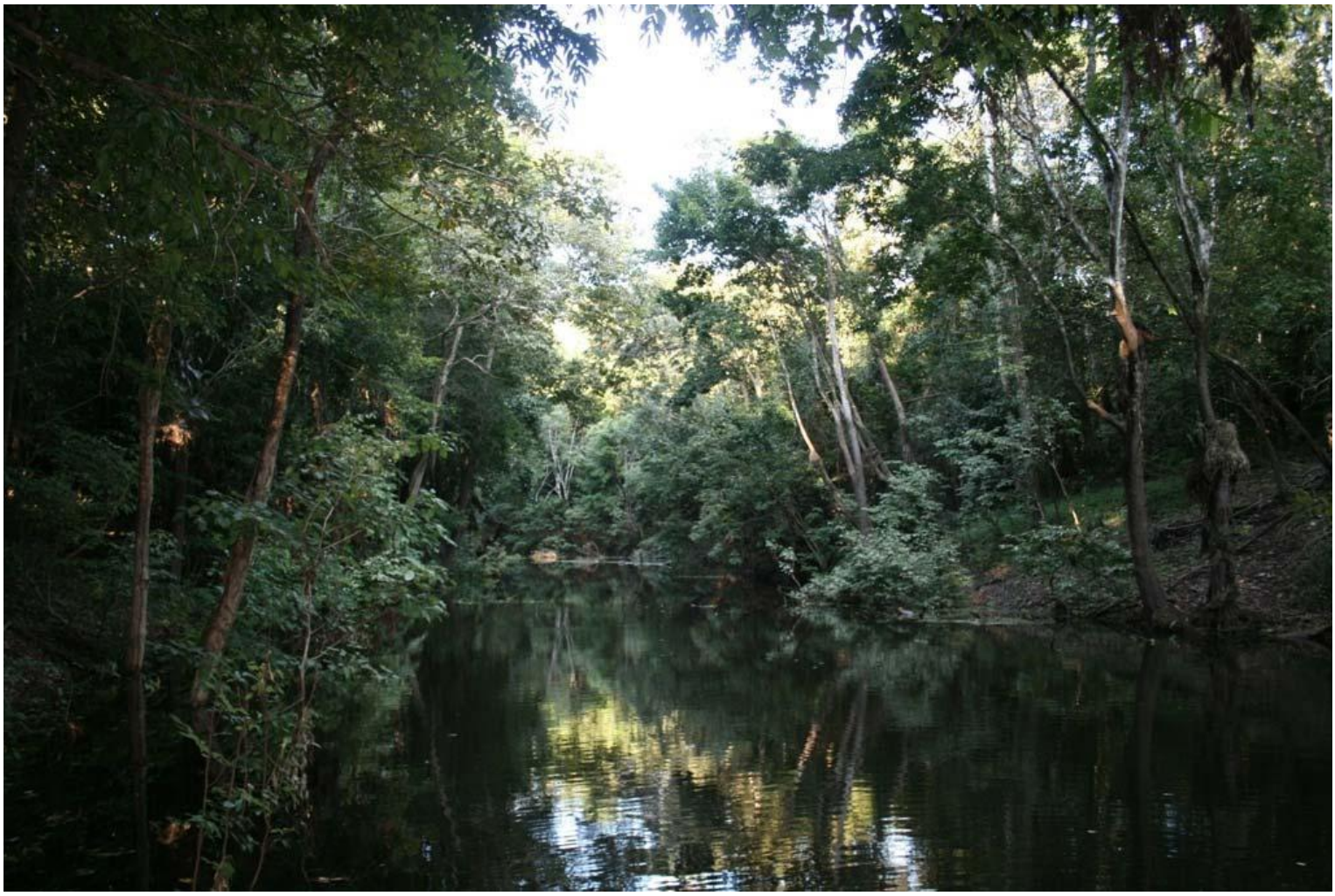
United Nations Development Programme

Habitat Banking in Latin America and Caribbean: A Feasibility Assessment

Main Report



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UNDP is the UN's global development network, advocating for change and connecting countries to knowledge, experience and resources to help people build a better life. We are on the ground in 166 countries, working with them on their own solutions to global and national development challenges. As they develop local capacity, they draw on the people of UNDP and our wide range of partners.

About PricewaterhouseCoopers (PwC)

PwC provides field-leading support to multi-lateral institutions and government agencies in the development of conservation finance and biodiversity and ecosystem service markets and engages with corporations to help them understand and manage biodiversity risk to business. We have a deep understanding of policy developments and market trends, strong relationships with policymakers, experience advising on institutional, legal and financial arrangements for ecosystem service market mechanisms, and a track record of diverse thought leadership pieces. www.pwc.com/sustainability

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The views in this report

The views expressed in this report are those of a wide range of stakeholder groups gathered through a series of workshop discussions and desk based research across the Latin America in January and February 2010, which may mean that more recent country developments have not been included in the analysis. The report was prepared by PwC's Forestry & Ecosystems Team contracted by UNDP. PwC does not necessarily share or endorse these views, or make any claims as to their accuracy. This report should be considered as an analysis of stakeholder views and publicly available data as gathered through the research and not as a reflection of the views of any individuals or member firms of the PwC global network.

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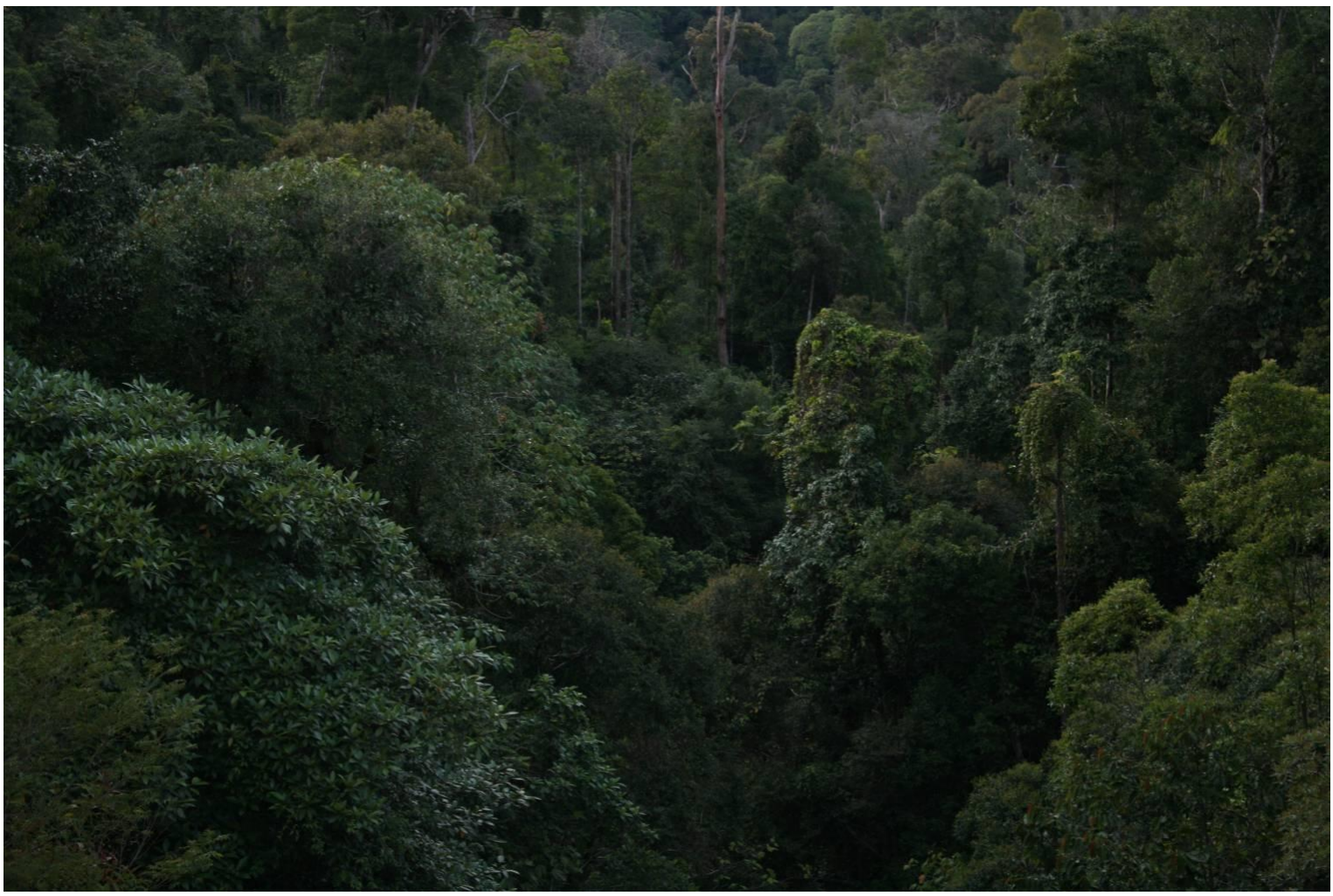
Glossary of terms



Term	Meaning
Banking company	A company that restores, protects or creates habitat or wetland for the purposes of generating habitat or wetland credits to sell to developers that require habitat or wetland offsets
Credit	A unit of natural habitat or wetland that is restored, protected or created by a habitat or wetland bank and then sold to a developer or permittee. In the USA case, typically 1 credit = 1 acre of habitat or wetland
Developer or permittee	A public or private sector actor who develops an infrastructure, engineering, mining or drilling project
EIA	Environmental Impact Assessment. A formalised process, including public consultation, in which all relevant environmental consequences of a project are identified and assessed before authorisation is given. The process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made.*
Mitigation	Sustained action(s) taken to reduce, eliminate or otherwise compensate for adverse impacts, whether controlling the source of the impact, or the result of the impact on biodiversity and habitat
Biodiversity offset	Biodiversity offsets are measurable conservation outcomes resulting from compensation action for adverse biodiversity impacts caused by project development. These are only used after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve No Net Loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure and ecosystem function and people's use and cultural values associated with biodiversity.*
Biodiversity compensation	Compensation of a negative impact of development on biodiversity in one area by making a positive contribution elsewhere. This can take the form of cash payment or in lieu fee that is expected to accomplish the desired offset (e.g. to a green fund or a government agency) or through the creation, restoration or protection of habitat in another location. Wetland or HB are types of compensation action.
Ecosystem services	The benefits people obtain from ecosystems. These include provisioning services such as food, water, timber, and fibre; regulating services that affect climate, floods, disease, wastes, and water quality; cultural services that provide recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling.*
Habitat / Conservation bank	A parcel of land managed for its conservation values. In exchange for permanently protecting the land, the bank owner is allowed to sell credits to parties who need them to satisfy legal requirements for compensating the environmental impacts of development projects.
Mitigation hierarchy	The mitigation hierarchy is defined as: 1. Avoidance: measures taken to avoid creating impacts from the outset, such as careful spatial or temporal placement of elements of infrastructure, in order to completely avoid impacts on certain components of biodiversity. This results in a change to a 'business as usual' approach. 2. Minimisation: measures taken to reduce the duration, intensity and / or extent of impacts that cannot be completely avoided, as far as is practically feasible. 3. Rehabilitation / restoration: measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and / or minimised. 4. Offset: Offsite measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimised and / or rehabilitated or restored, in order to achieve No Net Loss or a net gain of biodiversity. Offsets can take the form of positive management interventions such as restoration of degraded habitat, arrested degradation.*
Natural Habitats	Land and water areas where the biological communities are formed largely by native plant and animal species, and where human activity has not essentially modified the area's primary ecological functions.*

* Denotes where the explanation has been derived from the BBOP Glossary http://bbop.forest-trends.org/guidelines/glossary.pdf

Term	Meaning
No Net Loss	A principle by which countries, agencies and governments strive to balance unavoidable habitat, environmental and resource losses with an equal replacement of these losses. [1]
Wetlands	Those areas that are saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. [2]
Wetland mitigation	For unavoidable impacts, compensatory mitigation is required to replace the loss of aquatic resource functions in the watershed. Compensatory mitigation refers to the restoration, establishment, enhancement, or in certain circumstances preservation of wetlands, streams or other aquatic resources for the purpose of offsetting unavoidable adverse impacts.[3]

1 University of Florida,www.law.ufl.edu/conservation/waterways/waterfronts/pdf/no_net_loss.pdf
2 USA Army Corps of Engineers Wetlands Delineation Manual. Available online from: www.wetlands.com/coe/87manp2a.htm
3 United States Environmental Protection Agency 'Wetlands Compensatory Mitigation'

Executive summary

Full country reports available to download from: www.pwc.co.uk/sustainability

Background to the report

The Latin American and Caribbean (LAC) region is facing increasing pressures to develop important remaining natural habitats. Pressures are coming from tourism, agriculture (including biofuels), mining and oil and gas extraction. Addressing this trend is hugely challenging and hence, LAC governments should, and are, considering various cost-effective ways to mitigate environmental impacts from such development. The USA as well as Germany and Australia have piloted wetland mitigation banking[4] models to reduce net loss of habitats and spur private investment into habitat restoration. This report builds on the USA experiences to assess whether such banking models could be valuable, adaptable and feasible for countries in LAC. It provides an assessment of the feasibility of building successful habitat mitigation banking schemes in the region, highlighting the value and opportunity for countries to adopt banking approaches to supplement their traditional conservation strategies.

This Report is part of the broader UNDP Report: 'The Importance of Biodiversity and Ecosystems in Latin America and Caribbean: A Regional Economic Valuation of Ecosystems' which aims to analyse and demonstrate the value of biodiversity and ecosystems for economic growth and equity in LAC. The Habitat Banking (HB) Report is a valuable part of the broader UNDP Report as it provides information and guidance to Latin America and the Caribbean (LAC) on a new and additional opportunity to manage ecosystems in a manner that promotes economic growth and equity. The HB Report highlights the value and opportunity for countries in LAC to adopt market based approaches to supplement their traditional conservation strategies.

For the purposes of this report HB is defined as a system where an organisation or private company restores, creates, enhances or conserves a habitat to sell tangible units of this habitat or facilitates land purchase and creation of habitat, termed credits, to a developer or permittee. These credits are used by the developer or permittee as compensation for equivalent units of habitat that they would impact upon through project development or natural resource extraction. Wetland mitigation banking is considered to be a component of habitat banking and will be included within the HB definition throughout this report.

The objectives of the report are as follows:

- Introduce the concept of habitat and wetland banking to key stakeholders in the region
- Highlight how HB could contribute to environmental and economic aims of countries in LAC
- Identify where HB schemes could be developed in Latin America, opportunities, risks, barriers and what it would take to develop them
- Inform future planning and investment processes for establishing HB in select countries in LAC

Methodology

This report is based on an analytical framework for assessing banking feasibility which was developed for this report. Further details of this can be found in the 'Habitat Banking in New Markets' chapter. This analytical framework was developed and applied to select countries in LAC to assess the opportunity and feasibility for establishing HB markets. At a country level the feasibility assessments were carried out through stakeholder consultations with representatives from government, civil society, academia and the private sector in January and February 2010. During the consultations in Chile, Costa Rica, Mexico, Panama and Peru participants were invited to share information and give their opinions on the willingness and feasibility of establishing national or sub-national habitat mitigation banking schemes. Consultations were divided into an analysis of policy and regulatory foundations, Environmental Impact Assessment (EIA) and permitting processes, demand and support from developers and the potential creation of banks and credits. The reports for Argentina, Brazil and Colombia are based on desk based research and individual stakeholder consultation.

4 In this report banking refers to a method of building up credits for the purposes of trading, and should not be interpreted as banking in the standard use of the word.

Main economic and ecological benefits of Habitat Banking for the LAC region

HB can help governments reduce habitat and species loss in their country. This can be achieved through incorporating HB into environmental legislation to improve the effectiveness and efficiency of ecological compensation during the permitting process for new developments or extractive activities. By incorporating an HB system into environmental legislation sufficient private and public sector demand for HB credits could be generated to enable a national or provincial scale HB market.

The HB market can assist in restoring or enhancing the ecosystem provisioning services upon which society depends. This HB market could also contribute to national economic growth from the value created by both bank development and the provision of market support services including monitoring, legal, insurance, registry and technical support services.

HB could play an important role in job and enterprise creation in the establishment, maintenance and monitoring of HBs particularly at the local community level. Skills in species identification, conservation management and socio-cultural knowledge are needed for HBs, and if reinforced with capacity building programmes this could provide employment at scale for local residents.

The following table summarises the value that has been received by stakeholders from wetland mitigation and species banking in the USA. The possibility that a carefully designed banking scheme in Latin America could add similar value for stakeholders in the region is an important consideration in deciding whether or not the USA model, or adaptations to this model, should be adopted by country governments.

Stakeholder	Value received
Government regulator	Consolidated monitoring of mitigation sites; professional environmental restoration experts managing mitigation projects; larger scale restoration and economies of scale; liability transferred to private professional companies with a vested interest in success of mitigation; mitigation done in advance assures success
Developers/permittees	Mitigation requirements have increased clarity and can be addressed upfront; known mitigation costs helps with project budgets and pro forma analysis; transfer of liability releases developer from long-term commitment; no annual monitoring requirements; streamline payment to one company
Landowners	Added value to land that is often not suitable for other uses; improved land stewardship; tax incentives from conservation easements; banks managed by professional companies can improve land value and revenue without direct management by landowners
Mitigation bankers	Banking model becomes more streamlined with increasing guidance and industry maturity; risk is lowered as the industry and banking process is understood and accepted by most regulators and clients; market demand increases as banking schemes gain confidence of regulators; permittees will begin to rely on using mitigation credits
Environment and Public Good	Better mitigation done by professionals with vested interest in long-term bank success; economies of scale achieve conservation outcomes at lower cost; increasing knowledge and scientific basis growing with data collection and monitoring requirements; enhanced industry best management practices and environmental stewardship; long-term or perpetual conservation

Key elements of a HB scheme for LAC

The following elements need to be in place for a HB scheme to function in LAC countries:

- Policy & regulatory foundations – National biodiversity and planning strategies which include provisions to reduce or eliminate biodiversity loss from development and natural resource extraction. This may also include specific goals to increase private sector participation in biodiversity conservation and to increase the use of market mechanisms for conservation.
- Integration of HB within EIA and permitting process – The EIA system is applied and enforced for all developments and projects that have a significant impact on natural habitat. Permittees go through each stage of the mitigation hierarchy prior to project development and where residual habitat impacts occur, the purchase of HB credits is used to mitigate these impacts. The credit purchase agreement between the permitee and HB developer they purchase from allows for the transfer of regulatory liability from permittee to HB developer.
- Demand for credits – This requires the creation of regulatory drivers for HB (see regulatory and EIA elements above). Offset schemes should include full habitat conservation and restoration to reflect true mitigation costs to make HB a cost-competitive option for permittees to meet their regulatory requirements.
- Supply of credits – HBs developed by private nature reserves, NGOs, community groups, specialist banking companies or land owning companies e.g. forestry companies
- Government and third party management of HB scheme – Permitting and environmental agency along with third party monitor and evaluates HBs, enforce HB regulation, manage HB databases and provide market information and guidance to permittees for credit purchase
- Scientific and market support services – provided by NGOs, universities and private companies. This includes technical support for habitat conservation and restoration, monitoring and evaluation services, legal, insurance and registry services.

To analyse the presence of these criteria within each in-depth case study country, a more detailed feasibility framework was drawn up to capture stakeholder views at a country level. This is structured into four components: policy and regulatory foundations, scope for integration of HB within the EIA and permitting process, potential demand for credits and the ability to develop banks and supply credits. This framework is summarised in the diagram on the next page.

1. Policy and regulatory foundations

- Political interest in concept of no net loss (NNL)
- Understanding of the values of habitat to the economy
- Possibility of setting up an 'Endangered Species Act' or equivalent
- Implementation of Ramsar, Convention on Biological Diversity and other international conventions

2. Scope for integration with EIA and permitting process

- Consistent application of mitigation hierarchy within EIAs for development projects
- Inclusion of compensation requirements within EIAs
- Requirement and completion of EIAs for all key activities impacting on habitat
- Compensation payments determined using a consistent and robust approach
- Use of compensation funds to directly address ecological impacts from development
- Adequate follow up and enforcement of mitigation requirements within EIAs
- Consistent and direct link between EIA findings and permitting requirements
- Clear definition of institutional responsibilities

3. Potential demand for credits

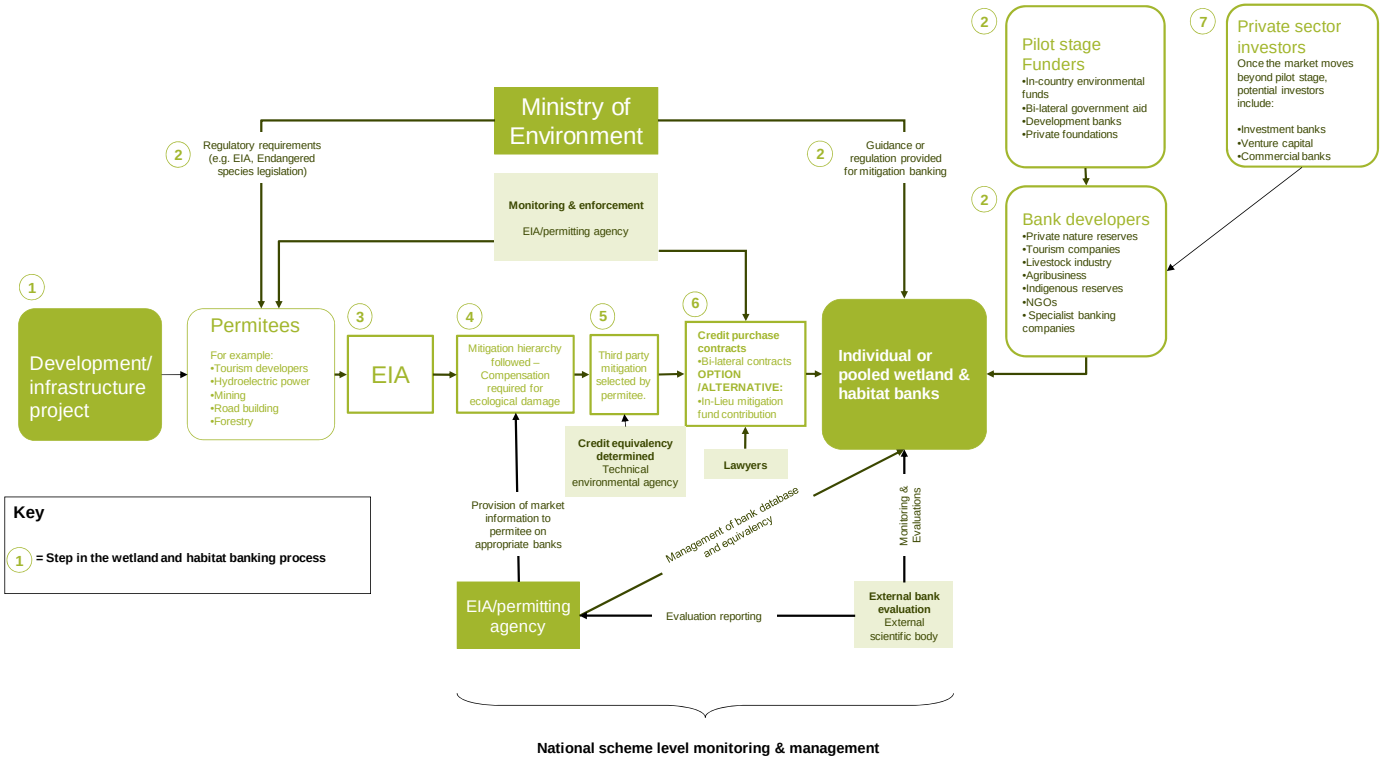
- Current compliance costs high enough for there to be developer demand for alternatives

4. Ability to develop banks and supply credits

- Interest in long term land conservation agreements despite current and/or future land price rises
- Presence of larger landowners who may consider long term conservation agreements
- Ease of registering land as a private reserve
- Scope for involvement of indigenous reserves in establishing banks
- Processes in place to identify threatened areas of natural habitats
- Presence of groups with capacity to establish and manage 10 wetland/habitat banks in the next 2 years
- Presence of groups with existing science and conservation experience of relevance to habitat banking
- Secure land title arrangements and liabilities of these to change
- Ability to establish long term projects on untitled land (e.g. where only 'possession rights' apply)
- Ability to uphold credit agreements and enforce legal claims to recourse in case of project failure
- Availability of capital in country for financing wetland or habitat banks, including endowing trusts
- Presence of domestic funding sources to support the development of banks – either on a grant basis or for profit
- Presence of international funding sources to support banking scheme infrastructure

Feasibility for regulatory HB

Once most of the feasibility elements are in place or in development, an establishment phase HB system may begin to take shape. The generic template below provides an illustration of what the establishment process of an HB system in LAC may look like. Each number represents a stage in the development process, which may require multiple factors coming into place at the same time.



Key issues for HB in LAC

Ecological issues

- Potential dominance of primary habitat conservation (with sustainable use) over restoration based HBs – Unlike in the USA, HB in Latin America could be predominated by conservation (with sustainable natural resource use) rather than restoration activities, due to the large areas of primary unprotected high biodiversity habitats in the region.
- HBs defined according to habitat type rather than individual species – Due to the high number of endangered species within many Latin American habitats it may be appropriate to design a scheme where HB credits are equal to acres or hectares according to habitat type rather than relating it to individual species or habitat functionality, although it is understood that in some cases this route would be controversial.

Socio-cultural issues

- Access rights to ecosystem services and natural resources – It will be important that HB schemes are designed with customary or formal access rights to ecosystem services and natural resources in mind. This may result in the establishment of HBs that incorporate the principles of REDD+, where sustainable natural resource extraction is permitted and even encouraged within the boundaries of the conservation area. This may result in an HB+ approach being used, with sustainable economic activity inside HBs.
- Risks from land tenure issues for HB developers – There may be significant challenges in parts of Latin America for bank developers to assert their legal rights to land ownership either due to deficiencies in the land registry system, overlapping land rights, an inability to enforce rights through the judicial system. A potential route around this could be through the separation in some cases of land rights and rights to trade ecosystem services. This is not dealt with in detail in this report.

- Employment creation and community benefits – The increased presence of rural or forest dependent communities in or around habitat areas suitable for HB in Latin America could mean that there is greater scope than in the USA to involve these communities in bank creation and generate new employment opportunities in the process

Institutional capacity

- Government institutional and regulatory enforcement capacity for managing HB schemes – The key institutional capacity building need in LAC is the capacity of government to monitor and enforce third party conservation and restoration of complex habitat types to ensure that banks provide ecological equivalency to the habitat impacts the credit purchaser is attempting to mitigate.
- Using HB to provide additional conservation resource to national protected areas and buffer zones – Conservation and enforcement resource constraints in the protected area network in Latin America may also mean that illegal encroachment is still a threat. Habitat or wetland banking projects within protected areas could still provide 'additionality' by strengthening protection capacity and reducing this encroachment, however this does not mean that protected areas themselves could be opened for development.
- Capacity to provide market support services – Many countries in Latin America have experienced networks of universities and research institutions with the necessary experience in conservation and restoration science to provide a technical support and in some cases, monitoring services

Funding HB market development

- Funding sources for pilot projects and market infrastructure – Stakeholder findings suggest that a number of funding sources may be needed in order to develop the necessary market support infrastructure and pilot projects. Organisations that may be able to provide this early stage funding in Latin America were identified as national government agencies, private companies, multi-lateral institutions such as the Global Environment Facility, bi-lateral government support, private banks, development banks, private foundations and charities.
- Investors to finance fully functioning markets – A combination of lower profitability and higher risks may discourage the investor groups identified above from making large-scale investments. This could result in a dominance of self-funded (bilateral agreement) habitat banks until widespread profitability can be demonstrated and investment risks are mitigated.
- Redirection of compensation payments – A potential consequence of implementing a regulatory HB market is that financial compensation for ecological impacts from project development is no longer directed to government budgets but instead is paid to private bank developers. The impact of this depends on which department or treasury currently receives compensation payments. For example where compensation payments are normally directed to the state treasury but are not linked to the budget of the ministry of environment (or equivalent), the treasury could lose compensation funding streams, whilst the ministry of environment benefits from having their compensation management responsibilities transferred to private bank developers. Conversely, where the ministry of environment receives significant funds from developer compensation payments there may be resistance to 'out-sourcing' this funding to a HB market.

