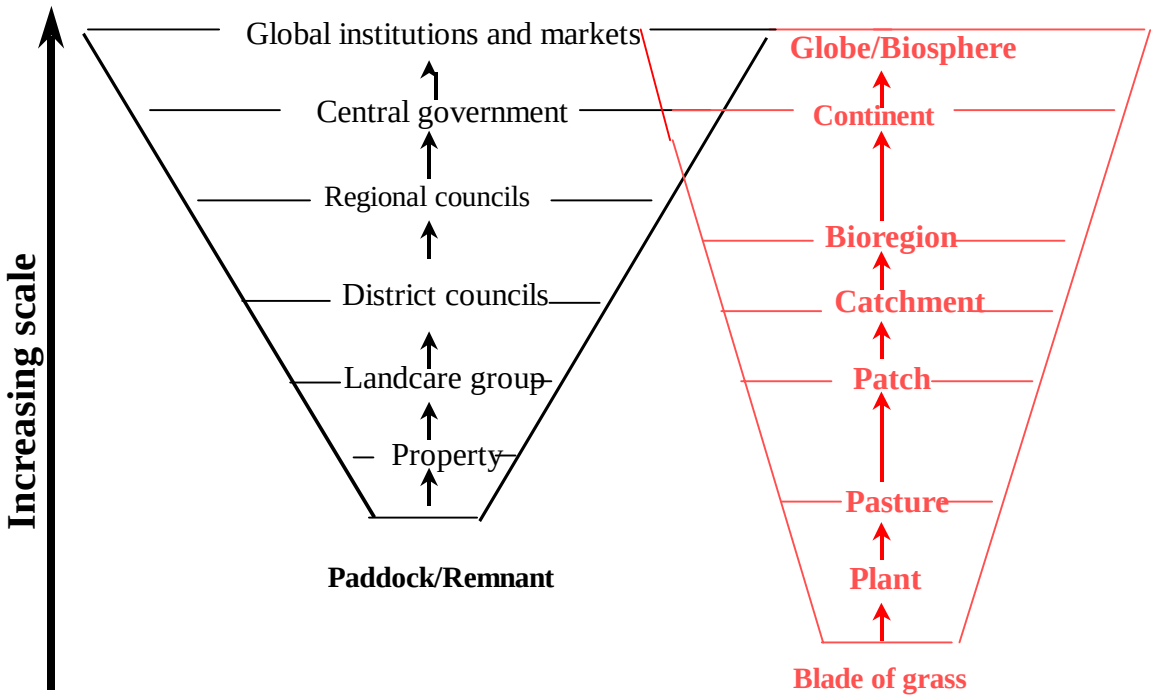

Figure 1: Different scales of ecological and institutional planning

Further, successful planning requires that the interrelationships between different natural resources be explored. For example, in catchments experiencing significant pest and weed

problems the management of areas of natural habitat cannot easily be isolated from strategies for pest management. Likewise, in an urban context, planning for the conservation of native vegetation cannot take place in isolation from issues of recreation management and water quality. In short, a holistic approach that integrates new strategies for conservation into existing development and natural resource management programmes is more likely to be successful.

Planning and involvement at each scale is necessary. To be effective the outcomes of decisions at different scales should be integrated and reinforce each other.

- At a **national scale,** decisions are made in relation to the objectives of natural resource management and how these are to be balanced and integrated with other social and economic objectives.
- Planning at a **regional scale** provides an opportunity to evaluate natural resources within natural boundaries that are relevant to meeting particular management objectives, for example, catchments for water management or a bioregion for biodiversity conservation. Planning and coordination at a regional scale allows management objectives to be reconciled at a scale beyond that of the individual landholding. For example, maintaining the variety of native plants and animals within a region requires careful planning, particularly when native vegetation is fragmented. Corridors that connect remnants are required, in addition to giving priority to the types of habitat that are rare or required to sustain focal species (Lambeck, 1999).
- At the **local scale** it is possible to interpret the objectives of higher scales and reconcile and apply them to local circumstances. At a local scale the immediate concerns of the community may be most effectively voiced. The implications of regional strategies can be determined and adjusted to meet local needs.
- At the **property and paddock scales,** more pragmatic decisions are made about management needs and how these can be dealt with 'on the ground'. At this scale, management guidelines and prescriptions are more likely to be accepted if they are flexible. This is because different landholders have differing aspirations and imperatives for the management of their land. If flexibility is provided, landholders have the ability to be entrepreneurial and create innovative solutions that strike a balance between conservation of threatened habitat, and maintenance of the economic viability of the family farm. The critical importance of this scale of management is reinforced by New Zealand's culture and its legal institutions, which emphasise a landholder's entitlement to autonomously manage their land within a framework of very broad constraints and obligations. [3]

[3] This is a general statement. It is acknowledged that some planning rules are quite prescriptive, such as those relating to the conversion of pasture to pines in the 1970s.

2.1.2 Who should bear responsibility for biodiversity management

The previous section demonstrated that managers at all scales must bear some responsibility for biodiversity management. The challenge lies in developing approaches where the actions of managers at each level are complementary and reinforce one another, rather than being in conflict. This requires coordination and the development of cooperative partnerships.

Binning and Young (1997a) highlight the critical role of **regional coordination** in providing the linkage between **commitments** to biodiversity conservation made at the national and state level and **planning** for and **implementation** of strategies for on-ground works at a local level. It is difficult, however, to develop clear divisions of responsibility as each tier of government has an active interest in the performance of the management regime as a whole.

Young *et al*. (1996) have argued that these tensions can be resolved through the principle of subsidiarity, that is, devolution of management responsibility to the individual or lowest institutional level able to take effective action. Further, they recommend that no level of government be able to reduce standards for management set by another level.

Campbell (1996) distinguishes between different scales of policy development and the role of regional planning by distinguishing between the concepts of regionalism and regionalisation:

> … there is a convergence [of policy development] from two directions, meeting at the regional level. The bottom-up phenomenon is *regionalism*, and the top-down move to a regional focus for program delivery is *regionalisation*. This is not an academic distinction, as the imperatives driving them are distinct and different. Regionalism is about autonomy and identity at a regional level, and about 'scaling up' to better engage with particular environmental and social issues, driven from below. Regionalisation is about central governments achieving efficiencies and effectiveness by concentrating program delivery at the regional scale, usually while retaining financial control and hence program direction. It is not uncommon for the two forces to be at cross purposes, with regional community leaders having very different aspirations for particular programs from those held by policy makers in Canberra or State capitals (Campbell, 1996).

This is a very important observation as the tensions between regionalism and regionalisation are clearly apparent. The importance of developing institutional structures that balance the need for scientific assessment, leadership and centralised planning from the "top down" with strategies for engaging landholders and local communities from the "bottom up" is clearly critical. [4]

Figure 2 puts forward a conceptual model that illustrates the hierarchy of institutions that have an interest in natural resource management and the roles they may play at different scales. The figure highlights a number of issues and principles for institutional design.

- Management needs to be linked across scales with each tier of management having unique responsibilities within a nested hierarchy.
- Regional coordination and planning has the potential to bridge the gap between "top-down" and "bottom-up" approaches.
- A diversity of partnerships with both government and non-government players is required to develop successful programmes for developing partnerships with local communities and landholders (we return to this issue in Section 2.2).

[4] It is noted that terms "top-down" and "bottom-up" are somewhat value laden. Niether should be considered superior. Rather the point being made is that the best elements of both are required to successfully manage biodiversity across scales.

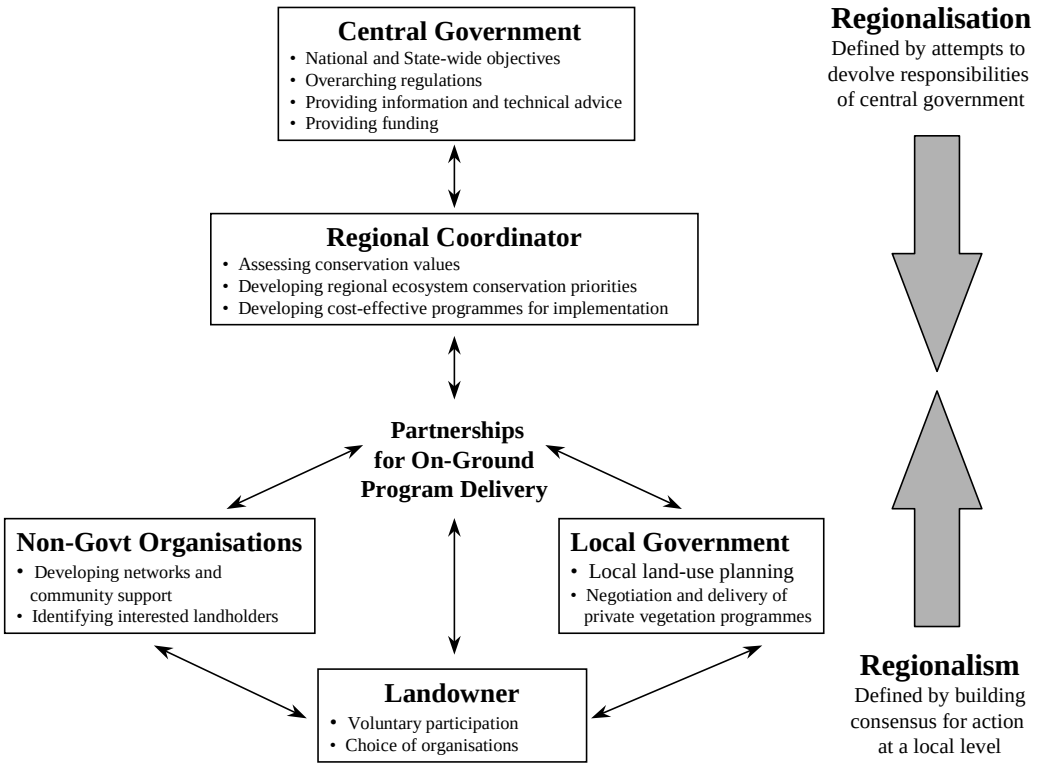

Figure 2: Institutional approaches to natural resource management

It is tempting to use a model of this kind to simply prescribe a universal solution to biodiversity management. This implies that:

- New Zealand's central government would take the lead in developing legislative frameworks and ensuring adequate resources are available at a regional scale.
- Regional and district councils would take the lead in developing regional strategies and brokering partnerships for on-ground delivery with local government and the private sector.
- Local government, non-government organisations and private individuals would be actively encouraged to develop and deliver on-ground management programmes.

However, it is important to recognise that capacities, willingness and responsibilities of organisations to manage biodiversity vary across regions. A particularly important issue is who should take the lead in developing and integrating biodiversity policy at the regional scale. The section which follows shows that there is a range of different ways of achieving this leadership.

2.1.3 Addressing different capacities for biodiversity management

A framework for evaluating the role of different tiers of government in developing successful regional partnerships for biodiversity conservation is set out in figure 3. The framework was developed following analysis of the following factors (Binning, Young and Cripps, 1999):

- the processes that threaten biodiversity in different regions and how these relate to the **core functions and responsibilities** of different tiers of government;
- the **capacity** of local institutions, as determined by population size and the rate base; and
- the **coincidence** between **local, regional and national** priorities for the conservation of biodiversity.

Variation in the overall ability of local institutions to take the lead in developing responses to biodiversity can be readily identified using this framework.

For example, in addressing the first of these factors a distinction can be drawn between responsibilities of regional and district councils. Regional Councils would have more responsibility in rural regions where the main pressures arise from agricultural activity that threatens the natural resources for which they have responsibility: air, water, soil, the coast, pollution and discharges. One the other hand, district councils may have relatively more responsibility in urban and peri-urban regions where development and subdivision are the main pressure on biodiversity.

Build Capacity →

	Low capacity and responsibilities for vegetation management	**High capacity and responsibilities for vegetation management**
Coincidence of local, State and nation-wide priorities	• Build capacity by providing information and expertise • Encourage regional/local planning for natural resource management • Fund and resource with technical skills	• Use regional/local structures to develop and implement strategies for natural resource management • Focus on monitoring outcomes and maintaining minimum standards
Conflict between local, State and nation-wide priorities	• Build capacity through education and awareness programs • Manage change through regulation, structural adjustment and incentives	• Develop communication, education and awareness strategies • Maintain minimum standards by formalising regional strategies and applying conflict resolution

Build Consensus ↑

Figure 3: Framework for developing partnerships

In the figure, it is clearly desirable to facilitate transition of local institutions to the top right corner over time. This could be described as the central challenge for the New Zealand Government in developing policies and programmes that build consensus and the capacity of local institutions to independently manage biodiversity.

Outlined below is a brief description of the key strategies for developing successful approaches in each of the categories identified in the figure.

Low capacity regions with coinciding interests

Regions with a low capacity to manage biodiversity tend to be rural regions where there is neither a large population base nor development pressures. These regions are unlikely to be actively involved in vegetation management because they lack the resources required to take action outside their key areas of responsibility. However, many of these regions have strong support for improved vegetation management, primarily motivated towards the management of land degradation processes.

Regions of this kind are relatively common in the agricultural heartlands of Australia where natural resource management problems such as dryland salinity are common. From our reading it is quite likely regional councils in New Zealand have greater capacity to address natural resource management issues, given their responsibilities under the *Resource Management Act 1991*. However, an interesting question is how much capacity these councils have to address indigenous biodiversity issues. Our understanding is that capacity and commitment to biodiversity conservation is quite varied across New Zealand.

Key challenge: Capacity building with resources, knowledge and policy instruments.

In these regions, the most effective strategy will be for central government to engage directly in partnership with regional councils and non-government organisations to plan effectively for biodiversity. Central government will need to play the lead role in coordinating approaches and providing data and expertise. With this support, these regions will generally have greater capacity to undertake effective regional planning and programme delivery.

High capacity regions with coinciding interests

Regions with a high capacity to manage biodiversity tend to be located in population centres in the coastal zone. Conflicts between local and national interests tend to be minimised because there is a strong diversity of interests within the community, which are then reflected in the composition of councils, who in turn have responsibility for the management of urban development, the key threat to the management of natural resources, including biodiversity.

A key issue in New Zealand for regions fitting into this category is to clarify roles and responsibilities between district and regional councils and to ensure that these councils have the capacity to implement the full range of policy instruments and tools described in section 3.

Key issue: Institutional reform to ensure regions have access to the full range of policy tools.

In these regions the preferred strategy would be to give regional and district councils autonomy to coordinate the development of accredited regional natural resource management plans that include biodiversity as a core element.

High capacity regions with conflicting interests

Regional and district councils in regions with conflicting national and local interests may not be in a position to reconcile differences that occur, for example, when high profile developments are proposed on sites of high conservation value.

The clearing of glider habitat within the coastal zone of Queensland for sugar cane development is an Australian example of a case where there are conflicting local and national interests. In New Zealand, a central issue is to clarify how central government should be involved in these situations.

Key issue: Capacity building, conflict resolution and ensuring minimum legislative standards are maintained.

In these regions, stronger involvement of central government will be required to reconcile differences in objectives for the management of biodiversity. Conflict resolution tools will be required. However, attempts should be made to maintain active council and community involvement in any processes developed.

Low capacity regions with conflicting interests

Regions fitting this category will tend to be rural and remote regions facing declining returns from grazing-based industries, leading to falling populations and loss of key rural services and infrastructure. Councils in these regions are unlikely to perceive or want responsibility for biodiversity issues. They are likely to have a strong focus on issues of rural decline and landholder rights. In Australia, councils in regions of this kind are quite antagonistic to the notion of being asked to make a contribution to the conservation of biodiversity.

Key issue: Capacity building and structural adjustment.

In these regions, approaches that build local capacity and manage structural adjustment are required from the central government. Regional strategies, developed through structures that are directly supported and managed by central government, are likely to be most successful.

2.2 ROLE OF THE NON-GOVERNMENT ORGANISATIONS IN FOSTERING PARTNERSHIPS

Up until this point we have largely ignored the role of non-government organisations, i.e. the private sector and landholders, other than to note that these organisations will play a role in the delivery of conservation programmes at a local scale.

In addition to this driver, there are also a number of characteristics of the non-government sector that highlight the importance of its more active engagement in developing new approaches to biodiversity conservation.

- The perceived independence of the non-government sector means that it can engage many private landholders who will not deal with government. The experience of Trust for Nature in Victoria Australia, which was modelled directly from QEII National Trust systems, would suggest this is indeed the case.
- Non-government organisations are often less constrained than government agencies, and hence are better able to gauge community needs and to develop entrepreneurial solutions. Global experience suggests they are often the source of innovation.
- Free of bureaucratic processes, non-government organisations are often able to deliver on-ground outcomes more efficiently than government organisations. This is particularly true at local and regional scales where individual knowledge and networks are often critical.

These points are important when considering the role of partnerships with private landholders in securing conservation outcomes. The initial reaction of many people to strategies for engaging landholders in biodiversity conservation is that they represent the thin edge of the wedge – a form of disguised regulation through which government is seeking to impose land-use restrictions on landholders. However, if these strategies are to succeed they must seek to achieve and retain strong landholder support and commitment (Farrier, 1995, Binning and Young, 1997a).

Ultimately landholders must be active stewards of the biodiversity that occurs on their properties. The non-government sector, acting at arms length to government, has the potential to be more effective than government in delivering this outcome (Binning and Feilman, 2000).

A final rationale for involving the private sector is one of mutual obligation within a civil society. The private sector derives benefits from biodiversity and, hence, has a responsibility to contribute towards its sustainable management.

The following issues set an agenda for achieving more effective engagement of the non-government sector:

- Developing successful partnerships with the non-government sector
- Giving recognition to non-government activities for biodiversity conservation
- Removing impediments to the non-government sector using a suite of policy instruments designed to fully engage landholders and local communities.

2.2.1 Developing partnerships with the non-government sector

Figure 4 provides an overview of the current range of non-government activity in nature conservation in Australia. A brief analysis of the New Zealand situation is contained in Section 5 of this report although a comprehensive beyond the scope of this study.

In recent years there has been considerable growth in the range of non-government activity. This is perhaps best evidenced by the growth in the number of non-government organisations actively promoting the protection of arras of indigenous biodiversity. Organisations such as the Trust for Nature (Vic), the Australian Landscape Trust, The Australian Bush Heritage Fund, National Trust (WA) and the World Wide Fund for Nature have all significantly expanded their role. Further, the New South Wales, Queensland and South Australian governments are actively considering supporting the establishment of independent Conservation Trusts, modeled on the Victorian Trust for Nature. At a local scale there is a huge range of local and regionally based groups undertaking conservation works both within and outside the Landcare movement.

