Promoting avoidance for conservation gains

Geneviève Hayes[1] and Samir Whitaker[2]

Abstract: *Biodiversity loss is occurring at an unprecedented rate, largely due to economic motivations for development (Poulton, 2014). Current actions are failing to meet their targets, and new mechanisms are needed to avoid and manage impacts and the Mitigation Hierarchy is one such framework (BBOP, 2009). As with any framework however, robust, practical guidance and a strong evidence base are vital for effective implementation. This study draws on case studies to highlight where development projects have made specific and significant efforts to avoid their impacts on biodiversity. We examine the tools and methods available to achieve avoidance at four levels: 1) Pre-site selection; 2) Spatial; 3) Temporal and 4) Design. To conclude, the case studies presented in this paper demonstrate that there is much technology available to the corporate sector. However, better uptake will be reliant on knowledge sharing and collaboration.*

Introduction

The mitigation hierarchy is a widely used framework that enables and encourages more effective environmental risk management by companies across a range of sectors. However, while there is much guidance and dialogue around the offset stage of the mitigation hierarchy in the academic literature, especially surrounding the methods and metrics of how to calculate what should be offset (area and individuals for example), there is significantly less on the avoidance stage. The Business and Biodiversity Offsets Programme (2012) defines avoidance as: "*measures taken to prevent impacts from occurring in the first place, for instance by changing or adjusting the development project's location and/or the scope, nature and timing of its activities*".

Recent work of the Cross Sector Biodiversity Initiative (2015) outlines 3 key types of avoidance: 1) Spatial: the re-location of the entire project site away from an area recognized for its high biodiversity value; 2) Temporal Avoidance: Changes in the timing of activities such as surveys and construction; and 3) Design Avoidance: selection of the type and location of infrastructure and its operation. However, we contend that pre-site selection avoidance should be distinguished as a preliminary stage. This stage would be informed by the broad range of tools to carry out landscape level planning and sensitivity mapping to identify areas with high biodiversity 'risks' to a business.

The aim of this paper is to present tools and frameworks currently available to, and being used by, corporate organisations to guide avoidance. This research is based on an assessment of 17 case studies from extractive (9), energy (3), housing (1), infrastructure (1), agriculture (1) and forestry (2) sectors. These were selected based on recommendations of experts working in this field, and have been evaluated through a multi-stakeholder process as good examples of avoidance implementation. Information was based on a review of available documents (e.g. EIAs) in addition to key informant interviews.

[1] Genevieve Hayes is Research Assistant at BirdLife International (Cambridge, UK). genevieve.hayes@birdlife.org
[2] Samir Whitaker is Programme Manager at BirdLife International (Cambridge, UK). Samir.Whitaker@birdlife.org

<u>1) Pre-site selection</u>

1.1 BirdLife Sensitivity Map:

The BirdLife Migratory Soaring Bird Sensitivity Map (tinyurl.com/MSBmap) has been developed to assist developers, planning authorities and other stakeholders working in the Red Sea area with avoiding project impacts. The tool can be used before a specific site is selected and a costly EIA required. There is capacity on the Red Sea to produce over 20GW worth of energy from wind farms, however, the Rift Valley/Red Sea flyway is also used by over 2 million migratory soaring birds, and is thus one of the largest avian flyway in the world. Therefore, if wind farms are not carefully planned and sited appropriately there is potential for significant impacts on the populations of these species. The tool allows access to information regarding the distribution of soaring bird species, and the visualisation on the sensitivity of certain areas located within the flyway in order to inform the site selection process. Users can draw polygons where a site would be located and receive information regarding satellite tracking data for migratory soaring birds such as vultures and eagles, the population status of vulnerable species in the area, and sensitivity indices for the site.

1.2 Toolkit for Ecosystem Service Site-Based Assessment (TESSA)

TESSA[3] has been designed to inform land-use decision-making through demonstrating the impacts on ecosystem services of actual and potential land-use changes at sites. The toolkit emphasises the importance of making comparable estimates for the most likely alternative state of the site (e.g. after conversion to agriculture) so that decision-makers can assess the net consequences of such a change, and the consequences for biodiversity and human well-being. Relevant applications to the corporate sector may include: ecosystem services (ES) assessment prior to development of site-based operations; monitoring of the ES impacts; and demonstrating ES value of a corporate conservation project.