Potential risks and barriers to species banking in the USA relevant to Latin America

The main risks are:

- Different approaches between government agencies to the role of markets in ecological conservation
- Institutional capacity for permitting, monitoring and enforcement
- Willingness of private companies to develop banks
- Ability of government to develop appropriate HB guidance
- Opposition from environmental groups
- Exemptions or inefficiencies in the Environmental Impact Assessment process
- Maintaining access to ecosystem services for communities living in and around potential HB sites
- Insecure land tenure and rights for communities living in and around potential HB sites
- Presence of partial species and habitat inventories

Overall potential for establishing HB schemes in Latin America

The study's overall finding was that HB is feasible in all countries assessed. As explained later in this document, the study used a country assessment framework and attributed a Tier 1 or 2 rating to each country according to assessment results. Brazil, Costa Rica, Chile and Mexico were given a Tier 1 rating, which indicates that most elements are in place for a banking scheme with EIA and endangered species regulation adaptation needed. In these countries some risk is present which should be mitigated prior to implementation of a banking scheme but is not critical. Argentina, Colombia, Panama and Peru were given a Tier 2 rating, which indicates that some elements and encouraging initiatives are in place although regulatory additions are needed. In these countries risks are present and should be mitigated prior to the implementation of a banking scheme; otherwise these could have a critical impact on scheme development.

It is important to emphasise that all countries have unique areas of opportunity for HB and in each there are important benefits to be derived from the development of these markets. Whilst differences exist between countries there are also common issues across the region that will be important to address in order for banking schemes to become established and then grow to scale. These are summarised below:

Policy and regulatory foundations

In each case study country there are national level initiatives and strategies in place to reduce habitat loss and increase private sector engagement with biodiversity conservation. In some countries such as Argentina there are national objectives to achieve no overall loss of natural capital. Whilst the inclusion of habitat 'No-Net Loss' objectives in government policy is encouraging, 'reduced loss' policy objectives could also support the development of HB schemes in the region.

There are many encouraging signs for the development of HB in Latin America but also barriers to be overcome and risks to be considered. Most importantly, existing national environmental regulation and permitting processes require further enforcement and adaptation. In many countries to do this would not necessarily require new governmental institutions but strengthening of existing ones.

Integration within EIA and permitting process

There is scope for integrating HB into the EIA and permitting processes in every case study country although this will need to be accompanied by adaptation to existing EIA processes. This should include an extension of EIAs to all industries with significant impact on primary habitat, full species inventories completed at impact sites, guidance provided by environmental agencies for ecological 'like for like' offsetting during the EIA process and provisions should be made for habitat offsetting to complement or replace monetary compensation payments. In some cases the application of the mitigation hierarchy in the Environmental Impact Assessment (EIA) process is needed in order to generate demand for habitat and wetland banking transactions. Guidance may also be provided on including non-biological factors in the 'like for like' assessment process, including the social and cultural characteristics of impact sites and corresponding habitat banks.

Creating demand for credits

Whilst compensation has to date been focused on monetary payments to governments and communities for the social impacts of project and infrastructure development, there may be opportunity for also directing compensation payments to ecological offsetting especially within the mining and energy sector. These industries may be 'first movers' in HB markets, based on their existing engagement with large compensation schemes and their obligations to meet international environmental mitigation standards. Other sectors could also join these industries as early participants in the market; for example in countries such as Costa Rica and Panama where the tourism and real estate industries account for a large proportion of project development. Voluntary offsets may be an intermediary first step during piloting to assist in the formulation of regulations and institutional arrangements, although for an HB market to reach scale the appropriate environmental and EIA regulatory drivers must be in place (see 'Main elements of a HB scheme for LAC above).

A transition is needed away from reforestation or afforestation schemes (for example in forest compensation schemes in Chile, Costa Rica, Mexico and Panama) towards conservation or full restoration of native forests in habitat compensation programmes, so that the true costs of habitat impact mitigation are reflected in the

compensation process. It is also important that gaps in knowledge regarding national species and habitat inventories are filled in. This could be achieved through the provision of capacity building support for the scientific and technical sections of government environmental agencies, potentially funded by donor aid. There may also be options for these agencies to develop partnerships with other scientific research institutes to share species and habitat inventory data.

Ability to develop habitat banks and supply credits

In each case study country there are a unique set of opportunities for developing establishment phase HB schemes to support already existing biological corridor initiatives, compensation schemes, well established payments for ecosystem service (PES) programmes and other conservation mechanisms.

There is considerable scientific research and technical capacity in Latin America for the provision of market support services, including habitat bank scheme design, legal support, technical assistance and monitoring services. Latin America is a major recipient of international donor funding for habitat conservation projects, which, alongside national government, could provide the initial financial resource needed to build this banking market support infrastructure.

There may be significant challenges in parts of Latin America for habitat bank sponsors to assert their legal rights to land ownership, which may be particularly acute for indigenous and community groups wishing to develop wetland or habitat banks. To tackle this challenge, where land rights are disputed or difficult to enforce, habitat bank sponsors could be offered subsidised legal support services from the government or form partnerships with organisations with experience in implementing conservation projects in areas of land dispute. A possible solution trialed in some other projects is to separate land and habitat banking or ecosystem service rights with compensation or benefit sharing with affected communities. It will of course be crucial that habitat banks are not just managed for conservation but incorporate sustainable use of ecosystem services, as the communities in Latin America that live in or around these habitats rely strongly on access to these services.

In some Latin American countries, especially in smaller coastal nations such as Panama and Costa Rica, projected land price rises in areas of residential and tourism development may limit the level of interest from landowners in placing land under a conservation easement. One of the ways in which to reduce competition between land speculators and habitat bank developers is to implement or update zoning plans that reflect the ecological value of the land in question. Without this in place it will continue to be difficult to encourage landowners to enter long term conservation agreements where residential and tourism development demand accelerates land price increases. This is especially true for coastal areas that can be effectively protected and restored.

Next steps

- *Stakeholder consultations* – individual and group consultations required with the appropriate environmental and permitting agencies, industry groups, civil society and academic institutions.
- *Pilot projects* – these could be implemented to demonstrate the potential benefits of habitat banks and to assess their potential negative impact. These pilot schemes could be incorporated into voluntary private agreements between a developer and private banks or as part of existing compensation schemes. Alternatively pilot HBs could be established independently of existing compensation schemes, with new HB credit purchase agreements being made between ‘early-mover’ HB developers and permittees. Once the progress of pilot projects has been assessed, efforts could be directed towards generating interest from prospective habitat bank companies along with investment and financial service providers.
- *HB scheme design* – this process could be led by a HB stakeholder committee alongside government environmental agencies. This process would consider how the USA wetland and conservation banking model should be adapted to suit the environmental, political and social characteristics of each country (see ‘Key issues for LAC HB above’)
- *Institutional capacity building* – needed in each country in order to make national HB schemes operational. Based on the level of interest expressed from government, NGO, academic and private sector stakeholders this would focus on increasing EIA enforcement capacity, developing species and habitat databases, establishing robust monitoring and evaluation systems, registries and verification processes, and providing guidance and market information services for HB developers.
- *Regulatory refo*rm – whilst this report and the country reports include specific suggestions for regulatory change there are regulatory adaptations that apply to multiple case study countries. This analysis is based on countries

where stakeholder workshops were carried out and not to countries where findings were based on desk review supplemented with interviews. The piloting process will help to clarify which of the following regulatory amendments are needed and any additional reforms needed.

Type of regulation	Suggested amendments
• Wildlife and biodiversity laws	• Include restrictions on impacting species habitat outside of protected areas • Stronger and clearer links could be given between threatened species lists and the restrictions that will be placed on damage to the habitat of these species • Responsibility of property owners or third parties impacting wildlife habitat are required to not only repair but to compensate for residual impacts on habitat
• EIA law	• The mitigation hierarchy formalised within the EIA and permitting process • Adaptation of current EIA law so that the purpose of compensation measures is to mitigate environmental damage with ecological 'like for like' offsetting. 'Like for like' offsetting should also take into consideration the socio-cultural characteristics of impact sites and offsets. This will help increase the likelihood that HB benefits are delivered equitably across communities in the same ecosystem service area. • Issue guidance for 'like for like' compensation during the EIA process where developers are required to purchase biodiversity offsets or develop them on their own land. • Add requirement for full biodiversity analysis of impacted site rather than the use of indicator species only • Potential allowance within the regulation for a transfer of liability from permittees to wetland mitigation and habitat banking companies • Place the responsibility for compensation design with the designated authority, as opposed to EIA consultants • Increase the capacity of EIA enforcement agencies to ensure that findings from EIAs are followed up

Introduction to the report

Background to Report

This Report is part of the broader UNDP Report: 'The Importance of Biodiversity and Ecosystems in Latin America and Caribbean: A Regional Economic Valuation of Ecosystems' which aims to analyse and demonstrate the value of biodiversity and ecosystems for economic growth and equity in LAC. The Habitat Banking in Latin America and the Caribbean Report is a valuable part of the broader UNDP Report as it provides information and guidance to Latin America and the Caribbean (LAC) on a new and additional opportunity to manage ecosystems in a manner that promotes economic growth and equity. The Report highlights the value and opportunity for countries in LAC to adopt market based approaches to supplement their traditional conservation strategies.

LAC is facing increasing pressures to develop important remaining natural habitats. Pressures are coming from tourism, agriculture (and biofuels), mining and oil and gas extraction. LAC governments need to find cost-effective ways to mitigate environmental impacts from such development. The USA as well as Germany and Australia have piloted wetland mitigation banking models to reduce net loss of habitats and spur private investment into habitat restoration. This Report builds on the USA experience to assess whether such banking models could be valuable, adaptable and feasible for countries in LAC. The Report provides an assessment of the feasibility of building successful habitat mitigation banking schemes in the region, highlighting the value and opportunity for countries to adopt banking approaches to supplement their traditional conservation strategies. Habitat banking will build on emerging voluntary initiatives for biodiversity offsetting and should also be viewed as complementary and not in competition with emerging carbon and REDD markets.

The Report is expected to catalyse interest in HB opportunities and act as a platform for further policy and stakeholder dialogue and planning on how such markets can become operational throughout LAC.

Report objectives

- Introduce the concept of habitat and wetland banking to key stakeholders in the region
- Highlight how habitat banking and wetland mitigation could contribute to environmental and economic aims of countries in LAC
- Identify where HB schemes could be developed in Latin America, opportunities, risks, barriers and what it would take to develop them
- Inform future planning and investment processes for establishing wetland mitigation and HB in select countries in LAC

Habitat banking

For the purposes of this report habitat banking (HB) is defined as a system where organisations or private companies restore, create, enhance or conserve a habitat to sell tangible units of this habitat, termed credits, to a developer or permittee. These credits are used by the developer or permittee as compensation for equivalent units of habitat that they would impact through project development or natural resource extraction.

Wetland mitigation banking is considered to be a component of HB and will be included within the HB definition throughout this report. Key principles of HB include:

- HB is used only once all steps of the 'mitigation hierarchy' has been exhausted (see report glossary)
- There are unique or endangered 'No-Go' habitat types where impacts cannot be mitigated for through HB. One example of this could be habitat that supports critically endangered species on the IUCN Red List of Threatened Species.
- HB credits typically take the form of a habitat acre, hectare or breeding pair.
- The total credits purchased by a developer/permitte should provide ecological equivalency with the area of habitat impact they are mitigating for (the debit). This should be enforced by a government agency or third party.
  In regulatory HB schemes the purchase of HB credits equivalent to the debit allows a developer or permittee to meet their regulatory requirements set by the government's environmental agency

Methodology for Report

The design of the methodology has been developed using guidance from a Technical Advisory Panel with expertise in USA wetland mitigation and species banking. The Panel provided detail on the history of the USA banking schemes and the political and economic factors that have been crucial in the growth and success of these schemes to use the lessons to assess feasibility in LAC.

Guidance from the advisory panel has helped in the production of the 'feasibility framework assessment' where the presence of key elements for the establishment of a HB system has been assessed according to:

- Policy and regulatory foundations;
- Scope and integration within EIA and permitting process;
- Potential demand for credits and;
- Ability to develop banks and supply credits.

The analytical framework was applied at the country level through stakeholder consultations with representatives from government, civil society, academia and the private sector in January and February 2010. During the consultations in Chile, Costa Rica, Mexico, Panama and Peru, participants were invited to share information and give their opinions on the willingness and feasibility of establishing national or sub-national habitat mitigation banking schemes. The timing of these consultations may mean that more recent country developments have not been included in the report. Consultations were divided into an analysis of policy and regulatory foundations, EIA and permitting processes, demand and support from developers and the potential creation of banks and credits. The reports for Argentina, Brazil and Colombia are based on desk based research and individual stakeholder consultation.

At the national level each feasibility building block was rated as being 'non-existent', having 'limited elements in development', being 'present but not satisfactory' or having 'adequate presence'. The overall presence of these elements is then assessed for each country and is used to classify the country as having a 'Tier 1' or 'Tier 2' feasibility rating.

A Tier 1 rating indicates that most elements are in place for a banking scheme with EIA and endangered species regulation adaptation needed. Some risk is present which should be mitigated prior to implementation of a banking scheme but this is not critical.

A Tier 2 rating indicates that some elements and encouraging initiatives are in place although regulatory additions are needed. Risks are in place which should be considered prior to the implementation of a banking scheme and would have a critical impact on scheme development.

Country selection criteria

The countries selected for this study were Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Panama and Peru. These countries were selected for the study based on the following set of criteria:

- Existence of important habitats and biodiversity;
- High levels of development which negatively impacts on habitat;
- Sufficient levels of market mechanisms already present to indicate HB might be feasible;
- Initial interest of national government in HB concept.

Figure 1 : Study countries

Introduction to wetland mitigation and habitat banking

Markets for biodiversity offsets

The purpose of biodiversity offsets is primarily to ensure that impacts related to development and other disturbances of natural systems such as mining or oil & gas drilling are effectively offset by the restoration, enhancement, or in some cases, preservation of an ecosystem or biodiversity elsewhere. To date, biodiversity offsets have been dependent on threats to species, ecosystems and the goods and services derived from them in order for economic values to be assessed.

In recent years, a number of voluntary biodiversity offset transactions have occurred, largely in response to targeted pressure on high-environmental impact industries, such as mining. The size of this voluntary offset market has been limited to date. Ultimately, a shift from “one-off” deals to more liquid markets is needed in order to appropriately price ecosystem services and biodiversity. In today’s markets, these values are best realised under the force of regulatory drivers – hence the purpose of this Report.

Regulatory HB has originated from the concept of the mitigation hierarchy, which requires that negative environmental impacts are first avoided, then minimised, and finally mitigated. Some stakeholders suggest that mitigation should preferentially take place onsite; however, supporters of HB often note that more and better quality habitat conservation can be achieved off site. The need for offsite mitigation and its utility as a lower-cost, easy-to-use option to fulfilling the mitigation hierarchy has given rise to the mitigation and conservation banking industries in the United States, where regulated markets have evolved over more than three decades.

Creating HB schemes

While these broad principles set forth a framework for regulation around ecosystem services and HB, more specific methodological guidelines are required to create an actual habitat “credit” and to govern transactions.

Like physical commodities, habitat credits can be bought and sold. For ecosystem services and biodiversity, creating consistent commodities can be difficult because of the high levels of diversity that exist in environmental goods. Measuring their qualities is not as straightforward as quantifying a unit of electricity or measuring a volume of gas emissions.

Factors that affect the development of habitat credits include: the currency of the transaction; ability to trade, sell and buy the good or service; a process for monitoring and verifying results and agreements; a mechanism to ensure lasting results or permanence as well as transfer of liability; and finally, a mechanism by which the trade can occur. Strong legal and regulatory regimes can put in place the machinery to address these factors in a manner that supports market activity. Each of the following components of HB requires consideration in the regulatory implementation of a new market:

- **Currency** – Unlike greenhouse gas trading schemes, where a ton of carbon dioxide can be directly measured, biodiversity values are not easily quantifiable and currency units may not be easily fungible, limiting market liquidity. Regulatory strategies can be employed to mitigate and resolve these issues; however, the appropriateness of each needs to be examined in light of the objectives of the overall scheme design.
- **Rights –** The nature of the rights that are to be traded is important to providing market certainty and enforceability. Decisions need to be made about whether or not HB credits will create separate property rights distinct from the land or if the rights will be merely contractual in nature. One of the reasons for the success of markets in the USA is that the banks that had the right to sell HB credits also took on regulatory liabilities from developers, which was an attractive commercial proposition.
- **Verification** – Monitoring and verification are crucial to ensuring the long-term environmental integrity of a scheme but must be balanced between costs and benefits. Transparency in verification processes can augment buyer confidence.
- **Permanence –** Regulatory strategies to ensure permanence are important to deliver environmental benefits. Regulatory options must consider where the liability and risk should rest for certain situations. Adequate compliance mechanisms are also important to ensure permanence, and decisions need to be made surrounding

the penalties and actions that occur if there is non-compliance. Tools such as conservation easements have been important guarantees of permanence in USA markets.

- **Trading mechanism** – In general HB schemes can be operated in one of two ways: on a bilateral basis, where developers negotiate directly with conservation stewards or private banking companies for the generation and subsequent purchase of credits or as a registry scheme where an independent regulator verifies credits and maintains a registry of those credits for developers when they are required. The mechanism of trade chosen can affect the success of the scheme by ensuring enforceability, transparency and market confidence.

Key highlights of wetland mitigation and species banking in the United States

Introduction

In the USA, a $1 billion per annum market in endangered species habitat credits stems from regulations under the USA Clean Water Act (CWA) and the USA Endangered Species Act (ESA). Based on the concept of “no-net-loss” and avoiding deleterious and irreversible impacts to species and habitat, these acts cap the amount of destruction to federally protected wetlands or endangered species habitat and require developers to offset permitted impacts. Conservation and mitigation “banks” sell credits to developers under a “like-for-like” principle (offsets provide the same or improved ecological functionality). These dual concepts of like-for-like and no-net-loss help ensure that the mitigation hierarchy is fulfilled and are also integral to creating a market that seeks to match supply and demand of biodiversity or ecosystem service products. These three principles are detailed in Table 1 below.

Table 1 : The three key principles of USA wetland mitigation and species banking

Principle	Description
Mitigation Hierarchy	The mitigation hierarchy forms the basis for compensatory mitigation, wherein an unavoidable impact to the environment is offset by the restoration, protection or conservation of a similar area or environmental attributes elsewhere. This concept is hierarchical in that deleterious impacts should first be avoided, then minimised, then mitigated and finally offset.
No-net-loss	The principle of no-net-loss is intended to prevent the loss of ecosystems and their functionality and was originally popularised in tandem with wetland mitigation banking. Under the concept, ecosystems are usually created on a per-area basis to offset the loss of the original area. While critics have argued that no-net-loss does not adequately ensure the full replacement of ecosystem services, there has been a movement towards net-positive policies that seek to ensure environmental gains rather than a break even. No-net-loss can be applied to endangered species banking by using species habitat as a proxy, but offsets for endangered species can also be preservation of existing habitat that takes in account a regional conservation strategy.
Like-for-like	The like-for-like tenet seeks to ensure that the benefit of the mitigation activity has parity with the environmental impact caused by the activity requiring mitigation. The type of restoration, enhancement or conservation guaranteed by a credit sold by banks must be aligned with the environmental degradation caused by the buyer. This requires that when practicable, credits represent the same suite of environmental characteristics (e.g. species, hydrology, community compositions) as the characteristics that were degraded or destroyed elsewhere. A critical consideration of like-for-like equality relates to each bank’s location and “service region,” or allowed geographical area to which a bank is certified to provide credits.

The evolution of wetland mitigation banking in the USA

The timeline below shows the key points in the evolution of USA wetland mitigation banking. The foundation for aquatic ecosystem markets in the USA was laid by a number of complementary and sequential components that fostered the creation of a regulatory framework for what is now known as wetland mitigation banking.

Timeline

1977 - Basis for mitigation requirements in US begins with the amended clean water act

1984 - Shift towards *offsite* third party mitigation

1995 - Banking activity coordinated around national 'no net loss' objectives, and banking defined as:

- Wetland restoration, creation, enhancement, and in exceptional circumstances, preservation
- For the purpose of compensating for unavoidable wetland losses in advance of development actions
- When such compensation cannot be achieved at the development site or would not be as environmentally beneficial
- Typically involves the consolidation of small, fragmented wetland mitigation projects into one large contiguous site
- Units of restored, created, enhanced or preserved wetlands are expressed as "credits" which may subsequently be withdrawn to offset "debits" incurred at a project development site"*

2008 – Published new regulations that further defined mitigation and provided guidance for mitigation banks

Wetland mitigation banking summary

There are around 500 wetland banks established in the USA, with another 500 proposed or approved. Each 'bank' can be from one to thousands of acres and the current cumulative value of credits in these banks is between $1.1 and 1.8 billion.

The USA market is increasingly formalised, with private mitigation bankers generating revenue from selling 'wetland credits' to developers. This includes the creation of the Regional Internet Bank Information Tracking System (RIBITs) which allows the USA Army Corps of Engineers Districts to monitor wetland mitigation banking[5]. There are also research programmes underway to investigate whether or not wetland credits are providing 'like for like' mitigation and full ecological equivalence to the wetland impacts they are intended to offset. The data collected from this research is helping to inform the improvement process for wetland banks and to enhance their ecological performance.

The following sectors currently purchase wetland mitigation credits:

5 USA Army Engineer Research and Development Center, (2010). *Regional Internet Bank Information Tracking System (RIBITs)*. Available online: www.erdc.usace.army.mil/pls/erdcpub/www_welcome.navigation_page?tmp_next_page=114145.

Table 2 : Sectors purchasing wetland mitigation credits

Transportation related projects	Energy related projects	Mining	Agribusiness	Tourism	Residential/ Commercial	Municipal and local government
Department of transportation – roads and highways	Oil and gas exploration and drilling	Surface and subsurface mining (e.g coal)	Land clearance for agricultural projects	Hotel & resort developments	Beachfront communities	Storm water sewers
Airports – Runway expansion and safety projects	Pipelines and related facilities	Strip mining (e.g Phosphate, Copper, Gold etc)	Processing facilities	Golf courses	Housing estates	Sanitary sewers
Railroads – New and repair projects	Electric power facilities and transmission lines		Discharge into waterways		Residential infrastructure e.g. new roads	Flood control
Ports – Dredging and new facilities					Offices	Reservoirs
					Retail	Road projects

Species banking summary

Species banking was built upon the principles of wetland mitigation banking and is intended to support the recovery of endangered species through protecting and restoring habitat.

The species (or conservation) banking industry is built upon 1973 Endangered Species Act which provided the basis for an ecosystem market for species habitat. Responding to the need for mitigating impacts to endangered species habitats in large regional Habitat Conservation Plans (HCP), the California Resources Agency (CRA) and the California EPA launched a formal species banking process by jointly issuing their official policy on species banks in 1995. Less than a year later a supplemental policy was provided which provided guidance on bank size, function, credits and service areas.

The free market approach envisioned by California provided an opportunity for landowners of important habitat to consider another possible revenue generating opportunity – species banking – instead of destroying habitat for urban development. This helped transform endangered species from liabilities to potential assets. Species banking is now present in several states and the market is collectively worth as much as $370 million a year, providing protection and restoration for around 80,000 acres of habitat[6]

What is the value of species banking for stakeholders?

The following table summarises the value that has been received by stakeholders from wetland mitigation and species banking in the USA. The possibility that a carefully designed banking scheme in Latin America could add similar value for stakeholders in the region is an important consideration in deciding whether or not the USA model, or adaptations to this model, should be adopted by country governments. **It should be noted that HB are tools which can add value to a country's range of conservation actions and are not necessarily the best or only solution for achieving effective ecological conservation.**

6 Bayon, R (2008). Biodiversity Banking: A Primer. Available online: www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=5617&section=home#close

Table 3 : The value of HB for stakeholders

Stakeholder	Value received
Government regulator	Consolidated monitoring of mitigation sites; professional environmental restoration experts managing mitigation projects; larger scale restoration and economies of scale; liability transferred to private professional companies with a vested interest in success of mitigation; mitigation done in advance assures success
Developers/permittees	Mitigation requirements have increased clarity and can be addressed upfront; known mitigation costs helps with project budgets and pro forma analysis; transfer of liability releases developer from long-term commitment; no annual monitoring requirements; streamline payment to one company
Landowners	Added value to land that is often not suitable for other uses; improved land stewardship; tax incentives from conservation easements; banks managed by professional companies can improve land value and revenue without direct management by landowners
Mitigation bankers	Banking model becomes more streamlined with increasing guidance and industry maturity; risk is lowered as the industry and banking process is understood and accepted by most regulators and clients; market demand increases as banking schemes gain confidence of regulators; permittees will begin to rely on using mitigation credits
Environment and Public Good	Better mitigation done by professionals with vested interest in long-term bank success; economies of scale achieve conservation outcomes at lower cost; increasing knowledge and scientific basis growing with data collection and monitoring requirements; enhanced industry best management practices and environmental stewardship; long-term or perpetual conservation

USA wetland mitigation and species banking in 2010

Here is a summary of the status of wetland mitigation and species banking in the USA, which includes some important points to consider when evaluating their potential application in Latin America.

- Total payments for wetland mitigation and species banking in the USA in 2009 were between $1.5 and 2.5 billion
- Banking schemes allows for better environmental and stewardship by professionals with vested interest in success, provides increased resources for conservation, without reducing development
- species banking forms a key part of the national ‘no-net loss’ strategy where projects cannot be avoided, or relocated (although there are still off limit areas for development)
- Developing wetland or species banks adds value to non-commercial land, tax incentives for conservation easements
- The presence of a wetland mitigation and species banking scheme has provided more clarity for developers on mitigation requirements, costs, reduced liability and economic efficiencies
- Regulators have consolidated the monitoring of mitigation sites to provide more effective assurance of mitigation credit quality

Habitat banking in new markets

Enabling criteria for HB and implications for new markets

In order to establish functioning markets for compensatory mitigation that uphold the principles of like-for-like and no-net-loss in a cost efficient manner, basic supporting circumstances may be required of related agencies, governments and other stakeholders. While it may not be essential that all of the circumstances be in place at the start of HB scheme, evaluating potential new market areas based on the occurrence of these capacities or the ability to develop them is an apt starting point. This section divides the criteria into three branches – political, environmental and social – for further discussion drawing from the lessons learned in the USA regulatory wetland banking and species banking.

Political

In Latin America, there exists a range of public and political opinions regarding the privatization of natural resources, and in particular toward to the perceived internationalization of goods, wherein local resources that are required for subsistence and economic development are deemed “off limits” to local users for the sake of the national population or international community. Thus, discourse around HB creation should clearly demonstrate the local and national economic benefits in order to gain political will and to stimulate market interest.

Governments play an integral role in regulatory HBs, not just in the enactment of laws to require and facilitate the markets, but also in enabling markets through various agencies whose policies and programs support market-based compliance schemes. For regulatory HB creation, governments must have the political will and ability to require the conservation of environmental resources and include provisions for the use of biodiversity mitigation instruments, such as species credits, to meet these requirements. Thus, there must be political will to implement these laws; concerns about the sovereignty and privatization of public goods may pose a risk to the implementation of HB-related policies.[7]

In addition to laws that place a “cap” or restrict biodiversity and ecosystem services impacts, laws that facilitate transactions are necessary. Clear ownership of property is necessary to create enforceable contractual agreements. Given the diversity of types of land ownership existing in Latin America, careful attention should be paid to ensuring equitable distribution of opportunities within a country. For example, individual private landowners may have a different set of private property rights than an indigenous community, stemming from different land tenure types. In some Latin American countries, the rights to use the same natural resource are administered by different agencies depending on the land ownership type; attention to these existing governance structures is an important consideration in the creation of laws that enable HB transactions and their subsequent governance.

