



## Chapter 4.6 Biodiversity, Ecosystem Services and Protected Areas

### BACKGROUND

Biological diversity, or biodiversity, describes the variety of life on Earth. It refers to the wide variety of ecosystems and living organisms: animals, plants, their habitats and their genes. Biodiversity underpins ecosystem functioning and the provision of ecosystem services essential for human well-being, it is a central component of many belief systems, world views and identities, it provides for food security, human health, clean air and water, and contributes to local livelihoods and economic development. Despite its fundamental importance, however, biodiversity continues to be lost.<sup>242</sup>

Mining may take place in landscapes that are already heavily modified or degraded, and therefore, pose little or no threat to global biodiversity loss. When located in areas of high biodiversity value, however, there is the potential that mining may lead to a temporary or permanent loss in biodiversity and ecosystem services.

Globally, a network of protected areas have been put in place, offering various levels of protection for biodiversity, land and seascapes. Developments such as exploration and mining are expected to respect those protections and operate in manner that safeguards biodiversity and other values that led to a protected area designation (e.g., cultural values – see IRMA Chapter 3.7). In many areas of the world, however, an adequate system of protected areas has yet to be established, and even where protections exist there are opportunities to further conserve biodiversity and other important values.

Through adherence to the mitigation hierarchy during the most appropriate stages in project development, mining can proceed in a manner that supports global biodiversity, maintains the ecosystem services that communities need to survive and thrive, and leaves behind structurally safe and functioning ecosystems upon closure. This chapter puts forward a framework for mines to proactively assess and manage impacts on biodiversity and ecosystem services according to the mitigation hierarchy of avoiding and minimizing impacts early in the project life cycle, and if impacts cannot be avoided, restoring and, if necessary, offsetting or compensating for residual impacts throughout the remainder of the mine's life.

### TERMS USED IN THIS CHAPTER

Additional Conservation Actions ■ Area of Influence ■ Avoidance ■ Baseline ■ Biodiversity ■ Biosphere Reserves ■ Competent Professionals ■ Conservation Outcomes ■ Conservation Values ■ Collaborate ■ Consultation ■ Critical Habitat ■ Cumulative Impacts ■ Direct/Indirect Impacts ■ Ecological Processes ■ Ecosystem Services ■ Endangered Species ■ Enhancement ■ Existing Mine ■ Habitat ■ Host Country Law ■ Important Biodiversity Values ■ Key Biodiversity Areas ■ Mine Closure ■ Mining Project ■ Mining-Related Activities ■ Minimize ■ Mitigation ■ Mitigation Hierarchy ■ Modified Habitat ■ Natural Habitat ■ New Mine ■ No Net Loss and Net Gain ■ Offset ■ Operating Company ■ Priority Ecosystem Services ■ Protected Area ■ Protected Area Management Categories ■ Residual Impacts ■ Restoration ■ Stakeholder ■ Tentative List for World Heritage Site Inscription ■ World Heritage Site ■

*These terms appear in the text with a dashed underline. For definitions see the Glossary of Terms at the end of the document.*

<sup>242</sup> Adopted from the Convention on Biological Diversity (CBD) Strategic Plan for Biodiversity 2011-2020. Available at: [www.cbd.int/sp/](http://www.cbd.int/sp/)

## OBJECTIVES/INTENT OF THIS CHAPTER

To protect biodiversity, maintain the benefits of ecosystem services and respect the values being safeguarded in protected areas.

## SCOPE OF APPLICATION

**RELEVANCE:** This chapter will not be applicable if no risks to biodiversity, ecosystem services or protected areas, including risks related to potential knowledge gaps, are identified through the screening process.

**NEW VS. EXISTING MINES:** This chapter applies to new mines and existing mines. The requirements are drafted with the intent that the overall impact of a mining project on biodiversity, ecosystem services and protected areas will be considered across the entire period of the mine's life.