1.3 Integrated Biodiversity Assessment Tool (IBAT)

IBAT is a central database for globally recognized biodiversity information including spatial data on protected areas, Key Biodiversity Areas (KBAs) and species. This tool can be used to identify both the opportunities and risks associated with a given area and provide the necessary information to make decisions. This higher level screening is now often required by leading financial institutions such as the IFC and Equator Principles Finance Institutions. IBAT can also provide guidance as to data gaps and required expertise, helping prepare the terms of reference for an impact assessment, focusing attention on key species of conservation concern and sites of known conservation value, as well as providing information to support sustainability reporting such as GRI. Within the tool, users are able to highlight individual sites of biodiversity value, and explore which species trigger criteria for vulnerability or irreplaceability. IBAT allows developers and investors to identify issues with, and thus avoid, certain areas at an early stage of project planning. It is important to recognise that IBAT does not provide details of potential indirect, downstream or cumulative impacts. IBAT should be regarded as a "first-step", and is not a substitute for further investigation and due diligence, especially concerning national/local conservation priorities (pers.comm. Martin Sneary, 2015).

[3] tessa.tools

1.4 BROA – used by British American Tobacco (BAT)

The BAT Biodiversity Partnership developed BROA, a field-based tool, recognised by the UN Food and Agriculture Organisation and the World Business Council for Sustainable Development as an approach that is comprehensive enough to be used by any organisation operating in an agricultural landscape. In 2012, BROA was made publicly available to encourage the application of the tool outside the tobacco sector. The BROA tool provides a method to: identify the impacts and dependencies of business operations on biodiversity in agricultural landscapes; assess and prioritise the risks and opportunities arising from those impacts and dependencies; and produce action and monitoring plans to address the identified risks and opportunities.

2) Spatial Avoidance

Spatial avoidance is relatively common, especially within the extractives sector. For example, a Rio Tinto project in Guinea located the conveyor system for crushed ore on the eastern as opposed to the western side of a mountain range, enabling the avoidance of key Chimpanzee habitat, essential as all Great Ape taxa are listed as Endangered or Critically Endangered (IUCN, 2014) and are extremely sensitive to extractive activities. The Ambatovy mine in eastern Madagascar also utilised on-site avoidance to conserve habitat within the concession area that was tied to the soil type and thus was unique to the project site (Ambatovy, 2006).

Within the agricultural/forestry sector, spatial avoidance can be seen in the Round Table on Sustainable Palm Oil Principles and Criteria (2013) and Forest Stewardship Council Principles and Criteria (2014) which require avoidance of habitats such as peatlands and High Conservation Value habitats (HCV). For example, Asia Pacific Resources International Limited (APRIL) avoided using 26% of its concession areas for conservation and indigenous trees in accordance with voluntarily adopted HCV criteria (2005), and Indonesia's governmental land management regulations.

2.1. Genetic Avoidance

Other interesting developments and advances in terms of spatial avoidance may come in the form of genetic research. With genetic technologies increasing in affordability and availability, it may be possible for development projects to carry out genetic analysis to determine the relative importance of species found in certain areas, and thus the degree to which those areas should be avoided. For example, the Ambatovy mine, Madagascar conducted a spatial and genetic survey (endemicity assessment) to determine whether the species present were endemic to the mine footprint. This form of analysis produces much more rapid results (new species could be listed in 2-3 months) which fit better within the timeframe of mining projects. It would also be more efficient than field surveys, which are costly and which may take years to officially list a new species, by which time the opportunity to avoid an area may be lost.

Using the environmental DNA technique will allow for more sensitive analysis and will likely be useful for those species which are rarer and harder to detect using traditional surveillance equipment or where the increases in sampling effort required are simply unfeasible (Jerde et al. 2011). However, it does rely on the existence (and availability) of genetic data sets for comparison. If efforts are made to improve the eDNA method and apply it to other species and ecosystems, environmental managers may be able to better monitor their impacts to rare, endangered and endemic species, reduce the damage of invasive species, and target management earlier and in more specific locations (Leung et al. 2002).