Government enforcement of environmental regulations and facilitation of HB is essential for ensuring robust markets, in terms of creating demand from credit buyers, in assuring that all forms of mitigation are implemented under the same standards and in providing supply of available credits for purchase. As is demonstrated by the USA case, without proper regulation from agencies responsible for overseeing the Environmental Impact Assessment (EIA) process and issuing permits to developers and permittees, there would not be demand for mitigation and species credits. Likewise, in the Latin American region, governments could enforce and require HB compensatory mitigation as part of the EIA process and for the issuance of permits for specific activities, such as oil and gas exploration, or at time of execution of concession contracts. The administration of HB programs should be consistent across jurisdictions and geographies in order to foster market confidence and to prevent unnecessary delays in the issuance of permits and credits. The USA case demonstrates that developers and mitigation and species bankers can experience significant delays and uncertainty in attempting to coordinate with these agencies, especially in the early stages of the HB development process.

A reliable and accessible judicial system is also important for HB. Generally, environmental court cases are not directly involved with establishing a functioning HB, but they are involved with how the system develops over time. A lack of accessible legal recourse can jeopardise the contractual basis of habitat banks, activities and transactions. The

7 For example, in Peru the issuance of a new forestry law that sought to allow increased privatization of natural resources led to a violent altercation between indigenous protestors and police in June 2009, during which several people were killed and injured. Eventually, President Alan Garcia issued an apology for insufficient consultation of indigenous peoples before the passing of the new law, which has since been repealed. Although the objectionable changes to the law centered mostly on oil and gas reserves, there has also been significant concern from indigenous groups surrounding the privatizing of ecosystem services, which was also included within the now-repealed law.

court system in the USA has been very involved with enforcement of the laws that are the basis for HBs. Several key Supreme Court cases had a great effect on what areas are considered jurisdictional and therefore require mitigation if impacted. Recently environmental groups have successfully disrupted coal mining (specifically mountain top removal mining) in the Appalachian states due to insufficient mitigation. These cases are ongoing and are certain to affect how mitigation is undertaken in the future for this region.

Finally, it should be clear that effective HB implementation and facilitation requires significant coordination from a number of agencies and arms of government. Given the diversity of agencies involved in the regulation and functioning of HB, mechanisms for coordination among government actors is important to streamlining market development. Tasks forces and working groups in the USA have been useful tools for combining lessons learnt and developing new guidance for improving the markets.

Environmental

While market-based mechanisms for addressing environmental problems hold both economic and conservation promise, they require close attention to the underlying local environmental issues that are being addressed. In the existing regulatory markets, environmental integrity is generally pursued via the three tenets: the mitigation hierarchy, no-net-loss and like-for-like (see section 5.1, p.24). As the USA experience has shown, there are important environmental components needed to ensure that these three principles are upheld within the process of beginning and developing effective HBs.

While the USA HBs are now based on guidance regarding which species and ecosystems are under regulation, clarity surrounding these guidelines and the application of regulation took place over a long timeframe. The most recent guidance from 2008 stresses in-kind mitigation to support the like-for-like principle; however, this can still be difficult to assess and enforce. In mitigation banking, over time the requirement to mitigate within the same watershed has become increasingly important.

Ultimately, the USA system has left it up to the regulators to determine if credits from a specific bank are appropriate for a specific impact. Given the profound diversity of ecosystems and species in Latin America under varying levels of threats, it will be a large undertaking to replicate such guidance. To support HBs, at the national level it will be necessary to identify high-priority conservation areas, ecosystems and/or species to be included within the scheme. These priority areas, ecosystems and species will foster a robust HB if there are strong connections to relevant development and industry pressures, which are generally exercising threats over those environmental goods. Thus, HBs should relate to land use planning maps and systems that can aid the direction of environmental goals, which are a critical component of bank success. While ideally such broad-scale national land planning and registry systems can be implemented, it is also important to promote local-level specificity, such that high pressure areas are adequately mapped and addressed.

In addition to environmental planning capacity, HBs rely on scientific capacity to ensure that the environmental integrity of the HB commodities is strong, particularly around the quantification and issuance of credits, use of standardised methodologies and best practices for environmental management. While advancing quantification methodologies and approaches is important for guaranteeing the integrity of a system, as the units of trade become increasingly specific, they may become more difficult to trade and create market barriers.[8]

The use of standardisation and protocols for credits or mitigation instruments for sale can help reflect the environmental integrity of the product using science-based approaches. Particularly given the environmental richness of Latin American nations, such standardization may help avoid regulatory delays and the transaction cost of demonstrating like-for-like is satisfied.

Sector-based approaches based upon the type of impact may support parity while streamlining the transaction process, lessening the burden on regulators to determine if a given credit satisfies requirements to offset a given impact. For example, a “stream restoration credit” may be required for any alluvial mining activity that disrupts

8 www.forest-trends.org/documents/files/doc_526.pdf

streams. Furthermore, standardised approaches and protocols allow for the incorporation of best practices into HB banks. Environmental oversight by relevant authorities and/or third parties should ensure that best practices for sustainable management occur in order to enhance the desired environmental qualities. This also requires that an 'adaptive management' approach is taken to assure that best practices are continually updated with evaluation and feedback so that the anticipated ecological outcomes from offsetting are achieved. The creation of best management practices and guidelines requires advanced ecological expertise as well as an evaluation of existing and emerging land management practices.

Economic

As HBs begin to place new economic values on environmental goods, new skill sets must be developed to support the HBs. As mentioned above, government oversight and facilitation is an essential motivating factor for HBs, and these agencies must be empowered to fulfil their mandates with respect to regulatory markets. In addition, scientific expertise must be communicated and incorporated into the regulatory system. In terms of market players, there must be an overlap between environmental professionals, engineers, lawyers and finance professionals. While the core product of a species or mitigation bank is an environmental good, the bank's business rests of financial success. Thus, the field of environmental finance is a natural fit for HB markets; however, in market beginnings, these financial skills will need to be transferred from other fields, such as more traditional financial institutions. The HB banks must be able to identify, mitigate and manage both financial and environmental risks. In some cases this can be achieved by combination of specialists and consultants, but as banks and programs achieve scale these skill sets become overlapping. In order to maximise the benefits staying within the Latin American region in terms of sustainable development, it is important to foster these capacities within the region.

Throughout much of Latin America, environmental losses are driven by diverse socio-economic factors and directly caused by agents at differing scales and with differentiated capacities to take on roles in HBs. For example, both small-scale shifting cultivation and industrial agriculture can contribute to loss of biodiversity and ecosystem services; however, it is difficult to regulate and enforce caps on subsistence and small-scale activities that are essential for livelihoods. At the same time, such stakeholders could potentially be important providers of HB products. By contrast, more commercially-oriented actors could potentially bring high demand for HB credits if they are effectively regulated and responsible for mitigating impacts. Such socio-economic dynamics should be considered on both the supply and demand sides of potential HBs in order to support equitable engagement with new market opportunities.

Key elements for developing Habitat Banking schemes

Table 4 below summarises the key criteria for HB development, based on the USA wetland mitigation and species banking experiences. This table has provided the basis for the design of the feasibility framework used in the Chile, Costa Rica, Mexico, Panama and Peru country reports.

Table 4 : Criteria for HB development

Criteria	Specific components
Environmental threats linked to development and commercial industries	• Developers/industries are already regulated or could be regulated, e.g. with Environmental Impact Assessment (EIA) and permitting and requirements • Processes in place to identify threatened areas of natural habitat, critical conservation areas and species • Conservation priorities have been noted at regional and national scales with an understanding of the value of wetlands and other habitat types for the economy
Political will and public support	• Political interest in the concept of No Net Loss and political support for enacting habitat mitigation regulation • Environmental and industry groups cannot stonewall development of banks or projects • Industry recognition that third party mitigation is cost effective • Private landowners willing to enter into long-term conservation agreements

	• Stakeholder understanding and agreement on the benefits and appropriate role of third-party mitigation
Regulatory foundations for the mitigation or compensation of environmental impacts	• HB legislation can be linked to existing requirements, laws and treaties (e.g. Convention on Biological Diversity) • Guidance for permittees on how to maintain compliance with the regulation • Requirement and completion of EIAs for all key activities impacting on habitat • Consistent application of mitigation hierarchy within EIAs for development, mining or drilling projects • Use of compensation funds from developers/permittees to directly address the ecological impacts from their project • Clear definition of agencies that can be issued authority related to implementing and enforcing the law • Agencies have capacity for enforcement and monitoring of mitigation requirements within EIAs • Agencies have the capacity to manage an effective HB system in conjunction with the existing EIA process. This includes oversight of HB credit agreements, monitoring of ecological equivalency, enforcement of HB regulation and ability to use lessons learnt to continually improve the HB system
Long-term sustainability of banks and permanence of HB credit can be guaranteed	• Availability of capital in country for financing wetland or habitat banks, including endowing trusts, committing to repairs, monitoring and maintenance • Legal property and land tenure can be secure for duration of project or in perpetuity • Liability can be transferred from permittee to banker, guaranteeing the credit
Financing mechanisms and skills to support bank or project creation	• Investors accept long-term perspective on return on investment and risk capital is available • Insurance mechanisms are available for country and sector of operation • Expertise is available for structuring contracts that may depend on uncertain credit delivery
Science-based understanding of species and ecosystem requirements for continued existence and provisioning of ecosystem services	• Best practices exist or can be developed for bank activities, including preservation, enhancement, restoration and creation of ecosystem services and/or biodiversity • Minimum requirements for conservation of ecosystem services and/or biodiversity are known or can be determined at local scale and for programme at large

To analyse the presence of these criteria within each in-depth case study country, a more detailed feasibility framework was drawn up to capture stakeholder views at a country level. This is structured into four components: policy and regulatory foundations, scope for integration of HB within the EIA and permitting process, potential demand for credits and the ability to develop banks and supply credits.

Figure 2: Feasibility components for the establishment of HB

Once most of the feasibility elements are in place or in development, an establishment phase HB system may begin to take shape. The generic template below provides an illustration of what the establishment process of an HB system in LAC may look like. Each number represents a stage in the development process, which may require multiple factors coming into place at the same time.

Figure 3 : Potential establishment process for an HB system in Latin American nations

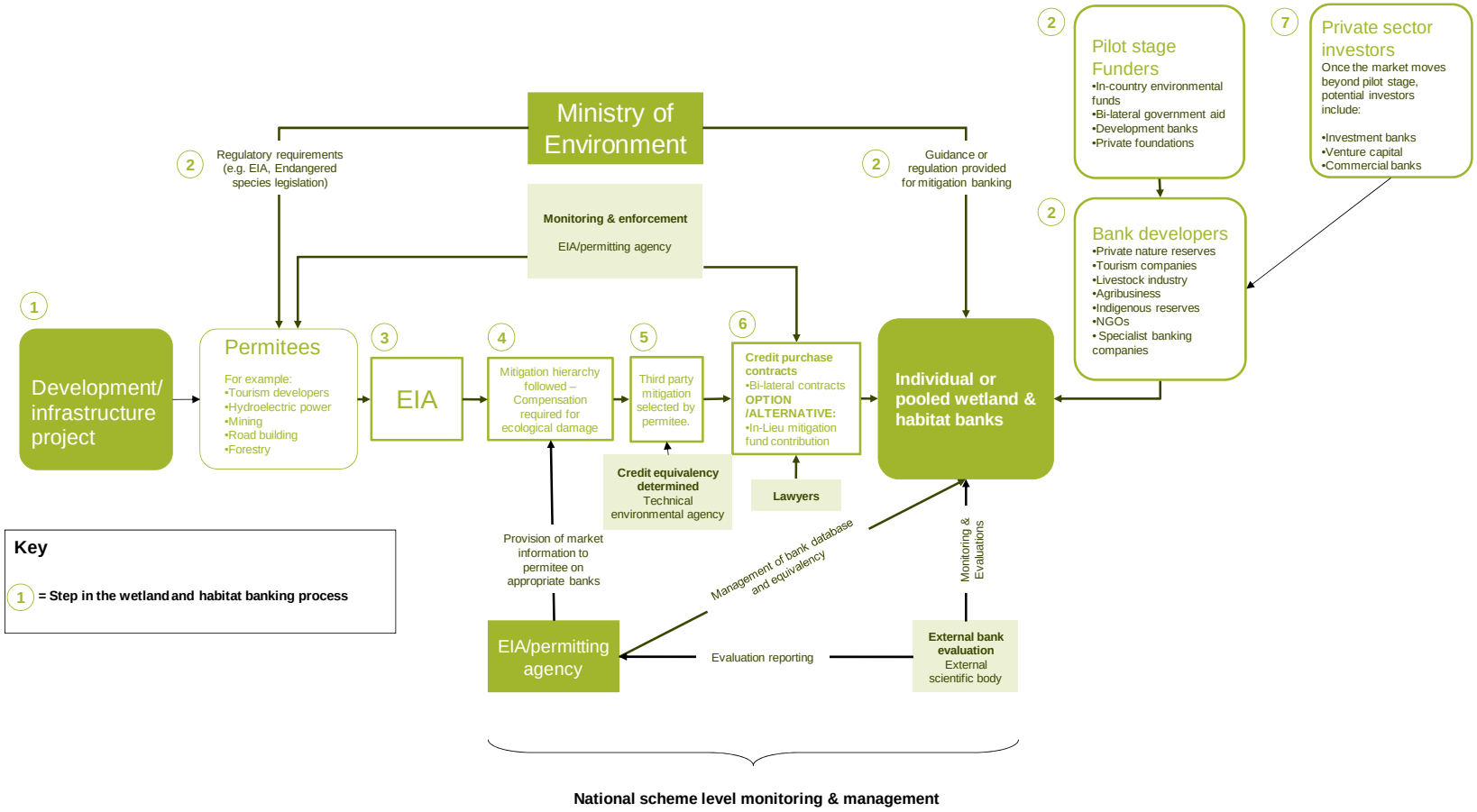


Table 5: Summary of HB establishment stages in Figure 3

Establishment stage	
1.	• Public or private development or extractive based project (the permitee) applies for a permit to commence operations from the relevant permitting agency.
2.	• Regulatory requirements are in place for the permitee to enter an EIA process and complete an environmental management plan prior to permit issuance. • Guidance or regulation is developed by the Ministry of Environment or equivalent for mitigation habitat banking. • Donor funding is provided either by national bodies, bi-lateral government assistance, development banks or private foundations to establish start-up market support services and/or pilot projects. • HBs developed by private nature reserves, NGOs, industry, communities and specialist banking companies. This may progress in absence of donor funding for market support services and is funded by HB developers/investors or through permitees paying a third party contractor to establish a bespoke HB for them.
3.	• The EIA process is carried out (typically be an external consultancy) producing an environmental management plan as a condition of permit issuance. This is aligned with the principles of the mitigation hierarchy.
4	• Permittee applies the mitigation hierarchy in accordance with EIA findings.
5.	• If the project has residual ecological impacts after the application of mitigation hierarchy, biodiversity offsetting is required. Environmental legislation allows for third party mitigation of ecological damage.
6.	• Third party mitigation selected by permitee, using the purchase of HB credits from an HB developer. Credit purchase contract prepared by lawyers between developer and purchaser and a bi-lateral contract is signed between parties. An alternative option is for permitees to make a payment to an In-Lieu mitigation fund directly linked to habitat credits in a pooled HB.

Lessons on potential risks and barriers to species banking in the USA relevant to Latin America

- **Differences between government agencies –** Numerous agencies had various levels of authority and input into HB development processes. Each had its own "agenda" with distinct goals. It may be a difficult and lengthy process for the various environmental, planning and sector specific agencies to agree on the framework of how a species banking scheme would/should work. Today, multiple agencies in the USA remain involved in the approval process, which can lead to bureaucratic delays.
- **Institutional capacity for permitting, monitoring and enforcement –** The success of a regulatory HB system will depend on the technical and human resource capacity of the environmental, planning and sector specific agencies to ensure that significant project impacts on natural habitat go through the permitting process. These agencies will also require the technical expertise to determine credit equivalency and oversee the credit agreement process. Once these agreements are made the relevant agency will also need the resources and scientific capacity to monitor and enforce agreements.
- **Willingness of private companies to develop banks –** This requires the ability and willingness of private companies to participate and help develop new biodiversity based business models. When creating a bank, proponents often lack guarantees about the timing of bank approval and demand for credits, which can make investment returns and profitability uncertain.
- **Developing appropriate guidance –** The development of formal guidance and rules for mitigation banking, after the laws were passed, took many years to emerge in the USA. As new types of banks develop, best practices continue to evolve and agency guidance and rules must keep up with new science and market demands.
- **Opposition from environmental groups –** There are sometimes challenges from environmental advocacy groups with concerns that mitigation banking will facilitate and accelerate environmental destruction.
- **Exemptions or inefficiencies in the Environmental Impact Assessment process –** This may mean that many developers do not face regulatory obligations to mitigate their ecological impacts which could potentially undermine a banking system and limit demand for these schemes.
- **Maintaining access to ecosystem services –** For those communities that live in and around habitat, maintaining access to ecosystem services in or near wetland or habitat banks will be critical. If wetland or habitat banks are managed for preservation purposes, without access for sustainable use, then communities will no longer be able to access these services. This could lead to severe conflict with habitat bank developers and have substantial negative impacts on the communities living in and around habitat areas.
- **Land tenure and rights –** There may be significant challenges in parts of Latin America for bank developers to assert their legal rights to land ownership either due to deficiencies in the land registry system, overlapping land rights, an inability to enforce rights through the judicial system or the legal rights of the state to override private land ownership for national development purposes. Some of these issues may be particularly acute for indigenous and community groups, who in many notable cases live in habitat areas with high species diversity and could benefit from habitat bank development. Without assurances of their long term land rights it may be difficult to attract the necessary investment in these community based banks.
- **Partial species and habitat inventories –** In some areas of Latin America there may be areas of ecological importance, particularly in un-protected areas where species and habitat data is partial or non-existent. This could pose a challenge for potential wetland or habitat bank developers and regulators, making it difficult to select bank sites and determine credit quality.
- **Redirection of compensation payments –** Another potential consequence of implementing a regulatory HB market is that financial compensation for ecological impacts from project development is no longer directed to government budgets but instead is paid to private bank developers. The impact of this depends on which department or treasury currently receives compensation payments. For example where compensation payments are normally directed to the state treasury but are not linked to the budget of the ministry of environment (or equivalent), the treasury could lose compensation funding streams, whilst the ministry of environment benefits from having their compensation management responsibilities transferred to private bank developers. Conversely, where the ministry of environment receives significant funds from developer compensation payments there may be resistance to 'out-sourcing' this funding to a HB market.

Latin America potential for habitat banking

In Chile, Costa Rica, Mexico, Peru and Panama the in-country consultation findings were analysed according to the feasibility framework set out in Figure 2. In Argentina, Brazil and Colombia analysis was based on desk research, supplemented with individual stakeholder consultations. This chapter presents the overall conclusions on the potential value, feasibility and risks and barriers to establishing HB schemes in the case study countries.

Potential value of HB for LAC

Benefits for meeting national biodiversity and development goals

Biodiversity and ecosystem markets can help maintain or increase the level of species habitat in a country, contributing to biodiversity conservation objectives whilst simultaneously supporting the achievement of national development targets. The conservation benefits derived from these markets could contribute directly to the achievement of poverty alleviation goals by restoring or enhancing the ecosystem provisioning services upon which society depends. These include, amongst others, freshwater regulation, crop production, erosion control, pest regulation, livestock productivity, fisheries and non-timber forest products.

Biodiversity markets can also contribute to national economic growth from the value created by both bank development and the provision of market support services. Bank developers, which could include private companies, community groups or NGOs, if successful, generate profit and employment for their stakeholders. There could also be added economic benefits for a range of companies or individuals providing financial services and market support including monitoring, legal, insurance, registry and project technical support services (see Table 7).

Table 6: Employment opportunities for Habitat Banking

Employment type	Specific employment opportunities
Design, establishment and maintenance of habitat banks	Wetland conservation scientists, biodiversity conservation scientists, hydrological engineers, conservation wardens, landscape engineers, forestry professionals, habitat restoration experts, construction workers
Monitoring, evaluation and verification	Wetland conservation scientists, biodiversity conservation scientists, forestry professionals, habitat restoration experts
Legal support	Property lawyers, financial lawyers
Registry and administration	Market administrators, registry specialists, public administrators
Project finance & banking services	Investment bankers, venture capitalists, commercial bankers
Market information services	Market researchers, news and intelligence analysts
Fund creation and management	Investment fund managers, fund management consultants
Project technical support	Environmental consultants with knowledge of habitat and wetland restoration, NGO specialists, researchers

Poverty alleviation

As part of this process HB could play an important poverty alleviation role due to the business and job creation potential from the establishment, maintenance and monitoring of wetland or habitat banks.

Following these one off transaction based employment opportunities , there will be long term employment opportunities in the ongoing protection, maintenance and monitoring of habitat banks. It was reported that skills in species identification, conservation management and socio-cultural knowledge would be of great benefit to the sustainability of habitat banks, and if reinforced with capacity building programmes this could provide employment at scale for local residents.

Aside from employment opportunities, community based habitat banks could also generate income for community development programmes and alternative livelihoods projects. This could be particularly important for improving access to basic services for remote communities.

The conservation and restoration of ecosystems will also protect the ecosystem services described at the start of this section. Protecting these ecosystem services such as erosion protection and pest control is essential for rural communities dependent on agricultural production.

Overall potential to develop HBs

In each country reviewed there are a unique set of opportunities for developing early stage HB schemes, although it should be recognised that there are differing levels of feasibility between these countries.

There are common issues across the region that will be important to address in order for banking schemes to become established and then grow to scale. These include the need to build HB into current environmental legislation, ensure its cost competiveness with current compensation schemes (both for developers and regulators), engage broad support outside of government so the market continues to operate between government administrations, address land tenure, zoning and land pricing issues that may limit the supply of habitat credits and build the institutional capacity needed to manage and support these banking schemes.

There are also important risks that need to be addressed in regards to the maintenance of ecosystem service access rights for communities living in and around habitats, ensuring that biodiversity offsetting is viewed as an option only once the mitigation hierarchy has been exhausted and ensuring that habitat and wetland banks provide sufficient ecological equivalency and additionality. The use of independent verification bodies could help to ensure that this equivalency and additionality is achieved (Please see Figure 3).

On the positive side LAC already has made advances in market based conservation approaches and certain countries have foundational legislation and mechanisms which can pave the way and provide examples for establishing HB in the region. In each case study country there are a selection of laws, programmes and initiatives that could support the development of an early regulatory HB scheme. These range from national forest compensation funds to government-NGO biodiversity offsetting partnerships and could provide useful starting points for the adaptation of HB to fit with existing conservation frameworks. Please see the country summaries and sections 2 and 3 of the full country reports for more detail of these initiatives.

Achievements in biodiversity conservation have already been made in the region with biological corridors, environmental funds and world leading payment for ecosystem service (PES) schemes already present. In many of the case study countries governments have explicitly stated aims within their biodiversity strategies to increase private sector involvement in biodiversity conservation and explore the use of market mechanisms to achieve this.

There is also considerable scientific research and technical capacity in the region, with world leading institutions playing a prominent role in habitat conservation and restoration. There is also broad experience in compensation and environmental fund administration which could provide a starting point for effective pooled habitat offsetting schemes. Latin America is also the focus of donor funding for habitat conservation due to its status as the most biodiverse continent on earth, which could be vital in building up the market support infrastructure and pilot projects needed for market establishment and growth.

Table 7 Feasibility component summary for case study countries

Feasibility component	General findings from case study countries
1. Policy and regulatory foundations	• Most countries have a national biodiversity strategy with some including specific reference to the need to explore market mechanisms for conservation and quantify the economic value of natural habitat . There is still great potential for a more extensive implementation of national biodiversity strategies. • Some countries have well established Payments for Ecosystem Services schemes in place (such as Costa Rica's FONAFIFO fund) although mostly in form of public payments rather than true markets. • Regulations in place for compensatory payments to be made for impacts on native forest, protected areas and in some case other unprotected habitat types (for instance Chile's new Native Forest Law). In some cases these payments could be directly towards ecological offsetting. • Wildlife laws include restrictions on impacting species habitat but not always directly linked to a national endangered species list. Further guidance could be provided on the restrictions to impacting endangered species for developers or permittees.
2. Scope for integration with EIA and permitting process	• EIA processes do not generally include comprehensive biodiversity assessments or full analysis of downstream biodiversity impacts. HB could provide stimulus for more comprehensive assessments by EIA consultants. • Mitigation hierarchy applied in most EIA systems although the use of ecological offsetting is rare. Establishment of HB system could increase the use of offsetting options. • EIA compensatory requirements do not include the need for 'like for like' ecological offsetting. Compensation generally in the form of monetary payments to government or local communities. These compensatory schemes could be adapted to include direct ecological offsetting through HB. • Some governments and non-state actors are in process of trialling biodiversity offsetting programmes, such as the 'Development by Design' partnership in Colombia between The Nature Conservancy, Conservation International, WWF and the Colombian Ministry of Environment.
3. Potential demand for credits	• The mining and energy sectors have strong potential for inclusion in an HB scheme due to obligations from international finance service institutions or from shareholders to mitigate environmental impacts, the need to maintain a 'licence to operate' amongst stakeholders and relatively high budgets to compensatory action. • In countries such as Costa Rica and Panama where the tourism sector depends upon natural habitat areas as a competitive advantage, there may be interest from tourism developers to engage in HB in response to consumer or investor demand. • Environmental legislation in some countries requires developers/permittees to pay for afforestation or reforestation as part of the compensation process. These compensatory schemes could be adapted to include full forest restoration using HB. • There remain key sectors such as national level mining and agriculture with large-scale impacts on habitat that are not subject to the EIA process. Without EIA processes in place, demand for HB will not develop in these sectors. • A potential obstacle to the development of HB schemes for industries that are subject to EIAs is that environmental management plans produced during the EIA process may not always be enforced. • Where enforcement is followed through, the fines administered are reported to be low in relation to project budgets or overturned by legal challenge. This may limit demand for cost-competitive environmental mitigation schemes such as HB.
4. Ability to develop banks and supply credits	• In many case study countries there is a strong private or not-for-profit conservation sector and world class conservation research facilities to support the design and development of a habitat and wetland banking market. • Strong domestic and international funder interest in biodiversity conservation in Latin America which could be used to fund the development of market infrastructure or pilot projects. • There is mixed potential for indigenous and community groups to develop HBs. In some countries insecure land tenure may limit the ability of these groups to provide long term credit guarantees. In other countries these groups have relatively stable and enforceable

land rights which may allow for HB development.

- In many habitat areas in LAC there are local communities that rely on the ecosystem services and natural resources these areas provide. The development of HBs will need to respect these access rights and could also allow for the sustainable extraction of natural resources within their boundaries.
- In many high biodiversity habitats, land prices are low, which could allow for the profitable development of HBs in these areas. Conversely it may be difficult to develop HBs in coastal areas under pressure from tourism and residential development due to high land prices. This is most applicable in smaller coastal case study countries such as Panama and Costa Rica.
- Low input costs and the need to provide cost-competitive mitigation may mean that the price of HB credits may be considerably lower than in other countries, This could have a limiting effect on total revenues and engagement from the financial services sector in LAC HB markets.

Summary feasibility assessments

(see page 27 for more details of feasibility assessment methodology)

Table 8 below summarises the scores attributed to each detailed study country using the feasibility assessment framework from each detailed country report. It is important to emphasise that all countries have unique areas of opportunity for HB and in each there are important benefits to be derived from the development of these markets. Listings within the tiers are alphabetical and do not reflect differences in feasibility.

