

## Critical review of Biodiversity Offset track record

For the purposes of IEEP in their review of 'Policy Options for a potential EU No Net Loss Initiative'

### Summary

This preliminary review reveals a number of problems related to the performance of offsets, which put into doubt their ability to achieve 'no net loss'. The technical problems related to the difficulty of measuring biodiversity, of restoring and recreating nature and of setting adequate baselines suggest that most biodiversity offsets are little more than a 'promise in the wind'. Offsets provide no certainty as to their final outcome, and what little reporting is done shows that offsets more often than not provide 'equivalent biodiversity' that is grossly inferior to that which was destroyed.

In addition to 'technical' problems, the literature points towards a number of 'governance' realities that must be acknowledged. In the past, public authorities have failed to penalise or deal with failed offsets and have failed to ensure that the mitigation hierarchy is applied. There appears to be a generalised failure to ensure that offsets are properly implemented, that biodiversity is properly measured and that offset interventions are sufficient and appropriate. Even in countries with 'strong governance' such as the USA, Germany and Australia, reports show concerning signs that biodiversity offsetting has contributed to the erosion of the mitigation hierarchy and leads to weakening of existing legislation and protection.

Finally, reports have shown that biodiversity offsets do not take into consideration the impact of developments on local communities, the impact of which cannot be offset. This take a step backwards from the acknowledgement that nature and human society are intimately linked.

Though the EU has strong legislation to protect biodiversity, there are gaps relating to the requirement to 'avoid' and 'mitigate' damage that need proper consideration. There are also a number of problems related to implementation that need to be addressed. Given the problems related to biodiversity offsetting, the EU should focus its energy on making existing legislation work better and on creating new legislation on avoidance.

### Why produce a critical review for IEEP?

In the workshop (3.04.2013) on 'Policy options for an EU No Net Loss Initiative' organised by IEEP and DG Environment, there was a strong focus on the role that biodiversity offsetting could play in achieving no net loss in the EU. However, there seemed to be little recognition of the numerous problems that biodiversity offsetting faces on the ground. IEEP acknowledged this and welcomed any data on difficulties that biodiversity offsets have faced in the past.

### Summary of findings

This critical review is based on a review of academic texts but also grey literature produced by local communities faced by biodiversity offsetting (Annex A and B). This literature review leads us to make a number of observations:

*Technical issues: Impossibility of accurately measuring net loss and restoration/avoided impact, failure of restoration actions, problems related to time-lags and scale*

1. There are problems regarding the calculation of 'what is lost': often, it appears that the calculation of 'what is lost' lacks detail. This is a pragmatic choice related to the difficulty of measuring biodiversity and the pressure on offset providers to provide cheap and accessible

offsets. One example in the North West of France (see Annex A) and one example in South-West of England (See Annex B) show that this ‘pragmatism’ has led to inferior assessments being made that undervalue the biodiversity on site.<sup>1</sup> This makes it hard to know if offsets have achieved ‘no net loss’.

2. There is evidence of underreporting ‘what is gained’ in offsets, which makes the task of assessing offset outcomes more difficult. This means it is hard to know if offsets have really achieved ‘no net loss.’ Anecdotal evidence in Germany reveals that little information is produced on the results of offsets over time.
3. It appears that many biodiversity offset programmes specify ‘actions to take’ rather than ‘condition outcomes’. This means that offsets are not liable for achieving specific outcomes. In the event that offsets do not achieve equivalence to ‘what is lost’ (which we believe is a strong possibility due to flaws in restoration ecology), offsets will result in an increased loss of biodiversity.
4. There is evidence within the restoration ecology literature that shows that the science of restoration is still in its infancy and demonstrates mixed to poor outcomes. This means that offsets that are based on restoration work risk the same flaws.
5. Offsets that are based on ‘avoided impact’ also face a number of flaws, such as problems related to setting baselines. These are problems that can be observed from biodiversity offsets, but also other types of offsets such as carbon offsets, that face similar problems.<sup>2</sup>

#### *Governance issues and legislative gaps: problems of implementation and enforcement*

6. There is evidence to show that, in countries that require following the mitigation hierarchy, most jurisdictions do not properly implement an avoidance hierarchy. In Europe this will be a particularly a problem as there is currently gaps in legislation to avoid impact. Furthermore, studies show the difficulty of proving whether projects have properly consulted alternative options. Studies show that it is extremely rare that projects have ever been refused due to the difficulty of offsetting biodiversity. Since the ‘mitigation hierarchy’ is important in ensuring the environmental integrity of compensation activities, this is undoubtedly concerning. The examples so far taken on board by IEEP and also the expertise presented by

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<sup>1</sup> One academic, Martine Maron from the University of Queensland, highlighted to us that “A major issue in establishing whether the target condition has been met is that while the overarching policy objectives may state replacement of a specific biodiversity value, the onsite targets set in a particular case were never going to be enough to replace the lost biodiversity even if achieved. This has been the case for a long time for the south-eastern Red-tailed Black-Cockatoo, for which offsets initially involved planting of tree species that are not habitat for the cockatoo, and then moved on to protecting already-protected trees. While the proponents may have achieved the site-level outcome required of them (although they did not always) the outcome required could never have benefited the cockatoo.”

