

AN APPRAISAL OF THE NSW BIOBANKING SCHEME TO PROMOTE THE GOAL OF SUSTAINABLE DEVELOPMENT IN NSW

JANE SCANLON*

I SUSTAINABLE DEVELOPMENT POLICY

A International

Sustainable development is a policy approach utilised in numerous jurisdictions around the globe. Sustainable development can be defined as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’.¹ This concept is encompassed by the principle of inter and intra-generational equity and is at the core of sustainable development policy.

The idea of sustainable development has arisen due to recognition that development activities, although imperative in improving the economic status of a nation, can severely impair the ability of earth’s systems to maintain a healthy and functioning environment. Problems including atmospheric pollution, biodiversity loss, climate change and desertification are recognised as major issues associated with development activities.² These issues typically affect human populations because they interfere with the prevalence of healthy living conditions.

* Jane Scanlon has a Master of International Environmental Law from Macquarie University’s Centre for Environmental Law (MU-CEL). The author acknowledges that the *biobanking* scheme is still under development. For further information about the scheme, see <www.environment.nsw.gov.au>. The author also acknowledges the contributions made by the questionnaire participants, namely Shona Bates, Ricardo Bayon and William Warnke and the guidance of her supervisor Dr Shawkat Alam.

¹ World Commission on Environment and Development (WCED), *Our Common Future*, Oxford University Press 1987, 84; United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP).

² J Kirby, P O’Keefe and L Timberlake (eds), *The Earthscan Reader in Sustainable Development* (1995) 234-237.

Biodiversity is affected by development activities, such as habitat destruction or the introduction of pest species.³ Biodiversity is a broad term, but can be defined as the 'variability among living organisms from all sources, including, 'inter alia', *terrestrial, marine, and other aquatic ecosystems*, and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems'.⁴ The *Earth Charter* of 2000 states clearly in Principle 5 that it is imperative to 'protect biological diversity and the natural processes that sustain earth'. In the *Convention on Biological Diversity* (CBD) of 1992, the protection of biodiversity by ratifying states was recognised as one of three important objectives that nations must commit themselves to achieving.⁵ More specifically, Article 1 of the CBD states that:

The objectives of this Convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

The protection of biodiversity is an important aspect of sustainable development because of the ecosystem services it provides. Such services are created by interactions with living organisms in their environment and include the purification of water, controlling pests and mitigating floods.⁶ This demonstrates that the human population is inter-dependent with biodiversity protection and further that environmental protection is required for social well-being and economic equity.

There is therefore an intrinsic connection between economic, social and environmental components of sustainable development. These components can be defined as the 'pillars' of sustainable development. This connection was duly recognised by the UN's *Johannesburg Declaration on Sustainable Development* of 2002 in Article 11, where it is stated that:

We recognise that poverty eradication, changing consumption and production patterns and protecting and managing the natural resource base for economic and social development are overarching objectives of and essential requirements for sustainable development.

The use of economic instruments has emerged in recognition that the environmental and economic pillars of sustainable development are intricately linked and that

³ K ten Kate, J Bishop and R Bayon 'Biodiversity Offsets: Views, Experience and the Business Case' (2004) IUCN, Gland, Switzerland and Cambridge, UK and Insight Investment, London, UK, 10.

⁴ As defined in the 1992 United Nations Earth Summit in Rio de Janeiro, Brazil and also used in the Convention on Biological Diversity (CBD).

⁵ CBD *Strategic Plan for the Convention on Biological Diversity Decision VI/26, Annex 5* <<http://www.biodiv.org/decisions/default.aspx?m=COP-06&id=7200>> 10 May 2006.

⁶ J Salzman *et al*, 'Protecting Ecosystem Services: Science, Economics and Policy' (2001) 20(2) *Stanford Environmental Law Journal* 1-28, 3.

economic incentives are a driving force in a continually developing world. For example, Principle 16 of the *Rio Declaration* and Chapter 8.32(d) of *Agenda 21* both refer to the use of economic instruments for sustainable development practices. Principle 2 of the UN's Economic and Social Council's *Earth Summit* of 1997 recommends the use of economic instruments 'that combine market instruments and direct regulation'.

The principles of sustainable development are integrated into domestic settings through various means. Such means include planning mechanisms, such as national environment strategies and implementing instruments, such as the enactment of legislation.⁷ However, despite such mechanisms, biodiversity continues to decline at an alarming rate.⁸ In the state of NSW, Australia, such biodiversity loss is particularly severe in the coastal regions where the demand for urban development is high and where there exists a large diversity of endemic species.⁹ There is therefore a dire need to address this biodiversity loss that is occurring despite existing planning and legislative regimes.

B Biodiversity Protection in NSW

1 *The Environmental Planning and Assessment Act 1979 (EP&A Act) and the Threatened Species Conservation Act 1995 (TSC Act)*

Biodiversity in NSW is in a very fragile condition. The Australian Terrestrial Biodiversity Audit showed that threatened ecosystems are present across Australia, with most bioregions¹⁰ (90%) having one or more threatened ecosystem.¹¹ More than half of the total are in the central east coast, the Darling Riverine Plains, the Murray Darling Depression and other parts of NSW. This indicates two things. Firstly, that biodiversity in the coastal regions in NSW is under serious threat and secondly, that the existing biodiversity protection regime in the coastal regions is not meeting its objectives.

The reasons why the biodiversity protection regime is not working can partially be attributed to issues associated with biodiversity protection legislation. In the coastal regions, such issues are seen in the use and application of the *EP&A Act* and the

⁷ United Nations Economic and Social Commission for Western Asia *Governance for Sustainable Development in ESCWA Member States: Summary* (2002) 4, 5.

⁸ For a detailed report see IUCN Species Survival Commission 'IUCN Red List of Threatened Species: A Global Species Assessment' (2004) <http://www.iucn.org/themes/ssc/red_list_2004/GSA_book/Red_List_2004_book.pdf> 10 May, 2006.

⁹ Commonwealth of Australia, *Australia State of the Environment 1996*, CSIRO Publishing, Canberra, (1996); New South Wales Environment Protection Authority, *State of the Environment Report 1997*, NSW EPA, Sydney, (1997).

¹⁰ A landscape type with distinctive biological and ecological characteristics such as the wooded grasslands on NSW south-western slopes. National Parks and Wildlife Service (NPWS) 'The Bioregions of NSW: Their Biodiversity, Conservation and History' <http://www.nationalparks.nsw.gov.au/PDFs/Bioregions_nsw_overview.pdf> 16 July 2006, 13.

¹¹ The Australian Terrestrial Biodiversity Assessment, National Land & Water Audit (2002) <http://audit.deh.gov.au/ANRA/vegetation/docs/biodiversity/bio_assess_contents.cfm>.

TSC Act in particular. This legislation incorporates Ecologically Sustainable Development (ESD)¹² policy. For example, the *TSC Act* calls for the conservation of biodiversity and the promotion of sustainable development.¹³ This again links the environmental pillar of sustainable development with biodiversity protection.

The *TSC Act* is a type of command and control legislation: that is, regulation accompanied by monitoring and enforcement.¹⁴ This approach decides what type of environmental disturbance should be regulated and how.¹⁵ Further examples in NSW include the *Native Vegetation Conservation Act 2003 (NVC Act)*, which determines how much land can be cleared and under what conditions (usually for agricultural purposes) and the *National Parks and Wildlife 1974 Act* (NSW), which imposes penalties for harm to biodiversity in National Parks. Contained in these acts are requirements for developers to consider threatened species in their proposals, and enforceable penalties and offences to protect biodiversity.

Command and control legislation is therefore connected to the planning system because development activities, which are controlled by the planning system, can impact on biodiversity. In NSW, the *TSC Act* is connected to the *EP&A Act*. In relation to biodiversity protection, section 5 details the need for the 'protection of the environment, including the protection and conservation of native flora and fauna, including threatened species, populations and ecological communities, and their habitats'.¹⁶ Environmental Impact Assessment (EIA),¹⁷ under Part 4 and Part 5

¹² In the context of Australia, ESD is used to define the international term 'sustainable development'. However, this appraisal will use the term 'sustainable development' because of the international context of analysis. The National Strategy for Ecologically Sustainable Development (NSED) uses the following definition of ESD: 'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.' Department of Environment and Heritage (DEH) *National Strategy for Ecologically Sustainable Development*, part 1 <<http://www.deh.gov.au/esd/national/nsed/strategy/intro.html#WIESD>> at 23 October 2005.

¹³ *TSC Act* 1995, Part 1, Section 3(a); P L Stein 'Are Decision-Makers too Cautious with the Precautionary Principle?' (2000) 17(1) *Environmental Planning and Law Journal* 3-21, 9.

¹⁴ J D Bernstein, 'Alternative Approaches to Pollution Control and Waste Management' (1994) *World Bank* 1.

¹⁵ J D Bernstein, 'Alternative Approaches to Pollution Control and Waste Management: Regulatory and Economic Instruments' (1997) 1-20 in D Craig, N A Robinson, L Koh Kheng (eds) *Capacity Building for Environmental Law in the Asian and Pacific Region: Approaches and Resources* (2002) Volume 1, Asian Development Bank, Manilla, 353-368, 352; W Harrington and R D Morgenstern, 'Economic Incentives versus Command and Control: What's the Best Approach for Solving Environmental Problems' (2004) *Resources for the Future (Rff)* <http://www.rff.org/Documents/RFF_Resources_152_ecoincentives.pdf> 20 June 2006, 14; R Bayon 'Making Environmental Markets Work: Lessons from Early Experience with Sulphur, Carbon, Wetlands and other Related Markets' (2004) *Forest Trends* <www.forest-trends.org>, 4.

¹⁶ *EP&A Act* s 5(vi).

¹⁷ For good discussions on EIA see I Thomas and E Mandy, 'EIA Context and Content' *Environmental Impact Assessment and Theory and Practice in Australia* (4th ed, 2005) chap 2, 9 and R Fowler 'Environmental Impact Assessment: What Role of for the Government?' (1996) 13 *Environmental and Planning Law Journal* 246-259.

of the Act incorporates the *TSC Act* in an attempt to protect biodiversity, for example through the necessity for certain developments to carry out a species impact assessment.

The *EP&A Act* allows for the use of Environmental Planning Instruments, namely State Environmental Planning Policies (SEPPs), Regional Environmental Plans (REPs) and Local Environmental Plans (LEPs). LEPs are the most common Environmental Planning Instruments, dictating land use through zoning and are arguably the most powerful. For example, from a State administrative perspective ‘there is often little room to comment on the decision of a development as it has largely been based on the zoning of the land through LEPs’.¹⁸ An example of the operation of this system can be seen in the use of SEPP 14 that aims to standardise State wide practice in assessing developments that may affect coastal wetlands. Many REPs contain plans, zoning tables and development standards to be applied by councils, and can be used as a broad approach to environmental management, focusing, for example, on the development of natural catchment areas.¹⁹

There are, however, contentious issues with this planning system. The sustainable development objectives of the *EP&A Act* are deemed by some observers to be redundant in that numerous amendments have weakened the role of planning legislation.²⁰ The *TSC Act* has been criticised for inflexibility and the protection of threatened species on an *ad hoc*, inconsistent basis, leading to little advance in biodiversity protection.²¹

In addition, despite the frequent utility of these acts,²² their enforcement and practicality have not been adequate in protecting biodiversity in NSW.²³ It has also been argued that there has been misapplication of the legislation, in many cases due to the economics of development taking priority over biodiversity.²⁴ The level of scientific uncertainty associated with biodiversity further complicates the application of this command and control legislation.²⁵

¹⁸ Response to Question 9, Appendix 2.

¹⁹ See in general G Bates, *Environmental Law in Australia* (5th ed, 2002) chaps 10 and 11.

²⁰ D K Leary, ‘Market Based Mechanisms, Biodiversity Banking and Threatened Species Protection in NSW’ (International Forum on Environmental Legislation and Sustainable Development Organising Committee, Beijing, China, 20-22 November 2005) 227; The Hon Richard Jones in Hansard extract, NSW Legislative Council, 4 May 1994 (article 40) on the *EP&A Act* Amendment Bill <www.parliament.nsw.gov.au/prod/PARLMENT/hansArt.nsf/V3Key/LC19940504040> 3 January 2006.

²¹ Ibid 229.

²² See the Austlii website <www.asutlii.edu.au> for NSW cases regarding in *EP&A Act* and *TSC Act*.

²³ Fowler, above n 17 and accompanying text.

²⁴ Response to Question 9, Appendix 2; See also Part I F 1 and Part II B 3 for further discussion; J Lambert, ‘Threatened Species Legislation: Does it Work for Local Communities or Local Government’ in Hutchings, Lunney and Dickman (ed), *Threatened Species Legislation – Is it Just an Act?* (2004).

²⁵ C S Holling and G K Meffe, ‘Command and Control and the Pathology of Natural Resource Management’ (1996) 10(2) *Conservation Biology* 328-337, 330, chap II(B) C.

Overall, it is widely accepted amongst actors in biodiversity protection in NSW that the current system has ‘proven to be cumbersome, time consuming, expensive and created too much uncertainty’,²⁶ including more specifically that ‘the existing threatened species legislation is not working’.²⁷ This is particularly true for the development industry that has to comply with this system. It has been argued that ‘the only winners are ... the lawyers and consultants employed to draw up species impact statements and the bureaucrats’.²⁸

2 *Economic Instruments and Conservation on Private Lands*

More recently, economic instruments have been used in an attempt to address biodiversity loss in the coastal regions of NSW. This has primarily been through economic incentives for the protection of biodiversity on private lands. This is a strong approach because large amounts of land and biodiversity fall within the property of private landowners. Further, incentives for this conservation are required because, as has been the case in the US,²⁹ some landowners have illegally removed threatened species to avoid restrictions on development, viewing ‘the presence of high conservation value bushland as a constraint rather than an asset’.³⁰

Organisations such as the Nature Conservation Trust have established revolving funds to conserve biodiversity on private lands using covenants. A legally binding covenant is placed on the land title after purchasing that requires any future owner of the land to protect and conserve the biodiversity properties of the land. The land can then be sold to those willing to continue the conservation under the covenant and the capital can be used again.³¹

The national parks and reserve system has been considered a strong approach to biodiversity protection because the area can be exempted from development activities and in some instances, where ecosystems are naturally restricted or rare, 100% reservation is desirable. This system is supported by conservationists³² and in the NSW Biodiversity Strategy of 1999, it was claimed that such a system should be expanded.³³ National Parks and Nature Reserves occur in all bioregions in NSW.

²⁶ Response to Question 2 and 8, C3, Response to Question 2, G3. For example, developers may experience lengthy development approval processes.

²⁷ Mr Michael Robinson at *Threatened Species Conservation Amendment (Biobanking Bill)* reader, parliament debate 8th June 2006; Response to Question 2 C1, D1. This is also illustrated by the increasing rate of biodiversity loss in NSW. EPA NSW State of Environment Report 2003, Chapter 6.

²⁸ Ibid.

²⁹ See below n 99 and accompanying text.

³⁰ Response to Question 8, L1. It can be argued that biodiversity should be considered as an asset because of the ecosystem services it can provide such as pollination and water purification. If biodiversity is viewed as a restriction to development, the value of ecosystem services is effectively undermined.

³¹ P Figgis for IUCN ‘Conservation on private lands, the Australian experience’ (2004) <<http://www.acfonline.org.au/docs/general/00532.pdf>> 23 October 2005, 19.

³² See below n 293 and accompanying text.

³³ NPWS, above n 10, 21.

Wilderness Areas and Flora Reserves have also been important for biodiversity protection, though mining is permitted in some Flora Reserves and Wilderness Areas have been criticised for lack of ongoing management to conserve biodiversity values.³⁴ The reserve system can also be criticised because of the lack of funding available to acquire land for reserve purposes that is coupled with cheap government land left to add to enhance reserve size and the difficulties in attempting to maintain a balance between the different types of access, such as recreational use and fire management.³⁵

Taxation incentives have also been significant in promoting biodiversity protection on private lands through voluntary agreements. For example, the Commonwealth Government's changes to the *Income Tax Assessment Act 1997* (Cth) allowed tax payers to benefit from donations of land valued over \$5000 to relevant organisations.³⁶ Voluntary agreements have also been encouraged through financial incentives including tax relief and rate exemptions or tender and auction processes for public funds to conserve biodiversity. Advocates of such agreements believe that this system has contributed significantly to biodiversity protection. For example, the NPWS states that in the South-East Highlands Bioregion, 0.06% is protected by Voluntary Conservation Agreements.³⁷ Yet such advocacy for Voluntary Conservation Agreements is questionable when considering that there are only 170 Voluntary Conservation Agreements in place on private land in NSW (since 1987) and approximately 934 property agreements (covering 90,078hec), with only 25% of these in secure and long-term management arrangement.³⁸ This could be attributed in part to the changing of property ownership, where despite the covenant on the title, little can be done to enforce an agreement because of its voluntary nature and because so little funding is attached.³⁹ It is argued in general that few actual payments for ecosystem values have been made despite the use of the mechanisms described above.⁴⁰ It is therefore doubtful that private land conservation alone can achieve biodiversity protection and thus sustainable development objectives.

3 *The Concept of Offsetting and the Emergence of Banking Offsets Systems*

Many nations have utilised the concept of offsetting, which can be defined as the act of compensatory mitigation for the unavoidable adverse effects of a development to ensure a 'no net loss' of biodiversity value.⁴¹ In general, offsetting is defined as taking place off-site, that is, away from the geographical area of a

³⁴ NPWS, above n 10, 15.

³⁵ Response to Question 2, E4 and Response to Question 2, A2 respectively.

³⁶ NPWS, above n 10, 2.

³⁷ NPWS, above n 10, 19.

³⁸ Data from the Department of Infrastructure Planning and Natural Resources (DIPNR) at <<http://www.dnr.nsw.gov.au/index.html>> 23 November, 2005.

³⁹ Response to Question 3, A2.

⁴⁰ Figgis, above 31, 21.

⁴¹ ten Kate *et al*, above n 3, 13.

development project.⁴² Offsetting can, however, occur on-site, taking place on an area not directly impacted by the development but still on the project site.⁴³ An example of an off-site offset is when a developer secures land to protect that is 'like-for-like' to compensate for the impacts of a development. For an offset to be effective, it should display similar biological characteristics.

In NSW, offsetting has been developed with Property Vegetation Plans⁴⁴ operating under the *NVC Act*, the NSW Fisheries policy of 'no net loss'⁴⁵ for developments affecting aquatic habitats as well as for individual project offsetting negotiations, for example between the DECC and Mount Owen Coal Mine.⁴⁶ It has been argued, however, that some of these offsetting systems in Australia to date have been used on an ad hoc basis without transparent, overarching principles with subsequently little environmental benefit.⁴⁷

A form of off-site offsetting that has been utilised in some jurisdictions is where offsets can be banked (banking offsets systems). Banking offsets systems allows offsets to be consolidated or 'pooled' to achieve greater environmental outcomes.⁴⁸ A developer can pay money to a 'bank' or parcel of land in order to purchase credits that are a calculation of the natural resource value on the land. This type of system allows the developer to place the responsibility of offsetting in the hands of an accredited biodiversity bank operator. The bank operator may be a private landowner or a joint venture for example between an agency and a not-for-profit organisation. Essentially, buying credits fulfils compensatory mitigation requirements or replaces the 'debit' incurred by the predicted development impacts, aiming towards the goal of 'no net loss'. Banking offsets systems aim to create a biodiversity trading market through which sustainable development and biodiversity protection outcomes are possible.

The US mitigation banking system has been heralded by some as being the innovator and leader of banking offsets systems with debated degrees of success in biodiversity protection.⁴⁹ US mitigation banking can be divided into two

⁴² ten Kate *et al*, above n 3, 10.