Table 8: Detailed study country results

Feasibility assessment framework summary	Readiness rating	Rating key
Brazil	Tier 1	Tier 1 indicates that most elements are in place for a banking scheme. EIA and endangered species regulation adaptation needed. Some risk is present which should be mitigated prior to implementation of a banking scheme but is not critical.
Costa Rica	Tier 1	
Chile	Tier 1	
Mexico	Tier 1	
Argentina	Tier 2	Tier 2 indicates that some elements and encouraging initiatives are in place although regulatory additions are needed. Risks are present and should be mitigated prior to the implementation of a banking scheme; otherwise these could have a critical impact on scheme development.
Colombia	Tier 2	
Panama	Tier 2	
Peru	Tier 2	

Tier 1 countries may be closer to moving beyond state compensation schemes and isolated offset transactions to achieve fully functional habitat markets than those in Tier 2. In Tier 2 countries additions to EIA and endangered species regulation, a growth in ecological based offsetting and government capacity building are all likely to be required prior to moving from pilot projects to an operational market. In Tier 1 countries adaptation of existing regulation is still needed, along with capacity building and mitigation of key risks but there are examples of offset programmes such as Mexico's 'Program for Environmental Restoration and Compensation' and Brazil's 'Environmental Compensation Programme' where a market for third-party habitat offsets could grow in the near future. Please see the individual country summaries and the country reports for more detail.

Key adaptations needed to apply USA and international HB models in Latin America

Policy and regulatory foundations

Implementing 'No Net Loss' policies at an ecosystem level

The USA 'No Net Loss'(NNL) policy has not been replicated in any of the case study countries although the biodiversity strategies and regulations in many of these countries include forest conservation objectives and identify the need for protecting habitat in the national development process. The scale of primary habitat coverage in some of these countries (up to half the national territory in some cases) would mean that whilst there are no national NNL policies, the will to achieve no net loss within forest areas alone would be sufficient to require and instigate the development of a HB market. It is perhaps more realistic in the initial stages of HB to support NNL policies at an ecosystem rather than national level, with the aspiration to eventually achieve national NNL.

Scope for integration with EIA and permitting process

Adapting EIA regulation and practice to create demand for HB credits

Throughout the region stakeholders have expressed their concerns that without the inclusion of the mitigation hierarchy, a comprehensive analysis of ecological impacts in the EIA process and more stringent enforcement of EIA findings by the relevant permitting agencies, there may not be sufficient market drivers in place for HB schemes to grow. Whilst these elements have been adequate for the USA market, there may be adaptations needed to the EIA process in some Latin American nations before similar levels of growth can be achieved. These adaptations could include the mandatory inclusion of full biodiversity inventories and potential downstream biodiversity impacts in EIA findings, the need for permitees to provide 'like for like' ecological offsetting and the provision of offsetting standards and guidelines by permitting agencies. These standards should include the need for offsets to take into the socio-cultural characteristics of the communities living at both impact and offset sites, so that HB benefits are distributed equitably between communities living in the same ecosystem service area.

EIA and Widllife regulations to be introduced

Whilst the USA Endangered Species & Clean Water Acts as well National Environmental Policy Act regulation provide the necessary framework (along with guidance) for a habitat mitigation banking market, there are some important regulatory gaps present in Latin America that could limit the growth of a banking scheme. Areas that require particular attention include the use of ecological 'like for like' compensation, the inclusion of all stages of the mitigation hierarchy in EIA regulation and the strengthening of linkages between the restrictions on impacting habitat in national wildlife laws and endangered species lists.

Potential demand for credits

Adapting existing permittee compensation funds for HB

There are a number of permittee compensation funds in operation in Latin America, whereby permittees pay into a pooled fund for programmes to mitigate for negative social and environmental impacts related to extractive or project development activities. However few of these include a direct linkage between permittee payments and the provision of habitat offsets.

These funds have the potential for adaptation into wetland or habitat bank credit purchase funds depending on whether they can be adapted to provide a direct link between permittee payments and ecological offsets. Many of these compensation funds would also need to be modified so that they provide compensation on a 'like for like' basis, whereby payments for an impact in one ecosystem area are used to protect or restore a corresponding area of ecological equivalence.

Additional costs of HB for developers

The success of the USA HB schemes have been dependent on the fact that the purchase of wetland or habitat credits provides a cost effective way to fulfil regulatory requirements and to mitigate the ecological impacts of project

developers' activities. The alternative options which included self-mitigation, fining and delays to project development would have greater cost and hence the purchase of credits reduced the expense of project development.

Ecological compensation schemes in Latin America are focused on afforestation and reforestation, which present a relatively low cost for developers, when put into the context of total project budgets. The purchase of HB credits is likely to present a higher cost for a developer to cover the capital and running costs of full habitat restoration and conservation.

Some companies in Latin America have engaged in their own wetland conservation and restoration projects and may find that the purchase of wetland mitigation credits provides a more secure and cost effective option for impact mitigation. Whether or not these companies would be prepared to purchase third party conservation or restoration credits is uncertain, as they may feel that they are already achieving their mitigation goals.

In order for habitat bank credit purchases to become an economically attractive option for developers, the costs of developing banks will need to be kept as low as possible. This may be achievable given that land prices are relatively low in many primary habitat areas in LAC and make up around 40% of the establishment costs of HBs. For instance in Panama primary forest areas can be purchased for as little as $1,000 – 2,000 per hectare compared to in the USA where primary forest may cost $100,000 to 200,000 per hectare. In addition to this there may need to be increased political pressure for developers to provide full ecological restoration and protection rather than reforestation and afforestation, so that the 'real cost' of fully mitigating habitat impacts are realised by developers. This could increase compensation payments so that they become more costly than purchasing habitat credits.

Ability to develop banks and supply credits

Government institutional capacity for managing HB schemes

The key institutional capacity building need in Latin America is the capacity of government to monitor and enforce third party restoration of complex habitat types such as rainforest and to ensure that these banks provide ecological equivalency to the habitat impacts the purchaser is attempting to mitigate.

In every country the development of HB would require new management resources within permitting and environmental agencies to oversee the development of an HB scheme, although the level of resource investment needed varies between Tier 1 and 2 countries.

Countries within the Tier 1 readiness rating may already have the foundations in place to manage a national HB system. This is partly evidenced by the successful operation of existing EIA monitoring and enforcement systems. It is likely that Tier 2 countries would require more support and in some cases a large-scale resource investment in their EIA management system to create the foundations for a HB system. This may also require partnership building between government agencies and scientific research institutes to assess ecological equivalency in the HB approval process. The REDD+ readiness process in Latin American nations could be complementary to the HB readiness process and include similar capacity building processes in conservation science and monitoring.

Risks from land tenure issues for HB developers

There may be significant challenges in parts of Latin America for bank developers to assert their legal rights to land ownership either due to deficiencies in the land registry system, overlapping land rights, an inability to enforce rights through the judicial system or the legal rights of the state to override private land ownership for national development purposes.

In the USA model, habitat banks must guarantee credits over the long term e.g. 50 years. Where bank developers cannot guarantee the longevity of habitat credits, it will be difficult to attract the investment needed for these banking schemes to grow. Whilst this does not present an insurmountable barrier to project development in any country, it may mean that project development is limited in areas of land conflict. This may also limit project development by indigenous groups in countries where legal recognition of their land rights are limited, as credit longevity would be difficult to guarantee.

Potential dominance of primary habitat conservation (with sustainable use), over restoration based HBs

Unlike in the USA, HB in Latin America could be predominated by conservation (with sustainable natural resource use) rather than restoration activities, due to the large areas of primary, unprotected high biodiversity habitats in the region. However restoration and long-term management will still play a critical role, especially within ecosystems under intense development pressure and in small and unique biomes. For conservation based HBs, demonstrating additionality will be critical and could include the use of independent verification bodies to assess and compare baseline and project scenarios.

HBs defined according to habitat type rather than individual species

Due to the high number of endangered species within many Latin American habitats it may be appropriate to design a scheme where HB credits are equal to acres or hectares according to habitat type rather than relating it to individual species or habitat functionality. In some cases where the EIA process identifies impacts on an individual species then it may be more appropriate to use credits in the form of breeding pairs of these species.

Access rights to ecosystem services and natural resources

Changes or restrictions in access to natural resources and ecosystem services have led to violent social conflict in each case study, a recent example being the 2009 indigenous protests in northern Peru against the opening of vast areas of rainforest to oil drilling, logging and hydroelectric dams[9]. It will be important that HB schemes are designed with customary or formal access rights to ecosystem services and natural resources in mind. This may result in the establishment of habitat banks that incorporate the principles of REDD+, where sustainable natural resource extraction is permitted and even encouraged within the boundaries of the conservation area.

Using HB to provide additional conservation resource to national protected areas and buffer zones

Whilst habitat mitigation banks in the USA are focused on areas outside of the protected area network and impacts on protected areas are not permitted, in Latin America there are examples of project developments within buffer zones or protected areas. It is particularly important that the residual impacts of these projects are mitigated in order to maintain the integrity of protected areas.

Conservation and enforcement resource constraints in the protected area network in Latin America may also mean that illegal encroachment is still a threat. Habitat or wetland banking projects within protected areas could still provide 'additionality' by strengthening protection capacity and reducing this encroachment.

Restoration based habitat banks could also help strengthen degraded ecosystems within protected areas and buffer zones. Initiatives such as the Mesoamerican biological corridor which spans Central America could also be strengthened by habitat banks providing added connectivity between public or private protected areas.

Funding sources – pilot projects and market infrastructure

Stakeholder findings suggest that a number of funding sources may be needed in order to develop the necessary market support infrastructure. This includes but is not limited to monitoring and evaluation systems, the expansion of species and habitat inventories, HB databases, government guidance support for permittees and legal support services for HB credit transactions. This funding could also be used for pilot projects to assess the practical implications of managing HBs at project level.

Organisations that may be able to provide this early stage funding in Latin America were identified as national government agencies, private companies, multi-lateral institutions such as the Global Environment Facility, bi-lateral government support, private banks, development banks, private foundations and charities.

Investors to finance fully functioning markets

The transition from an early stage to a mature, scaled up market would be strengthened through the participation of investment banks, venture capital companies and commercial banks as well as the bank developers themselves. A

[9] Romero, S, (2009). *Fatal Clashes Erupt in Peru at Roadblock*. New York Times June 5th 2009.

key difference may be that the combination of lower profitability and higher risks discourage the investor groups identified above from making large-scale investments. This could result in a dominance of self-funded habitat banks until widespread profitability can be demonstrated and investment risks are mitigated. However, with low land prices in many remote habitat areas, the profitability of HBs may be high enough to attract external investment.

Capacity to provide market support services

In either a regulatory or voluntary form, the success of HB markets in Latin America will be dependent on support from a variety of stakeholders. Many countries in Latin America have experienced networks of universities and research institutions with the necessary experience in conservation and restoration science to provide a technical support and in some cases, monitoring service. Capacity building may be required in registry and market information services, with possible training needed for legal professionals who would be involved in the contracting and credit purchase process.

Employment creation and community benefits

The increased presence of rural or forest dependent communities in or around habitat areas suitable for HB in Latin America could mean that there is greater scope than in the USA to involve these communities in bank creation and generate new employment opportunities in the process. For further detail on what these benefits could be please see Table 7.

Potential barriers & risks to Habitat Banking development in LAC and mitigating actions

It is important to recognise that there are common barriers to the implementation of an establishment stage HB scheme in Latin America and risks that could negatively affect the growth of these schemes once they are established. In the following section these key barriers and risks are highlighted and appropriate mitigation actions are recommended to reduce any negative impact they may have.-

Policy and regulatory foundations

Gain political recognition for the value of HB within LAC countries

Prior to advances being made in the development of HB within LAC, the potential environmental and economic value of HB will need to be recognised both by national governments and the wider stakeholder communities. Without this support an HB system will not be able to grow and succeed at a national scale. There is a risk that important stakeholders from insider or outside government will oppose HB, which needs to be recognised and respected.

Recommended action

Before progress is made in the development of HB schemes, consultations are required with the appropriate environmental and permitting agencies. This will be vital in ensuring that national and where possible local governments are fully engaged in identifying the opportunities and risks that need to be addressed in the development of an HB scheme.

Another key step will be consulting with civil society organisations and academic institutions, who will be able to provide a wider stakeholder perspective on the perceived opportunities or risks posed by a HB scheme. Consultations will also be needed with business in order to gauge the willingness of the private sector to engage in HB.

Achieving national support for an HB system will be dependent on consultation steps being taken with all these stakeholders to the extent that resources allow.

Governmental change

This was cited as an important risk in countries where government departments are subject to senior staffing changes, restructuring and the reallocation of ministry responsibilities with the election of new governments. This may create

uncertainty for the continuity of HB regulation from one government to another without a legal framework in place. HB schemes could be particularly vulnerable to this change as they are partially reliant on pro-market environmental policies being in place.

Recommended action

Whilst it is not possible to entirely mitigate the risks associated with governmental change, the presence of a robust legal framework supporting habitat mitigation banking would be fundamental in protecting the continuity of a banking scheme. Supplementary to this, a non-governmental HB committee composed of stakeholders from industry, NGOs, academia and the relevant regulatory government agency could be established. This group could provide continuity during governmental change and provide a platform for communication with new administrations so that they are aware of the wider support these schemes have before deciding on their future.

Scope for integration with EIA and permitting process

Developing HB regulations into current environmental legislation

Whilst in all case study countries there are elements of wildlife legislation, forestry and EIA laws that would support a habitat mitigation scheme there are linkages and additions required before regulatory drivers are strong enough to generate demand within the private and public sectors. These changes, if politically and socially acceptable, could take *a considerable length of time* to implement and the drafting of guidance for developers may take even longer.

Recommended action

The potential biodiversity benefits of a HB scheme need to be presented to the appropriate environmental regulatory agency. Suggested regulatory adaptations need to presented, emphasising synchronicities between the aims of HB and national biodiversity objectives to increase private sector involvement in habitat conservation, the use of market based conservation mechanisms and the planning and management benefits from taking action to link legislation e.g. linking endangered species lists with sustainable forestry laws.

The mitigation hierarchy should also be formalised within the EIA and permitting process and guidance for 'like for like' compensation during the EIA process should be provided for developers. Guidance may also be provided on including non-biological factors in the 'like for like' assessment process, including the social and cultural characteristics of impact sites and corresponding HBs.

To increase the efficiency of regulatory change and the drafting of guidance for developers a task force could be created within the relevant environmental agency to drive this process forward.

This process should be used to specify the exact changes needed for a functioning regulatory framework. The more specific the guidance the easier for the changes to be made, once political will gives clearance to establish such market

Potential demand for credits

Cost competitiveness with existing compensation schemes

Compensation for terrestrial ecological impacts has been largely focused on reforestation and afforestation in Latin America which provides a low cost way for permittees to engage in ecological compensation. The presence of existing compensation mechanisms based on reforestation such as in FONAFIFO in Costa Rica and the National Forest Fund in Mexico may make it difficult to promote the more expensive option of paying for full ecosystem restoration through habitat bank purchases.

Recommended action

A transition should be made away from reforestation/afforestation schemes towards full restoration of native forests in habitat compensation programmes, so that the true costs of mitigating habitat impacts are reflected in the compensation process. Once these costs are realised, the purchase of habitat bank credits may present a much more economically competitive mitigation option for developers. An emphasis should also be placed on the possibility that engaging third-party specialists may be more cost effective for companies than creating their own wetland or habitat offsets.

Exemptions from the EIA process

Industries with a large 'footprint' on primary habitat in Latin America, such as domestically owned agribusiness and mining have not been subject to stringent EIA, mitigation and compensation processes. These industries could provide the bulk of the demand for habitat credits, if these processes were more comprehensively applied. Without their involvement a banking scheme may struggle to reach scale at a national level.

Recommended action

Requirements for a full biodiversity analysis of impacted sites need to be included in the EIA process rather than the use of indicator species only. The capacity of EIA enforcement agencies should be increased to ensure that findings from EIAs are followed up.

Ability to develop banks and supply credits

Partial species and habitat inventories

In some areas of Latin America there are still large areas of ecological importance outside the protected area network where species and habitat data is partial or non-existent. This could pose a challenge for potential wetland or habitat bank developers and regulators, making it difficult to select bank sites and determine credit quality.

Recommended action

In many case study countries efforts are underway to identify gaps in knowledge regarding national species and habitat inventories. It is important that these gap analyses are completed and action is taken to rectify these gaps through the provision of capacity building support within government and the development of partnerships with scientific research institutes to share species and habitat data.

Land Tenure

There may be significant challenges in parts of Latin America for bank developers to assert their legal rights to land ownership either due to deficiencies in the land registry system, overlapping land rights, an inability to enforce rights through the judicial system or the legal rights of the state to override private land ownership for national development purposes.

In the USA model, habitat banks must guarantee credits over the long term e.g. 50 years. Where bank developers cannot guarantee the longevity of habitat credits, it will be difficult to attract the investment needed for these banking schemes to grow

This risk varies greatly between countries and regions within these countries. For example in countries such as Panama land tenure risks are relatively low whereas in remote regions of Peru land conflict could pose a real threat to the longevity of HBs.

Recommended action

In order to ensure land tenure risks do not severely limit investment interest, developers could be offered subsidised legal support services from the government to enforce their rights to land or form partnerships with organisations with experience in implementing long term conservation projects in areas where land rights are disputed or difficult to enforce.

Maintenance of access to ecosystem service and natural resource rights

For those communities that live in and around habitat, maintaining access to ecosystem services in or near wetland or habitat banks will be critical. If wetland or habitat banks are managed for preservation purposes, without access for sustainable use, then communities will no longer be able to access these services. This could lead to severe conflict with habitat bank developers and have substantial negative impacts on the communities living in and around habitat areas.

Recommended action

Formal recognition of customary or community rights to ecosystem services and natural resources in the design of habitat banks. Incorporation of access rights to habitat banks for these communities to participate in sustainable extractive and economic activity e.g. sustainable timber harvesting, non-timber forest extraction and use of freshwater resources.

Land price rises and long term conservation agreements

Stakeholders felt that in some countries such as Panama, Costa Rica and the Yucatan Peninsula in Mexico historic and projected land price rises in coastal areas of interest to the residential and tourism sector would make it difficult for landowners to justify putting their land into long term conservation easements, thus missing out on the potential profit from selling their land. This could limit the land available for HB development in coastal areas, preventing the market from providing the necessary supply of coastal habitat bank credits for purchase.

Recommended action

One of the ways in which to reduce competition between land speculators and habitat bank developers is to implement or update zoning plans that reflect the ecological value of the land in question. Without this in place it will continue to be difficult to encourage landowners to enter long term conservation agreements where residential and tourism development demand accelerates land price increases. It should also be emphasised that there could be a 'first-mover' advantage for banking companies in these high development areas, where demand for mitigation could raise credit-prices and bank profitably.

Country report summaries

This section provides a summary of each full country report produced as part of the study. The reports for Chile, Costa Rica, Mexico, Panama and Peru were based on stakeholder workshop consultations which has allowed for a full country analysis against the feasibility framework along with the inclusion of a hypothetical banking system diagram for each country. In the case of Argentina, Brazil and Colombia where feasibility framework analyses were not carried out, an executive summary of each full country report is provided.

Chile

Overall Feasibility rating for HB: Tier 1

Opportunities for developing HB in Chile:

- The 'New Native Forest Law' could support the development of HB, subject to adaptations being made to strengthen the emphasis on 'like for like' ecological compensation. (see section 3.3 of the Chile country report)
- There are numerous organisations and groups demonstrating their technical capacity for restoration projects in the Valdivian forest region and wetland restoration projects (see section 3.11 of the Chile country report)
- There are numerous examples of cross-sector ecological evaluation studies, social and environmental compensation payment schemes and plans to incentivise private sector engagement in biodiversity conservation in Chile (see section 3.9 of the Chile country report)
- Private ecosystem restoration and conservation management projects are relatively well established in Chile including the involvement of companies from the mining and energy sector in the creation of habitat offsets e.g, the management of the *Conchalí* lagoon by the *Los Pelambres* Copper mining company (see sections 2.3 and 3.11 of the Chile country report)
- There is a strong network of research institutions that could support the design and monitoring of a banking scheme (see section 4.4 of the Chile country report)
- Strong national and international funding potential for establishing HB market support infrastructure (see section 4.3 of the Chile Country report)
- Secure land title arrangements in place for HB developers (see section 3.10 of the Chile country report)

Executive summary

Policy and regulatory foundations

Chile has both national biodiversity and wetlands strategies, established since 2003 and 2005 respectively. HB could provide an important supporting role to the objectives set out in these strategies, in particular in renewing efforts to 'protect all major ecosystems by 2010'. Stakeholder consultation indicates that in some aspects these strategies have not translated into direct action, although the conservation agenda in Chile has recently received further regulation support through the 'New Native Forest Law'. This regulation provides a potential basis for the development of HB, subject to adaptations being made to strengthen the emphasis on 'like for like' compensation. This could be strongly supported by an extension of the Wildlife Hunting Law to restrict impacts on habitat, so that non-forest ecosystems could be included in a regulatory banking scheme.

Scope for integration with EIA and permitting process

EIA results may require compensatory action by project developers although there are no clear guidelines for the levels and forms of compensation that should be taken for different types of ecosystem impact. It is most often the case that the developer presents a compensation plan, which is usually focused on cash payments or infrastructure projects for communities affected by the project, to then be approved by the permitting agency.

EIAs include the need for a 'closing plan', that when a company stops operating they should restore the area back to as close to its original state as possible. However, most closing actions are aimed at satisfying local communities as opposed to restoring the ecological function of the impacted area. Where closing plans are not feasible, wetland or HB schemes could provide a way to ensure that there is no net habitat loss from project impacts.

Whilst Chile's EIA laws and systems are relatively advanced there are still gaps present that would require filling prior to a regulatory wetland or habitat mitigation scheme becoming fully functional. These gaps come from the lack of emphasis on 'like for like' ecological compensation and the prioritisation of the regulation for impacts on habitats adjacent to protected areas as opposed to the many endangered habitats that exist away from the protected network.

Potential demand for credits

Natural habitat areas in the central region of Chile are subject to the greatest development and degradation pressures in the country whilst containing the highest levels of biodiversity, such as the unique Valdivian forest ecosystem. The North of Chile has experienced severe pressure on wetland habitats from a variety of sources, including water extraction by the mining industry which could form the basis of an industry/provincial level wetland mitigation scheme. Over a quarter of Chile's land area is made up of primary habitat, where an emphasis on conservation based habitat banks may be required, although there is still a great need for restoration to degraded ecosystems. Although there is a concentration of private and public protected areas in the South of Chile, threats to habitat are lower than in the central and northern parts of the country, which may lessen the demand for habitat banks in this area.

The mining sector in Chile has taken early steps to restore and compensate for habitat impacts, and given the scale of the sector's impact in Northern Chile this could provide sufficient demand for an industry specific scheme. The New Native Forest Law may also provide incentives for involvement in HB from the forestry industry and other industries with forestry impacts such as hydroelectric power companies. One area of concern highlighted by consultees was how economically competitive habitat credits would be against current compensation costs, although if 'Like for Like' offsetting is incorporated into EIA law the purchase of credits could present the most economic permittee option.

Ability to develop banks and supply credits

There has been significant funding interest in environmental conservation from multi-lateral institutions and private entities, which could provide the funding need to support market infrastructure development or pilot banking projects. The high levels of primary forest cover in Chile may mean that for HB, conservation based management could form the central component of a banking scheme although there is widespread scope for restoration based work, with numerous organisations and groups demonstrating their technical capacity for restoration projects in the Valdivian forest region and wetland restoration projects.

It will be critical that if a habitat or wetland banking scheme is to succeed, indigenous rights to ecosystem services and natural resources are respected. If they are not, then there could be a substantial damaging effect for communities living in and around habitat areas. In the design of banking schemes these rights must be considered, which could mean that sustainable extractive use of natural resources within the boundaries of HBs.

Relevant initiatives already in place in Chile

There are numerous examples of cross-sector ecological evaluation studies, social and environmental compensation payment schemes and plans to incentivise private sector engagement in biodiversity conservation in Chile (see sections 2 and 3 of the Chile country report for more detail). The New Forest Law (701) and the issuance of clean agreements signed between the government and the Mining Council provides one of the best examples where existing environmental initiatives could be supported by HB.

Case study of complementary initiative for HB in Chile:

The New Forest Law (701)

The New Forest Law has been applied to EIAs for mining projects which have a deforestation impact on native forest. According to the consultation group this has made it more straightforward for mining and other companies to define the level of compensation needed per hectare of habitat. Mining companies have so-called 'clean agreements' signed with government and the Mining Council which outline 'good practice' regarding how the environmental management of the mining concession is carried out. Whilst these agreements are focused on matters such as waste management and acid drainage[10], they could be amended to emphasise biodiversity management and recommendations for wetland or habitat bank credit purchase.

Feasibility framework summary

The following framework gives a summary of the presence of the core elements needed for the establishment of a regulatory HB scheme. An assessment is given for each element according to whether it is non-existent, has limited elements in development, present but not satisfactory or adequate presence. This is used for high level comparison with other countries in the region in the analysis of Latin American regional potential.

Chile's feasibility assessment is one of the most favourable within the case study countries. This can be largely attributed to a presence of laws supporting ecological compensation for habitat impacts, industry sectors with a track record of ecological compensation, the presence of a strong private conservation community, land title security and a strong network of research institutions to support a banking scheme.

There are however areas where Chile could improve feasibility scoring. These are related to the improvements which may be needed in the enforcement of EIA findings and more generally the follow up of national strategy with practical biodiversity conservation initiatives. There may also be uncertainty around the legality of customary land right claims by indigenous groups which could complicate the role of these groups in bank development.

Chile is rated consistently highly in policy and regulation due to the emphasis on ecosystem valuation and no-net loss within national strategy; although there is room for further implementation of the objectives in these strategies. Emphasis on environmental mitigation in the EIA process and the use of compensation in laws such as the New Native Forest Law also contribute to these higher ratings.

Private ecosystem restoration and conservation management projects are relatively well established in Chile and include involvement of companies from the mining and oil and gas sector, which could be important in establishing an early stage banking scheme. This is backed up by the presence of a network of research institutions to support the design and monitoring of a banking scheme and strong national and international funding potential.

10 Irarrázabal, R, (2005). Mining Investment and Policy Developments: Argentina, Chile and Peru. Centre for Energy, Petroleum and Mineral Law & Policy, University of Dundee.

