Performance Standard 6: Biodiversity Conservation and Living Natural Resources

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COURSE STRUCTURE

- Fundamentals of Performance Standard 6
- Key deliverables for PS6 compliance
- Conducting a Critical Habitat Assessment
Fundamentals of Performance
Standard 6
IFC PERFORMANCE STANDARDS

PS1: Assessment & management of environmental & social risk & impacts
PS2: Labor & working conditions
PS3: Resource efficiency & pollution prevention
PS4: Community health, safety & security
PS5: Land acquisition & involuntary resettlement
PS6: Biodiversity conservation & sustainable management of living natural resources
PS7: Indigenous Peoples
PS8: Cultural Heritage
OBJECTIVES OF PS6

Objective

To protect and conserve biodiversity

To maintain the benefits of ecosystem services

To promote the sustainable management of living natural resources

Key issues

Habitats
Protected Areas
Internationally Recognized Areas
Invasive Alien Species

Ecosystem Services

International standards
Third-party certification
Supply chains
Why Biodiversity?

- Biodiversity is undergoing rapid loss & degradation
  - 12 to 55% of species in assessed groups threatened with extinction
  - Monitored wildlife populations fell by an average of 31% since 1970

- Growing expectation for businesses to be a responsible member of the community: locally, nationally and globally

- Biodiversity-related risk can affect business operations
  - Access to permits and license to operate
  - Impact on key environmental inputs (e.g. water, soil)
  - Delays, liabilities and lost revenues
  - Legal penalties for violation
  - Relationships with stakeholders, regulators, consumers or investors
**MITIGATION HIERARCHY**

- **Avoid**
  - Site selection (landscape)
  - Project Design (site level)
  - Timing

- **Minimize**
  - Physical controls
  - Operational controls
  - Abatement controls

- **Restore**

- **Offset**
  - High risk
  - High cost
  - Uncertain costs
  - High reliance
  - Time lags possible

- **Low risk**
  - Low cost
  - Fixed costs
  - Low reliance
  - No time lags
As a matter of priority, the client should seek to avoid impacts on biodiversity and ecosystem services.
HABITATS

A terrestrial, freshwater or marine geographical unit or airway that supports assemblages of living organisms and interactions with non-living environment.

MODIFIED
PS6: para 13

NATURAL
PS6: para 14

CRITICAL
PS6: para 16
A single project area may contain a mosaic of natural and modified habitat.

- Largely non-native species
- Primary ecological function modified
- Species composition modified
- Result of human activity
- Excludes areas cleared in anticipation of project
- Sometimes defined at national level

Experts with regional/local experience can help with setting defensible thresholds.
CRITICAL HABITAT

Areas supporting high biodiversity value, including:

- Critically Endangered &/or Endangered species
- Endemic &/or Restricted Range species
- Globally significant concentrations of migratory or congregatory species
- Highly threatened &/or unique ecosystems
- Key evolutionary processes

See Guidance Note 6: GN71-97
### Critical Habitat

Quantified thresholds for some criteria (GN6: GN71-97)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Tier 1</th>
<th>Tier 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Critically Endangered (CR)/ Endangered (EN) Species</td>
<td>(a) Habitat required to sustain ≥ 10 percent of the global population of a CR or EN species/subspecies where there are known, regular occurrences of the species and where that habitat could be considered a discrete management unit for that species.</td>
<td>(c) Habitat that supports the regular occurrence of a single individual of a CR species and/or habitat containing regionally important concentrations of a Red-listed EN species where that habitat could be considered a discrete management unit for that species/subspecies.</td>
</tr>
<tr>
<td>3. Migratory/ Congregatory Species</td>
<td>(a) Habitat known to sustain, on a cyclical or otherwise regular basis, ≥ 95 percent of the global population of a migratory or congregatory species at any point of the species’ lifecycle where that habitat could be considered a discrete management unit for that species.</td>
<td>(d) Habitat of significant importance to CR or EN species that are wide-ranging and/or whose population distribution is not well understood and where the loss of such a habitat could potentially impact the long-term survivability of the species.</td>
</tr>
<tr>
<td>2. Endemic/ Restricted Range Species</td>
<td>(a) Habitat known to sustain ≥ 95 percent of the global population of an endemic or restricted-range species where that habitat could be considered a discrete management unit for that species (e.g., a single-site endemic).</td>
<td>(b) Habitat known to sustain ≥ 1 percent but &lt; 95 percent of the global population of an endemic or restricted-range species where that habitat could be considered a discrete management unit for that species, where data are available and/or</td>
</tr>
<tr>
<td></td>
<td>(e) Source sites that contribute ≥ 1 percent of the global population of recruits.</td>
<td></td>
</tr>
</tbody>
</table>

