



Innovative mechanisms for financing biodiversity conservation

A comparative summary of experiences from Mexico and Europe

D. Ezzine de Blas, M. Kettunen, D. Russi, A. Illes, J.A. Lara-Pulido, C. Arias and A. Guevara



Institute for
European
Environmental
Policy



THE REPORT SHOULD BE CITED AS FOLLOWS

Ezzine de Blas, D., Kettunen, M., Russi, D., Illes, A., Lara-Pulido, J.A., Arias, C. and Guevara, A. (2017) Innovative mechanisms for financing biodiversity conservation: a comparative summary of experiences from Mexico and Europe, an executive summary in the context of a project “Innovative financing mechanisms for biodiversity in Mexico / N°2015/368378”. Brussels, Belgium.

CORRESPONDING AUTHORS

Driss Ezzine de Blas (ezzine@cirad.fr)

Marianne Kettunen (mkettunen@ieep.eu)

THE REPORT IS ASSOCIATED WITH THE FOLLOWING PUBLICATIONS

Illes, A., Russi, D., Kettunen, M. and Robertson M. (2017) Innovative mechanisms for financing biodiversity conservation: experiences from Europe, final report in the context of the project “Innovative financing mechanisms for biodiversity in Mexico / N°2015/368378”. Brussels, Belgium.

Lara-Pulido, J.A., Arias, C., Guevara, A. and Ezzine de Blas, D. (2017) Innovative mechanisms for financing biodiversity conservation: experiences from Mexico, final report in the context of the project “Innovative financing mechanisms for biodiversity in Mexico / N°2015/368378”. Brussels, Belgium.

ABOUT THE LEAD INSTITUTION:

La Recherche Agronomique pour le Développement (CIRAD)

42, rue Scheffer, 75116 Paris

France

Tel.: +33 1 53 70 20 00

CIRAD (French Agricultural Research Centre for International Development) is a public establishment (EPIC) under the joint authority of the Ministry of Research and the Ministry of Foreign Affairs. Its activities concern life sciences, social sciences and engineering sciences, applied to agriculture, the environment and territorial management. Its work centres on six main topics: food security, climate change, natural resource management, inequality reduction and poverty alleviation.



@Cirad

Acknowledgements

We would like to thank the following people for comments and insights:

The European Commission – Vincenzo Collarino, Lars Müller, Laure Le Doux and Vujadin Kovacevic

Participants in the expert seminar *“Mecanismos Innovadores para la Financiación de la Biodiversidad: Un intercambio entre Europa y México”* in Mexico City, April 19 2016

Participants to the expert workshop *“Innovative mechanisms for financing biodiversity conservation: Exchange of experiences and information between Europe and Mexico”* in Brussels, 5 July 2016

Participants to the expert workshop in Mexico City *“Invertiendo para la Biodiversidad y el Capital Natural: Lecciones Aprendidas y Desafíos Futuros. Un intercambio entre Europa y México”*, 23-24 January 2017

Recommendations: opportunities for future bilateral partnership between the EU and Mexico

Our study has identified a number of innovative *biodiversity finance mechanisms currently in use in the EU* that could also be taken up in Mexico:

1. **Payments for environmental services (PES)**: The efforts to improve the EU agri-environment measures, making them more **result-based** provide an important innovation that could also be pioneered within the current framework for subsidies and credits for the Mexican agricultural sector. Such schemes could potentially have direct **benefits for grassland diversity, forest conservation and pollination services in Mexico**, all of crucial importance when aiming to increase rural resilience under climate change. A number of the private PES programmes in place in the EU could also provide interesting insights for Mexico. For example, the cooperation model for the protection of drinking water in the **Lower Saxony state (Germany)** demonstrates how a levy on water extraction could be used to generate funds to compensate for management and monitoring activities. Alternatively, PES financed by mineral water companies like **Evian and Vittel in France** provide insights in **involving the private sector in PES financing schemes**.
2. **Fiscal instruments**: The **Portuguese** example of **Ecological Fiscal Transfers (EFT)** indicates that such an instrument could help to increase the designation of regionally-governed national protected areas (NPA) in Mexico. It also appears that the key for increasing NPAs in a direct manner would be to **earmark EFT to the designation or management of NPAs**. Alternatively, increase and earmarking of national protected area entrance fees could be used to directly finance protected area management and maintenance costs. The existing information on the visitors' willingness to pay indicates that an increase in the level of fee would be possible. Hence a political reform in the congress would be needed as the concrete next step.
3. **Private sector and impact investment**: Hybrid public-private partnerships could encourage private sector investment in emerging new markets in Mexico. The **Natural Capital Financing Facility (NCFF)** in Europe is an example of such a strategy: by funding start-up costs for PES, offsets and green markets, NCFF helps to cover the initial costs and associated risks of setting up a biodiversity-related business initiative. Such a scheme could be **set up in Mexico by rural banks such as FIRA (Financiera Rural)** or government executive bodies such as the secretariat for agriculture and natural resources (*SEMARNAT*);

With regard to the *Mexican finance mechanisms* that could inspire innovative policies and investments in Europe we highlight the following:

4. **Payments for environmental services**: The **Mexican Matching Funds programme** has seen a sharp increase in private investment in the sustainable management of natural resources and biodiversity in the last years. The success of the program is linked to the **freedom given to local actors** when designing the program and targeting the payments. Although no empirical evidence is yet available to assess the scheme's efficiency, matching funds are seen as a promising scheme for the future with a **potential to deliver benefits to local actors, and public and private sectors**. Reflecting on the Mexican experience, an EU-level initiative could be established to explore such a design at national or regional level, for example in the context of the EU agri-environment schemes.

5. **Private sector and impact investment:** In Mexico, a wide number of biodiversity entrepreneurs and organisations are teaming up and taking the lead in enhancing private sector involvement in biodiversity conservation, with limited public support. The projects implemented by the **Mexican Nature Conservation Fund (FMCN)**, **el Buen Socio** and **FIDA** are an example of such **bottom-up multi-stakeholder developments**. The Mexican examples could help to improve the understanding of **stakeholder governance mechanisms** needed to stimulate the bottom-up process for private sector involvement also in Europe.

Finally, a number of conclusions emerge that are applicable in *both regions*:

6. **Payments for environmental services:** Despite the initial criticism on their potential lack of additionality and negative impacts into the intrinsic motivations of stakeholders, PES schemes have proven to be an **effective auxiliary** for delivering funding for biodiversity conservation. Continued public sector led innovation of scheme designs proves this instrument is still policy relevant. PES programmes need to be **tailored to local conditions** in order to maximise conditionality and additionality, while trying to improve equity and adapting to the local institutional context. To improve the schemes further, increasing the understanding of the conditions under which the **motivations of stakeholders** to conserve biodiversity are either eroded or enhanced is needed. Moreover, there is a need to move towards the **“end of line” type PES schemes** that seek to support a **permanent shift from biodiversity damaging practices** by providing asset-building incentives to invest into biodiversity-friendly productive systems.
7. **Fiscal Reform:** Examples from Europe, including the Danish pesticide tax and the Portuguese Ecological Fiscal Transfers, prove that in principle **fiscal instruments can be reformed to deliver concrete biodiversity benefits**. However, environmental fiscal reform requires further efforts to deliver its potential. Institutional inertia and political interests seem to be the main constraints for a wider reform and adoption of fiscal instruments for biodiversity. **A continued informed advocacy from the scientific and civil society communities is required to increase the uptake.**
8. **Policy Mixes:** Rather than just one instrument, a **mix of different financing instruments** has proved to be the successful solution for delivering identified biodiversity objectives. For example, **PES combined with certification and organic markets** and/or the **alignment of subsidies** to enable private investments can create a supportive framework for delivering concrete net benefits for biodiversity conservation.
9. **Habitat Banking:** The **US experience** on offsets and habitat banking indicates that, while such a framework can be useful in certain well-defined circumstances, it has **limited capacity to deliver robust results** in terms of ecologically effective restoration. Although offsets and habitat banking are useful as an **instrument to facilitate the take up of compensation projects**, it has also a high risk of compensating just on paper. The existing experience lets to conclude that such an instrument should **be used strictly following the mitigation hierarchy but not as mainstream policy.**

Context

The continued depletion of biodiversity is destabilizing the functioning of ecosystems which is putting at risk the flow of related benefits, such as provisioning of food and clean water, mitigation of natural disasters, and physical, mental and spiritual wellbeing. This in turn affects the long-term viability of economic activities and human wellbeing.