Four core aspects of feasibility assessment	Assessment: Non-existent	Limited elements/ in development	Present but not satisfactory	Adequate presence	Suggested next steps
1 – Policy and regulatory foundations					
Policy exploration and developments					
Political interest in the concept of No Net Loss (NNL)					Target of 'protecting all major ecosystems by 2010' in 2003 Biodiversity Strategy reassessed and implementation plan developed
Understanding of the values which wetlands and other habitat types have for the economy					Objective 2.6 of Chile's wetland conservation strategy, to develop economic valuation methodologies used as the platform for a national valuation initiative. Consolidation of individual valuation studies e.g., for Valdivian forest
Regulatory foundations					
Possibility of country setting up an 'Endangered Species Act' equivalent					Inclusion of restrictions on impacts on species habitat within the Wildlife Hunting Law (*Ley de Caza* 4.601)
Implementation of RAMSAR, the Convention on Biological Diversity and other international conventions					Review of national regulation against CBD principles
2 – Scope for integration within EIA and permitting process					
EIA mitigation requirements					
Consistent application of mitigation hierarchy within EIAs for development projects					Further guidelines and training provided to EIA consultants on the application of the mitigation hierarchy
Inclusion of compensation requirements within EIAs					Expansion of compensation requirements to habitats falling outside the New Native Forest Law
Requirement and completion of EIAs for all key activities impacting on habitat					Extension of EIA requirements to activities impacting habitat other than that neighbouring to protected areas
Compensation requirements					
Compensation payments determined using a consistent and robust approach					Extension of compensation payment guidelines outside New Native Forest Law and increased involvement of permitting agencies in determining payment schemes
Use of compensation funds to directly address ecological impacts					Increase in emphasis on ecosystem restoration within the reforestation requirements of the 'New Native Forest Law' and expansion of social

from development		■		compensation to ecological restoration e.g. for hydroelectric power projects
EIA enforcement and monitoring				
Adequate follow up and enforcement of mitigation requirements within EIAs	■			Investment in enforcement capacity within the Ministry of Environment and COREMA
Consistent and direct link between EIA findings and permitting requirements		■		Elevated priority given to ecological impacts in the permitting decision process for habitat not covered by New Native Forest Law
Clear definition of institutional responsibilities		■		Definition of where responsibilities would be divided between COREMA and the Ministry of Environment in a wetland or HB scheme
3 – Potential demand for credits				
Current compliance costs high enough for there to be developer demand for alternatives		■		Clarification of current average compensation costs specific to reforestation and habitat restoration
4 – Ability to develop banks and supply credits				
Support from landowners				
Interest in long term land conservation agreements despite current and/or future land price rises			■	Further demonstration of interest in private conservation projects in areas with high development pressure, especially in the central zone.
Presence of larger landowners who may consider long term conservation agreements			■	Awareness raising within private sector of opportunities from land conservation, especially in the central and northern parts of the country
Ease of registering land as a private reserve		■		Use of lessons from current private reserves, especially in south of the country and guidance provided for provincial governments in central and northern regions.
Scope for involvement of indigenous reserves in establishing banks		■		Establishment of clear guidelines for the establishment of conservation management projects on unregistered indigenous land
Conservation contexts and ability to supply credits				
Processes in place to identify threatened areas of natural habitats		■		Consolidation of individual inventory projects and follow through on biodiversity strategy objectives of coordinating University research network
Presence of groups with capacity to establish and manage 10			■	Numerous NGOs and private companies with the capacity and previous experience in restoring wetlands and habitat

wetland/habitat banks in the next 2 years				
Presence of groups with existing science and conservation experience of relevance to HB				Combined expertise between academic institutions and the NGO community
Risks for buyers of credits				
Secure land title arrangements and liabilities of these to change				According to consultation group land title is secure in Chile with land only expropriated for national level infrastructure projects
Ability to establish long term projects on untitled land (e.g. where only 'possession rights' apply)				Establishment of clear guidelines for establishment of conservation management projects on unregistered land
Ability to uphold credit agreements and enforce legal claims to recourse in case of project failure				Guidance provided on how community based wetland or habitat banks can access public defenders through regional government legal services
Funding for development of HB				
Availability of capital in country for financing wetland or habitat banks, including endowing trusts,				Further work needed to encourage interest from the financial sector in biodiversity conservation
Presence of domestic funding sources to support the development of banks – either on a grant basis or for profit				Public funding has previously been made available for forest conservation initiatives (e.g. USA$8 million per year to support the New Native Forests Law funds) although new funding streams would need to be established.
Presence of international funding sources to support banking schemes				Consultation with GEF, EC, private financial institutions and IADB regarding funding possibilities for piloting banking projects, national capacity building and building market support infrastructure

Looking forward

Potential regulations to be introduced for the establishment of an HB scheme

For a regulatory HB scheme to develop in Chile the following high level changes may need to be made in EIA and environmental regulation:

- Adaptation of current EIA law so that the purpose of the compensation measures is to offset environmental damage with 'like for like' compensation as opposed to 'generate an alternative positive effect which offsets environmental damage'[11].
- Issue guidance for 'like for like' compensation during the EIA process where developers are required to purchase biodiversity offsets or develop them on their own land.
- Inclusion of restrictions on impacting species habitat within the Wildlife Hunting Law (*Ley de Caza* 4.601).
- An equivalent law to the New Native Forest Law (DS.20.283) which incentivises the protection and restoration of other ecosystems within Chile, including wetlands.
- Potential allowance within the regulation for a transfer of liability from permittees to wetland mitigation and HB companies

Potential institutional responsibilities for a regulatory banking scheme

The table below provides an outline of the role that government institutions could play in implementing a regulatory market and a suggestion of which institutions may be best placed to fill these roles. For an analysis of institutional arrangements and capacities for monitoring and enforcing EIA and compensation regulations for a HB scheme see p.15 of the Chile country report.

Market role	Government institution responsible
Set regulations	The Ministry of the Environment
Enforce regulations	The Ministry of the Environment
Determine credit equivalency	The Biodiversity and Private Areas Service
Approve issuance of credits	Regional Environmental Commission (COREMA)
Monitor compliance with credit agreements	COREMA
Development and management of bank databases	The Ministry of the Environment

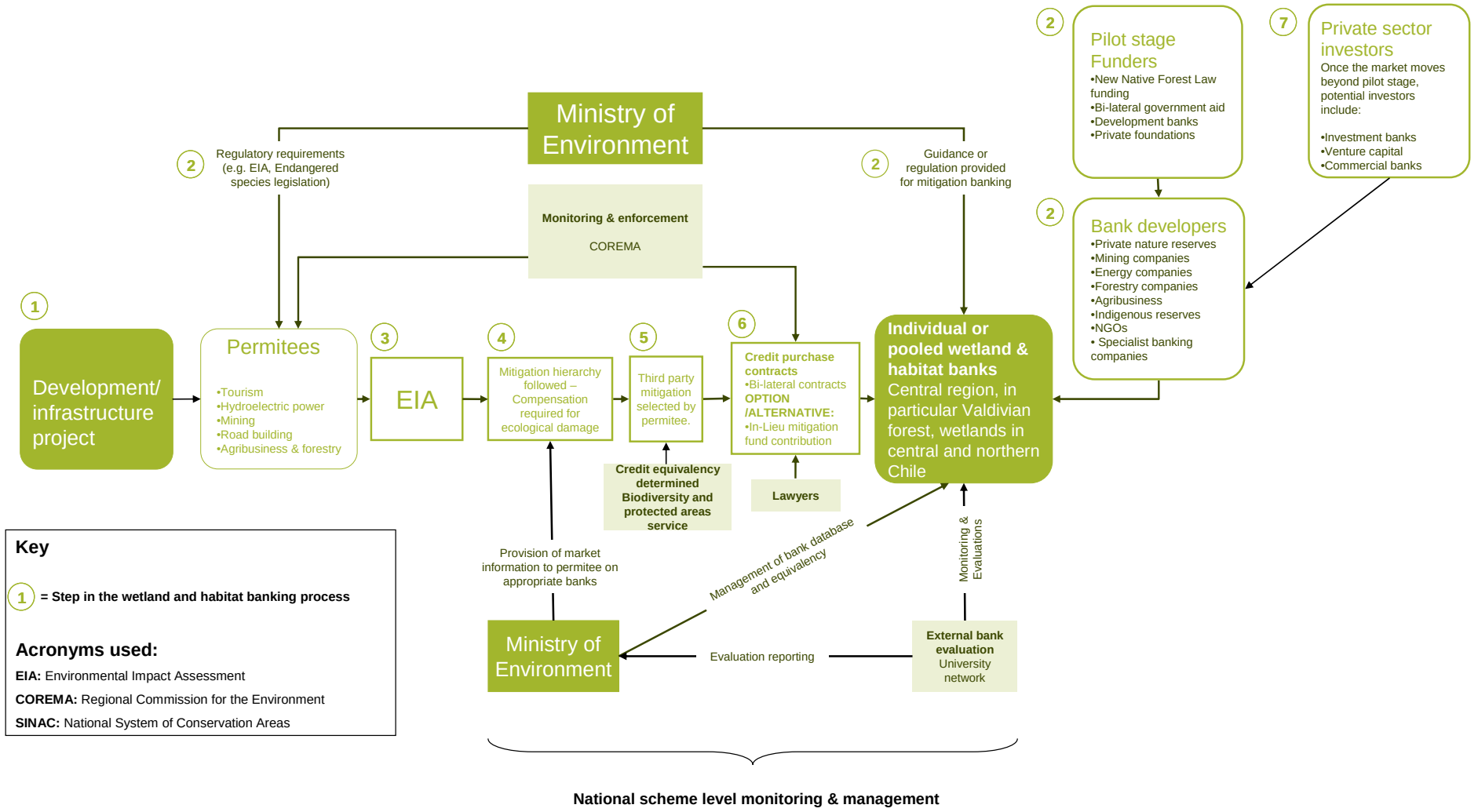
Suggested ways forward

Consultation with the Ministry of Environment and the Regional Environmental Commission (COREMA) is needed to establish the scope for incorporating HB into current regulation and to fund early stage development through national funds. This could be accompanied with an exploration of industry/provincial specific mitigation banking schemes, focusing on the mining, energy and forestry sectors with potential involvement from the agriculture and fisheries companies. There is potential for industry/provincial schemes to operate on a voluntary basis using pooled funds, although this is less likely to lead to a scalable and sustainable development of a banking scheme.

The diagram below provides a hypothetical framework for the establishment of a Chilean HB system based on the findings of this report.

11 Baker & McKenzie, (1997). The Environmental Impact Assessment System under Chilean Law. Latin American Legal Developments Bulletin Vol.5; No.3.

Figure 4 : A hypothetical HB system for Chile



Costa Rica

Feasibility rating: Tier 1

Opportunities for developing HB in Costa Rica:

- Voluntary compensation, focused on reforestation and forest protection is encouraged through schemes such as the National Forest Fund (FONAFIFO) programme (see Costa Rica country report section 3.3).
- There is a well developed private reserve and eco-tourism network in Costa Rica which contains organisations with the capacity needed to establish habitat banks, supported by the numerous conservation NGOs and research institutions based around the country (see Costa Rica country report section 3.11).
- The tourism sector may provide one of the first markets for bank credits, taking into account Costa Rica's eco-tourism based model which fits with the 'no-net loss' principle of mitigation banking. Credits could take the form of 'biodiversity positive' certification for tourism developers, so that bank purchases lead to an advantage in the market (see Costa Rica country report section 4.2).
- International funding has been made available to support the transition from PES to direct market based mechanisms in Costa Rica, such as the World Bank's $30 million loan and $10 million GEF grant for 'Mainstreaming of Market Based Instruments for Environmental Management' (see Costa Rica country report section 4.3).
- Gaps in Costa Rica's protected area network are well identified and there is a relatively high level of data available on species distribution and habitat types to inform the design of a wetland or HB scheme (see Costa Rica country report section 2.1).
- A banking scheme could help to address and fill gaps in the Mesoamerican biological corridor and protected area networks (see Costa Rica country report section 2.2).

Executive summary

Policy and regulatory foundations

The Costa Rican government has a world leading position in the development of Payment for Ecosystem Service (PES) schemes and has made significant progress in maintaining the nation's forest cover. This success has created positive political will regarding the economic value of natural habitat, underpinned by the tangible value it adds to the country's growing tourism industry. However this success has been balanced against a continued loss of primary habitat and biodiversity. In this regard Costa Rica appears to share many of the same challenges to protecting habitat as other Latin American nations.

Voluntary compensation, focused on reforestation and forest protection is encouraged through schemes such as the FONAFIFO programme.

Scope for integration with EIA and permitting process

EIAs may require a stronger emphasis on the application of the mitigation hierarchy for an HB system to be fully integrated into the permitting process. Where permitees' actions impact protected areas the EIA processes require compensation but not on a 'like for like' basis. EIAs in environmentally sensitive areas include the need for permittees to pay 1% 'environmental guarantees' which could potentially be used to fund HB purchases.

Potential demand for credits

Half of Costa Rica's land area is forested but there are large areas of degraded former pasture or agricultural land that are in need of restoration in order to reconnect some of the most biodiverse forest on earth. This includes dry forest ecosystems in the northwest of the country, rain shadow forest along the Pacific coast, forests on the northern Caribbean coast cleared for banana plantation and the forests of the Osa peninsula. Gaps in Costa Rica's protected area network are well identified and there is a relatively high level of data available on species distribution and habitat types to inform the design of a wetland or HB scheme. Moreover, a banking scheme could help to address and fill gaps in the Mesoamerican biological corridor and protected area networks.

Amistad and Osa contain the largest mangrove system in Central America and could benefit greatly from coastal wetland conservation and restoration based banks. In regards to inland wetlands the areas around Juan Castro Blanco National Park, parts of the central valley and wetlands south of *Parque Nacional Tortuguero* could provide important sites for restoration and protection.

The tourism sector may provide one of the first markets for bank credits, taking into account Costa Rica's eco-tourism based model which fits with the 'no-net loss' principle of mitigation banking. Credits could take the form of 'biodiversity positive' certification for tourism developers, so that bank purchases lead to an advantage in the market. The mining and hydro-electric power sectors would also be likely to be early buyers in the market based on their previous engagement with ecological compensation and the desire to maintain their 'licence to operate'. However, with low current reforestation based compensation schemes costs as little as $64 per hectare per year it may be difficult for habitat banks to compete without an increase in demand for full ecosystem restoration.

Ability to develop banks and supply credits

International funding has been made available to support the transition from PES to direct market based mechanisms in Costa Rica, such as the World Bank's $30 million loan and $10 million GEF grant for 'Mainstreaming of Market Based Instruments for Environmental Management'. There may also be the political will necessary for domestic funding to be directed to infrastructure development for HB.

The well developed private reserve and eco-tourism network in Costa Rica contains organisations with the capacity needed to establish habitat banks, supported by the numerous conservation NGOs and research institutions based around the country. There may be an opportunity through the use of habitat banks to provide full ecosystem restoration in buffer and corridor zones, strengthening Costa Rica's efforts to create connectivity between its protected areas and adding to the function of the Mesoamerican corridor.

In the design of a potential habitat bank scheme it will be crucial to the ecosystem service access rights of local communities are taken into account fully, and that banking projects allow for sustainable natural resource use by these communities.

Relevant initiatives already in place in Costa Rica

There are numerous examples of PES schemes, permittee environmental compensation payments and initiatives supporting the transition to direct market based conservation mechanisms in Costa Rica (see sections 2 and 3 of the Costa Rica country report for more detail). The Payments for Environmental Services (PSA) programme provides one of the best examples where existing environmental initiatives could be supported by HB.

Case study of relevant initiatives for HB in Costa Rica:

Payment for Environmental Services (PSA) programme:

The high profile PSA programme, established in 1996 through the Ministry of Environment involves a payment from the National Forestry Trust Fund at a base rate of $40 per hectare (depending on forest type) to landowners to protect forest on their land. The majority of the money for this trust fund comes from a tax added to fuel sales in Costa Rica, supplemented by 'environmental credits', sold to businesses and other sources of international finance.

Up until 2006 the PSA programme has protected approximately 250,000 hectares of forest[12], and has transferred around $80 million dollars to landowners. The price per hectare is set by the government and not through a direct market-based mechanism for biodiversity services and therefore the payments may not reflect the true financial costs of effective conservation of biodiversity. Prices are based on the Costa Rica Central government's ability to pay rather than on supply and demand for the service.

Even with this in mind, the programme in Costa Rica has been very successful in attributing higher economic value to biodiversity and in helping to protect and increase forest cover. The current loan financing for PSA schemes in Costa Rica ends in 2012 and HB could provide an option for continuing the finance available for conserving forest. It may also be possible to integrate HB systems within the current PSA framework, using the certification given to the private sector donors who make voluntary contributions to the fund for the protection of forest and ecosystem services in their areas of operation. This could be developed so that companies purchase certificates linked to HBs that provide ecological equivalence to areas impacted by their operations. This may encourage the engagement of sectors such as the tourist industry, where certification could help to meet consumer or investor demand for companies to lower their biodiversity impacts.

Feasibility framework summary

The following framework gives a summary of the presence of the core elements needed for the establishment of a regulatory HB scheme. An assessment is given for each element according to whether it is non-existent, has limited elements in development, present but not satisfactory or adequate presence. This is used for high level comparison with other countries in the region in the analysis of Latin American regional potential.

Costa Rica's high feasibility ratings can be largely attributed to the level of political support for biodiversity conservation and widespread recognition of the role for market based conservation mechanisms Costa Rica's protected area gaps.

Costa Rica's assessment would be even more favourable if there was a greater integration of environmental mitigation measures in the EIA process with increased levels of guidance and enforcement provided by MINAE. Where compensation actions for impacts on natural habitat are required it is not on a 'like for like' basis and instead is focused on activities that do not provide full ecological equivalence.

Another potential obstacle for the development of a HB scheme is that the environmental management plans produced during the EIA process may not always be enforced. Where enforcement is followed through, the fines administered are reported to be very low in relation to project budgets or overturned through legal challenge. The remaining issue that limits Costa Rica's feasibility scoring is the uncertainty over how overlapping land rights would impact bank development, particularly by indigenous groups.

Costa Rica's most favourable feasibility assessments relate to the strong presence of national market mechanisms for environmental conservation, and a widespread recognition of the need to utilise private sector investment to fill the gaps that exist in the country's protected area network. This is fortified by a strong private conservation sector, and the availability of world class conservation research facilities to support the design and development of a habitat and

12 World Bank, 2006. Available online: web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTEEI/0,,contentMDK:21647925~menuPK:1187844~pagePK:210058~piPK:210062~theSitePK:408050~isCURL:Y~isCURL:Y,00.html

wetland banking market. There is also strong funder interest in biodiversity conservation in Costa Rica, where grant funding could have a large impact on the development of a banking scheme within a relatively small country territory.

	Assessment				Evidence/suggested next steps
Four core aspects of feasibility assessment	Non-existent	Limited elements /in development	Present but not satisfactory	Adequate presence	
1 – Policy and regulatory foundations					
Policy exploration and developments					
Political interest in the concept of No Net Loss (NNL)					Has been clearly demonstrated through national schemes such as FONAFIFO
Understanding of the values which wetlands and other habitat types have for the economy					There has been a sustained effort by MINAE to evaluate the role of Costa Rica's ecosystems in the national development process
Regulatory foundations					
Possibility of country setting up an 'Endangered Species Act' equivalent					Stronger linkage of Wildlife Act to EIA regulation for specific mitigation of impacts on endangered species
Implementation of RAMSAR, the Convention on Biological Diversity and other international conventions					Costa Rica has taken a leading position in implementation of international agreements
2 – Scope for integration within EIA and permitting process					
EIA mitigation requirements					
Consistent application of mitigation hierarchy within EIAs for development projects					Introduction of mitigation hierarchy requirements within the EIA process
Inclusion of compensation requirements within EIAs					Use of 1% environmental guarantees for 'like for like' ecological compensation activities
Requirement and completion of EIAs for all key activities impacting on habitat					Further enforcement of EIAs to include impact on key activities
Compensation requirements					
Compensation payments determined using a consistent and robust approach					SETENA increase monitoring of EIA consultants to ensure mitigation and compensation guidance is being adhered to. Full biodiversity assessments included in EIAs
Use of compensation funds to directly address ecological impacts from development					Whilst some compensation funds reforestation with native species, explicit aim to restore full ecosystem functionality needs inclusion in EIA regulation
EIA enforcement and monitoring					

Adequate follow up and enforcement of mitigation requirements within EIAs	Investment in enforcement capacity within OCA
Consistent and direct link between EIA findings and permitting requirements	Permitting requirements require action on species specific impacts as a result of biodiversity assessments
Clear definition of institutional responsibilities	Definition of roles between OCA and SETENA in the monitoring of a HB scheme
3 – Potential demand for credits	
Current compliance costs high enough for there to be developer demand for alternatives	Increase in compensation and fining costs and standardisation of compensation levels
4 – Ability to develop banks and supply credits	
Support from landowners	
Interest in long term land conservation agreements despite current and/or future land price rises	Costa Rica has a strong private reserve network and widespread recognition of economic value of conserving ecosystems, primarily associated with ecotourism revenues
Presence of larger landowners who may consider long term conservation agreements	Further awareness-raising within the agricultural and forestry industries of potential to restore degraded forestland
Ease of registering land as a private reserve	Guidance given to current private reserve owners regarding HB
Scope for involvement of indigenous reserves in establishing banks	Previous engagement of indigenous groups in PES schemes and large areas of primary and degraded forestland within indigenous territories. Overlapping land rights may cause problems for groups without land title ownership and require clarification
Conservation contexts and ability to supply credits	
Processes in place to identify threatened areas of natural habitats	SINAC have carried out the *Gruas II* project (see section 2.1 and 3.5). Integration of HB to fill gaps identified
Presence of groups with capacity to establish and manage 10 wetland/habitat banks in the next 2 years	Consultation to confirm interest from strong network of private reserves and potential market support from both local and international NGOs
Presence of groups with existing science and conservation experience of relevance to HB	Strong presence of domestic and international academic institutions consultancies and NGO with relevant experience and competencies

Risks for buyers of credits	
Secure land title arrangements and liabilities of these to change	Clarification of land rights for bank developers from Ministry of National Planning and Economy)
Ability to establish long term projects on untitled land (e.g. where only ‘possession rights’ apply)	Consultation with private reserve owners for examples where conservation easements have been established in previously untitled land
Ability to uphold credit agreements and enforce legal claims to recourse in case of project failure	Arrangements for legal aid or guidelines for bank developers in the processes to enforce legal claims to land
Funding for development of HB	
Availability of capital in country for financing wetland or habitat banks, including endowing trusts,	Potential funding sources such as FONAFIFO and 1% bonds fund consulted to determine if wetland or HB may be within funding remit
Presence of domestic funding sources to support the development of banks – either on a grant basis or for profit	See above
Presence of international funding sources to support banking schemes	Consultation with IADB, GEF, Moore Foundation, MacArthur Foundation, Netherlands and Norway development agencies regarding funding possibilities for piloting banking projects and national capacity building

Looking forward

Potential regulations to be introduced for the establishment of an HB scheme

For a regulatory HB scheme to develop in Costa Rica the following high level changes might need to be made in EIA and environmental regulation:

- Adapt reforestation payment schemes so that more holistic habitat restoration is emphasised for impacts on primary forest habitat as opposed to reforestation with a small range of native species that does not mirror natural succession.
- Increase the capacity of EIA enforcement agencies (SETENA/OCA) to ensure that findings from EIAs are followed up.
- Add requirement for full biodiversity analysis of impacted site rather than the use of indicator species only, promoting partnerships with institutions that hold detailed biological data for natural habitat types.
- Specific reference to restrictions on destruction of endangered species habitat as listed in The Wildlife Act and inclusion of mitigation requirements for these impacts within EIA regulation.

Potential institutional responsibilities for a regulatory banking scheme

The table below provides an outline of the role that government institutions could play in implementing a regulatory market and a suggestion of which institutions may be best placed to fill these roles.

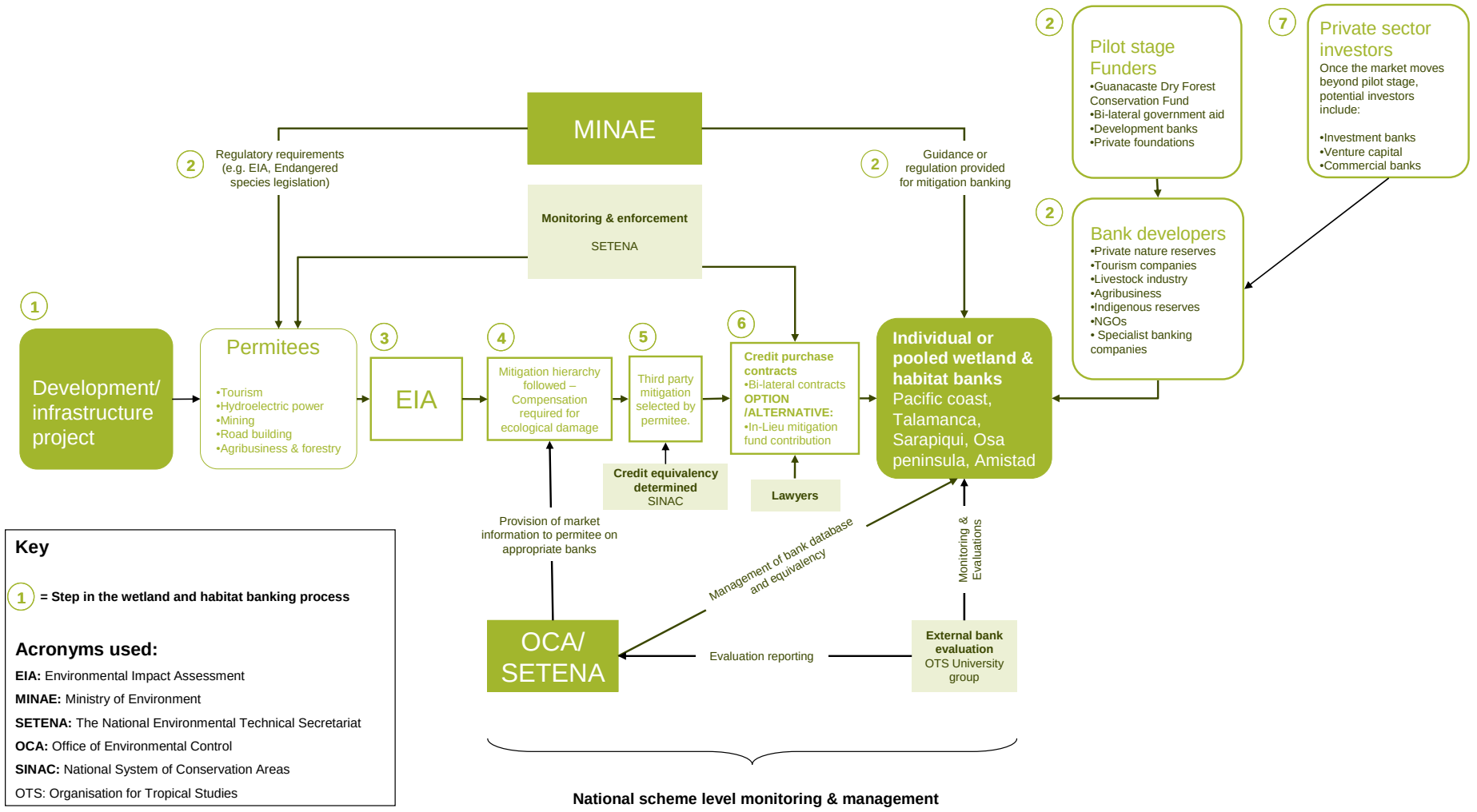
Market role	Government institution responsible
Set regulations	MINAE
Enforce regulations	SETENA – Enforcement of need to mitigate and compensate for impacts on natural environment on an ecological 'like for like' basis by developers.
Determine credit equivalency	SINAC (National Protected Areas Service) – Approval of wetland or habitat bank design and management plans
Approve issuance of credits	SETENA
Monitor compliance with credit agreements	OCA
Development and management of bank databases	SETENA – Integration of bank database within national protected area database to reinforce role of banking in the Mesoamerican corridor initiative

Suggested ways forward

An establishment phase regulatory market could target developers that have an impact on protected areas and buffer zones, beginning with municipality level piloting schemes before scaling up to a national level. A voluntary market could be developed through adapting the current FONAFIFO PES framework and issuing certificates linked to wetland or habitat bank purchases. In either case HB could be one way of delivering on Costa Rica's numerous national policy and regulatory commitments to biodiversity conservation.

The diagram below provides a hypothetical framework for the establishment of a Costa Rican HB system based on the findings of this report.

Figure 5 : A hypothetical HB system for Costa Rica



Mexico

Feasibility rating: Tier 1

Opportunities for developing HB in Mexico include:

- Strong presence of existing compensation and conservation funds such as the Mexican Fund for the Conservation of Nature, CONAFOR fund and CONABIO fund (see Mexico country report section 3.2).
- The government PROFEPA and CONABIO 'Program for Restoration and Compensation' could provide the framework for offsetting habitat impacts through offsite mitigation (see Mexico country report section 3.2).
- There is the potential for a broad distribution of the economic benefits of HB, if community habitat banks are developed using the *ejido* communal ownership structure (see Mexico country report section 3.10).
- Governmental forestry and conservation projects have been integrated into zoning planning processes, some of which have led to the creation of community protected areas which could provide HB functions (see Mexico country report section 3.8).
- Investment in institutions such as CONABIO and INE and well established links with university and NGO networks also mean that the Mexican government has the access to data and research capacity needed for the design of an early stage banking scheme (see Mexico country report section 4.4).
- There is a strong network of institutions and partnerships with expertise in habitat restoration that could lead the development of HBs (see Mexico country report section 3.11).