Mitigation measures for new mines are expected to be designed to achieve no net loss and preferably a net gain in important biodiversity values and priority ecosystem services. While ideally existing mines would also seek to achieve no net loss in biodiversity and ecosystem services, IRMA recognizes that it may be difficult or impossible to accurately identify the biodiversity values that were present in an area prior to the mine development, which makes it difficult to establish a baseline for calculating a no net loss or net gain in biodiversity. Instead of requiring no net loss/net gain at existing mines, IRMA expects existing mines to document, to the best of their abilities, the impacts that their past activities have had on biodiversity and ecosystem services. Where significant impacts have occurred, existing mines will be expected to undertake conservation actions to enhance biodiversity and ecosystem services. Existing mines are also expected to avoid any additional losses of important biodiversity values or priority ecosystem services (see 4.6.4.2). This approach enables an existing mine to apply for IRMA certification later in its project life, but ensures that doing so does not allow them to avoid responsibilities that would have been applicable had they applied for IRMA certification at an earlier stage.

# Biodiversity, Ecosystem Services and Protected Areas Requirements

## 4.6.1. General Stipulations

4.6.1.1. Biodiversity, ecosystem services and protected areas screening, assessment, management planning, implementation of mitigation measures, and monitoring shall be carried out and documented by competent professionals using appropriate methodologies.

4.6.1.2. Biodiversity, ecosystem services and protected areas screening, assessment, management planning, and the development of mitigation and monitoring plans shall include consultations with stakeholders, including, where relevant, affected communities and external experts.

4.6.1.3. Biodiversity, ecosystem services and protected areas impact assessments, management plans and monitoring data shall be publicly available, or made available to stakeholders upon request.

## 4.6.2. Biodiversity, Ecosystem Services and Protected Areas Screening

4.6.2.1. New mines and existing mines shall carry out screening or an equivalent process to establish a preliminary understanding of the impacts on or risks to biodiversity, ecosystem services and protected areas from past and proposed mining-related activities.

4.6.2.2. Screening shall include identification and documentation of:

- a. Boundaries of legally protected areas in the mine's actual or proposed area of influence, and the conservation values being protected in those areas;

- b. Boundaries of Key Biodiversity Areas (KBA)<sup>243</sup> in the mine's actual or proposed area of influence, the important biodiversity values within those areas and the ecological processes and habitats supporting those values;
- c. Areas of modified habitat, natural habitat and critical habitat<sup>244</sup> within the mine's proposed or actual area of influence, and the important biodiversity values (e.g., threatened and endangered species) present in the critical habitat areas; and
- d. Ecosystems or processes within the mine's proposed or actual area of influence that may or do provide provisioning, regulating, cultural and supporting ecosystem services.

### 4.6.3. Impact Assessment

4.6.3.1. When screening identifies protected areas or areas of potentially important global, national or local biodiversity or ecosystem services that have been or may be affected by mining-related activities (e.g., KBAs, critical habitat, threatened or endangered species), the operating company shall carry out an impact assessment that includes:

- a. Establishment of baseline conditions of biodiversity, ecosystem services and, if relevant, conservation values (i.e., in protected areas) within the mine's proposed or actual area of influence;
- b. Identification of potentially significant direct, indirect and cumulative impacts of past and proposed mining-related activities on biodiversity, ecosystem services and, if relevant, on the conservation values of protected areas throughout the mine's life cycle;
- c. Evaluation of options to avoid potentially significant adverse impacts on biodiversity, ecosystem services and conservation values of protected areas, prioritizing avoidance of impacts on important biodiversity values and priority ecosystem services; evaluation of options to minimize potential impacts; evaluation of options to provide restoration for potential and actual impacts; and evaluation of options to offset significant residual impacts (see 4.6.4.1 and 4.6.4.2); and
- d. Identification and evaluation of opportunities for partnerships and additional conservation actions that could enhance the long-term sustainable management of protected areas and/or biodiversity and ecosystem services.