The traditional publically funded sources for conserving biodiversity are not sufficient. This has resulted in a need to explore new sources for funding that build on making a “business case” for biodiversity.

The costs of biodiversity degradation - and the benefits of addressing the degradation - are increasingly understood however, still poorly internalized by different economic sectors, including the private sector actors. International efforts for and by the financial sector to enhance the understanding of impacts and dependencies on biodiversity and natural capital are taking place, with investment portfolios addressing these emerging. While pioneering examples of successful business cases for biodiversity exist, comprehensive strategies are yet to emerge to allow upscaling of financial investment in biodiversity business.

To unlock this potential, this report intends to inform business and biodiversity professionals, about a set of concrete initial examples in the EU and Mexico that can help to transform the economics and finance of biodiversity.

Mexico and Europe: different starting points, similar challenges

Mexico hosts a number of wild mammals and endemic species unique to the world. Several of these including, for example, Mexican Salamander (*Ambystoma mexicanum*) and vaquita (*Phocoena sinus*) are in a critical need of conservation (Llorente-Busquets and Ocegueda, 2008). The **loss of natural habitats, deforestation in particular, due to uncontrolled expansion of economic activities** (e.g. agriculture) is the major threat to the conservation of Mexico's endangered species. The situation is exacerbated by a complex rural socio-economic situation linked to rural poverty, institutional corruption and lack of security.

Habitat loss is also a cause of concern in Europe. Similar to Mexico, the loss is caused by changes in land use which in the case of Europe means **intensification of agricultural production, urbanisation and abandonment of land in rural areas** (EEA, 2015). For example, intense use of chemicals in upstream watershed areas, and along wetlands and extensive agricultural areas that host biodiversity, have degraded the quality of soils and underground waters and have provoked a problem of bioaccumulation (EEA, 2015). As a consequence of that, the maintenance and restoration of ecosystem quality is a key focal area for European conservation efforts.

Even though the geography and the economic and institutional characteristics are very different, some of the **environmental challenges are common to Mexico and Europe**, as for example the **decline in bee populations** due in part to the intense use of pesticides (Woodcock et al., 2016). Similarly, both Mexico and Europe struggle to make the available **public financial resources match the needs** for implementing their conservation objectives. Were it caused by the low price of oil in Mexico or increased public debt following the financial crisis in Europe, seeking new innovative finance mechanisms to both improve the effectiveness of public funding **and increase the investment of the private sector for biodiversity conservation** is gaining traction on both sides of the Atlantic. **Payments for environmental services (PES), biodiversity offsets and habitat banking, environmental fiscal reform and biodiversity related impact investment and green markets** have been the focus of both development and discussion in the past years.

This executive summary presents a comparative synthesis of the existing innovative finance mechanisms for biodiversity conservation in Mexico and in the EU. The summary is based on the work carried out under the project "Innovative financing mechanisms for biodiversity in Mexico / N°2015/368378" financed by the European Commission (Illes et al., 2017; Lara-Pulido et al., 2017). In particular, the report highlights the opportunities in terms of bilateral cooperation between the EU and Mexico and the potential for scaling up the different finance mechanisms analysed in the context of the study.

For further information see: Illes et al. (2017)¹ and Lara-Pulido et al. (2017)².

¹ Illes, A., Russi, D., Kettunen, M. and Robertson M. (2017) Innovative mechanisms for financing biodiversity conservation: experiences from Europe, final report in the context of the project "Innovative financing mechanisms for biodiversity in Mexico / N°2015/368378". Brussels, Belgium.