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*IFC International Finance Corporation*
HABITAT REQUIREMENTS

- **PS6 applies if significant biodiversity values found**
  - Minimize impacts
  - Mitigate as appropriate

- **No viable alternatives in modified habitat**
  - Views of stakeholders established about impacts
  - Mitigation hierarchy
  - No net loss

- **No viable alternatives in non-critical habitat**
  - No measurable adverse impacts on CH values or supporting processes
  - No net reduction in CR or EN species population over reasonable time period
  - Long-term monitoring and evaluation program
  - Mitigation hierarchy
  - Net gain for CH values
  - If biodiversity offsets used, provide technical rationale
PROTECTED AREAS

A clearly defined geographical space, recognized, dedicated and managed through legal or other effective means, to achieve the long-term conservation of nature

6 IUCN Management Categories

- Demonstrate legal permission
- Consistency with management plans
- Consult managers & other stakeholders
- Additional programs to promote conservation aims & effective management

IUCN Category Ia: Strict Nature Reserve
IUCN Category Ib: Wilderness Area
IUCN Category II: National Park

“Treated” as Critical Habitat
INTERNATIONALLY RECOGNIZED AREAS

Recognized importance but not always legally protected

Key Biodiversity Areas

Pinpointing and conserving epicenters of imminent extinctions
## No Net Loss & Net Gain

### Key issues for defining NNL/NG:

<table>
<thead>
<tr>
<th>Category</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time</strong></td>
<td>When does the target need to be achieved?</td>
</tr>
<tr>
<td><strong>Space</strong></td>
<td>Is the target for a site or a landscape?</td>
</tr>
<tr>
<td><strong>Baseline</strong></td>
<td>What is the reference state for biodiversity: Past, present or future?</td>
</tr>
<tr>
<td><strong>Metrics</strong></td>
<td>What indicators will be used to measure success?</td>
</tr>
<tr>
<td><strong>Stakeholder views</strong></td>
<td>Have stakeholders reviewed or approved assumptions, approaches &amp; projected outcomes?</td>
</tr>
<tr>
<td><strong>Transparency</strong></td>
<td>Are assumptions, choices &amp; data inputs clearly &amp; openly documented?</td>
</tr>
</tbody>
</table>
Biodiversity Offsets

Measurable conservation outcomes resulting from actions designed to compensate for significant residual impacts arising from project development and persisting after appropriate avoidance, minimization, and restoration measures have been taken.

IFC principles & requirements

- Like-for-Like
- Best current practices
- NNL reasonably expected
- Quantified losses & gains
- Best available information
- External offset experts
- On-the-ground
- Long term

Averted risk

Restoration

Positive conservation
INVASIVE ALIEN SPECIES

Alien or non-native species introduced beyond original range.

Invasives spread quickly due to lack of controlling factors.

Not established in country/region

- No intentional introductions unless within regulatory framework
- Never deliberately introduce high risk alien invasives, regardless of regulation
- Risk assessment for any introductions
- Implement measures to avoid accidental/unintended introductions

Established in country/region

- Avoid spreading to new areas
- Eradicate from Natural Habitat under client control, where practicable
ECOSYSTEM SERVICES

Benefits from ecosystems.