Executive summary

Policy and regulatory foundations

Whilst Mexico has instituted a variety of large-scale schemes that recognise the economic value of ecosystem services, this has been focused on 'Payments for Ecosystem Services' and has not yet led to the development of true ecosystem service markets. Investment in institutions such as CONABIO and INE and well established links with university and NGO networks also mean that the Mexican government has the access to data and research capacity needed for the design of an early stage banking scheme.

Scope for integration with EIA and permitting process

Similar to other countries in the region, Mexican wildlife, EIA and water regulation would not, in its current form, provide the regulatory drivers needed for the growth of a national banking scheme.

Environmental Impact Assessment's are carried out through the Semarnat which has the power to authorise the work or activity in question. Conditions for acceptance may include the need to avoid, mitigate or offset adverse environmental impacts of the project[13]. The inclusion of offsets as a mitigation action may provide a starting point for introducing third party offsetting. The Program for Restoration and Compensation (see Case study of relevant initiative for HB in Mexico) which provides the framework for offsetting habitat impacts through offsite mitigation.

Potential demand for credits

Mexico is one of the five most species rich countries on earth and a relatively high percentage of these species are classified as threatened. There is a pressing need for increased investment in biodiversity conservation in the country, especially for the large areas of priority habitat for protection and restoration that lie outside of the protected area network. HB could play a key role in filling in these gaps, particularly in the shrubland ecosystems of Baja California, tropical forest and wetland ecosystems in the Yucatan Peninsula and shrubland and grassland in Tamaulipas, Zacatecas and San Louis Potosi. A banking scheme could also support and grow *ejido* based conservation projects on communal land, starting with Oaxaca and Guerrero.

13 Instituto Nacional Ecologica, (2007). Recomendaciones del INE para majorar el Sistema de Compensacion Ambiental ante el Impacto Ambiental sobre Infraestructura.

There have been limited examples where developers have transferred compensation funds into private trust funds and disbursed grants to conservation NGOs to create resources for restoration. The consultees also reported that there have been cases where developers make private compensation deals with local landowners. For example Coca-Cola is funding a Pronatura ecological restoration and water harvesting project over 6 years in 25,000 hectares of land across 133 communities in 17 states. This type of cross sector partnership could act as a precedent for the piloting of habitat banks[14].

Demand for credits may be highest from the energy, mining sectors which face international pressure to mitigate their environmental impacts and where some companies have funded environmental and conservation programmes in and around their areas of operation. In regions with high levels of ecological or cultural tourism such as in the 'Mayan Riveria' of the Yucatan Peninsula, there may be a market advantage for tourism developers that can demonstrate a 'biodiversity positive' impact through the purchase of habitat credits.

Forest habitat offsetting is also supported by national funds such as the CONAFOR compensation fund, although it would require adaptation so that a direct link can be made between compensation payments and demand for HBs.

Ability to develop banks and supply credits

Mexico receives public funding from a variety of international donors for habitat restoration, which has helped build the in-country capacity needed to develop habitat banks. There is the potential for a broad distribution of the economic benefits of HB, if community habitat banks are developed using the *ejido* communal ownership structure. The success of a HB scheme would also be contingent on the degree to which access rights to ecosystem services by *ejido* communities are respected and the allowance of sustainable extractive activities within bank conservation management regimes.

Relevant initiatives already in place in Mexico

There are numerous examples of national ecological compensation funds, industry led conservation schemes and analyses of conservation and restoration priority areas (see sections 2 and 3 of the Mexico country report for more detail) that could be of relevance to HB in Mexico. The National Forest Commission (CONAFOR) Compensation fund, Federal Environmental Attorney (PROFEPA) and Commission for Knowledge and Use of Biodiversity (CONABIO) offsetting funds provide the best examples where existing environmental initiatives could be supported by HB.

14 Alejandra Salazar – Pronatura México, (2010), personal communication.

Case study of relevant initiative for HB in Mexico:

National Forest Commission (CONAFOR) Compensation fund, Federal Environmental Attorney (PROFEPA) and Commission for Knowledge and Use of Biodiversity (CONABIO) offsetting fund:

Developers currently have the option to create an offset themselves through paying into CONAFOR's compensation fund, for example the Mexican Petroleum Company (PEMEX) has aggregated all of their required offsets in a single 961 hectare Jaguarundi tropical rainforest conservation project near their refineries[15].

If developers take the option of paying into the CONAFOR fund, Mexican regulation requires a compensation ratio that is higher than 1:1. It is the responsibility of CONAFOR to set this ratio and the resulting funds are then used by CONAFOR to implement reforestation activities on behalf of the developer[16].

Compensation totals are calculated using the average cost of reforestation activities (not inclusive of land purchase) as opposed to the value of the ecosystem services impacted. There is also not a direct link between payments and specific reforestation areas which makes it difficult to assess the performance of the offset, and whether it provides a 'like for like' compensation function.[17]

The Federal Environmental Attorney (PROFEPA) currently receives payments in kind or in cash from developers damaging habitat through accidents or regulation violations. There is currently an agreement in place between PROFEPA and CONABIO to launch an offset-like programme called the 'Program for Environmental Restoration and Compensation' which aims to compensate for these accidents or violations through planned ecological restoration or recovery onsite. If this is not possible, the programme allows for the avoidance or the mitigation of damage elsewhere[18], echoing one of the fundamental principles of the USA mitigation scheme.

Feasibility framework summary

The following framework gives a summary of the presence of the core elements needed for the establishment of a regulatory HB scheme. An assessment is given for each element according to whether it is non-existent, has limited elements in development, present but not satisfactory or adequate presence. This is used for high level comparison with other countries in the region in the analysis of Latin American regional potential.

Mexico's relatively high feasibility is attributed to strong demonstrated interest by the government in market and offsetting mechanisms, supported by legislation such as the Sustainable Forestry Law and a strong political interest in biodiversity conservation through national and state biodiversity initiatives. This is backed up with high capacity conservation networks developed between NGOs, universities and government institutions to restore and conserve other habitat types as well as suitable site availability.

Mexico's other key advantage is that *ejido* communal land ownership could provide the legal structure necessary for communal habitat banks and a broad distribution of the economic benefits from banking. Mexico also performs strongly with regards to the presence of both domestic and international funders who would be appropriate for funding either pilot projects or the early stage infrastructure needed for a market to develop.

The key reason why Mexico does not achieve higher ratings is related to the limitations in the application of EIAs to all activities impacting habitat, in particular in the agribusiness and forestry sectors and because compensation funds do not yet create direct, attributable offsets for habitat impacts on a 'like for like basis'. The consultation group also expressed a concern that the follow up environmental management plans are not yet adequate and that the responsibility for determining compensation plans should lie not with EIA consultants but permitting agencies. There is

15 PEMEX, "Parque Ecológico Jaguaroundi," August 21, 2009. www.pemex.com/index.cfm?action=content&sectionID=3&catID=12460
16 Darbys et al., International Approaches to Compensation for Impacts on Biological Diversity. Final Report, Dresden and Berlin, March 2009, available at www.forest-trends.org/publication_details.php?publicationID=522
17 The Ecosystem Marketplace, (2010) State of Biodiversity Markets: Offset and Compensation Programs Worldwide. Forest Trends.
18 Darbi.M et al., International Approaches to Compensation for Impacts on Biological Diversity. Final Report, Dresden and Berlin, March 2009, available at www.forest-trends.org/publication_details.php?publicationID=522

also the question of whether or not current compensation and fining regimes create sufficient demands on developers so that the purchase of habitat credits is an economic and time-efficient method to meet regulatory obligations.

	Assessment				Suggested next steps
Four core aspects of feasibility assessment	**Non-existent**	**Limited elements/ in development**	**Present but not satisfactory**	**Adequate presence**	
1 – Policy and regulatory foundations					
Policy exploration and developments					
Political interest in the concept of No Net Loss (NNL)					No net loss objectives established for priority species but requires expansion to entire endangered species list
Understanding of the values which wetlands and other habitat types have for the economy					Valuation of ecosystem services in current compensation, PES related schemes and at sub-national level. Potential to utilise strong NGO and university networks for a national ecosystem valuation initiative.
Regulatory foundations					
Possibility of country setting up an 'Endangered Species Act' equivalent					Extension of liability on developers to provide 'like for like' offsetting for impacts on endangered species
Implementation of RAMSAR, the Convention on Biological Diversity and other international conventions					Mexico has 114 Ramsar sites covering 8 million hectares[19] and Mexico's National Biodiversity Strategy and Action Plan along with state level Biodiversity Strategies are helping Mexico make progress against CBD objectives.
2 – Scope for integration within EIA and permitting process					
EIA mitigation requirements					
Consistent application of mitigation hierarchy within EIAs for development projects					Whilst mitigation hierarchy is included in EIA process, further guidelines and training could be provided to EIA consultants on the application of the hierarchy process
Inclusion of compensation requirements within EIAs					Expansion of compensation requirements to habitats falling outside the Sustainable Forestry Law
Requirement and completion of EIAs for all key activities impacting on habitat					Extension of EIA requirements to all activities with significant impacts on habitat
Compensation requirements					
Compensation payments determined using a consistent and robust approach					Extension of compensation payment guidelines within Sustainable Forestry Law to include full habitat restoration
Use of compensation funds to directly address ecological impacts from					Increase in emphasis on ecosystem restoration within the reforestation requirements of the 'Sustainable Forestry

19 The Ramsar Convention on Wetlands, (2009). Available online: www.ramsar.org/cda/ramsar/display/main/main.jsp?zn=ramsar&cp=1-26-45-84%5E24252_4000_0__

development			Law' and expansion of social compensation to ecological restoration e.g. for oil & gas industry
EIA enforcement and monitoring			
Adequate follow up and enforcement of mitigation requirements within EIAs			Investment in enforcement capacity within Semarnat and DGIRA
Consistent and direct link between EIA findings and permitting requirements			Elevated priority given to ecological impacts in the permitting decision process for habitat not covered by Sustainable Forestry Law
Clear definition of institutional responsibilities			Confirmation of how responsibilities for a banking scheme would be allocated between national and state authorities
3 – Potential demand for credits			
Current compliance costs high enough for there to be developer demand for alternatives			Clarification of current average compensation costs specific to reforestation and habitat restoration
4 – Ability to develop banks and supply credits			
Support from landowners			
Interest in long term land conservation agreements despite current and/or future land price rises			Investigation into how HB developers can negotiate high price demands from landowners once conservation interest is declared
Presence of larger landowners who may consider long term conservation agreements			Awareness raising within private sector of opportunities from land conservation, especially in the agribusiness and forestry sector
Ease of registering land as a private reserve			Guidance created from existing *ejido*/NGO/government/private sector conservation partnerships to allow for replication at scale
Scope for involvement of indigenous reserves in establishing banks			Awareness raising and capacity building programme with *ejidos* to maximise potential for community involvement in bank development

Looking forward

Potential regulations to be introduced for the establishment of an HB scheme

For a regulatory HB scheme to develop in Mexico the following high level changes may need to be made in EIA and environmental regulation:

- Article 106 of the Wildlife Law could be adapted so that the responsibility of property owners or third parties impacting wildlife habitat are required to not only repair, but also to compensate for residual impacts on habitat.
- Issue guidance for 'like for like' compensation in existing compensation schemes such as the forest compensation scheme as set out in the Sustainable Forestry Law and a direct linkage between payments and offset sites. This may also be important to include in the addition to paragraph 60 of the Wildlife Law where compensation for impacts on mangrove ecosystems is proposed.
- Place the responsibility for compensation design with the designated authority, as opposed to EIA consultants (DGIRA). Mitigation and compensation recommendations issued during the EIA by consulted government agencies (e.g. CONANP) should be obligatory.
- Increase the capacity of EIA enforcement agencies to ensure that findings from EIAs are followed up.

Potential institutional responsibilities for a regulatory banking scheme

The table below provides an outline of the role that government institutions could play in implementing a regulatory market and a suggestion of which institutions may be best placed to fill these roles.

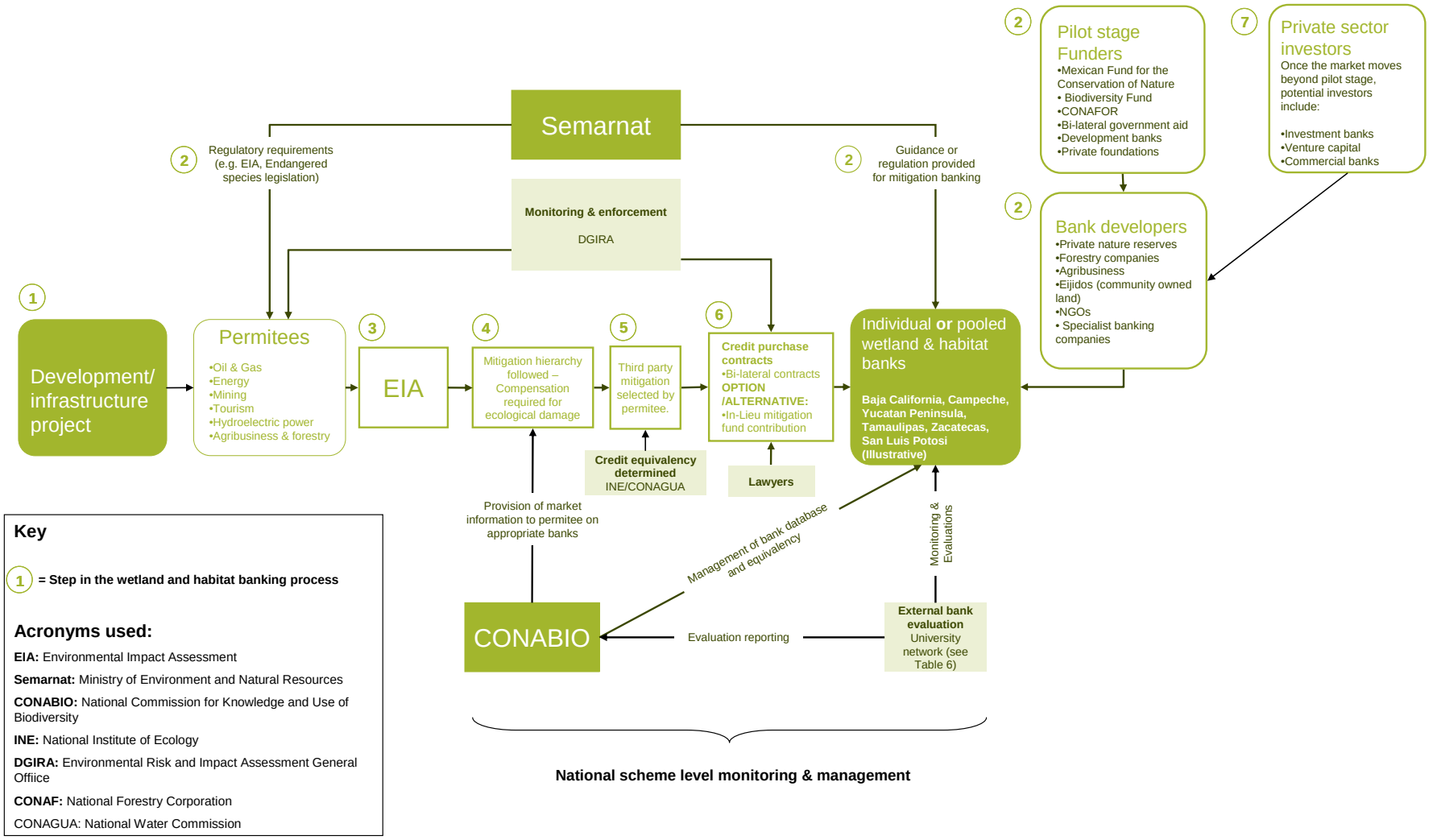
Market role	Government institution responsible
Set regulations	Semarnat
Enforce regulations	DGIRA, CONAGUA
Determine credit equivalency	INE
Approve issuance of credits	INE
Monitor compliance with credit agreements	DGIRA
Development and management of bank databases	CONABIO

Suggested ways forward

Pilot banking schemes could be integrated within the Program for Environmental Restoration and Compensation and possibly CONAFOR's compensation fund. These projects could be developed in priority conservation areas where there are strong networks of NGO, university and government actors and *ejido* managed conservation projects. If the required adaptations to the wildlife, EIA and sustainable forestry law are put into place then these pilot schemes could grow to a state or federal level, using a combination of international and national funding to support a decentralised market infrastructure.

The diagram below provides a hypothetical framework for the establishment of a Mexican HB system based on the findings of this report.

Figure 6 : A hypothetical HB system for Mexico



Panama

Feasibility rating: Tier 2

Opportunities for developing HB in Panama:

- There have been individual examples of compensation for impacts within protected areas through restoration and reforestation activities within the same ecosystem service area, for example during the widening of the Panama Canal by the National Canal Authority (see Panama country report section 4.1).
- The supply of habitat bank credits could be provided in part by Panama's private reserve network, private forestry and tourism companies and indigenous reserves or *comarcas*, in partnership with NGOs (see Panama country report section 3.11).
- Potential buyers of habitat credits would be the mining industry, the Panama Canal Authority and hydro-electric power project developers largely due to their current engagement with environmental and social compensation funds and their need to comply with international environmental performance standards (see Panama country report section 4.2).
- A HB system could be aligned at a landscape level, supporting multi-stakeholder initiatives such as the Mesoamerican corridor project (see Panama country report section 3.8).

Executive summary

Policy and regulatory foundations

The consultation process indicates that whilst national policy supports habitat conservation within protected areas, outside of this network there are very few mechanisms available to conserve land threatened by the rise in demand for land for tourism and real estate development. The major compensatory activities for natural habitat impacts have been implemented within the national park network, largely due to the fact that the regulation restricting biodiversity and ecosystem service impacts only applies to these areas (category III impacts). Panama is still yet to assess and prioritise those areas that require careful development management so that potential 'limits' are put on development.

Scope for integration with EIA and permitting process

In its current form national EIA and permitting regulations would not provide sufficient support for a regulatory-based HB system. EIA law does not require any form of 'like for like' ecological compensation. However, for impacts within protected areas there have been individual examples of compensation through restoration and reforestation activities within the same ecosystem service area, for example during the widening of the Panama Canal by the National Canal Authority. Gap analysis assessments of the current protected area network have been recognised at government level but there has been a lack of resources and political will to address these gaps. A HB scheme may be able to provide the resources to fill these gaps using market mechanisms.

Potential demand for credits

To achieve the greatest biodiversity conservation benefits, the buffer areas around the *Darién* forest reserve should provide a focal point for an establishment stage HB scheme as well as the high biodiversity forests of Bocas del Toro.

Priority buyers of habitat credits would be the mining industry, the Panama Canal Authority and hydro-electric power project developers largely due to their current engagement with environmental and social compensation funds and their need to comply with international environmental performance standards for access to project finance and financial services.[20]

[20] A recently passed law in Panama allows for development projects deemed to have a significant 'social benefit' to be permitted without requiring the completion of an EIA. Without the legal obligation to undergo an EIA, these projects may not feel compelled to purchase HB credits although other drivers, such as the need to comply with international standards, may provide sufficient reason to engage with HB.

Ability to develop banks and supply credits

The supply of habitat bank credits could be provided in part by Panama's private reserve network, private forestry and tourism companies and indigenous reserves or *comarcas*, in partnership with NGOs and potentially utilising the Indigenous Peoples Development Fund for support. The existence of land right conflicts between indigenous communities and state developers indicate that for a habitat or wetland banking scheme to succeed, the access rights of indigenous groups to ecosystem services must be maintained. This could be achieved at least in part through the allowance of sustainable extractive and livelihood activities within bank boundaries.

Relevant initiatives already in place in Panama

There are examples of social and environmental compensation payment schemes and investment in landscape level conservation schemes in Panama (see sections 2 and 3 of the Panama country report for more detail). The ecological compensation payments provided to the protected area network during the expansion of the Panama Canal is one of the best examples where existing environmental initiatives could be supported by HB.

Case study of relevant initiative for HB in Panama:

Panama Canal protected area compensation:

Environmental compensation payments in Panama are focused on impacts to protected areas, with high profile compensation schemes being enforced for the Panama Canal Authority during the widening of the canal and the construction of the third set of locks. In these cases compensation funding of between $2,500 to 4,000 per hectare was paid to reforest other areas of Panama's protected area network to an equivalent hectare value as the natural forest cleared, although it was not necessarily within the same 'ecosystem service area'. Based on the costs involved it is possible that purchasing credits from a habitat bank could present a lower cost option in the future and yield potentially improved ecological restoration results.

Feasibility framework summary

The following framework gives a summary of the presence of the core elements needed for the establishment of a regulatory HB scheme. An assessment is given for each element according to whether it is non-existent, has limited elements in development, present but not satisfactory or adequate presence. This is used for high level comparison with other countries in the region in the analysis of Latin American regional potential.

Panama's feasibility assessment reflects stakeholder opinion that whilst the country's EIA process places little emphasis on environmental mitigation, there is potential for a HB scheme to develop, building on existing examples of ecological compensation and the private conservation management capacity the country has to support bank establishment.

The lower rated assessments in the framework relate principally to the non-inclusion of the mitigation hierarchy in the EIA process and a perceived 'light touch' approach to the follow up of EIA recommendations, agreed compensation and the implementation of environmental fines. Two areas which deserve particular attention are the application of compensation requirements to impacts occurring outside of protected areas and an increase in the compensation requirements for the tourism and real estate sectors which are having an increasing impact on coastal habitats.

Panama has a favourable feasibility rating for the ease of establishing private reserves and the number of actors in the country with conservation management capacity that could support establishing a HB scheme. This is reinforced by relatively secure land tenure and the ability to enforce contracts in the country's judicial system. The presence of these elements strengthens the possibility of involvement from indigenous groups within *comarcas* and possibly even outside these areas. Whilst this suggests that the environment is conducive for bank development, it is tempered by rising land prices in coastal development zones, where banks may be most needed. These land price rises could make it more difficult to purchase or enter into conservation easements with landowners where the potential profits

from land sale to residential or tourism developers are much higher. This adds to the limitations of suitable sites in Panama available for restoration or HB in relation to other case study countries.

The levels of funding required to build market infrastructure may be relatively low, due to Panama's small size. This could mean that even modest grant based capacity building from national and international sources go a long way to put in place the early stage infrastructure needed.

	Assessment				Suggested next steps
Four core aspects of feasibility assessment	Non-existent	Limited elements/in development	Present but not satisfactory	Adequate presence	
1 – Policy and regulatory foundations					
Policy exploration and developments					
Political interest in the concept of No Net Loss (NNL)					Completion of national wetlands inventory and development of ecosystem inventory. Use of these results to inform zoning plans and formulate No Net Loss goals
Understanding of the values which wetlands and other habitat types have for the economy					Initiation of an ecosystem service valuation at a national level, utilising the research institution capacity available in Panama
Regulatory foundations					
Possibility of country setting up an 'Endangered Species Act' equivalent					Amendments made to the Wildlife Law (Law 24) so that activities that may destroy or damage wildlife habitat are not only subject to an EIA but must follow the mitigation hierarchy, with permitting refusals and significant fines for those that don't comply
Implementation of RAMSAR, the Convention on Biological Diversity and other international conventions					Review of conservation success of RAMSAR sites and comparative analysis of national regulation and enforcement against CBD principles
2 – Scope for integration within EIA and permitting processes					
EIA mitigation requirements					
Consistent application of mitigation hierarchy within EIAs for development projects					Introduction of mitigation hierarchy requirements within the EIA process
Inclusion of compensation requirements within EIAs					Creation of ecological compensation guidelines by permitting agencies (ANAM or sector specific ministries)
Requirement and completion of EIAs for all key activities impacting on habitat					Extension of the EIA requirements for the tourism and real estate sectors[21]
Compensation requirements					
Compensation payments determined using a consistent and robust approach					Compensation mandatory for not just Category III impacts but for all impacts on natural habitat. ANAM or environmental units within

[21] See footnote 20

				relevant ministries should provide their own input into mitigation plans before they are submitted for approval. Guidelines for compensation prepared by these agencies.
Use of compensation funds to directly address ecological impacts from development				Modification of the objectives of reforestation based compensation to focus on habitat restoration or protection
EIA enforcement and monitoring				
Adequate follow up and enforcement of mitigation requirements within EIAs				Investment in enforcement capacity and duration within the Directorate of Environmental Quality in ANAM or environmental units in sector specific ministries.
Consistent and direct link between EIA findings and permitting requirements				Introduction of landscape level EIAs and capacity of EIA consultants to identify biodiversity and habitat impacts.
Clear definition of institutional responsibilities				Enhanced clarity over central and municipal government permitting and EIA enforcement responsibilities.
3 – Potential demand for credits				
Current compliance costs high enough for there to be developer demand for alternatives				Fining levels raised so that they represent a significant percentage of project budgets. Compensation costs to reflect the total cost of both social and environmental compensation measures.
4 – Ability to develop banks and supply credits				
Support from landowners				
Interest in long term land conservation agreements despite current and/or future land price rises				Further incentivisation and government support of the private reserve network. Development of current forestry incentives to add extra benefits to reforestation with native species.
Presence of larger landowners who may consider long term conservation agreements				Engagement with cattle ranching companies, mining companies operating in proximity to protected areas. National efforts to recognise economic value of natural habitat and ecotourism opportunities.
Ease of registering land as a private reserve				Further government support and incentives for private reserve creation.
Scope for involvement of indigenous reserves in establishing banks				Further support for indigenous groups to obtain legislation for their *comarca*. Inclusion within *comarca* legislation that these reserves may be used for HB.
Conservation contexts and ability to supply credits				
Processes in place to identify threatened areas of natural habitats				National level ecosystem surveying carried out with the support of sub-national inventory developers such as the Smithsonian Institute.

Presence of groups with capacity to establish and manage 10 wetland/habitat banks in the next 2 years				Creation of HB working groups between NGOs, private reserve holders and research institutions.
Presence of groups with existing science and conservation experience of relevance to HB				Inclusion of leading biodiversity and natural habitat research institutions within working group identified above.
Risks for buyers of credits				
Secure land title arrangements and liabilities of these to change				‘Conditional ownership title’ reviewed for its suitability for use for HB. Examination of how Law 80 would impact the development of wetland banking in coastal areas.
Ability to establish long term projects on untitled land (e.g. where only ‘possession rights’ apply)				As above.
Ability to uphold credit agreements and enforce legal claims to recourse in case of project failure				Establishment of guidance for credit agreements and designation of responsibility for overseeing these agreements within ANAM.
Funding for development of HB				
Availability of capital in country for financing wetland or habitat banks, including endowing trusts				Awareness-raising within investor community of the benefits of diversifying investment portfolios to include HB, especially if tax incentives can be included.
Presence of domestic funding sources to support the development of banks – either on a grant basis or for profit				Formation of co-funding agreements between international donors and the national government.
Presence of international funding sources to support banking schemes				Consultation with international funders

Looking forward

Potential regulations to be introduced for the establishment of an HB scheme

For a regulatory HB scheme to develop in Panama the following high level changes may need to be made in EIA and environmental regulation:

- Provision of guidance for 'like for like' compensation during the EIA process where developers are required to purchase biodiversity offsets or develop them on their own land. These should be linked to restrictions on actions that 'destroy, damage or alter, nests, caves, feeding sites, water holes, dens or any other action that violates the conservation of wildlife' as identified within the Wildlife Law.
- Responsibility for compensation design should be with the designated authority, as opposed to EIA consultants (ANAM or the relevant sector ministry).
- The capacity of EIA enforcement agencies should be increased to ensure that findings from EIAs are followed up.
- The mitigation hierarchy should be formalised within the EIA and permitting process.
- The Law of Incentives for Reforestation could include specific incentives for the reforestation of native forests for habitat restoration purposes. Different incentive formats and scales could be linked to the biodiversity impacts of reforestation to help encourage participation from the private sector in native habitat restoration.