<sup>2</sup> On academic, Sian Sullivan, from the University of Birkbeck, highlighted to us that “There is a lot of scope for playing with figures in the ways in which they are assessed. For example, the Rio Tinto offsets associated with the Ambatovy ilmenite mining projects in Madagascar rely on counterfactual assumptions that assume high levels of forest degradation by locals, thus acting to justify displacement of them and their resource use practices. They also do not take into account historical deforestation practices caused through commercial and colonial exploitation of timber, the establishment of commercial eucalyptus plantations.”

the commission on the occasion of the workshop show the concept of avoidance builds merely on choosing the least damaging alternatives for a project. It does not look at other factors, such as the question if the project is of a public interest that overrides the interests of biodiversity, comparable to the procedure in Art. 6(3) and 6(4) of the EU habitats directive (92/43/EC).

7. Studies show that implementing bodies almost never takes action when offsets are found not to be in compliance with the agreed standards. In Germany, while the authorities control that offsets actions are undertaken, there is little control if these have a long-term effect (as long as the impact of the project persists).

#### *Socio-geographical considerations*

8. By definition, most biodiversity offsets do not take into consideration the social impact of development and land-use change. This impact can be a loss of quality of life, loss of spiritual, cultural or community role that nature plays, loss of recreation, loss of 'natural engineering' values such as storm water drainage, water purification & pollination (etc.), loss of economic value of housing (etc.)
9. Biodiversity Offsetting does not take into consideration the impact of development and land-use change on landscapes. Landscapes are an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors. Landscapes have significant cultural heritage and this highlights an important principle in landscape protection and that is that they are 'site specific' meaning that they have meaning not only in what they are but *where* they are.

#### *Financial considerations*

10. In the absence of regulation on avoidance, the premise of biodiversity offsetting is that it replaces the need for a regulation that prevents destruction since the price put on ecosystems is a sufficient regulator. The theory is that putting a price on ecosystems loss will regulate its destruction, since precious ecosystems would, in theory, be more expensive to offset, their destruction would therefore be avoided. Proponents of biodiversity offsetting suggest that price will then act as a form of regulation, since developers will look for the cheapest land to build on. However, if offsets are sold on a market, it will be impossible to 'ensure' that price is prohibitive enough to dissuade destruction, since price depends on demand and supply and by other factors such as land value, accessibility etc. Experience in countries that have well-established offsetting requirements show that businesses factor in the cost of offsetting into their business plan, meaning that it no longer plays a dissuasive role. As previous environmental markets (such as for carbon) have shown, weak design and political intent means that prices never reach the required level to be prohibitive.

#### *Legal considerations*

11. There is concern that biodiversity offsetting interferes in the ability of laws to prevent damage. Biodiversity offsetting relies on a market price for habitat restoration being high enough to encourage development in places that are easier to find a similar substitute, and

therefore cheaper, rather than on laws that are democratically decided. There is also concern that biodiversity offsetting (see Annex A and B) has undermined the democratic voice of local communities who challenge unwanted land use change.

### Literature review

- 1. Lack of monitoring & underreporting:** A number of articles show that very little monitoring of the outcome of restoration activities is done. These articles also show that there is an underreporting of failed projects.
  - *Bernhardt, E.S., Palmer, M.A., Allan, J.D., Alexander, G., Barnas, K., Brooks, S., Carr, J., Clayton, S., Dahm, C., Follstad-Shah, J., Galat, D., Gloss, S., Goodwin, P., Hart, D., Hassett, B., Jenkinson, R., Katz, S., Kondolf, G.M., Lake, P.S., Lave, R., Meyer, J.L., O'Donnell, T.K., Pagano, L., Powell, B., Sudduth, E., 2005. Synthesizing US river restoration efforts. Science 308, 636–637.*
  - *Hobbs, R., 2009. Looking for the silver lining: making the most of failure. Restoration Ecology 17, 1–3.*
  - [Government Accountability Office report](#) “Wetlands Protection: Corps of Engineers Does Not Have an Effective Oversight Approach to ensure that Compensatory Mitigation is Occurring.”<sup>3</sup>
  - *NRC (2001) Compensating for Wetland Losses under the Clean Water Act. National Academy Press, Washington, D.C. According to this article, 63% of the banks were inadequately monitored. Lack of centralised information about banks and their credits, hence the difficulties in monitoring them, high transaction costs, and the risk of credits being sold twice.*
  
- 2. Restoration ecology has produced weak results:** Studies point towards both technical difficulties (difficulties of measuring biodiversity and implementation difficulties such as time-lags) but also ‘administrative improbabilities’. This latter point is important: articles question whether governance will ever be strong enough to enforce offsetting rules properly to achieve ‘no net loss.’ A number of articles suggest that restoration ecology is a relatively young and inexperienced discipline with a still-embryonic and patchy evidence base. Given the complexity and variability of natural systems, the ecological community is increasingly recognizing that recreating or restoring ecosystems to some specified former state is often unlikely to be feasible, especially within reasonable time frames. Studies also show that it is often not easy to evaluate the effectiveness of offsets in achieving their environmental objectives. It requires knowing what has been lost, what the baseline of the offset site is, what the result of the offset is after a defined time. It also requires making a decision about what is being measured. Studies show that for reasons of pragmatism, assessments are simplified and tend to lack enough detail (See Annex A and Annex B).

