



## 2011 Update

# State of Biodiversity Markets

### Offset and Compensation Programs Worldwide

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## About Ecosystem Marketplace

Ecosystem Marketplace, a project of the non-profit organization Forest Trends, is a leading source of information on environmental markets and payments for ecosystem services. Our publicly available information sources include annual reports, quantitative market tracking, weekly articles, daily news, and newsletters designed for different payments for environmental services stakeholders. We believe that by providing solid and trustworthy information on prices, regulation, science, and other market-relevant issues, we can help payments for ecosystem services and incentives for reducing pollution become a fundamental part of our economic and environmental systems, helping make the priceless valuable.

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# Executive Summary



In today's climate of rapid biodiversity loss, decreasing philanthropic and public conservation dollars, and the growing recognition that conservation must address the scale of economic drivers it seeks to correct, governments and businesses are seeking new ways to balance economics and ecology. And as governments and businesses explore and adopt market-like instruments to strike this balance, it is as important as ever to understand what is happening, where, and how the tools work.

Here at the Ecosystem Marketplace, it is our mission to provide to the public reliable information at no cost, to enable all market participants to make more informed decisions, learn from the experiences of others, and ultimately allow stable, equitable, and effective conservation markets to develop. To address the vital need for more and better information, we have written this update to our initial *State of Biodiversity Markets* report to provide a succinct answer to the question "What is currently happening in biodiversity offset and compensation programs around the world?"

As such, this report is a companion paper to the initial report that highlights the key developments over the past year. If you haven't read the initial report,<sup>1</sup> we encourage you to download [here](http://www.ecosystemmarketplace.com/documents/acrobat/sbdmr.pdf) or from EcosystemMarketplace.com and read it in parallel with the 2011 Update. The initial report is still relevant and lays out the fundamentals of biodiversity markets, with a

focus on programs (laws or policies) which require offsets or compensation for impacts to biodiversity.

Our research finds 45 existing compensatory mitigation programs around the world, ranging from programs with active mitigation banking of biodiversity credits to programs channeling development impact fees to policies that drive one-off offsets. There are another 27 programs in various stages of development or investigation. Within each active offset program, there are numerous individual offset sites, including over 1,100 mitigation banks worldwide.

The global annual market size is USD 2.4-4.0 billion at minimum, and likely much more, as 80% of existing programs are not transparent enough to estimate their market size. The conservation impact of this market includes at least 187,000 hectares of land under some sort of conservation management or permanent legal protection each year.

North America continues to dominate activity in biodiversity markets, with 15 active programs and 4 in development. The US aquatic compensatory mitigation and conservation banking programs account for the greatest volume of payments and area to the global biodiversity market, bringing in USD 2.0-3.4 billion and over 15,000 hectares (37,700 acres) annually. US mitigation banking is still showing increases, with a total of 1,044 active and sold-out wetland, stream and conservation banks. The lagging economy and reduced federal investments in infrastructure projects may, however,

1 Becca Madsen, Nathaniel Carrol, Kelly Moore Brands, *State of Biodiversity Markets Report: Offset and Compensation Programs Worldwide*, 2010, <http://www.ecosystemmarketplace.com/documents/acrobat/sbdmr.pdf>.



create a glut in supply of mitigation credits that will outstrip demand until the economy rebounds. In Canada, we are seeing increased transparency of fish habitat banking nationally and new policy developments on environmental mitigation and offsets in British Columbia, while Alberta's policy on wetland mitigation has seen back-sliding in the principle of "no net loss."

The biggest development in Central and South America are the recent changes in Brazil's Forest Code that limit the impact and scope of the law. On the positive side, the UN Development Program has highlighted the value of ecosystems and potential for habitat banking in two major research reports, "The Importance of Biodiversity and Ecosystems in Latin America and Caribbean: A Regional Economic Valuation of Ecosystems" and "Habitat Banking in Latin America and Caribbean: A Feasibility Assessment."

In Africa, countries are continuing to explore and develop biodiversity offsets policy but little progress has been made in implementation. Several policies are still in development in South Africa, and Namibia is incorporating offset concepts in strategic planning to address a boom in uranium mining.

In Europe, the past two years have seen a growing focus on biodiversity despite a failure to meet the European Union (EU) target of halting biodiversity loss in the EU by 2010. Biodiversity offsets and other compensation mechanisms continue to gain recognition as a policy tool, with a number of countries – including the UK, France, and Sweden – taking initial steps to develop markets for biodiversity. Nascent markets should see a boost thanks to the recent European Commission commitment to develop a "no net loss" strategy by 2015 that embraces the use of payments for ecosystem services.

In Asia, the past year has seen some countries, including Vietnam and Japan, make progress on frameworks for biodiversity payment mechanisms. In Japan, a number of initiatives were launched to explore the feasibility of biodiversity offsets in the country, while Vietnam's new decree outlining a compensation process for environmental damages took effect in early 2011.

Finally, over in Oceania, Australia continues to develop unconnected state-level biodiversity offset and banking programs. In New South Wales, BioBanking continues to gain momentum and now boasts five BioBank sites. BushBroker, the "matchmaker" of Victoria's native vegetation offsets, is now in its sixth year of existence and has assisted around 300 transactions cumulatively. The Northern Territory released a new draft Environmental Offsets Policy in October 2010. In New Zealand, a National Biodiversity Policy Statement is expected to go into effect in June of this year and could provide a national push for greater implementation of the mitigation hierarchy and the "no net loss" principle. This Policy Statement could eventually trickle down into local, council, and district policies – like those being developed in the progressive Waikato and Gisborne Districts.

Many regions around the world are in early stages of adoption or investigation of compensatory mitigation, while others have sophisticated and mature systems. But in all regions, compensatory mitigation is developing around unique economic, political, institutional, and cultural circumstances that give rise to a variety of programs.

The goal of this update is to bring transparency and access to information to stakeholders to enable both experienced and new market participants to make more informed decisions, learn from the experience of others, and ultimately facilitating innovative conservation finance.

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# Mapping the World's Biodiversity Markets





## General Status Update

Our research finds 45 existing compensatory mitigation programs around the world, ranging from programs with active mitigation banking of biodiversity credits to programs channeling development impact fees to policies that drive one-off offsets. There are another 27 programs in various stages of development or investigation. Within each active offset program, there are numerous individual offset sites, including over 1,100 mitigation banks worldwide.

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By the numbers		
Number of active programs:		45
Number of programs in development:		27
Total known global payments per annum:		USD 2.4-4.0 billion
Land area protected or restored per annum:		>187,000 hectares

## Definitions

**Compensatory Mitigation** – the restoration, creation, enhancement, and / or in certain circumstances preservation of natural resources for the purposes of offsetting adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved. For the purposes of this report, compensatory mitigation represents a spectrum of practices that range from rigorous and measurable biodiversity offsets to less direct efforts to compensate for impacts through financial donations and land protection.

**Mitigation Hierarchy** – avoidance, minimization, rehabilitation / restoration (sometimes termed mitigation), offset.

**One-off offset** – “do-it-yourself” offsetting conducted by the developer or a subcontractor. Known as ‘permittee responsible mitigation’ in the United States.

**Compensation Fund** – a third-party mechanism that collects and administers fees from developers to offset their impacts to biodiversity. The money may go directly towards compensating biodiversity loss or to more indirect biodiversity-related projects (i.e., funding protected area management, research).

**Mitigation Bank (“bank”)** – a site, or suite of sites, where resources (e.g., wetlands, streams, habitat, species) are restored, established, enhanced and / or preserved for the purpose of providing compensatory mitigation for impacts. In general, a mitigation bank sells compensatory mitigation credits to developers whose obligation to provide compensatory mitigation is then transferred to the mitigation bank sponsor.

**Credit** – a unit of measure representing the environmental commodity that is able to be traded (this can be functional or measure of area), based on the environmental activity.

**No Net Loss** – A target for a development project in which the impacts on biodiversity caused by the project are balanced or outweighed by measures taken to avoid and minimize the project’s impacts, to undertake restoration and finally to offset the residual impacts, so that no loss remains. Where the gain exceeds the loss, the term “net gain” may be used.

**Like-for-Like** – conservation (through the biodiversity offset) of the same type of biodiversity as that affected by the project. Also referred to as in-kind.

**Environmental Impact Assessment** – a formalized process, including public consultation, in which all relevant environmental consequences of a project are identified and assessed before authorization is given.

# North America



The major developments in the US in 2010 have been in wetland, stream, and conservation banking. Increases in banking are largely due to the continuing effects of regulatory certainty from 2008 compensatory mitigation regulations, and the spread of the conservation banking model outside of its epicenter in California. Canadian programs continue to increase in transparency – with information on dozens of additional fish habitat banks collected and new information found on programs in Alberta and British Colombia. There are no major developments in offset or compensation programs in Mexico to report at this time.

## United States

### US Wetland and Stream Mitigation Banking

One of the greatest changes in wetland and stream mitigation banking in the US is the increased transparency of information from the US Army Corps of Engineers (US ACE)

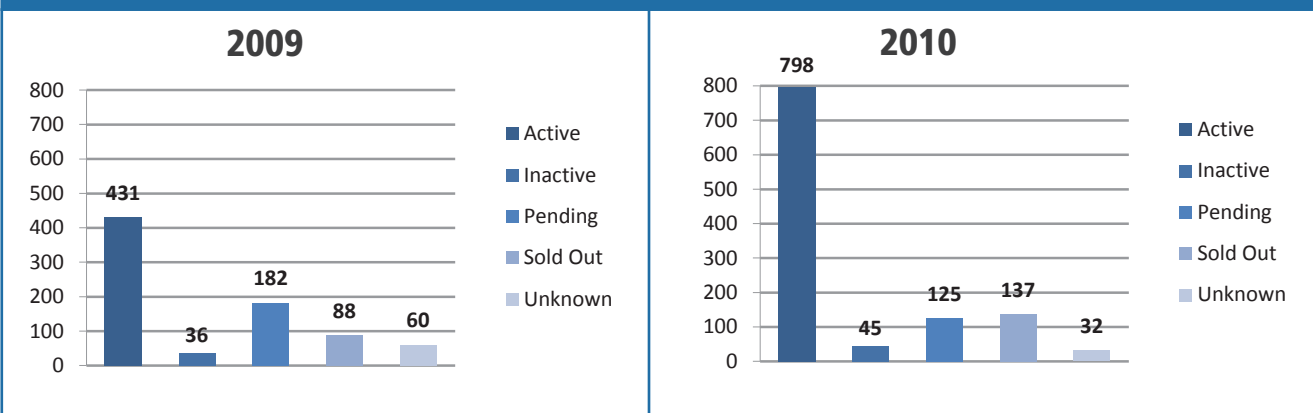
Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS) website. The great increase in banks between our past analysis in the initial *State of Biodiversity Markets* report and this current analysis (see graphic below) is more a reflection of a greater amount of data transparency than a “boom” of wetland and stream bank creation.