Potential institutional responsibilities for a regulatory banking scheme

The table below provides an outline of the role that government institutions could play in implementing a regulatory market and a suggestion of which institutions may be best placed to fill these roles.

Market role	Government institution responsible
Set regulations	ANAM and ARAP (National Water Resources Authority)
Enforce regulations	ANAM – Directorate of Environmental Quality, or environmental units within sector specific ministries
Determine credit equivalency	SINAP
Approve issuance of credits	ANAM – Directorate of Environmental Quality
Monitor compliance with credit agreements	ANAM – Directorate of Environmental Quality
Development and management of bank databases	ANAM with PRONAT (National Program for Land Regularisation)

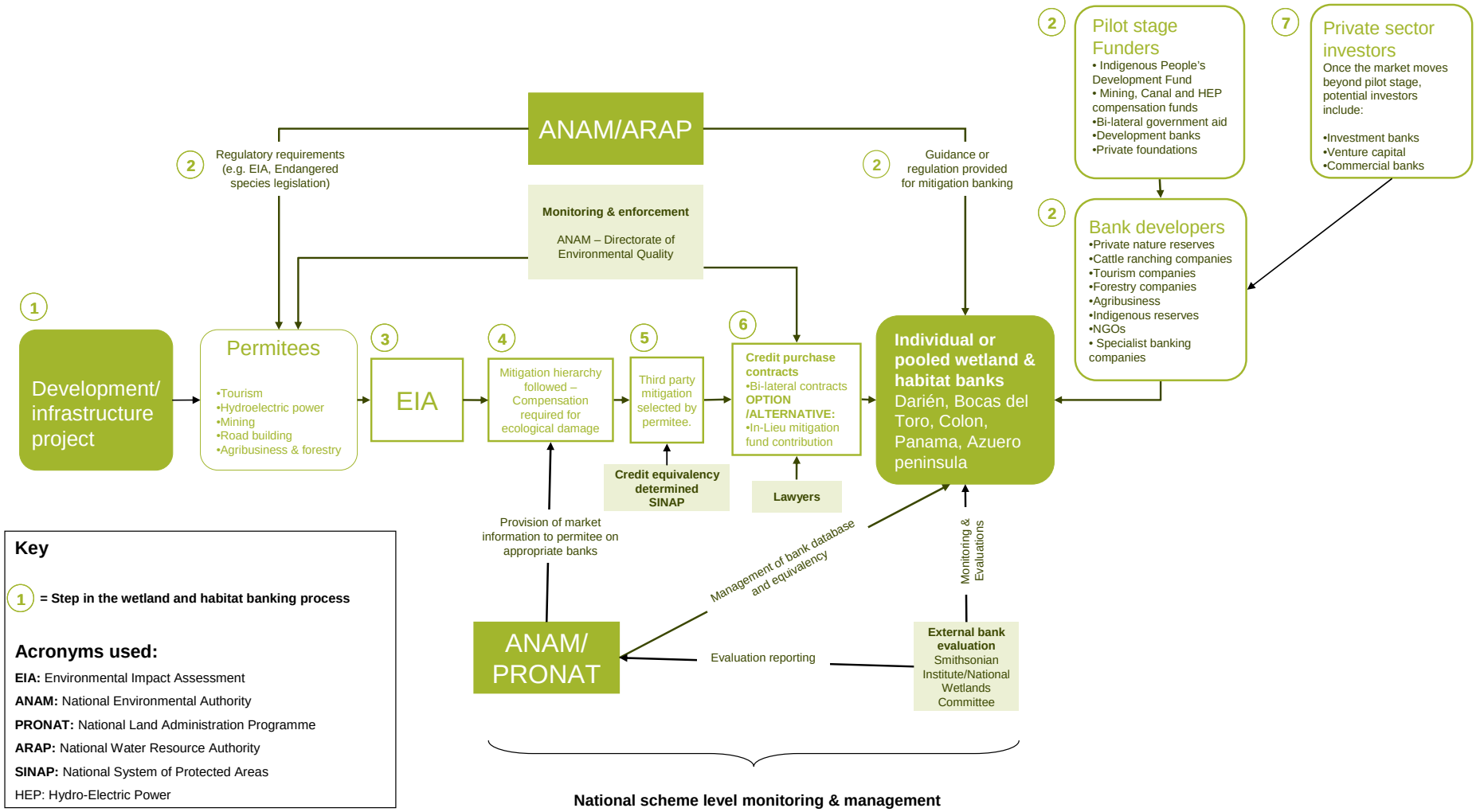
Suggested ways forward

There are options for the development of either a voluntary or regulatory wetland or habitat offsetting scheme in Panama. A regulatory scheme would require a revision of current EIA and compensation law, to include the mitigation hierarchy and the need for 'like for like' ecological compensation for impacts on wetlands or the habitat of species identified in the current Wildlife Law. To begin with this may be located within the buffer zones of national protected areas, in support of national initiatives to strengthen and expand the national protected area network.

A regulatory scheme could be preceded by a voluntary HB market, focused on industries such as mining that have paid for ecological compensation in the past. The location of these banks would largely be determined by the 'ecological service areas' of industry impact sites, and as the scheme grows the banking system itself could be aligned at a landscape level, supporting multi-stakeholder initiatives such as the Mesoamerican corridor project.

The diagram below provides a hypothetical framework for the establishment of a Panamanian HB system based on the findings of this report.

Figure 7 : A hypothetical HB system for Panama



Peru

Feasibility rating: Tier 2

Opportunities for developing HB in Peru:

- Priority buyers of habitat credits would be the mining, petroleum, oil & gas industries due to a combination of their need to comply with international environmental performance standards and previous contribution to compensation funds e.g. the *Canon Minero* fund (see Peru country report section 3.2).
- MINAM is also developing a methodology to evaluate the economic benefits of natural resources and environmental services in coastal marine ecosystems, Andean ecosystems (using the case study of *Nor Yauyos Cochas*) and high forest ecosystems (using the case study of the National Park *Yanachaga Chemillén*) (see Peru country report section 3.9).
- The current Peruvian government has clearly expressed a desire to increase the use of market based instruments to achieve the country's biodiversity and habitat conservation goals (see Peru country report section 3.9).

Executive summary

Policy and regulatory foundations

The current Peruvian government has clearly expressed a desire to increase the use of market based instruments to achieve the country's biodiversity and habitat conservation goals. Whilst these high level objectives may be in place, regulatory frameworks do not yet fully reflect these aspirations. Whilst compensation schemes are currently in place to mitigate social impacts from project development, there is no mention in the regulation of biodiversity offsetting or guidance on how compensation funding activities relate to environmental impacts. In its current form, the regulation in place would not be sufficient for a regulatory HB scheme in the USA model to take place.

Scope for integration with EIA and permitting process

Compensation is not directly related to the ecological impact that projects have and where ecological compensation is demanded, the compensation is not required to directly offset the ecological impacts of the project. It is most often the case that the developer presents a compensation plan, which is usually focused on cash payments or infrastructure projects for communities affected by the project, to then be approved by the permitting agency. However the EIA legislation requires that the economic valuation of natural and environmental impacts should be taken into account when compensation amounts are decided[22]. For a regulatory HB scheme to be established, 'like for like' offsetting requirements need to be included and be more closely aligned to the ecological impacts from project development.

Potential demand for credits

The priority geographical areas for a restoration based wetland banking scheme would include the Central Andean wet *puna* and Arequipa department in Southern Peru with particular opportunities for engaging the petroleum industry in Abanico del Pastaza and the Pacaya Samiria wetlands. For forest based HBs, the maximum conservation benefits would be achieved in Amazonian forest areas such as Loreto, Amazonas and Madre de Dios departments although due to the complexity associated with successfully restoring these ecosystems these banking schemes would be best suited to focusing on protection. This protection scheme could also include dry forest areas and tropical montane forest areas.

Priority buyers of habitat credits would be the mining, petroleum, oil & gas industries due to a combination of their need to comply with international environmental performance standards for access to project finance and financial services, their previous contribution to compensation funds (e.g. the *Canon Minero* fund) and their relatively high environmental and social responsibility budgets in comparison with other Peruvian industries.

22 MINAM, (2010). Ley No. 27446 Ley del Sistema Nacional de Evaluación de Impacto Ambiental DS No. 019-2009

Ability to develop banks and supply credits

The extensive areas of primary natural habitat available in Peru suggest that the majority of habitat banks could be developed through protective long-term management (with additionality[23] demonstrated) with some opportunities for restoration, particularly in the case of wetlands. The design of a wetland or HB scheme would need to incorporate customary and community ecosystem and natural resource rights, allowing access by local communities for sustainable extractive and economic activities A scheme focused on habitats as opposed to particular species or breeding pairs may be more appropriate in Peru where there are large high biodiversity habitat areas under threat. In the case of wetland banking schemes, restoration projects are likely to play a more important role.

The supply of habitat bank credits could be provided from across both the private and NGO sector and Peru benefits in this regard from its relatively advanced approach to REDD projects, with a number of these actors already demonstrating their capability to implement market based forest conservation projects. At a sub-national level there are many examples of research and conservation projects which HB could complement or support, although within government there is still institutional capacity building needed if a national level scheme is to be enforced, monitored and managed successfully.

Relevant initiatives already in place in Peru

There are examples of Payment for Ecosystem Service schemes, provincial level compensation funds and landscape level conservation schemes in Peru (see sections 2 and 3 of the Peru country report for more detail). The national initiative to value ecosystems is one of the best examples where existing environmental initiatives could be supported by HB.

Case study of relevant initiative for HB in Peru:

National initiative to value ecosystems:

The National System for Evaluation of Environmental Impacts (SEIA) was approved by the Peruvian government in September 2009, which in article 26 specifically requires developers to perform an economic valuation of environmental impacts from project development. The Ministry of the Environment (MINAM) is currently developing an economic valuation system which could be supported by the implementation of a HB scheme.

MINAM is also developing a methodology to evaluate the economic benefits of natural resources and environmental services in coastal marine ecosystems, Andean ecosystems (using the case study of Nor Yauyos Cochas) and high forest ecosystems (using the case study of the National Park Yanachaga Chemillén). MINAM is currently producing a report which seeks to identify areas of forestland in Peru which would produce the greatest ecological and economic benefits from receiving payments for the ecosystem service they provide.

There is a draft law in place that if implemented could result in a nationwide valuation of ecosystem services. Consulted stakeholders felt that this valuation process would be reinforced by the implementation of a habitat and wetland banking scheme which would encourage these values to be recognised by developers and the wider stakeholder community.

Feasibility framework summary

The following framework gives a summary of the presence of the core elements needed for the establishment of a regulatory HB scheme. An assessment is given for each element according to whether it is non-existent, has limited elements in development, present but not satisfactory or adequate presence. This is used for high level comparison with other countries in the region in the analysis of Latin American regional potential.

The feasibility framework reflects stakeholder opinion that Peru has a number of opportunities for developing sub-national biodiversity mitigation markets, but to reach a national scale it will be important to resolve land tenure issues

23 Projects provide 'additionality' only where they have additional conservation benefits above and beyond what would happen in their absence (the baseline scenario).

and the level of unregulated activity that threatens habitat, in particular in the Amazonian forest. This is significant, as the Amazonian forest represents a large percentage of Peru's primary habitat and biodiversity and would play a decisive role in the success of a HB market.

The other message from the feasibility framework analysis is that in order for a regulatory based mitigation banking scheme to exist in Peru the inclusion of a mitigation hierarchy in EIA law should be considered, alongside the formalisation of ecological compensation obligations for developers and an increase of the follow up and enforcement made for EIA and compensation agreements.

The higher range of feasibility assessments included in the feasibility framework stem from Peru's political interest in ecosystem valuation and market mechanisms for conservation and the capacity that exists in the NGO and academic sectors for conservation management and restoration. The presence of this political will is important, especially in a relatively young Ministry of Environment that may be more willing to adopt new market based approaches than other more established ministries in the region. For example if the findings of MINAM's national ecosystem valuation survey are reflected in future development planning, tax and fiscal incentives, the likelihood of HB making progress in Peru will be much improved.

In addition to this Peru contains a community of leading local and international conservation NGOs and research institutions, which could provide the basis for building a robust market support network, as well as potential domestic bank developers.

	Assessment				Evidence/Suggested next steps
Four core aspects of feasibility assessment	Non-existent	Limited elements/ in development	Present but not satisfactory	Adequate presence	
1 – Policy and regulatory foundations					
Policy exploration and developments					
Political interest in the concept of No Net Loss (NNL)					Clear definition given on no net deforestation goals, selection of municipalities with NNL interest
Understanding of the values which wetlands and other habitat types have for the economy					Completion and widespread dissemination of MINAM's national ecosystem economic valuation initiative
Regulatory foundations					
Possibility of country setting up an 'Endangered Species Act' equivalent					Clarification of restrictions on destruction of endangered species habitat introduced to Endangered forest fauna & flora law
Implementation of RAMSAR, the Convention on Biological Diversity and other international conventions					Review of national regulation against CBD principles
2 – Scope for integration within EIA and permitting process					
EIA mitigation requirements					
Consistent application of mitigation hierarchy within EIAs for development projects					Introduction of mitigation hierarchy requirements within the EIA process with government guidelines
Inclusion of compensation requirements within EIAs					Creation of compensation guidelines by permitting agencies (whether OEFA or sector specific ministries)
Requirement and completion of EIAs for all key activities impacting on habitat					Extension of EIA requirements to informal industries with major impacts on habitat e.g. mining
Compensation requirements					
Compensation payments determined using a consistent and robust approach					Preparation of compensation standards & guidelines by permitting agencies. Compensation proposals no longer determined by developer
Use of compensation funds to directly address ecological impacts from development					As above. In addition ecological service areas in Peru would need to be defined informed by regional and national conservation plans.
EIA enforcement and monitoring					

Adequate follow up and enforcement of mitigation requirements within EIAs				Investment in enforcement capacity within OEFA or relevant sector ministry. Dependent upon where permitting responsibilities are allocated in the future.
Consistent and direct link between EIA findings and permitting requirements				Increased emphasis on habitat impacts within EIA surveying process and inclusion within permitting decisions
Clear definition of institutional responsibilities				Decision made regarding whether OEFA will assume permitting role or if this will be retained within sector specific ministries
3 – Potential demand for credits				
Current compliance costs high enough for there to be developer demand for alternatives				Increase in compensation and fining costs and reduction in successful court challenges from developers against environmental related fines
4 – Ability to develop banks and supply credits				
Support from landowners				
Interest in long term land conservation agreements despite current and/or future land price rises				Peru has a relatively high level of REDD & private conservation projects in development which demonstrate the presence of landowners with willingness to enter into long term conservation agreements
Presence of larger landowners who may consider long term conservation agreements				Awareness raising within mining and forestry industries of the potential business opportunities from land conservation
Ease of registering land as a private reserve				Development of more attractive government incentives and guidance for private landowners to create reserves on their land
Scope for involvement of indigenous reserves in establishing banks				Clarity needed over how agreements could be guaranteed where indigenous communities have ‘usage’ rights as opposed to outright land ownership
Conservation contexts and ability to supply credits				
Processes in place to identify threatened areas of natural habitats				Decentralisation of species habitat and surveying and further inclusion of local municipalities to capture data across the 84 country biomes
Presence of groups with capacity to establish and manage 10 wetland/habitat banks in the next 2 years				Landowners willing to enter conservation agreements to strengthen scientific and management capacity through partnership with NGOs/private reserves/REDD developers
Presence of groups with existing science and conservation experience of relevance to HB				Combined expertise between REDD developers and academic institutions. Particular need for companies specialising in Amazonian forest restoration.
Risks for buyers of credits				

Secure land title arrangements and liabilities of these to change			Assurances needed regarding government's ability to override private property rights and strengthening of indigenous communities' long term rights
Ability to establish long term projects on untitled land (e.g. where only 'possession rights' apply)			As above
Ability to uphold credit agreements and enforce legal claims to recourse in case of project failure			Review of current practice within the REDD project network (Grupo REDD) to overcome these challenges
Funding for development of HB			
Availability of capital in country for financing wetland or habitat banks, including endowing trusts,			High profile environmental funds such as FONAM and PROFANANPE to be consulted regarding how banking schemes would fit within their funding remit. Investigation into how compensation funds from mining sector could be directed towards funding bank development.
Presence of domestic funding sources to support the development of banks – either on a grant basis or for profit			See above
Presence of international funding sources to support banking schemes			Consultation with USAID, IADB, GEF, Moore Foundation, MacArthur Foundation, AEG/S regarding funding possibilities for piloting banking projects and national capacity building

Looking forward

Potential regulations to be introduced for the establishment of an HB scheme

Based on stakeholder consultation, for a regulatory HB scheme to develop in Peru the following high level changes may need to be made in EIA and environmental regulation:

- In the Forest and Wildlife Law, stronger and clearer links could be given between threatened species lists and the restrictions that will be placed on damage to the habitat of these species. In addition to this more detail could be provided on what protective measures will be applied to these habitats and how this is captured in the EIA process.
- Issue guidance for 'like for like' compensation during the EIA process where developers are required to purchase biodiversity offsets or develop them on their own land.
- Place the responsibility for compensation design with the designated authority, as opposed to EIA consultants (OEFA or the relevant sector ministry).
- Increase the capacity of EIA enforcement agencies to ensure that findings from EIAs are followed up.
- Adapt EIA regulation to specifically include a requirement for permitees to go through the mitigation hierarchy process rather than the general wording to 'reduce, mitigate and prevent negative environmental impacts generated by human activity'.
- The inclusion within the Water Resource Law of the need to compensate for biodiversity loss associated with an impact or change in water flows or courses

Potential institutional responsibilities for a regulatory banking scheme

The table below provides an outline of the role that government institutions could play in implementing a regulatory market and a suggestion of which institutions may be best placed to fill these roles.

Market role	Government institution responsible
Set regulations	MINAM (Ministry of the Environment)
Enforce regulations	Industry specific ministries e.g. MINEM (Ministry of Energy and Mines) – Enforcement of need to mitigate and compensate on an ecological 'like for like' basis for impacts on natural environment by developers OEFA (Organisation for Environmental Monitoring and Evaluation) – Enforcement of need to mitigate and compensate for impacts on natural environment on an ecological 'like for like' basis by developers.
Determine credit equivalency	MINAM – Approval of wetland or habitat bank design and management plans. Potential role in holding conservation easements or other land protection mechanisms. SERNANP (National Protected Areas Service) – Approval of wetland or habitat bank design and management plans for impacts within protected areas.
Approve issuance of credits	OEFA (Organisation for Environmental Monitoring and Evaluation)
Monitor compliance with credit agreements	MINAM Instituto de Investigaciones de la Amazonía Peruana (IIAP) in coordination with regional governemnts (In the Peruvian Amazon) – A scientific research institution specialising in the sustainable use of biodiversity in the Amazonian region.
Development and management of bank databases	OEFA (Organisation for Environmental Monitoring and Evaluation)

Suggested ways forward

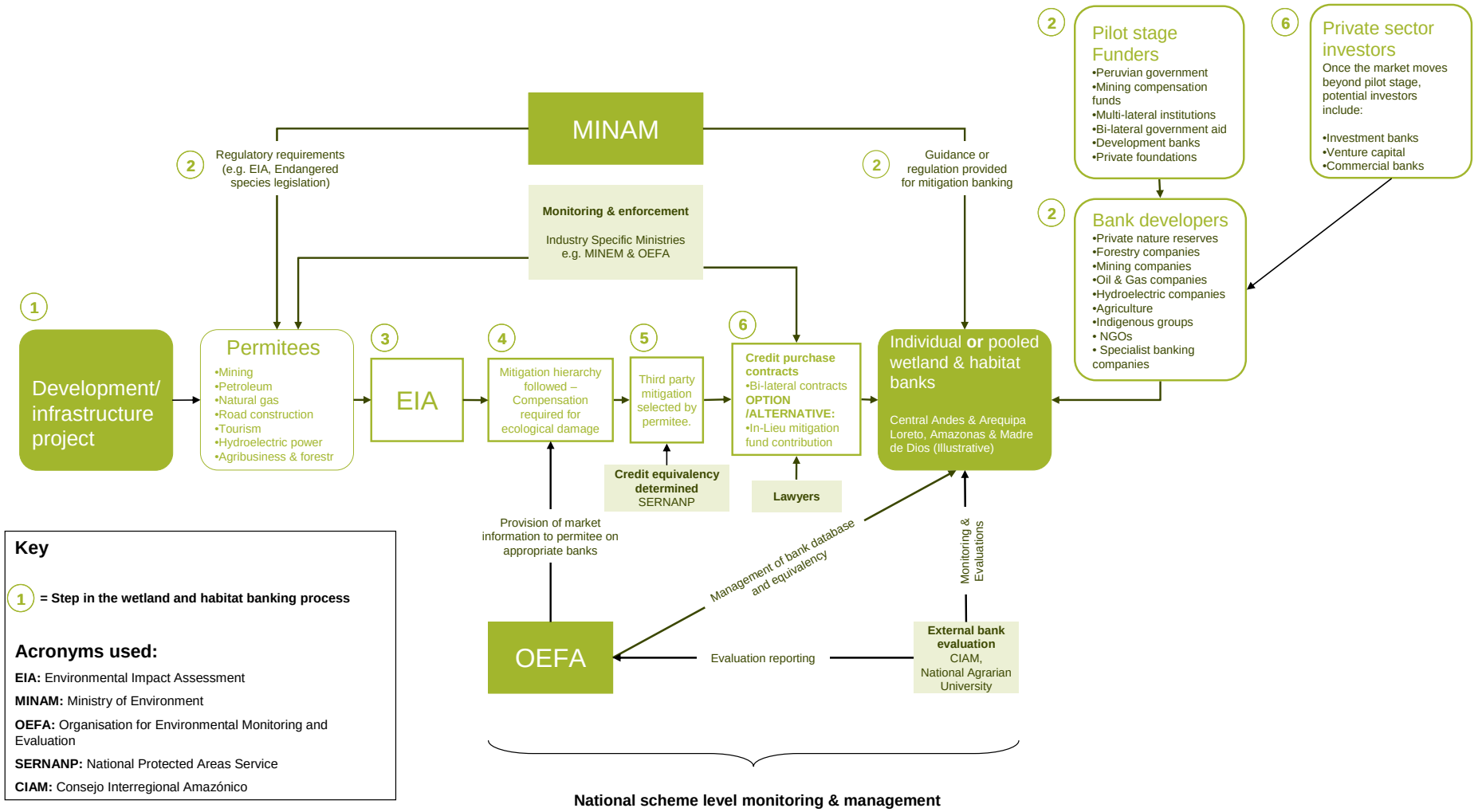
Two possible ways forward for a HB scheme in Peru are suggested. The first is that a voluntary HB scheme is established. The findings from consultations suggest that international mining and oil and gas companies would most

likely be the first buyers in such a voluntary market. These early level HB schemes would likely require international funding to become established and would begin with pilot level projects.

The second option is that a regulatory HB scheme is established inside the existing EIA and compensation framework. For example, in Peru's current compensation framework, where compensation funds, in particular from mining companies, are pooled into a trust fund.

The diagram below provides a hypothetical framework for the establishment of a Peruvian HB system based on the findings of this report.

Figure 8 : A hypothetical HB system for Peru



Argentina

Feasibility rating: Tier 2

Opportunities for developing HB in Argentina include:

- The Law on Minimum Standards for Environmental Protection of Native Forests (26331) orders the creation of a National Fund for the 'Enrichment and Conservation' of native forests, with 70% of compensation payments going to forest land owners for protection of medium to high conservation value forest (as defined by provincial zoning plans)[24] and the remaining being directed to provincial conservation programmes. This fund is financed by a 2% tax on soybean exports along with 0.3% of the total state budget[25]. This law could be particularly important in encouraging the forestry industry to develop habitat based forest credits through restoration work[26] and a potential fund based mechanism through which compensation payments could be used to fund the development of habitat offsets (see Argentina country report section 2.2).
- The Secretariat for the Environment and Sustainable Development and local governments are implementing a GEF/UNDP funded project to test different payment mechanisms for ecosystem services and where appropriate replicate these mechanisms in Argentina. HB piloting could be complementary to this process (see Argentina country report section 2.3).
- There have been notable examples where developers have taken a pro-active approach to mitigating their biodiversity impacts (e.g. the establishment of a 52,500 hectare reserve in the Paraná Delta, to compensate for flooding from the Yacyretá hydroelectric plant) and HB may provide a means of improving the efficiency and impact of these efforts(see Argentina country report section 2.3).
- An HB scheme could provide a useful tool for meeting the objective of Argentina's National Biodiversity Strategy to avoid a reduction in Argentina's natural capital (see Argentina country report section 2.3).

Executive summary

Policy and regulatory foundations

The following objectives of Argentina's National Biodiversity Strategy and Action Plan could be of direct relevance to HB:

- The integration of biodiversity-related issues into sectoral plans and programmes for national development;
- An increase in access to biodiversity related information and;
- The avoidance of a reduction in the natural capital of Argentina[27].

The integration of biodiversity-related plans into national development programmes could be strongly supported by an early stage HB scheme and may also provide a useful tool for avoiding a reduction in Argentina's natural capital.

The Secretariat for the Environment and Sustainable Development and local governments are also implementing a GEF/UNDP funded project to test different payment mechanisms for ecosystem services and where appropriate replicate these mechanisms in Argentina. HB piloting could be complementary to this process.

Whilst there may the political will to develop PES schemes within central government, there could be resistance at the provincial level, particularly in the north of the country where agricultural unions have significant political influence and may not consider habitat conservation a priority in their planning processes. In the planning process for habitat and wetland banking it would also be critical to consider how access to ecosystem services and natural resources could be maintained for populations with customary land use rights in or near to habitat banks.

24 UNDP and UNEP Request for CEO Endorsement/Approval: Establishment of incentives for the conservation of ecosystem services of global significance. Available online: www.thegef.org/gef/sites/thegef.org/files/documents/document/4-8-10.GEFID_.3623-Argentina.pdf
25 Valente, M. (2007). Ban on logging approved. Available online: http://ipsnews.net/news.asp?idnews=40277
26 USDA Foreign Agricultural Service: Global Agriculture Information Network Report, (2006). Argentina Solid Wood Products: Argentina's Forestry Sector 2006. Available online: www.fas.usda.gov/gainfiles/200604/146187584.pdf
27 The Convention on Biological Diversity, (2010). Argentina – Details. Available online: www.cbd.int/countries/profile.shtml?country=ar#nbsap

Scope for integration with EIA and permitting process

Although the mitigation hierarchy is included within EIA legislation, compensation is not provided on a 'like for like' basis and offsetting is not generally included in Environmental Management Plans. However laws such as the 'National Law on Minimum Standards for Environmental Protection of Native Forest' may provide the appropriate mechanism to direct compensation funding towards PES or offsetting schemes, potentially paving the way for in forest ecosystems.

Potential demand for credits

Argentina contains an exceptional diversity of habitat and is described as one of the world's 'mega-diverse' countries, with a number of threatened ecosystems including the Atlantic forest, Andean puna and the temperate Valdivian Forest. Argentina contains numerous important wetland systems, including the Iberá network of shallow lakes and marsh lands which make up the second largest wetland system in Latin America. The major threats to these ecosystems include agricultural and forestry expansion, infrastructure projects, hydrocarbon and mining operations and urban development. HB schemes could provide an effective tool for ensuring that biodiversity impacts are accounted for by developers, and would allow them to provide effective 'like for like' offsetting for their residual project impacts.