² Lara-Pulido, J.A., Arias, C., Guevara, A. and Ezzine de Blas, D. (2017) Innovative mechanisms for financing biodiversity conservation: experiences from Mexico, final report in the context of the project "Innovative financing mechanisms for biodiversity in Mexico / N°2015/368378". Brussels, Belgium.

Payments for environmental services: improving effectiveness and increasing private sector involvement

Payments for environmental services (PES) are direct conditional contracts negotiated between a provider and a user of an environmental service, aimed at achieving a dedicated environmental outcome. The underlying rationale of PES is that landowners (i.e. the providers) get compensated for actions that help to maintain a certain level of environmental quality that benefits other stakeholders (i.e. the users) (Ezzine-de-Blas et al., 2016).

Public sector is the largest investor in PES both in the EU and in Mexico. In Mexico, since 2003 the national program of payments for hydrological services has enrolled more than 2 million hectares of forests all around the country (Lara-Pulido et al., 2017). In a predominantly dry country like Mexico, forests are vital for the provisioning of watershed services, such as mitigating the erosion and supporting the infiltration of water. Mexican forests have also been historically vulnerable to wildfires and deforestation. In the EU, the EU agri-environment measures are by far the largest PES in terms of areal coverage and beneficiaries involved. These measures are used to incentivise agricultural practises that help to maintain the quality of soils and aquifers, and conserve biodiversity that depends on extensive agriculture practices. Both in Mexico and in the EU, the **public PES** schemes established to help to conserve the above key ecosystems **have aimed to evolve towards higher efficiency.**

In the EU, **result-based agri-environment schemes (RB-AEMs)** have been developed to remunerate farmers for achieving the desired environmental outcome, instead of specific management practices as in the most common action-based agri-environment measures. In many cases **result-based schemes result in higher conditionality and efficiency, while encouraging innovation** (Allen et al., 2015). They are particularly well-suited to situations where it is easy to find proxy indicators for biodiversity conservation and where there is a clear link between conservation practices and provision of an environmental outcome. In some cases, however, result-based schemes may entail an increased risk for farmers with respect to the more traditional action-based schemes, for example when the provision of the desired environmental outcome can be substantially influenced by external factors like weather or where the species targeted are animals that can move from field to field.

Besides the EU funded RB-AEMs, there are also other interesting and efficient examples of PES in the EU. **Examples exist of schemes financed by public bodies or private companies and, in a few cases, by a combination of the two.** These schemes are commonly implemented at a local or regional scale and most of them address agricultural areas and in particular water catchment areas. The most commonly targeted ecosystem services are those related to water quality, however examples of schemes focused at recreational uses of natural areas, improving flood risk management and increasing carbon sequestration also exist. Programmes are also used to target the conservation of specific species and habitats.

In Mexico, the most relevant evolution of the national PES programme is the Matching-Funds programme. The programme started in 2006 with an aim to encourage private investment in nature conservation by **matching private funding with public investment** (a maximum of one Mexican peso from the public funds per one peso invested by the private sector). Matching Funds are PES schemes designed by the National Forestry Commission (Comision Nacional Forestal - CONAFOR) and a local private institution, and funded by a combination of public (CONAFOR) and private contributions. A number of different schemes have been implemented involving international NGOs and private companies related to drinking water and mining (Saldaña-Herrera, 2013). The last years' plunge in international oil prices plus the structural deficiencies of the Mexican oil industry have affected the allocation of funds to federal programs including the national program for hydrological services. This has pushed CONAFOR to transfer funds from the national program on hydrological services to the Matching Funds programme in an attempt to double the current available funds.

A question that remains is whether the shift to the Matching Funds programme will be able to guarantee the similar level of effectiveness as the national programme that has been able to reduce deforestation rates by 50% (Alix-Garcia et al., 2015). While the Matching Funds programme is better tailored for the national social-ecological conditions it is also more prone to be influenced by local power dynamics.

Environmental fiscal reform: unlocking the potential for biodiversity

Environmental fiscal reform (EFR) refers to the action of shifting the tax burden from economic functions to activities that lead to environmental pressure and entail negative externalities (OECD, 2013). Tax shifting as such is rarely used to target biodiversity conservation and therefore in the context of biodiversity financing EFR covers a broader range of instruments including environmental taxes, environmental fees and charges, environmental tax incentives and ecological fiscal transfers (EFT).