- Provisioning
- Regulating
- Cultural
- Supporting

Focus on management control or significant influence.

Priority Type 1: Affected Community dependence
- Stakeholder engagement process (PS1)
- Avoid & minimize impacts
- Maintain value & functionality
- See also PS 4, 5, 7 & 8

Priority Type 2: Project dependence
- Minimize impacts
- Increase resource efficiency
- See also PS 3
LIVING NATURAL RESOURCES

Primary production of living natural resources

- Land-based agribusiness or forestry on already converted land
- Manage sustainably via good practice and technology
- Use relevant & credible standards where available
- Pre-assess conformity with standards & take action to comply

Standards

- Globally, regionally or nationally recognized
- Objective & achievable
- Multi-stakeholder consultative process
- Encourage continual improvement
- Independent verification/certification & accredited bodies

Standards absent

- Commit to good practice
- Support development of standards
Purchasing primary production from regions with high risk of conversion of Natural or Critical habitats

- Adopt system to evaluate primary suppliers
- Integrate into ESMS
- Determined by client management control & influence

System should:

- Identify source of supply & habitat types
- Support ongoing review of primary supply chains
- Limit procurement to low risk suppliers, e.g. certified under credible standards
- Require actions to shift supply chain to low risk suppliers over time
Key Deliverables for PS6 Compliance
ESIA

To inform risk profile & applicability of specific IFC requirements. Integrates biodiversity assessment.

Process

- Reference to core datasets?
  - IUCN Red List
  - Protected Areas
  - Key Biodiversity Areas
- Desktop review of existing biodiversity assessments, plans or data?
- Application of mitigation hierarchy?
- Field survey dates, duration, methods & expertise?
- External experts with regional experience?

Key outputs

- Regional context & proximity to biodiversity values, with maps?
- Location & extent of project area/AoI, with maps?
- Alternatives Analysis?
- Direct & indirect impacts?
- Significant residual impacts & need for offsets?
- Global, national & local biodiversity values?
- Priority ecosystem services?
- Location & extent of Natural vs Modified habitats, with maps?
- Alien species?
- Constraints map based on findings?
Natural vs Modified Habitat map using remote sensing & targeted surveys

Constraints map based on slope, riparian reserves, set asides & conservation areas

Source: ERM & Hatfield Indonesia, 2014

Source: WWF Borneo, 2011
To confirm if project area is critical habitat & full list of biodiversity values triggering critical habitat status.

Process

- Describe & map Study Area
- Review existing data & consult experts
- Collect field data & verify available information
- Describe & map Discrete Management Unit (DMU)
- Make Critical Habitat determination
- Scope external review options & partnerships (if applicable)
## Example of Critical Habitat determination

### Species

<table>
<thead>
<tr>
<th>Species Name</th>
<th>Common Name</th>
<th>CR or EN Species</th>
<th>Migratory/Conspicuous Species</th>
<th>Critical Habitat Tier 1</th>
<th>Critical Habitat Tier 2</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Bos javanicus</em></td>
<td>Banteng</td>
<td>EN</td>
<td>-</td>
<td>-</td>
<td>√</td>
<td>Criteria 1c</td>
</tr>
<tr>
<td><strong>Mammals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Bos javanicus</em></td>
<td>Banteng</td>
<td>EN</td>
<td>-</td>
<td>-</td>
<td>√</td>
<td>Criteria 1c</td>
</tr>
</tbody>
</table>

- Regionally important population of EN species based on:
  - The known population representing the largest sub-population in the species in East Malaysia (*pers comm. F. Gardner, 2014*).
  - The potential to represent 21% of the global population, if the population in the Concession is confirmed to be greater than 50 individuals.

- Observed at: P04, P14, P20, P29, P37
- Study from 2014 identified 34 individuals present in a limited study area covering five compartments. Based on the survey effort to date and the habitat presence it is expected the population will be in excess of 50 individuals within the Concession.
- Maximum of 6 individuals recorded in 2011 by SFI staff in P37. Overall the population size in concession unknown.
- Once widespread in Borneo but now they are confined

### Sources/data

- Source: ERM, 2014

### Source: The Biodiversity Consultancy, 2012
To operationalize biodiversity-related management and monitoring as part of a broader Environmental and Social Management Plan (ESMP).

