

# Biodiversity Offsets in Mining

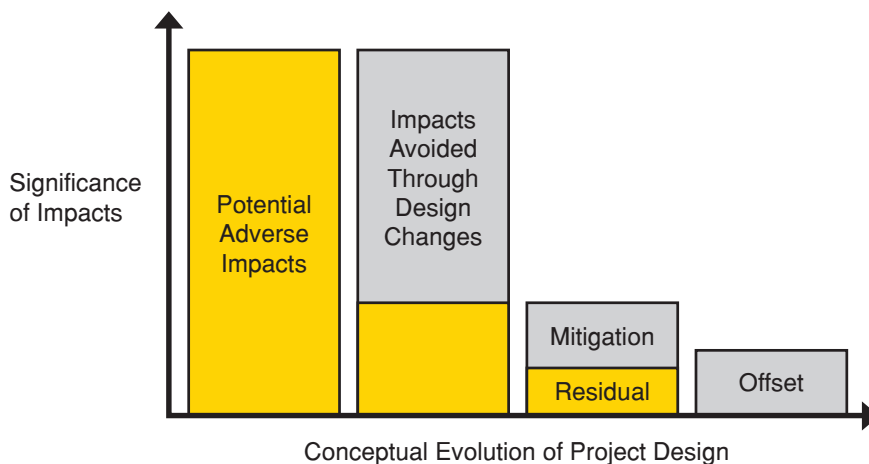
By Mehrdad Nazari and Don Proebstel

**B**iodiversity Offset (BDO) is a creative tool to ensure that development of extractive operations is not conducted at the cost of [biodiversity](#) conservation. With the increasing expectations of stakeholders and investors with regard to responsible mining practices, BDOs can contribute to developing a social license to operate. [Gold Reserve Inc's](#) (GRI) Brisas Copper-Gold Project in Venezuela is used to illustrate key concepts and approaches to developing a BDO for a mining project.

## Context and Definition

The central importance and stakeholder expectations associated with biodiversity conservation in mining operations was highlighted in the [World Bank's Extractive Industry Review](#), the [Global Mining Initiative's Mining, Minerals and Sustainable Development Project](#), the more recent [National Roundtables on CSR](#) and the [Canadian Extractive Industry in Developing Countries](#). In response, extractive companies and their stakeholders are seeking new approaches to attain "no net biodiversity loss" for their operations. BDOs are rooted in the principles of the Rio Declaration on Environment and Development ([Earth Summit, 1992](#)) and adapt a concept dating back to "[Wetland Banking](#)" used in the US since the 1970s. The [Business and Biodiversity Offset Program](#) (BBOP) is a partnership of over 40 companies, leading conservation groups, governments and financial institutions. BBOP is exploring and testing BDOs and offers the following definition: "Biodiversity offsets are measurable conservation outcomes resulting from actions designated to compensate for significant residual adverse biodiversity impacts arising from project development and persisting after appropriate prevention and mitigation measures have been implemented. The goal of biodiversity offsets is to achieve no net loss, or preferably a net gain, of biodiversity on the ground with respect

## Mitigation Hierarchy of BDO



Mitigation hierarchy of Biodiversity Offsets.

to species composition, habitat structure and ecosystem services, including livelihood aspects." BBOP is developing a suite of handbooks to assist in design, implementation and evaluation of BDOs. BBOP is currently road testing its emerging methodologies on pilot projects from extractive and others sectors.

## Mitigation Hierarchy

The application of BDOs in emerging markets is still in its early stages. However, it is already attracting a growing following amongst major conservation NGOs and the business sector. Some critics liken the BDO concept to donating to an animal shelter to "offset" mistreating one's dog at home. But this is neither the intent nor the methodology which is being developed using a multi-sector approach. The basic mitigation hierarchy applicable to environmental and social impact assessments also applies to the development of an appropriate BDO. As conceptualized in the figure above, the project developer would be expected to mature its project through an iterative design process. This prioritizes avoidance and impact

minimization over mitigation, offset and compensation measures. Residual impacts (those not amenable to avoidance or mitigation) could then be addressed through the development of appropriate BDOs. Consultation with key stakeholders, particularly local communities and indigenous people, is also an important element feeding into the development of BDOs.

## Bankability and Credibility

More rigorous planning and consultation processes are also expected by the [IFC Performance Standards](#) and the [Equator Principles](#). These are benchmarks used by major project finance institutions, export credit agencies (such as [Export Development Canada](#)), multilateral financial institutions and others, to appraise and manage social and environmental risks associated with their prospective investments. Experience suggests that, in addition to working with local and indigenous communities, the involvement of conservation NGOs is a critical component in generating credible BDO initiatives. This is not merely recognizing



The concept of BDOs is contributing to a positive vision and a better care of the environment.

the obvious; mining companies are better at mining, whilst NGOs and other stakeholders have an edge on conservation. Without the involvement of legitimate NGOs, most BDO concepts may not gain credibility and would not be able to contribute to a social license. The involvement of international NGOs will also help to develop practical approaches to complex methodological issues surrounding BDOs. NGOs can assist in assessing and validating baselines and benchmarks, selecting appropriate “offset currency” and indicators (hectares, trees or frogs?), identifying eligible components in view of the project specific context (planting trees, capacity building or trading-up to higher biodiversity priorities?) and use of multipliers (two trees planted for each tree removed?). In many cases, responsible mining practices applying best international practice – which we anticipate to incorporate increasingly BDOs, where appropriate– are seen as the preferred development option compared to unregulated and poorly run operations. The latter includes artisanal and small scale mining (ASM), which is a longstanding and growing phenomenon in emerging markets.