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<sup>3</sup> As the academic Morgan Robertson, formerly part of the Army Corps of Engineers, has related to us: “The Government Accountability Office is a part of the government, not a watchdog group, and this is just one of many reports they've done over the years on the failures of the compensation program.”

- Robertson, M. 2006. *The nature that capital can see*, *Environment and Planning D*.
- Hobbs, R.J., Hallett, L.M., Ehrlich, P.R., Mooney, H.A., 2011. *Intervention ecology: applying ecological science in the twenty-first century*. *Bioscience* 61, 442–450.
- Palmer, M.A., Filoso, S., 2009. *Restoration of ecosystem services for environmental markets*. *Science* 325, 575–576.
- Stokstad, E., 2008. *Environmental regulation: new rules on saving wetlands push the limits of the science*. *Science* 320, 162–16
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- Moreno-Mateos, D.Power, M. Comi ´n, F Yockteng, R.,(2012) 'Structural and Functional Loss in Restored Wetland Ecosystems' *Plos Biology* 10(1): e1001247.doi:10.1371/journal.pbio.1001247
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- Why bartering biodiversity fails – Susan Walker, Ann Brower, Theo Stephens, William Lee
- BenDor, T., 2009. *A dynamic analysis of the wetland mitigation process and its effects on no net loss policy*. *Landscape Urban Plan.* 89, 17–27.
- Hossler, K., Bouchard, V., 2010. *Soil development and establishment of carbon based properties in created freshwater marshes*. *Ecol. Appl.* 20, 539–553.
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- Buckney, R.T., Morrison, D.A., 1995. *Temporal trends in plant species composition on mined sand dunes in Myall Lakes National Park, Australia*. *Aust. J. Ecol.* 17, 241–254.

- Wilkins, S., Keith, D.A., Adam, P., 2003. Measuring success: evaluating the restoration of a grassy eucalypt woodland on the Cumberland Plain, Sydney, Australia. *Restor. Ecol.* 11, 489–503.
- Lomov, B., Keith, D.A., Hochuli, D.F., 2009. Linking ecological function to species composition in ecological restoration: seed removal by ants in recreated woodland. *Austral Ecol.* 34, 751–760.
- There are a number of case studies in the 2001 [report by the National Research Council](#) that show that in a number of cases, offsetting sites have not reached a satisfactory level of equivalency.

**3. Not replacing the ‘same thing’: problems of simplification of metrics to make them fungible means they end up not being accurate.**

- Hilderbrand, R. H., A. C. Watts, and A. M. Randle 2005. The myths of restoration ecology. *Ecology and Society* 10(1): 19. [online] URL: <http://www.ecologyandsociety.org/vol10/iss1/art19/>.
- See Annex A, case study of a proposed airport in North-West France. This case shows that the offset provider, in this case a company called Biotope, severely undervalued biodiversity that existed on the site, which was an area of wetland habitat.

**4. Focus on compensation rather than avoidance and minimization & weakens existing**

**legislation:** There is evidence that the wetland banking in the US focuses almost predominately on compensation than the other aspects of the mitigation hierarchy such as avoidance and minimization. This means that the offsets can work as an *incentive* to developments that may be ecologically problematic since they offer compensatory measures. This could lead to an increase in biodiversity loss against a projected baseline of loss, albeit hard to measure

- See Annex A
- Case in Tyneside, UK: <http://saveourwoods.co.uk/articles/nppf/biodiversity-offsetting-permits-previously-rejected-housing-development/>.
- Case in Gloucestershire: <http://www.bbc.co.uk/news/uk-england-gloucestershire-23301393?print=true>
- *Hough and Robertson. Mitigation under Section 404 of the Clean Water Act: where it comes from, what it means. Wetlands Ecol Manage (2009) 17:15–33*
- *Clare, S., N. Krogman, L. Foote, N. Lemphers. 2011. Where is the avoidance in the implementation of wetland law and policy? Wetlands Ecol Manage (pre-publication)*
- *Why bartering biodiversity fails – Susan Walker, Ann Brower, Theo Stephens, William Lee.*

**5. Displaces biodiversity away from communities**

- *Ruhl, J. B. and J.E. Salzman. The Effects of Wetland Mitigation Banking on People (January 1, 2006). FSU College of Law, Public Law Research Paper No. 179; FSU College of Law, Public Law Research Paper No. 179. Available at SSRN: <http://ssrn.com/abstract=878331>*