- Implementable & auditable?
- ESIA requirements fully integrated?
- Actions & responsibilities?
- Focus on site-specific mitigation measures?
- Monitoring implementation of site-specific mitigation measures?
- Adaptive management & responsive measures on regular basis?
# Biodiversity Action Plan

Required for IFC’s internal purposes to describe corrective actions for fulfilling compliance with Performance Standard 6.

BAP can be defined differently by some stakeholders

## Purpose of BAPs

- **Address corrective actions**
- ** Demonstrate leading practice**

## BAP Framework

<table>
<thead>
<tr>
<th>Objective or Goal</th>
<th>Actions</th>
<th>Completion indicator</th>
<th>Owner</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation of Onsite Mitigation Measures</td>
<td>OT will: (i) complete installation of flight diverters on high-voltage power transmission line from the Chinese border to the Oyu Tolgoi site; (ii) complete installation of flight diverters on medium-voltage power transmission lines from the Oyu Tolgoi site to the Gunii Hooloi borefield. (iii) complete installation of flight diverters on medium-voltage power transmission lines from the Oyu Tolgoi site to Khanbogd soum centre. (flight diverters include &quot;Bird Mark – Model BM-AG (After Glow)&quot; and the &quot;Swan “ spiral flight diverter).</td>
<td>(ia) Begin installation of flight diverters on high-voltage power transmission line (ib) Complete installation of flight diverters on high-voltage power transmission line (iaa) Begin installation of flight diverters on medium-voltage power transmission lines (ibb) Complete installation of flight diverters on medium-voltage power transmission line</td>
<td>(a) Q1 2012 (b) Q2 2012 (ia) Q3 2012 (ib) Q2 2013</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ID</th>
<th>Topic/ Aspect</th>
<th>Action Description</th>
<th>Completion Indicator</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bird Diversers</td>
<td>Flight Diversers</td>
<td>(ia) Begin installation of flight diverters on high-voltage power transmission line (ib) Complete installation of flight diverters on high-voltage power transmission line (iaa) Begin installation of flight diverters on medium-voltage power transmission lines (ibb) Complete installation of flight diverters on medium-voltage power transmission line</td>
<td>(a) Q1 2012 (b) Q2 2012 (ia) Q3 2012 (ib) Q2 2013</td>
</tr>
</tbody>
</table>
Biodiversity Strategy

To describe broader strategy and highlight response towards biodiversity issues for external stakeholders.

Optional. Recommended in high risk projects or projects with high stakeholder interest

- Biodiversity context & importance
- Summary of project risk and impact management
- Strategic links & contributions to external broader efforts
- Long-term biodiversity commitment/vision
- Additional conservation actions
- Formal project partnerships with biodiversity-related stakeholders
- Record of consultation & review
Required to monitor habitats and species over life of project in Critical Habitats. Recommended in Natural Habitats.

- In-field monitoring of high biodiversity values
- Monitoring implementation & effectiveness of mitigation
- Monitoring external threats to high biodiversity values

Usually designed in consultation with & undertaken by third-parties with biodiversity monitoring experiences e.g. credible conservation organization or university

Establish acceptable thresholds of variability for biodiversity values

Measurable results outside thresholds for set time periods indicate non-compliance
Biodiversity Offset Management Plan

To justify and describe implementation of a biodiversity offset.