This is not to discount the increase in banks entirely. There were 89 new banks in 2009 and 104 new banks in 2010, despite the down economy.<sup>2</sup> Regulatory certainty gained with the 2008 mitigation banking regulations may still be positively affecting bank approvals after two years, and a fall in land values may have made land purchases for banks attractive.<sup>3</sup> On the other hand, real estate development, one of the main drivers of bank creation a few years ago, has not rebounded

<sup>2</sup> Steve Martin, presentation “RIBITS implementation and analysis of banking status and trends,” at the 2011 National Mitigation and Ecosystem Banking Conference.

<sup>3</sup> Sheri Lewin, interview, “Coverage of the National Mitigation and Ecosystem Banking Conference - May 4” Eko-Eco.com, May 5, 2010, <http://eko-eco.com/archive/coverage-of-the-national-mitigation-and-ecosystem-banking-conference---may-3.php>.

### Status of US Wetland and Stream Mitigation Banks



\*Note: The decrease in the category “unknown” is due to data “spring cleaning” in which many bank records which could not be updated or verified since 2005 were removed from our database.

Conservatively, 450,000 acres have been permanently protected in wetland and stream banks in the US over the history of their use, or roughly 22,000 acres each year.

California is the largest participant in conservation banking in the US, with a total of 82 active and sold out banks. Very few new banks have been established outside of California, with just two additional banks in Washington, two in Florida, one in Utah, and one in Mississippi. Of the banks pending

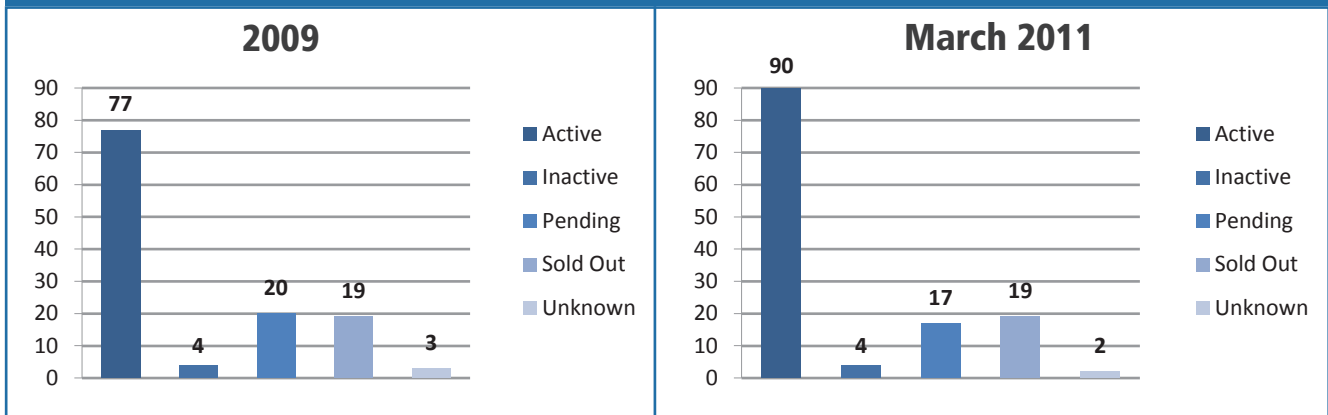
approval (not shown on the map above), the majority are located in California, with a handful in the Northwest and Florida.

There are currently 74,807 acres permanently protected under conservation banks in the US (this figure does not include banks whose status is pending or unknown). The average annual acreage added to the program over the last 10 years was 4,398 acres.

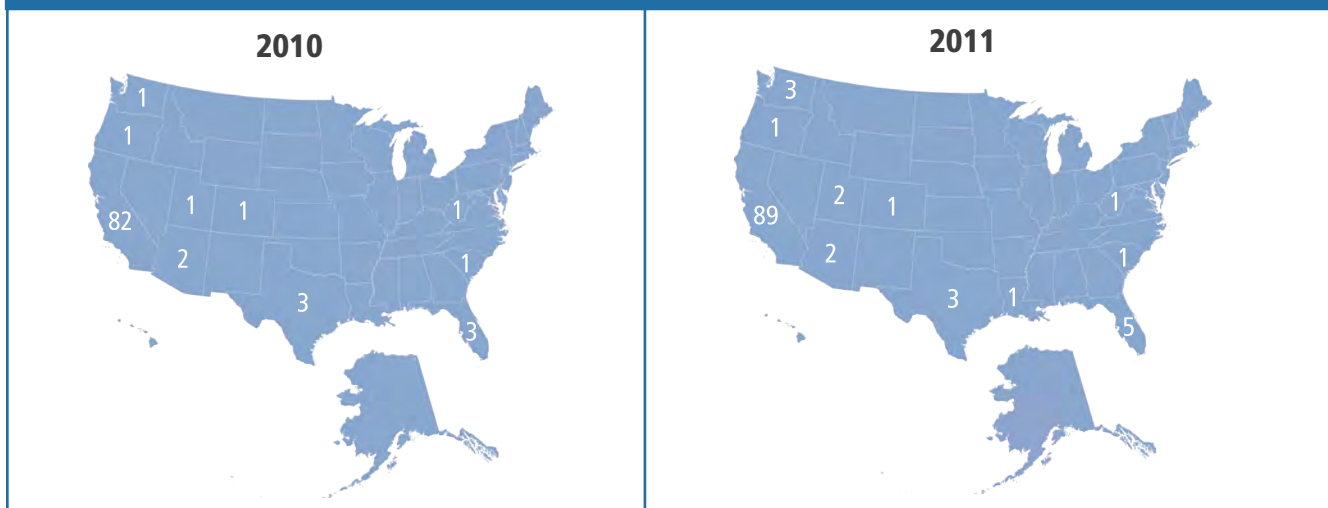
## Other Trends in US Wetland and Stream Mitigation Banking and Conservation Banking

As many at the nexus of markets and the environment know, interpretation of regulations can either stimulate or quash market solutions for environmental issues. In the US world of wetland and stream banking, mitigation bankers have been crying foul over the US Army Corps of Engineer's (US ACE) lack of preference for mitigation banking, which was stated in the

### Status of US Conservation Banks



### Location of Conservation Banks\*



\*Note: Maps represent active and sold-out banks.





*Reflections at the marsh* by Selena N. B. H., <http://www.flickr.com/people/moonlightbulb/>, Creative Commons Attribution license.

2008 Final Compensatory Mitigation Rule.<sup>5</sup> After some prodding from the National Mitigation Banking Association, in October of 2010 the Corps issued a memo requiring documentation when mitigation banking is not being used as the preferred method for mitigation. However, a 2011 Freedom of Information Act request that Ecosystem Marketplace received from the USACE in May of 2011, showed that nationally, mitigation is still sourced predominantly from permittee-responsible mitigation (67%), followed by mitigation banks (26%) and then In-Lieu Fee Funds (7%).<sup>6</sup>

The determination of service areas of mitigation and conservation banking was a subject of study in 2010, with Martin and Womble concluding that “service areas vary considerably in size, type, and rigor across the nation... and the variance we documented [in 38 US ACE districts] doesn’t reflect the geographical variance of a large nation, but rather the administrative variance across the Army Corps’ 38 districts – as well as variance within districts.”<sup>7</sup> Ota and Hayashi studied the service areas of 53 conservation banks in

California<sup>8</sup> and concluded that the importance of recovery units increased after the 2003 US FWS guidance clearly noted that service areas should be located in “areas designated in recovery plans as recovery units or other applicable recovery focal area.”<sup>9</sup>

Transparency of wetland mitigation information was also an issue in 2010. In March of 2010, 20 leaders in the US wetlands field signed a letter to the Assistant Secretary of the Army for Civil Works with a listing of their grievances along with multiple citations of how the Corps was either required to or voluntarily promised to provide data within a specified timeframe.<sup>10</sup> The USACE responded in June of 2010 to this first letter, citing the difficulty in implementation and providing a link to a 2000-page report to Congress. The US ACE letter also claimed that RIBITS was “in use across the nation,” when at that time only 28 of the 38 USACE districts provided public information. Since then, RIBITS has taken tremendous strides in data transparency and as of June 2011 includes information from all but 2 districts.

5 US EPA, 2011. “Compensatory Mitigation” webpage, accessed June 3, 2011 [http://water.epa.gov/lawsregs/guidance/wetlands/wetlandsmitigation\\_index.cfm](http://water.epa.gov/lawsregs/guidance/wetlands/wetlandsmitigation_index.cfm).

6 US Army Corps of Engineers, unpublished FY2010 data in response to Freedom of Information Act request, delivered, 24 May, 2011.

7 Philip Womble and Martin Doyle, “Army Corps Needs to Examine Rationale for Mitigation Territories,” Ecosystem Marketplace, March 18, 2011, [http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page\\_id=8136&section=news\\_articles&eod=1](http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=8136&section=news_articles&eod=1).

8 Ota Takahiro and Kiichiro Hayashi, “Comparative analysis of the determining factors that define service area perimeters of conservation banks in California”, *Papers on environmental information science*, 24 (2010) 255-260.

9 U.S. Department of the Interior, Fish and Wildlife Services. Guidance for the Establishment, Use, and Operation of Conservation Banks, May 2, 2003, [http://www.fws.gov/endangered/esa-library/pdf/Conservation\\_Banking\\_Guidance.pdf](http://www.fws.gov/endangered/esa-library/pdf/Conservation_Banking_Guidance.pdf).

10 Becky Abel et al., Letter to the US Army Corps of Engineers, *RE: Corps of Engineers Transparency and On-Line Data Access*, March 31, 2010, <http://www.mitigationbanking.org/pdfs/2010-asacw.pdf>.