### 4.6.4. Biodiversity and Ecosystem Services Impact Mitigation and Management

4.6.4.1. Mitigation measures for new mines shall:<sup>245</sup>

- a. Follow the mitigation hierarchy of:
  - i. Prioritizing the avoidance of impacts on important biodiversity values and priority ecosystem services and the ecological processes and habitats necessary to support them;
  - ii. Where impacts are not avoidable, minimizing impacts to the extent possible;
  - iii. Restoring biodiversity, ecosystem services and the ecological processes and habitats that support them; and
  - iv. As a last resort, offsetting the residual impacts.

<sup>243</sup> KBAs include Alliance for Zero Extinction sites (AZE), Important Bird and Biodiversity Areas (IBA), Important Plant Areas (IPA).

<sup>244</sup> Modified, natural and critical habitat refers to the biodiversity value of the area as determined by species, ecosystems and ecological processes. Critical habitats are a subset of modified or natural habitats. (See: International Finance Corporation. 2012. Performance Standard 6, Guidance Notes. (GN26 and Para.9) [https://www.ifc.org/wps/wcm/connect/a359a380498007e9a1b7f3336b93d75f/Updated\\_GN6-2012.pdf?MOD=AJPERES](https://www.ifc.org/wps/wcm/connect/a359a380498007e9a1b7f3336b93d75f/Updated_GN6-2012.pdf?MOD=AJPERES))

<sup>245</sup> This section is meant to align with many other standards and guidelines that address impacts on biodiversity, such as IFC's Performance Standard 6 (see Para. 10 and 14) and the KBA Partners Guidelines on Business and KBAs (KBA Partners. 2018. Guidelines on Business and KBAs: Managing Risk to Biodiversity. <https://portals.iucn.org/library/sites/library/files/documents/2018-005-En.pdf>)

- b. Prioritize avoidance of impacts on important biodiversity values and priority ecosystem services early in the project development process;
- c. Be designed and implemented to deliver at least no net loss, and preferably a net gain in important biodiversity values, and the ecological processes that support those values, on an appropriate geographic scale and in a manner that will be self-sustaining after mine closure.

#### 4.6.4.2. At existing mines:

- a. Where past adverse impacts on important biodiversity values and priority ecosystem services have been identified, the operating company shall design and implement onsite restoration strategies, and also, through consultation with stakeholders, design and implement additional conservation actions to support the enhancement of important biodiversity values and/or priority ecosystem services on an appropriate geographic scale; and
- b. If there is the potential for new impacts on important biodiversity values or priority ecosystem services (e.g., as a result of mine expansions, etc.), the operating company shall follow the mitigation hierarchy, prioritizing the avoidance of impacts on important biodiversity values or priority ecosystem services, but where residual impacts remain, shall apply offsets commensurate to the scale of the additional (new) impacts.

4.6.4.3. Offsetting, if required, shall be done in a manner that aligns with international best practice.

4.6.4.4. The operating company shall develop and implement a biodiversity management plan or equivalent that:

- a. Outlines specific objectives (e.g., no net loss/net gain, no additional loss) with measurable conservation outcomes, timelines, locations and activities that will be implemented to avoid, minimize, restore, enhance and, if necessary, offset adverse impacts on biodiversity and ecosystem services;
- b. Identifies key indicators, and ensures that there is an adequate baseline for the indicators to enable measurement of the effectiveness of mitigation activities over time;
- c. Provides a budget and financing plan to ensure that funding is available for effective mitigation.

4.6.4.5. Biodiversity management shall include a process for updating or adapting the management plan if new information relating to biodiversity or ecosystem services becomes available during the mine life cycle.<sup>246</sup>

### 4.6.5. Protected Areas Mitigation and Management

4.6.5.1. An operating company shall not carry out new exploration or develop new mines in any legally protected area unless the applicable criteria in the remainder of this chapter are met, and additionally the company:

- a. Demonstrates that the proposed development in such areas is legally permitted;
- b. Consults with protected area sponsors, managers and relevant stakeholders on the proposed project;
- c. Conducts mining-related activities in a manner consistent with protected area management plans for such areas; and
- d. Implements additional conservation actions or programs to promote and enhance the conservation aims and/or effective management of the area.