- Evidence of mitigation hierarchy?
- Significant residual impacts?
- Regulatory context & political feasibility?
- Biodiversity metrics?
- Biodiversity baseline/counterfactual?
- Biodiversity loss & gain forecast & assumptions?
- Offset sites, actions & dependencies?
- Stakeholder responsibility & capacity?
- Long-term financing & governance?
- Monitoring & evaluation?
PS6 in Practice for a Mining Exploration Project
What Type of Habitat is this?
What Type of Habitat is this?
What Type of Habitat is this?
Characterize the area - Which ‘habitat’ is the project associated with? Modified, natural or critical – without this basis, we will not know which requirements apply

Need to maintain a ‘landscape perspective’ and not only focus on the concession area

The goal is to understand:

- is habitat truly degraded / modified?
- What are the important biodiversity features associated with the area (and near the area)?

Note that important biodiversity features are often called *biodiversity values* - these will become the focus of mitigation
ACTIVITY 1: SCOPING AND REVIEW

Conduct a literature review of (i) available environmental studies, scientific literature, and biodiversity data for the area of each concession, (ii) Identify existing eco-regional plans (developed by the government and/or NGOs), NGO conservation initiatives in the areas and their surroundings, protected or recognized areas of importance to conservation, and biodiversity corridors.
ACTIVITY 2: INTERVIEWS

Carry out interviews with government representatives and relevant conservation NGOs in the country to understand the regional context of each of the areas where the concessions are located and their importance in terms of biodiversity conservation.

Carry out interviews with company staff and consultants who were involved in any previous biodiversity surveys in the areas to obtain an understanding of the biodiversity values of each concession and their surroundings (area of influence, if possible) and the extent of anthropogenic modification of the concessions and their surroundings.
ACTIVITY 3: HABITAT CHARACTERIZATION

Use satellite imagery and vegetation maps to 1) determine major habitat types and 2) map and calculate the area of modified and natural habitat within the project footprint and surrounding area.

If relevant, describe any watershed, interfluvial zone or other relevant defining landscape features in which the concessions are located.

If possible, provide comment on the uniqueness of each concession area with respect to larger landscapes (i.e., is it well-represented? This is an important topic that should be covered as part of the interviews with conservation organizations).
Activity 3: Habitat Characterization
Objective is to document the current status of the biodiversity and habitats within the concession area. This is essential to establish the conditions that would prevail in the absence of the project and to provide data for assessing risks and managing impacts during exploration.

The outcome of the biodiversity assessment should be a list of the major ‘biodiversity values’ associated with the study area and its surrounding landscape. These should serve as guiding criteria from which to help design the field surveys.
SCOPE OF RAPID BIODIVERSITY SURVEY

- Surveys within the major habitat types within the concession areas (how many days/ nights of sampling in each habitat type?).
- Sampling of a range of taxonomic groups, including plants, large and small mammals, birds, reptiles and amphibians, and select insect groups (if appropriate).
- If there are significant freshwater resources within the concession, aquatic groups including fishes, benthos and aquatic insects should be surveyed.
- Contract qualified biodiversity experts who know the flora and fauna of the region to conduct the surveys.
- Follow international standards for sampling protocols (see Guidance for suggestions).
- An evaluation of the major habitat types and the extent of anthropogenic disturbance (degradation, invasive species, prior human activities) within the concession areas. If the sites are a mosaic, provide calculations of the extent of any remnant areas of potential conservation value.
ACTIVITY 5: BIODIVERSITY REPORT

- Overlay of the concession with established or proposed protected areas, Key Biodiversity Areas (KBAs), Important Bird Areas (IBAs), Alliance for Zero Extinction (AZEs) Sites or habitat of Endangered, Vulnerable or Near Threatened species.
- A map showing the regional context for each concession, including protected areas, corridors, location of each concession with respect to any ecoregional planning of governments/NGOs (this section will incorporate relevant findings from interviews conducted).
- Comment on broad habitat types with respect to the modified and natural habitat definition as defined in Performance Standard 6, including comment on the type and extent of anthropogenic activities.
- Scientific reports for each taxonomic group surveyed, including lists of species recorded and sampling details (location, dates, points length, methods, field workers, etc)
- Description of biodiversity values for each concession with respect to para. 16 of Performance Standard 6. Provide comment on any other biodiversity values of importance in each concession area, such as Critically Endangered or Endangered species, CITES species, endemic species, etc.
- Identification of any data gaps.
### Some Outcomes