## Canada

Canadian contacts have indicated that Canada's **National Fish Habitat Compensation** program is largely carried out through individual one-off offsets and only when there is deemed to be an impact requiring an authorization. The vast majority (~95%) of "referrals" are deemed to have no impact; avoid impact by following an "operational statement" for "a number of routine projects that pose little risk to fish habitat;" or negate impacts by relocating, redesigning, or mitigating impacts to fish habitat.<sup>11</sup>

Habitat banking is used for compensation in a number of cases in Canada. Over the years, Regional Program staff have been gaining experience in applying the concept of fish habitat banking across Canada. Banking is developing largely at the provincial level, with Nova Scotia and Quebec seeing the most activity in banking.<sup>12, 13</sup> The Quebec branch of the Department of Fisheries and Oceans (DFO) recently provided a list of 25 habitat banks (or "habitat de réserve"); one additional unofficial bank is listed in Alberta, bringing the total number of banks in Canada up to 43. While the concept of fish habitat banking was identified in the 2002 Practitioners Guide to Habitat Compensation, the preferred method of compensation within this program remains individual one-off offsets. Recently, a consortium of industry representatives contracted with a consultant to review habitat banking practices in Canada and abroad and have shared their findings with DFO officials to encourage further application of the concept of habitat banking by DFO.<sup>14</sup>

Regardless of what type of compensation is occurring, three DFO officials in April of 2011 told a judicial panel that the policy goal of "no net loss" is not being met because "the habitat provided in compensation often doesn't match in size or productivity the habitat that has been lost to development."<sup>15</sup> In response to the judicial panel appointed to investigate sockeye salmon decline, DFO's director of Habitat Policies and Practices Patrice LeBlanc, noted: "We do lose some habitat," and "I'm not sure if it's 10% or 50% – we have no true way to measure." LeBlanc noted that his agency did not have a standard methodology for measuring "no net loss"(or net gain) of productive capacity of fish habitat.<sup>16</sup>

In **Alberta**, provincial law may be losing the "no net loss" driver for wetland restoration and compensation. The province's 2007 Provincial Wetland Restoration/Compensation Guide is underpinned by a 1993 provincial wetlands policy "Wetland Management in the Settled Area - An Interim Policy." The interim policy, which has a "no net loss" goal, only applies to settled areas ("white" zones) and not the ~60% of the province that is public lands. From about 2008 up to the present, the policy has been

15 Mike Hume, "Fisheries habitat being steadily eroded, panel told," *Globe and Mail*, April 4, 2011, <http://www.theglobeandmail.com/subscribe.jsp?art=1970790>.

16 See note 12.

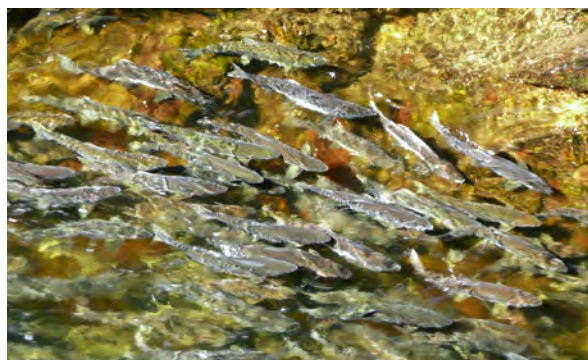


Image: Shutterstock.

11 Patrice LeBlanc and Alwyn Rose, personal communication, May 2011.

12 Carla Gomez, personal communication, 2011.

13 Brenda McAfee, personal communication, April 2011.

14 See note 12.

in the midst of updates, although it has not been finalized (as of March 2011). Although the majority of the 25 stakeholders convened in a provincial Alberta Water Council supported maintaining the “no net loss” policy goal, it appears that pressure by two powerful industry groups (Alberta Chamber of Resources and the Canadian Association of Petroleum Producers) have convinced government to remove the “no net loss” goal.<sup>17</sup> The Environment Minister released a policy “intention” in October of 2010 that, while not the final policy, provides an indication that “no net loss” will be stripped from the provincial wetlands policy.<sup>18, 19, 20</sup>

In **British Columbia** the Ministry of Environment is in the engagement stage of developing a new policy on environmental mitigation and offsets.<sup>21</sup> The Ministry is anticipating a policy that would promote a mitigation hierarchy for avoiding, minimizing, and offsetting damage to environmental resources (broadly defined as “fish, wildlife, and ecosystem resources, including species and ecosystems of priority conservation concern”) on government lands. Although provincial staff have had the authority to request mitigation or offsets for impacts on government lands, there has been no guidance to standardize decision-making regarding mitigation or offsets.

The province established a team to develop a discussion paper on research and policy options and closed input on 6 February 2011.

According to the discussion paper, the policy would apply “to decisions made under legislation administered by the B.C. Ministry of Environment (MoE) and the B.C. Ministry of Natural Resource Operations (MoNRO) that affect environmental resources.” The policy would also apply to MoE and/or MoNRO employees when they are asked to provide advice to decision makers in other government agencies that make land and water development authorization decisions.”<sup>22</sup> The policy is scheduled to be applied on a trial basis in 2011 and 2012.<sup>23, 24</sup>

22 British Columbia Ministry of the Environment. *Towards an Environmental Mitigation and Offsetting Policy for British Columbia: A Discussion Paper*, draft for consultation, 2010, [http://www.env.gov.bc.ca/emop/docs/EMOP\\_DiscussionPaper.pdf](http://www.env.gov.bc.ca/emop/docs/EMOP_DiscussionPaper.pdf).

23 Jan Cassin, personal communication, 2011.

24 Jenny Feick, personal communication, 2011.

17 John Cotter, “Alberta Chamber of Resources says Alberta to change wetlands plan,” Canadian Press, March 15, 2010, <http://www.tarsandswatch.org/alberta-chamber-resources-says-alberta-change-wetlands-plan>.

18 Water Matters, “Weakened policy puts Alberta wetlands at risk,” news release, October 29, 2010, <http://www.water-matters.org/story/409>.

19 Jeffrey Jones, “Regulation is deficient in Canada oil sands—study,” December 15, 2010, <http://uk.reuters.com/article/2010/12/15/canada-oilsands-environment-idUKN1519514220101215>.

20 Joe Obad, personal communication, March 31, 2011.

21 “Environmental Mitigation and Offsetting Policy for British Columbia,” accessed May 6, 2011, <http://www.env.gov.bc.ca/emop/>.



# Central and South America



In Latin America, there continues to be more activity in traditional Payments for Ecosystem Services (PES) mechanisms than offset, compensation, or banking systems that are tied more directly to impacts on biodiversity. For example, in Brazil, two states – Acre and Amazonas – have released formal or draft state law on environmental services.<sup>25,26</sup>

Nevertheless, the past two years have seen increased discussion, if not increased activities and implementation, of mitigation banking and biodiversity offset mechanisms in **Latin America**. In late 2010, the United Nations Development Program released their report “The Importance of Biodiversity and Ecosystems in Latin America and Caribbean: A Regional Economic Valuation of Ecosystems,” which outlined the importance of ecosystem health in ensuring continued economic development in the region.<sup>27</sup> Earlier in the year PricewaterhouseCoopers released as part of that UNDP effort a report “Habitat Banking in Latin America and Caribbean: A Feasibility Assessment,”<sup>28</sup> which assessed the current state of political, economic, and social conditions in a group of countries in Latin America and how readily a habitat banking system could be established for each.<sup>29</sup> The report found some overarching similarities

and existing conditions that make some countries in the region well suited to habitat banking and other PES mechanisms: an abundance of biodiversity and forests (that are nonetheless threatened by development), the availability of government infrastructure, NGOs, and academic institutions, and an existing policy that could act as a launching pad for a full-fledged PES mechanism and market (mostly in the form of Environmental Impact Assessment requirements). There are, however, some elements missing, such as the necessary technical capacity, and importantly, the political will.<sup>30</sup>

In late May of 2011, **Brazil** significantly reduced the force of its 1965 law regulating forestry, the Código Florestal, or **Forest Code**. Although reform has taken place in the past, many legal and environmental experts

25 Secretary of State for the Environment and Sustainable Development, “Minuta de projeto de lei serviços ambientais,” March 22, 2011, [http://www.sds.am.gov.br/images/stories/Minuta\\_de\\_projeto\\_de\\_lei\\_de\\_servicos\\_ambientais\\_do\\_AM.pdf](http://www.sds.am.gov.br/images/stories/Minuta_de_projeto_de_lei_de_servicos_ambientais_do_AM.pdf).

26 Slayde Hawkins, personal communication, May 2011.

27 Andrew Bovarnick, Francisco Alpizar, Charles Schnell, Editors, *The Importance of Biodiversity and Ecosystems in Economic Growth and Equity in Latin America and the Caribbean: An economic valuation of ecosystem*, United Nations Development Programme, 2010.

28 Andrew Bovarnick, Chris Knight & Jim Stephenson. *Habitat Banking in Latin America and Caribbean: A Feasibility Assessment*. United Nations Development Programme, 2010.

29 Ibid.

30 Daniel Kandy, “Nagoya Report Highlights Latin American Biodiversity Funding,” Ecosystem Marketplace, October 28, 2010, [http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page\\_id=7785&section=home](http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=7785&section=home).



Image: Jatobá-do-cerrado (*Hymenaea stigonocarpa*) by Mauricio Mercadante, <http://www.flickr.com/photos/mercadanteweb/>, Creative Commons Attribution-NonCommercial-ShareAlike license.

say these latest changes will weaken rather than strengthen the law.<sup>31, 32, 33</sup> Although the law still requires land owners to preserve a percentage of their land as forest, the legal reserve requirement has been reduced – from 80% to 50% in the Amazon and from 35% to 20% in the Cerrado. The bill also exempts small-scale farmers from this requirement and grants amnesty to small-scale farmers who violated the law before July 2008. As well, the bill opens environmentally sensitive areas like hilltops, slopes, and riparian areas to cultivation.<sup>34</sup>

31 Antonio Benjamin, "Law and the Future of Brazilian Forests" (presentation, Washington, DC, July 23, 2010).

32 Yana Marull, "Fierce debate in Brazil over forestry protection," Agence France-Presse, May 12, 2011, [http://www.google.com/hostednews/afp/article/ALeqM5hElzc-xBwvvdvqvm\\_gN5Fv\\_y2EMlg?docId=CNG.b9087ae85ba0cdf88c38a982205dfbcd.01](http://www.google.com/hostednews/afp/article/ALeqM5hElzc-xBwvvdvqvm_gN5Fv_y2EMlg?docId=CNG.b9087ae85ba0cdf88c38a982205dfbcd.01).

33 Richard Blaustein and Chris Santiago, "Anti-Logging Activist Murdered as Brazil Moves to Reduce Protection of the Amazon Rainforest," Ecosystem Marketplace, May 25, 2011, [http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page\\_id=8334&section=news\\_articles&eod=1](http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=8334&section=news_articles&eod=1).

34 Ibid.



Image: Aerial view of the Amazon Rainforest #03, Brazil by CIFOR, <http://www.flickr.com/photos/cifor/>, Creative Commons Attribution-Noncommercial-No Derivative Works license.



# Africa



In Africa, countries are continuing to explore and develop biodiversity offsets policy but little progress has been made in implementation.

While **South Africa's Western Cape biodiversity offsets** guidelines were developed in 2007, the provincial government continues to refine the system and has called for more research on public finance and administration of the system. Biodiversity offset policy in the province of **KwaZulu-Natal** is also still in the process of being adopted, while **Gauteng** is currently undertaking the revision of its draft (unpublished) biodiversity offset guideline.