The EU provides a useful range of experiences related to the application of environmental fiscal instruments for biodiversity that could be further mainstreamed across the EU Member States and that Mexico can draw inspiration from. **Taxes on pesticides and fertilizers** are among the most frequently implemented instruments in the EU currently in place in 5 out of 28 EU Member States. **The Danish pesticide tax, established in the 80s and reviewed in 2013, is the most advanced in terms of relevance to biodiversity with its level being set according to the health and ecosystem impacts of each substance.**

With regard to environmental fees, some initiatives in the EU show that earmarking can considerably increase the effectiveness of environmental fiscal instruments. **Fishing fees in Estonia and Ireland are directly used to protect fish habitats through conservation funds.** Such a combination of environmental fees transferred to earmarked conservation funds has proven also to be effective in Mexico. The national program of payments for hydrological services (above) has used federal funds from water taxes. Furthermore, **a recently established Jalisco environmental fund will fund climate change and biodiversity conservation actions through revenue originating from taxes**, compensation payments and fines for environmental damage made by private companies, and fees and charges related to controlling vehicle emissions.

Finally, **ecological fiscal transfers (EFT)** are an instrument that aims to redistribute non-earmarked tax revenue between different government levels according to ecological criteria, most commonly the coverage of protected areas. In other words, **EFT recognise the local areas' contribution to biodiversity conservation** and can therefore incentivise further action in this regard. **In Portugal, the evidence indicates that EFT can be effective in fostering the creation of new regional protected areas.** Although the Portuguese central government does not specify the way the transferred resources have to be used (i.e. they are not earmarked for conservation actions), there has been an increase in protected areas in municipalities receiving EFTs payments. Based on this experience, **such a policy would assist Mexican states to endorse positive attitude towards conservation and even increase efforts in biodiversity conservation at local level.**

Green markets and impact investment: becoming better at making the business case for biodiversity

Impact investing refers to investments made into companies, organizations, and funds with the intention **to generate a measurable, beneficial social or environmental impact alongside a financial return** (GIIN, 2016).

In Mexico, impact investment and the emergence of viable business models for biodiversity is advancing as a joint action by communities, NGOs and **“biodiversity brokers” which act as entrepreneurs that help to connect biodiversity project with the business sector**. To mainstream this bottom-up process, an involvement of large-scale multinational companies (i.e. agricultural companies such as Bimbo or Nestle) and investment funds is required. Such an involvement is in part hampered by the **lack of existing “bankable” project opportunities** and the availability of biodiversity brokers that can link identified conservation needs with financial expectations. Some interesting examples include the work done by small impact investment funds that act as small-scale triggers of business viable ideas such as *El Buen Socio* and *FIDA* (Lara-Pulido et al., 2017).

In Europe, examples of impact investing can also be found. For example, the food and beverages company **Mondelez International** has been pioneering an initiative that focuses on sustainable agriculture and biodiversity protection targeting the wheat supply chain. Farmers enter a charter with voluntary quality requirements – similar to a private PES scheme – and the company uses an informal certification as a way to increase the quality of the products and therefore its sales and marketing image. The agricultural practises promoted by Mondelez cover around 40,000 hectares of land and are creating an impact in altogether six EU Member States. Another relevant public-private initiative is **the Natural Capital Financing Facility (NCFF) supported by the European Investment Bank (EIB) and the European Commission**, which seeks to cover initial start-up costs of biodiversity investments (green markets, PES etc.) in order to incentivise the private sector to unleash larger investments once the sources of risk have been integrated. Both examples are interesting schemes to be replicated in Mexico.

Offsetting: what can Mexico and the EU learn from the US?

Biodiversity offsets are defined as measurable conservation outcomes of actions designed to compensate for significant residual adverse biodiversity impacts that arise from project development after appropriate prevention and mitigation measures have been taken (Business and Biodiversity Offsets Programme, 2013).