<table>
<thead>
<tr>
<th>TIPO DE HABITAT</th>
<th>TIPO DE COBERTURA</th>
<th>SIMBOLO</th>
<th>AREA (HAS)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MODIFICADO</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PASTOS LIMPIOS</td>
<td>PL</td>
<td>1126,678716</td>
<td>12,624</td>
<td></td>
</tr>
<tr>
<td>PASTOS ARBOLADOS</td>
<td>PA</td>
<td>64,206326</td>
<td>0,72</td>
<td></td>
</tr>
<tr>
<td>PASTOS ENMALEZADOS</td>
<td>PE</td>
<td>382,65485</td>
<td>4,288</td>
<td></td>
</tr>
<tr>
<td>MOSAICOS DE PASTOS Y ESPACIOS NATURALES</td>
<td>M</td>
<td>594,743725</td>
<td>6,664</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL MODIFICADO</strong></td>
<td></td>
<td>2168.28</td>
<td>24.29</td>
<td></td>
</tr>
<tr>
<td><strong>NATURAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOSQUE DENSO</td>
<td>BD</td>
<td>4922,155453</td>
<td>55,152</td>
<td></td>
</tr>
<tr>
<td>PALMAR (MORICHAL)</td>
<td>PLM</td>
<td>4,40034</td>
<td>0,049</td>
<td></td>
</tr>
<tr>
<td>BOSQUE FRAGMENTADOS</td>
<td>BF</td>
<td>413,292076</td>
<td>4,631</td>
<td></td>
</tr>
<tr>
<td>BOSQUE DE GALERIA</td>
<td>BG</td>
<td>877,099208</td>
<td>9,828</td>
<td></td>
</tr>
<tr>
<td>VEGETACION SECUNDARIA O EN TRANSICIÓN</td>
<td>VS</td>
<td>538,090853</td>
<td>6,029</td>
<td></td>
</tr>
<tr>
<td>LAGUNAS</td>
<td>LG</td>
<td>1.319</td>
<td>0,015</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL NATURAL</strong></td>
<td></td>
<td>8074.03</td>
<td>75.68</td>
<td></td>
</tr>
</tbody>
</table>
**SOME OUTCOMES**


Actualmente las poblaciones parecen estar muy fragmentadas aunque con indicios de recuperación en algunas áreas del país. Esto ha ocasionado que en algunas regiones los pescadores consideren a estos animales como una seria competencia por el recurso pesquero, por lo que han tomado medidas extremas en algunos casos. También se ha observado un mercado ilegal de venta de crías como mascotas en algunas regiones del país. Se desconoce el efecto de los continuos derrames de petróleo en el río Arauca, pero en el Ecuador ocurre algo similar y se considera a este hecho como la principal amenaza de la especie (Tirira 2001).

**Distribución:** Pteronura brasiliensis es la única especie del género endémico de Suramérica cuya localidad típica fue definida como "in fluviis americae meridionalis" y restringida por Cabrera (1958) al "río São Francisco, en la orilla correspondiente al Estado de Alagoas", Brasil. Históricamente esta especie se distribuía desde la Guayanas hasta el norte de Argentina, incluyendo Colombia, Venezuela, Ecuador, Perú, Bolivia, Brasil (excepto la región noreste), Paraguay y Uruguay (extinta hoy en día en este último). Después del activo proceso de caza de los años 1960, la especie fue extinguida localmente en algunas áreas y ahora su distribución es muy fragmentada (Harris 1968, Laidler 1984, Carter y Rosas 1997). En Colombia, la información sobre la distribución actual de Pteronura brasiliensis es escasa. Existe evidencia de su presencia en la mayoría de departamentos de la Amazonía y Orinoquía.
DETERMINATION OF CRITICAL HABITAT

• The data should be evaluated by a well-qualified person/consultant using PS6 criteria and the Guidance Note for PS6 (GN6) to determine if the area qualifies as Critical Habitat or Natural Habitat.