<sup>35, 36</sup>

At the national level, the Department of Environmental Affairs (DEA,) in conjunction with South African National Biodiversity Institute (SANBI), is leading the development of a **national biodiversity offset framework**, and has initiated a consultation process to guide this process. Linked to the development of the national offset framework, SANBI's

Freshwater and Grasslands programs are piloting the development of a **wetland mitigation banking scheme** as an offsets mechanism. The focus here is on the use of biodiversity planning tools to identify high-risk wetlands; methodologies for determining hectare equivalents and compensation ratios for wetland offsets; and on the development of guidelines for off-site compensation/offsets arrangements. This will primarily serve the coal mining sector, but could serve all sectors in terms of the precedent it will set.<sup>37</sup>

**Namibia** has taken some steps to include the concepts of the mitigation hierarchy and "no net loss" in a **Strategic Environmental Management Plan (SEMP)** in response to a large increase in exploration and mining license applications. The country has been enacting a moratorium on issuing licenses since 2007 while a Strategic Environmental Assessment (SEA) was conducted for the Uranium Province (Erongo and Southern Kunene regions). In 2009, the SEA commenced and recommended biodiversity offsets "for

35 Jeffery Manuel, personal communication, May 2011.

36 Amrei von Hase, personal communication, May 2011.

37 Ibid.



Image: Fynbos by Joachim Huber (flickr: Sara&Joachim), [http://www.flickr.com/photos/sara\\_joachim/](http://www.flickr.com/photos/sara_joachim/), Creative Commons Attribution-Share Alike license.

the residual negative impacts in order to achieve a zero net loss to biodiversity and if possible make a net positive impact through other beneficial actions, e.g., supporting additional conservation activities.”<sup>38</sup>

Following the SEA, a Strategic Environmental Management Plan (SEMP) was drafted to provide a framework for addressing the impacts of development. The SEMP included as one of its Environmental Quality Objectives maintaining the ecological integrity of sites by employing a mitigation hierarchy, with biodiversity offsets as an option.<sup>39</sup> A landscape-level spatial assessment to identify biodiversity conservation priorities and land-use opportunities and constraints within the Uranium Province will be undertaken from 2011 through early 2012. The project includes a focus on biodiversity offsets and aggregated offsets and is being conducted under the auspices of the Ministry for Environment’s Strengthening the Protected Areas Network (SPAN) programme.

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38 Ministry of Mines and Energy, *Strategic Environmental Assessment for the Central Namib Uranium Rush*. Windhoek: Ministry of Mines and Energy, 2010.

39 Ibid.



Image: Namib Naukluft National Park, Namibia by Joachim Huber (flickr: Sara&Joachim), [http://www.flickr.com/photos/sara\\_joachim/](http://www.flickr.com/photos/sara_joachim/), Creative Commons Attribution-Share Alike license.



In Europe, the past two years have seen a growing focus on biodiversity despite a failure to meet the European Union (EU) target of halting biodiversity loss in the EU by 2010. Biodiversity offsets and other compensation mechanisms continue to gain recognition as a policy tool, with a number of countries – including the UK, France, and Sweden – taking initial steps to develop markets for biodiversity. Nascent markets should see a boost thanks to the recent European Commission commitment to develop a “no net loss” strategy by 2015 that embraces the use of payments for ecosystem services.

In May of 2011, the European Commission adopted an **EU strategy for reversing biodiversity loss** placing a stronger emphasis on ecosystem services than in the past. It responds to a key objective of the EU 2020 headline target set by EU heads of state in March 2010 that calls not only for halting biodiversity loss and the further deterioration of ecosystem services but also for actively restoring them. The Commission also aims to craft a comprehensive “no net loss” biodiversity initiative by 2015, as well as a Green Infrastructure Strategy by 2012. Payments for ecosystem services, biodiversity offsets, and private sector investment in green infrastructure are identified as innovative ways to scale up and diversify funding to achieve these goals.

The new strategy builds on the European Environment Agency’s June 2010 EU biodiversity baseline, which concluded that most of the living ecosystems no

longer provided ecosystem services such as the filtering of water, the pollination of crops, and flood control. It will rely on the ecosystem services work undertaken by the Commission’s Joint Research Centre for the implementation of some of the targets. The new strategy will now be discussed by the European Council and Parliament.<sup>40, 41</sup>

A Birdlife International Birds and Habitats Directive task force investigating the potential role for biodiversity offsets within the scope of the **EU Habitats and Birds Directive** released a position paper in June 2010 advancing “relatively cautious” approval toward offsets. The BHDTF position paper set out principles for an offset system and recommendations for the role of biodiversity offsets in EU conservation policy, emphasizing offsets as a complement to, rather than overlapping with, current Natura 2000 sites. The paper also called for strengthening policy to reflect the concepts of “no net loss” and “net gain.”<sup>42</sup>

Incorporation of the **European Union Liability Directive** (ELD) into member states’ domestic law was completed in July 2010. Data on implementation of the ELD is still sparse given the delay in full incorporation, which took three years longer than planned.<sup>43</sup> An October 2010 report on the ELD’s

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40 European Commission, *Report From the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: Under Article 14(2) of Directive 2004/35/CE on the environmental liability with regard to the prevention and remedying of environmental damage*. Brussels: European Commission, 2010.

41 Ian Dickie, personal communication, May 2011.

42 Birdlife International, *Position paper of the Birds and Habitats Directives Task Force on Biodiversity Offsets in the European Union*. 2010. [http://www.birdlife.org/eu/pdfs/2010\\_BHDTF\\_position\\_Biodiversity\\_offsets.pdf](http://www.birdlife.org/eu/pdfs/2010_BHDTF_position_Biodiversity_offsets.pdf).

43 “Environmental Liability,” European Commission, accessed May 11, 2011, [http://ec.europa.eu/environment/legal/liability/pdf/com\\_2010\\_0581.pdf](http://ec.europa.eu/environment/legal/liability/pdf/com_2010_0581.pdf).



effectiveness found that around 50 cases have been recorded to date across Europe. Of these, only a small number concern damage to protected species and natural habitats. None of the cases report complementary or compensatory remediation for damages. Total remediation costs, where available, range between €12,000 and €250,000.<sup>44</sup>

A second pilot habitat banking site is in early stages in the Poitou-Charentes region in **France**. The pilot is being developed by CDC Biodiversité and the Ministry of Ecology and is the second of five pilots ultimately planned; CDC Biodiversité's Saint Martin de Crau project being the first.<sup>45</sup>

Amendments to **Germany's** Federal Nature Conservation Act in March 2010 established the concept of "natural areas" to reflect spatial relationships between the sites of intervention and compensation measures; compensation measures must take place with the same "natural area." The updated act also attempted to limit the use of high-priority agricultural land for compensation projects. However, a number of regulatory questions have yet to be settled, including monitoring and long-term maintenance, credit generation

44 European Commission. *Report From the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: Under Article 14(2) of Directive 2004/35/CE on the environmental liability with regard to the prevention and remedying of environmental damage*. Brussels: European Commission, 2010.

45 eftec, IEEP, et al., *The use of market-based instruments for biodiversity protection - Habitat Banking case studies*, 2010, <http://ec.europa.eu/environment/enveco/index.htm>.

methodologies, clarifying the mitigation hierarchy, trading, and banking credits in compensation pools, and harmonizing standards across state governments in order to increase market liquidity.<sup>46, 47</sup>

Ecological impacts in the German system can be mitigated either through like-for-like compensation or an intervention worth an equal number of "eco-points" as the original site before impacts. "Eco-points" are a general term for the crediting basis for mitigation, a way to measure ecological value of an impact and demonstrate equivalency between the impact and compensation sites. Eco-point scores are calculated based on state-specific biotope lists, regional conservation priorities, and local guidance; thus there can be considerable variation in calculation methods. Eco-points are also not comparable between different habitat types.<sup>48</sup>

In **Sweden**, an April 2011 workshop was convened to explore what a national ecological compensation system might look like. Attended by Swedish municipalities,

46 Federal Ministry for the Environment, "Nature Conservation and Nuclear Safety, Reform of environmental law takes effect: new Acts enter into force on 1 March 2010", news release, February 26, 2010, [http://www.bmu.de/english/current\\_press\\_releases/pm/45821.php](http://www.bmu.de/english/current_press_releases/pm/45821.php).

47 Michael Heugel et al., eds., *The New Federal Nature Conservation Act Cohesive and Close to Citizens*, Berlin: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, February, 2010, [http://www.bmu.de/files/english/pdf/application/pdf/broschuere\\_bnatschg\\_en\\_bf.pdf](http://www.bmu.de/files/english/pdf/application/pdf/broschuere_bnatschg_en_bf.pdf).

48 Sandra Naumann et al., *Resource Equivalency Methods for Assessing Environmental Damage in the EU (REMEDE) Project: Compensation in the form of Habitat Banking - Short Case Study Report*, Berlin: Ecologic Institute, 2008.

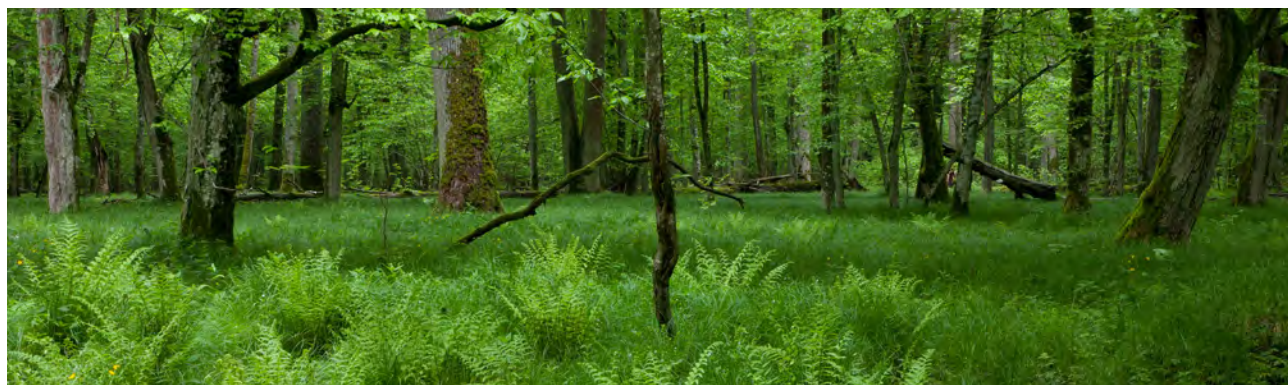


Image: Shutterstock.

government agencies, biodiversity-focused research and advocacy groups, and academia, the meeting aimed to get a national dialogue started on using biodiversity offsets to halt ongoing losses of natural resources on unprotected lands.<sup>49</sup>

The UK began exploring the idea of biodiversity offsets seriously when shadow environment secretary Nick Herbert outlined proposals for a nationally implemented, mandatory offsetting mechanism in 2009. The approach never gained the necessary traction under the Labour government, but the Liberal Democrat-Conservative coalition government elected in 2010 is expected to make biodiversity offsets a part of their environmental policy.