The mining and oil & gas industry in Argentina may provide the 'first buyer' marker for habitat credits. Habitat impacts have caused delay to project approval for these sectors in the past and are an increasing area of focus for their investors and financial service providers. There have also been examples where these companies have taken a pro-active approach to mitigating their biodiversity impacts and HB may provide a means of improving the efficiency and impact of these efforts.

Ability to develop banks and supply credits

The funding for the development of an early HB market infrastructure may come from international funding programmes such as GEF funding agents, who are currently providing $3.3 million in funding for 'Establishment of incentives for the conservation of ecosystem services of global significance' project. This focuses on developing Argentina's capacity to pilot PES schemes, which could be aligned with the piloting of HB. There are also numerous private international funders for habitat conservation in Argentina and organisations with the scientific and management capability to develop banks. One area of uncertainty is the extent to which indigenous communities would benefit from a HB scheme, where only a small number of indigenous groups live in legally recognised reserves.

Relevant initiatives already in place in Argentina

There are examples of PES feasibility studies, private sector funded compensatory conservation projects and social and environmental compensation payment schemes in Argentina (see sections 2.3 of the Argentina country report for more detail). The National Law on Minimum Standards for Environmental Protection of Native Forests (26331) provides one of the best examples where existing environmental initiatives could be supported by HB.

Case study of relevant initiative for HB in Argentina:

National Law on Minimum Standards for Environmental Protection of Native Forests (26331):

This law, ratified in 2007, requires provincial governments to include three levels of forest protection in the development of their land use plans. This includes a classification of 'red' for high conservation value forest which cannot be impacted, 'yellow' for forests that can be put under sustainable forest management and 'green' for forests that can be partially or wholly converted.

The law also orders the creation of a National Fund for the 'Enrichment and Conservation' of native forests, with 70% of compensation payments going to forest land owners for protection of medium to high conservation value forest (as defined by provincial zoning plans)[28] and the remaining being directed to provincial conservation programmes. This fund is financed by a 2% tax on soybean exports along with 0.3% of the total state budget[29]. This law could be particularly important in encouraging the forestry industry to develop habitat based forest credits through restoration work[30] and a potential fund based mechanism through which compensation payments could be used to fund the development of habitat offsets.

Suggested way forward

Consultation with relevant government institutions, industry groups, civil society & academic institutions. Establishment of pilot projects aligned with GEF funded PES piloting programmes and potential adaptation of forest compensation funds to link compensation payments with specific restoration or protection based offsets (see Argentina country report section 4.1).

28 UNDP and UNEP Request for CEO Endorsement/Approval: Establishment of incentives for the conservation of ecosystem services of global significance. Available online: www.thegef.org/gef/sites/thegef.org/files/documents/document/4-8-10.GEFID_.3623-Argentina.pdf
29 Valente, M. (2007). Ban on logging approved. Available online: http://ipsnews.net/news.asp?idnews=40277
30 USDA Foreign Agricultural Service: Global Agriculture Information Network Report, (2006). Argentina Solid Wood Products: Argentina's Forestry Sector 2006. Available online: www.fas.usda.gov/gainfiles/200604/146187584.pdf

Brazil

Feasibility rating: Tier 1

Opportunities for developing HB in Brazil include:

- Brazil has emphasised environmental compensation in its regulation, most prominently through the Compensação Ambiental law, where compensatory payments are made for significant impacts to natural habitat. This is reinforced by CONAMA resolutions and IBAMA's administrative rules (see country report section 2.3).
- The Brazilian Forestry Code has also enabled a series of compensation and incentive schemes for reforestation and forest protection based on watershed conservation. The combination of these factors may allow for the starting of a pilot level HB scheme. Whilst some states, such as Paraná, are making progress in making 'forestry set asides' a regulatory requirement for developers, the majority of Brazilian states do not have this regulation in place (see Brazil country report section 2.3).
- Oil & gas exploration, mining, transportation, hydroelectric power, agriculture and other major sectors are subject to environmental compensation by CONAMA and some face similar international pressures to mitigate their environmental impacts (see Brazil country report section 3.1).
- There are models in place for the incorporation of sustainable extractive and livelihood based approaches to conservation management, which would be needed for HB to succeed in Brazil (see Brazil country report section 2.3).
- There are fiscal and loan related incentives for landowners to establish private nature reserves which could encourage the development of HBs by private reserve holders (see Brazil country report section 3.3).
- There is an extensive network of conservation and research organisations with experience in habitat conservation and restoration within Brazil. This network provides substantial scientific, project and fund management capacity to support the development of a national HB scheme and in the development of individual HBs (see Brazil report section 3.3 and 3.4) .
- The focus on state level PES schemes to date would suggest that pilot HB schemes would most suitably be developed on a state by state basis. The large size of some of Brazil's states would mean that matching development impacts with wetland or habitat banks within the same ecosystem service area does not become a limiting factor as it has been in some countries (e.g., Netherlands, Victoria State in Australia) (see Brazil report section 2.3).

Executive summary

Policy and regulatory foundations

Brazil has emphasised environmental compensation in its regulation, most prominently through the *Compensação Ambiental* law, where compensatory payments are made for impacts to protected areas. This is reinforced by CONAMA resolutions and IBAMA's administrative rules. The Brazilian Forestry Code has also enabled a series of compensation and incentive schemes for reforestation and forest protection based on watershed conservation. The combination of these factors may allow for the starting of a pilot level scheme. Whilst some states, such as Paraná, are making progress in making 'forestry set asides' a regulatory requirement for developers, the majority of Brazilian states do not have this regulation in place.

Scope for integration with EIA and permitting process

The EIA process in Brazil includes the implementation of mitigation measures and a recovery plan at the end of project development. The Environmental Compensation Law allows the principle of 'Permittee-Responsible Mitigation' in a similar way to the USA Conservation banking schemes. Developers in Brazil have the option of performing the mitigation work themselves or by transferring compensation funds directly to an NGO to carry out the mitigation action. Compensation can be carried out using the equivalent of In Lieu Fee Mitigation whereby multiple developers contribute to a public environmental fund, or in some cases a private fund.

Potential demand for credits

The established position of compensation funds at a state level may suggest that pilot HB schemes would most suitably be developed on a state by state basis. The USA model of federal and state coordination could act as a useful reference point for state based schemes. The geographic focus of these schemes could be in states within the Amazon Rainforest, Atlantic Forest, *Cerrado*, *Caatinga* and *Pampa* ecosystem areas. Due to the large size of some of Brazil's states, matching development impacts with wetland or habitat credits within the same ecosystem service area may not pose the same type of restrictions that have been experienced in other state level biodiversity offset programmes (e.g. Victoria State in Australia). Buyers of these credits may include mining, oil & gas, transportation and hydro-electric power developers operating within these areas.

Ability to develop banks and supply credits

Funds that receive compensation payments from developers already (e.g. *Compensação Ambiental*) may provide an appropriate starting point for piloting regulatory HB schemes. For a banking scheme to achieve scale however it is likely that a new fund would need to be established, with new funding sources. Brazil already appears to have the environmental fund and conservation management capacity needed to expand the use of these funds and support new state level schemes.

There is an extensive network of conservation and research organisations with experience in habitat conservation and restoration within Brazil. This network provides substantial scientific, project and fund management capacity to support the development of a national HB scheme and in the development of individual HBs. The development of REDD+ in Brazil has generated some important lessons for HB, particularly over the need to identify and incorporate indigenous and forest community access rights to ecosystem services into project planning. There are also models in place for the incorporation of sustainable extractive and livelihood based approaches to conservation management, which would be needed for HB to succeed in Brazil.

There are examples of watershed based PES schemes, ecological compensation funds and landscape level conservation projects in Brazil (see section 2.3 of the Brazil country report). The Environmental Compensation Programme and The Brazilian Forestry Code provide some of the best examples where existing environmental initiatives could be supported by HB.

Case study of relevant initiative for HB in Brazil:

Environmental Compensation Programme

The Environmental Compensation Programme is described within Article 36 of Law nr. 9985 of July 18th, 2000. It is designed to offset the negative impacts on the natural environment from project development, requiring developers to pay a licensing fee.

Compensatory payments are made for projects that have significant impact on natural habitats. The funds accrued from these payments are then allocated to research into the creation of reserves, management plans, resolution of land tenure issues and purchase of goods and services needed for the management of an area.[31]

There are currently two options for developers to spend the licensing fee under the Environmental Compensation Programme:

- Companies execute the payment themselves but in practice this means that it is the companies themselves that administer the details of the project. So far the only company to take the option of out-sourcing the offset process is the private-public energy group Petroleo Brasileiro (PetroBras) which sub-contracted the environmental offset for a hydroelectric plant it purchased.
- Transfer the fee to the responsible environmental agency, although there are currently concerns over the capacity of regulatory agencies to take on the administration of compensation projects. Money can also be put into a public environmental fund which would then manage the implementation and monitoring of offsetting projects. There are instances where money is put into private funds for the same purpose.

Whilst the Environmental Compensation Programme has raised funds in the order of $138 million to $270 million, there are some concerns regarding the scheme. For example there is currently no agreed methodology for assessing environmental impact made by compensatory projects and there has not been a consensus on the best way of distributing funds to projects or protected areas[32].

Out of all the compensation schemes in operation in Latin America, the Environmental Compensation Programme is considered to have the greatest potential, along with the Brazilian Forestry Code, to include HB. However, key differences remain between the Environmental Compensation programme and the USA wetland and species banking models:

- A lack of 'like for like' compensation, or private agreements made between developers and conservation project proponents.
- Where private developers are involved they can only be contractors to a company rather than regulated by the state.

The Environmental Compensation Programme provides a useful Brazilian example of a regulatory compensation scheme where the development and inclusion of a banking system could be appropriate. In addition, The Programme has provided important lessons for the development of similar schemes in the region, particularly on the need for robust programme governance and the role of the courts in ensuring that regulatory programmes are acceptable for business.

Suggested way forward

Brazil has taken a leading position in developing state level compensation funds and may be in a relatively favourable position for developing a pilot regulatory HB scheme. Further consultations are needed with CONAMA, NGO and academic institutions and private sector associations to assess whether a potential banking scheme could be introduced on a pilot basis using existing regulatory frameworks. These pilot projects could be implemented using existing funds or through the establishment of new funding schemes using national or international resources (see Brazil report section 4.1).

32 Lerda, D & Zwick, S (2009) A Brief Tour of Brazilian Payments for Ecosystem Services. Available online from: www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=6524&section=home&eod=1

Colombia

Feasibility rating: Tier 2

Opportunities for developing HB in Colombia include:

- Colombia has a draft national Payment for Ecosystem Services strategy and national biodiversity and wetlands policies which recognise the economic value of ecosystems and identify the need to increase private sector investment into biodiversity conservation (see Colombia country report section 2.3).
- The Ministry of Environment, Housing and Territorial Development (MAVDT) has engaged effectively with civil society in the 'Development by Design' project which catalyses the introduction of 'like for like' based offsetting and the use of GIS tools to help MAVDT identify ecosystem service areas in which habitat impacts are matched with appropriate offsets (see Colombia country report section 2.3).
- Developers in the mining, oil & gas and energy sectors as well as public works agencies have provided significant compensation payments in the past, although these have predominantly been focused on community rather than environmental compensation (see Colombia country report section 3.1).
- There is a strong presence of high capacity institutions that would be able to provide the technical advice and monitoring support needed for a pilot banking scheme to develop (see Colombia report section 3.4).

Executive summary

Policy and regulatory foundations

Colombia has a draft national Payment for Ecosystem Services strategy and national biodiversity and wetlands policies which recognise the economic value of ecosystems and identify the need to increase private sector investment into biodiversity conservation. The challenge now is to implement some of these strategies, including the draft plan to implement PES schemes to protect 83,000 hectares of land, which may require significant management and monitoring resources if it is to be implemented successfully.

There are important examples where NGOs and government are working together to protect habitat in Colombia. The Ministry of Environment, Housing and Territorial Development (MAVDT) has engaged effectively with civil society in the 'Development by Design' project which catalyses the introduction of 'like for like' based offsetting and the use of GIS tools to help MAVDT identify ecosystem service areas in which habitat impacts are matched with appropriate offsets.

Scope for integration with EIA and permitting process

The inclusion of the mitigation hierarchy within EIA law has allowed for the implementation of numerous forest compensation schemes in Colombia, although these are currently more focused on maintaining forest cover than habitat restoration. Under regulatory compensation schemes developers can support reforestation projects that use exotic and sometimes invasive species, although there are incentives to use native species.

Potential demand for credits

The protection of Colombia's exceptionally high levels of biodiversity, especially in ecosystems such as the *Choćo* tropical pre-montane and *Magdalena-Urabá* moist forests is of global importance. Forest in the *Choćo* forms part of the *Chocó-Darién* corridor with Panama, which provides vital habitat connectivity for species migrating between South and Central America. HB could provide added protection within Colombia's biological corridors, strengthening the country's role in providing migratory habitat for thousands of neo-tropical species. This will help to ensure that endemic and threatened species can maintain viable populations within these ecosystems despite the growing pressure from urban growth, pollution, agricultural conversion, mining and large scale infrastructure development.

Developers in the mining, oil & gas and energy sectors as well as public works agencies have provided significant compensation payments in the past, although these have predominantly been focused on community rather than

environmental compensation. There have also been cases where projects receiving international finance have provided large-scale reforestation, although without a focus on full habitat restoration.

Ability to develop banks and supply credits

There could be significant bi-lateral and multi-lateral funding opportunities for the development of a HB market infrastructure from donors such as GEF and USAID. This is supported by the presence of a number of high capacity institutions such as the Humboldt Institute that would be able to provide the technical advice and monitoring support needed for a pilot banking scheme to develop.

An important political factor for Colombia is the *resguardo* legal ownership structure for indigenous communities. This may allow for scalable involvement from communities in high biodiversity areas such as the Amazon, as land rights are held in perpetuity, providing the long term security needed for the development of habitat credits. Where indigenous communities would not be directly involved in the development of habitat banks it will crucial that customary land rights are respected, and that their access to ecosystem services are maintained. This may mean that habitat banks include sustainable extractive and livelihood based activities as part of conservation management.

Relevant initiatives already in place in Colombia

There are examples of watershed based PES schemes, GIS based compensation schemes and biological corridor initiatives in Colombia (see section 2.3 of the Colombia country report for more detail). The development by design framework provides one of the best examples where existing environmental initiatives could be supported by HB.

Case study of relevant initiative for HB in Colombia:

Development by design framework:

The multi-partnership initiative between The Nature Conservancy (TNC), Conservation International (CI), WWF and the Colombian Ministry of Environment seeks to use TNC's 'Development by Design' (DbD) framework. The DbD framework is used to identify development impact and determine appropriate offsets with ecological equivalence. In the Cesar region of Colombia TNC is implementing the DbD approach to offset the impacts of coal mining in particular[33] and now for 4 other projects (marine ports, roads and gold mining). There is also a project starting with The Ministry of Environment, Housing and Land Development (MAVDT) for the hydro-electric power sector based on freshwater eco-regional plans created for most of the major watersheds in Colombia, including the Magdalena and Orinoco basins[34].

TNC have also developed a GIS compensation decision support tool and software that allows the MAVDT to find areas of ecological equivalency to those being impacted. The level of compensation needed is formulated using ecoregional plans, deforestation or land use changes, global, national and local priorities and the duration of the conservation strategies proposed by the company. This tool was developed by a group of experts internationally and nationally together with the MAVDT[35].

Suggested way forward

Consultation with MAVDT, industry groups, civil society, indigenous groups & academic institutions. Exploration of how the 'like for like' offsetting used in the 'Development by Design' project can be integrated into existing regulatory compensation schemes, complementing, or substituting reforestation programmes (see Colombia country report section 4.1).

33 The Ecosystem Marketplace, (2010). State of Biodiversity Markets.
34 Ramos, A. Personal communication
35 Ibid

Conclusion

Value of HB for LAC

HB can help governments to manage planning and zoning processes to maintain or increase the level of species habitat in their country. The conservation benefits derived from an HB market could then contribute directly to the achievement of poverty alleviation goals by restoring or enhancing the ecosystem provisioning services upon which society depends. HB can also contribute to national economic growth from the value created by both bank development and the provision of market support services including monitoring, legal, insurance, registry and technical support services. In all countries, but especially in Mexico, Brazil and Colombia, there is strong potential for including community and indigenous groups into this process, allowing for a wide distribution of the economic benefits of HB. There may be an opportunity for developing habitat banking plus (HB+) banks, where sustainable economic activity and resource extraction is permitted within HB boundaries.

HB is achievable

A regulatory HB scheme is achievable in every country reviewed; although there are a number of political, economic, environmental and social factors which will need to be in place in order to grow these schemes and make them successful. There are shared challenges that each case study country will face in implementing a regulatory HB scheme, most notably in making the purchase of habitat credits an economically competitive option against current compensation action, and country-specific risks to mitigate. **It is important to emphasise that whilst a banking scheme is achievable, it is not the only solution for achieving reduced biodiversity and ecosystem loss at scale in Latin America. Instead HB should be considered as playing a potentially complimentary role to existing and future national conservation efforts.**

What needs to be done to achieve this

Due to the complexity of HB and a lack of some of the fundamental components for a regulatory HB system, it may not be suitable conservation mechanism for all case study countries. Where there is appetite for HB and willingness to reform national regulation, build institutional capacity and address the risks of HB, it could still take many years and a sizeable resource investment to achieve a fully functioning HB scheme.

Table 10 below gives a summarised comparison between Tier 1 and Tier 2 countries of what may be achievable in HB development over the next 20 years based on the findings from this study.

Table 9: Potential timeframe for HB development in LAC (2010-2030)

Timeframe	Tier 1 countries	Tier 2 countries
2010-2015	• Stakeholder consultations completed • Possible establishment of national HB stakeholder committee • HBs piloted and evaluated • HB gains widespread political acceptance • EIA reform and integration of biodiversity offsetting requirements into environmental management plans • Capacity building of government, NGOs and academic institutions in preparation for national HB schemes	• Stakeholder consultations completed • Possible establishment of national HB stakeholder committee • HBs piloted and evaluated • HB gains widespread political acceptance
2015-2020	• National HB schemes established • Private sector investment from national and international sources • Market support services fully established – donor funding no longer needed	• Regulatory reform allowing for HB establishment • Capacity building of government, NGOs and academic institutions in preparation for national HB schemes

Timeframe	Tier 1 countries	Tier 2 countries
2020-2030	• National HB markets reach scale • HB development is well-established as an economically competitive land use option, attracting wide-scale participation from the private sector and civil society	• National HB schemes established • Private sector investment from national and international sources • Market support services fully established – donor funding no longer needed

To reach the landmarks identified in table 10 above, it will be important that countries achieve most or all of the feasibility framework steps identified in table 11 below. It is important to note that some of these elements are already present in the case study countries. Examples are used where these steps have particular relevance to individual or multiple case study countries.

Table 10: Steps needed for the establishment of regulatory HBs in LAC

1. Policy and regulatory foundations
Political acceptance
• Establish HB committees in each country, composed of industry, NGOs, academia and with representation from the relevant regulatory government agency. This group could provide continuity during governmental change and provide a platform for communication with new administrations
• Potential biodiversity benefits of a HB scheme need to be presented by this group to the appropriate environmental regulatory agency along with specific regulatory reform measures (see country reports)
• Decision made as to which agencies would assume responsibility for overseeing the growth of HB (see country schematics for potential institutional arrangements).
Regulatory change
• No net loss objectives established at a national, ecosystem or provincial level. Whilst this is not a critical step for the development of HB, it may be important driver for restoration based offsets, especially wetland banking.
• Stronger linkage between wildlife law restrictions on impacting species habitat and endangered species lists
2. Integration within EIA and permitting process
Amendments to EIA process
• Extension of EIA process to all industries with large-scale impact on primary habitat – focusing on industries where the implementation of EIAs is limited, such as domestically owned mining companies in Peru.
• Full species inventories are required during the EIA process, as opposed to using indicator species to assess potential biodiversity impacts at project sites, for example in the Costa Rican EIA process.
• Mitigation hierarchies formalised within the EIA and permitting process so that projects show evidence of taking measures to avoid, minimise, rehabilitate or offset residual impacts on natural habitat
Integration of 'like for like' offsetting in environmental management plans
• Provision of guidance for ecological 'like for like' compensation during the EIA process and provisions for habitat conservation instead of monetary compensation payments. Guidance may also be provided on including non-biological factors in the 'like for like' assessment process, including the social and cultural characteristics of impact sites and corresponding habitat banks.
1. Creating demand for credits
Demand from individual companies
• Transition away from afforestation/reforestation compensation schemes to full habitat restoration, reflecting true mitigation costs – where these occur as not everywhere
• Creation of regulatory drivers (as mentioned in regulatory change above) critical in generating sustainable credit demand

Demand from existing compensation funds
• Modification or establishment of compensation funds to provide direct linkages between habitat impacts and ecological restoration or conservation
2. Ability to develop banks and supply credits
Project developers and investors
• Partnerships formed between NGOs or research institutions with community land owning groups e.g. indigenous reserves for habitat bank development. Whilst this is important in all case study countries it may have particular value in regions where land disputes are relatively common, for example in parts of the Peruvian and Brazilian Amazon.
• Target industries where HB could provide a diversification of revenue generating opportunities or support existing revenue streams for example the ecotourism sector. These ecotourism opportunities may be of particular relevance in Costa Rica and the Yucatan peninsula of Mexico.
• Awareness-raising within investor community and landowners of the benefits of diversifying investment portfolios to include HB, especially if tax incentives can be included
• Assessment of current government institutional capacity to manage an HB system and provide adequate guidance, monitoring, permitting and enforcement service. Identification of the most critical capacity building needs within environmental and permitting agencies. This will be important in every case study country
• Analysis of potential revenues from HB development in comparison to the opportunity cost of other land uses (e.g. cattle ranching, tourism development, timber extraction). This will be particularly important in countries with limited habitat areas such as Panama and Costa Rica
• Where potential revenue analysis indicates higher profitability from HB development, consultation should be carried out with companies or private landowners to promote concept of long term conservation agreements as a viable commercial option
• Completion of gap analyses to rectify gaps in species and habitat inventories at national level. This is not a critical step but with better species inventories, countries will be better equipped to design HB schemes with scientific integrity
Scientific and market support services
• Provision of the necessary capacity building support with government and development of partnerships with scientific research institutes to share species and habitat data. This will be of particular importance for countries that are in the process of building national ecosystem inventories, such as Peru. This may be complemented by scientific and monitoring capacity building processes during REDD+ readiness.
• Establishment of legal guidance for credit agreements and designation of responsibility for overseeing these agreements within government. Guidance should be focused on the transfer of regulatory liability between credit purchasers and HBs and the need for HB developers to demonstrate sustained ecological equivalency to the impact they are offsetting.
• Formation of co-funding agreements between international donors and the national government for the development of market support infrastructure. This includes but is not limited to monitoring and evaluation systems, the expansion of species and habitat inventories, HB databases, government guidance support for permittees and legal support services for HB credit transactions.
• Assess where HB could support national and regional planning processes and where it could help align these planning processes with national biodiversity strategy objectives (e.g. Argentina's goal to achieve no loss in the country's natural capital).

This section outlines the next steps that could be taken over the next 10 years to assess the feasibility of HBs and support the development of national HB schemes where appropriate.

The consultation process – (2010-2012)

Before progress is made in the development of HB schemes, consultations are required with the appropriate environmental and permitting agencies. This will be vital in ensuring that national and where possible local governments are fully engaged in identifying the most appropriate ways forward for early stage HB schemes. This process should include in depth reviews of environmental, planning and EIA regulation to identify the exact reforms needed for an establishment phase HB system to take form. This should be accompanied by an assessment of the likelihood and timescales for regulatory change.

Another key step will be consulting with civil society organisations and academic institutions, which could be set to play important roles in the development of HB schemes, including developing banks, monitoring banking schemes, engaging stakeholder communities and providing technical support to bank developers. Local NGOs could also provide insight into how the benefits for local communities are maximised and potential negative impacts are avoided.

In order to engage business in the design of a banking scheme and to build investor interest, consultation with industry groups will be essential.

Establishment of pilot projects (2011-2015)

One option for identifying how a wetland or HB scheme could be best adapted to each country's needs would be to develop pilot projects. These projects could demonstrate the potential benefits from banks and provide a tool for assessing potential negative impacts within a particular ecosystem, province, industrial development zone or community reserve.

These pilot schemes could be incorporated into voluntary private agreements between a developer and private banks or as part of existing compensation schemes. This would, in effect, extend national protected areas using private market mechanisms, fitting with the objectives of a number of national biodiversity strategies. Alternatively pilot HBs could be established independently of existing compensation schemes, with new HB credit purchase agreements being made between 'early-mover' HB developers and permittees.

Once the progress of pilot projects has been assessed, the necessary regulatory adaptations have been made and the market infrastructure is operational, efforts should be directed towards generating interest from potential habitat bank developers (as identified in the country reports).This interest will be partly dependent on the level of interest shown by national or international investment banks, commercial banks, private equity and venture capital companies in providing financial services or investment into the capital costs of establishing banks. In order to generate interest from these groups they could be included within a national HB stakeholder group. The establishment of pilot projects could be incentivised by grant based funding from international or national donors.

Design of national HB systems (2012-2017)

As suggested in the 'Latin America Potential for Habitat Banking' section each country could consider how the USA wetland mitigation and conservation banking model should be adapted to suit the environmental, political, economic and social characteristics of each country. This process could be led by the HB stakeholder group or by the government's environmental agency, possibly supported by donor funding. This will need to take into account differences in ecology, cultural diversity, access to secure land tenure, the maintenance of community access to ecosystem services, future development pressures and the institutional capacities of each country.

Institutional capacity building (2012-2017)

In order to make the national HB schemes (as described in the 'hypothetical HB system' diagrams for each country) operational, institutional capacity building is needed in each country, supported by environmental agency budgets and/or with international donor funding.

This process could begin with national HB training workshops and inter-country study tours to review current examples of ecological compensation and offsetting in LAC. Based on the level of interest expressed from government, NGO, academic and private sector stakeholders this would be followed up with more extensive capacity building to increase EIA enforcement capacity, develop the necessary species and habitat databases for the design of an HB scheme, establish robust monitoring and evaluation systems and provide guidance and market information services for HB developers and permittees. Whilst this may be initially funded by national and international donors, the intention is that after 'readiness' for managing a national HB scheme is achieved responsibilities for further funding are passed on to state budgets. This could be at least partly funded by a fee or tax on HB transactions directed to whichever government agency is responsible for managing the national HB scheme.

Regulatory reform based on lessons from pilots (2012-2017)

Whilst this report and the country reports include specific suggestions for regulatory change there are regulatory adaptations that apply to multiple case study countries. This analysis is based on countries where stakeholder workshops were carried out and not to countries where findings were based on desk review supplemented with interviews. The piloting process will help to clarify which of the regulatory amendments are needed and additional reforms required.

Type of regulation	Suggested amendments
Wildlife and biodiversity laws	• Include restrictions on impacting species habitat both inside and outside of protected areas • Stronger and clearer links could be given between threatened species lists and the restrictions that will be placed on damage to the habitat of these species • Responsibility of property owners or third parties impacting wildlife habitat are required to not only repair but to compensate for residual impacts on habitat
EIA law	• The mitigation hierarchy formalised within the EIA and permitting process • Adaptation of current EIA law so that the purpose of compensation measures is to mitigate environmental damage with ecological 'like for like' offsetting • Issue guidance for 'like for like' compensation during the EIA process where developers are required to purchase biodiversity offsets or develop them on their own land. • Add requirement for full biodiversity analysis of impacted site rather than the use of indicator species only • Potential allowance within the regulation for a transfer of liability from permittees to wetland mitigation and habitat banking companies • Place the responsibility for compensation design with the designated authority, as opposed to EIA consultants • Increase the capacity of EIA enforcement agencies to ensure that findings from EIAs are followed up