⁴³ DEC, 'Biobanking: An Investigation of Market-Based Instruments to Secure Long-Term Biodiversity Objectives' Background Paper (2006) 30 <www.dec.nsw.gov.au> 11 April 2007.

⁴⁴ For details see <www.dipnr.nsw.gov.au/nativeveg>. Such plans have been integral to the development of *Biobanking* as will be discussed in Part 4.

⁴⁵ For details see <<http://www.dpi.nsw.gov.au/fisheries>>.

⁴⁶ Department of Environment and Conservation (DEC), 'Biobanking: A Biodiversity Offset and Banking Scheme' (Working Paper (2005) <<http://www.environment.nsw.gov.au/resources/biobanking05661.pdf>> 29 June 2006) 4. For a good definition of offsets see DEC titled 'Green offsets for sustainable development – Concept paper – April 2002'.

⁴⁷ Ibid 4; Environmental Protection Agency (EPA) Western Australia 'Biodiversity Offsets: Preliminary Position Statement No 9' (2004) 1; NSW Urban Task Force 'Biodiversity Certification and Banking in Coastal and Growth Areas' Submission September 2005, 8.

⁴⁸ DEC, above n 46, 3.

⁴⁹ R Bayon, A Hawn and N Carroll for the Katoomba Group's Ecosystem Marketplace 'Banking on Conservation: Species and Wetland Mitigation Banking' (2006)

components: wetland mitigation banking and conservation banking.⁵⁰ In Australia, the Department of Environment and Climate Change's (DECC)⁵¹ Biodiversity Banking and Offsets Scheme (*biobanking*)⁵² in NSW and the Department of Sustainability and Environment in Victoria's 'Bush Broker' program,⁵³ are two banking offsets systems that are currently being developed. *Biobanking* is the scheme that has been chosen for analysis in this appraisal. As mitigation banking in the US has attracted significant attention and produced various reports, both in favour and against wetland banking, it will be used as a basis for comparative analysis with *biobanking*.⁵⁴ This will aid in determining what issues *biobanking* may face when implemented in NSW.

C The Biobanking Scheme

1 What is Biobanking?

Biobanking is a biodiversity trading market that is being developed by the DECC and is in the process of being piloted State-wide.⁵⁵ The scheme is largely based on Australian experience in offsetting, such as with the Property Vegetation Plans and banking offsets systems overseas, such as US mitigation banking. Although the objectives of the scheme seem to have shifted throughout its development,⁵⁶ the broad aim of *biobanking* is to 'address the clearing of native vegetation for urban development and the impact it has on biodiversity values, including threatened species'.⁵⁷ This is being undertaken in recognition that the current threatened species system is not working to either protect biodiversity or allow for efficient development application processes.⁵⁸

Biobanking will be legally applied by inserting a Section 7A into the *TSC Act* using the *Threatened Species Conservation Amendment (Biodiversity Banking) Act* (the "Biodiversity Banking Act") that was enacted on 4 December 2006.⁵⁹ The scheme was originally designed to complement biodiversity certification of Environmental

<http://ecosystemmarketplace.com/pages/newsletter/mm_4.10.06.html> 7 June 2006; See Part IV.

⁵⁰ Part 1 D.

⁵¹ The Department of Environment and Conservation (DEC) changed to the Department of Environment and Climate Change on 27 April 2007. For details see <www.environment.nsw.gov.au/index.htm>.

⁵² Part 1 C.

⁵³ For details of the scheme see the Department of Sustainability and Environment at <<http://www.dse.vic.gov.au/dse/>>.

⁵⁴ See Part IV for a critical analysis of wetland mitigation banking and Part V for comparative analysis with *biobanking*.

⁵⁵ For further details see <www.environment.nsw.gov.au/threatspec/biobankpilot.htm>.

⁵⁶ Part 1 C 2.

⁵⁷ DEC 'Questions and Answers about the Biodiversity Banking and Offsets Scheme' July 2006 <www.environment.nsw.gov.au/threatspec/biobankscheme.htm> at 23 October 2006, 1.

⁵⁸ Part 1 B 1.

⁵⁹ To access the Act see <www.legislation.nsw.gov.au> under the Browse A-Z 'In Force' section.

Planning Instruments that were to be certified by the Minister for the Environment under amendments to Section 126 G of the *Threatened Species Legislation Amendment Act 2004* (NSW). The intention of the Environmental Planning Instruments is to create Regional Conservation Plans that identify the biodiversity value in their area as being either 'green light', 'amber light' or red light' areas. Figure 1 provides a summary of what such areas are intended to represent. It should also be noted that the certification of LEPs is optional and arguably adoption has been poor to date. Evidence also suggests that LEPs are slowly being prepared by councils that often do not have the resources to apply for biodiversity certification as well.⁶⁰ This could be an issue for the application of biodiversity certification and *biobanking*, especially considering that both are optional.⁶¹ In addition, *biobanking* will now become operational in the absence of biodiversity certification, a concern for many stakeholders for reasons that will become apparent later in the appraisal.⁶² Local councils are currently working with the DECC to develop, assess and implement LEPs and Development Control Plans for biodiversity certification under the Regional Conservation Plans and can apply *biobanking* to the amber-light areas.⁶³

Green Light Areas
• LOW Biodiversity values
• Reduced inhibition on development, e.g, no threatened species requirements at development application (DA) stage
• Residential, industrial or business zoning
• Features will be maintained as minimum zoning requirement, eg, local biodiversity
Amber-light Areas
• Medium biodiversity values
• Rule-based assessment of biodiversity loss at the DA stage
• Offsets used to maintain or improve biodiversity values
• Residential, business, industrial or rural zoning
• Features will be maintained as minimum zoning requirements
Red-light Areas
• HIGH biodiversity values
• No development
• Area to be used for restoration investment
• Environmental protection or existing zoning
• Biodiversity values must be maintained or improved for restoration

Figure 1: An outline of the Regional Conservation Plans certification and Environmental Planning Instruments zoning approach.⁶⁴

⁶⁰ Response to Question 2, Appendix 2.

⁶¹ See further discussion on biodiversity certification in Part II C 2.

⁶² Part II C 2.

⁶³ DEC 'Refinements to the Development and Implementation of the *Biodiversity Banking Bill* after Stakeholder Consultation', 6 from email received 29 September, 2006; see for example the Hunter Council Regional Conservation Plans being developed at <http://www.epa.nsw.gov.au/resources/20060538hunter.pdf>. It is understood, however, that to date only 12 councils out of 152 have prepared LEPs for biodiversity certification, response to Question 9, D2.

⁶⁴ DEC, 'Biodiversity Certification and Banking in Coastal and Growth Areas' (2005) <<http://www.environment.nsw.gov.au>> 2 October 2005.

The *biobanking* scheme aims to operate in the following manner. Developers can voluntarily choose to participate in the scheme by obtaining a *biobanking statement* from the Minister for the Environment. The *biobanking statement* will be produced using the ‘rule-based biodiversity assessment tool’ (assessment methodology), that is currently being developed, based on the Biometric system that exists under the Property Vegetation Plans,⁶⁵ that will determine the amount and type of ‘credits’ needed to offset the ‘debit’ incurred by the development.⁶⁶ This supplies the ‘demand’ side of the scheme. A typical credit purchaser would be a developer seeking to offset their project’s impacts on biodiversity.⁶⁷ If not wishing to participate in the scheme, or unable to meet the ‘improve or maintain’ test, the developer will use the normal threatened species system.⁶⁸ Legislative provisions for *biobanking statements* are provided in Division 6 of the *Biodiversity Banking Act*.

On the supply side, landowners will be able to establish *biobank* sites, which retain or have the potential to provide, biodiversity value. The *biobank* is established using an in-perpetuity agreement between the Minister for the Environment and the landowner, known as the *biobanking agreement*. This agreement will mandate what management actions needed to be undertaken to generate credits that can then be sold on to the developers, using the assessment methodology. Such management actions may include removing pest species and planting species for restoration purposes.⁶⁹ The value of biodiversity on the site will also be based on vegetative connectivity, threatened species habitat or threatened species and conservation values of vegetative communities.⁷⁰ The funding for management actions will come from the *Biobanking Trust Fund* where a prescribed amount will be assigned to the fund from the purchasing of credits, so that payments can be made to current and future landowners to carry out the management actions. Legislative provisions for *biobanking agreements* are provided in Division 2 of the *Biodiversity Banking Act*.

The landowners and developers may seek assistance from third parties known as conservation brokers.⁷¹ Conservation brokers may be for example individuals, company consultants, or not for profit organisations. Their role will include marketing *biobanks* for landowners and sourcing credits for developers. In essence, they will act as intermediaries between the sellers and the buyers. Figure 2 outlines the intended role of the various actors.

⁶⁵ Part II C 3.

⁶⁶ DEC, above n 46, 6.

⁶⁷ DEC *Guide to Threatened Species Conservation (Biodiversity Banking) Bill* 2006 received via email to author on 8 June 2006, 5.

⁶⁸ Part I A 1.

⁶⁹ DEC, above n 46, 5.

⁷⁰ DEC, above n 46, 10.

⁷¹ Part III B 2; For legislative provisions see the *Biodiversity Banking Act* s 127(ZZI).

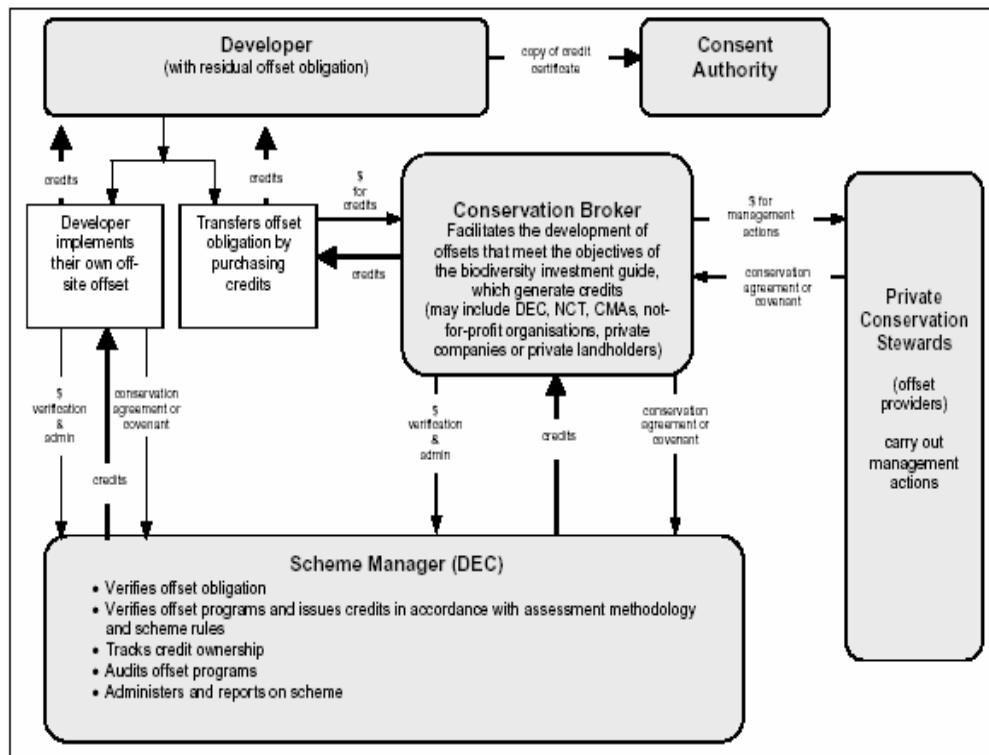


Figure 2: An overview of the desired operation of *biobanking*.

Source: DEC 'Biobanking- A Biodiversity Offsets and Banking Scheme' Working Paper December 2005, 8 <www.dec.nsw.gov.au> 12 December 2005.

With regard to administering the scheme, the DECC, as the scheme manager would undertake this role. Local governments would then use the *biobanking statements* as part of the development consent process. In addition to the legal, scientific, planning and economic advice that has been sought by the DECC through the focus and review groups,⁷² a Ministerial Reference Group (MRG) has been established to ensure sound administration, including members who generally represent all stakeholders and facets of *biobanking*.⁷³ There is no suggestion, however, of a review panel for each bank or bank region as utilised in the US systems.⁷⁴

Ultimately, the Minister for the Environment will have the final say in relation to the operation of the scheme, although it will be necessary for this Minister to confer with other Ministers, such as the Planning and Primary Industries Ministers on matters related to the issuing of biobanking statements and biobanking agreements,

⁷² The five expert groups have met to discuss the parameters of the scheme since February 2006 but information from the meetings has yet to be released. The review groups receive information, such as progress on the *biobanking* pilot, via email.

⁷³ DEC above n 46, 13. For the MRG membership list see www.environmentnsw.gov.au/threatspec/consultationpubs.htm.

⁷⁴ Part IV A 3.

such as whether the site could be subject to extractions in the future and thus is unsuitable as a biobank site.⁷⁵

To date, the scheme has been controversial and various groups lobbied for changes to the *biodiversity banking (Biobanking)* bill that was introduced into parliament on the 8 June 2006.⁷⁶ This is reflected in the 62 amendments to the original bill.⁷⁷ Concerns still exist with the *Biodiversity Banking Act* including the voluntary nature of the scheme,⁷⁸ the absence of ‘no-go’ areas where threatened species can be completely protected,⁷⁹ the provision for the cancellation of *biobanks* for mining activities⁸⁰ and the confusion over what will be traded, including geographic and ecosystem limitations.⁸¹ This demonstrates the difficulties inherent in attempting to consolidate the interest of various stakeholders who may have differing views of biodiversity protection and the way to achieve sustainable development. These and other concerns will be addressed throughout this appraisal.

2 Justification for Biobanking

This subsection will attempt to answer the question: what is the scheme trying to achieve? This is a fundamental issue and needs to be clearly defined. The varying objectives and principles of the scheme will indicate whether the DECC has been effective in communicating its objectives or whether it has weakened public and stakeholder trust. These differing objectives also commend the theory supported by this appraisal that limitations exist in trying to consolidate the differing views of stakeholders regarding biodiversity protection and sustainable development in NSW.⁸²

Arguably, the basic intention of the scheme is clearly understood by the relevant actors and stakeholders, namely to address the biodiversity decline associated with urban development.⁸³ It appears, however, that the drawn out development of *biobanking* has been accompanied by a change in the vital underlying objectives of the scheme. The first public paper released by the DECC in August 2005 titled ‘Biodiversity Certification and Banking in Coastal and Growth Areas’ presented the scheme as a ‘new approach ... based on positive plans for future sustainable

⁷⁵ DEC, above n 57, 7.

⁷⁶ See <<http://www.parliament.nsw.gov.au/prod/parlment/nswbills.nsf/V3BillsHome>> 10 October 2006.

⁷⁷ See <www.parliament.nsw.gov.au/prod/web/common.nsf/V3HHBDayLA?open&key=20061018> 19 October 2006.

⁷⁸ DEC, above n 57, 4.

⁷⁹ Part III B 5.

⁸⁰ *Biodiversity Banking Act* Section 127S.

⁸¹ Although this confusion should be resolved through detail provided in the *biobanking* regulations to be published in the Government Gazette. The *biobanking* regulations are not likely to be released for public exhibition until late 2007 or 2008. For further details and for current information please see www.environment.nsw.gov.au. See also Part II B 3.

⁸² Part III B 2.

⁸³ Every participant indicated this as answer to Question 2; see also DEC, above n 43, 1.

landscapes’,⁸⁴ essentially referring to biodiversity certification. The subsequent *biobanking* Working Paper moved away from biodiversity certification, which was even in the title of the first paper, with an objective clearly aimed at using *biobanking* regardless of the presence of biodiversity certification.⁸⁵ Further, this has been undertaken without any real justification or rationale, despite significant stakeholder concern.⁸⁶

In addition, the scheme originally aimed to utilise the ‘improve or maintain’ principle with preference for conservation of areas with high biodiversity value.⁸⁷ The *Biodiversity Banking Act* is unclear as to whether the use of areas of high conservation value will be favoured over the use of degraded land that can be restored.⁸⁸ This is a critical issue, as contrary to providing incentive to protect biodiversity as an economic instrument, the scheme may now encourage landowners to degrade their land first so that more credits can be generated through subsequent management actions.⁸⁹ As will be discussed, this approach also fails to acknowledge the constraints associated with restoration practices and the ability to recreate complex ecosystems.⁹⁰

It has even been argued that the above mentioned primary objective of rectifying the biodiversity decline that results from urban expansion is an unwarranted one. Put simply, there is evidence that ‘rural activities are primarily responsible for land clearing and any offsets achieved through *biobanking* will have negligible impact’.⁹¹ This argument, however, is redundant if one accepts that the DECC is only attempting to address the impacts of urban expansion,⁹² and has other avenues, for better or worse, through which to address land clearing from different activities, such as the *NVC Act*.⁹³ Even if the total amount of biodiversity loss is negligible as a consequence of urban development, it nonetheless is a definitive loss.

It is therefore fair to say that the way in which the DECC has described *biobanking* is ambiguous, particularly regarding the scheme’s intent. Although this is to be expected considering the *biobanking* scheme is still being developed, it is unwise to change objectives, as stakeholder trust can be lost. This can be detrimental to participation levels in the scheme.⁹⁴

⁸⁴ DEC, above n 63, 4.

⁸⁵ Part II C 2.

⁸⁶ Part II C 2.

⁸⁷ DEC, above n 46, 5.

⁸⁸ For example see the *Biodiversity Banking Act* s 127(B). Response to Question 9, L1, G1; See below n 424 and 425 and accompanying text.

⁸⁹ Ibid.

⁹⁰ Part II B 3.

⁹¹ Response to Question 9, D2.

⁹² See above n 57 and accompanying text.

⁹³ Part II C 3.

⁹⁴ Part II B 1.

D Mitigation Banking in the US

1 Wetland Mitigation Banking

As stated above, *biobanking* was partially formed based on the US mitigation banking systems. Wetland mitigation banking was the first banking of offsets system in the US. This system was created due to acknowledgement that wetlands, which provided important ecosystem services, were being destroyed. Due to the recognition of this loss and the speed at which it was occurring, Congress passed the *Clean Water Act (CW Act)* in 1972, mandating developers to replace as many wetlands as they destroyed, specifically under section 404 of that Act.

In wetland mitigation banking developers can purchase credits that fulfil their compensatory requirements from a wetland bank. The bank needs to have restored, enhanced or created wetland values (to a debatable degree) in order to sell credits.⁹⁵ Such a system has proven to be a popular form of wetland protection and due to developments in the regulation of the use of wetland mitigation banking⁹⁶ it can be observed that such usage has grown. This was demonstrated in the Environmental Law Institute's 2005 report on wetland mitigation banking in the US, where it is stated that there are 405 banks across the US.⁹⁷ Interestingly, *biobanking* is not the only banking of offsets system that has utilised wetland mitigation banking, as the US has also created conservation banking from experience with this system.

2 Conservation Banking

Conservation banking looks specifically at improving the protection of endangered species through conserving their habitat. In this system, developers can buy credits from a conservation bank that is created from the protection, creation or restoration of endangered species habitat.⁹⁸ Active management is favoured for conservation banks in order to improve biological characteristics, such as through weed removal.

An amendment to the *Endangered Species Act (ES Act)* in 1982 made provision for conservation banking. This is significant as the *ES Act* was typically considered a perverse tool for biodiversity protection as it encouraged the removal of endangered species to allow for development. With the provision for conservation banks, endangered species were valued rather than regarded as simply a 'nuisance',⁹⁹ incorporating market-based incentives for endangered species protection rather than just command and control approaches.

⁹⁵ See below Part IV A 1.