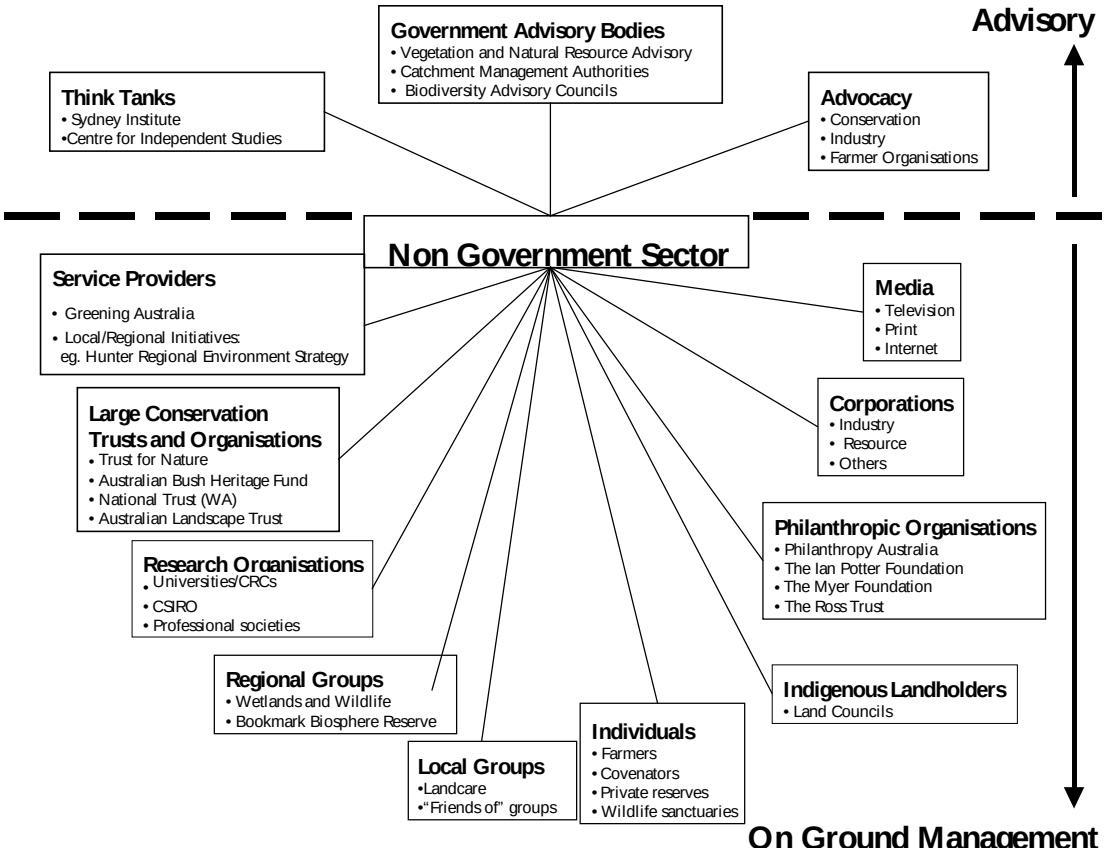

Figure 4: The range of non-government players in Australia

Closer to government, but at arms length from it, organisations such as Greening Australia are actively involved in delivering government programmes. Strong linkages between the community and government also exist through advisory bodies and advocacy groups.

Whilst the level and growth of activity is encouraging, the challenge is to identify the mechanisms through which more effective partnerships can be developed between the different categories of organisation represented in figure 4. Too often current conservation initiatives are constrained by only involving a narrow range of organisations. For example, and although there are notable exceptions, local Landcare and catchment groups are often tied to government funding programmes and have only limited awareness or connection to business, philanthropic or research organisations with an interest in nature conservation and

natural resource management. If synergies between organisations can be found, particularly ones that provide connectivity between urban and regional centres, it is believed that markets, funding and participation of the non-government sector in conservation activities can be significantly expanded.

The following characteristics of successful partnerships for nature conservation have been identified through the Australian research (Binning and Feilman, 2000):

- the collaboration of several non-government organisations, businesses and government working in partnership to achieve conservation outcomes at a landscape/regional scale;
- an appropriate balance struck between *engagement of local communities* and their aspirations for land management and *leadership in natural resource management* through provision of information, identification of conservation priorities, funding and organisational support;
- acceptance that different organisations have different strengths and weaknesses and hence different niches within which they can effectively contribute in partnership;
- active promotion of successes and collaboration to secure ongoing community and political support, including funding from both the public and private sector.

If the non-government sector is to actively work with governments there is a need to establish relationships where power and decision-making are evenly shared. Given the differences in the decision-making processes of governments and private organisations and businesses, this is a far from superficial issue.

Mechanisms do exist within Australia for establishing community, business and government partnerships, but they a bureaucratic and administratively cumbersome. The challenge is to engage the corporate and philanthropic sectors to scale up their investment by contributing to larger scale regional programmes. A recent workshop of community, business and government leaders in Australia identified the opportunity to facilitate larger scale partnerships for landscape conservation using a charter for government-business-community partnerships (Binning and Feilman, 2000).

The purpose of the charter would be to articulate the principles against which large-scale conservation partnerships may be put in place in an administratively efficient manner. The charter would include:

- a vision for the role and growth of non-government investment in landscape conservation;
- strategies for capacity building covering provision of expertise and networks for information sharing, and programmes for organisational learning;
- arrangements for joint funding of large investments in conservation at a regional scale;
- the development of markets for environmental services that allow urban populations to donate or purchase shares in landscape reconstruction (this includes shares with a monetary value, such as carbon credits or agroforestry).

Other key issues for enhancing the role of the non-government sector are expanded on in the remainder of this section.

2.2.2 Giving recognition to non-government activities

A key issue for coordinating implementation of New Zealand's Biodiversity Strategy will be the capacity to monitor, account and quantify the contribution of government and non-government activities outside of the formal reserve system, and in particular, on private land.

Mechanisms for accounting for and quantifying the contribution of the non-government sector to achieving conservation objectives are yet to develop in Australia. In New Zealand the QEII National Trust receives much of it's funding from the Crown and is required to report to parliament. However, we are uncertain of the extent to which conservation planning between land-use tenures is being effectively integrated.

Lack of institutional recognition for private conservation means that the contribution of private initiatives cannot be readily quantified. This is important for two reasons. First, it means that the role of private conservation is often neglected in the development of government policy at national, state, regional and local scales. Second, the poor public profile of private conservation impedes its future growth.

The concept of a Conservation Management Network has been developed to address this concern; see figure 5 (Prober and Thiele, 1996, 1999; Binning and Young 1997a). The objective is to develop management strategies that maximise the contribution that each tenure of land can make to the achievement of conservation outcomes. No tenure is considered "superior" to another. Rather, management strategies that maximise opportunities for integrating conservation objectives with other land-uses are actively pursued on all land tenures. For example, in the case of rural lands, conservation actions would need to be integrated with agricultural practices and the protection of corridors of native vegetation. The framework is inclusive and acknowledges conservation objectives will not be met exclusively through formal reserves.

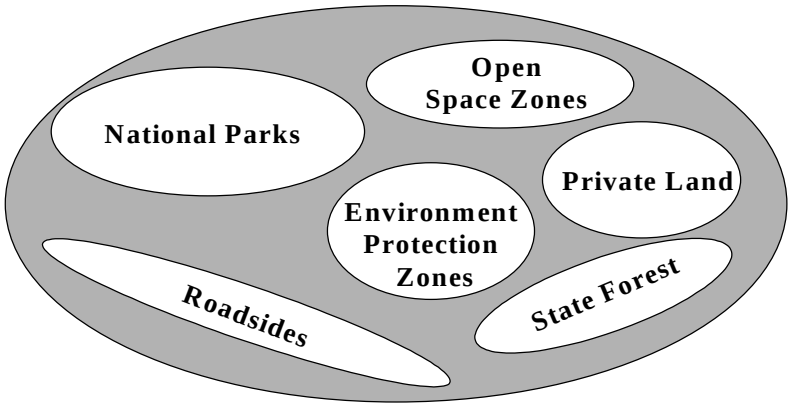

Figure 5: The concept of a conservation management network

It is noted that such a framework is not new and is consistent with the approach used in the United Nations Environment Programme's Biosphere Reserve model, which was initiated in 1972. It also has similarities to the definition of protected area network in the New Zealand Biodiversity Strategy. However, although this concept is not new, there remain significant impediments to its application. Perhaps the most significant of these is the pervasive culture that nature conservation is a public responsibility with little or no role for private individuals.

This culture is changing, both in Australia and New Zealand, as evidenced by the development of biodiversity strategies and associated policies to engage private landholders. However, application of the concept requires that currently fragmented approaches to conservation policy be more effectively coordinated across all government agencies (Binning, 1997).

In addition to engaging private landholders, another challenge is to engage public authorities that manage land but do not have conservation as a primary management objective. For

example, in Australia many of the most valuable remnants of temperate woodlands and grasslands are found on vacant crown land, rail easements, travelling stock routes and cemeteries (Prober and Theile, 1996).

Coordination management across tenures could be facilitated by the development of a database that contains:

- the *distribution* of native vegetation by ecological communities within the region;
- the *significance* of specific sites in meeting the region's conservation objectives including, where available, an assessment of site quality; and
- the *security* of management for conservation on the site. For example the land-uses permitted and any commitments entered by the landholder to conservation management.

If such a database were maintained it would be possible to objectively evaluate the status of ecological communities and review management strategies. The database would also provide a baseline against which changes and losses in the distribution of ecological communities could be measured through time.

The database could also record more detailed information on when land managers have been approached, and if they have accessed information or incentive programmes from a government agency or local government. This last point is important because, although there are already a wide range of programmes available to promote conservation outcomes, awareness of these programmes is likely to be low and coordination of their activities is likely to have been poor.

No State or region in Australia currently maintains a database of this kind, a fact that is a significant impediment to the coordination and targeting of conservation programmes nationally (Dore, Binning and Hayes, 1999).

A Community Conservation Network, or set of regionally based networks with supporting database, is the foundation upon which biodiversity conservation can be coordinated on and off-reserve (Binning and Thorman, 1999).

The simple existence of this information would enable implementation options for regional strategies to begin to be prioritised. For example:

- public land whose management is currently inappropriate can be identified and the responsible management agency or local government approached;
- private lands of highest significance can be targeted for incentives for voluntary conservation management and covenants; and
- land of highest conservation significance that is at immediate risk of development may be targeted for acquisition or re-zoning.

Such a network would enable greater emphasis to be placed on encouraging community and private investment in conservation on private lands outside the formal public reserve system in meeting the objectives of the Biodiversity Strategy.

A database of this kind would be best held and managed by government agencies. However, it would be critical that access be provided to all relevant government and non-government organisations, whilst taking account of privacy issues.

2.2.3 Removing impediments to partnerships between the non-government sector and landholders

Designing effective policies and programmes for engaging private landholders in biodiversity conservation raises a number of significant issues. They:

- require a high level of information on the conservation value and status of individual sites;
- require close cooperation and trust between the landholders and the partnership organisation, who may be suspicious of government involvement;
- are seeking to secure objectives of a very long term nature, and hence the programmes themselves require long term support which is often lacking within government; and
- are resource intensive in terms of the facilitation effort and personal contact required.

The government agencies that currently manage off-reserve conservation generally do not have the culture or the capacity to adequately address all of these challenges. Non-government organisations could potentially play many of these roles. The broadening of Australian non-government organisations to include on-ground organisations as well as traditional advocacy groups, is encouraging.

However, because conservation policy and legislative structures have not been developed with active involvement of the private sector in mind, many significant impediments to accessing the full range of conservation tools may exist. Key examples of the type of impediment that exist in Australia that may also exist in New Zealand are[5]:

- **Capacity to establish independent conservation trusts and organisations:** Arrangements are required which allow for the efficient establishment of organisations committed to developing programmes and funding on-ground conservation works at national, State, regional and local scales. These organisations should enjoy equivalent tax treatment to other charitable organisations.
- **Access to covenanting powers:** all regions should have in place arrangements for conservation trusts to enter conservation covenants that have a statutory basis, are registered or noted on land title, and are binding in perpetuity.
- **Taxation treatment of private reserves:** secure private conservation reserves (covered by a covenant) should enjoy the similar treatment to primary producers who can, for example access tax deductions for management costs (these issues are addressed in detail in section 4).
- **Institutions for the creation of environmental markets:** non-government organisations are limited in their capacity to promote and secure land use change through markets for environmental services such as markets for carbon sequestration or markets for the conservation streamside buffers that limit rapid run-off and hence maintain water quality. One example is that markets for environmental services require a mechanism that allows separation of ownership of environmental services from land, as is the case in forestry where ownership of trees/timber and land can be separated. Further separations could be permitted to allow for the establishment of separate markets for environmental services such as carbon, biodiversity and water purification. It is noted that a conservation covenant, tied to a one-off payment equivalent to the value of the environmental service provided, may be one mechanism

[5] The QE II National Trust notes that New Zealand already has the capacity for charitable trusts to be established and that the Trust provides a covenanting power throughout New Zealand.

for achieving this outcome. New South Wales is the first Australian State to pass legislation that allows for the separation of carbon rights from land.

These are examples of potential institutional and policy impediments to the non-government sector, which should be able to promote biodiversity conservation on a "level playing field" with the government sector. Principles of competitive neutrality highlight the potential of a thorough review directed at enhancing these capacities, for instance by giving non-government organisations equal access to conservation funding by government through the creation of contestable funds.

A potential model for securing non-government involvement sector involvement is outlined in figure 6.

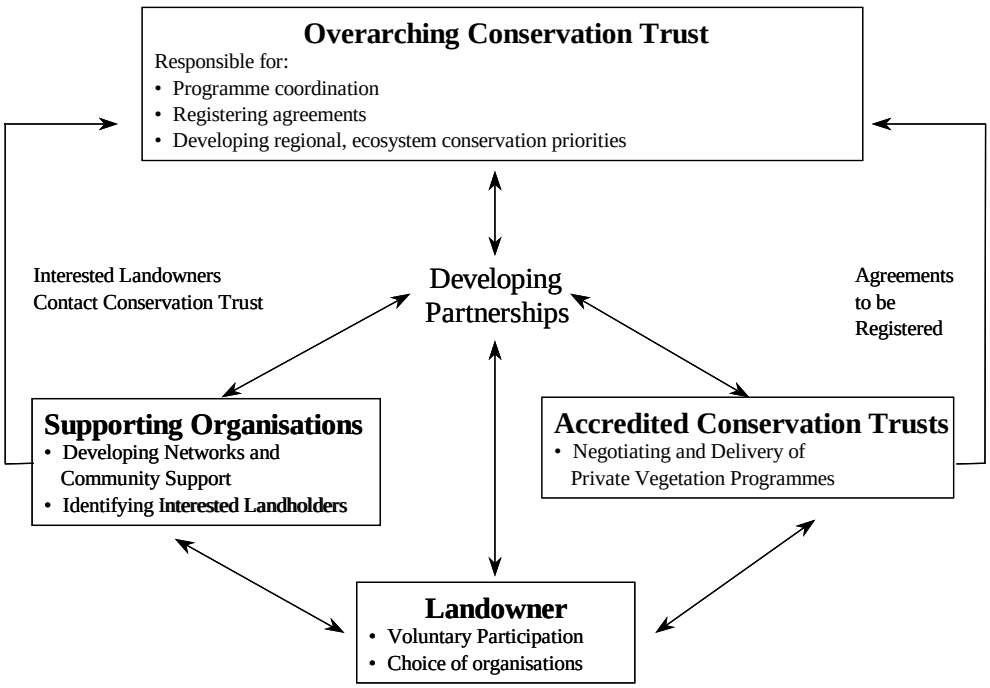

Figure 6 – Empowering the non-government sector to deliver on-ground programmes

In the figure an overarching Conservation Trust provides support and builds the capacity of regions to undertake conservation works. It can accredit local and regional trusts to deliver conservation programmes. The model developed in Section 2.1 that analyses the role and responsibility of government in devolving responsibility to a regional scale has parallels with model proposed above. The key difference is that the delivery of conservation programmes in this model is facilitated by non-government organisations at arms length from government.

The role of such a Trust would be to facilitate voluntary conservation by landholders. It would have no role in regulating landholders. However, there is the potential for such trusts to work in partnership with governments, particularly at local and regional scales.

In New Zealand it is possible that the QE II National Trust could play this role. The distinction is that the trust would shift its primary role from working with landholders to working to build the capacity of other organisations to deliver voluntary conservation programmes on-ground. Of course care needs to taken to ensure that an overarching Trust of this kind does not create centralised and inflexible approaches, or add another tier of accountability. Rather its primary functions would be related to identifying conservation priorities on private land, providing expertise to local and community based groups, providing checks and balances on the covenanting process and potentially acting as a source of funding.

Similar objectives could be achieved through existing trusts moving to actively establish partnerships with other non-government groups and local governments for assistance in

engaging private landholders. In order to appeal to the broadest range of landholders, partner organisations may include industry, farming, conservation and, philanthropic organisations.

The model of enabling/model legislation for the establishment of Conservation and Land Trusts has been drawn from the United States where in excess of 1500 Land Trusts have been established. In this case, an umbrella organisation – the *Land Trust Alliance* – supports the work of individual Trusts, coordinates activities and provides supporting knowledge and training programmes that build organisation capacity (Binning and Young, 1999c).

The experience of the U.S. Nature Conservancy is described in Case Study 6.

2.3 SUMMARY OF PRINCIPLES FOR INSTITUTIONAL DESIGN

To conclude the discussion of institutional frameworks CSIRO developed six key principles for successful biodiversity planning and programme delivery at a regional scale (Binning, Young and Cripps, 1999).

Principle 1: Clear definition of roles and responsibilities – the development of regional strategies requires clear distinction to be maintained between the following roles and responsibilities:

- decision-making associated with the performance of statutory functions including land-use approvals;
- the provision of expertise, advice and stakeholder input to the development of programmes, policies and regulations developed under the statutory process; and
- the delivery of natural resource management programmes through a diverse range of structures, including partnerships with the non-government sector.

Principle 2: Maintenance of outcome-based legislative framework – a legislative framework that takes account of biodiversity and facilitates regional planning should be in place. This framework should establish clear minimum standards for the maintenance of biodiversity, e.g. through requirements to conserve a comprehensive and adequate range of different ecological communities.

Principle 3: Delegation and development of action based regional strategies – regional strategies that meet minimum standards should be accredited and management responsibility devolved. Core elements of a regional strategy are described on the following page (Box 1).

Principle 4: Flexible delivery – regional plans should involve diverse partnerships with both government and non-government organisations for delivery polices and programmes across all land tenures. Implementation programmes should include the full suite of policy tools ranging through education and motivational tools, regulations and property right-based instruments, and financial incentives (see discussion of model toolkit in the next section).