### **Brisas Case Study**

GRI commissioned a bankable [Environmental and Social Impact Assessment \(ESIA\)](#) for its world class Brisas copper-gold deposit (10.4 million ounces of gold, 1.3 billion pounds of copper). The ESIA, which was spearheaded by [AATA International](#) and supported by [Prizma LLC](#) and others, was designed to meet GRI’s corporate commitments to best practice and sustainability. The study was also designed to meet the IFC Performance Standards and the Equator Principles.

### **Baseline Study**

For the Brisas Project, the biodiversity baseline information was gathered and evaluated within a regional and landscape context. This allowed consideration of other key regional developments and challenges. The latter includes ASM, which is widely practiced in the [Imataca Forest Reserve](#) in the Bolivar State in Venezuela, which hosts the Brisas Project. The regional perspective also helped to include matters of scale, connectivity, cumulative effects and inclusion of indigenous knowledge and government priorities. Potential biodiversity impacts

were evaluated with a species specific approach. This enabled a targeted determination of presence/absence of critical habitats within the project boundary. It also facilitated the identification of activities and interventions that could be incorporated into a BDO program.

### **Design Changes Reduce Impacts**

Using an iterative methodology, the ESIA process not only identified potential impacts, but also assisted in the development of project alternatives to reduce conservation (and other) risks. This resulted in significant design changes to reduce adverse biodiversity (and other) impacts. Key design changes include splitting the waste rock storage area to eliminate blocking/re-routing the Aymara Creek, which provides habitat for an endemic species of fish (*Bryconops calaroja*). It also provides access for local communities to the Cuyuni River system. Thus, several potentially significant adverse impacts were avoided in line with the mitigation hierarchy process prior to considering any offsets. Also, management measures and infrastructure additions were provided to protect environmental receptors, improve sediment

control and address potential acid rock drainage.

## Residual Impacts and Artisanal Mining

However, despite adopting an iterative approach and including design changes, a number of residual impacts were expected to remain. These include those predicted to be associated with the presence of several indigenous animals on or near the project site. Some of these have local or international conservation status. Another key residual impact revolves around the conversion of forest habitat into an open pit, which will eventually be reclaimed as a freshwater lake. Also, significant off-site ASM activities depicted have also impacted the regional biodiversity landscape and contribute to other regional socio-economic conditions.

## Biodiversity Offset Strategy

To address residual impacts and ensure “no net loss” or possibly “net gain,” GRI adopted a biodiversity offset strategy. GRI also incorporated a portfolio approach to avoid putting all the proverbial eggs into the same basket. This philosophy requires the selection of several different interventions to help with risk management. This approach is not unlike assembling a risk adverse retirement fund. Also, engaging and involving local and international NGOs, in addition to local communities and other stakeholders, were viewed as important ingredients for GRI’s BDO strategy. As the offset strategy developed, it became apparent that there were opportunities for synergies with

social, regional and cumulative impacts. In response, the offset strategy matured to include more than biodiversity alone.

## Portfolio Selection Criteria

The selection process used to assemble a preliminary BDO portfolio for further discussion with local communities and conservation NGOs considered a number of criteria. These included (a) biodiversity linkage (similar ecosystems, species, size); (b) expected desirability by key stakeholders (indigenous, local communities and government); (c) sustainability (cost, risks, capacity, longevity) and, (d) partnership opportunities (including for mobilization of funds and expertise). Using this approach, a number of preliminary options were developed. These ranged from regional reclamation with native vegetation and sustainable agro-forestry assistance, to more conventional measures aimed at strengthening existing pristine or protected areas.

## NGO Alliances

The emerging BDO portfolio was taken to two short-listed international conservation NGOs to explore possibilities for collaboration. The aim was to seek partnership to help enhance conservation and development outcomes and enable GRI to outsource activities to competent and credible organizations. GRI proceeded with a partnership with [Conservation International](#), a leading international nonprofit organization (with presence and networks in Venezuela) and [Fundación Para el Desarrollo Sostenible](#) (Foundation for Sustainable Development, based in Venezuela). Outcomes of joint

activities to date include extending the biological baseline study by conducting a [Rapid Biological Assessment](#) through the [Center for Applied Biodiversity Science of Conservation International](#). Also, selected ecotourism and agro-forestry projects were initiated and are already in the early stages of development, prior to commencement of the Brisas project.

## Work in progress

The concept of BDOs is contributing to a positive vision: win-win outcomes pursued by collaborating stakeholders from local communities, business, conservation organizations and governments. Using established and emerging methodologies and approaches, mining projects can develop credible, sustainable and bankable BDO strategies and programs. BDOs have the potential to be a foundation for activities that reach beyond the scope of biodiversity alone and help to address more complex concerns that incorporate all three facets of sustainability: environmental, social and economic. Applying an adaptive management approach and flexible alliance structures will contribute to successful implementation of BDO strategies. These strategies are also expected to demonstrate GRI’s commitment to responsible mining and give confidence to our stakeholders and investors. ■

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## Links and References

- [AATA International](#)
- [Biodiversity offsets: Views, experience, and the business case](#)
- [Canadian Extractive Industry in Developing Countries](#)
- [Center for Applied Biodiversity Science](#)
- [Conservation International](#)
- [Earth Summit, 1992](#)
- [Environmental and Social Impact Assessment \(ESIA\) Guidelines](#)
- [Fundación Para el Desarrollo Sostenible](#)
- [Global Mining Initiative’s Mining](#)
- [Gold Reserve Inc.](#)
- [Imataca Forest Reserve Management Plan](#)
- [Minerals and Sustainable Development Project](#)
- [Mining and Biodiversity](#)
- [National Roundtables on CSR](#)
- [Rapid Biological Assessment](#)
- [Rapid Biological Assessment Protocols](#)
- [Rio Declaration](#)
- [Wetland Mitigation Banking](#)
- [World Bank’s Extractive Industry Review](#)

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