⁹⁶ See below Part IV A 4.

⁹⁷ J Wilkinson and J Thompson for the Environmental Law Institute (ELI) '2005 Status Report on Compensatory Mitigation in the United States' (2006) <http://www.elistore.org/reports_detail.asp?ID=11137> 29 June 2006, 4.

⁹⁸ Part IV B 1.

⁹⁹ ten Kate *et al*, above n 3, 26; See below n 343 and accompanying text.

E *The Case For and Against the Banking of Offsets*

1 *The Case for the Banking of Offsets*

The banking of offsets aims to utilise a market in which to place value on biodiversity protection, ‘recognis[ing] the power of the market place, and incentive mechanisms, to focus resources and achieve conservation outcomes’.¹⁰⁰ Essentially then, banking of offsets systems veer away from strict command and control approaches to the use of market based mechanisms in a hope to consolidate the environmental, economic and social pillars of sustainable development.

Environmental benefits are clear as placing value on biodiversity protection increases incentive for its protection. This is particularly beneficial to stakeholders who understand the language of the ‘bottom line’. For example, formerly ‘nuisance’ endangered species are now being protected in conservation banking. This means that the ‘no net loss’, or ‘improve or maintain’ principle, is more likely to be achieved, as opposed to traditional forms of biodiversity protection, for example the use of unconsolidated offsets and threatened species legislation.¹⁰¹ Biodiversity banks can potentially consolidate large areas for biodiversity protection and connect habitat corridors.¹⁰² Arguably, banking offsets systems duly recognise the environmental pillar of sustainable development.

Banking offsets systems can potentially create new jobs and trade significant amounts of money. In terms of market value, an unofficial estimate is that mitigation banking in the US, incorporating both wetland mitigation and conservation banking, trades approximately \$1 billion per year.¹⁰³ New job opportunities may come as a product of new industries, such as the proposed conservation brokers for *biobanking*.¹⁰⁴ Landowners can benefit as they can receive income for their undeveloped land and for conservation efforts, such as restoration.

From an administrative perspective, the benefits also include increased finances for an improvement in biodiversity protection as a result of the creation of a biodiversity market. The implementation of offsets can also be more transparent and consistent with banking offsets systems.¹⁰⁵ In addition, increased participation of other stakeholders in biodiversity protection, such as landowners, will enable a reduction in resources required for other biodiversity protection regulatory regimes. For developers, banking offsets systems may create a more economically efficient

¹⁰⁰ Answer to Question 2 by E4.

¹⁰¹ Response to Question 8, A2; See also Part I B 1.

¹⁰² See below n 314 and accompanying text.

¹⁰³ R Bayon ‘Markets and Biodiversity’ *The Katoomba Group’s Ecosystem Marketplace* <www.ecosystemmarketplace.com/pages/article.opinion.php?component_id=4080&co> 23 February 2006.

¹⁰⁴ Part III B 2.

¹⁰⁵ Response to Question 2, A2.

and simplified development application process, such as reduced compliance costs.¹⁰⁶

From a social perspective, there is an opportunity for banking offsets systems to consolidate various expertise and encourage stakeholders participation in biodiversity protection.¹⁰⁷ It can also provide for flexibility, coordination and consistency in decision making.¹⁰⁸ In addition, if biodiversity protection is achieved, including the use of more strategic offsets, society can receive the benefits that biodiversity provides through ecosystem services, such as carbon sequestration and water purification.¹⁰⁹ This argument recognises that banking offsets systems can aid in achieving social benefits through environmental protection, connecting the social and environmental pillars of sustainable development.

2 The Case Against Banking Offsets Systems

It is argued that biodiversity protection may in fact be further undermined by biodiversity banks. For example, in the case of conservation banking, concern has been raised as to whether endangered species habitat can actually be commodified, that is whether a common unit of exchange can be created that can capture all of the externalities.¹¹⁰ In addition, it is argued that banking offsets systems are a perverse approach to biodiversity protection, allowing destruction to occur or a 'license to trash' for developers, whilst the ecological benefits of the bank sites may be delayed.¹¹¹ In addition, it is also argued that some banking offset systems, particularly those that reward preservation as oppose to restoration, do not actually create biodiversity, but only protect an area from destruction so that there is a net loss in the system.¹¹²

The economic argument against banking offsets systems includes the fact that the money that is used to commodify biodiversity in fact must be raised by the development industry.¹¹³ In addition, it has proven to be very difficult in many cases to create an adequate currency by which to trade biodiversity that encapsulates all externalities.¹¹⁴ There also has to be demand for credits for there to be a viable market, which is a situation that has arisen in carbon trading.¹¹⁵ This demonstrates the difficulties that banking offsets systems may face in utilising an economic

¹⁰⁶ ten Kate *et al*, above n 3, 14.; see in general Part III B 2.

¹⁰⁷ An important approach to sustainable development and Environmental Trading Markets see Part III B 2.

¹⁰⁸ E4 answer to Question 2.

¹⁰⁹ Part I A.

¹¹⁰ C Mills 'Incentives and the ESA: Can Conservation Banking Live up to Potential?' (2004) 14(2) Duke Environmental Law and Policy Forum, 523-561, 542; Part II B 3.

¹¹¹ ten Kate *et al*, above n 3, 19.

¹¹² Response to Question 9, A2; Contra below n 235 and accompanying text.

¹¹³ See below n 150 and accompanying text.

¹¹⁴ Part II B 3.

¹¹⁵ R Bayon 'Making Environmental Markets Work: Lessons from Early Experience with Sulphur, Carbon, Wetlands and other Related Markets' (2004) *Forest Trends* <www.forest-trends.org> 23 October 2006.

instrument to balance the economic pillar with the environmental pillar of sustainable development (discussed in Part II).

With respect to the social effects of banking offsets systems, there is concern that biodiversity banking systems, especially if they are added to, rather than integrated into a planning system, further move to complicate an already complex system.¹¹⁶ This means that stakeholders, including local communities and governments, lose understanding and faith in both the system and administrators of biodiversity protection.¹¹⁷ In addition, there may be social impacts from biodiversity loss in one area that are offset away from the society affected. Further cases for and against *biobanking* will become apparent as this appraisal progresses.

F Need for and Objectives of this Appraisal

1 The Need for this Appraisal: Balancing Sustainable Development Pillars

Typically, the development process allows for social and economic benefits but at the expense of environmental outcomes.¹¹⁸ Policy must therefore seek to recognise, and in many cases balance the three pillars of sustainable development in a transparent and workable manner, if it is to be an effective tool for all stakeholders. It is also observed that no one mechanism is capable of achieving high degrees of biodiversity protection or able to consolidate the three pillars of sustainable development.¹¹⁹ As a Department of Environment and Heritage publication notes: ‘the chances of successful policy design are likely to be improved by utilising an array of policy instruments designed in a complementary fashion, rather than single instruments acting alone.’¹²⁰

Biobanking, if successfully integrated into other biodiversity protection policy approaches and mechanisms, could be an effective sustainable development instrument (Part III). This appraisal is therefore imperative as it will not only determine if *biobanking* can become an effective instrument but will also provide the recommendations for how *biobanking* can be improved to achieve biodiversity protection in NSW.

2 Methodology of this Appraisal

- *Biobanking* will be examined using the following means:

¹¹⁶ Response to Question 9, G3; Part I B 1.

¹¹⁷ Part III B 2.

¹¹⁸ Response to Question 2, E4.

¹¹⁹ Leary, above n 20, 233.

¹²⁰ CSIRO Division of Wildlife and Ecology, Australian Centre for Environmental Law, and Community Solutions ‘Reimbursing the Future’ (1996) Part 1 (see www.deh.gov.au/biodiversity/publications/series/paper9/Chapter1.html), (accessed 24/4/06).

- *Biobanking* will firstly be examined as an economic instrument and further as a market based mechanism, by critically analysing other economic instruments at a global scale with *biobanking* to assert what challenges it may face (Part II).
- *Biobanking* will be tested against the relevant principles and instruments of sustainable development (Figure 3) to determine if the scheme can consolidate the three pillars of sustainable development. Here, empirical evidence will be used that was gained by a questionnaire process undertaken by 20 representatives of relevant stakeholders and experts related to *biobanking*.¹²¹ The participants were chosen because of their direct involvement with the development of the scheme, for example, through publicly available submissions on the DECC *biobanking* publications (Part III).
- US mitigation banking will be examined to form a comparative analysis with *biobanking*, although differences between the US and NSW will be taken into account (Part IV). As this system is already operational, the benefits in using a comparative analysis are clear as potential pitfalls can be identified (Part V).

II THE REGULATORY REGIME FOR BIOBANKING

A *The Emergence of Environmental Trading Markets*

1 *An Overview of Economic Instruments*

Considering the ample policy recommendations for the use of economic instruments and the existence of various types of such instruments, it can be observed that such an approach to environmental protection has become a popular form of control. A brief examination of economic instruments will now be undertaken to aid in understanding the establishment of Environmental Trading Markets and further, banking offsets systems.

Economic instruments, under ideal conditions such as active markets, can provide the lowest cost solutions to environmental problems.¹²² Pollution taxes have been used, which place levies on the water and sewerage industry for example, essentially utilising the polluter-pays principle. This principle states that the person

¹²¹ See Appendix I and II for Table 2 of Code of Participants and Questionnaire respectively.

¹²² P O'Brien and A Vouch for the OECD *Encouraging Environmentally Sustainable Growth: Experience in OECD Countries* (Working Papers No 293 OECD, May 2001) 6; Harrington and Morgenstern, above 15, 15; D James for the Department of Environment and Heritage (DEH) 'Environmental Incentives: Australian Experience with Economic Instruments for Environmental Management' Research Paper No 5, Environmental Economics, 1997) <http://www.deh.gov.au/about/publications/economics/incentives/exec.html>> 19 July 2006.

responsible for pollution should bear the costs of that pollution.¹²³ Deposit-refund systems¹²⁴ and performance bonds¹²⁵ are widely used economic instruments that use market signals with the aim of improving profit and environmental protection.¹²⁶ Economic incentives have also been used in biodiversity protection, as discussed above, through providing landowners with payments for conserving biodiversity on their land.¹²⁷

More recently, marketable permits have developed which also utilise market signals. Essentially these markets commodify an environmental service, such as fish in fishing quotas or water purification by wetlands, by creating a market on which it can be traded.¹²⁸ Such a system, if adequately regulated, can provide good environmental and business outcomes. Such regimes, also known as Environmental Trading Markets, are now being developed in various nations around the globe.

2 Environmental Trading Markets

The first form of Environmental Trading Markets began with emissions trading. As with command and control regulation, such a system requires that emissions are measurable so that they can subsequently be traded. In this system, polluters may choose to reduce their emissions below their prescribed target and sell credits which reflect the excess below that target. The Kyoto Protocol of 1997 gave provision for developed ratifying nations and nations participating in bilateral trade agreements to trade emission credits to other nations, providing a flexible, effective pollution emission reduction system.¹²⁹ Such trading included, for example, companies buying credits in carbon 'sequestration'¹³⁰ from other nations to bring them within the legal limits of compliance.¹³¹

As previously stated, ecosystem services are now being translated into markets in both developing and developed countries. The products of these ecosystem services sustain life and are thus intrinsically connected to social well-being. Therefore, it can be argued that it is just as viable to denote monetary value on these ecosystem

¹²³ P Sands, *Principles of International Environmental Law* (2nd ed, 2003) 279-278.

¹²⁴ For example in South Australia where money is refunded for the returning of beverage containers.

¹²⁵ Performance bonds involve an upfront guarantee by developers, mining companies or other users to ensure that, should they go bankrupt or otherwise neglect their environmental responsibilities, there will be funding available to cover the cost of rehabilitation. James, above n 122.

¹²⁶ IUCN/UNEP/WWF, 'Caring for the Earth – a Strategy for Sustainable Living.' (1991) Gland Switzerland <<http://coombs.anu.edu.au/~vern/caring/caring.html>> 4 December 2005.

¹²⁷ Part I B 2.

¹²⁸ Part I D 1.

¹²⁹ M Jeffery, 'Environmental Management through Market-Based Incentives: A Role for Carbon Trading' (2000) in Craig Text, 349-351, 349; Bayon, above n 103, 5.

¹³⁰ Also known as carbon 'sinks' this process involves the absorption of carbon dioxide by plants through photosynthesis, helping to offset the enormous non-anthropogenic and anthropogenic causes of carbon dioxide emissions.

¹³¹ Jeffery, above n 129, 350.

services as it is the commodities these services provide. As biodiversity is an important ecosystem service, there has emerged a number of active biodiversity Environmental Trading Markets, or biodiversity trading markets, internationally, such as through *biobanking* and mitigation banking. Examples of other types of Environmental Trading Markets in NSW include the Hunter River Salinity Trading Scheme and the Greenhouse Gas Abatement Scheme.¹³² As *biobanking* utilises the same approach to sustainable development as these other Environmental Trading Markets as an economic instrument, it is valuable to examine the operation of such systems as it may be possible to reveal issues that *biobanking* may face in its implementation and operation.

B *Biobanking as an Economic Instrument*

This Section will examine *biobanking* using existing issues with other economic instruments and market based incentives such as other Environmental Trading Markets. As the use of economic instruments utilises the economic pillar of sustainable development, the validity of *biobanking* as an economic instrument will determine its ability to achieve sustainable development. It should be noted here, however, that in the absence of an operational market or even an estimation of a potential market by the DECC, succinct analysis of market issues associated with *biobanking* is not feasible.

1 *Participation and Competitiveness*

Despite their frequent use, economic instruments have not escaped criticism. One argument against the use of these instruments for the reduction of pollution is that some heavy polluters can actually be exempt from reducing pollution on the grounds of concerns with competitiveness.¹³³ In addition, it is difficult to quantify the economic gain that is claimed to occur with the use of certain economic instruments, particularly where design and administration is complex.¹³⁴ In the absence of such certainty, there may be little incentive to participate in their use.

Such issues of competitiveness and participation also exist for *biobanking*. For example, the scheme currently allows for the use of public land, such as Crown land, for *biobanks*.¹³⁵ Bank sites located on public land do not have to factor land prices into the cost of credits.¹³⁶ This can reduce the incentive for private landowners to set up *biobanks* on private land as they may not be as competitive. The use as a bank site of public land that is part of the National Wildlife Refuge

¹³² The GGAS Scheme was created in 2003 as a mandatory emissions reduction scheme aimed at reducing emissions associated with the production and use of electricity. See www.greenhousegas.nsw.gov.au/.

¹³³ OECD, *Policy Brief: Sustainable Development: Critical Issues* (2001) at <<http://www.oecd.org/dataoecd/29/9/1890501.pdf>> 10 May 2006.

¹³⁴ James, above n 122.

¹³⁵ *Biodiversity Banking Act* s 127(F) 2.

¹³⁶ Environmental Defence 'Mitigation Banking as an Endangered Species Conservation Tool' (1999) Environmental Defence Fund, 39; Response to Question 9, L1.

System, is not permitted by the US Fish and Wildlife Service for this reason.¹³⁷ The provision for this is of grave concern to certain stakeholders, particularly private landowners, who assert that this could skew the market in favour of *biobanks* on public land.¹³⁸ Incentives to conserve private land are reduced if the use of public land is permitted for bank sites and should be addressed before implementation of *biobanking*.

With respect to landowner participation, the financial incentive to protect and manage biodiversity will most likely only exist if landowners know that they will receive more money than if they had developed their site. This is particularly true now that the scheme potentially favours degraded sites, as sites with threatened species would be more attractive for landowners to use as *biobanks*, given that restrictions for development already exist.¹³⁹

Developers may also be disinclined to participate because of the voluntary nature of the scheme.¹⁴⁰ This is of much concern to certain stakeholders and experts who assert that a viable market cannot form with such an approach.¹⁴¹ In the US, the debatable successes of the schemes ‘hinges to a large extent on the fact that it is a regulated system, you have to do it, and as a result people have to buy credits and there is a market for credits... it totally changes the nature of the beast if it is voluntary’.¹⁴² This reiterates that both the demand and supply side of *biobanking* is likely to be uncertain. This is also demonstrated in the Victorian Bush Broker scheme, where the supply side is being established before the details of the scheme are being developed.¹⁴³

Since *biobanking* is voluntary, the DECC needs to use a strong marketing approach to better engage the supply and demand side.¹⁴⁴ To date, marketing of the scheme has not been sufficient. This concern is further argued when considering that ‘one way a [banking offsets systems] can fail is through lack of marketing and execution by the agency that administers it...and marketing wise *biobanking* has not been very effective’.¹⁴⁵ This directly connects the use of economic instruments with stakeholder participation.¹⁴⁶ Essentially, the scheme will fail without both the supply and demand side and the support of the associated communities.

¹³⁷ Ibid.

¹³⁸ Response to Question 9, L1.

¹³⁹ Part I B 1.

¹⁴⁰ See above n 78 and accompanying text.

¹⁴¹ Response to Question 9, L1; C3; E4.

¹⁴² Phone interview with Ricardo Bayon, Director of the Ecosystem Marketplace and author, 1 March 2007.

¹⁴³ See Expression of Interest Section in ‘Bush Broker: Trading Native Vegetation Credits’ by Department of Sustainability and Environment <[http://www.dse.vic.gov.au/CA256F310024B628/0/1DD90D4472854890CA25712B00005752/\\$File/bb+brochure+final+1.pdf](http://www.dse.vic.gov.au/CA256F310024B628/0/1DD90D4472854890CA25712B00005752/$File/bb+brochure+final+1.pdf)> 24 October, 2006. For recent developments of the Bush Broker scheme see www.dse.vic.gov.au.

¹⁴⁴ Response to Question 9, G1; Part VI B.

¹⁴⁵ Response to Question 9, E3.

¹⁴⁶ Part III B 2.

2 Investment in Environmental Protection

Economic instruments are favoured largely because they allow for the cost of protecting environmental resources to be absorbed by industries causing most of the damage.¹⁴⁷ In this way, Environmental Trading Markets utilise the polluter-pays principle that is another economic instrument.¹⁴⁸ For the most part, *biobanking* is favoured because it places a value on biodiversity and thus encourages its protection. Thus, one of the main benefits of *biobanking* is that if it is successful, ‘it will establish in NSW for the first time a real economic value for the protection and management of biodiversity on private land’.¹⁴⁹

On the other hand, the party who actually pays for this biodiversity protection is essentially the loser in the scheme. In *biobanking*, funds are to be raised by developers, who in turn are funded by homebuyers, so that

it is not so much a matter of how it affects the [developmental] industry but how it affects homebuyers ... *biobanking* is just another in a long list of taxes, charges and levies by the government ... impeding social and economic growth.¹⁵⁰

This has also been an argument against carbon taxes, where the tax has simply been passed down to consumers and the money gained is not necessarily used for environmental protection.¹⁵¹ Such concern is justified, yet fails to acknowledge that society is already paying for biodiversity loss. It is just a hidden cost, such as through taxes used to pay for managing National Parks or the immeasurable cost of losing species to extinction.

In addition, the argument that *biobanking* is just an additional tax is only viable if the scheme fails to streamline and reduce the cost of developmental processes. As the current threatened species legislation has proven to be costly both in time and resources,¹⁵² if *biobanking* can reduce such resources, paying for biodiversity should not be a significant concern. To be assured of the feasibility of *biobanking* in this respect, developers have the option of

doing some cost tracking, which would involve tracking the cost in time and money of a successful development to see what the cost is and then go into *biobanking* with some confidence as to whether or not it is a profitable and equitable deal.¹⁵³

¹⁴⁷ Response to Question 2, E4.

¹⁴⁸ Response to Question 2, G3.

¹⁴⁹ Response to Question 2, L1.