Principle 5: Adequate resources – funding, information and expertise to meet required minimum standards should be secured for the region.

Principle 6: **Monitoring and review** - performance indicators and accountability measures should be in place and include provision for regular review of outcomes and the appropriateness of existing standards.

In addition to these principles biodiversity conservation will need to be integrated with other natural resource management strategies, including land-use planning, water quality and pest control strategies. Indeed the management of biodiversity is often integral to the achievement of these objectives.

Box 1 – Key elements of a regional biodiversity strategy

Establishment of a coordinating body: A local or regionally based body is given responsibility for overall coordination and strategic development of the regional strategy. This body will require a balance of expertise and skills. It is important to note that the coordinating body need not be a part of government or perform statutory functions, it may, for example, be an advisory board of relevant experts and stakeholders. Its role is to bring the various interests together at an appropriate scale for natural resource management planning. It should have defined relationships to other regional agencies.

Memorandum of Understanding on statutory processes: A formal Memorandum of Understanding will be required between the agencies with statutory responsibilities and other parties with a role in delivering the regional action plan. The purpose of the memorandum of understanding is to outline how each agency or organisation with statutory responsibilities will interpret and apply the legislation under their control within the region. A key objective is to streamline existing approval processes and the delivery of on-ground programmes.

Integrated land use plans: All statutory land use planning should be integrated into a single coordinated land use planning framework that forms the basis of regional natural resource, economic and social planning. For the purposes of biodiversity planning, mapping of the distribution of indigenous biodiversity within the region, on the basis of agreed ecological communities across all land tenures, is a critical step. Key threats to biodiversity and appropriate management responses will also need to be identified. Any tensions in the land use planning responsibilities of statutory agencies will be resolved through the Memorandum of Understanding.

Implementation programme: An implementation programme drawing on the full range of policy tools will be developed that is consistent with priorities identified in the planning phase.

Funding and resourcing partnership agreement: All tiers of government will agree resources for the strategy with a minimum five year commitment to the implementation programme.

Accountability criteria: As regions are given greater flexibility in achieving defined outcomes, these must be measured and accountability procedures put in place.

3. MODEL TOOLKIT

The New Zealand Biodiversity Strategy and the Bio-What report have comprehensively addressed the range of strategic issues that need to be addressed in improving the management of biodiversity. A key gap remains, however, in documenting the range of tools that are available for implementation – that is to engage landholders and the broader community in the conservation of biodiversity.

Figure 7 provides and overview of the range of instruments that can be used to implement policies for the conservation and sustainable use of biodiversity.

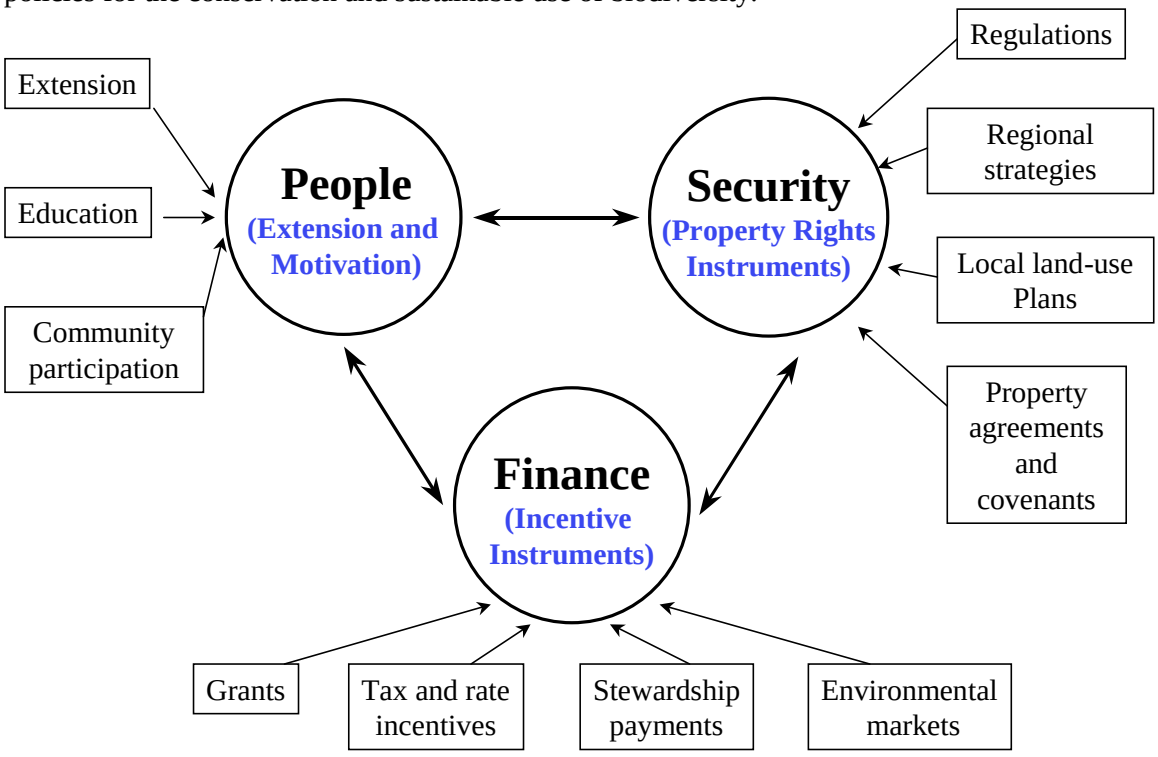

Figure 7: The policy mix

The toolbox is divided into the following broad categories (Binning and Young, 1997).

- **People** - the tools that can be used to motivate and retain landholders' support for vegetation programmes;
- **Security** - the regulatory, legal and voluntary property right instruments that can be used to provide secure adaptive management of vegetation; and
- **Finance** - the incentives that can be provided to share the costs of managing vegetation.

These categories provide a powerful framework for the development of implementation programmes for biodiversity strategies. The concept of sustainable development highlights the that policy approaches to natural resource management will be more effective if strong linkages are drawn between social, economic and environmental drivers. This process is mirrored in policy design where there is considerable evidence that policies that harness the synergies between: educational (people), regulatory (security) and economic incentives (finance). These are likely to be more effective both in terms of cost and environmental outcome (Farrier, 1995; Young et.al, 1996; OECD, 1996, Binning and Young, 1997a).

This insight is critical because policy makers are generally biased to one type of instrument based on their disciplinary training and professional experience. For example, lawyers and

planners tend to prefer regulation and land-use planning, economists incentive instruments, and social scientists education and participatory processes. A critical management issue in developing successful implementation strategies is to bring these differing perspectives together and to seek out complementarity.

A key challenge for governments is to facilitate understanding of the range of tools available, remove impediments to their use, and actively promote their adoption through the development of model policy instruments and the provision of catalytic funding to local and regional organisations to support the implementation of new policies (Cripps et.al, 1999).

In the remainder of this section the range of tools available within each of these categories is discussed to provide background for a number of case study examples that are used to derive a range of key principles for policy design and instrument selection.

3.1 PEOPLE – EDUCATION AND MOTIVATIONAL TOOLS

Education and motivational tools are required to develop understanding and the willingness of local communities and landholders to adopt new management practices for the conservation of biodiversity.

These tools are designed to raise awareness and shift the willingness of the community to take action to conserve native vegetation.

3.1.1 Landholder Facilitation

A critical relationship is that between the landholder and the government or non-government organisation seeking to promote the conservation of biodiversity.

A particular priority is to develop an ethic of environmental stewardship by landholders (Farrier, 1995). Stewardship has two critical attributes: first a willingness and commitment of the landholder to sustainable management; and second, a strong relationship with third parties who provide advice and incentives for improved land management.

The first of these attributes is relatively common and the second relatively rare. Successful approaches to landholder facilitation are set out below.

Community facilitation

In Australia community based facilitation for sustainable land management was pioneered by the Landcare movement (Campbell, 1995). This movement has been credited with raising the awareness of landholders of sustainability issues.

Few dare to argue against the efficacy of the Landcare movement. It undoubtedly has strengths in its grass routes nature and its commitment to learning through community participation in group-based activities. The movement has a commendable history.

Criticisms and shortcomings can, however, be identified. Landcare does not connect with many landholders who are individualistic and wary of group interactions. With increased funding from the Natural Heritage Trust in Australia it has been argued that Landcare groups have stopped discussing issues and simply become a mechanism for bidding for and managing funds. Landcare was initially focussed on sustainable production with little attention paid to conservation and biodiversity issues, and it has proved difficult for approaches to biodiversity to penetrate this culture. Finally, community based conservation is often criticised as lacking strategic direction and suffering from the difficulties of spreading scare resources over many groups rather than focussing on key priorities.

All of these criticisms are valid but still do not detract from the power and influence of the movement and its role in group learning. Landcare is the foundation stone of community facilitation in Australia. However, in itself it is not sufficient.

Individual facilitation

Evidence suggests that little if anything can replace the need for face-to-face contact with trained facilitation officers on site.

A review of programmes in Australia reveals that individual facilitation is the most effective educative tool in delivering both attitudinal and behavioural change in landholders, particularly when combined with catalytic or cost sharing incentives (Williams, 2000). This is because a true dialogue is generated and concepts can be readily transferred into plans for action that can be implemented.

A number of successful programmes have operated on this basis in Australia. In relation to biodiversity, *Land for Wildlife* is the most notable example (see box 2). Other programmes which have successfully used individual facilitation services include fencing grants by Greening Australia (see case study 3) and the use of locally-employed facilitation officers in the *Taking Action Now* programme protecting the highly fragmented Grassy White Box Woodlands of the western slopes of NSW.

Key lessons from these programmes suggest (Lambert and Elix, 1998):

- One-on-one communication is an essential element of successful landholder facilitation;
- Facilitation officers employed from the local community (preferably local landholders) are likely to be better accepted and hence more effective; and
- Non-government delivery of facilitation services is often more acceptable, better targeted and more cost effective.

Box 2 – Land for Wildlife

Land for Wildlife is a facilitation programme that was initiated by the Victorian Department of Conservation and Natural Resources and the Bird Observers Club of Australia. The objective of the programme is to encourage and assist landholders to conserve native flora and fauna on their property, even though the property may be managed primarily for other purposes.

The programme is analogous to the Landcare programme, which provides advice on sustainable agriculture to rural landholders, with two important differences. Firstly, it is focused on achieving nature conservation objectives. Secondly, it is focused on providing one-to-one advice to land managers rather than providing information through group-based facilitation and demonstration.

The programme is entirely voluntary and does not bind landholders in any way. It represents the first step in engaging landholders and securing their interest in nature conservation. It is critical that a programme of this kind be completely divorced from any regulatory or land-use planning functions of the local councils in the region.

The programme essentially supports a network of landholders who have an interest in conservation on their properties. It has the three following elements.

- **Provision of Management Advice**: *Land for Wildlife* facilitation officers provide free advice on the protection and management of native vegetation to any landholder who seeks assistance from the programme. This process involves a site visit to assess native vegetation found on the property, and its condition. Strategies for ongoing management, rehabilitation and (where appropriate) revegetation may be established.
- **Support Network**: Participating landholders are kept engaged in the programme through a range of ongoing support mechanisms. Information is distributed via a low cost quarterly newsletter *Land for Wildlife News*. Field days and local projects are also sponsored by the programme.
- **Property Registration**: Landholders may choose to register their property as part of Land for Wildlife. In this case property and habitat details are recorded on a centralised database. Registration is entirely voluntary and non-binding. The landholder can withdraw from the programme at any time. Registration is acknowledged by provision of a certificate and sign, both of which serve to advertise that the property supports the programme, and provides community acknowledgment to the landholder.

The programme provides the foundation for successful voluntary conservation on private lands. The facilitation and motivational support provides a base from which landholders may enter more binding agreements for the conservation of native vegetation on their properties. The focus on voluntary private lands conservation has made Land for Wildlife one of Australia's most successful conservation programmes.

However, individual facilitation is resource intensive. A major challenge is to build the capacity of existing facilitation networks to advise on the management of indigenous biodiversity (Williams, 2000; Dore, Binning and Hayes 1999). Another is to retain government funding for facilitation, which often has intangible results. As discussed in the case study on fencing assistance by Greening Australia, this problem can be addressed when facilitation is tied to catalytic incentives (see below).

3.1.2 Education

Education is critical to securing support for biodiversity conservation. Awareness of the significance and importance of biodiversity in the general community cannot be over-emphasised, as it is from these quarters that political will, funding and other resources are ultimately derived.

Decision-makers and community leaders

A key target for education programmes is key decision-makers in both the government and non-government sectors. Within central government decision-makers are critical to achieving institutional recognition and change. The development of the New Zealand Biodiversity Strategy is evidence that this process is well in train.

At a local level leadership is equally critical in developing on ground action. In our analysis of the role of local government in biodiversity conservation (Binning, Young and Cripps, 1999), we identified the critical role of champions at the local scale in developing successful programmes. They are characterised by:

- having a clear strategic vision;
- being able to build consensus between competing organisations;
- embracing new ideas; and
- having continuity and long term involvement in the development of programmes (often in excess of 10 years).

How is such leadership generated? A clear priority is to raise awareness of managers, chief executives and elected representatives. A biodiversity information kit was prepared for Australian decision-makers and has enjoyed limited success. A more effective strategy may be to sponsor key leaders in biodiversity conservation to give targeted presentations to audiences of decision-makers.

Landholders

Facilitation as a core education strategy for landholders is addressed separately (above).

Other education strategies involve including biodiversity in property planning courses and providing relevant technical information to landholders through various media. Some success has been experienced in Australia through developing conservation and natural resource management modules in property management courses. A good example is the *Farming for the Future* programme in New South Wales.

A recent review of materials including planning kits, technical notes and how-to pamphlets revealed a vast amount of literature in Australia aimed at providing relevant information to landholders. However, four main weaknesses in this material were cited (Morton, 1999):

a) much of the information is shallow, offering advice of only a generalised fashion;

b) information in the area of the financial cost of changing management is rarely offered;

c) information available to urban landholders is very limited; and

d) the backup/facilitation support required to complement printed material is rarely forthcoming.

Thus care needs to be taken to clearly target information to landholders and closely align this information with facilitation networks.

Schools

A key longer term strategy is to raise the awareness of biodiversity issues within the broader community. An important element of this approach is the development of programmes within schools to educate children on the role and function of biodiversity. In Australia there are numerous programmes aimed at involving schools in environmental education. There is, however, no well-established curriculum for environmental management, including biodiversity conservation.

An important opportunity would be for the region to work with the Education Department to develop a formal curriculum on environmental issues. This could be supported by bushland projects and may even include a "Biodiversity and Schools" programme with schools competing for annual "Landcare" and/or "Biodiversity" conservation awards.

Community and voluntary involvement

One view is that communication and learning about biodiversity values is most effectively achieved through direct involvement with the management of biodiversity and natural areas. Examples of programmes that engage voluntary assistance from members of the community are outlined below:

- A range of monitoring programmes that involve community and school groups have been developed in Australia, the most notable of which is *Water Watch* which involves hundreds of groups across the country monitoring water quality at regular intervals.
- A number of local councils involve community groups in voluntary management of bushland areas. Activities can range from simple working bees to establishing community committees to oversee the management key council reserves. Ku-Ring-Gai Municipal Council and Brisbane City Council are leading examples in this area.
- Volunteer and compulsory "work for the dole" programmes involve young people and the unemployed in environmental management. It is hoped that self reliance and a work ethic can be developed through the programmes. The Australian Trust for Conservation Volunteers is a central player in this field in Australia.

Community involvement is a highly effective education strategy. It does, however, require dedicated resources. In interviews with local government, resistance to involving the community was often expressed in terms of inefficiency, legal liability and misaligned objectives with council (Binning, Smyth and Catling, 2000). These are all valid concerns, but must be weighed against the benefits of developing strong community networks at the local scale.

3.2 FINANCE – INCENTIVES FOR MANAGING BIODIVERSITY

Financial incentives play a critical role in securing voluntary uptake of conservation programmes. They can also assist landholders in meeting the costs of transition to a new regulatory standard.

There is much debate over when and how much landholders should be paid to take action to conserve biodiversity or address natural resource management issues. A distinction can be drawn between:

- The **Duty of Care** for sustainable land management faced by a landholder; and
- The provision of non-marketable "**Public Conservation Service**" by landholders managing vegetation to meet conservation objectives.

Determining where "duty of care" stops and "public conservation service" begins is a difficult issue. It is suggested that the dividing line should be drawn between those management practices required to achieve land-use objectives at a landscape or regional scale and any additional practices required to sustain sites of unique conservation value[6]. Hence, a public conservation service is provided when the community's interest lies in securing active and ongoing management of a particular site (Binning and Young, 1997a).

The design of effective financial incentives depends on their relationship to regulatory and motivation programmes. Different models of financial incentives are outlined below although many others exist. As will be demonstrated, different cost burdens can be justified in different circumstances. Rather than confining payments to one level it will be more effective to define the rules and situations under which different levels of incentive can be justified.

3.2.1 Grants

Community grants

These are grants provided to community/landcare groups to undertake conservation works. They are the foundation of the $1.3 billion Natural Heritage Trust in Australia. Whilst undoubtedly successful, care needs to be taken to ensure proposed works are targeted at priority natural resource management actions.

Criticism has been made that existing grant-based programmes are being poorly targeted and are of insufficient a scale to make an impression on land degradation issues (Dore, Binning and Hayes, 1999). A key issue is determining how to strategically invest larger amounts in high priority areas, hence leaving other regions with less funds. This of course raises equity issues. The issue is whether regional equity or maximum biodiversity outcome is the priority.

Catalytic incentives and grants

Catalytic incentives are used to reinforce existing motivations of landholders and to secure behavioural change. Catalytic incentives are characterised by being small payments that meet a proportion of the costs of on-ground works. They typically require a substantial landholder contribution, at least 50% in the case of the Natural Heritage Trust. They are highly effective in regions where landholder awareness and participation in conservation programmes is high.

[6] An example may be that clearing of areas of indigenous biodiversity would not generally be permitted without offsetting measures. However, sites that justify intensive pest and weed management strategies could qualify for ongoing assistance. This is similar to the approach taken in the Bio-What report (Ministerial Council, 2000).

An excellent example of a catalytic incentive is the Greening Australia Fencing Assistance Program described in third case study in the final section of this paper.