• *Keep in mind that critical habitat is determined based on the biodiversity values inherent to an area and is irrespective of the impacts that the project may have on these values.* If the area qualifies as Critical Habitat, the project will be required to demonstrate Net Positive Gain of the important biodiversity values identified. If the area is categorized as Natural Habitat, No Net Loss of Biodiversity (where feasible) is required.

• IFC primarily focuses on the following ‘criteria’ for determining Critical Habitat. The selection of a ‘priority’ list of high biodiversity values is often based on their regional (or global) vulnerability and irreplaceability.
  • IUCN (global) Critically Endangered (CR) or Endangered (E) species;
  • Endemic / restricted range species (are there any species endemic to the area?);
  • Migratory and/or congregatory species with globally significant concentrations;
  • Highly threatened (in the region) and/or regionally unique ecosystems.
  • Key evolutionary processes.
# Determination of Critical Habitat

## Fauna

<table>
<thead>
<tr>
<th>Valores claves de Biodiversidad</th>
<th>¿Es Valor Crítico?</th>
<th>Justificación</th>
</tr>
</thead>
<tbody>
<tr>
<td>Especies UICN Global – CR: Churuco (Lagohrix lagohricha lugens)</td>
<td>Posible</td>
<td>Fue cambiado en la lista UICN Global a CR en 2008. En la lista roja de Colombia (resolución 383 de 2010) está establecido como VU, con base en su rango de distribución en la Amazonía, regiones Andina, Caribe y Oriente (400 – 3000msnm) (Salar, 2013). Catalogado por UICN como en peligro crítico, ya que parece razonable esperar que la población de esta especie a nivel mundial se reducirá en el orden de 80% en los próximos 45 años (tres generaciones), debido principalmente a los efectos de la pérdida de hábitat y la caza.</td>
</tr>
<tr>
<td>Tapir (Tapirus terrestris)</td>
<td>No</td>
<td>Está en la resolución 383 nacional de 2010 como CR, en la lista UICN como EN. Esta especie tiene una distribución amplita por Sur y Centro América.</td>
</tr>
<tr>
<td>Nutria (Lontra longicaudis)</td>
<td>No</td>
<td>Especie UICN Colombia – EN, UICN Global – DD (sin datos), con amplia distribución en Sur América.</td>
</tr>
<tr>
<td>Oso hormiguero (Myrmecophaga tridactyla)</td>
<td>No</td>
<td>Especie UICN Colombia – VU, UICN Global – VU, con amplia distribución en Sur América.</td>
</tr>
</tbody>
</table>
| Puerco espina - Coendú sp. | No | Especie UICN Colombia – VU, no está en la lista de UICN Global.
ASSESSMENT OF IMPACTS AND MITIGATION

Assess Impacts

Conduct an assessment of potential impacts of the exploration activities on important biodiversity values (both species and habitats) identified through Activities 1-5.

Predict the impact magnitude for both direct and indirect impacts. Evaluate how the environmental status will change due to the project. Include calculations of how much forest will be cleared for exploration and evaluate the indirect impacts (e.g. in-migration or invasive species) that roads may bring.

Evaluate significance of the impacts on each key biodiversity value.
Assess Mitigation options

Apply the mitigation hierarchy as described in PS6 to avoid, minimize or remedy the impacts from exploration activities on sensitive biodiversity areas, focusing on avoidance as a first step (location of access roads, camp infrastructure, etc). If avoidance is not possible then minimizing and mitigating any impacts on-site (restoration, changing operations to have less impact, etc.).

Develop a set of mitigation measures that can be incorporated into the project Standard Operating Procedures (SOPs).

After mitigation is taken into account, determine the residual impact and its significance. Identify impacts that cannot be avoided or mitigated and thus will need to be offset.