¹⁵⁰ Response to Question 8, D3.

¹⁵¹ Response to Question 9, L2.

¹⁵² Part I B 1.

¹⁵³ Response to Question 9, E3.

3 Commodifying an Environmental Resource

Other Environmental Trading Markets, such as carbon trading, exist successfully so this is one argument for the establishment of *biobanking*.¹⁵⁴ Such markets are for discrete commodities within a defined market, such as carbon trading in the BASIX model.¹⁵⁵ *Biobanking*, however, 'is in an order of magnitude more complex as it deals with poorly mapped and defined communities'.¹⁵⁶ Essentially, the assessment methodology, which will be integral to placing a currency on biodiversity, can only be based on sciences that are immature and extremely complex, namely ecological and restoration science.¹⁵⁷ This is illustrated by the argument that few successful restoration projects exist in Australia.¹⁵⁸

Such science is unsound because ecosystems are complex in space, type and time; being heterogenous in all three aspects making ecosystems provide different ecosystem services.¹⁵⁹ Ecosystems can also change at unexpected and fluctuating rates depending on a number of variables, for example, the introduction of disease or changes in weather patterns. For instance, it has been documented that climate change can alter ecosystems considerably¹⁶⁰ and climate change is occurring at an unprecedented rate.¹⁶¹

Essentially, as recognised in wetland mitigation banking, protection of biodiversity can only be achieved if what is being traded is equivalent in terms of ecosystem values, known as a non-fungibility in space.¹⁶² *Biobanks*, therefore, must be in ecologically equivalent regions, as is the case in the US where for some mitigation banks the exchange must be in the same watershed.¹⁶³

¹⁵⁴ Simon Smith of the former DEC at *Biobanking* bill Seminar 24 July 2006 presentation; Response to Question 2, D3.

¹⁵⁵ See www.basix.nsw.gov.au for details.

¹⁵⁶ Response to Question 5, D3.

¹⁵⁷ Rachel Walmsley 'Biodiversity Banking Part Two' ABC Online Radio National 17 December 2006 <www.abc.net.au/rn/talks/saturday/stories/s1530822.htm> 4 January 2006.

¹⁵⁸ N Bond and P Lake, 'Local Habitat Restoration in Streams: Constraints on the Effectiveness of Restoration for Stream Biota' (2003) 4 *Ecological Management and Restoration* 193-198, 194.

¹⁵⁹ J Salzman and J B Ruhl, 'Currencies and the Commodification of Environmental Law' (2000) 53 *Stanford Law Journal* 609-647, 645.

¹⁶⁰ The responses to climate change span across species to community level, for example vegetation shift from indigenous deciduous to exotic evergreen broad-leaved vegetation that favours warmer temperatures, in southern Switzerland. Gian-Reto Walther *et al*, 'Ecological Responses to Recent Climate Change' (2002) 416(28) *Nature*, 389-395, 392; OceanWatch 'Biodiversity Certification and Banking in Coastal and Growth Areas' Submission 20 September 2005; Climate change can also change the physical landscape, for example due to sea level rise in coastal areas, which has an indirect impact on species composition and thus ecosystems. S Croke and L Ledoux 'Mitigation Banking as a Tool for Strategic Coastal Zone Management: A UK Perspective' (1999) *Centre for Social and Economic Research on the Global Environment*, 2.

¹⁶¹ C Keller, '1000 years of Climate Change' (2002) 34 *Advances in Space Research* 315-322, 317.

¹⁶² Part IV B 4.

¹⁶³ Bayon, above n 103.

On the other hand, if biodiversity is given a simple surrogate, there is little chance that it can be adequately represented or traded in the desired 'like-for-like' fashion. This is indicated in the US experience where a simplistic assessment model or simplistic surrogates will not achieve biodiversity protection, so this must be considered throughout the development of the methodology.¹⁶⁴ This is being addressed by the DECC, who acknowledges that 'simply setting aside one hectare and developing another hectare will not deliver offsets'.¹⁶⁵ Trading in biodiversity does, however, complicate the already controversial ethical issues associated with the commodification of nature¹⁶⁶ such as the trading of 'a patch of vegetation that may have limited biodiversity value ... but has major aesthetic importance or social importance to the local community'.¹⁶⁷

Such limitations to the assessment methodology and thus adequate trading are apparent for mitigation banking in the US also.¹⁶⁸ The assessment methodology must be predictive yet flexible enough to enable such changes to be measured for the length of the impact at the debit site.¹⁶⁹ This should include an analysis of changes in community values that may affect the market place.¹⁷⁰

4 *The Price of Credits*

The price of credits for *biobanking* is primarily the concern of the development industry that will be purchasing them. Credit prices are market driven with the proposed land use and amount of work required for the upkeep of the *biobank* having an influence on the price.¹⁷¹ The cost of land in the area of the *biobank* will have a major impact on the price of the credits with land that is closer to the urban fringe being more expensive.¹⁷² Other factors that will impact on the credit price will include management costs and interest rates. In addition, the availability of credits from the supply side will dictate the market, for example if there are only five or six bank sites with one threatened species, the price of the credits may be high. If there are twenty to thirty sites, however, competitiveness should decrease the price of the credits. The assessment methodology therefore has an important

¹⁶⁴ Part IV B 4.

¹⁶⁵ DEC, above n 63, 6.

¹⁶⁶ J Salzman and J B Ruhl, above n 159, 6; Response to Question 9, C2; Response to Question 6, I2; David Brand, 'Can the Value of Ecosystem Services Pay for the Conservation of the World's Remaining Tropical Rainforests?' *Session: Demand for Forests and Forest Products 2020 Forests Woods and Livelihoods* www.crawfordfund.org/publications/pdf/forestwoods.pdf 2 October 2006, 2; Phil McManus as cited by Tim Dick, 'Biodiversity Bank Comes Under Fire', *Sydney Morning Herald*, 5 August 2005.

¹⁶⁷ Response to Question 4, E3.

¹⁶⁸ J A Kustler and M E Kentula, 'Wetland Creation and Restoration: The Status of the Science' (1990) *Island Press*. See Part IV B 4 and Part IV C 3.

¹⁶⁹ Part III B 4.

¹⁷⁰ Response to Question 9, G3.

¹⁷¹ R Bonnie 'Endangered Species Mitigation Banking: Promoting Recovery through Habitat Conservation Planning under the *Endangered Species Act*' (1999) 240 *The Science of the Total Environment* 11-19, 15; Response the Question 9 by E4.

¹⁷² Ibid 16-17.

role to play as it will dictate what can be traded. Land price and demand will have the most obvious impact on the cost of credits.¹⁷³ This has largely been ignored in the information released for *biobanking*, including the fact that the type of development will impact on the money available for credit purchasing.¹⁷⁴

In the US, credits for wetland mitigation banking are regularly sold at a price of US\$10 000 to US\$100 000 per acre to developers or state transportation agencies.¹⁷⁵ This variation is indicative of the difficulties in determining ongoing management costs. According to one study, the cost per acre of creating a bank site decreases as the area of the site increases, a fact also recognised by potential participants in the scheme in NSW.¹⁷⁶ As mentioned above, the price of credits is extremely important to developers in particular and thus a transparent, open dialogue concerning such costs will benefit participation levels and successful trading operation.

5 Conclusion: Biobanking as an Economic Instrument

Biobanking offers a promising approach to biodiversity protection as it potentially places value on an environmental commodity that has typically been protected or even subsidised using government resources. *Biobanking* recognises that using a market based incentive can encourage private investment in biodiversity protection, thus ‘trying to bring ... socio-economic objectives and biodiversity conservation objectives into harmony’¹⁷⁷ or balance the three pillars of sustainable development.

As has been the case with other economic instruments, however, *biobanking* must overcome significant economic challenges. These include difficulties in finding an adequate currency for biodiversity, having an understanding of the size of the market and providing enough financial incentive for participation. Such challenges must therefore be addressed by incorporating other principles and instruments of sustainable development, such as stakeholder participation¹⁷⁸ and the principle of prevention¹⁷⁹ if *biobanking* is to be a viable instrument to implement sustainable development. The following Part will thus examine *biobanking* in light of these other principles and instruments.

¹⁷³ M Bonds and J Pompe ‘Calculating Wetland Mitigation Banking Credits: Adjusting for Wetland Function and Location’ (2003) 43 *Natural Resources Journal* 961-977, 969.

¹⁷⁴ Response to Question 9, E2.

¹⁷⁵ P Hemminger ‘Wetland Mitigation Banking’ (2003) 58(6) *Journal of Soil and Water Conservation* 118-119.

¹⁷⁶ Response to Question 7, A2; Crooke and Ledoux, above n 160, 5.

¹⁷⁷ DEC ‘Biodiversity Certification and Banking in Coastal and Growth Areas’ (2005) 3.

¹⁷⁸ Part III B 2.

¹⁷⁹ Part III B 5.

C Biobanking and Legislation

1 The EP&A Act and the TSC Act

It is hoped that *biobanking* will remedy the inflexibility and ineffectiveness of threatened species legislation seen to date.¹⁸⁰ There appears, however, to be a poor reflection in *biobanking* of local plans, policies and strategies under the *EP&A Act*.¹⁸¹ As the planning system is essential to the administration of biodiversity protection legislation at a grass roots level, it is imperative that *biobanking* be adequately integrated into this system. The current lack of strategic integration of *biobanking* into the planning system only serves to complicate further an already complex system. This becomes more convoluted when trying to incorporate the ‘improve or maintain’ test that *biobanking* utilises into the planning system as there is no real ‘improve or maintain’ test under this Act.¹⁸² In fact, there are a number of socio-economic factors which need to be considered.¹⁸³ For example, it has been argued that *biobanking* could benefit from adding public participation as a condition of the *biobanking statement*.¹⁸⁴

It is also argued that as *biobanking* offers an alternative path to the normal threatened species processes, the advantages of such a regime will become obsolete. For example, by replacing the 7 part test inherent in the *TSC Act*, site specific surveys are lost and apt ecological assessment is totally reliant on the assessment methodology for *biobanking*, which, as will be discussed, is filled with uncertainty.¹⁸⁵ The strengths of the site specific assessments include the fact that they are based on an objective test of the impacts on threatened species and are subject to third party appeal rights in the Land and Environment Court.¹⁸⁶ It is therefore argued by some that the NSW government should be attempting to rectify the problems with, or strengthen the existing legislation, rather than developing new untried and untested regimes of biodiversity protection.¹⁸⁷

2 Biodiversity Certification

Directly related to the relationship between the *EP&A Act* and *biobanking* is the uncertain role of biodiversity certification for Environmental Planning Instruments in the scheme. In fact, as mentioned above, the scheme now plans to operate in isolation of biodiversity certification. It has been argued that the absence of certification means that it is unlikely that the scheme will provide a quicker

¹⁸⁰ Part IV C 1.

¹⁸¹ Response to Question 3, L1.

¹⁸² Response to Question 3, C1.

¹⁸³ *EP&A Act* s 79C (b).

¹⁸⁴ Response to Question 8, C1.

¹⁸⁵ Part III B 1.

¹⁸⁶ Fowler, above n 17, 8.

¹⁸⁷ Response to Question 10, G3.

assessment for developers or be adequately incorporated into the planning system, greatly decreasing the incentive to participate.¹⁸⁸

The Urban Development Institute of Australia (UDIA) in NSW, for example, encourages the use of biodiversity certification regarding existing remnant vegetation to remove uncertainty.¹⁸⁹ This will aid in establishing what areas are of conservation priority and potential no-go areas that could eventually be incorporated into the reserve system¹⁹⁰ and further build on the knowledge base of biodiversity in the State.¹⁹¹ Without biodiversity certification, *biobanking* may be as onerous as the existing legislation, thus not providing much of an incentive to participate in the new scheme compared to the threatened species process that is already known, inclusive of costs that are relatively predictable. It has also been argued that with the development of new LEPs across the State, this lack of direction about biodiversity certification means that local governments will remain unsure of how to adequately operate the scheme.¹⁹² It should also be noted, however, that the implementation of biodiversity certification will be costly in both time and resources to local government, for example in terms of mapping and assessing biodiversity values. Such costs should therefore be considered if *biobanking* is used in conjunction with biodiversity certification.

3 *The NVC Act*

The lack of connection between the *EP&A Act* and the *NVC Act* is also of concern. This is because there is no indication of how offsets will be consistently applied between different government agencies. The *Biodiversity Banking Act* will allow for land operating under the *NVC Act* to be used as offsets if it is applicable under the assessment methodology,¹⁹³ though this will require greater intergovernmental coordination to avoid possible inconsistencies.¹⁹⁴ This is of concern as this may, for example, amount to trading in different geographic locations.¹⁹⁵

In addition, the actual assessment methodology of the *Biodiversity Banking Act* and the *NVC Act* Property Vegetation Plans developer software calculate offsets differently, locally for Property Vegetation Plans and more broadly for *biobanking*.

¹⁸⁸ Response to Question 9, D2.

¹⁸⁹ Response to Question 10, E4; UDIA, Position Paper Biodiversity Banking Bill received via email to author 23 October 2006 by UDIA NSW; UDIA NSW Submission to the Joint Select Committee on *Threatened Species Conservation Amendment (Biodiversity Banking) Act 2006* March 2006 received via email to author on 12 March 2006, 7.

¹⁹⁰ Response to Question 10, C2.

¹⁹¹ See below n 238 and 377 and Part VI B; M Sheahan, 'Credit for Conservation: A Report on Conservation Banking and Mitigation Banking in the USA, and its applicability to NSW' (2001) Winston Churchill Memorial Trust of Australia, Canberra, 6; Response to Question 9, C2.

¹⁹² Response to Question 6, G1.

¹⁹³ DEC, above n 63, 7.

¹⁹⁴ See Part III B 2.

¹⁹⁵ Part IV B 4.

The fact that these two methods exist sets up potential conflicts.¹⁹⁶ The DECC will investigate the feasibility of connecting *biobanking* in whole or part to the *NVC Act* that controls clearing and offsetting on rural land.¹⁹⁷

4 *The Mining Act*

Section 127(S) of the *Biodiversity Banking Act* makes provision for mining on land held in *biobanks*. This is appeased by the guarantee that the mining activities will later be offset by on site mitigation, such as restoration or the purchasing of more credits on the market.¹⁹⁸ As stated above, however, this provision for mining moves to further complicate what is being traded and is fundamentally against the interperpetuity nature of the scheme which complies with the theme of inter-generational equity and the principle of prevention. This system also ignores the potential investment in terms of restoration and care taking on a *biobank* that may then hold some community or cultural value and cannot be offset.

5 *The Biodiversity Banking Act*

The *Biodiversity Banking Act* contains detail as to how the scheme will operate, including providing criminal sentences for lack of compliance with a *biobanking agreement* and provision for mining on land held in *biobanks*. It is, however, necessary to discuss the Act in more detail to evaluate how effective the scheme will be. For example, as in the US legislation and regulations pertaining to mitigation banking, the language in the Act seems to be ambiguous at some points.¹⁹⁹ For example, section 127(B) part 3 states that ‘biodiversity values *should* be conserved across *appropriate* local and regional scales’ and further that ‘all types of ecological communities *should* be adequately conserved’ (emphasis added). There is arguably too much flexibility in these words, and room for interpretation.²⁰⁰ Such ambiguity is also a concern with the phrase ‘viable patch’ of vegetation in the legislation, a concern raised during debates on the *Biodiversity Banking* bill in the NSW parliament.²⁰¹

The large number of amendments (62)²⁰² prior to the *Biodiversity Banking Act* being enacted seems also to indicate that the scheme has been pushed through rather than considered and planned more carefully. This is reiterated by members of parliament who debated over the bill, with some extremely discouraged by the ‘dog’s

¹⁹⁶ Response to Question 3, A2.

¹⁹⁷ Email received 22 November Simon Smith of the DEC to author.

¹⁹⁸ *Biodiversity Banking Act* s 127S.

¹⁹⁹ J Neal, ‘Paving the Road to Wetland Mitigation Banking’ (1999) 27(161) *Environmental Affairs* 161-192, 164.

²⁰⁰ Response to Question 10, G3.

²⁰¹ Peter Dowling at *Threatened Species Conservation Amendment (Biobanking Bill)* reader, parliament debate 8 June 2006

²⁰² Andrew Fraser in the *Threatened Species Conservation Amendment (Biobanking Bill)* reader, parliament debate 8 June 2000.

breakfast'²⁰³ formation of the *Biodiversity Banking Act*. It would therefore seem that rather than the scheme offering a way to consolidate the cumbersome and time consuming normal threatened species processes, *biobanking* may only add further confusion and require more resources to administer.²⁰⁴

6 *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*

Despite the above concern that *biobanking* is not consistent with legislation and planning in NSW, there is also some concern that it is not consistent with Commonwealth legislation, namely the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (*EPBC Act*). Under the *EPBC Act*²⁰⁵ for certain development there is a stringent assessment process to undertake. The *Biodiversity Banking Act* ensures that the *biobanking statement* 'switches off' other biodiversity protection processes in NSW, such as part of the *Local Government Act 1993* (NSW), but is unclear as to the relationship of *biobanking* with legislation at a Commonwealth level. It is thus advised that the Commonwealth Government enter into a bilateral agreement with NSW,²⁰⁶ or consider implementing similar schemes in other states and territories.

III BIOBANKING AND SUSTAINABLE DEVELOPMENT

A *The Principles and Instruments of Sustainable Development*

The use of economic instruments and the protection of biodiversity are not the only approaches to sustainable development that are connected to *biobanking*. The principles and instruments related to sustainable development that are directly related to banking offsets systems are outlined in Figure 3 (below). All principles and instruments are an integral part of sustainable development so that when a scheme such as *biobanking* is created, it is necessary to evaluate whether they are adequately and consistently addressed. On occasion, one principle or instrument may over-ride the interest of another because of industry pressure, for example, and it may be necessary to re-evaluate the underlying policy to form an ample policy mix which considers all principles and instruments evenly. Such an occurrence seems to be implicit in *biobanking* because of the changing nature of the objectives²⁰⁷ and the pressure to change the *biobanking* legislation by the development industry.²⁰⁸ It is therefore imperative in this part of the article to test *biobanking* against these principles and instruments to assert whether it will be a viable sustainable development instrument.

²⁰³ Ibid.

²⁰⁴ Response to Question 3, G3.

²⁰⁵ For a good discussion see S Chapple 'The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) One Year Later' (2001) <www.nccnsw.org.au/member/cbn/projects/upload/EPBCAct-One-YearLater_Chapple.pdf> 4 May 2006.

²⁰⁶ UDIA 2007, above n 190, 7.

²⁰⁷ Part I C 2.

²⁰⁸ See above n 150 and accompanying text; Part VI B.