Cost sharing grants

Cost sharing incentives provide funding for on-ground works on the basis of a calculation the relative proportion of public and private benefits associated with that work (MDBC, 1996). These payments are typically larger than catalytic incentives, but have the advantage that payment can be more effectively targeted at strategic priorities. A good example of this approach is the Coorong Salinity Action plan that provides funding for on-ground works on the basis of the contribution made to meeting strategic objects for both salinity control and biodiversity conservation. Payments vary from $40 ha for establishment of lucerne pasture to control ground water levels to $1500 ha plus fencing costs for natural habitat of high conservation value (Coorong District Committee, 1997).

3.2.2 Stewardship payments

Stewardship payments can be defined as ongoing annual payments for conservation management of natural areas. They are typically paid at a rate near the full opportunity cost of conservation management. Payments of this kind are typically restricted to areas of outstanding conservation value that are protected by a binding conservation covenant. They can be argued to represent a cost effective alternative to public acquisition and management, particularly for ecological communities that are highly fragmented. Experience with the use of stewardship payments is limited in Australia to the $30 million private forest reserves programme that resulted from the Tasmanian Regional Forest Agreement, which identified in excess of 90 000ha of private forest to be managed for conservation (Tasmanian Government, 1998).

The use of stewardship payments is widespread in the United States and Europe, where subsidies for environmental management are increasingly being substituting for production-based agricultural subsidises. For example, in the United Kingdom landholders are paid full annual rental for the management of Sites of Scientific Interest, including sites of biodiversity value.

3.2.3 Transition incentives

Incentives are paid to encourage compliance and transition to a new regulatory standard, for example restrictions on the right to clear and/or sub-divide land. Transition payments can be based on compensation for foregone land-use opportunities, or on the basis of assisting compliance. The latter approach is generally associated with smaller payments targeted at on-ground management. Examples in Australia cover this full range, from compensation requirements for involuntary re-zoning by local government to the modest $15 million incentives fund associated with the introduction of broad-scale clearing controls in NSW in 1997 (Cripps et.al, 1999).

South Australia's experience with transition arrangements following the introduction of clearing controls is described in Box 3.

Box 3

Managing the Transition to Clearing Controls in South Australia

Like the majority of States, both the South Australian and Federal governments encouraged clearance of native vegetation into the 1970's. Indeed, many Crown leases include a standard condition requiring clearance.

In 1977 a committee, established to investigate the extent of clearance, found that over 75% of land in agricultural regions had been cleared and a significant number of regions had less than 10% of their original vegetation.

To combat this problem the SA government introduced the *South Australian Heritage Agreement Scheme* in 1980. At that time entry into a Heritage Agreement [covenant] was voluntary and based on the conservation value of the land in question.

By 1982, it was clear that voluntary action would not meet vegetation objectives as only 0.75% of existing vegetation was covered by an agreement. To address this problem regulations were introduced in 1983 with no prior warning. Debate over clearance controls led to the *Native Vegetation Act* being introduced in 1985, which tied refusal to clear to gaining financial assistance to enter a Heritage Agreement. $70million was invested in incentives to landholders who enter Heritage Agreements following refusal to clear land.

The current *Native Vegetation Act 1991* ceased financial assistance but maintained strict controls over land clearance. In rare circumstances where minor clearing is approved it is subject to conditions requiring replanting or other equivalent conservation works and the development of a management plan.

The scheme has been very successful in halting clearance. There are now 550,000 ha covered by 1050 Heritage Agreements (only 650 properties received compensation but all 1050 are eligible for assistance with fencing costs).

The scheme, however, has done very little to promote active conservation management. Many landholders feel disenfranchised by the process and perceive that the Government is now responsible for the land. Further, no distinction is made between the quality of vegetation between various sites.

(Source: Young, E. SA Department of Environment and Natural Resources 1997)

3.2.4 Tax incentives

Conservation is one of the most highly taxed land-uses in Australia, particularly on private land that is not used for primary production, and therefore, cannot access business-related tax entitlements, including deduction of management costs and negative gearing. Binning and Young (1999a, 1999b and 1999c) have identified a wide range of impediments created by the taxation system, and opportunities to provide incentives for private investment in nature conservation.

Tax incentives are often argued to be a blunt and poorly-targeted policy instrument. However ,they are also an efficient way to market conservation to non-landholders who may be willing to make philanthropic donations to conservation. They may also facilitate private investment in dedicated private conservation reserves. Because they use an existing administrative structure they can represent the most effective means in engaging a wide range of people in conservation activities. Tax incentives do, however, need to be carefully targeted (Binning and Young, 1999a).

Property rates and taxes

Property rates and charges are annual charges on land ownership and are generally based on a fixed proportion of property value. In Australia property rates are applied by both local government, in the form of rates, and by state governments in the form of land tax.

Exemptions to these taxes are often given to land-uses associated with the provision of public goods. For example, exemptions are given to charitable organisations, sporting clubs and religious bodies. On this basis, a similar case could be made for land covered by a legally binding conservation covenant as proposed in Binning and Young (1999b). Indeed a number of state and local governments have moved recently to introduce exemptions of this kind - including New South Wales and Western Australia. Legal impediments remain, however, in some states to local government pursuing rate rebate programmes.

The Australian analysis of these taxes revealed that the financial impact of property rates and land taxes varies widely ranging from as little as $2 - $25 per hectare in rural regions to in excess of $635 per hectare in one cited case on coastal Queensland (Binning and Young, 1999b). Hence the incentive provided by exemptions to property based taxes will vary, ranging from a purely symbolic gesture in remote rural regions to a significant incentive in urban and peri-urban areas where land-use pressures, and hence values, are high.

In New Zealand councils have the capacity to offer rate relief. However, this is at the discretion of individual councils. The level of incentive offered by councils offering rate rebates is often minimal, meaning the main impact of this incentive is its symbolic and motivational impact.

Donation of property

Donations of property to registered environmental organisations have not always been tax deductible. Indeed, until recent amendments to taxation laws were made, only financial donations have been deductible and then only in the year of donation.

In order to generate debate on how greater donations for environmental philanthropy could be achieved, an analysis of the Australian treatment of environmental donations was compared to that of the United States (Binning and Young, 1999c). On the basis of that analysis the following policy options were identified:

> To facilitate the establishment of private conservation reserves, allow all donations of property to conservation trusts to be tax deductible over five years and exempt from capital gains tax. The definition of property for the purposes of this recommendation could be extended to:
>
> - All land, physical and financial assets
> - Conservation covenants – that is any loss in land value from entering a conservation covenant
> - Bargain sales of land – that is the gap between sale price to the conservation trust and the full market value of the land
> - Donations of land with the retained right to occupation of the existing owner
> - Donations of assets for which a limited lifetime annuity is paid.

In April 2000 the Australian parliament passed legislation allowing donations of land to be tax deductible over five years. Options relating to conservation covenants, bargain sales and donations with a retained right of occupation are to be further considered during the course of 2000.

Management of private conservation reserves

Private conservation reserves, secured by a conservation covenant, cannot access tax deductions for the costs of management unless an income-generating business, such as primary production, is also being undertaken on the land. This has been identified as a key impediment to the creation of private reserves, particularly on the coastal zone nearby major urban centres and where many of Australia's most vulnerable ecological communities are located.

To address this concern Binning and Young (1999a, 1999c) have identified the following options for land secured by a binding conservation covenant:

- Access to tax deductions, or the 34% Landcare rebate, for costs associated with managing land covered by a conservation covenant
- Allow private conservation reserves to be negatively geared and give their owners primary producer status.

The first of these options represents an extension of an existing special incentive in tax law and is readily implementable. The second is more problematic as it involves extending business-related tax arrangements to non-income earning activities. Arguments of precedence and conflict with tax policy principles mitigate against any serious consideration of this proposal, although it can be justified on public good grounds.

However, this raises an interesting issue related to using environmental markets to derive income for the provision of environmental services such as biodiversity or carbon. If an income stream were generated, then business-related tax deductions would become available.

3.2.5 Environmental markets

An alternative approach to direct payments is to create markets for environmental services. In these cases environmental values are internalised by using regulations or property right measures to cap resource use a sustainable levels and then allowing markets to determine the most efficient land-use allocation.

Revolving funds

A revolving fund which purchases land on the open market, places an in-perpetuity covenant on the land, and then resells it provides an innovative alternative to acquisition programmes where the capital value of the land and its ongoing costs of management must continue to be met in perpetuity. As the property right is changed via the covenant, it is more likely that a landowner committed to vegetation management will purchase the land. In this way the market works to put a "willing" landholder in the place of an "unwilling" landholder.

In this case a market is created for land that has had additional land-use restrictions placed upon it. Rationale economic behaviour would suggest some loss in resale of the property to be experienced. However, the Victorian Trust for Nature's experience suggests otherwise.

The Trust is the only organisation in Australia currently operating a revolving fund, through which they have purchased, covenanted and resold approximately 15 properties in the last three years. The experience of the Trust is useful, as the costs of operating a revolving fund will vary depending on the marketability of the land purchased. The Trust experienced some losses in the initial operation of their programme due to transaction costs and loss in the market value of the land. However, as they have learnt they have generally made a profit by identifying land that could be readily re-marketed as a conservation property.

However, even if modest losses are experienced the attraction of a revolving fund is that much of the capital base can be recovered to be reinvested in future land acquisitions. Further, ongoing liabilities associated with managing the site can be minimised.

Revolving funds are attractive because they are cost effective and also because they may be more ecologically dependable in terms of final results for biodiversity conservation. As Farrier (1995) notes, it is difficult, if not impossible, to get a resistant landowner to change their management practices. This is irrespective of the approach taken: regulations, information or incentives. By acting in the open market, a dependable landholder identifies themselves through the market. Moreover, because the seller is usually keen to sell, there is no need to offer more than market value to secure an area of native vegetation.

Through the Bush for Wildlife component of the Bushcare programme, the Commonwealth government is committed to the introduction of revolving funds in all Australian states. Through this process, a number of non-government organisations have recently been provided with Commonwealth funding to establish funds of this kind.

Tradeable permits

Tradeable water rights and fishing rights are examples of market-based mechanisms that are being used to regulate resource use. These schemes involve setting an overall cap on resource use and then allowing rights to that resource to be traded to achieve efficient allocation between competing resource users.

From an environmental perspective the critical part of this process lies in regulating an appropriate cap on overall resource use. The market mechanism is somewhat incidental to the outcome, although it may facilitate acceptance of the programme. A critical challenge associated with tradeable permit schemes is to ensure that there is capacity to refine and adapt the regulatory cap through time as scientific knowledge and community values change.

This is particularly important as tradeable permit schemes are often introduced as a measure of last resort once significant degradation of a key resource is already occurring. In these cases it may be important to gradually restrict overall allocations over a number of years until sustainable levels of use are re-achieved.

Environmental certification

Certification and labelling of sustainably produced goods has been put forward for some time as a way of developing market niches. Accreditation could take place under generic management system approaches such as ISO 14 000 (International Standards Organisation, 1996) or specific industry-based standards such as those established for forestry by the Forest Stewardship Council. It is noted that a combination of management systems and standards-based approaches are required for effective environmental accreditation to take place.

Certification and labelling is having its greatest influence in Europe, particularly in response to genetically modified foods, which has assisted in driving the market share of organically grown foods over 10% in Britain for the first time (Radio National ABC, April 2000). It will be interesting to see if consumer demand is able to sustain a significant price differential.

Markets for environmental services

New markets for environmental services are starting to emerge. The first carbon and salinity trades in Australia have been recently negotiated by State Forests of NSW in partnership the Sydney Futures Exchange (carbon) and Macquarie Food and Fibre (salinity) (Bob Smith, 2000). In both these cases the beneficiaries of environmental services have been provided a market through which they can invest in on-ground works. The carbon example is particularly interesting as companies seek to hedge risk associated with the Kyoto Protocol by investing in carbon sinks.

Markets for biodiversity can also be imagined. For example, the Goulbourn-Broken Catchment in Victoria is contemplating marketing investment in the rehabilitation of floodplains by marketing conservation shares in Melbourne. Likewise the Australian Bush Heritage Fund purchases properties of high conservation value with funds raised through donation.

Internationally, wetland banking in the United States creates markets for the rehabilitation of degraded wetlands (see case study 4). Further, the US Conservation Reserve Program involves holding auctions for the provision of conservation services, with government assistance being provided to those who bid to provide services at the lowest cost. In this way all rents are extracted from the suppliers of conservation services (Stoneham and Chaudhri, 2000).

Further opportunities lie in other areas such as water purification. In one celebrated case the services of water filtration and purification provided by ecosystems in the catchment for New York City were estimated to be worth at least US$8 billion, which was the difference between the cost of repairing the ecosystems and building artificial filtration facilities to replace the degraded capacity of the ecosystem services (Chichilnisky and Heal 1998). This study has been used as the basis for investing in on-ground works to restore the catchment. In a study of Melbourne's water catchment, recommendations for timber harvesting regimes were based partly on avoiding or minimising the costs of decreased water or timber yields under a range of scenarios (Read Sturgess and Associates 1992).

Markets of this kind are only beginning to emerge in Australia. They have great potential but will require regulatory and property right structures that create scarcity and hence demand for these services.

In rural landscapes a particular challenge is how to bundle or package services associated with re-establishing areas of native vegetation. Table 2 alerts us to the potential by speculating on what a diversified farm business might look like in 20 years' time. In the table traditional agricultural business outputs account for 55% of total output. Areas of land rehabilitated provide benefits through timber, carbon credits, salinity mitigation, water filtration and biodiversity. These benefits are sold to different clients in a mature market place that has defined and quantified the flows of valued services from the farm.

Table 2: Example of commodities produced by a farm business in 20 years

Commodity	Share of farm business (Net Present Value)	Client
Wheat	40%	World Market
Wool	15%	World Market
Timber	10%	Pulp Wood Specialty Timber Merchants
Carbon Credits	7.5%	Japanese Steel Company
Salinity Credit	7.5%	Catchment Management Authority – cost sharing fund
Water Filtration Credit	15%	Water Board
Biodiversity Credit	5%	Philanthropic Trust

To achieve this vision, methods that can account for the various environmental services flowing from on-ground works are required. Further mechanisms for separating the ownership of environmental services from land are also required.

3.3 SECURITY – PROPERTY RIGHT AND LAND-USE PLANNING TOOLS

At any point in time, responsibilities for land management are defined through the policies and legal institutions that regulate land management practices. Land ownership can be described in terms of a series of entitlements and obligations, such as the right to graze and the obligation to protect areas of significant indigenous vegetation. Property rights are not only defined by legislation but also by the implementation programmes and enforcement regimes associated with legislation. It is not uncommon for regulations and land-use plans to fail because they were never implemented or enforced (Brasden, 1991).

It is important to note that property rights can be defined at any scale ranging from national legislation to individual property agreements that may only affect a small portion of a block of land. Further, property right mechanisms are not always regulatory in nature and may be entered into willingly, as is the case with voluntary conservation covenants.

However, as has been noted, regulatory structures have a fundamental role in the policy mix in terms of establishing minimum standards for environmental management.

Key examples of regulatory, land-use planning and property right-based instruments are outlined below. The potential for complementarity between these tools in appropriately defining property rights at different scales should be noted.

3.3.1 National legislation

National legislation establishes the framework for biodiversity management. Key acts in New Zealand include *Resource Management Act 1991*, *Conservation Act 1987*, *Biosecurity Act 1993*, *Fisheries Act 1996* and the *Hazardous Substances and New Organisms Act 1996*.

The role of national legislation in establishing minimum standards and facilitating the creation outcome based regional structures has been discussed extensively in section 2 and will not be repeated here.

3.3.2 Regional and local scale regulation

A wide range of tools is available to plan for and regulate land-use at local scales. These tools are, of course, familiar and essential to planners. A useful distinction can be drawn between strategic planning, local planning and tools for rezoning land. Table 3 outlines a number of local and regional planning tools used in Australia.

Table 3: Examples of regional and local planning tools

Strategic Planning	Local Planning	Re-zoning
• Development and settlement planning • Regional policy statements • Pest and fire management • Offsets policies	• Tree and vegetation protection by-laws • Open space, local reserve and recreation management • Development incentives	• Voluntary • Compulsory • Acquisition • Revolving funds

(Binning and Thorman, 1999)

Particular challenges in adapting existing planning frameworks lie in the following areas:

- integrating biodiversity values into existing natural resource management and land-use planning processes that have traditionally focused on development, infrastructure, recreation and land management issues;
- ensuring biodiversity on public land is appropriately managed;
- developing land-use plans that effectively conserve sites of significant biodiversity through appropriate zoning ahead of development pressures; and
- developing mechanisms to cost effectively re-zone land that is inappropriately zoned whilst ensuring landholders are treated equitably and fairly.

Strategic planning

Effectively integrating biodiversity into existing strategic development planning processes is perhaps the most significant challenge facing planners at local and regional scales. It is at the strategic level that the fundamental and underlying causes of biodiversity loss. For example, in the Hunter and Central Coast regions of NSW the key pressure on biodiversity is from population growth, currently in excess of 3% per annum, and associated urban development. Addressing the impact of population growth requires careful planning that ensures that the design of future urban areas and rural subdivisions takes explicit account of biodiversity by setting aside appropriate areas for conservation (Binning and Thorman, 1999).

In practice this means that biodiversity value must be mapped and included as data layers in geographic land-use planning databases, and that rules for taking account of these values are developed. Further, training in conservation planning may be required for planners who may also be required to shift their culture.

A wide range of tools is available for spatial biodiversity planning. Examples include *Bio-Rap*, a set of tools developed by CSIRO for mapping, assessing and setting priorities for biodiversity conservation (Margules, 1995) and *Local Greening Plans*, a guide developed by Greening Australia for developing local biodiversity plans (Greening Australia, 1995).

A related strategic issue is taking biodiversity values into account in other planning processes including fire, pest and weed management (Binning, Smyth and Catling, 2000).

Whilst strategic planning involves significant up-front costs, it has the potential to significantly reduce the costs of regulating land-use to protect biodiversity. If land is appropriately zoned from the beginning there is less scope for conflict and more scope to streamline approval processes and give greater certainty to developers.

Local planning instruments

Local planning laws are critical to interpret higher scale regulations and apply them to local circumstances. Often discretion is allowed at a local level, making the development of appropriate local plans critical to their on-ground interpretation and implementation.

Examples of local planning tools commonly used in Australia include tree preservation orders, habitat corridor and linkage policies, development control plans regulating clearing of endangered species and communities, and recreation management.

Other more innovative tools may include offset and development incentive policies. Offset policies require impacts on biodiversity to be offset by other works in the region that yield a net benefit to the environment. An example of an offsets programme, wetland banking, from the United States is described in case study 6.

Developments which minimise the impact on native vegetation can be achieved through development incentives, e.g. higher density development is permitted when other land is set aside for conservation or open space.