The Department for Environment, Food, and Rural Affairs (DEFRA) released what they called “An invitation to shape the Nature of England” in July 2010, encouraging comments and suggestions through the 30th of October 2010 for the Natural Environment White Paper,<sup>50</sup> a document that outlines the government’s environmental policies.<sup>51</sup> Many of the respondents encouraged the exploration and implementation of biodiversity offsets and other PES mechanisms.<sup>52</sup> In light of those responses and the understanding that biodiversity offsets fit within the government’s mandate of reducing the size of government and putting more

power in the hands of local governments, DEFRA’s current “Business Plan 2011-2015” notes that they will “assess the scope for actions to offset the impact of development on biodiversity.”<sup>53</sup>

The White Paper itself, released June 7, 2011, includes a plan to start a biodiversity offset program in the spring of 2012. This trial phase is set to run for two years in a number of pilot areas around the country, with a review taking place at the end of the trial to assess whether to implement an offset program at a larger scale and implement other changes. The program, in keeping with the government’s “small government” mandate is voluntary and will be administered largely by local governments (although Natural England will provide support to pilot areas). In the meantime, one private developer – Environment Bank Ltd. – is already developing pilot “conservation credit” banks in the headwaters of the Thames and on the Essex and Suffolk coasts.<sup>54</sup>

53 Department for Environment, Food and Rural Affairs, *Business Plan 2011-2015*, London: Department for Environment, Food and Rural Affairs, 2010, <http://archive.defra.gov.uk/corporate/about/what/documents/defra-businessplan-101108.pdf>.

54 Emily Smoucha, “Environment Agency teams up with private bank on conservation credit system,” *International Business Times*, 13 April 2011, <http://uk.ibtimes.com/articles/20110413/environment-agency-teams-with-private-bank-conservation-credit-system.htm>.

49 EnviroEconomics Sweden, “Ecological compensation -- a new tool in Sweden?” 13-14 April, 2011, Umeå, Sweden, Conference Brochure. Accessed May 20, 2011, [http://www.eesweden.com/assets/EkolKompKonf\\_pm\\_en.pdf](http://www.eesweden.com/assets/EkolKompKonf_pm_en.pdf).

50 Department for the Environment, Food, and Rural Affairs, “Natural Environment White Paper: The Natural Choice: securing the value of nature,” London: Department for Environment, Food and Rural Affairs, June 2011, <http://www.archive.defra.gov.uk/environment/natural/documents/newp-white-paper-110607.pdf>.

51 Department for Environment, Food and Rural Affairs, *An invitation to shape the Nature of England: Discussion Document Summary*, London: Department for Environment, Food and Rural Affairs, 2010, <http://archive.defra.gov.uk/environment/natural/documents/newp-discussion-summary-260710.pdf>.

52 Department for Environment, Food and Rural Affairs, *An invitation to shape the Nature of England: Summary of responses to the Discussion Document*, London: Department for Environment, Food and Rural Affairs, 2010, <http://archive.defra.gov.uk/environment/natural/documents/newp-discussion-110131.pdf>.







In Asia, the past year has seen some countries, including Vietnam and Japan, making progress on frameworks for biodiversity payment mechanisms. In Japan, a number of initiatives were launched to explore the feasibility of biodiversity offsets in the country, while Vietnam's new decree outlining a compensation process for environmental damages took effect in early 2011.

In **Vietnam**, the country is continuing to elaborate on more details of their 2008 biodiversity law. On 18 January, 2011, Decree No. 113/2010/ND-CP (Nghị định số 113/2010/NĐ-CP) went into effect.<sup>55</sup> The decree regulates damages from pollution and degradation on water, land, ecosystems, and priority species and spells out the process for claiming compensation. Authority is generally decentralized to the provincial level and the Ministry of Natural Resources and Environment, depending on the scale of the damage. The decree, however, is not entirely clear on how damages are calculated.<sup>56</sup>

There has been interest in biodiversity offsets in **Japan** for some time, with professional impact assessment organizations<sup>57</sup> offering 25 seminars on biodiversity offsets and

banking since 1998.<sup>58</sup> In June of 2010, a **Biodiversity Offsets Study Group** was set up at the initiative of Tohoku University and has brought together about 60 individuals from general contractors, megabanks, NGOs, universities, the Ministry of Land, Infrastructure, Transport, and Tourism, and the Tokyo metropolitan government. Over the course of 2010, the group has analyzed overseas examples and examined the feasibility and potential economic impacts of offsets in Japan. The initiative will conduct experiments and prepare a report including policy suggestions for the government.<sup>59</sup>

A 2010 report by Japan's Central Environmental Council called for better tracking of new types of biodiversity conservation measures including biodiversity offsets. Following this recommendation, the Ministry of Environment Japan began investigations into overseas biodiversity compensation schemes in 2010.<sup>60</sup> Under Japan's existing national Environmental Impact Assessment Law (enacted in 1997), impact mitigation measures may include avoidance, reduction, and compensation. Several compensation examples exist to date but most of these are not full-scale biodiversity offsets as implemented in many countries.<sup>61, 62, 63</sup>

55 "Nghị định quy định về xác định thiệt hại đối với môi trường được Thủ tướng Chính phủ ký ban hành" [Decree on the determination of provisions for environmental damage is to the Prime Minister signing], Ispnre, December 18, 2010, <http://www.ispnre.gov.vn/home/tin-tuc/597-nghe-dinh-quy-dinh-ve-xac-dinh-thiet-hai-doi-voi-moi-truong-duoc-thu-tuong-chinh-phu-ky-ban-hanh>.

56 Socialist Republic of Viet Nam, No. 113/2010/ND-CP: Decree Providing for the Determination of Environmental Damage, Hanoi: Socialist Republic of Viet Nam, 2010, [http://asemconnectvietnam.gov.vn/luatasem\\_out/get\\_detail.aspx?idlaw=1589](http://asemconnectvietnam.gov.vn/luatasem_out/get_detail.aspx?idlaw=1589).

57 The International Association for Impact Assessment Japan chapter and the Japan Society for Impact Assessment.

58 Akira Tanaka, Tokyo City University, personal communication, June 6, 2011.

59 Yoshikazu Hirai, "COP10/ Biodiversity offsets can help fund conservation," October 19, 2010, <http://www.asahi.com/english/TKY201010180262.html>.

60 Ibid.

61 Akira Tanaka, "Changing Ecological Assessment and Mitigation in Japan," Built Environment 27 (1) 35-41.

62 Government of Japan, Ministry of the Environment. "Press Release: Amendment of the Basic Guidelines for Environmental Impact Assessment," 2005. <http://www.env.go.jp/en/press/2005/0330b.html>.

63 Kii Hayashi, personal communication, May 27, 2011.

Japan also has at least two **business and biodiversity initiatives**, though neither are currently engaged in compensation activities intended to offset measured impacts. These include the Nippon Keidanren initiative, which issued a Declaration on Biodiversity in 2009 (expressing their unease with the concept of “no net loss”), and a Japan Business Initiative for Biodiversity (JBIB).<sup>64, 65, 66</sup>

In Japan, **Satoyama Banking** has been proposed as a mechanism for providing financial support to the preservation of traditional landscapes.<sup>67</sup> The program does not target “biodiversity” in the same sense that other programs do (e.g., non-human habitat), but it is an interesting concept attempting to adapt biodiversity offset/banking systems to Japanese traditional secondary ecosystems and cultural assets. In 2010, Tokyo City University organized stakeholder meetings to discuss the possibilities of Satoyama Banking in three sites: Simokawa, Hokkaido, a typical rural area; Chiba, a suburb of a large city; and Yokohama, the center of a large city.<sup>68</sup> Satoyama isn’t just for Japan, either: the International Partnership for the Satoyama Initiative is a global partnership announced during the CBD COP10 in Nagoya in October of 2010.<sup>69, 70</sup>

Finally, although palm oil production is not limited to Asia, we wanted to mention a new program endorsed by the Roundtable on Sustainable Palm Oil (RSPO) that provides

incentives for sustainable production. **GreenPalm** is not precisely an offset or compensation program, but represents something between a certification system and a voluntary environmental compensation credit. To address the difficulty in identifying a purely segregated sustainable source of palm oil, GreenPalm credits allow those purchasing certificates to “buy” certified palm oil without following every link in the supply chain. A GreenPalm certificate represents one ton of palm oil that has been sustainably produced and certified to Roundtable on Sustainable Palm Oil (RSPO) standards. Consumer goods producers or retailers can calculate the total amount of palm oil in their products and then purchase certificates to represent the same volume of palm oil.<sup>71, 72</sup>

71 GreenPalm, “What is GreenPalm?” accessed May 12, 2011, <http://www.greenpalm.org/en/what-is-greenpalm/overview>.  
72 Bob Norman, personal communication, April 14, 2011.



Image: Shutterstock.

Like other certification standards, producers are independently audited. One of the components of the producer certification system is a requirement to produce only on previously degraded lands. The certificates are traded on a market and the price of the credit becomes the premium given to producers of sustainably produced palm oil.<sup>73</sup> Trading began in September of 2008, and as of April 2011, 1.75 million certificates have been traded, providing a total of USD 30 million to certified growers.<sup>74</sup>

64 “Japanese Business and Biodiversity Partnership,” accessed June 6, 2011, [http://www.bd-partner.org/wp-content/uploads/COP10\\_Partnership\\_E.pdf](http://www.bd-partner.org/wp-content/uploads/COP10_Partnership_E.pdf).

65 “Towards Conservation and Sustainable Use of Biodiversity,” Nippon Keidanren website, accessed June 2, 2011, <http://www.keidanren.or.jp/english/policy/2010/053.html>.

66 Japanese Business Initiative for Biodiversity, accessed June 2, 2011, <http://www.jbib.org/en/>.

67 Akira Tanaka, “Novel biodiversity offset strategies: Satoyama Banking and Earth Banking.” Paper presented 30th Annual Meeting of the International Association for Impact Assessment, Geneva, Switzerland, April 2010.

68 See note 58.

69 Satoyama Initiative website, accessed June 6, 2011, <http://satoyama-initiative.org/en/>.

70 “Launch of the International Partnership for the Satoyama Initiative,” GEF website, accessed June 6, 2011, <http://www.thegef.org/gef/node/3680>.