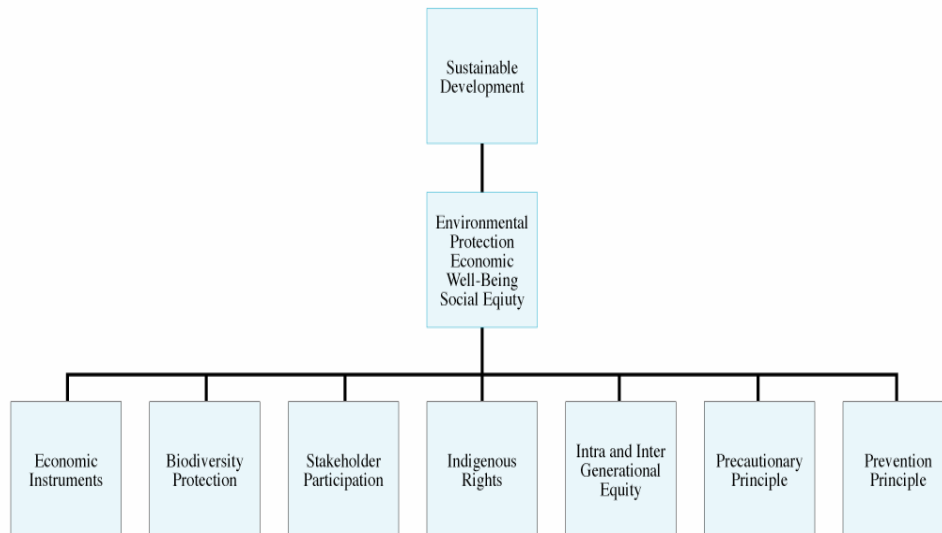


Figure 3: The main principles and instruments relevant to banking offsets systems are illustrated here. Note the intrinsically linked nature of each principle and instrument to the three pillars of sustainable development. Note also that there are other principles and instruments of sustainable development not mentioned here.²⁰⁹

B Evaluating Biobanking in the Context of Sustainable Development

1 The Protection of Biodiversity and Biobanking

The need for the protection of biodiversity has already been discussed briefly in the context of its relationship with economic instruments and the pillars of sustainable development.²¹⁰ This theme will now be used to test the validity of *biobanking* with reference to how the protection of biodiversity is connected to the other principles and instruments of sustainable development.²¹¹ The ability of *biobanking* to adequately achieve biodiversity protection in the coastal regions in NSW is integral to this appraisal because the objectives of the scheme centre on this theme.²¹²

(a) Biobanking and the Environmental Pillar

The protection of biodiversity has proven to be difficult to implement. One issue is that some actors in sustainable development, internationally and domestically, place

²⁰⁹ See B Boer, 'International Aspects of ESD' in C Hamilton and D Throsby eds, *The ESD Process: Evaluating a Policy Experiment* (1998) 83-89, 88; see generally Chapter 6 in Philippe Sands, *Principles of International Environmental Law* (2nd eds, 2003).

²¹⁰ Part I A.

²¹¹ See Figure 3.

²¹² Part 1 C 2.

more emphasis on this theme and can make unrealistic goals for its implementation. For example, developing countries may not have the resources or capacity to enforce policy that pertains to the protection of biodiversity.²¹³ Further, some stakeholders may perceive the application of this theme as inhibiting to other necessary actions associated with sustainable development, such as providing land for housing or facilitating economic growth, which are connected to the two other pillars of sustainable development, social equity and economic well-being. This issue is of particular importance to certain stakeholders to *biobanking*. For example, it is argued that ‘the pursuit of environmental outcomes is likely to have a detrimental impact on social and economic aims where the margins are slim and the buyers can least afford it’.²¹⁴

The concern about the pursuit of environmental outcomes affecting social and economic values can be debated using a number of arguments. Firstly, by the observation that the scheme now seems to be somewhat developer oriented,²¹⁵ as demonstrated by the change in objectives, such as the now voluntary nature of the scheme which developers sought in their submissions.²¹⁶ Secondly, this can be argued because of ‘concerns that *biobanking* may be a back door method of developers avoiding compliance’.²¹⁷ This means that the objective of trying to incorporate the environmental pillar more effectively with the economic and social pillars of sustainable development is being undermined, and that economic concerns may prevail- as has typically occurred.²¹⁸ This issue has not been adequately addressed by *biobanking*, although the complex nature of implementing such a consolidated policy mix cannot be underestimated. *Biobanking* must therefore be considered as part of a policy approach to sustainable development and more specifically, biodiversity protection. This approach, as well as a policy approach to consolidate the principles and instruments of sustainable development related to *biobanking* will be discussed in the Part VI.

(b) *Biobanking and the ‘Improve or Maintain’ Test*

The capacity for *biobanking* to achieve biodiversity protection is largely dependent on its ability to actually ‘improve or maintain’ biodiversity or ensure a ‘no net loss’ of biodiversity values. This is connected to the assessment methodology and in particular the trading rules. The ‘improve or maintain’ principle has also generated debate over what types of land should produce more credits. This issue is discussed below.

²¹³ The Johannesburg Principles on the Role of Law and Sustainable Development adopted at the Global Judges Symposium held in Johannesburg, South Africa on 18-20 August 2002, 3.

²¹⁴ Response to Question 9, D3.

²¹⁵ Response to Question 9, C3; C4; G1, G2.

²¹⁶ UDIA, above n 189; Urban Task Force, above n 47.

²¹⁷ Response to Question 9, E3.

²¹⁸ Response to Question 2, E3, Environmental Liaison Office ‘Environment Groups Response to the Biobanking Bill’ 20 August 2006 received via email from Nature Conservation Council to Author 24 September 2006.

There are many examples of the use of the ‘improve or maintain’ test in NSW, for example with respect to *NVC Act*.²¹⁹ In relation to *biobanking*, this needs to be more clearly defined by the DECC. To date there has been no clear indication of where offsetting will be allowed. Although the DECC states that the clearing of viable patches²²⁰ of endangered ecological communities will not meet the ‘improve or maintain’ test that is to be integrated into the assessment methodology,²²¹ the definition and legal support for this proposition is not provided. For example, any no-go areas have not been indicated, including those of local and regional areas landscape connectivity, which is of concern to a number of stakeholders.²²²

The definition could also be to *reverse* the rate of species or biodiversity decline, rather than reversing the decline itself.²²³ This could further be understood as a ‘net gain’ rather than ‘no net loss’, a greater than 1:1 ratio of biodiversity values or an ‘improve’ rather than ‘maintain’ which is argued in the US case and by some stakeholders to *biobanking*.²²⁴ This is important as it is likely, as in the US, that developers will do the minimum required to remain within compliance,²²⁵ so this must be mandated and not simply suggested. In addition, it must be ensured that the objective to ‘improve or maintain’ biodiversity values prevails over the predominately social and economic values of developers,²²⁶ as such pressures are likely to bias the ‘improve or maintain’ test in many cases.²²⁷ This argument again indicates the need to distinctly consider all pillars of sustainable development equally.

As previously mentioned, the ‘improve or maintain’ test currently allows *biobank* sites to be established on land which does not necessarily have high conservation values.²²⁸ This is of concern as those areas that are of high biodiversity value on private lands may not be managed appropriately, and may deteriorate.²²⁹ It is therefore argued that the ‘improve or maintain’ test should incorporate the favourable assessment of sites with high biodiversity value, and undertake management actions to ensure the integrity of such sites or even further improve

²¹⁹ Part II C 3.

²²⁰ Part II C 5.

²²¹ DEC, above n 63.

²²² Response to Question 9, L1; C3; C4; Part III B 5.

²²³ Nature Conservation Council (NCC) ‘Biodiversity certification and biodiversity banking’ (2005) <www.nccnsw.org.au/bushland/projects/Biodiversity/biobank.html> 24 October 2005.
²²⁴ ten Kate *et al*, above n 3, 15; R C Fleming for Washington Institute for Students of Engineering (WISE) ‘America’s wetlands: a policy analysis of mitigation banking in the US’ <http://www.wise-intern.org/journal04/WISE2004-RyanFlemmingFinalPaper.pdf> 2 October 2005, 24; Response to Question 10, C3, C2, L1; Hugh Possingham, ABC Online, above n 152; Environmental Liaison Office, above n 219, 4.

²²⁵ ten Kate *et al*, above n 3, 50; Interview with Bayon, above n 142.

²²⁶ See above n 118, 151 and 215 and accompanying text.

²²⁷ The Total Environment Centre (TEC) ‘Review of Biodiversity Certification and Banking in Coastal and Growth Areas’ (see <http://www.tec.org.au/member/tec/projects/NaturalAreas/scp4.html>), (accessed 1/11/05).

²²⁸ Part I B 2.

²²⁹ Response to Question 9, L1.

biodiversity values. It has been argued that this would also aid in deterring landowners from degrading the biodiversity value on their sites to enable more credits to be generated.²³⁰ If this argument is valid and such degradation were to occur, it would directly contradict the idea of using economic instruments, and further market incentives to achieve biodiversity protection. This issue may be overcome, however, by auditing potential sites well prior to the implementation of a conservation agreement.²³¹ Further, there should be a minimum level of biodiversity value on a site for it to be eligible for a *biobank*.²³² This is because, as mentioned above, the chances of successfully restoring a site are extremely uncertain.²³³

On the contrary, it is argued that if sites with high biodiversity value are favoured by the assessment methodology, it will be harder to achieve a 'no net loss'. This is because it would be very difficult to replace a whole developmental debit through simple preservation, because there is no actual creation of habitat to replace the loss.²³⁴ It is therefore clear that a conundrum exists with respect to what type of sites should generate more credits. Those favouring sites of high quality vegetation argue that there is still room to improve a site through management actions and that intervention and management of areas of high quality vegetation is necessary to avoid deterioration that may occur, for example from pest invasion or unpredictable climate change impacts.²³⁵ Further, it is argued that the discrimination of sites with high quality vegetation could lead to their deterioration through negligence or even the above mentioned active degrading of the site to generate more credits. To further examine this issue it is useful to look at the US systems (Parts IV and V). One way to overcome such an issue could be to use a mixture of credits for one developmental impact to provide a buffer for bank failure as well as having a sound, publicly reviewed management plan. Such a buffer would require a decent ratio of trading that incorporates the precautionary principle, yet is still palatable to developers.

The 'improve or maintain' test allows for the trading of 'like-for-like or better' in *biobanking*. This is of concern with trading as, although endangered ecological communities will be protected, those communities that are 'less'²³⁶ valuable may then become more endangered as they are incrementally destroyed for the value of another. The DECC states that the 'improve or maintain' methodology will conserve all types of ecological communities,²³⁷ yet without adequate mapping, for example by using biodiversity certification, to identify where these communities exist, this cannot be easily achieved. A biodiversity database²³⁸ must be used to

²³⁰ Response to Question 10, L1; A2; C1.

²³¹ EDO publicly available submission on the *Biobanking* bill emailed to author 23 October 2006.

²³² Ibid; Response to Question 10, L1.

²³³ See above n 157 and 158 and accompanying text.

²³⁴ Response to Question 7, G2.

²³⁵ Response to Question 8 and 10, A2; Response to Question 8, G3.

²³⁶ This is controversial because it implies that an ecological community or species has to be threatened to be valuable.

²³⁷ DEC, above n 63, 3.

²³⁸ See below n 377 and accompanying text.

ensure that ecological communities are not being reduced to threatened or endangered status. The trading between different ecological communities is also an issue because it ignores the possibility that areas of biodiversity may have social or cultural values not accounted for by the assessment methodology²³⁹ and that these values can change over time.²⁴⁰

2 *Biobanking and Stakeholder Participation*

Apt stakeholder participation is directly linked to sustainable development because without the cooperation and contribution of stakeholders, none of the other principles or instruments of sustainable development can be effective. For example, the implementation of market-based incentives requires the participation and support of various industries, particularly local communities, to be successful.²⁴¹ Primarily, however, this theme is linked to the pillar of social equity, as participation in both the economic and environmental decisions regarding sustainable development is a human right because of the way in which such decisions can affect stakeholders.

Adequate stakeholder participation is also provided by international recommendations such as WSSD *Johannesburg Declaration on Sustainable Development* of 2002 (section 26 of the Declaration states that sustainable development requires ‘broad-based participation in policy formation, decision-making and implementation at all levels’) and by Article 12(40) of the *Draft Covenant on Environment and Development* (which states that stakeholders have the ‘right to participate effectively during decision-making processes ... regarding activities ... that may have a significant effect on the environment’). *Biobanking* must therefore be tested against this theme to assess if it can be a viable sustainable development instrument. The stakeholders to *biobanking* can be divided into local governments, developers, landowners, public participation (including local communities), conservationists and conservation brokers. Indigenous stakeholders will be discussed in the context of the need for indigenous rights in section [3] below.

Adequate public participation is imperative to the incorporation of social equity into a sustainable development instrument. Further, public support of banking offsets systems are identified as imperative to their success.²⁴² It is therefore important to evaluate whether *biobanking* can aptly allow for public participation if it can be competent in balancing the pillars of sustainable development. It has been argued that the DECC has been rigorous in the public participation component throughout the development of the scheme.²⁴³ This includes the periodic release of documents, such as the Working Papers for the scheme, engagement with stakeholders through

²³⁹ Response to Question 9, E3; Response to Question 6, C3.

²⁴⁰ Response to Question 6, G3; see also below n 170 and 411 and accompanying text.

²⁴¹ ten Kate *et al*, above n 3, 8.

²⁴² ten Kate *et al*, above n 3, 8.

²⁴³ Response to Question 11, C1; Response to 9, A2.

working groups and information events and a seminar concerning the *Biodiversity Banking Act*.²⁴⁴ The DECC also plans to allow for the assessment methodology to be reviewed before its implementation as well as a formal public review after the scheme has been operational for two years.²⁴⁵

Some stakeholders feel that in fact public participation has not been sufficient, that 'the scheme has been developed through an extraordinarily inclusive consultation process ... not a public one in the general sense'.²⁴⁶ Further, the implications for public participation during the operation of the scheme seem less optimistic. For example, this is evident in the exclusion of public participation in the establishment of *biobanking statements*,²⁴⁷ the concern expressed in various community and environment group submissions²⁴⁸ and the fact that privatising an environmental commodity may in fact subject it to private law.²⁴⁹ This evidence indicates that *biobanking* has not been adequately made available for public participation.

In the US there exist discrepancies between local governments and other agencies that carry out mitigation banking activities.²⁵⁰ This has already been identified as an issue with sustainable development policy in NSW²⁵¹ and with *biobanking* in terms of strategic planning. It is therefore imperative that the *biobanking* scheme seeks to fully educate and incorporate local governments concerning their role in *biobanking*. This is because local governments and the communities they represent will be directly affected by decisions regarding the trading of biodiversity across jurisdictions.

Further, local governments have a role in biodiversity certification and in identifying potential offsets because of their understanding of local areas and direct community contact.²⁵² There is also a potential for local governments to supply land for offsets (although this is a concern to private landowners)²⁵³ review and comment on offsets where appropriate, or act as conservation brokers.²⁵⁴ Local governments should also be involved in the establishment of Regional Conservation Plans that identify such offsets, although this role has not been considered thus far by the DECC.²⁵⁵

The role of local governments could be further extended to reviewing development proposals wishing to use *biobanking* to ensure that the 'mitigation hierarchy', or in

²⁴⁴ The seminar was held on the 24 July 2006.

²⁴⁵ DEC, above n 63, 4.

²⁴⁶ Response to Question 11, G1; Environmental Liaison Office, above n 218, 4, 5.

²⁴⁷ Response to Question 11, C2; C4.

²⁴⁸ Environment Liaison Office, above n 218, 5; EDO, above n 226.

²⁴⁹ Response to Question 9, C2.

²⁵⁰ Neal, above n 199, 167 and 168.

²⁵¹ Response to Question 9, L2.

²⁵² Response to Question 6, G1.

²⁵³ See above n 135 and accompanying text.

²⁵⁴ Response to Question 6, G1.

²⁵⁵ Ibid.

other words the use of avoidance, minimisation and then mitigation to achieve environmental protection prior to using offsets, has been adhered to. Conversely, some stakeholders feel that local governments are not equipped for such a task, with significant resource limitations making additional roles in biodiversity protection unrealistic.²⁵⁶ In addition, some local governments feel that their role will be minimal, especially considering the lack of integration into land use planning.²⁵⁷ It can also be argued that *biobanking* could benefit local governments as it will reduce the resources necessary to carry out normal threatened species processes and ‘remove the debate [such as between developers and local councils about land clearing] ... as the *biobanking* decision will have already been made by the State government’.²⁵⁸

Overall, however, it appears that local governments are not well informed about what role they will play in *biobanking* and that involvement will ‘be at a low level and very patchy’.²⁵⁹ Considering that the scheme is currently being piloted there is a need to further educate local governments, or firmly establish the administrative role of the local governments. It could also be argued that such education is needed for the Catchment Management Authorities who will also be affected by the scheme.

Landowner participation is linked to the viability of *biobanking* as an economic instrument because their participation will indicate if the financial incentives of the scheme are sufficient.²⁶⁰ Clearly, *biobanking* needs to assure landowners of the benefits of participating in the scheme if there is to be a supply side.²⁶¹ Such benefits need to be expressed through clarity and additional advice to prospective participants who may then be able to make informed decisions as to whether to participate or not.²⁶²

The scheme could be beneficial in that it ‘holds potential for local group[s] to take a brokerage role in promoting and encouraging local landholders to seek biodiversity credits [being] much more attractive than other schemes *if* the value [of the credits] becomes significant’.²⁶³ In addition, potential participants in the scheme may include stakeholders who are not typically considered as such, for example some developers and indigenous communities. Apt marketing of the scheme could aid in addressing this.²⁶⁴

²⁵⁶ See for example the Bigscrub Environmental Centre ‘Threatened species changes: implementation of biodiversity certification of local government plans (LEPs) in NSW coastal regions’ (2005) <www.bigscrub.org.au> 28 October 2005.

²⁵⁷ Response to Question 3, G3; Part II C 2.

²⁵⁸ Response to Question 9, E2.

²⁵⁹ Response to Question 3, G1.

²⁶⁰ Part II B.

²⁶¹ Part II B.

²⁶² Response to Question 10, L1; Part VI B.

²⁶³ Response to Question 8, E3.

²⁶⁴ Part VI B.

Conservation brokers will be imperative to the operation of the scheme.²⁶⁵ Initial concerns about the ability of conservation brokers to adequately use the assessment methodology has been addressed in Section 127(ZZI) of the *Biodiversity Banking Act*, which states that the regulations may determine whether a person is a ‘fit and proper person to be accredited as a conservation broker’. This should allow only an accredited person to be able to use the assessment methodology tool, rather than a developer who may be incapable of aptly using it.²⁶⁶ How such stakeholders are to remain transparent and accountable is also not yet demonstrated. Auditing could be used to overcome such an issue.²⁶⁷ Marketing of and clear criteria for this role will be imperative to the successful emergence of conservation brokers (Part VI).

Developers are also extremely important stakeholders in the scheme because they will be providing the funding for the establishment and operation of the market and therefore link stakeholder participation to the use of economic instruments. Without developer confidence in the scheme, the market is unlikely to have the strength required to attract investment from either developers or other sources, such as financial institutions. Without any other source of seed funding, *biobanking* is likely to fail. There has been much scepticism about the validity of the scheme and its ability to deliver the desired outcomes for developers. Developers want simple and inexpensive compliance measures, and have largely felt that the current system is not meeting these needs.²⁶⁸ By and large, such concerns have been appeased by the *Biodiversity Banking Act*, for example the removal of the potentially compulsory nature of the scheme and the protection from additional assessment tests that may be incurred by local governments.²⁶⁹ Such appeasements have, however, been at the expense of other stakeholders,²⁷⁰ thus demonstrating the difficulties the DECC faces in trying to consolidate the pillars of sustainable development with the needs of different stakeholders.

Conservationists are important stakeholders to *biobanking*, for if the scheme should fail to deliver the desired biodiversity protection outcomes, the interests of conservationists will be undermined. Conservationists therefore link stakeholder participation, or the social pillar of sustainable development with environmental protection, or the environmental pillar of sustainable development. Conservationists in general feel that *biobanking* cannot achieve biodiversity protection. The main concerns include the voluntary nature of the scheme, the ability to trade between different ecosystem types, the lack of detail about the assessment methodology – including how this will achieve a ‘maintain or improve outcome’ – and the further

²⁶⁵ See above Figure 1.

²⁶⁶ Environmental Defenders Office (EDO) NSW submission on ‘Biobanking: A Biodiversity Offsets and Banking Scheme Working Paper’ March 2006 <<http://www.edo.org.au/edonsw/site/policy/biobank060405.php>> 3 May 2006.