Offsetting and habitat banking have yet to deliver their supposed promises for biodiversity conservation. Europe is still debating the risks and benefits of offsetting with some pioneering countries, such as Germany, having concrete experience in implementing legislative frameworks for offsetting (Illes et al., 2017). In Mexico, more substantial discussion on offsetting and habitat banking is yet to take place. An analysis of the experiences from the US offers food for thought for both of the regions.

No robust studies demonstrating the ecological effectiveness of the US wetland mitigation banks (US WMB) are available. A local assessment of the wetland mitigation banking –a habitat banking system for the compensation of destroyed wetlands- in the state of Ohio concludes that from 12 banks covering 400 hectares, 50% were not restored (25%) or remain in poor condition after they were (25%) (Mack and Miccachian, 2005). The assessment concludes that the promise of achieving a higher quality “product” of wetland restoration has

not been attained in the practice. An assessment of Chicago offsets reveals that the wetland mitigation banking has resulted in the movement of wetlands from high opportunity cost urban “white” areas, to low opportunity costs rural “ethnic” areas (Ben Dor et al., 2014). Such a trend combined with the geographical pattern of dispersed losses versus concentrated restoration can cause a reduction in the social value of the ecosystem services delivered by wetlands.

Therefore, **although the US wetland mitigation banking has been able to enrol large ecologically homogeneous areas, there has been a lack of long term monitoring and success into getting the ecological equivalence between destroyed and restored areas.** The US experience therefore seems to validate the concerns for conserving ecosystem quality in the context of habitat banking, e.g. indicating that **the effective implementation of the mitigation hierarchy remains one of the most crucial building blocks of any offsetting or habitat banking schemes.**

Capacity building: a call for biodiversity brokers

A recurrent bottleneck for impact investment to happen at a larger scale is **the lack of biodiversity investment champions - or biodiversity brokers** - that have the capacity to identify and design investments that fit the local conservation needs and translate them into a proposal that appeals to the financial sector. Such champions are the missing lynchpin in the **chain of actors that need to be aligned for biodiversity investment to happen** (Fig. 1).