73 See note 71.  
74 See note 71.

# Australia and New Zealand



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Australia continues to develop unconnected state-level biodiversity offset and banking programs. In New South Wales, BioBanking continues to gain momentum and now boasts five BioBank sites. BushBroker, the “matchmaker” of Victoria’s native vegetation offsets, is now in its sixth year of existence and has assisted around 300 transactions cumulatively. The Northern Territory released a new draft Environmental Offsets Policy in October 2010. In New Zealand, a National Biodiversity Policy Statement is expected to go into effect in June of this year and could provide a national push for greater implementation of the mitigation hierarchy and the “no net loss” principle. This Policy Statement could eventually trickle down into local, council, and district policies – like those being developed in the progressive Waikato and Gisborne Districts.

## Australia

In the State of **Victoria**, the **BushBroker** program is on its sixth year as a facilitation service for identifying supply and matching supply and demand of **Native Vegetation Offsets** under requirements of the Native Vegetation Framework of 2002. BushBroker services perhaps 20-25% of offset demand – the “hard-to-find” requirements for larger impacts that are referred to the Department of Sustainability and Environment (DSE), while the majority of offsets are created by a

landowner on their own land with approval by a local council.<sup>75, 76, 77</sup>

BushBroker maintains a Native Vegetation Credit Register. Although a 2008 government document about the BushBroker program noted that “in the future, a web-based BushBroker will operate allowing buyers of credits to conduct their own searches and complete trades,” at the moment there is no publicly accessible online database. All enquiries about the available supply must be channeled through offset search requests through the BushBroker program.<sup>78</sup>

There is a new 6-month pilot program (launched May 2011) called the Native Vegetation Exchange (NVX) that is described as an “online system which matches buyers and sellers of Native Vegetation Credits.”<sup>79</sup> While NVX is not a project *within* the BushBroker program, it mimics it somewhat, in that it is a matching system for native vegetation credits. The distinction, it seems, is that NVX is an experiment in automating the

75 Victoria Government Department of Sustainability and Environment “Native Vegetation Net Gain Accounting - First Approximation Report,” 2008, <http://www.dse.vic.gov.au/conservation-and-environment/net-gain-accounting-first-approximation-report>.

76 Amanda Cornwall, personal communication, May 12, 2011.

77 Anne Buchan, personal communication, May 24, 2011.

78 Victorian Government Department of Sustainability and Environment, Native Vegetation Offset Search Request Form, [http://www.dpi.vic.gov.au/CA256F310024B628/0/6A08A257E604A7C9CA2577BC00809071/\\$File/BushBroker+Offset+Search+Request+-+DSE+referred+scattered+trees.pdf](http://www.dpi.vic.gov.au/CA256F310024B628/0/6A08A257E604A7C9CA2577BC00809071/$File/BushBroker+Offset+Search+Request+-+DSE+referred+scattered+trees.pdf).

79 “Native Vegetation Exchange Trial - Homepage,” Victoria Government Department of Sustainability and Environment, accessed May 13, 2011, <http://www.dpi.vic.gov.au/DSE/nrence.nsf/LinkView/FD1935AB0568F310CA2577F9001405C8D45BD6C381976E35CA257877000BB708>.



trading process. The project is being trialed in the Gippsland Plain bioregion.

Regarding demand for native vegetation offsets, the Victorian government has committed to create two new large-scale “reserves” by 2020 to create consolidated banks of credits for expected impact due to planned expansion. Developers in Melbourne’s designated urban growth area must source their offsets from these reserves – one of 15,000 hectares (the Western Grasslands Reserve) and one of 1,300 hectares.<sup>80</sup> The government will create the reserves by acquiring the land and designating it under Crown reserves legislation. It has undertaken to sell the credits at a price that represents cost recovery. BushBroker will be used to provide matches of offset requirements with credits in the reserves.<sup>81, 82</sup>

BushBroker staff reported that the program had facilitated about 300 trades since May 2007; this averages out to about 75 trades annually. In terms of dollar volume, the program facilitated AUD 34 million (USD 32 million) in credit sales cumulatively (2007-2011), and an average of AUD 6.8 million annually over the last two years (or USD 6.4 million).<sup>83, 84</sup> This is higher than we estimated using low-end or average prices

80 See note 77.

81 See note 77.

82 See note 76.

83 AUD converted to USD using the exchange rate on June 1, 2011, from: [http://www.exchangerates.org.uk/AUD-USD-01\\_06\\_2011-exchange-rate-history.html](http://www.exchangerates.org.uk/AUD-USD-01_06_2011-exchange-rate-history.html).

84 See note 77.

and credit volumes found on the BushBroker program’s “Price History” webpage.<sup>85</sup> Just to emphasize, this only represents credit sales within BushBroker, and perhaps 75-80% of native vegetation offsets in Victoria occur outside the sphere of BushBroker (although these are generally smaller-scale offsets created by a landowner on their own land). In terms of area, BushBroker staff reported that the program has facilitated 3,420 hectares of credits since May 2007, or 855 hectares annually.<sup>86</sup>

The **BioBanking** program, formally implemented in **New South Wales** by the Office of Environment and Heritage (NSW OEH) in the fall of 2009, now boasts five Biobanks covering a total of 210.3 hectares and an additional 23 “expressions of interest.”<sup>87</sup>

The initial BioBanking transactions have occurred under the NSW OEH’s Biocertification Program. Under the Biocertification Program, development is projected at a landscape scale. Offsets needed for planned impacts are assessed at an aggregate level, circumventing the need for project-by-project processing. Two areas, the North West and South West Sydney Growth Corridors have been planned under the

85 Victoria Government Department of Sustainability and the Environment, “Price History”, accessed May 11, 2011, <http://www.dse.vic.gov.au/DSE/nrence.nsf/LinkView/29F2EEFD882B07D5CA2574D400070D92544ABC860B2506F7CA257004002550CC>.

86 See note 77.

87 “BioBanking Public Register,” New South Wales Office of Environment and Heritage (NSW OEH), accessed May 11, 2011, <http://www.environment.nsw.gov.au/bimsp/index.htm>.



Image: Manly Mangroves by David Hearle (flickr: eguidetravel), <http://www.flickr.com/photos/eguidetravel/>, Creative Commons Attribution license.



Biocertification Scheme.<sup>88</sup> The Biocertification Program anticipates that around 1,800 hectares will be lost within the Growth Centres<sup>89</sup> and projects AUD 337.9 million (in 2009-10 dollar values) will be collected over a 30-40-year period to implement the Growth Centre's Biodiversity Offset Program.<sup>90</sup> Funds will be raised through an "infrastructure contribution."

Biobanks are one means of securing the projected offsets of the Growth Centres. The first biobank site established (Missionaries of the Sacred Heart biobank, aka St Mary's Tower site)<sup>91</sup> was used wholly to offset projected growth in the Sydney Growth Centres.<sup>92</sup> This has had some positive effects, with the Brownlow transaction being the first biobanking project not occurring through the Department's Biocertification program.<sup>93</sup>

While transactions have occurred, activity within Biobanking has fallen short of expectations. From May 31, 2010 until March 25, 2011, the program has seen 757 credits transferred and retired.<sup>94</sup> Credit prices ranged from AUD 2,563 (2010) to AUD 8,000 (2011). The total value of credits sold by the program cumulatively is AUD 2.8 million (or USD 2.5 million).<sup>95</sup> The value of credits sold only in 2010 was AUD 1.6 million (or USD 1.5 million).<sup>96</sup>

88 NSW OEH, "The Growth Centres Biodiversity Offset Program" webpage, accessed May 2011, <http://www.environment.nsw.gov.au/biocertification/growthcentres.htm>.

89 Ibid.

90 NSW OEH, "Growth Centres Biodiversity Offset Program 2009-10 Annual Report", <http://www.environment.nsw.gov.au/resources/biodiversity/2010635growthcentresar.pdf>.

91 Jemma Denny, *Offset Banking in New Zealand*, Canterbury: University Of Canterbury, School of Forestry, 2011. Unpublished.

92 See note 91.

93 Office of Environment and Heritage, Personal Communication, March 2011.

94 "BioBanking Public Register: Search for credit transactions and sales," NSW OEH, accessed May 13, 2011, <http://www.environment.nsw.gov.au/bimsprapp/SearchTransactionReports.aspx?Start=1>.

95 AUD converted to USD using the exchange rate on May 1, 2011, [http://www.exchangerates.org.uk/AUD-USD-01\\_05\\_2011-exchange-rate-history.html](http://www.exchangerates.org.uk/AUD-USD-01_05_2011-exchange-rate-history.html).

96 AUD converted to USD using the exchange rate on December 31, 2010, [http://www.exchangerates.org.uk/AUD-USD-31\\_12\\_2010-exchange-rate-history.html](http://www.exchangerates.org.uk/AUD-USD-31_12_2010-exchange-rate-history.html).

Yet, despite these promising figures, demand is outstripping supply. There is a reported shortage of 22,000 ecosystem credits and 5,000 endangered species credits.<sup>97</sup>

The Sydney basin context presents challenges to fulfilling demand for credits. The most valuable ecosystem (Cumberland Plain woodland) is highly endangered and extensively cleared so remaining small and isolated patches are in competition for both offset and development, limiting market liquidity. Housing shortages and demand for land create significant political pressure to look for offsets outside the basin, potentially generating contention over the conservation outcomes of BioBanking.<sup>98</sup>

The high cost of the scheme's implementation is also seen as reducing offset supply. Assessment Methodology use has been estimated at AUD 25,000 in some cases, yet is expected to become cheaper as assessors gain experience.<sup>99</sup> Such costs contribute to the AUD 10,000-40,000 upfront costs estimated by some. Land-owners may also be reluctant to enter the market because mining interests or public infrastructure can lead to the cancelling of the biobanking site, seen as inconsistent and unfair. The Trust Fund Deposit requirement is seen as being a risky burden when credit sales are uncertain.<sup>100</sup>

Finally, the Biobanking Assessment Methodology has also been blamed for delays in the system, with debate regarding some aspects of the biology, classifications, and calculations involved.<sup>101</sup> Draft amendments to the Biobanking Assessment Methodology were proposed in 2010, intending to reduce complexity and improve efficiency. During a

97 Michelle Gane, presentation: "Environmental Banking in Australia" at the National Mitigation and Ecosystem Banking Conference, 2011, Baltimore, MD, USA.

98 See note 76.

99 See note 93.

100 See note 91.

101 See note 91.

public comment period, 10 submissions were delivered to DECCW, including questions raised by the Environmental Defenders Office NSW implying the revisions to the Methodology would result in adverse environmental outcome. The revised version (2.0) is due out mid-2011.<sup>102</sup>

While these factors may damper speculative offset development by landowners, the Department notes that banks develop quickly once a developer communicates their demand for a large volume of credits.<sup>103</sup> This secured demand ensures that the requirement of paying the government trust fund (for ongoing management costs) is fulfilled so that the biobank owner can begin to see a monetary return.