²⁶⁷ Ibid.

²⁶⁸ Part I B 2; Response to Question 2, L2.

²⁶⁹ *Biodiversity Banking Act* s 127(B) 7.

²⁷⁰ For example, the now voluntary nature of the scheme see above n 140 and accompanying text.

reduction in public participation.²⁷¹ These concerns have been provided in various submissions from various local, regional and state environmental groups.²⁷²

To date, little has been done to address such concerns, and instead the scheme appears to have moved in the direction of developer interests, including the provision for mining on *biobank* sites.²⁷³ If the scheme is implemented without taking into account the realistic concerns of conservationists, it can only be assumed that it has not adequately balanced the three pillars of sustainable development. Ways through which this can be rectified will be provided in Part VI.

3 Biobanking and Indigenous Rights

The role of indigenous communities in sustainable development is extremely important yet often severely undermined.²⁷⁴ Some indigenous communities have been practicing sustainable development for thousands of years, hence their knowledge is invaluable to the present application of sustainable development.²⁷⁵ This is recognised at an international scale by Principle 22 of the *Rio Declaration* and section 25 of the *Johannesburg Declaration on Sustainable Development* of 2002 that asserts the 'vital role of indigenous peoples in sustainable development and further in Section 44(j) which recognises the rights of indigenous communities regarding Traditional Ecological Knowledge as previously provided by Article 15 of the CBD. Enhancing the rights of indigenous communities is linked to other approaches to sustainable development, such as the protection of biodiversity through the existence of traditional ecological knowledge and stakeholder participation. In relation to *biobanking*, this theme is considered a very important component and the overall lack of integration of indigenous interests in biodiversity and natural resources in the scheme is symptomatic of broader problems related to indigenous rights in NSW.²⁷⁶

There is little information regarding the role of indigenous stakeholders in *biobanking*, besides a mention in the Working Paper of the potential role of indigenous communities as conservation brokers.²⁷⁷ Indigenous communities are

²⁷¹ For general overview of these concerns see Environmental Liaison Office, above n 218, 2; Response to Question 9, C1, C2, C4.

²⁷² Bigscrub Environmental Centre, above n 256; EDO submission, above n 266 and the Environmental Liaison Office, *ibid*.

²⁷³ Part II C 4.

²⁷⁴ M Davis *Biological Diversity and Indigenous Knowledge* (1998) <www.aph.gov.au/library/pubs/1997-98/98rp17.htm> 10 October 2005.

²⁷⁵ International Institute of Rural Reconstruction (IIRR), Philippines, 1996. 'Recording and using indigenous knowledge: a manual' <http://www.unesco.org/most/bpindi.htm#_ftn2> 23 October, 2006.

²⁷⁶ Response to Question 9 and 10, I2; See generally T Corbett, M Lane and C Clifford 'Achieving Indigenous Involvement in Management of Protected Areas: Lessons from Recent Australian Experience' (Research Paper No 5, Aboriginal Politics and Public Sector Management, Griffith University, 1998).

²⁷⁷ DEC 'Biobanking - A Biodiversity Offsets and Banking Scheme' (Working Paper December 2005) 7.

stakeholders to *biobanking* as they can potentially participate in establishing *biobanks* and selling credits by providing a number of land holdings as biobank sites.²⁷⁸ There appears to be, however, a lack of understanding of indigenous issues related to land rights, inhibiting this potential. Such problems are beyond the scope of this appraisal although it is recommended that these issues need to be further examined in order to achieve sustainable development in NSW.

There is also a role for traditional ecological knowledge in the assessment methodology although this has been overlooked by the DECC.²⁷⁹ The general responses to the questionnaire regarding the role of indigenous communities indicated a broad lack of understanding of such land rights issues and traditional ecological knowledge, which again is indicative of the current state of indigenous issues in NSW. There is clearly a need, therefore, to rectify this, for example by ensuring that there is an indigenous representative on the MRG.

4 *Biobanking and Inter and Intra Generational Equity*

As introduced in Part I, inter-generational and intra-generational equity are fundamental to sustainable development as they form the crux of the definition provided by the WCED report *Our Common Future*. In addition, other international recommendations such as Principle 3 of the Rio Declaration refer to these themes. Inter-generational equity is important as it forces states to produce policy that ensures long-term benefits, rather than temporary solutions to environmental problems. Intra-generational equity is also important as it seeks to consolidate the inequities suffered by present human populations, such as between developed and developing countries.²⁸⁰

Inter-generational and intra-generational equity are thus important to banking offsets systems because these schemes aim to conserve biodiversity for present and future generations, recognising the connection between environmental protection and social equity. Inherent in these themes is the need to provide economic development to sustain present and future populations, thus advocating the need for urban growth in areas such as NSW.²⁸¹ This demonstrates the conundrum between environmental protection and the developmental or economic needs of the present and future populations.

Evidence suggests that the current *biobanking* system seems unable to achieve inter and intra-generational equity. This is demonstrated in the seemingly short term 'fix' that the scheme implicitly displays. For example, the fact that a *biobank* may itself be offset by the Environment and Planning Minister in future if the site is deemed

²⁷⁸ Response to Question 12, A2; Response to Question 7, I2.

²⁷⁹ Response to Question 12, D1.

²⁸⁰ For a good discussion see the UN's Millennium Development Goals Report of 2006 <<http://unstats.un.org/unsd/mdg/Resources/Static/Products/Progress2006/MDGReport2006.pdf>> 4 November, 2006.

²⁸¹ This supports the above-mentioned economic pillar of sustainable development Part I A.

necessary for mining activities by the Minister for Primary Industries²⁸² demonstrates such short-term thinking.

Although such cancellations of *biobanks* will be accompanied by the purchasing of credits elsewhere to comply with the ‘improve or maintain’ test, it will be very difficult to keep track of what has been traded and what will be lost by this seemingly endless offsetting system. This fundamentally devalues the scheme and is connected to the not so ‘in-perpetuity’ nature of the conservation agreements that have been ‘used to date’.²⁸³ This suggests that the current *biobanking* scheme cannot achieve inter-generational equity. Such lack of long-term management has also been seen in Voluntary Agreements on private land in NSW.²⁸⁴

In addition, the trading of biodiversity values in one area for a completely different area means that some communities may suffer the consequences of biodiversity loss with little or no compensation. The lack of encouragement for indigenous involvement as discussed above may also move to further degrade the social and economic status of many indigenous communities. It is apparent, therefore, that intra-generational equity cannot be achieved without consideration of indigenous rights and community needs.

Intra-generational and inter-generational equity are thus intrinsically linked to stakeholder participation as clearly the needs of present and future generations must be determined by representatives of those generations.²⁸⁵ *Biobanking* and further sustainable development policy in NSW should consider the issues discussed in this section, adhere strongly to these themes and plan long-term when developing such schemes.²⁸⁶

5 *Biobanking and the Principles of Prevention and Precaution*

The principle of precaution can be defined as a decision-making approach which prohibits any activity harming the environment, even in the absence of scientific evidence linking a substance or activity to such environmental damage.²⁸⁷ International recommendations for the precautionary principle include Principle 15 of the *Rio Declaration*, Article 7 of the *Draft Covenant on Environment and Development* and Principle 6 of the *Earth Charter*. Limitations in the application of

²⁸² Ibid.

²⁸³ Response to Question 9, C2.

²⁸⁴ Part I B 3.

²⁸⁵ This is an issue as how can we determine who can represent future generations? For a good discussion on this issue see H Veinla, ‘Sustainable Development as the Fundamental Principle of Europe’s Environmental *Ius Commune*’ (2005) *Juridica International* 115-125, 120.

²⁸⁶ Response to Question 10, E3; N Brunton, ‘Environmental Regulation: The Challenge Ahead’ *Alternative Law Journal* 24(3) (1999) <see www.austlii.edu.au/cgi-bin/disp.pl/au/journals/AltLJ/1999/24.html?query=sustainable+development> 2 April 2006.

²⁸⁷ J Cameron and J Abouchar, ‘The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment’ (1991) 14 *Boston College International and Comparative Law Review* 1.

this principle directly relate to other principles of sustainable development such as stakeholder participation. This is evident in the belief of some developers that the application of the precautionary principle may be stifling to the progression of economic development.²⁸⁸

Biobanking does not take the principle of precaution into account. This is indicated by the fact that ecological and restoration sciences that are riddled with uncertainty will be forming part of the assessment methodology. The precautionary principle should be incorporated into the assessment methodology to act as a kind of buffer should the methodology be unsound or restoration attempts fail,²⁸⁹ such as by mandating a greater than 1:1 ratio. The mitigation hierarchy must be adhered to so that offsets are used as a last resort.²⁹⁰ The assessment methodology regulations that are to be published in the Government Gazette must therefore be very clear on what must be undertaken to adhere to the mitigation hierarchy.

The principle of prevention maintains that the most effective way to protect the environment is to avoid any damage to it. This is significant because it recognises that the altering of the environment is riddled with uncertainty and unpredictability making management very difficult. This principle is explicit in Article 6 of the *Draft Covenant on Environment and Development*, which states that ‘protection of the environment is best achieved by preventing environmental harm rather than by attempting to remedy or compensate for that harm’. Interestingly, this principle is in conflict with other principles of sustainable development, such as the development component of intra and inter-generational equity, as inevitably development incurs some environmental damage.

This is of importance to *biobanking* because it fundamentally contradicts an important component of the scheme, which allows for the destruction of habitat through compensation elsewhere. For the part of *biobanking* that does comply with this principle, that is on the *biobank* sites, it is necessary that these sites be prevented from any present and future damage. To reiterate, this principle is thus linked to the theme of inter-generational equity.

There is concern, however, that this long-term protection may be compromised by the Ministerial ability to override a *biobanking agreement* for other developments.²⁹¹ This is not only contradictory to the principle of prevention, but also contradictory to section 127(B) of the *Biodiversity Banking Act*, which states that ‘any areas conserved under the *biobanking* scheme must be viable in the long-term’.

²⁸⁸ See above n 282 and accompanying text.

²⁸⁹ Response to Question 10, C4.

²⁹⁰ Response to Question 10, C3, Kate *et al*, above n 3, 10.

²⁹¹ See above n 76 and accompanying text.

In addition, threatened species habitat simply should not be available for development.²⁹² ‘High conservation value areas must be given strong legal protection from urban clearing before this scheme is introduced’²⁹³ and further the formal reserve system in public ownership should be the basis of conservation and should not be compromised.²⁹⁴ It would seem that the scheme ignores the value of the formal reserve system, which is intrinsically connected to the principle of prevention, running the risk of undermining the strict protection reserves as outlined in IUCN Protected Areas Categories I-IV.²⁹⁵ There should therefore be more focus placed on broad regional areas of high conservation values for consideration of protection in-situ, such as in the reserve system, to ‘stop the impact before it happens [rather than] focusing on offsetting’.²⁹⁶

6 Conclusion: Biobanking and Sustainable Development

It can be observed that *biobanking* is intrinsically connected to the principles and instruments of sustainable development that are connected to banking offsets systems. It should be noted, however, that many of these principles and instruments inherently contradict each other, such as the principle of prevention, encompassed by the environmental pillar of sustainable development, and inter-generational equity, where economic growth is needed for the survival of future generations. What needs to be determined, therefore, is if *biobanking* can adequately encompass these principles and instruments so that a balanced sustainable development approach can be achieved. This can be done by addressing and rectifying the negative impacts that the current *biobanking* scheme has on each principle as discussed (Part VI).

IV MITIGATION BANKING IN THE US

A Overview

The purpose of this Part is to examine two currently operating banking offsets systems, namely wetland mitigation banking and conservation banking in the US, to form a basis for comparison with *biobanking*, revealing potential challenges and indicating how such challenges could be addressed. The themes apparent from the literature on both wetland mitigation banking and conservation banking have formed the sections of this Part, under which the issues associated with mitigation banking will be critically analysed. In Part V, these issues will be discussed in the context of *biobanking*.

²⁹² Response to Question 10, C2; C3; C4.

²⁹³ Response to Question 10, C3.

²⁹⁴ Bigscrub, above n 256; C2.

²⁹⁵ Figgis, above n 31, 22.

²⁹⁶ Response to Question 10, A1.

B Wetland Mitigation Banking

1 The History of Wetland Mitigation Banking

In the US, wetlands were typically viewed as wastelands that offered little aesthetic or functional value and were developed without significant constraint. However, it was soon realised that wetlands were unique habitats to various species of flora and fauna and provided important ecosystem services, such as flood mitigation and water filtration. Yet due to the flat topography of wetlands and their general manageability, wetlands continued to be inundated with development. It is now estimated that over half of the original 230 million acres of wetland that existed prior to the first settlers has been destroyed.²⁹⁷

In addition to the provisions for the use of wetland mitigation banking in the CW Act,²⁹⁸ the Clinton administration determined that there should be 'no net loss' of wetlands, an objective also determined by the Conservation Foundation in 1988.²⁹⁹ In order to achieve this, a sequencing approach was legislated, which is still utilised today, where evidence is required to show that developers use the least environmentally damaging alternative, minimise any unavoidable impacts or compensate for or offset any harm.³⁰⁰ As mentioned above, this approach is also known as the mitigation hierarchy.

Compensation is then achieved by the restoration, enhancement, creation or preservation of wetlands, collectively termed 'mitigation'. In order to mitigate, developers could replace the wetlands themselves, pay in-lieu fee providers to replace them at a future time³⁰¹ or buy credits from wetland banks that actively restore, enhance or create wetlands.³⁰² The third option, frequently termed 'wetland mitigation banking', was seen as a more effective consolidated approach to other forms of compensation that typically led to isolated wetlands that provided little viable wetland function.³⁰³

2 Policy and Regulatory Context

Much activity concerning regulating mitigation banking comes under federal jurisdiction, specifically under the *CW Act*. Since the 1980s, the Environmental Protection Agency (EPA) and the Army Corps of Engineers (Corps) have provided guidance for the creation of banks under Section 404 of the *CW Act* and value

²⁹⁷ Neal, above n 199, 161.

²⁹⁸ Part I D 2.

²⁹⁹ Neal, above n 199, 162.

³⁰⁰ Neal, above n 199, 162.

³⁰¹ Such payment goes to a fund held by providers that may be an agency or not for profit organisation who then use the money for conservation projects. Sheahan, above n 191, 21.

³⁰² A Kenny for Ecosystem Marketplace, 'Reactions to the New Regulations' Wetland/Species Mitigation: Daily Coverage of the 2006 Mitigation/Conservation Banking Conference Volume 1(1) <www.ecosystemmarketplace.com> 23 May 2006.

³⁰³ Neal, above n 199, 174.

credits to sell to developers. The Corps also ensures that the mitigation hierarchy is adhered to and that banking is an acceptable form of mitigation.³⁰⁴ The Fish and Wildlife Service (FWS) cooperates with both the Corps and the EPA to review permits under the Section 404 program, as the Corps is required to consult the FWS prior to issuing permits. The National Conservation Service (NCS) also participates in issuing policy guidance for wetland banking. In addition, the National Marine Fisheries Service (NMRS) is actively involved in providing guidance on wetland mitigation banking in coastal areas.

Due to inconsistencies with the administration of the *CW Act*, a Memorandum of Agreement was signed in 1990 to try to resolve these inconsistencies, recognising sequencing as the best avenue to wetland protection.³⁰⁵ The Memorandum of Agreement also recognised banking as the optimal approach to mitigation. However, the EPA and Corps did not provide adequate guidance for banking until the 1995 Federal Guidance for the Establishment, Use and Operation of Mitigation Banks (Federal Guidance). The Federal Guidance initiated the policy framework from which banking became functioning.³⁰⁶ Initially, participation was limited, until the introduction of the *Transportation Equity Act for the 21st Century* (TEA-21) in 1998. TEA-21 refers to banking as the best form of compensatory mitigation for the development of roads, which contributes greatly to the loss of wetlands.³⁰⁷

Despite the addition of further guidelines on mitigation banking that aim to strengthen wetland mitigation such as the TEA-21, and more recently the draft mitigation regulations titled *Compensatory Mitigation for Loss of Aquatic Resources* under the section 404 of the *CW Act*,³⁰⁸ there is still much scepticism as to the viability of wetland mitigation banking. Such a system requires a strong, transparent regulatory regime, with minimal risks, in order to be successfully implemented. However, there is concern that such a regime does not exist in the context of wetland mitigation banking, inhibiting the goal of ‘no net loss’. These concerns will be discussed in section 4 below.

3 The Mitigation Banking Review Team (MBRT)

The MBRT will now be discussed because of the potential use of this system in *biobanking* (Part VI). The MBRT is an interagency group of Federal, State, Tribal and/or local regulatory and resource agency representatives which are signatories to a banking instrument and oversee the establishment, use and operation of each bank. The MBRT consists of representatives from the Corps, FWS, the EPA, and pertinent state resource agencies. Also included are any Tribal or local park district representatives as needed.

³⁰⁴ US Federal Register no. 58609; Flemming, above n 224, 19.

³⁰⁵ Neal, above n 199, 169; D J Edwards, ‘Wetland Mitigation Banking: Is the Current System Beyond Repair?’ (2003) 16 *Tulane Environmental Law Journal* 445-470, 450.

³⁰⁶ Neal *ibid* 171.

³⁰⁷ Neal *ibid* 181.

³⁰⁸ Passed in March 27, 2006.

The MBRT validates the bank and its operations, such as monitoring, before a permit can be approved and wetland credits generated. Besides the bank sponsor, numerous government agencies are involved in the operation of wetland banks. Unfortunately, little information is available regarding the operation of MBRTs and whether they have been successful in their objectives. Nonetheless, because of the inclusion of various stakeholders in decisions regarding the operation of banks, this approach is considered to be robust and will be recommended in the context of *biobanking* in subsequent Parts.

4 *Wetland Banking as an Economic Instrument*

Banking offsets systems such as wetland mitigation banking aim to achieve sustainable development through utilising economic instruments.³⁰⁹ It is important, therefore, to consider whether wetland banking has, or will have, the capacity to achieve sustainable development to form a basis on which to evaluate the validity of *biobanking* as a sustainable development tool and provide some recommendations on how *biobanking* could be improved. To evaluate this, the ability of wetland mitigation banking to protect biodiversity will primarily be analysed. This is because biodiversity protection can be regarded as the goal of the US objective of ‘no net loss’ of wetland values. However, is ‘no net loss’ actually being achieved? Before answering this, a discussion of the most relevant issues must be undertaken.

One concern is that the regulatory guidance provided by the Corps fails to adequately direct relevant stakeholders, such as developers and bankers, on producing viable banks.³¹⁰ This indicates an inadequate stakeholder participation process. The Corps has also been criticised for the lack of monitoring of banks or enforcement in the event of the breach of regulation.³¹¹ To add to this, accountability is an issue as it is not clear in the regulations which party is responsible for the failure of a bank.³¹² This is a particular concern as environmental losses are not adequately dealt with, even if a party is held responsible through legal action.³¹³

Despite these concerns, the supporters of wetland mitigation banking, such as the Corps and the EPA, are adamant about the various economic and environmental

³⁰⁹ See generally Part II A.

³¹⁰ Edwards, above n 305, 452; Phone Interview with William Warncke from the Oregon Department of Transport (ODOT) and author on 27 February 2007.

³¹¹ United States Government Accountability Office (GAO) ‘Wetlands Protection: Corps of Engineers Does Not have an Effective Oversight Approach to Ensure that Compensatory Mitigation is Occurring’ (2005) < <http://www.gao.gov/htext/d05898.html> > 6 June 2006; D Spieles, ‘Vegetation Development in Created, Restored and Enhanced Mitigation Wetland Banks of the United States’ (2005) 25(1) *Wetlands* The Society of Wetland Scientists, 51-63, 58.