As part of the subsequent ESIA and Feasibility Study process, the project should take into account the biodiversity values identified during the biodiversity assessment and incorporate these findings into future design work (Alternatives Analysis!).
## Outcomes: Mitigation Actions vs Values

<table>
<thead>
<tr>
<th>Valor de Biodiversidad</th>
<th>Impacto</th>
<th>Nivel de Impacto antes de mitigación</th>
<th>Acciones de mitigación</th>
<th>Nivel de Impacto después de mitigación</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Espece UICN</strong></td>
<td><strong>Capulí</strong> (Capulifera)</td>
<td>3</td>
<td>1) Identificación de la especie en el área 2) No cortar individuos</td>
<td>0</td>
</tr>
<tr>
<td>Colombia - EN: Cedro</td>
<td>Deforestación y remoción de cobertura vegetal y la capa orgánica</td>
<td>3</td>
<td>1) Mantener la ronda de 30 m a cuerpos de agua para la conservación de corredores en la flora</td>
<td>1</td>
</tr>
<tr>
<td>Colombia - EN: Cedro</td>
<td>Fractura de los bosques</td>
<td>3</td>
<td>1) Generación del plan de manejo de inmigración, que puede incluir: 2) Compra de predios aledaños a la via en un buffer establecido y contratación de guardabosques para la conservación 3) Educación para el manejo y protección de recursos naturales - trabajo con las comunidades</td>
<td>2</td>
</tr>
<tr>
<td>Colombia - EN: Ceiba</td>
<td>Deforestación y remoción de cobertura vegetal y la capa orgánica</td>
<td>3</td>
<td>1) Identificación de la especie en el área 2) No cortar individuos</td>
<td>0</td>
</tr>
<tr>
<td>Colombia - EN: Pachira</td>
<td>Inmigración de la población que causa deforestación</td>
<td>4</td>
<td>1) Generación del plan de manejo de inmigración, que puede incluir: 2) Compra de predios aledaños a la via en un buffer establecido y contratación de guardabosques para la conservación 3) Educación para el manejo y protección de recursos naturales - trabajo con las comunidades</td>
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|                       |         | 3                                   | 3) Establecer base de datos de pesca y cacería de la actual comunidad. 
                                      4) Monitorear la cantidad de pesca y cacería. Si es necesario realizar un Plan de manejo de cacería y pesca sostenible con las comunidades. |                                       |
|                       |         | 3                                   | 1) Revisión durante el corte de vegetación de la fauna para evitar los grandes y mover los pequeños |                                       |
|                       |         | 4                                   | 1) Generación del plan de manejo de inmigración, que puede incluir: 
                                      2) Educación para el manejo y protección de recursos naturales - trabajo con las comunidades a la no caza, no pesca. 
                                      3) Establecer base de datos de pesca y cacería de la actual comunidad. 
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|                       | Riesgo de accidentalidad de fauna (via de acceso) | 4 | 1) Generación del plan de manejo de inmigración, que puede incluir: 
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**Especie UICN Colombia - CR: Venado (Odocoileus virginianus)**

**Especie UICN Colombia - CR: Tapir (Tapirus terrestris)**
Conferring after appropriate avoidance, minimization, restoration ("Mitigation Hierarchy") have been applied.

Biodiversity offsets are only to be undertaken if significant residual impacts remain after all prior steps in the mitigation hierarchy have been fully assessed and implemented.
What qualifies as Biodiversity offsets

Can be many types of activities or “Measurable Conservation Outcomes”

Examples:

Classic - creation of a new area or extending an existing area

Activities in an existing area that are designed to address existing threats (hunting, rangeland management) and increase biodiversity

The design of a biodiversity offset must adhere to the “like-for-like” principle

Must result in “measurable” outcome “on-the-ground”
Offsets are designed using “loss / gain” methods - i.e., measuring the loss of biodiversity in one area versus the “biodiversity gains” in another area.

Loss / gain methods should be as quantitative as possible and a technical rationale should be developed.

Must be carried out in alignment with best available information and current practices.

External experts with knowledge in offset design and implementation must be involved.
Many thanks