Between 2008 and 2010 **South Australia's** Native Vegetation and Scattered Tree Offsets program conserved an estimated 60,000 acres annually, with program payments totaling roughly USD 2,500,000 each year. The way in which offset requirements are determined in South Australia is currently being reviewed along with the implications for legislation.<sup>104</sup>

**Queensland** is dealing with the consequence of six separate offset programs. As all the offset policies sit under different legislation and policy, a developer has to meet all offset requirements causing large delays in the development approval process as a potential developer may have to provide up to six different types of offsets.<sup>105</sup> With the demand for offsets in Queensland growing, several offset brokers have been established to help connect developers with

landholders. Earth Trade was established by a regional Natural Resource Management Group and EcoFund is being established by the Queensland Government.<sup>106, 107</sup> Ecofund's Projects webpage highlights three environmental offsets projects for koala habitat, coastal wetlands, and endangered Bigalow ecosystem habitat that together total 5,942.5 hectares.<sup>108, 109</sup>

One program that had been in development as of our last report, the **Queensland Southeast Regional Plan 2009-2031**<sup>110</sup> is now in implementation stage. The Regional Plan was developed by state government to manage growth in Australia's fastest growing region. This plan requires offsets for impacts on biodiversity that cannot be avoided.

In the **Northern Territories**, state government released a draft **Environmental Offsets Policy** in late 2010.<sup>111</sup> It will be introduced as a working policy for two years during the implementation stage. It is then proposed for a full policy review before drafting up new legislation to support environmental offsets. However, the offset policy will only come into affect during the assessment process outlined in the Environmental Assessment Act which is for larger development projects requiring an Environmental Impact Assessment.

And finally, on the **National** scale, there have been no significant developments over the last year in amending the **Environment**

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102 Jeff Angel and Rachel Walmsley, "Submission on proposed amendments to the Biobanking Assessment Methodology", 2010, Environmental Defenders Office NSW [http://www.edo.org.au/edonsw/site/pdf/subs/101119biobanking\\_methodology\\_comment.pdf](http://www.edo.org.au/edonsw/site/pdf/subs/101119biobanking_methodology_comment.pdf).

103 Tricia Bancroft, personal communication, May 13, 2011.

104 Dr. Andrew Fisher, Department of Environment and Natural Resources - South Australian Government, personal communication, May 18, 2011.

105 See notes 97 and 104.

.....  
106 Earth Trade website, accessed May 23, 2011, <http://www.earthtrade.net.au/>.

107 Ecofund website, accessed May 23, 2011, <http://www.ecofund.net.au/index.html>.

108 Projects webpage, Ecofund, <http://www.ecofund.net.au/projects/projects.html>.

109 5,942.5 hectares is the sum of the 2.5 ha koala offset project, 5,300 ha coastal wetlands offset project, and 640 ha Bigalow ecosystem offset project listed as of 5/26/2011.

110 Queensland government Department of Local Government and Planning, Southeast Queensland Regional Plan 2009-2031 webpage, accessed May 26 2011, <http://www.dlgp.qld.gov.au/regional-planning/regional-plan-2009-2031.html>.

111 Northern Territory Government, Draft Environmental Offsets Policy webpage, accessed May 26, 2011, [http://www.greeningnt.nt.gov.au/climate/environmental\\_offsets.html](http://www.greeningnt.nt.gov.au/climate/environmental_offsets.html).

**Protection and Biodiversity Conservation Act** of 1999 to use offsets for the unavoidable impacts of development. While there seemed to be movement in 2007 (a discussion paper was released in August suggesting the use of environmental offsets under the Act) and 2008 (the Federal government commissioned an independent review of the Act that recommended offsetting), no further formal movement has occurred. This is not to say there is no interest at the national level – the National Environmental Law Association focused on biodiversity and offsets during its 2010 annual conference.<sup>112</sup>

## New Zealand

New Zealand does not currently have any formalized offset or offset banking programs. However environmental offsets continue to occur in New Zealand under the Resource Management Act of 1991 (RMA), New Zealand's primary legislation regulating land use and development planning and the conservation and management of natural resources and values.<sup>113, 114, 115, 116</sup>

A number of relevant documents have developed since 2009 which are expected to move the country closer to more formal programs and more effective offsetting. Pending outcomes from these, more market-based approaches such as offset banking and credit trading may be possible.

**Regional, district, and local council plans** have moved policy towards environmental

and biodiversity banking by supporting the avoidance, remedy, and mitigation requirements in the RMA, and the act's other offset-relevant components. In particular, **Waikato's proposed District Plan** took legal effect in 2004 and is progressing to fully operational status. Adoption of the mitigation hierarchy allows development on areas of biodiversity in Waikato, but adverse effects should be remedied or mitigated at that site, or offset by conservation at another site of similar ecosystem type.<sup>117</sup>

Also, the **Gisborne District Council Combined Regional Land and District Plan** recognizes biodiversity and ecosystem impacts through their soil erosion policy linked to vegetation degradation and clearance. Mitigation proposals will be considered when obtaining council certification for works. Rules for implementing avoidance, remedy or mitigation will also be developed, in line with regional plan requirements.<sup>118</sup>

Although the regional examples above note some movement in adopting offsets and addressing biodiversity impacts at the local level, this has not been the case across the entire country. To step up more widespread adoption, a **National Biodiversity Policy Statement** has been drafted which is projected to be New Zealand's first national guidance on offsetting. This policy statement is akin to

117 Waikato District Council. Waikato District Plan, accessed May 23, 2011 <http://www.waikatodistrict.govt.nz/Documents/Plans/District-plan/Waikato-District-Plan.aspx>.

118 Gisborne District Council, District Plan. Retrieved 05 23, 2011, from Gisborne District Council: <http://www.gdc.govt.nz/district-plan/>.

112 National Environmental Law Association, 2010 conference webpage, accessed May 26, 2011, <http://www.nela.org.au/node/174>.

113 Luke Hinchey, "Environmental compensation under the RMA: An appropriate tool to "avoid, remedy or mitigate" adverse effects on the environment?". Resource Management Bulletin (2009).

114 Ministry for the Environment, "Proposed National Statement on Indigenous Biodiversity", accessed May 23, 2011, <http://www.mfe.govt.nz/publications/biodiversity/indigenous-biodiversity/index.html>.

115 David A. Norton, "Biodiversity Offsets: Two New Zealand Case Studies and an Assessment Framework", Environmental Management 43 (2009), 698-706.

116 Ali Memon and Peter Skelto, "The Practice of Environmental Compensation Under the Resource Management Act 1991". New Zealand Journal of Environmental Law 8 (2004), 177.



Image: Shutterstock.

legislation in terms of its strength under the RMA and would compel implementation at the level of councils and local authorities.<sup>119</sup> Assuming a smooth consultation process, the policy could be gazetted as early as June this year. The policy reinforces avoidance, remedying, and then mitigation, with offsetting to occur as off-site mitigation for residual adverse impacts. Offsets must be focused on a “no net loss” framework, with certain high-value sites or components exempt from offsetting.<sup>120</sup> The policy statement contains language making biodiversity a distinct aspect of the environment to consider during the development process, alongside other functions such as landscape, amenity, or recreational values.

The statement in its current version identifies national biodiversity priorities. Councils would be responsible for identifying local biodiversity management priorities, aligned within the national framework. Policy within the statement must be enacted through regional and district plans, so outcomes from this approach may take several years to appear.<sup>121</sup>

The policy statement does not provide implementation guidance. There are no metrics or processes by which to achieve the policy principles or how to achieve the creation of an appropriate offset. Although the policy strives for “no net loss,” there is no mention of like-for-like application of offsets with impacts. Further policy would be required for a formal offset banking system. It does, however, make significant progress towards establishing a greater regulatory-driven value for biodiversity that supports the establishment of an offset banking program in the future.<sup>122</sup>

Between 2009 and 2012, the Department of Conservation (DoC) is conducting a **Research Program on Biodiversity Assessment Systems and Offsetting Best Practices**. The intention is to fill some of the knowledge gaps regarding equitable and comparable assessment systems, and offsetting best-practice in New Zealand.<sup>123</sup> Supported by pilot projects to test potential metrics, research outcomes are expected to directly contribute to concurrent development of policy and implementation. The program applies to the public lands under the DoC’s control, yet outcomes are expected to be a strong indicator of the protocols to become established in the private sector also.<sup>124</sup> Preliminary information from three current pilot cases may be available for reporting later this year; however, it will not be until 2012 that more influential outcomes are clear.<sup>125</sup>

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123 Department of Conservation, “Biodiversity Offsets Program,” accessed May 23, 2011, <http://www.doc.govt.nz/publications/conservation/biodiversity-offsets-programme/>.

124 See note 115.

125 See note 123.

.....  
119 Craig Mallet, “Regulatory Impact Statement for the Proposed National Policy Statement on Indigenous Biodiversity,” Ministry for the Environment, 2010.

120 See note 115.

121 See note 115.

122 See note 115.



# Conclusion



The take-home message from this update is that global interest in biodiversity offsets and compensation has continued to develop over the past year – somewhat surprisingly, given the financial challenges that plague the private and public sectors alike. There has not been dramatic growth, but steady activity.

The biodiversity markets in the United States remained surprisingly robust given the near complete halt to private development. Last year saw the launch of 114 new wetland, stream, and species banks.

Meanwhile in other parts of the world, much of the movement in these markets is in early policy development, setting the foundation for future implementation. For example, the United Kingdom recently released a white paper guiding the country's environmental policy. Although currently light on details, the white paper includes plans for a voluntary biodiversity offset program to start in 2012. Vietnam continues to build on their 2008 Biodiversity Law, most recently with Decree No. 113, which spells out the impact compensation process and creates an opening for the use of biodiversity offsets.

However, conservation efforts continue to face challenges. In Alberta, Canada, policy that has guided compensation for more almost 20 years might be losing its “no net loss” goal due to the lobbying of powerful industry groups.

In the US, there is concern that the increase in mitigation supply (banks) is not driven by demand, but simply a reflection of the

completion of projects started before the financial crisis and that tough times are ahead. This concern is compounded by cuts in government budgets, a major buyer of mitigation credits for large infrastructure projects.

More broadly, biodiversity markets continue to struggle against the automatic perception that markets equate to profiteering, commoditization of nature, and privatization. This was perhaps most dramatically seen during the 2010 Convention on Biological Diversity negotiations where a contentious draft decision on “Policy Options Concerning Innovative Financial Mechanisms” was dropped from adoption at the final plenary of the Conference of Parties.