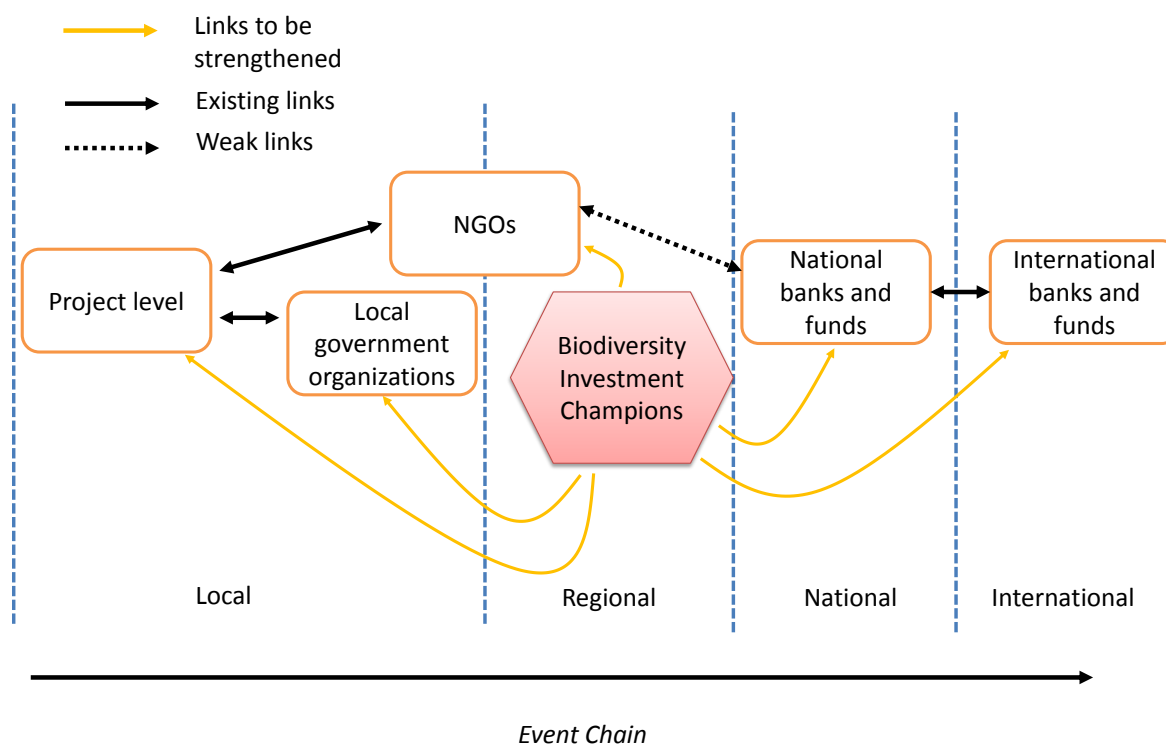


Figure 1. Role of biodiversity investment champions to connect local and national scales to complete the event chain. Source: Authors.

Such biodiversity investment champions must understand the language, needs and enabling conditions of each relevant actor. This implies understanding local livelihoods and rural productive systems in both socio-economic and ecological terms while connecting with the civil society actors (e.g. NGOs). Therefore, such **champions need an understanding of social-ecological complexity and interdisciplinary, for example coming from a finance background and getting trained into social-ecological local systems.**

Developing these skills and putting them in the market will require novel master and training programs that can build on the analysis of existing successful biodiversity business cases and integrate internships with private companies to build new biodiversity investments.

References

Alix-Garcia, J.M., Sims, K.R.E. and Yañez-Pagans, P. (2015). *Only One Tree from Each Seed? Environmental Effectiveness and Poverty Alleviation in Mexico's Payments for Ecosystem Services Program*. *American Economic Journal: Economic Policy*, 7(4): 1-40.

Business and Biodiversity Offsets Programme. (2013). *To No Net Loss and Beyond: An Overview of the Business and Biodiversity Offsets Programme (BBOP)*. Washington, D.C.

EEA. (2015). *The European environment — state and Outlook: synthesis report*, European Environment Agency, Copenhagen.

Ezzine-de-Blas, D., Wunder, S., Ruiz-Pérez, M., Moreno-Sanchez, R.dP. (2016). *Global Patterns in the Implementation of Payments for Environmental Services*. *PLoS ONE* 11(3): e0149847.

Global Impact Investing Network (GIIN). (2016). *Annual Impact Investor Survey*. Web access: <https://thegiin.org/knowledge/publication/annualsurvey2016>

Illes, A., Russi, D., Kettunen, M. and Robertson M. (2017). *Innovative mechanisms for financing biodiversity conservation: experiences from Europe, final report in the context of the project "Innovative financing mechanisms for biodiversity in Mexico / N°2015/368378"*. Brussels, Belgium.

Lara-Pulido, J.A., Arias, C., Guevara, A. and Ezzine de Blas, D. (2017). *Innovative mechanisms for financing biodiversity conservation: experiences from Mexico, final report in the context of the project "Innovative financing mechanisms for biodiversity in Mexico / N°2015/368378"*. Brussels, Belgium.

Llorente-Busquets, J., & Ocegueda, S. (2008). *Estado del conocimiento de la biota*. In *El capital natural de México* (Vol. 1). México: CONABIO.

Saldaña-Herrera, J. (2013). *Sistematización y documentación de mecanismos locales de pago por servicios ambientales en México*. CONAFOR, Guadalajara, México. 266p.

Woodcock, B.A., Isaac, N.J.B., Bullock, J.M., Roy, D.B., Garthwaite, D.G., Crowe, A. and Pywell, R.F. (2016). *Impacts of neonicotinoid use on long-term population changes in wild bees in England*. *Nature Communications* 7, Article number: 12459.

Ben Dor, T.K., Lester T.W., Livengood, A., Davis, A., and Yonavjak, L. (2014). *Exploring and Understanding the Restoration Economy*. Final report to Walton Family Fund. Web access: <https://curs.unc.edu/files/2014/01/RestorationEconomy.pdf>