Cessnock City Council (NSW) have taken this approach by using their Local Environment Plan and associated Development Control Plans (DCP) to allow high density development provided that vegetation corridors or other strategically-positioned vegetation plantings are established and maintained in perpetuity. The DCP fosters a policy of no vegetation loss. Similarly, we have been advised that Gosford Shire Council has a development incentive programme aimed at protecting natural habitat. However, no details on this policy have been provided.

The Gold Coast City Council in Queensland is another interesting case study where higher density development is permitted to compensate for setting other land aside as open space within their hinterland. This policy has had mixed success as the resulting small cluster developments have led to increased infrastructure costs and pressures.

3.3.3 Property scale tools

Property agreements, management agreements and conservation covenants are all terms for formal agreement between a landholder and a third party, usually government, to manage an area of privately-owned land for conservation. An agreement secures conservation outcomes by defining management objectives for the land. It sets out those land-uses that are permitted and excluded in much the same way as is done through land-use zoning. Provision may also be made for the development of a management plan (Binning and Young, 1997a).

Management agreements can be distinguished from local planning instruments because they have generally been entered into voluntarily.

Management agreements can be of varying levels of security ranging from non-binding, as is the case with the Land for Wildlife programme in Australia, through to covenants that are binding in perpetuity. The Queen Elizabeth II National Trust allows for the negotiation of both “in perpetuity” and “fixed term” conservation covenants in New Zealand.

A critical issue in designing management agreement programmes lies in achieving an appropriate balance between securing change in property right entitlements and administrative cost. Covenants are complex agreements that may be costly and time consuming to negotiate. Further, they place obligation on both the landholder and the covenanting organisation. For example, it is recommended that a qualified facilitation officer visit covenanted properties at least every two years (Binning and Young, 1997a). These requirements suggest that the use of covenants should be limited to high conservation value sites where active stewardship is required from the landholder. On the other hand, a simple binding 10-year contract may be sufficient when providing catalytic incentives such as fencing grants for the establishment of a wildlife corridor.

A major issue in the use of management agreements is enhancing the capacity of non-government organisations to develop and negotiate agreements with landholders (see Section 3.2)

An interesting application of management agreements in Australia has been their increased use by local governments who encourage voluntary rezoning by landholders committed to conservation through incentives such as rate rebates. This option is often taken up by landholders who fear that rising land values and local rates will ultimately force subdivision of their land.

3.4 PRINCIPLES FOR POLICY DESIGN

An overview of a wide range of policies and programmes that can be used to achieve on-ground actions that conserve native vegetation have been reviewed in this section of the report. In the next section of the report a number of Australian and international case studies are used to demonstrate how these tools can be mixed and applied at different scales of management.

Before doing this doing this it is important to draw attention to a number of important design principles.

First, as already noted, there is a need to ensure that a mix of educational, incentive and regulatory based mechanisms are used.

Second, there is an issue of ordering policy development. Awareness raising through education is a critical first step, but is demonstrated to have little influence on short term behavioural change. Likewise, financial incentives are likely to be ineffective until awareness is raised and landholder attitudes shifted toward positive management of biodiversity. Regulations have also been demonstrated to fail in the absence of strong community support (Brasden, 1991). This suggests that an ideal policy approach involves: awareness raising to shift attitudes, financial incentives to assist in meeting the transition to more sustainable management, and regulations to secure the community's investment in improved management.

Of course this policy ordering can be changed in certain circumstances. For example, when seeking to quickly achieve significant changes behaviour it may be more effective to regulate than educate. A celebrated case is that of imposing regulations requiring seat belts in cars or, perhaps less famously, the introduction land clearing controls. The process creates debate and may succeed in shifting community preferences. Whilst undoubtedly successful in some circumstances, such approaches are riskier and require greater political capital.

Third, related to policy ordering, are principles that guide the emphasis placed on each of the different categories of instrument. If dramatic structural change is required in a short time frame regulatory changes imposed by central government, coupled with incentive payments that facilitate transition by compensating landholders, may be preferred. However, strategies for achieving incremental change ideally place greater emphasis on education backed by incentives to achieve greater awareness and uptake.

Fourth, successful approaches to biodiversity management are complex and hence require time to develop, secure resources, implement and gain community acceptance and uptake. The most successful regional approaches we are aware of have taken in excess of 10 years to develop and are characterised by strong leadership and continuity in key staff (Binning, Cripps and Young, 1999). Stable regional structures that are able to learn and adapt are critical to achieving this outcome.

Fifth, an adaptive approach to biodiversity planning and implementation policies is required. Action should be taken whenever there is confidence that a substantial contribution to regional conservation objectives can be achieved. However, improvements to the information base and feedback from ongoing monitoring are essential elements of any successful approach (Holling, 1978; International Standards Organisation, 1996a, 1996b). The process of adaptive management applied to developing successful approaches to native vegetation management is described in Box 4.

The approach outlined in the Box serves to draw together and link the key lessons learnt from the separate discussions of institutional design and policy tools. It also provides a useful backdrop to the six case studies that are presented in the next section.

4. CASE STUDIES

Case Study 1 – Australian National Policy Approaches to Vegetation Management

The Australian Federal Government is committed to an objective of reversing the long-term decline in the quality and extent of Australia's native vegetation by June 2001. This is an ambitious target that is unlikely to be achieved.

A complex range of policies and programmes are in place to promote the achievement of this goal including the following (ANZECC, 2000).

- National and state regulations, policies and institutions including land clearing and threatened species legislation in most states.
- Planning and assessment frameworks for inventory, data mapping, assessment and planning for biodiversity conservation.
- Creation of a comprehensive, adequate and representative national reserve system that may, where appropriate, include private reserves.
- Communication and capacity building strategies for both planners and landholders to take account of biodiversity values.
- Financial incentives underpinned by grants available through the $1.3 billion Natural Heritage Trust (established through the partial sale of Telstra).
- Monitoring and evaluation strategies that assess the quality and extent of native vegetation.

Through the Natural Heritage Trust the government has invested in the full range of activities. The increase in investment has yielded many benefits with biodiversity effectively being raised to the profile of other natural resource management issues.

However, challenges remain. Clearing of native vegetation still outstrips revegetation and rehabilitation activities, with Queensland a particular hotspot. Regional structures for natural resource management remain poorly resourced and are generally not effectively integrated into other decision-making structures. Impediments to the use of the full suite of policy instruments identified in this report remain, particularly for the non-government sector. Grant programmes need to be more effectively targeted to high priority on-ground works and tied to appropriate property right instruments (Dore, Binning and Hayes, 1999).

These challenges highlight the need for central government to achieve a balance in the range of activities in which they are involved. It is not effective to simply invest in on-ground works whilst other processes that degrade biodiversity continue. A balanced approach by central government requires investment in the following areas.

- **Institutional reform** – including establishment of minimum standards, clarification of roles and responsibilities, funding and removal of impediments to the use of the full suite of policy instruments.
- **Capacity building** – including education, inventory and mapping, and provision of expertise in biodiversity planning, programme implementation and monitoring.
- **On-ground works** – provided funding to targeted investment in high priority on-ground conservation works.
- **Monitoring and adaptive management** – measuring progress, learning and adapting.

The Federal Government has invested in all of these areas but many challenges remain. This emphasises the critical role of national governments in leading the development of effective approaches to biodiversity conservation.

Case Study 2 – Regional Planning – Brisbane City Council

Brisbane City Council has an impressive vegetation management programme in place. This is designed around the combined objectives of maintaining open space and hence amenity in the city and conserving biodiversity.

The range of mechanisms used by Brisbane City includes the following:

- **Strategic Town Planning** which includes explicit planning through the development of District Open Space Plans which take account of biodiversity values.
- **Vegetation Protection Orders and Non Urban Zoning** are the regulatory and statutory processes used to protect native vegetation within the city. Vegetation Protection Orders (VPOs), that have the effect of making vegetation clearance a development that requires approval by the council, were introduced in 1991 and targeted at key natural areas and sites. In addition, land within the city may be zoned into one of three non-urban conservation zones.
- **Environment Levy** of $30 per ratepayer per annum is used to acquire key sites within the city. Ratepayers subject to a VPO are exempt from the levy. Initially funds were borrowed against the levy to facilitate the purchase of significant sites. The levy now funds repayments of the loan and purchase of additional sites. The fund is managed separately from Council revenue and enjoys strong community support.
- **Management of Council Land** is a high priority task within the council. The council is developing management plans for major natural areas within the city, with a commitment to extensive public consultation and ongoing participation.
- **Voluntary Conservation Agreement (VCA)** are used to encourage private landholders to set aside and manage land for nature conservation. Two types of agreement are offered: A General Agreement, which involves entering a Deed of Agreement to manage the land for conservation; and a Higher Agreement, which involves both a Deed of Agreement and rezoning the land to a non-urban conservation zone. Land for Wildlife also provides landholders with the option of a non-binding way of participating in nature conservation activities within the city.
- **Financial Assistance** is available to landholders entering VCA's. It is calculated as a proportion of the value of the property up to a set maximum of $1000 and $1500 per annum for General and Higher Agreements respectively. Assistance is essentially in the form of a rate rebate**,** however the council has taken the important step of tying assistance with the costs associated with ongoing management.
- **Community Grants** are provided to groups to undertake management works.
- **Monitoring of Vegetation Loss**. In the eight years prior to 1991 when VPOs were introduced the city lost one fifth of its vegetation. Since that time the rate of clearance has been significantly slowed.

Officers at the council emphasised that a strong mix of instruments is required, as the circumstances where a particular instrument is appropriate will vary. The planning processes identify key habitats, remnants and corridors requiring protection. However, successfully engaging the landholders has required a range of policy options to be developed through which conservation objectives can be satisfactorily met.

Another lesson that can be learnt is the importance of stable institutional structures that allow complex conservation programmes to be developed over time. Notably Brisbane City is Australia's only major city to be covered by a single regional council and this undoubtedly facilitates achievement of special programmes. It has resources is excess of $1 billion annually. It has developed its conservation programme progressively over 10 years with a small unit of committed staff.

Case Study 3 – Property Scale Programmes – Greening Australia Fencing Assistance

Greening Australia – Fencing Assistance

Greening Australia, a non-government organisation committed to re-establishing native vegetation, administer a programme funded by the Natural Heritage Trust that assists landholders to fence remnant vegetation within several catchments in Australia.

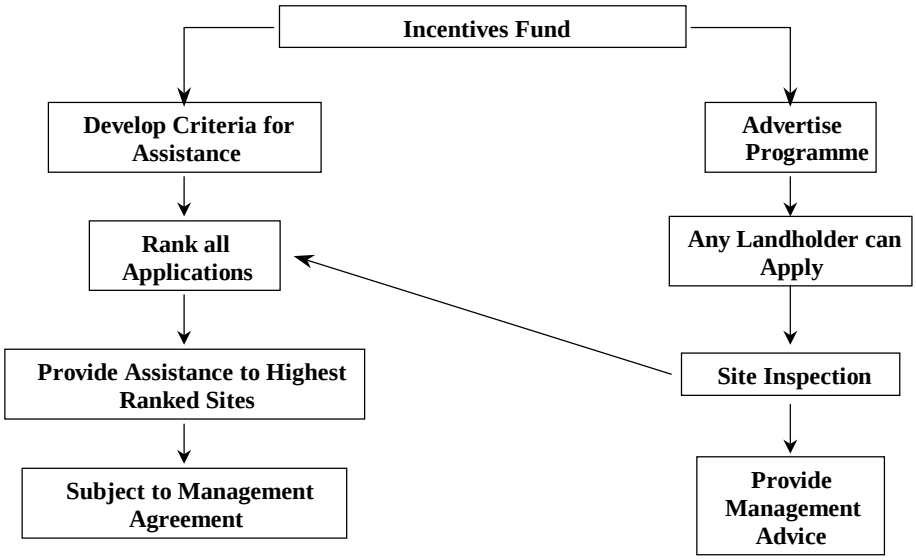

Figure 8 Greening Australia Fencing Assistance: An example of a targeted incentive.

The programme is very simply structured and involves the following:

- an incentives fund is created which is available to all landholders in the region;
- access to the incentive fund is broadly advertised promoting its objectives and administrative simplicity;
- landholders apply by simply expressing interest in the programme via a phone call or one page form lodged with Greening Australia;
- all landholders who express interest in the programme are visited by a facilitation officer who assesses potential sites on the property, provides free management advice and, if requested develops an application for funding on-site;
- all applications are ranked on the basis to which they contribute to catchment and biodiversity objectives;
- funding is approved to the highest ranked sites and provided by the facilitation officer at a rate of $1200 per kilometre of fencing; and
- landholders enter a 10-year management agreement to maintain the fences and manage the site for nature conservation.

The attraction of this kind of programme is that a relatively small incentive is used as a catalyst to encourage landholders to take conservation activities on their properties. It demonstrates that small, simple and administratively efficient programmes can be developed at a property scale that still achieve an appropriate mix of policy instruments. This is achieved by combining individual facilitation, financial incentives and property right instruments, in the form of a management agreement.

Variations of this type of agreement can easily be envisaged. For example, larger cost-sharing or stewardship payments may be coupled to entry into binding conservation covenants. Similarly transition incentives tied to facilitation services may promote acceptance of changes in land-use regulation.

Case Study 4 – Environmental Markets – Wetland Banking in the United States

Wetland banking has been in place in the USA since the mid-1970s. It allows for developments that affect wetlands to be offset by off site remediation works. By 1992 in excess of 40 banks were operating in the USA that had facilitated the rehabilitation of about 20,000 acres of wetland. There are now several hundred wetland banks in operation throughout the United States (Environment Law Institute, 1993).

In recent times the concept of mitigation banking has been extended to the protection of habitat for species listed under the USA's Endangered Species Act.

Wetland mitigation involves protection, restoration, creation and/or enhancement of wetlands for the purpose of compensating for unavoidable loss of wetlands in advance of development actions when such compensation cannot be achieved at the development site or would not be as environmentally beneficial.

A wetland bank is created when a sponsoring organisation undertakes a major restoration task. Once the restoration project is completed credits are provided for the value of the work undertaken. Different credit rates can be given for creation, restoration, or protection of wetlands. These credits can then be used to offset adverse impacts on other wetland areas caused by development. New developments that affect wetlands must buy credits to satisfy a prescribed impact rate. Hence a combination of the credit and impact rate determines the ratio between the area restored and the area affected by development. A committee, constituted of representatives from relevant regulatory authorities, generally sets both credit and impact rates on a project by project basis. Net rates can vary widely from 1:2 (i.e. development of one hectare of wetland requires an offset of two hectares of remediation work offsite) to as high as 1:20 (Environment Law Institute (1993). Wetland mitigation banking, Environment Law Institute, 1993).

Key features of wetland banking include:

- Wetland banking has no impact on regulatory approval processes for environmental projects;
- Mitigation works have to be completed prior to credits being drawn upon; and
- Large scale and strategically-targeted conservation works can be undertaken that provide much greater environmental benefits per dollar invested than small scale on-site remediation activities.

Wetland banking has facilitated large scale rehabilitation works that would otherwise not have been possible. The process has proven highly profitable for a number of environment rehabilitation companies who are able to on-sell to developers seeking to off-set impacts prior to development being approved. Benefits have also been provided to developers who now have greater certainty and a mechanism for offsetting adverse impacts.

The application of this type of model to a catchment or region in Australia or New Zealand would be extremely challenging. Rules for assigning credits for conservation works would need to be developed. Likewise rules for assessing impact of approved developments would also have to be calculated. An example of a set of rules is set out in Table 4.

Key lessons that can be learnt from wetland trading are that regulations coupled with market mechanisms can be used to achieve least cost solutions to environmental problems. In this case the polluter pays and, if rehabilitation works are strategically targeted, a net improvement to the environment delivered.

Care does need to be taken, however, to ensure that trading is not used to justify irreversible loss of core environmental assets. A second concern relates to ensuring that the transaction

costs associated with creating markets do not outweigh improvements in environmental outcomes and economic efficiency.

Table 4: Example of possible vegetation credit and debt ratios[#]

Vegetation Credits	**Indicative point ratio***	**Comments**
Planting individual trees	3:1	A high rate because planting of individual trees does little to restore habitat. The majority of the benefits derived from planting of this kind are associated with landscape amenity.
Revegetation and habitat reconstruction in an area not identified in a Regional Conservation Plan.	2:1	A moderate rate because although the works create habitat they are not strategically located within the landscape and hence are of lesser value to biodiversity conservation.
Revegetation or rehabilitation of strategic sites identified through a Regional Conservation Plan.	1:1	A low rate because the project is strategic in its nature and makes a direct contribution to the Conservation Plan.
Protection of currently unprotected sites identified as having high conservation value (eg by rezoning).	2:1	A moderate rate chosen to reflect that fact that although a strategic site has been protected, no additional habitat has been established, hence making trading for vegetation loss in other areas problematic.
Vegetation Debits		
Removal of isolated trees.	1:1	A low rate as removal of isolated trees has limited impacts on biodiversity although impacts on local amenity may be high.
Disturbance or removal of a vegetation community represented at greater than 30% pre-European distribution.	1:1.5	A low to moderate rating as the vegetation is well represented within the shire, but nevertheless is likely to provide habitat at a landscape scale.
Disturbance or removal of a vegetation community identified as of high conservation value in the Conservation Plan.	1:3	A high rate reflecting the fact that areas of strategic importance to biodiversity conservation within the Shire are being affected. Hence the offset needs to be set at a relatively high level.
Disturbance or removal of an endangered vegetation community or community known to contain endangered species.	1:5	A very high rate justified on the grounds of the high cost to the community of losing critical habitat to development. It is assumed that such developments would only be approved following a stringent approval process that demonstrated outstanding value of the development to the community. It is assumed there are significant economic rents associated with the development that should be returned to the community.

The ratios presented in this table are indicative and are derived from those put forward by Pacific International Engineering (1999) for wetland trading in the USA. The ratios presented here are a guide only and may be varied according to the contribution/impact of rehabilitation works/development on project by project basis.

*The credit ratio is the quantity of remediation required to earn a single vegetation credit; the debt ratio is the cost of a quantity of impact (eg acres cleared) in credits.

Case Study 5 –Regional Planning - The Hunter and Central Coast Region

The Lower Hunter and Central Coast Region have been developing a Regional Biodiversity Strategy for several years. To date emphasis has been placed on collecting data on the distribution and condition of different ecological communities within the region.

The region, north of Sydney, is one of Australia's fastest growing population corridors and is experiencing extreme development pressures, particularly in the lowland coastal areas that contain the region's most threatened ecosystems.

Options for developing an implementation programme have been developed and address the full range of institutional issues and policy instruments identified in this report (Binning and Thorman, 1999).