Despite these setbacks, the stakeholders working with Forest Trends' Business and Biodiversity Offsets Program (BBOP) continue to forge a path towards developing internationally agreed and certifiable standards for biodiversity offsets by 2015. Currently in consultation stage through mid-July,<sup>126</sup> a draft set of Criteria and Indicators will inform a draft standard on biodiversity offsets by 2012.

We have also seen creative exploration of the “no net loss” mechanism and the emergence of perhaps the next frontier for biodiversity markets: evaluating and compensating for a biodiversity footprint in the supply chain. Earthmind's Green Development Initiative

126 BBOP welcomes feedback on the draft PCI framework at the following website: [www.bbopconsultation.org](http://www.bbopconsultation.org).

(GDI), still in early stages, is an effort to create a common biodiversity unit (certified land management) to allow companies to compensate for global supply chain impacts.

Likewise, GreenPalm is an initiative which creates tradable certificates representing one ton of palm oil that has been sustainably produced and certified to Roundtable on Sustainable Palm Oil (RSPO) standards. Consumer goods producers can calculate the total amount of palm oil in their products and then purchase certificates to represent the same volume of palm oil.

A gap in market infrastructure that persists is the lack of landscape-scale ecological monitoring. While site-level ecological monitoring is not uncommon, the data is not easily available, much less compiled in a comprehensive way. Without site-level data compiled and used to monitor landscape-scale ecological outcomes and functions, there is no feedback loop to tell us how well or poorly our larger ecological systems are doing. In other words, without tracking the accumulation of successes and failures of all the individual battles, it is impossible to tell if we're winning or losing in the war. By correlation, we don't know if we are using our scarce resources effectively.

Infrastructure gaps aside, the developments and advances covered in this update and the slight uptick in public awareness of the economic value of biodiversity (thanks in part to The Economics of Ecosystems and Biodiversity, or TEEB project) bodes well for biodiversity markets. But as we have seen with climate change and carbon markets, public recognition of the problem hardly means effective action to solve it. The biodiversity community will need to not only successfully get our issue on the table

for the general public and decision makers to be aware of, but also develop effective, equitable, and politically viable solutions.

We hope this update and series of reports helps policy makers, practitioners, investors, and other market participants to make informed decisions learn from the experience of others – and ultimately enable fair, stable, and effective biodiversity conservation markets to develop.



# Appendix: List of Environmental Impact Assessment Laws



We would like to provide a brief mention of the numerous Environmental Impact Assessment Laws around the world that were largely overlooked in the initial *State of Biodiversity Markets* report:

## North America<sup>1</sup>

- United States - National Environmental Policy Act of 1969
- Canada - Canadian Environmental Assessment Act was passed in 1995
- Mexico - general law of ecological balance and environmental protection provides EIA legislation

## Central and South America<sup>2</sup>

- Argentina - Environmental Framework Law 2002
- Belize - Environmental Protection Act 1992, Regulations 1995
- Bolivia - Law on Environment 1992, Regulations 1995, 1996
- Brazil - Rio de Janeiro permit system, 1977 National Environmental Law 1981, Executive Decree 88, 351 1983 (issued 1986), EIA Regulations 1986
- Chile - Framework Environmental Law 1994, Regulations 1997
- Costa Rica - Biodiversity Law of 1998
- Mexico - Law of Public Works 1980 Federal Law on Environmental Protection 1982, Regulation on EIA 1988 and amendments

1 Nizami Abdul-Sattar, "Comparative Analysis of the EIA system of Developed and Developing Countries: Cases of Hydroelectric Power Plants," (master's thesis, Chalmers University OF Technology, 2007), 2011, [http://www.chalmers.se/ee/SV/forskning/forskargrupper/miljosystemanalys/publikationer/pdf-filer/2007\\_1/downloadFile/attachedFile\\_7\\_f0/2007\\_8?nocache=1192436052.3](http://www.chalmers.se/ee/SV/forskning/forskargrupper/miljosystemanalys/publikationer/pdf-filer/2007_1/downloadFile/attachedFile_7_f0/2007_8?nocache=1192436052.3)

2 Ibid.

- Peru - Environment and Natural Resources Code 1990
- Uruguay - Law of Environmental Impact Assessment 1994
- Venezuela - Organic Law of Environment 1976 Regulation on EIA, Decree 2213, 23/4/92

## Africa/Middle East<sup>3, 4</sup>

- Egypt - Law 4, 1994, on Protection of the Environment
- Ghana - Environmental Protection Agency Act 490/1994, EIA Procedures 1995
- Israel - 1973 Planning and Building Law
- Malawi - National Environmental Policy 1996 and draft Environmental Management Act 1996
- Mauritius - Environmental Protection Act 1991 as amended on 6.4.93
- Nigeria - Environmental Impact Assessment Decree 86/1992, Urban and Regional Planning Decree 1992, EIA Procedure 1994.
- Oman - Environment Protection and Pollution Control Act 1982, amended 1985, 1993
- Pakistan - Environmental Protection Act of 1997
- South Africa - Environmental Conservation Act 1989 EIA Regulations 1997
- Swaziland - Enabled by Swaziland Environment Authority Act 1992,

3 Ibid.

4 Akira Tanaka, "Novel biodiversity offset strategies: Satoyama Banking and Earth Banking," (30th Annual Meeting of the International Association for Impact Assessment, Geneva, Switzerland, 6-11 April, 2010).

Environmental Audit, Assessment and Review Regulations 1996

- Tanzania - No general national requirements. Tanzania National Parks Authority Guidelines 1993, Procedures 1995
- Tunisia - Law 88-91, 1988. EIA decree 91-362, 1991
- Turkey - Environmental Law 1983, EIA Regulations 1993, 1997
- Zambia - Environmental Protection and Pollution Control Act 1990, Regulations 1997

#### Europe<sup>5, 6</sup>

- Austria - 1993 Environmental Impact Assessment Act
- Belgium - 2006 National Biodiversity Strategy 2006-2016
- Bulgaria - Environmental Protection Act 1991, Regulation 1992, 1995
- Croatia - Law on Physical Planning 1980, EIS Regulations 1984, Law on Environmental Protection 1994, Decree on EIA 1997
- Estonia - Government Regulation No. 314 1992, Ministry of Environment Regulation No. 8 1994
- Latvia - Law on State Ecological Expertise 1990. Law on EIA 1998
- Lithuania - 1995 Biodiversity Conservation-Strategy and Action Plan
- Netherlands - 1961 Dutch Forest Law; 1987 Environmental Management Act
- Poland - Environmental Protection Act 1990, Land use Planning Act 1994, MoE Orders 1995
- Russia - Environmental Protection Act 1991, Ecological Expertise Act 1995, OVOS Regulations Order No. 222 1994
- Slovakia - Federal Act 17 1992, Act No. 127/1994 on EIA

- Switzerland - 1983 Federal Law for Protection of Nature and Landscape
- Ukraine - Law on Environmental Protection 1991, Law on Environmental Expertise 1995

#### Asia<sup>7, 8, 9, 10, 11</sup>

- Armenia - 1995 Law on the Expert Review of Impacts on the Environment
- Azerbaijan - 2000 Law on Amendments and Supplements to Some Legislative Acts Concerning the Application of Law on Environmental Protection
- Bangladesh - 1992 EIA Regulations - administered by the Department of Environment
- Bhutan - no info available
- Burma - no info available
- Cambodia - EIA Decree - 1999
- China - 2003 Environmental Impact Assessment Law
- Hong Kong - EIA Ordinance - 1998
- India - 1994 EIA law (amended 2006) administered by the Ministry of Environment and Forests
- Indonesia - 2001 EIA Law
- Japan - 1997 Environmental Impact Assessment Law, administered by the Ministry of the Environment
- Kazakhstan - 1997 Law on Environmental Expert Review
- Kyrgyzstan - 2000 Law on Environmental Expert Review

7 Hemantha Withanage, "Advocacy Guide to ADB EIA Requirement," NGO Forum on ADB, 2006, accessed June 2, 2011, <http://www.forum-adb.org/BACKUP/pdf/guidebooks/EIA%20Guidebook.pdf>.

8 Asha Rajvanshi, Vinod B. Mathur and Usman A. Iftikhar, "Best practice guidance for biodiversity-inclusive impact assessment: A manual for practitioners and reviewers in South Asia," 2007, accessed June 2, 2011, <http://people.exeter.ac.uk/rwfm201/cbbia/downloads/asi/Asia-guidance-pt1.pdf>; <http://people.exeter.ac.uk/rwfm201/cbbia/downloads/asi/Asia-guidance-pt2.pdf>; <http://people.exeter.ac.uk/rwfm201/cbbia/downloads/asi/Asia-guidance-pt3.pdf>.

9 See note 4.

10 Ministry of the Environment, "Environmental Impact Assessment in Japan", Government of Japan, 2000, accessed June 2, 2011, <http://www.env.go.jp/en/policy/assess/pamph.pdf>.

11 Ministry of the Environment, "Environmental Impact Assessment Law", Government of Japan, 2000, accessed June 2, 2011, <http://www.env.go.jp/en/laws/policy/assess/index.html>.

5 See note 1.

6 See note 4.

- Lao PDR - 2000 EIA Decree
- Malaysia - 1974 Environmental Quality Act
- Maldives - 1993 Environmental Protection and Preservation Act
- Mongolia - 1997 EIA Law
- Nepal - 1997 Environment Protection Act and Regulations administered by the Ministry of Environment
- Pakistan - 2000 Environmental Protection Agency Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, administered by the Pakistan Environmental Protection Agency and the Provincial Environmental Protection Agency
- Philippines - 2003 EIA Regulations
- Singapore - 2000 Environmental Protection Act
- South Korea - 1998 Environmental Impact Assessment Act
- Sri Lanka - 1993 EIA Regulations, administered by the Central Environment Authority, Coast Conservation Department, Northwest Province Environmental Authority
- Tajikistan - 1994 Regulation on State Environmental Expert Review No. 156
- Thailand - 1975 National Environmental Act, 1992 Environmental Quality Act
- Turkmenistan - 1995 Law on State Environmental Expert Review
- Uzbekistan - 2000 Law on the State Environmental Expert Review
- Vietnam - 1994 Government Decree No.175/CP
- Council (ANZECC) in 1991
- Fiji - Sustainable Development Bill - 1999
- Kiribati - 1999 Environmental Act
- New Zealand - Australian and New Zealand Environment and Conservation Council (ANZECC) in 1991
- Papua New Guinea - 2000 Environment Act
- Samoa - 1999 Regulations under Lands, Survey and Environment Act
- Vanuatu - 2002 Environmental Management and Conservation Act No. 12 of 2002

#### **Australia, New Zealand, and Oceania**<sup>12, 13, 14</sup>

- Australia - Impact of Proposals 1974, reformed with Australian and New Zealand Environment and Conservation

12 See note 1.  
13 See note 7.  
14 See note 8.



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