³¹² D Fleischer, ‘An Ongoing Debate: Wetland Mitigation Banking, Environmentalists Express Concern’ in ‘Banking on Conservation: Species and Wetland Mitigation Banking’ (2006) <http://ecosystemmarketplace.com/pages/article.news.php?component_id=2235&component_version_id=3506&language_id=12> 6 June 2006.

³¹³ Phone interview with Ricardo Bayon, above n 142.

benefits. Mitigation banks generally consolidate larger areas, being economically and environmentally more effective than smaller, project-specific compensation approaches.³¹⁴ For one thing, larger sites allow for better ecosystem services such as flood mitigation and are easier to monitor than smaller sites.³¹⁵ In addition, contrary to other forms of compensatory mitigation, banking allows for minimal lag time between the time when wetlands are destroyed and restored, so that there is more guarantee that compensation is occurring.³¹⁶

In contrast to this claim, it is argued that some banks take decades to reach maturity, and considering the 5-year monitoring regime recommended by the Federal Guidance,³¹⁷ there is no certainty that this alleged compensation is actually occurring. Inadequate monitoring has been identified as a major hindrance to the success of wetland banking.³¹⁸ This issue is known as a non-fungibility in time.³¹⁹ Some critics also assert that many banks are too far from the impact site to be truly representative. This is an issue known as a non-fungibility in 'space'.³²⁰ The third is non-fungibility in 'type',³²¹ because as wetlands are invariably heterogeneous, trading with an 'acre by acre' surrogate (as recommended in regulations such as the Memorandum of Agreement) in the absence of functional data, means that trading will not be like-for-like.³²²

It is therefore imperative that future regulations be specific about what is being traded, such as in TEA-21, where credits can only be bought in the same watershed.³²³ In addition, it has been argued that using a compensation ratio of greater than 1:1 is beneficial as this can be used as insurance against the failure of a

³¹⁴ J L Bolger, 'Creating Economic Incentives to Preserve Unique Ecosystems: Should Wisconsin Adopt a Private Wetlands Mitigation Banking Policy?' (2000) 83 *Marquette Law Review* 625-658, 641; J Treweek, Submission to the Environmental Planning Study 14 June 2000 *Royal Commission on Environmental Pollution* <www.rcep.org.uk/epevid/P2-JT.htm> 26 June 2006.; S Crooke and L Ledoux, 'Mitigation Banking as a Tool for Strategic Coastal Zone Management: A UK Perspective' (1999) *Centre for Social and Economic Research on the Global Environment* 5.

³¹⁵ White Paper submission to the Governor's Advisory Council for Georgia's Land Conservation Partnership 'Mitigation Banking' (2004) <http://www.gadnr.org/glcp_old/Assets/Documents/Mitigation_Banking_White_Paper.pdf> 8 June 2006.

³¹⁶ Neal above n 199, 177; Such benefits for *Biobanking* are identified by the DEC, see above n 46.

³¹⁷ Section 3 of the *EP Act*'s 'Federal Guidance for the Establishment Use and Operation of Mitigation Banks' <<http://www.epa.gov/owow/wetlands/guidance/mitbankn.html>> 7 June 2006.

³¹⁸ Rural Industries Research and Development Corporation (RIRDC) 'Emerging Markets for Environmental Services: Implications and Opportunities for Resource Management in Australia' (2001) <<http://www.rirde.gov.au>> 23 August 2005, 20.

³¹⁹ Salzman and Ruhl, above n 159, 630.

³²⁰ Salzman and Ruhl, above n 159, 627; M Robertson, 'The Neoliberalization of Ecosystem Services: Wetland Mitigation Banking and Problems in Environmental Governance' (2004) 35 *Geoforum* 361-373, 370.

³²¹ Ibid 629.

³²² Edwards, above n 305; Flemming, above n 224, 17; *ibid* 369.

³²³ Neal, above n 199, 186.

bank site.³²⁴ This is essentially a kind of buffer for potential failures, utilising the precautionary principle³²⁵ and thus strengthening the system. Wetland mitigation banking can only contribute to wetland protection if the credits that are being traded adequately represent ecosystem functionality.³²⁶

The Environmental Law Institute study revealed that in the US there were 405 approved mitigation banks.³²⁷ Although wetland banking offers a promising approach to wetland protection, as discussed, there are many issues associated with wetland mitigation banking that must be considered. Some even speculate that wetland banking has not even come close to achieving the prescribed goal of 'no net loss'.³²⁸ This is supported by additional information in the Environmental Law Institute report which states that of the 405 approved banks only 330 were active, with 24 inactive banks identified.³²⁹ To add to this, it may be argued that information provided for such statistics are from sources, such as the Corps, that are inherently unreliable,³³⁰ so the claim that an approved bank is actually contributing to 'no net loss' and thus biodiversity protection and sustainable development, is questionable.

Such issues can potentially be overcome with a sound regulatory framework. In addition, as determined by the National Academy of Science 2001 report, more highly regulated banks will succeed, thus strengthening regulation will have the most significant impact on wetland mitigation banking.³³¹ To improve accountability, auditing should be stringent and there should be clear rules mandating the replacement of wetland values, not just financial values, in the event of bank failure. For an improved wetland mitigation banking system the strengthening and further creation of regulation that mandates the use of wetland banking should be undertaken.

In summary, as discussed throughout this section, the following recommendations should be considered:

- Improved regulatory guidance.³³²
- Longer period of monitoring and stricter monitoring requirements.³³³
- Greater transparency in accountability should a bank fail.

³²⁴ Environmental Defence, above n 136.

³²⁵ Part III B 5.

³²⁶ Neal, above n 199, 186; Environmental Defence, above n 136, 39; Part II B.

³²⁷ ELI, above n 97, 4.

³²⁸ J Sibbing of the National Wildlife Federation in the US, as cited by Kate ten K *et al*, above n 3, 15; J Laidman and T Henry, 'Wetland Replacement Efforts Fall Short' *Toleblade.com* Toleblade University <www.toleblade.com/apps/pbcs.dll/article?date=2006052&Category=20> 20 June 2006.

³²⁹ ELI, above n 97, 4.

³³⁰ Sibbing, above n 328.

³³¹ Kenny, above n 302.

³³² Part IV B 4.

³³³ See above n 312 and accompanying text; Part V B 1; Part VI.

- A more stringent collection and recording of data regarding the status of banks.³³⁴
- Continued research into an adequate currency for trading wetland values.³³⁵
- Clear indication of an acceptable limit of credit withdrawal prior to level of bank functionality.³³⁶
- A policy mix to protect wetlands, such as further ‘no-go’ areas which link to the prevention and precautionary principles, especially considering the uncertainty that ‘no net loss’ is occurring with the current system.³³⁷

C Conservation Banking

This Section will examine the current status of conservation banking in the US. There are significant differences between the two mitigation banking regimes, and thus closely examining both will aid in a more comprehensive basis for a comparative analysis with *biobanking* (Part V).

1 History of Conservation Banking

Building on the experience of wetland banking, conservation banking is another banking offsets system utilised in parts of the US. Conservation banking looks specifically at improving the protection of endangered species through conserving their habitat. At a federal level, conservation banking is administered by the Department of Fisheries and Wildlife Service (FWS).

An amendment to the *ES Act* in 1982 made provision for conservation banking. The amendment included section 10 under which the ‘taking’³³⁸ of a species with an incidental taking permit could occur provided there was a habitat conservation plan to minimise the impact of the taking. The habitat conservation plan makes provision for conservation banks by allowing for third parties, such as a local government or private citizen, to contribute to compensation requirements by providing credits from a conservation bank.³³⁹ Section 7(a)(2) also provides for conservation banking by allowing conservation measures for projects to include the protection of off-site listed species through banking procedures.³⁴⁰

As identified by the FWS’s Guidance for the Establishment, Use and Operation of Conservation Banks, a bank may be created by the:

- Acquisition of existing habitat;

³³⁴ Part V B 1; see below n 323 and accompanying text.

³³⁵ Part II B 2.

³³⁶ Part V B 2; Part VI A.

³³⁷ Part III B 5; Part VI B.

³³⁸ For example, harassing, hunting, shooting or collecting an endangered species. Kate *et al*, above n 3, 25.

³³⁹ Mills above n 110, 535.

³⁴⁰ US Department of Fisheries and Wildlife Service (FWS) ‘Guidance for the Establishment Use and Operation of Conservation Banks’ (2 May 2003) 4.

- Restoration or enhancement of existing habitat;
- Protection of existing habitat through a conservation easement;
- Creation of a new habitat or
- Prescriptive management of land for certain biological characteristics.³⁴¹

2 Policy and Regulatory Context

In contrast to wetland mitigation banking, conservation banks emerged before federal policy was implemented. California was the first state to utilise conservation banking as a means of endangered species protection. In 1995, California released official policy guidance for the use of mitigation banking not only for wetlands but also for endangered species habitat.³⁴² The California Department of Fish and Game (CDFG), that administers conservation banking was responsible for introducing this policy guidance. Conservation banks have been created for species such as the red-cockaded woodpecker in South-east California that was significantly threatened by habitat destruction and in some cases landowners illegally removing them from their land due to the liability they incurred under the *ES Act*.³⁴³

3 Conservation Banking as an Economic Instrument

As with wetland banking, conservation banking can lead to the protection of large areas of habitat that are essentially ecologically self-sustaining and thus economically favourable to landowners.³⁴⁴ There is a notable difference between the preference for restoration for wetland mitigation banking and for preservation in conservation banking. The Federal FWS puts more focus on the preservation of sites with high conservation value 'based on unreliable methods of creating new habitat for endangered species'.³⁴⁵ This is illustrated by the generally unsuccessful attempts to restore vernal pool habitats for the endangered pool fairy shrimp in northern California and southern Oregon, so preservation and subsequent management systems have been used.³⁴⁶ In addition, as credits are based on the health of an endangered species, there is incentive to use sound scientific expertise and optimum management systems to enhance species protection and thus increase credit value.³⁴⁷ Another benefit, similar to wetland banking, is that the time-lag between the impact and mitigation is reduced by conservation banking, aiding in producing conservation outcomes. In conservation banking, active management is required to ensure species survival.³⁴⁸

³⁴¹ US States Department of the Interior Fish and Wildlife Service 'Guidance for the Establishment, Use and Operation of Conservation Banks' (2003) <<http://www.fws.gov/Endangered/policies/conservation-banking.pdf>> 5 June 2006.

³⁴² To access this policy please see www.ceres.ca.gov/topic/banking 5 May 2006.

³⁴³ See above fn 99 and accompanying text.

³⁴⁴ Mills, above n 110, 539.

³⁴⁵ Phone interview with William Warncke, above n 310 and see also n 153 and accompanying text.

³⁴⁶ Ibid.

³⁴⁷ White Paper, above n 315.

³⁴⁸ Environmental Defence, above n 368, 42.

As is the case with wetland banking, such benefits are redundant if there is not an adequate trading system. The issues of non-fungibilities of time, type and space, as outlined above, are also applicable to conservation banking. For example, non-fungibility of type is particularly important if a habitat is developed that is part of a larger, connective system for an endangered species and it is unlikely that the habitat exchanged will benefit the species.³⁴⁹ Therefore, it is imperative that a comprehensive currency is used that takes into account different attributes of a species. This can be costly as increased finances are required to gather adequate information on the species concerned.

Recently, there have been some developments in creating an adequate currency. For example, a Landscape Equivalency Analysis assessment tool has been developed, which compares ecosystem services provided for a species in different landscapes, creating a market on the spatial positioning of landscapes.³⁵⁰ Landscape Equivalency Analysis proposes to study meta-populations, that is populations connected by migration and gene flow, and exchange these values to ensure a 'like-for-like' trade. Such developments again indicate the need for continual research in this area. Yet imposing complexity and increasing restrictions on what can be traded in a market can lead to market failure.³⁵¹ Regulation of the market, therefore, using command and control techniques to mandate the use of conservation banks in development³⁵² is necessary to ensure a robust market, along with a clear standard of what is being traded. In addition, regulation must be used to standardise bank operation to ensure consistency and encourage public participation, essentially strengthening the theme of public participation.³⁵³

It is estimated that there are around 40,000 acres of conservation banks in the US, most of them in California.³⁵⁴ With this number increasing, there is a dire need to implement a standardised, effective regulatory regime for conservation banking in the US. Such a regime must overcome issues associated with trade and currency to ensure participation and a viable market. In addition, the following recommendations as discussed throughout this section, should be considered to improve the current system:

- The consolidation of data collected on endangered species from banks for use in further research.³⁵⁵
- Public values, including cultural, should be included in the pricing of credits.³⁵⁶

³⁴⁹ Mills, above n 110, 545.

³⁵⁰ D J Bruggeman *et al*, 'Landscape Equivalency Analysis: Methodology for Estimating Spatially Explicit Biodiversity Credits' *Department of Fisheries and Wildlife* Michigan State University <http://www.ecosystemmarketplace.com/media/pdf/LEA_Bruggeman_2005.pdf> 18 May 2006.

³⁵¹ Mills, above n 110, 548.

³⁵² Part IV B 3.

³⁵³ Part III B 2; Part VI B.

³⁵⁴ ten Kate *et al*, above n 3, 25.

³⁵⁵ Part V B 1.

- Include the use of other forms of regulation or a policy mix.³⁵⁷
- The need for a comprehensive currency with which to adequately trade threatened species value.³⁵⁸
- The implementation of regulation that encourages public participation.³⁵⁹

For both wetland mitigation banking and conservation banking an analysis of the benefits and short-comings aids in developing banking offsets systems in other jurisdictions. Therefore, the issues discussed above will be incorporated into a comparative analysis with *biobanking* in order to assess and potentially overcome problems the scheme may face (Part V).

V COMPARATIVE ANALYSIS

A *The Differences between Biobanking and US Mitigation Banking*

Before embarking on a comparative analysis between *biobanking* and mitigation banking, it is necessary to acknowledge the differences between the two jurisdictions. The most significant difference is that many regulations in the US actually mandate the purchase of credits from wetland mitigation banks and conservation banks if it is considered to be the most feasible approach.³⁶⁰ This includes some significant state authorities who in some circumstances are required to purchase credits, encouraging the supply side.³⁶¹ Another significant difference is that the US system, particularly with wetland mitigation banking, is legislated at a federal level rather than a state level. With *biobanking* the applicable legislation is purely at the state level. This is of significance because economic competition between states can lead to environmental deregulation, where investment by the developmental industry is encouraged through easier compliance measures. In the US, one of the main criticisms of the regulatory Federal Guidance for the establishment of wetland banks is that it leaves a lot of decision making to the state and local authorities, who may be more venal than federal agencies.³⁶² This, unfortunately, supports the theory that *biobanking* is simply allowing developers an easier path to development, or providing them with a license to trash, as the state government seeks to remove the 'red tape' on the development process.³⁶³ It is therefore advisable that the scheme is closely watched at a federal level, so that similar systems are developed that could eventually be integrated through bilateral agreements.³⁶⁴

³⁵⁶ See above n 239 and 240 and accompanying text.

³⁵⁷ Part VI B.

³⁵⁸ Part II B 3.

³⁵⁹ Part III B 2; Part VI B.

³⁶⁰ Phone interview with Ricardo Bayon, above n 142; Part IV B.

³⁶¹ Phone interview with William Warncke, above n 311.

³⁶² Flemming, above n 224, 32.

³⁶³ Response to Question 2, G3.

³⁶⁴ Response to Question 5, L1.

Mitigation banking in the US also has more government agencies regulating the banking systems. For example, wetland mitigation banking uses the FWS, EPA and the National Conservation Service to administer the scheme. Although it would seem that such an inter-governmental approach could be detrimental because of the complexities inherent in coordinating all the agencies, the strength in having so many bodies administering the scheme is that decisions are more stringently tested and decision makers held more accountable.

Although coordination is arguably yet to occur in the US mitigation banking schemes, the ways recommended through which to achieve this, for example through improved regulatory guidance and the collecting of data,³⁶⁵ could be implemented by *biobanking* prior to its implementation. In this way, *biobanking* could take a leadership role in having an apt regulatory regime for a banking offsets system. It is therefore advisable for *biobanking* that the administrators are always well informed about decisions for *biobanking* in their relevant jurisdictions or that a review team similar to the MBRT³⁶⁶ for each *biobank* is implemented. The establishment of such a review team (including local district representatives) for *biobanking* may aid in alleviating concerns regarding the nature of what is being traded, including geographic limitations and the inclusion of cultural and social values.

Essentially *biobanking* will be trading with a currency that is more complex than that of wetland mitigation banking and conservation banking. Wetland banking policy actively discourages the use of preservation as a bank option over restoration and enhancement of wetlands.³⁶⁷ On the contrary, conservation banks are essentially preservation banks, managed for habitat integrity.³⁶⁸ Endangered species are transient and may move from a bank even if the habitat remains in optimum condition for that species. *Biobanking* will be assessed on many variables, such as ecological communities, connectivity and the presence of threatened species³⁶⁹ and will focus on management actions. In essence, it will be a combination of both wetland mitigation banking and conservation banking, with more complicated assessment parameters. The assessment methodology must therefore be extremely comprehensive and flexible. In the absence of the release of information regarding the details of the assessment methodology by the DECC, however, its viability cannot be adequately addressed.

³⁶⁵ Part IV B 4 and Part IV C 3.

³⁶⁶ Part IV B 3.

³⁶⁷ Edwards, above n 305, 450.

³⁶⁸ Environmental Defence 'Progress on the Back Forty: An Analysis of Three Incentive Based Approaches to Endangered Species Conservation on Private Land' (2000) <<http://www.forest-trends.org/>> 6 June 2006, 42.

³⁶⁹ Part I C 1.

B *Biobanking and Mitigation Banking: What can we Learn?*

1 *Monitoring and Management*

The main criticism against US mitigation banking systems is that monitoring and management has been inadequate and has led to bank failure. There is therefore an opportunity for *biobanking* to pressage such problems and integrate adequate monitoring and management into the scheme's regulatory regime.³⁷⁰ The current legislation for *biobanking* contains ample provision for ensuring that management is adequately implemented as defined in the *biobanking agreement*, for example the withholding of annual payments from the *Biobanking Trust Fund*.³⁷¹

For *biobanking*, there is little indication of how monitoring will be undertaken, besides the mention of auditing in some of the documents released pertaining to *biobanking*.³⁷² Strict monitoring requirements should be clearly provided in the regulations to avoid non-fungibilities of time.³⁷³ Here, stricter monitoring implies comprehensive and long-term monitoring, with in-perpetuity funding³⁷⁴ and flexibility for improvement.³⁷⁵ This also applies to the management of the site by the landowner. Further, management of a *biobank* should not be undermined by the inclusion of 'compatible land uses' that exist under the Routine Agricultural Management Activities for the native vegetation regulatory regime, as these have proven to be detrimental to biodiversity protection objectives.³⁷⁶

Avenues to improvements in monitoring and management for *biobanking* will no doubt come from public and stakeholder input, so progress in the management and monitoring techniques should be transparent. This could be achieved in part by the creation of a publicly accessible, peer reviewable database.³⁷⁷ This could prevent the issue seen in mitigation banking in the US, of the collation of meaningless data on wetland banks.³⁷⁸ This may add to the state and federal information about threatened species, communities and ecosystems and hence contribute to other forms of biodiversity protection policy such as National Parks.³⁷⁹ This may also aid in gaining public trust as ultimately it is the community that has information on local biodiversity and will also be affected by the scheme.³⁸⁰

³⁷⁰ Part II C.

³⁷¹ DEC, above n 63, 8.

³⁷² DEC, above n 63, 8.