- It was proposed that a board of management be established to coordinate actions across three key state agencies and nine local councils.
- A balance of planning tools were identified that seek to integrate biodiversity into strategic planning decisions, audit and improve the management of public land, facilitate rezoning of high priority sites, and implement offsets policies for clearing native vegetation.
- A voluntary conservation programme for encouraging conservation of private land was designed placing emphasis on the provision of facilitation support, management agreements and financial incentives.
- Communication and education programmes were also identified
- The need for monitoring programmes was highlighted to facilitate adaptive management.
- Funding strategies were identified and discussed.

In all over 50 priority actions were identified with a potential cost of $70 million. To address the potentially unacceptable cost, three options where put to the region: status quo, a planning-based approach and full implementation.

The region is struggling to act on basis of this advice, even in relation to the highest priority recommendations. This is primarily because of the resources required and the potential impact on development interests. The key lesson is that well-designed programmes do not emerge instantaneously, but rather take time to develop.

Small programmes that enjoy modest on-ground success are required to demonstrate the importance of taking action, thereby securing greater resources and political will to take a larger step. Adaptive approaches to policy development are required, not just for environmental reasons, but also to address social and economic impediments.

The lesson to be drawn is that regional programmes may have long start-up lead times and may well gain impetus from smaller short term linking programmes which successfully implement outcomes that have a high community visibility.

Case Study 6 – Engaging the Private Sector - The Nature Conservancy

The Nature Conservancy is a non-profit organisation established in the United States. The Nature Conservancy uses non-traditional market based solutions to protect land that is of high conservation value. The mission of the Nature Conservancy is 'to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and water they need to survive'.

The Conservancy currently operates the largest private system of nature sanctuaries in the world with more than 1600 reserves in the United States. Originally, the Conservancy achieved its goal by simply purchasing land of high conservation value from willing sellers. However, to increase effectiveness and to extend its role, the Conservancy now protects land through gifts, exchanges, conservation easements, management agreements, debt-for-nature swaps, and management partnerships (see the discussion of mechanisms).

*The Nature Conservancy now protects more than 9 million acres of ecologically significant land in the United States.***The Conservancy places primary importance on developing partnerships with landholders, businesses, academic institutions and government. Some examples are:**

- Aluminium Company of America (Alcoa) and The Nature Conservancy signed a cooperative agreement in January 1996 that will result in the conservation and management of 1058 acres in Arkansas, USA;
- A partnership was established in 1996 between the New Jersey Chapter of The Nature Conservancy and a utility company called Public Service Electric and Gas Company (PS&G). Under contract the Conservancy is required to manage 16,000 acres of land owned by PS&G, which is home to 376 rare plants, animals and natural communities. 101 of these are listed by the State of New Jersey as endangered;
- Microsoft co-founder Paul G. Allen pledged to donate $5 million to The Nature Conservancy of Washington in January 1997 in the form of a Challenge Grant donated through the Paul G. Allen Forest Protection Foundation. The Foundation will donate $1 for every $2 donated to the Conservancy until the $5 million limit is reached. Allen's intention is to spur additional private donations to a total of $15 million.

Through innovative programmes of this kind the Conservancy has become one of the top 10 charities in the United States. This demonstrates the increased importance of nature conservation to individuals and corporations, who between them provide 80% of funding for The Nature Conservancy. Whilst The Nature Conservancy is limited by a reliance on donations and investments, this has encouraged innovative ways of expanding the programme. Today annual turnover exceeds $US450 million.

In more recent years the Conservancy has begun to undertake political advocacy both within the USA and in other countries in which it works. This is a significant shift that needs to be managed carefully to ensure the organisation does not marginalise itself and thereby threaten its donor base.

The US experience highlights the largely untapped potential of the non-government sector in New Zealand and Australia. It provides a model for developing partnerships between community-based organisations, businesses and government.

Non-government organisations may have greater capacity to develop links and markets between values of urban populations and regional communities that are the stewards of biodiversity.

5. APPLICATION TO NEW ZEALAND

In this final section of the report the concepts and principles identified up until this point are applied to the situation in New Zealand. It is timely to reflect on these issues in the context of the recent completion of the New Zealand Biodiversity Strategy and the near completion of the work of the Ministerial Advisory Committee considering issues associated with protecting biodiversity on private land.

To this point an Australian perspective on how to develop pragmatic approaches to conserving biodiversity has been given. Ultimately success will be defined through on-ground programmes that target and reward land managers who actively manage biodiversity on their land – be it private or public land.

However, it has been revealed that the pathway to this outcome is rather more complex. Rather than blaming land managers, it is necessary to understand the economic and social factors that are driving the land-uses and management practices that are causing the continuing loss of biodiversity. Policy responses to these socio-economic drivers require biodiversity values to be integrated into markets and with government policy responses to other natural resource management issues.

Institutional reforms are required that clarify roles and responsibilities for biodiversity management and ensure that local and regional institutions have the capacity to assess and develop programmes that address biodiversity in ways that are locally relevant. Engagement of the private sector is also required, particularly to develop markets for the services provided by biodiversity. Markets that connect urban and rural communities are an especially urgent need.

Further, a wide range of policies and programmes will ultimately be required to effectively engage landholders. A toolkit of education, incentive, and property right-based instruments has been outlined. The need to draw on the full suite of these instruments has been highlighted, as has the need for adaptive development of programmes.

The analysis of existing policies and programmes in New Zealand is based on the outcomes of consultations with government officials and key stakeholders in May 2000.The section is structured as follows:

- Context is set by a brief discussion of the unique nature of biodiversity in New Zealand and the challenge of identifying appropriate objectives for the implementation of the Biodiversity Strategy.
- Key institutional issues are discussed drawing on the analysis in Section 2 of the report.
- Options for implementing the full suite of policy tools discussed in Section 3 are identified.
- Finally a framework for accountability, monitoring and adaptive implementation of the Biodiversity Strategy is discussed.

Policy options are identified at the end of each section for consideration of governments and stakeholders.

The analysis contained in this final section of the report is an outsider's perspective based on a brief visit and desktop review of key policies and programme documentation.

5.1 CONTEXT FOR BIODIVERSITY CONSERVATION IN NEW ZEALAND

New Zealand has a unique biodiversity shaped by over 80 million years of isolation that has resulted in high levels of endemism. Because of this isolation, and comparatively recent human settlement, much of New Zealand's biodiversity is extremely sensitive to disturbance from humans and introduced pests.

Introduced weeds and pests including possums, stoats, rats, cats, ferrets, goats, deer, pigs and mice, and approximately 220 environmental weeds, present particular challenges for the management of indigenous biodiversity. The general statement can be made that in the absence of active ongoing management many of the values of natural areas are being lost. Further, effective pest and weed management is a costly exercise with full control in all areas beyond the combined resources of landholders and public agencies.

Because of the need for ongoing management, conservation strategies need to be balanced between broader landscape objectives and the need to intensively manage a representative range of areas of indigenous biodiversity for the full range of species. This distinction is perhaps best captured in the concept of more intensive management of mainland islands.

However, the Biodiversity Strategy notes that biodiversity conservation is more than simply the creation of network of reserves. Figure 9 places the role of biodiversity management in the context of a broader framework of landscape conservation. Two primary drivers are identified: landscape amenity, which addresses cultural, historic and human-based values; and, ecosystem health which addresses the role of ecological processes in providing goods and services which individuals and society value. Within this framework individual strategies for the management of natural resource management issues can be identified. In this case catchment management, indigenous biodiversity and pest management have been highlighted.

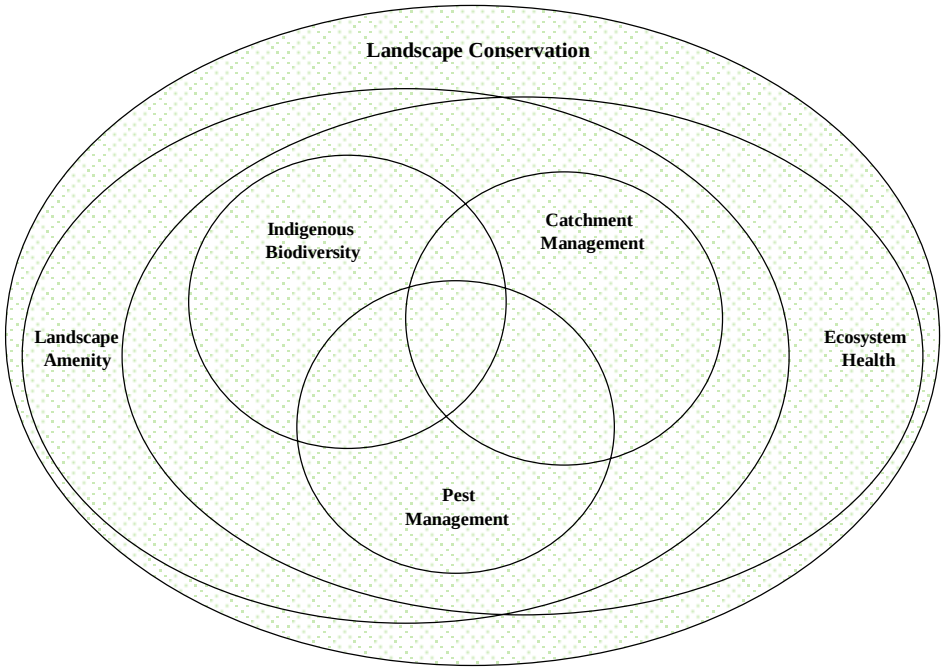

Figure 9 – Scope of biodiversity management

The figure draws our attention to the need to integrate across land-use objectives. This is particularly important when considering the role of private land in meeting natural resource management objectives. Landholders think holistically and have difficulty in responding to sectoral approaches to biodiversity management.

In Australia integrated approaches to the management of biodiversity have been required for a number of reasons. First, agricultural practices have been the cause of a variety of land degradation processes that can be directly attributed to the loss of ecological function. Examples include dryland salinity, increased salinisation and nutrification of water ways, soil acidity and increased pest loads in cropping systems. Further, the rehabilitation of natural areas of native vegetation is seen as integral to addressing these problems. Second, the conservation of a representative range of biodiversity requires the establishment of partnerships with land managers. This is because many of Australia's most vulnerable ecosystems occur on fertile soils and along the coastal strip where good quality sites are difficult to find because of extensive habitat fragmentation. Coastal lowland communities, temperate grasslands and woodlands are good examples of ecological communities of this kind in Australia. Third, Australia's landscapes are rich in biodiversity that is of intrinsic value to local communities for their sense of place and stewardship of the natural environment.

In our consultations with officials and stakeholders, we have been presented with mixed views on whether holistic approaches to biodiversity conservation are required or whether a model of protection through dedicated public and private (covenanted) conservation reserves will be sufficient to achieve the conservation of biodiversity. The issue is not whether protection is necessary – but whether it is sufficient.

The New Zealand Biodiversity Strategy devotes considerable attention to community participation and awareness (Theme 8), and a separate Ministerial Advisory Committee has been commissioned to assess the impacts of private land management on indigenous biodiversity and develop recommendations for the consideration of government. In these documents attention is drawn to the need to raise awareness and engage landholders, particularly to achieve conservation outcomes in New Zealand's lowland and coastal environments.

Nevertheless, it must be recognised that production systems based on introduced biodiversity are more resilient and less dependent on indigenous biodiversity than Australian ecosystems. Further, the need for costly and intensive management of priority regions for the conservation of pest sensitive species highlights the critical role of the creation of secure formal reserves.

The view taken in this report is that both focused protection strategies and broader strategies for landholder engagement and participation are required. However, careful consideration will need to be given to defining the objectives of conservation efforts outside the formal conservation estate. These objectives will relate to a broader suite of values. Hence, a key task is to integrate and interpret all natural resource management objectives at regional and local scales and to identify their relevance and coincidence with the objective of conserving biodiversity.

Objectives for conservation outside the formal conservation estate will inevitably seek human, economic and environmental outcomes. It is important that these are defined so that monitoring and strategies for adaptive management can be put in place.

5.2 INSTITUTIONAL ARRANGEMENTS FOR BIODIVERSITY CONSERVATION

5.2.1 Clarifying Roles and Responsibilities of Central and Local Government

A useful starting point is to provide a brief overview of the roles and responsibilities of different agencies and spheres of government with a direct role in managing biodiversity.[7]

> **Department of Conservation**: The Department of Conservation (DOC) is the lead agency for conservation at central government level. It manages approximately one third of New Zealand's land base. The department has a budget of approximately $190 million of which approximately $92 million is devoted to management of the existing conservation estate, $58 million to recreation and visitor management, $17.5 million to protection of new sites through acquisition and covenants on private land; and the remainder of fulfilling advisory and other functions (Treasury, 1999).
>
> In the context of this study, the Nature Heritage Fund and Nga Whenua Rahui are of particular interest. These funds are contestable allowing a range of organisations to bid for funding to assist in the management of biodiversity. The Nature Heritage Fund has an impressive record with 171,000 ha including 44,000 ha of covenants protecting land in the 10 years of its operation at a cost of approximately $26.5 million. The Nga Whenua Rahui has negotiated partnerships for the protection of 112,000 ha of Maori owned land at a cost of $14 million. These trusts are able to provide funding to regional and district councils and to non-government organisations.
>
> **Ministry for the Environment** The Ministry for the Environment (MfE) coordinates the development of environmental standards and guidelines to help local authorities and resource users implement their responsibilities under the *Resource Management Act 1991* (RMA). Standards and guidelines help define the "environmental bottom line" of sustainable management described by the Act by setting values and targets for environmental quality.

In October 1995, the MfE published a paper detailing principles and processes for developing standards and guidelines (MfE, 1995). These include the principle that standards and guidelines should prescribe the minimum amount of regulation to best achieve the desired environmental outcome, that they should consider the impacts on other parts of the ecosystem, and that they should employ a precautionary approach which takes account of the uncertainty in measuring environmental quality. The paper also states that standards should be developed only where the advantages of protecting national values or providing national consistency outweigh the advantages of national resource management.

> The process of developing standards and guidelines aims to ensure widespread public consultation and peer review.
>
> **Ministry of Agriculture and Forestry** The Ministry of Agriculture and Forestry (MAF) has responsibility for sustainable land management programmes and is the lead Crown agency for terrestrial biodiversity. This covers the quarantine, importation and monitoring of pests and unwanted organisms.

[7] Only a brief overview of the key agencies is provided here. More detailed summaries of the structure of governance for natural resource management in New Zealand are provided in the *The State of New Zealand's Environment* (Ministry for the Environment, 1999); *Biowhat: Preliminary Report of the Ministerial Advisory Committee* (2000); and the *New Zealand Biodiversity Strategy* (2000)

The Biosecurity Act 1993 provides for pest management strategies. These may be prepared by government, local government or the private sector. Criteria for identifying the need for a pest management strategy are not just environmental; they include consideration of economic well-being, cultural concerns, as well as the viability of rare or endangered species, soil structure and water quality.

Regional councils: have responsibility for a wide range of natural resource management activities under the RMA and other Acts including the development of pest management strategies under the *Biosecurity Act 1993.* Regional councils have primary responsibility for coordinating and setting policy for resource management including water, soil, conservation and transport.

Regional councils have key responsibilities in assessing conservation values and developing appropriate local responses. Under the RMA these functions are fully devolved with central government having limited direct involvement, other than through the development of national policies and strategies, the use of which has been limited to date.

Regional councils are self-funded through property rates, user charges and returns on investments.

City and district councils: have complementary functions to regional councils at a local scale. They cover water supply, control of land development, recreational facilities including parks and reserves, local roading and transport, sewerage and storm water drainage, community development and other public works.

District councils are also largely self-funded through property rates, user-charges and returns on investments.

Regional and district councils have the lead responsibility in regulating land-uses that impact on biodiversity throughout New Zealand. They do so under broad direction of the RMA, particularly through sections 5 – 7, which establish the purposes and priorities for this. Of particular note is controversy surrounding the interpretation and application of s6(c) of the Act which requires the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.

The collective operational revenue of regional and district councils is $3.3 billion. Of this approximately 5% ($169 million) is spent on RMA policy and natural resource management planning, 2.25% ($78 million) on pest management (although this is mainly dog and other pet control) and an astonishing 11% ($378 million) on parks management of an area estimated to be in excess of 172,292 ha (Local Government New Zealand, 1999). However, it is important to note that formal gardens and sports fields account for a large proportion of this.

Clearly district and regional councils are central players with highly significant levels of funding being spent on activities directly relevant to the conservation of biodiversity.

Maori lands: Some 4.7% of New Zealand's land base is owned by iwi groups. As noted the Nga Whenua Rahui has negotiated partnerships for the protection of 112,000 ha of Maori owned land at a cost of $14 million. Key issues relate to establishing partnerships for the management of these lands in a way that recognises land ownership and use rights.

Trusts and other bodies: a range of trusts and other bodies have an active interest in biodiversity conservation. Key players include: the Queen Elizabeth II National Trust; the Landcare Trust; the Royal Forest and Bird Protection Society; Federated

Farmers of NZ; Fish and Game Councils; NZ Native Forests Restoration Trust; NZ Landcare Trust; and Ducks Unlimited.

Of particular note is the QE II National Trust which has protected some 50,000 ha of indigenous biodiversity on private land through negotiation of 1350 voluntary conservation covenants. In addition the trust owns another 2000 ha of land with high biodiversity values. The uptake of conservation covenants by landholders has increased in recent years and the trust has not had the capacity to meet the demand of landholders seeking to enter conservation covenants in recent years. It is important to note that 98% of the covenants negotiated are in the lowland, semi-coastal or coastal areas where the most significant threats to biodiversity exist and where other programmes are less active. As discussed, it is in these areas where the voluntary stewardship approach used by the trust is likely to be the most cost effective and complement other government programmes aimed at conserving larger intact areas. Approximately 3000 ha of private land are covenanted each year.

Given the range of responsibilities for management of biodiversity outlined above, all spheres of government will need to be actively involved in the implementation of the NZ Biodiversity Strategy.

Our consultations revealed a strong division between: direct central government involvement primarily through management and extension of the formal conservation estate by DOC; regional councils, via their natural resource management responsibilities; and, district councils, via land use-planning and management.

There would appear to be a trend for each of these spheres of government to operate independently, although the linkages between district and regional councils may be stronger than those with central government. Several factors are driving this outcome.