3) Temporal Avoidance

Temporal examples include those carried out by Sakhalin Energy (SEIC), a Russian gas company. SEIC are committed to avoiding impacts on Western Gray Whale (Critically Endangered) populations off-shore, and so construction works were designed to begin at the earliest possible start date in summer to avoid the main feeding time, and in the summer of 2009 SEIC avoided seismic testing entirely on the advice of the Western Gray Whale Advisory Panel, established by the IUCN. In addition SEIC re-routed a pipeline by 180 km to avoid impacting the whale's feeding grounds. In depth analysis was also carried out on the habitats, behaviours and sensitivities of the Steller's sea eagle to understand the most sensitive times of the year for the species (e.g. breeding and fledging). This understanding helped design effective avoidance measures which included: timing clearance and construction during the winter to avoid key fledgling stages; establishment of a buffer zone both around the sea-eagle habitat generally and around specific nest sites in which no construction activities can occur during nesting season (Sakhalin, 2012).

4) Design Avoidance

At Ambatovy mine, the analysis of 21 design options for the pipeline route during the ESIA planning phase ensured optimal avoidance of the forest fragments between the mine area and the Mantadia National Park. The slurry pipeline, buried over the majority of its route, passes through 2 km of relatively intact forest surrounding the mine, crosses a Torotorofotsy Ramsar aquatic site (avoiding the wetlands by following an old railroad spur), and traverses the Ankeniheny-Zahamena forest corridor, avoiding residual forest fragments whenever possible. The Pipeline was buried to approximately 1.5m using "cut and cover" construction. Ambatovy also used horizontal drilling in some areas to avoid disruption to forest patches and key rivers. The pipeline route was modified in the eastern part of the assessed alignment based on the Environmental Assessment and a detailed engineering design in late 2005. This 60 km re-route follows a more southerly course and has both engineering and environmental advantages, such as avoiding running in close proximity to the Mantadia National Park (Ambatovy, 2006).

The Yemen Liquefied Natural Gas (LNG) project completely redesigned their Materials Offloading Facility (MOF) following a baseline environmental survey (2005). The final decision involved 1) placing the MOF in between two coral banks as this allowed for dredging in coarser material, reducing turbidity; and 2) using a piled bridge solution, rather than a rock-dumped solution, to maintain free flow of ocean currents and reduce the overall footprint on the sea bed. In addition, YLNG re-designed the shoreline works to the north of Balhaf cape to eliminate works at the shoreline, avoiding the potential for physical damage to corals. Furthermore, the water outfall was designed to avoid coral area by burying the pipe in the sea bed in a gap between the corals, avoiding the risk of coral morbidity or mortality due to increases in seawater temperature (Yemen LNG, 2008).

Conclusions

To conclude, there is a wide range of tools and technology available to the corporate sector to guide avoidance decisions and assessments of biodiversity risk. However, in order to be effective, it is essential that the use of these tools is encouraged at the earliest possible stage of planning. Efforts should also be made to increase collaboration amongst the different sectors in order to make the most of the tools and data available. Inputting and collecting the level of data required may also be time consuming to carry out at the scale needed (e.g. site level as opposed to landscape scale) and there will only be a finite number of scenarios which can be assessed within resource and time constraints of most development projects. Care should also be taken to not confuse lack of data with low risk or sensitivity. Many areas of high biodiversity importance are not formally designated or lie outside of national jurisdictions and thus should be avoided even though they may not show up on sensitivity maps. It must also be noted that these tools should not take over from Environmental Impact Assessments; they are intended to guide and inform planning in addition to national requirements. However, these new methods are increasing in popularity and availability and efforts should be made across the scientific community to increase the spatial and species specific data which can input into these tools (especially with regard to the marine environment).

Acknowledgements:

With thanks to the Cambridge Conservation Initiative fund and project partners: Sharon Brooks, Dave Marsh, Pippa Howard, Brendan Costelloe, Ben Phalan, Bhaskar Vira, Jessica Smith and other colleagues and individuals who took time to contribute to discussions and provide information.

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