³⁷³ Part IV B 4 and Part IV C 3.

³⁷⁴ Response to Question 10, C4.

³⁷⁵ Response to Question 10, C1; E1.

³⁷⁶ Response to Question 4, C1.

³⁷⁷ Fleischer, above n 312, 22.

³⁷⁸ Part IV A 4.

³⁷⁹ Part I B 2.

³⁸⁰ Part III B 2.

2 Timing of Credit Withdrawal

The timing of credit withdrawal has been the subject of much debate in the US,³⁸¹ particularly in terms of in-lieu mitigation, and hence needs to be seriously considered in the regulations for *biobanking*. Essentially, the regulations must mandate that credits cannot be released until it is proven, to a number of stakeholders, that the *biobank* site is operational and viable. In *biobanking*, the timing of credit withdrawal is known as ‘retirement’ of credits. This is detailed in the *Biodiversity Banking Act*,³⁸² though there is still no certainty as to what level of functionality will be required to allow for this retirement, largely because this will be determined by the assessment methodology.³⁸³ This must be clarified before initiation of *biobanking*.

3 Mandating Banking Offsets Systems for Certain Developments

A significant portion of the literature on US mitigation banking analyses the legislative and regulatory regimes. This is of particular value to a comparative analysis with *biobanking* because the legislation is already operational and has been critiqued as such. Because of the differences in the legislation, however, as identified above, a further analysis of the legislation pertaining to *biobanking* will be undertaken using empirical evidence and general primary and secondary sources.

Experience in the US demonstrates that highly regulated biodiversity banks are more successful. This is illustrated in practice by the mandating of the purchasing of credits by state agencies, such as road agencies through the TEA-21, which has achieved high levels of participation.³⁸⁴ Prior to the establishment of the TEA-21, participation in banking practices was limited.³⁸⁵ This is of concern to *biobanking* because the scheme specifically excludes major projects that arguably have the biggest impact on biodiversity.³⁸⁶

There is ample opportunity, therefore, for *biobanking* to mandate the scheme for certain projects, in particular those under Part 3A of the *EP&A Act*.³⁸⁷ Conservationists in particular are concerned that the scheme is not mandatory for Part 3A developments under the *EP&A Act*, which are arguably the projects most damaging to biodiversity.³⁸⁸ The DECC states that the Planning Minister *may*

³⁸¹ Part IV B 4.

³⁸² Biodiversity Banking Act Division 5.

³⁸³ *Biodiversity Banking Act* s 127(ZL) 2.

³⁸⁴ See discussion on the success of the TEA-1 in Part 3(B) 1.

³⁸⁵ Neal, above n 199, 169.

³⁸⁶ Response to Question 3 and 9, L1; Response to Question 3, C4, E4; Environmental Groups Liaison Office, above n 218, 4, 5.

³⁸⁷ Major projects dealt with under Part 3A include a wide range of large scale projects that are considered to be of significance to the State or region. Section 126H of the *Biodiversity Banking Act* states that ‘biobanking statements *may* (emphasis added) be issued in respect to projects proposed to be approved under Part 3A of the *EP&A Act*.

³⁸⁸ Response to Question 9, C1 and C3.

require offsets to be used as part of a Part 3A development process, and could thus use *biobanking* for a more strategic offsetting approach.³⁸⁹ A mandatory approach to Part 3A developments would thus aid in both encouraging the growth of the scheme and alleviating stakeholder concern.

VI CONCLUSION

Biobanking is an approach consistent with sustainable development in NSW because it aims to utilise an economic instrument for biodiversity protection and thus recognises that economic well being is interdependent with environmental protection and subsequently social equity. It is therefore an exciting approach because it can potentially place a market value on biodiversity. In light of this and the fact that *biobanking* incorporates the principles and instruments of sustainable development that are connected to banking offsets systems, it would be feasible to assert that the scheme could achieve sustainable development objectives in NSW. As discussed throughout this appraisal, however, evidence suggests that the *current* structure of the scheme cannot support these objectives.

Biobanking is an extremely complex approach to the protection of biodiversity in coastal NSW. This complexity can be seen in the various disciplines that are necessary to operate the scheme including economic, financial, ecological, planning and legal expertise. Although this could be beneficial as it allows for a more integrated approach to sustainable development in NSW,³⁹⁰ there is so far no real understanding amongst stakeholders or experts about what their role will or should be.³⁹¹ This is indicated by one expert who attended a briefing on the scheme, yet found ‘the briefing almost unintelligible’.³⁹²

This extends to concern amongst stakeholders that the scheme may almost be unworkable because of its complexity.³⁹³ This is even demonstrated in the ambiguous language of the *Biodiversity Banking Act*.³⁹⁴ These issues are most likely a product of a relatively exclusive consultation process accompanied by a fast tracked legislative process,³⁹⁵ which has essentially ‘put the cart before the horse’.

Such a complex approach means that the scheme is an undesirable addition to an already criticised planning and threatened species system.³⁹⁶ The scheme is not, for example, adequately integrated into the planning system because it does not necessarily link to biodiversity certification and cannot simplify the threatened species process because of its voluntary nature.³⁹⁷ Further, the scheme does not

³⁸⁹ DEC, above n 63, 6.

³⁹⁰ Part I E 1.

³⁹¹ Part III B 2.

³⁹² Response to Question 9, E2.

³⁹³ Response to Question 7, G3.

³⁹⁴ See above n 199 and accompanying text.

³⁹⁵ Part I C 2.

³⁹⁶ Part I B 1.

³⁹⁷ See above n 216 and accompanying text; see generally Part II B 1 and Part V A.

properly incorporate the *NVC Act*³⁹⁸ or take into account indigenous land rights issues. On the contrary, the scheme ignores indigenous issues.³⁹⁹

In addition, the DECC cannot obtain stakeholder trust when the complexities of the scheme render it incomprehensible. This is of concern because the scheme will not work without stakeholder participation. This is particularly true as *biobanking* is a market based approach to biodiversity protection, and a market requires both an apt supply and demand side, and thus requires landowner and developer participation. If such participation is gained, the scheme can function as an economic instrument. But this is hindered for a number of reasons, including the ability for public land to be used as a *biobank* site⁴⁰⁰ and the voluntary nature of the scheme⁴⁰¹ which means that developers, if they are unsure or disbelieving in the incentives for participating in the scheme, can revert back to the normal *TSC Act* provisions. Yet even if the scheme is successful in acquiring both the demand and supply sides, it still must address some issues concerning its ability to protect biodiversity if it can be successful.

This can be argued for a number of reasons. Firstly, the most damaging projects to biodiversity, namely those under Part 3A of the *EP&A Act* are not a mandatory component of the scheme.⁴⁰² This is contrary to the US schemes where, in some states, projects that have significant environmental impacts are bound by regulation to purchase credits, so a market is usually guaranteed.⁴⁰³ Secondly, the scheme fails to incorporate the precautionary principle either in the assessment methodology or by mandating a net gain or greater than 1:1 ratio in trading.⁴⁰⁴ Also, there is no provision for no-go areas, which contradicts the principle of prevention even further than the fact that the scheme itself is contradictory to the principle as it allows for the destruction of biodiversity.⁴⁰⁵

These difficulties in the protection of biodiversity as well as difficulties in the appropriate use of *biobanking*, as an economic instrument seem to indicate that intra-generational equity in particular cannot be adequately achieved.⁴⁰⁶ Further, the lack of long-term provisions for the scheme indicates that in particular biodiversity on *biobank* sites may not be protected for future generations. For example, *biobank* sites can potentially be offset for mining activities.

There is also no assurance that management and monitoring will be in-perpetuity and in fact it would seem incomprehensible, particularly to developers, to assume that managing and monitoring will be funded for an unlimited amount of time. Yet,

³⁹⁸ Part II C 3.

³⁹⁹ Response to Question 12, I2.

⁴⁰⁰ See above n 135 and accompanying text.

⁴⁰¹ DEC, above n 57, 4; See above n 140 and 216 and accompanying text.

⁴⁰² Part V B 3.

⁴⁰³ See above n 142 and accompanying text.

⁴⁰⁴ Part III B 5.

⁴⁰⁵ Ibid.

⁴⁰⁶ Part III B 4.

as has been discussed, for a *biobank* to remain viable, managing and monitoring must be continuous, especially when considering unpredictable occurrences such as those incurred by climate change.⁴⁰⁷ On the other hand, as the scheme is not yet operational there is an opportunity for *biobanking* to adequately incorporate in-perpetuity monitoring and management.⁴⁰⁸

With respect to the assessment methodology and the ‘improve or maintain’ test under the scheme, *biobanking* is in danger of further reducing biodiversity. This is because the scheme allows for the use of degraded land as *biobank* sites,⁴⁰⁹ which means that the success of generating functioning ecological communities and *biobanks* in general could be reliant on scientifically unsound restoration and ecological sciences.⁴¹⁰

In addition, *biobanking* does not define any no-go areas. This potentially means that areas that may have been off limits to developers can be developed, essentially allowing a ‘license to trash’. The concept of trading like-for-like or better is also flawed because it fails to recognise the potential importance of individual patches of ecosystems that may have local cultural significance.⁴¹¹

A Recommendations

The following recommendations have been provided based upon the evidence presented in this appraisal. With respect to the complexity of *biobanking*, the DECC must initiate a more consultative process amongst all stakeholders. For example, clear objectives of the scheme should be provided, with prior input from stakeholders. Essentially, the DECC must assure stakeholders that one interest, namely that of the development industry, is not overriding the interests of others, such as conservationists. This must be done prior to the two year trialling of the scheme to ensure that the trial is assessed taking all concerns of stakeholders into account. The role of a review team similar to that of the US MBRT should also be considered to more aptly incorporate stakeholder interest, specifically at a local and indigenous level.⁴¹² This would aid in achieving social equity and would further consolidate this pillar with economic well-being as it would increase trust and hence participation levels. Such trust could also be gained by ensuring that the language used in implementing and operating the scheme is succinct and fixed, with terminology that is clearly defined.⁴¹³

⁴⁰⁷ See above n 160 and 161 and accompanying text.

⁴⁰⁸ Part V B 1.

⁴⁰⁹ See Part III B 1(b).

⁴¹⁰ See above n 157 and 158 and accompanying text.

⁴¹¹ See above n 167 and accompanying text.

⁴¹² Part IV B 3 and Part V A.

⁴¹³ For example the definition of a ‘viable patch’ see Part II C 5.

*Participation could also be increased by the DECC through suitable marketing of the scheme to developers, local government and landowners.*⁴¹⁴ Adequate marketing will be imperative to the scheme's success. This could be achieved through the establishment of a website just for the scheme,⁴¹⁵ through the DECC employing experienced marketing staff and holding or supporting numerous community forums. Such forums could allow for a much needed re-evaluation of the role of local governments and indigenous communities in the scheme.⁴¹⁶ Public participation should also be strengthened by allowing for public input prior to issuing *biobanking statements*.⁴¹⁷ This directly connects the use of economic instruments with stakeholder participation. Evidence suggests that the scheme will fail without both the supply and demand side and the support of the associated communities.

To further achieve economic well-being through participation, biobanking must use more regulation to mandate the scheme for certain developments. This can be argued from the US experience where having strong regulation for the use of biodiversity banks has proven to be more successful.⁴¹⁸ This includes removing the voluntary nature of the scheme and considering *biobanking* for all Part 3A developments. With respect to the use of public land as a *biobank* site, factors that may allow the credits to be generated at a cheaper price should be taken into account so that private landowners are not disadvantaged.⁴¹⁹ In addition, *biobanking* should not replace existing obligations of the State government to protect areas of high conservation value such as through the formal reserve system.

The ability of the scheme to protect biodiversity is imperative to the social equity of both the present and future generations. Biobanking must therefore address the concerns associated with its ability to protect biodiversity. To begin with, the offsetting of *biobank* sites for certain developments must only be done in the most dire need and the Minister for the Environment must have lengthy and public discourse with the other Ministers to ensure that *biobank* sites are exempt from being offset later on. If the *biobank* site is cancelled, the subsequent credits purchased must be of equal ecosystem value and in the same geographic region. Otherwise, an incremental loss will occur as keeping track of what is being traded becomes complicated.

*Biodiversity certification should be implemented before State wide operation of the scheme.*⁴²⁰ Such certification should include the establishment of a public database,⁴²¹ ideally accessible on the internet where individuals, local governments

⁴¹⁴ Response to Question 10, G1; Response to Question 11, E4.

⁴¹⁵ Or for all Environmental Trading Markets in NSW or Australia, see for example the US based Ecosystem Market Place www.ecosystemmarketplace.com.

⁴¹⁶ Part III B 2 and Part III B 3 respectively.

⁴¹⁷ See above n 247 and accompanying text.

⁴¹⁸ Part IV B 2.

⁴¹⁹ See above n 135 and accompanying text.

⁴²⁰ Part II C 2.

⁴²¹ See above n 238 and 377 and accompanying text.

and organisations for example can add or gather information. This could contribute to the overall knowledge of biodiversity in NSW, such as the population status of certain species.

To alleviate conservationists concerns in particular, the DECC must be clear on how the assessment methodology will work and what the parameters for trading will be. The main concern amongst conservationists is that biodiversity will decline because of the trading between different ecosystems⁴²² and the unethical commodification of nature.⁴²³ This could also be addressed in part by ensuring that areas with high qualitative biodiversity are encouraged to be established as *biobank* sites.⁴²⁴ Using this approach, what is being traded can be clearly defined at the outset, rather than relying on unsound restoration or significant management actions to reach some level of ecological functionality.⁴²⁵ Although there is a valid argument against using areas of high biodiversity value as it is more difficult to meet the objective of 'no net loss', it should be recognised that as in the US, restoration may be difficult to achieve and that high quality sites may deteriorate if left unmanaged or be developed at a later stage. It may therefore be useful to combine credits of degraded and high quality sites for one developmental impact. Further, where degraded sites are used, auditing of the management activities and monitoring of the site should be extremely stringent and publicly reviewed to ensure objectives are being met.⁴²⁶

The assessment methodology must therefore include not only trading between acceptable space, time and type⁴²⁷ but must also include the values of all stakeholders including indigenous and local communities. The precautionary principle should be incorporated into the assessment methodology to allow a safe buffer in the case of bank failure, but should not be so high that it deters developer participation. Further, traditional ecological knowledge should be considered in the assessment methodology.⁴²⁸ The concern about the lack of provision for no-go areas must be alleviated by the DECC through providing evidence that the reserve system will not be compromised so that the principle of prevention is not only upheld but also strengthened in the governments approach to sustainable development in NSW.

Presently, biobanking runs parallel to the already complicated planning and threatened species system. This means that a policy mix should be used in the application of biobanking. This could include the continued use of the national parks and reserve system, the consolidation of the current threatened species

⁴²² See in general Part II B.

⁴²³ Part II B 3.

⁴²⁴ Part III B 1(b).

⁴²⁵ Part II B 3.

⁴²⁶ Part V B 1.

⁴²⁷ Part IV B 4 and Part IV C 3.

⁴²⁸ Part III B 3.

legislation with the planning system and integration of *biobanking* into this system only in the presence of biodiversity certification.⁴²⁹

*The DECC must also consider the ability for biobanking to be incorporated into the EPBC Act to ensure that it is consistent with federal legislation.*⁴³⁰ Such a policy mix could also more aptly consolidate the conflicting concerns of the stakeholders to biodiversity protection, for example because conservationists want to strengthen the reserve system⁴³¹ and developers want to use a comprehensive but simple planning process.⁴³²

It should be recognised that it is too early to be certain about the viability of *biobanking* in promoting sustainable development in NSW. However, evidence suggests that *biobanking* cannot consolidate the three pillars of sustainable development in its current form. Further, the available data indicates that if this form can be changed to adequately consolidate the pillars of sustainable development, it has the potential to be a viable sustainable development instrument. The principles and instruments connecting *biobanking* and sustainable development are therefore a good framework on which to assess how successful the scheme will be in fulfilling its objectives, in the context of how the scheme is positively incorporating these approaches. Any negative effects should be addressed immediately, as recommended in this appraisal. The DECC should continue to use these principles and instruments of sustainable development to test against *biobanking*, in addition to continually comparing *biobanking* with the US wetland mitigation banking and conservation banking systems as they continue to develop and expand. Other jurisdictions can learn from this scheme, just as this appraisal has utilised US mitigation banking to assess the feasibility of *biobanking*, and should closely watch the scheme as the implementation stage approaches.

Addenda

Abbreviation	Full Name
United States	
Corps	Army Corps of Engineers
CW Act	Clean Water Act 1972
EPA	Environmental Protection Agency
ES Act	Endangered Species Act 1982
FWS	Department of Fisheries and Wildlife Service
MBRT	Mitigation Banking Review Team
TEA-21	Transportation Equity Act for 21 st Century
Australian Commonwealth	
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
New South Wales	
DECC	Department of Environment and Climate Change

⁴²⁹ For discussion on integration with these and other legislation see Part II C.

⁴³⁰ Part II C 6.

⁴³¹ Part III B 2.

⁴³² Ibid and specifically above n 268 and accompanying text.

<i>EP&A Act</i>	Environmental Planning and Assessment Act 1979
LEP	Local Environmental Plan
MRG	Ministerial Reference Group
<i>NVC Act</i>	Native Vegetation Conservation Act 1997
REP	Regional Environmental Plan
SEPP	State Environmental Planning Policy
TSC Act	Threatened Species Conservation Act 1995
Other	
CBD	Convention on Biological Diversity
ESD	Ecologically Sustainable Development
WCED	World Conference on Environment and Development

Appendix 1

Code	Organisation / Company
E = Expert	David Freudenberger (CSIRO)
	Lesley Bull (JBA Planners)
	Penelope Figgis (IUCN)
	Dr Jim Shields (State Forests)
D = Developer	Landcom
	NSW Urban Development Institute of Australia
	Roche Group
A = Administrator	Department of Environment and Conservation
	Shona Bates (Former Acting Head of the Market Based Unit at DECC)
G = Local Government	Nambucca Shire Council
	Local Council Association
	Greater Tarree City Council
L = Landowner	Ecotrades (Hardy Holdings)
	Property Council
I = Indigenous Representative	Metropolitan Aboriginal Land Council
	NSW Aboriginal Land Council
C = Conservationist	Hunter Community Environment Centre
	NSW Environmental Defenders Office
	Coast Watchers
	Nature Conservation Council

Table 2: This table shows the organisations, companies and individuals who participated in the questionnaire process. The code that is used in the report is provided, divided into the relevant groups. The order of the participants as seen in this table is not indicative of the number attached to the letter code throughout the appraisal as the identity of the participants and their organisation or company is anonymous.

*Appendix 2***Questionnaire⁴³³****DECC's Biobanking Scheme**

- 1 Please state your name and company/organisation's name. What is your job title and what does your position entail?
- 2 Why do you think the DECC has developed the *biobanking* scheme?
- 3 How is *biobanking* consistent with the current NSW legal/planning system? For example, are there any discrepancies between the *biodiversity banking bill* and other legislation?
- 4 What information should be provided in the scheme's rulebook?
- 5 In what way could this scheme be adapted to other jurisdictions?
- 6 How do you think the scheme will affect your organisation/industry?
- 7 What role do you perceive for your organisation/industry in the administration or regulation of the scheme?
- 8 What are the main benefits of the *biobanking* scheme?
- 9 What are the main shortcomings of the scheme to date?
- 10 What are your recommendations to overcome these shortcomings?
- 11 What role should the public take in developing the scheme?
- 12 What role should indigenous communities, or other specific interest groups, have in the *biobanking* scheme?

⁴³³

This questionnaire was approved by the Macquarie University Human Ethics Committee on 22 August 2006, reference number HE28JUL2006-M04820.