- The RMA and Biosecurity Act largely delegate responsibility for their interpretation and implementation to regional and local scales. This is a key strength in that responsibilities are clearly defined and natural resource management can be planned for and integrated at an appropriate catchment scale. However, delegation does not imply that central government can afford to play a passive role particularly in regions with low capacity and/or willingness to actively manage biodiversity values (see section 2.1.3).
- Each sphere of government has control of its own taxation powers and other revenue sources. This means that there is limited financial leverage between the different spheres of government. In commenting on this paper MfE have noted that financial leverage has been used to address other environmental priorities although not biodiversity. The capacity to use financial leverage stands in contrast to Australia where the imbalance in revenue-raising powers, where central government is the beneficiary, means that financial grants are the key mechanism for central government involvement in environmental policy.
- The capacity to develop national policies and statements under key natural resource management acts, including the *Resource Management Act (RMA) 1991* and the *Biosecurity Act 1993* to guide and direct regional policy development has not generally been employed.

The development of a NZ Biodiversity Strategy runs somewhat across this trend as it is seeking to facilitate a non-regulatory but coordinated national approach to biodiversity management. This raises a number of important challenges and issues that require careful consideration.

Integration

Integration is required at a number of levels.

First, linkages between on -and off-reserve conservation require further effort. It is important to note that efforts to extend the formal reserve system to incorporate private land via covenants and regional and district council reserves has been commendable, as has the development of partnerships for Maori land management through the Nga Whenua Rahui Fund.

However, there is little coordination between strategies for the protection of sites through the reserve system and protection of other sites. Indeed there would appear to be conflicting views on this issue. One view, expressed on several occasions by senior officials, is that if further public funds are allocated they would be best directed at securing the protection of larger contiguous areas through DOC, who have the professional skills and management expertise to deliver conservation outcomes. A second view, most notably championed by the QEII National Trust, notes that a formal reserve system is necessary ***but not sufficient*** to secure biodiversity outcomes, noting that many of New Zealand's threatened ecosystems occur in small fragments on private land, particularly in lowland areas including riparian and wetland systems.

The need to resolve this tension is perhaps best evidenced by current debate over the interpretation and application of s6(c) of the RMA. It is clear that formal reservation of all areas identified under s6(c) assessments is neither practical nor desirable. If not, what are the appropriate mechanisms for their protection and who should bear the costs? These are key questions being considered by the Ministerial Advisory Committee following comments on the *Bio-What* report.

A first step is to record the status of key ecosystems across all land tenures. Adoption of the concept of a Conservation Management Network (Section 2.2.2) would do much to facilitate this process over time. It is noted that the regional strategic plans of the National Heritage Fund represent a good starting point for this process.

Second, a related issue is coordination of the management of public lands. As has been noted, regional and district councils are spending significant resources on reserve management for a range of objectives including open space, recreation and conservation. Further, there are undoubtedly many small areas of public land for which management responsibilities are poorly defined. Local Government New Zealand, the peak body representing local government, and DOC have now initiated reviews for some local reserves and some rationalisation has occurred.

These concerns match experience in Australia where many significant areas of indigenous biodiversity are found on vacant crown land. Experience would suggest that a methodical, but given the size of the task, staged approach to reviewing land-use classifications should be undertaken over about a five year time frame. The review could address both appropriate land-use classification and appropriate management of selected sites. Revenue collected from sale of sites could be targeted to securing appropriate management of other significant sites identified through s6(c) and other biodiversity assessment processes.

Third, coordination is required at a regional scale to integrate biodiversity management with other natural resource management strategies, particularly catchment and pest management. Planning frameworks must ensure that advice provided to land managers is consistent with meeting different natural resource management objectives concurrently. A key challenge here is to move responses to biodiversity policy at a local scale beyond assessment of s6(c) sites to develop landscape scale responses to natural resource management – this may, for example, place increased emphasis on rehabilitation of riparian zones. Another challenge, discussed in Section 5.3, is to ensure integrated delivery of government facilitation and grant programmes.

Fourth, there is a need to integrate biodiversity values into strategic land-use zoning processes at a district level to ensure lands of conservation value are appropriately zoned prior to development pressures.

Policy Option 1 – Integrating approaches to biodiversity conservation

The framework of a Conservation Management Network be adopted to coordinate management responses to biodiversity conservation across all land tenures.

- Processes can be put in place to ensure biodiversity values are integrated into existing natural resource management and statutory land-use planning processes;
- Regional data-bases recording the status of and existing conservation efforts to manage key ecosystems across all land tenures can be put in place;
- A progressive review of public land classifications can be put in place with emphasis placed on pragmatically resolving issues of regional and district land management responsibilities;
- Linkages can be made with the research community to ensure the development of conservation priorities is undertaken on a scientific basis.

Clarification of expectations

A second set of issues relates to clarifying expectations between levels of government.

Regional and district councils have had difficulty in implementing requirements under s6(c) because they have not had clear guidance on what would constitute areas of "significant indigenous vegetation and significant habitats of indigenous fauna". Further, it is unclear whether regions are expected to provide regulatory certainty or whether they would be allowed to adopt a voluntary approach.

An illustrative quote from a frustrated West Coast Planner:

> Our notified plan made forestry a permitted activity. We have had seven appeals on the above rules. One appellant lives on the Coast, the rest are from AWAY. Four government agencies appeal despite my thinking plans are meant to in some way reflect the aspirations of the local community. Even more bizarre is that MfE, DOC and MAF's submissions are contradictory.

This example highlights a number of key issues. There is indeed a need for checks and balances between local and national objectives. Sometimes the policy process becomes messy – this is unavoidable but should be minimised. Where local and national objectives do not coincide, clear decision making and conflict resolution processes are required. Finally, central government requires a coordinated response to these issues.

This issue is likely to be compounded in the future as other elements of the RMA come into the picture. The *Bio-What* report notes that requirements under the RMA include requirements under s5 to "safeguard the life-supporting capacity of ecosystems as well as water soil and air" and "avoiding, remedying or mitigating any adverse effects of activities on the environment" with environment defined as: "ecosystems and their constituent parts, all natural and physical resources, amenity values and the social, economic, aesthetic and cultural conditions that affect those matters". Further, s6 also requires preservation of the natural character of wetlands, lakes and rivers. S7 goes on to specify further requirements (Ministerial Advisory Committee, 2000 pg 18).

Options for clarifying expectations include:

- codification of rules to define what a significant site is in terms of vegetation type, size, location and condition;

- requiring approval for land clearing of any areas of indigenous biodiversity above a certain size to be based on assessment of conservation value, with referral to central government for sites above a certain size;
- the capacity to accredit individual property plans as complying with regulatory requirements making all actions consistent with that plan permitted activities;
- definition of an outcome, such as "no net loss in the extent of areas of indigenous biodiversity" within a defined period, with flexibility provided to regions in how they meet these defined outcomes;
- requirements for regions to develop regional plans which would then be accredited as complying with the RMA – thus minimising the problem of government appeals to the Environment Court.[8]
- interim controls on clearing of indigenous vegetation until regionally specific policies and plans can be developed; or
- no regulation or central government guidance with encouragement through non-regulatory and voluntary mechanisms.

Each of the options outlined above has been used in at least one Australian state (Dore, Binning and Hayes, 1999). The analysis of institutional frameworks in section 2 would suggest that an outcomes-based approach as outlined in the fourth or fifth options would, in principle, be preferable, with regions then drawing on the full range of policy tools described in this report to meet clearly defined outcomes over a three to five year time horizon. The key challenges here are to define an appropriate outcome, to adequately resource non-regulatory approaches and to address issues of transition. For example the objective of "no net loss in extent" would defer issues of site quality, including pest management. Further, a mechanism for calculating trade-offs between vegetation clearance and revegetation would be required.

The issue of whether a basic minimum standard, to halt inappropriate land clearing, should also be put in place is more complex, particularly in the transition to more secure regional approaches of the kind described above. A voluntary approach may be justified if land clearing rates are insignificant and the issue is one of fostering positive management, not regulating inappropriate land clearing. However, if clearing rates are high a voluntary approach may be insufficient, as evidenced by clearing rates in Queensland outstripping rehabilitation efforts across the whole of Australia. However, if there is insufficient community will to enforce tight regulatory controls, as reflected through the political process, then a regulatory approach may be counter productive.

A final issue is that of clarifying expectations of landholders. Irrespective of the pathway chosen, increased resources will be required either: in the form of incentive payments for voluntary conservation; or, in the form of transition payments to assist landholders in meeting costs imposed by new regulations. The need for balance between eduction, incentives and regulation as discussed in section 3 is highlighted.

It is beyond the scope of this short-term study to resolve this issue. Data on land clearing: whether it is a significant issue and in which regions, appears not to be available. For example, during consultations the issue of clearing indigenous vegetation to establish industrial pine plantations by companies outside the voluntary NZ Forest Accord was raised on a number of occasions. If this is true, resolution through adherence to a Forest Accord that specifically addresses issues of plantation establishment and harvesting may be a more acceptable and appropriate. The Tasmanian Forest Practices System provides a good model,

[8] It is noted that the process through which plans would be accredited would require careful consideration.

although it only addresses harvesting for commercial purposes and does not address issues of plantation establishment.

A Ministerial Advisory Committee is currently looking at whether a National Policy Statement under the RMA should be prepared and, if so, what it should address. As discussed there are many issues to consider and difficult judgements to be made about the extent to which regulation from central government is required. Irrespective of the pathway chosen the following issues will need to be addressed:

- Ultimately the process through which issues of land clearing and indigenous biodiversity management will need to be resolved at a regional scale – through inventory, assessment and the definition of agreed outcomes and implementation programmes. Central government interventions should be targeted at achieving this outcome with some national consistency in the shortest timeframe possible. This will require resources to support integration regional planning;[9]
- The need to include adopt a mix of education, incentive and regulatory approaches in meeting regional objectives including the imperative of fostering voluntary stewardship by private landholders, particularly for lowland coastal and coastal ecological communities;
- The establishment of monitoring and research programmes that account for biodiversity values across both private and public land as proposed in policy option 1;
- If there is a need to impose interim controls requiring consent for land clearing during the transition to regional policies and whether individual property accreditation is a viable option; and
- If there is a need to develop industry specific guidelines including, but not limited to, plantation establishment.

Policy Option 2 – Clarifying roles and responsibilities

Consistent with the framework of the *Resource Management Act 1991*, clear responsibility can be given to regional councils for the coordination of strategic planning for biodiversity conservation in an integrated fashion with other natural resource management issues. This would require increased commitment from all spheres of government over the next three to five years.

- There is an urgent need to facilitate and build the capacity of regions to successfully integrate biodiversity management into their existing natural resource management objectives.
- Central government should actively monitor land clearing rates across New Zealand to guide future policy development in this area.

The points made here are put forward as the observations of an outsider looking in. The opportunity provided to reflect on these issues has been brief as the regulatory framework is but one consideration of this study. Indeed, a key finding of our research is the need to complement regulatory approach with social engagement, education and financial incentives. Comment has been made because of the current status of this debate. The comments should

[9] Experience with regional vegetation planning in Australia provides some powerful lessons. Those state governments that have sought to prescribe outcomes have struggled to adequately resource regional planning that can bring regulations into force in the years following the introduction of clearing controls. The experience of NSW is particularly illustrative (Dore, Binning and Hayes, 1999).

be considered as simply one input to the work of the Ministerial Advisory Committee which is addressing these issues in a more comprehensive and consultative manner.

Building institutional capacity

A final issue associated with issues of governance is the issue of building the capacity of all spheres of government to address biodiversity issues. Once again these issues are highlighted in both *The New Zealand Biodiversity Strategy* and the *Bio-What* report.

The need for inventory, assessment and threat analysis highlighted in both the Biodiversity Strategy and Bio-What are noted and will not be addressed in detail here. A short discussion of the mechanisms through which institutional capacity in these areas could be increased is, however, warranted.

A key issue is how the capacity of local institutions can be developed to address biodiversity issues in more innovative ways that reduce the conflicts associated with prescriptive national regulatory approaches. One successful approach in Australia has been to employ facilitators with expertise in biodiversity planning and to provide access to contestable funds for local governments to develop biodiversity programmes. It has been noted that the Taranaki Tree Trust has adopted an approach similar to this in New Zealand.

As local government in New Zealand is predominately self funded it is desirable that access to contestable funds be only used as a catalyst to establish programmes that become self-funding after an establishment phase. Programmes could range from inventory and assessment through to adoption of model incentive, education and local regulatory schemes.

A difficult issue to resolve here is the uneven distribution of revenue-raising capacity of Councils. Some councils with significant biodiversity issues may not have the resources required to address these issues. This issue is simply noted as a review of intergovernmental funding arrangements for natural resource management and biodiversity is beyond the scope of this study.

The Nature Heritage Fund is a contestable fund of the kind described above, and one to which Councils already have access. However, this fund is specifically targeted at the protection of priority sites. The proposal here is to establish a fund that specifically builds the capacity of local government. Other organisations, including the QE II National Trust, have been working with local governments for some time.

The issue of whether the proposed fund should be rolled in with any other incentive fund is discussed in section 5.3. Finally, it is noted that considerable additional resources have been allocated to biodiversity management in the 2000-2001 Budget. An important issue that requires consideration is identifying where funding for the policy option outlined below should be sourced.

Policy Option 3 – Building institutional capacity

Incentives that build institutional capacity will be required to give district and regional Councils access to and the ability to implement the full suite of tools required to achieve the outcomes established in the Biodiversity Strategy.

- Small team of facilitators can be employed to provide advice and expertise on biodiversity planning and programme design to local governments and non-government organisations operating at a regional scale.
- A contestable fund is established to which local governments can apply to implement innovative programmes for biodiversity management. The programme would provide establishment funding for 3 years after which the programmes would be required to become self-funding.

5.2.2 Engaging the private sector

Discussion with officials and stakeholders has revealed mixed views about the potential role and capacity of the non-government sector. On the one hand, the potential for engagement of wealthy individuals in purchasing large areas of indigenous biodiversity for conservation purposes was highlighted. On the other, there was concern that resources could be spent attempting to attract private interest and investment with little or no return because of the "thin philanthropic market" in New Zealand.

A further issue related to outsourcing of the delivery of on-ground programmes for nature conservation, including both management of public lands and the delivery of advice and incentives to landholders. The potential and need to gain leverage of government funding was noted on several occasions, as was the need to make programme delivery contestable to promote innovation and efficiency in. However, this must be balanced against the significant transaction costs that can be associated with engaging non-government players, particularly when programme allocations are small.

There would appear to be minimal legal impediments to non-government involvement in conservation activities. Department of Conservation officials have advised that there is no impediment to the creation of private conservation trusts or to the non-government sector accessing covenanting powers to secure investment in on-ground works for conservation on private lands. Some government funding programmes, including the Nature Heritage Fund, are contestable and allow for the private sector to bid for government funding. However, a number of non-government organisations have commented that these funds are difficult to access, particularly where devolved grant programmes or landholder facilitation are involved.

There may, however, be cultural impediments, with a strong view held that government should be the central driver of conservation policy. Whilst this view is not questioned, care needs to be taken to ensure government activity does not crowd out potential private sector investment in this area. The proposal to initiate a focussed dialogue with business and community leaders on this issue is a constructive one worthy of pursuing.

The impact of existing taxation arrangements on private conservation activities is less clear. It has not been possible to undertake a comprehensive review of taxation arrangements. We have had no advice on the taxation treatment of donations to environmental organisations or the gifting of property for conservation purposes. It is expected that landholders managing lands for conservation, where no other business activities are taking place, would be unable to access business deductions for management costs, as is the case in Australia. It is assumed that strong tax incentives for environmental philanthropy of the kind discussed in the body of the report are yet to be considered in New Zealand. Consideration of the impact of the taxation system on conservation represents a particular challenge. This is because there are generally direct conflicts between tax policy and environmental policy. On the one hand, the objective is to maintain a simple tax system that minimises special arrangements for particular public policy objectives. On the other, taxation arrangements may act as an impediment to investment in private conservation.

At district and regional scales access to property rate exemptions for covenanted land would appear to be patchy. A particular issue raised is that under existing legislation rate exemptions cannot be guaranteed beyond one financial year. This issue is worthy of closer investigation although it would appear that many councils have established a precedent of providing ongoing rate relief.

Another issue raised was barriers to foreign ownership of land. This requires consent of the Overseas Investment Commission, which does not currently take account of potential gains in terms of biodiversity conservation. It is recognised that foreign ownership of land raises complex and difficult issues. However, ensuring that potential conservation benefits are taken into account by the Overseas Investment Commission when considering proposals for private ownership suggests they may be worthy of further consideration.

The situation in New Zealand would appear to match that in Australia closely: first there is considerable and growing willingness by private landholders to implement voluntary conservation programmes on their land, including entering conservation covenants; and second, the scope for engagement with the non-landholding community, particularly urban New Zealanders, is largely untested and has some risk associated with its development. The issues associated with engaging the private sector are complex and may at times lead to conflicts in public policy. Further, there are those who would prefer to see conservation programmes retained exclusively within government agencies.

However, to counter these arguments is the view that the conservation of biodiversity must ultimately be a social responsibility between government, business and community sectors in partnership with private landholders who are ultimately the on-ground delivers of conservation outcomes. The New Zealand Biodiversity Strategy endorses this view – hence it is expected that more effective engagement of the non-government sector would be perceived as a high priority for government.

Draft Policy Option 4 – Engaging the non-government Sector

Given the emergent nature of the role of the non-government sector and private investment in conservation activities in New Zealand there is a need to review existing arrangements, to identify and address impediments to private investment and to foster opportunities for large-scale partnerships which deliver effective leverage of scarce public sector funding. Consideration could be given to:

- increasing support for voluntary conservation programmes to meet the demand of landholders wishing to enter conservation covenants;
- establishing a roundtable between relevant ministers and community and business leaders to review existing arrangements and facilitate engagement of the non-government sector, with particular focus on urban New Zealanders;
- reviewing taxation arrangements to provide positive incentives for environmental philanthropy and the creation of private conservation reserves; and
- review property rates to confirm the capacity of local government to provide ongoing exemptions to land covered by a conservation covenant.

5.3 POLICY TOOLKIT

There would appear to be strong support for the need to use a suite of policy instruments covering education and motivation (people), financial incentives (finance) and property right measures (security).

A consistent message from the consultations was that too much emphasis has been placed on regulation and that insufficient attention has been paid to facilitating landholder stewardship through voluntary participation in conservation programmes. Notable exceptions to this general rule lie in a number of local government programmes and in the operation of the QEII National Trust and the contestable funds administered by DOC.

Outlined below are key findings on the use of policy instruments arising from the consultations.

5.3.1 People

Bio-What and the Biodiversity Strategy place great emphasis on engaging landholders and the broader community in participating in on-ground works for the conservation of biodiversity.

Further, interviews conducted with officials and landholders have revealed a strong preference by many to focus on a facilitative and voluntary approach to biodiversity conservation.

Biodiversity conservation will ultimately require all land managers, public and private, to be active stewards of the land they manage. Australian experience would suggest that one-on-one dialogue through locally-based facilitation officers who are employed at arms length to government, tied to appropriate cost-sharing incentives, is the most effective mechanism for delivering on-ground conservation outcomes.

Individual facilitation is costly and must be carefully targeted. Critical issues surround who should deliver facilitation services, what objectives they should be targeted at, and what linkages to government expertise are required.

In summary, a successful facilitation programme would take account of the following needs.

- employment of facilitators who understand the local community and the farming systems in place within their region;
- services should be independent of government regulation and, preferably, be delivered at arms length from government;
- services should have close connection to and be aligned with strategic objectives of central government agencies (DOC, MAF), regional and district councils;
- services should be able to communicate with landholders about the full range of government programmes relating to sustainable land management including *inter alia* responses to pests, weeds, catchment management and biodiversity;
- individual facilitators should be given delegation to facilitate access to all government funding and incentive programmes based on agreed guidelines for on-ground works.

The organisations closest to meeting these criteria at the present time would appear to be the QEII National Trust and the Landcare Trust.

To develop such a facilitation network it is recommended that bids be sought on a regional basis with selection to be determined between representatives from central, regional and

district government for each region. The provision of facilitation/support networks would be integral to any proposed partnership or statutory agreement with regional councils for delivery of the outcomes of the biodiversity strategy.

It is noted that the adequacy of existing extension services would need to be reviewed prior to moving to establish a new facilitation service. This review is beyond the scope of this study, although several officials noted that traditional agricultural extension by government agencies has diminished markedly in the last 15 years. On the other hand, organisations such as QEII National Trust have worked hard to establish effective networks in rural communities. The objective of the review would be to assess the adequacy of existing services and evaluate how integration between different facilitation services with different objectives can be most effectively achieved.

Other key issues raised during consultations relate to education of the general community. New Zealanders' are generally proud of their natural environment. However, there is a need for greater understanding of the linkages between natural and human systems and the urgency of the task in managing biodiversity. Key opportunities lie in engaging decision makers through events such as parliamentary briefings and the development of a biodiversity and schools programme. These are already key commitments under Theme 8 of the Biodiversity Strategy.

Policy Option 5 – Facilitating landholder stewardship

In order to achieve greater uptake of biodiversity conservation programmes by land managers it is recommended that a network landholder facilitators be established to provide advice and facilitate access to incentives for on-ground works.

- A review of existing extension services available to landholders is required to determine how existing resources can be most effectively targeted to a more integrated service across all public policy objectives, including biodiversity.
- Where new services are required, the provision of these services should be contestable and preferably delivered at arms length from government.
- Facilitation networks should be closely aligned to any financial incentives (see finance).

5.3.2 Finance – Cost Sharing Incentives

Implications for New Zealand - Outcome of Consultations

Funding provided by governments and the non-government sector for conservation reserves is shown in figure 10, and funding for sustain land management, including pest and weed management is shown in figure 11.[10]

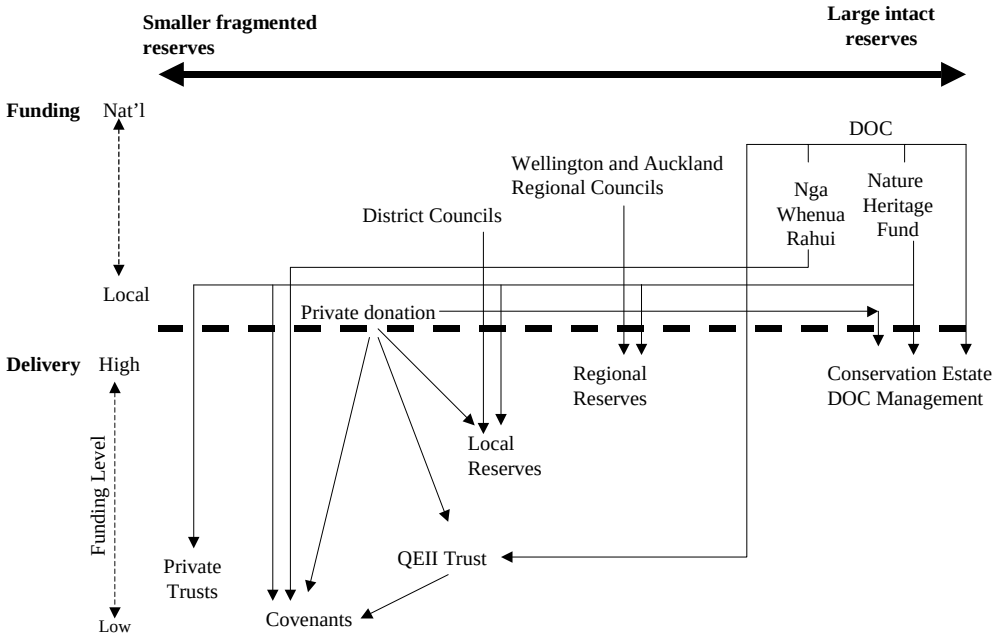

Figure 10 – Funding for public and private conservation reserves

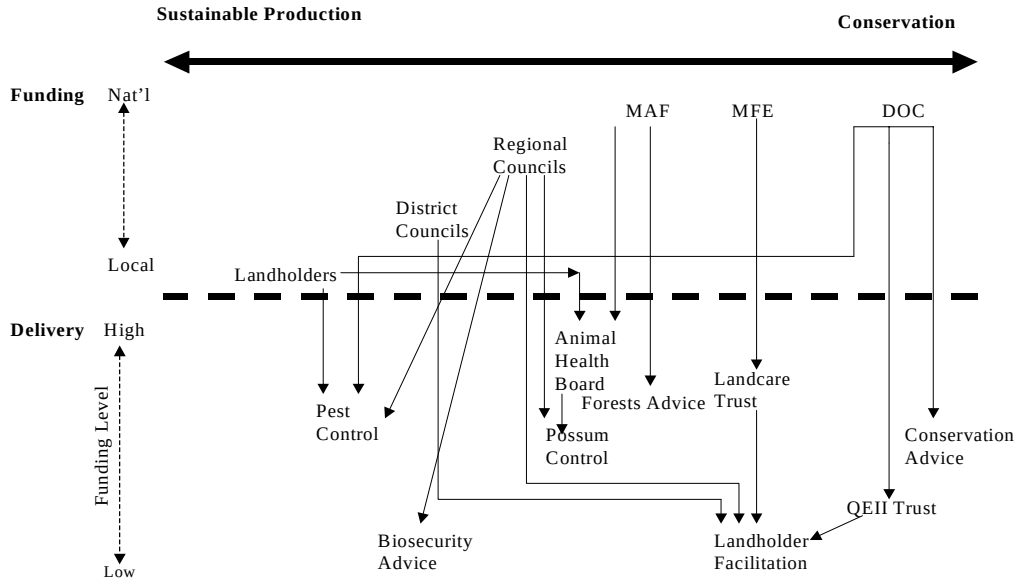

Figure 11 – Funding for Sustainable Land Management

[10] Note these diagrams are a schematic representation of existing funding structures. It is understood that individual programmes may have a range of objectives and operate across a number of scales.

The figures are split in two to distinguish between funding sources, scaled from local to national, and delivery mechanisms, scaled from low to high funding. Further, the objectives of the funding sources are distributed along a spectrum ranging from sustainable production to protection of large intact formal conservation reserves. The diagrams are a schematic representation. Of course some of the funding and delivery mechanisms are relevant at number of scales in the diagram. For example, regional and district reserves may be expected to cover the full range of on-ground outcomes ranging from landscape health to large intact conservation reserves.

The diagram reveals that there is some level activity is taking place across the full spectrum of desired outcomes. Particular highlights drawn attention to during the consultations are:

- the impressive network of public conservation reserves owned and administered at national, regional and district scales;
- the role of the Nature Heritage Fund and Nga Whenua Rahui Fund in working in partnership with governments and land managers to secure protection of high priority sites to meet the objectives of the Protected Area Network;
- the fragmentation between programmes run by different government agencies;
- the role of regional and district councils in managing and funding conservation through a large network of local and regional reserves for a range of objectives including open space, recreation, conservation and landscape amenity;
- the emerging and potential role of regional and district councils in promoting sustainable natural resource management and facilitating nature conservation outcomes on private land through a range of innovative programmes.
- the fundamental role of independent organisations including the QE II National Trust and the Landcare Trust in building partnerships with landholders.

In summary, there is some activity across the full spectrum of desired outcomes ranging from exclusive conservation to management of biodiversity in a production landscape. However, a critical issue is whether a balanced portfolio of funding mechanisms is in place across this spectrum. The work of the QE II and Landcare Trust is currently occurring on a modest scale. This is largely due to limited funding. The *Bio-What* report notes that:

> "Existing mechanisms are worthwhile, but far less effective than they should be, due to significant funding shortfalls".

From the consultations it would appear that the Nature Heritage Fund and Nga Whenua Rahui appear well designed to meet the needs and objectives of the Protected Area Network. There is, however, no equivalent national mechanism for facilitating landholder engagement and protection of indigenous biodiversity that falls outside the strict requirements of these funds. Indeed, as noted in the main body of the report, government facilitation programmes are failing to meet this need. If land managers are to be convinced that natural areas on private land are of value an additional mechanism to support smaller scale grants directed at protection and management, for example pest control, will be required.

Such a fund could be achieved in one of two ways: the scope of existing funds could be broadened; or, a new fund established. Given the extremely focussed nature of the Nature Heritage Fund it is proposed that a separate fund be established. If established the design of such a fund would need to take account of the following attributes:

- a focus on funding projects aimed at contributing to the objective of conserving biodiversity on private lands;
- be closely linked to other existing funds to ensure consistency in operation and strong linkage between on and off-reserve conservation management;

- give priority to projects with the potential to either: build institutional capacity at a local scale, or catalyse further on-ground work to protect or rehabilitate indigenous biodiversity in strategic locations; and
- be contestable with funding available to individuals, community groups, non-government organisations and district and regional councils for the purpose of establishing devolved programmes (see draft policy option 3).

The need for such a fund needs to be debated given the mixed objectives for implementation of the Biodiversity Strategy discussed earlier. However, a strong conclusion can be reached that a more flexible fund of this kind is required if the general landholder community is to be successfully engaged in biodiversity conservation. The objective would be to achieve balance between the mix of regulatory (security), facilitation (people), and incentives (finance) tools discussed in section 3 of this report.

Once again it is important to note that the issues of who should manage such a fund and where its budget should be sourced from are of critical importance. It is unclear whether the new commitments to biodiversity announced in the last budget will be able to be redirected to activities of this kind. The resolution of this issue is beyond the scope of this study.

Policy Option 6 – Incentives fund

To support the transition to sustainable management of indigenous biodiversity on private land a new contestable incentive fund be established or the scope of existing funds be broadened.

- The fund would be linked to existing funds aimed at securing protection of high priority lands for the Conservation Management Network (policy option 1).
- The fund would also provide catalytic funding for the establishment of new programmes by regional and district councils (see draft policy option 3).

5.3.3 Security

The issues surrounding national scale regulatory and institutional structures have been discussed in section 5.2, focusing on the need to clarify expectations and resolve the mechanisms through which the conservation of indigenous biodiversity on private land can be secured.

If an outcomes-based approach is adopted and primary responsibility for resolving this issue remains with regional and district councils, there will be a need to identify and broadly communicate the full range of options for establishing effective regulatory structures at the regional scale. Section 3.3 of the report identifies a range of tools that can potentially be used to plan for and regulate land-use at local scales. The role of strategic planning in securing appropriate land-use zoning ahead of development pressures is noted, as are mechanisms for offsetting the impacts of development and rezoning land. The experiences of local government reported by Local Government New Zealand reveal that a number of councils are successfully addressing this controversial issue including linking of regulatory mechanisms with education, facilitation and financial incentives.

The need to build institutional capacity is highlighted in draft policy option 3. A further step could be taken by developing resource materials of best practice and also developing model planning provisions for local government. These would need to be coupled with model facilitation and incentive programmes in order to promote an appropriate balance between statutory and non-statutory mechanisms.

At a property scale, covenanting programmes through both DOC and the QE II National Trust appear to be well-established and working effectively. Strategic partnerships could be formed with local governments, farming organisations and other non-government organisations to ensure that potential to use voluntary property-based mechanisms is maximised.

A related issue is the potential to use less binding voluntary mechanisms as a first step to achieving improved landholder stewardship of areas of indigenous biodiversity. Options include:

- fixed term contracts for specific works such as fencing or pest control – in Australia such agreements are usually for a period of 10 years; and
- purely voluntary agreements such as available through the *Land for Wildlife* programme described in section 3.1.

A final suggestion would be to consider options for accrediting individual property plans as meeting the requirements of regional and/or national regulation. In this case, works consistent with the property plan could take place, creating a mechanism for resolving difficult cases that do not easily fit within regional framework. It is noted, however, that such an approach must be carefully targeted and complemented by appropriate rules at a regional scale to achieve consistency. The administrative cost of negotiating individual agreements is also likely to be high.

Policy Option 7 – Model regional regulation, incentive and facilitation programmes

To facilitate improved design and acceptance of regulation at regional and local scales, best practice and model programmes can be developed and widely disseminated to all local governments to facilitate early uptake of new and innovative approaches to biodiversity management.

- The model programmes could be tied to the capacity building and catalytic incentives fund described in policy options 3 and 6.

Policy Option 8 – Broadening the suite of management agreements

To facilitate greater voluntary uptake of property agreements and covenanting programmes a range of fixed term and non-binding agreements can be developed and made available to landholders.

- Fixed term agreements (10 years) may be appropriate for catalytic funding for improved management such as fencing or pest control.
- A non-binding programme modeled on the Land for Wildlife programme may encourage greater landholder uptake and stewardship.

5.4 MONITORING AND ACCOUNTABILITY

A key issue raised in consultations was: how to monitor and evaluate performance in implementing *The New Zealand Biodiversity Strategy*. The need for an adaptive approach to management and implementation are discussed under *Theme 10* and *Part Four: Strategic Priorities and Implementation* of the strategy.

Likewise an adaptive approach has been highlighted, albeit briefly, in this report. The challenge remains: how do we measure progress given that the strategy is a large comprehensive document that will take years to implement? To address this issue the strategy identifies those areas of action that should be given highest priority in the next five years.

This report has primarily focussed on the following sub-set of priority areas identified in the strategy: better governance, community participation and learning; sustaining indigenous biodiversity in privately-managed areas; and, enhancing protected areas and prospects for threatened species. In doing so it has highlighted the need for targeted actions in the following areas:

- Building institutional capacity;
- Engaging the non-government sector;
- Facilitating greater landholder and community awareness and participation;
- Strategically investing in on-ground works.

Measuring the outcome of these actions is not a trivial task. For example, how do we measure landholder and community awareness - by the level of on-ground action or by surveys of attitudes?

The objective is to develop more effective strategies and to secure greater commitment by all stakeholders - government and non-government - over time. This requires careful articulation of what each programme is seeking to achieve, over what timeframe and what the indicator of success will be. It is beyond the scope of this study to develop appropriate indicators of this kind. It is, however, suggested that monitoring will need to occur in at least the following areas:

- **Biophysical Indicators**: for example changes in the extent and quality of areas of indigenous biodiversity;
- **Institutional Indicators**: for example, the level of activity and effectiveness of district and regional Council programmes;
- **Awareness Indicators**: for example, the level of understanding of landholders, decision makers and the broader community; and
- **Behavioural Indicators**: for example, the uptake of voluntary conservation programmes by landholders.

Care must be taken to ensure that the success of programmes is measured over an appropriate timeframe. For example section 3 of this report, which outlined a number of case studies, noted that successful regional programmes - based on a balance between eduction, information, incentives and regulation - can take up to 10 years to establish and achieve their primary objectives.

For this reason the report is concluded by returning to the need to interpret the objectives, themes, strategies and actions of the Biodiversity Strategy and then develop pragmatic programmes that can be measured in the context of their specific objectives and expected outcomes over a budget cycle. Thus monitoring is required at two levels: first of the overall

strategy; and second of the specific programmes funded under the strategy to gauge their success in the context of their own objectives and funding over a budget cycle.

As one West Coast practitioner put it: today's strategies for managing biodiversity must be:

- **R**ealistic
- **A**chievable
- **M**easurable

The acronym is RAM.

Figure 11 provides a simple framework for linking short and long term objectives. Priority issues are identified based on existing information on the state of and threats to biodiversity. Programmes are designed that address social, economic and environmental aspects of these issues. Monitoring and auditing provides guidance on those programmes that are successful and justify further funding and those that require reconsideration. Information flows are highlighted as flowing from both the monitoring programme but also from new information collected through ongoing research.

The outcome is that planning, action and monitoring can take place in parallel in order to facilitate learning and adaptation on a continuous basis.

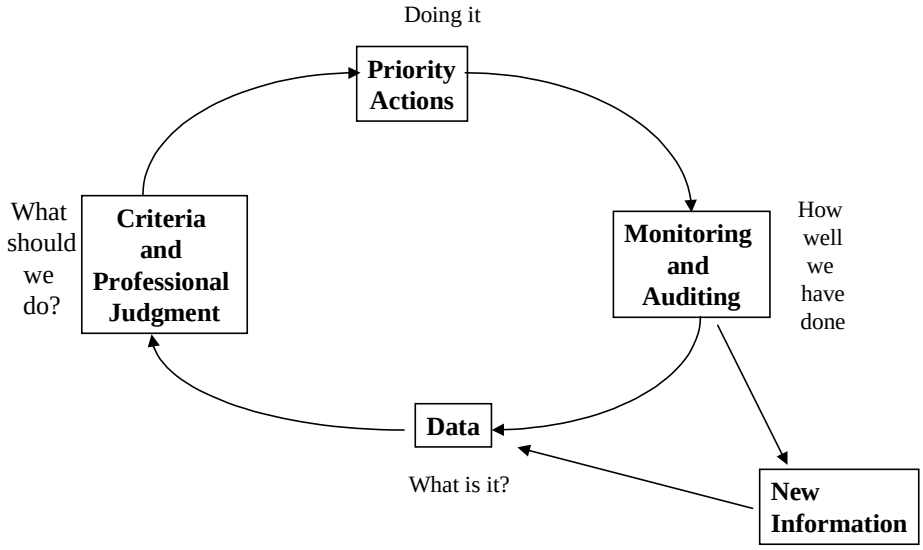

Figure 11 – Adaptive implementation of the New Zealand Biodiversity Strategy

Draft Policy Option 9 – Measuring success

To ensure that scarce funds are invested wisely it is recommended that all programmes funded under the Biodiversity Strategy have clear project objectives and performance indicators associated with them to facilitate learning and improved programme design and delivery over time.

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