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<sup>246</sup> For example, new information may be obtained through the implementation and monitoring of mitigation measures.

4.6.5.2. An operating company shall not carry out new mining-related activities in the following protected areas unless they meet 4.6.5.1.a through d, and an assessment, carried out or peer-reviewed by a reputable conservation organization and/or academic institution,<sup>247</sup> demonstrates that mining-related activities will not damage the integrity of the special values for which the area was designated or recognized:

- International Union for Conservation of Nature (IUCN) protected areas designated as protected area management category IV;
- Ramsar sites that are not IUCN protected area management categories I-III; and
- Buffer zones of UNESCO biosphere reserves.

4.6.5.3. IRMA will not certify new mines that are developed in or that adversely affect the following protected areas:

- World Heritage Sites, and areas on a State Party's official Tentative List for World Heritage Site Inscription;
- IUCN protected area management categories I-III;
- Core areas of UNESCO biosphere reserves.

4.6.5.4. An existing mine located entirely or partially in a protected area listed in 4.6.5.3 shall demonstrate that:

- a. The mine was developed prior to the area's official designation;
- b. Management plans have been developed and are being implemented to ensure that activities during the remaining mine life cycle will not permanently and materially damage the integrity of the special values for which the area was designated or recognized; and
- c. The operating company collaborates with relevant management authorities to integrate the mine's management strategies into the protected area's management plan.

## 4.6.6. Monitoring

4.6.6.1. The operating company shall develop and implement a program to monitor the implementation of its protected areas and/or biodiversity and ecosystem services management plan(s) throughout the mine life cycle.

4.6.6.2. Monitoring of key biodiversity or other indicators shall occur with sufficient detail and frequency to enable evaluation of the effectiveness of mitigation strategies and progress toward the objectives of at least no net loss or net gain in biodiversity and ecosystem services over time.

4.6.6.3. If monitoring reveals that the operating company's protected areas and/or biodiversity and ecosystem services objectives are not being achieved as expected, the operating company shall define and implement timely and effective corrective action in consultation with relevant stakeholders.

4.6.6.4. The findings of monitoring programs shall be subject to independent review.

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<sup>247</sup> E.g., Peer review should be undertaken by an academic institution or environmental NGO with experience in biodiversity assessments. Also, the personnel responsible for carrying out the peer-review or assessment are expected to be competent professionals (i.e., in-house staff or external consultants with relevant education, knowledge, proven experience and necessary skill-sets and training to carry out the required work. Competent professionals are expected to follow scientifically robust methodologies to carry out their work).

## NOTES

Although presented in a different format, many of the requirements in this chapter are meant to generally align with the International Finance Corporation’s (IFC) Performance Standard 6—Biodiversity Conservation and Sustainable Management of Living Natural Resources, and also the KBA Partners’ Guidelines on Business and Key Biodiversity Areas (KBAs).<sup>248</sup>

This chapter focuses on the conservation of the most important or critical areas of biodiversity (in some cases these have been designated as protected areas or Key Biodiversity Areas, in other cases they will not have been officially designated but still contain important biodiversity values). Despite this emphasis, it is expected that mines will minimize impacts on biodiversity and ecosystem services generally, according to the mitigation hierarchy (see 3.7.4.1). Similarly, while the objectives of no net loss and preferably net gain are explicitly required to be planned for in the case of impacts on important biodiversity values and priority ecosystem services, it is strongly encouraged that such objectives be considered for any impacts on biodiversity or ecosystem services (e.g., IFC PS6 states that in areas of natural habitat, mitigation measures will be designed to achieve no net loss of biodiversity where feasible).

| CROSS REFERENCES TO OTHER CHAPTERS                            |  |
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| CHAPTER   | ISSUES   |
| 1.1—Legal Compliance  | As per Chapter 1.1, if there are <u>host country laws</u> governing <u>protected areas</u> or the protection of <u>biodiversity</u> or <u>ecosystem services</u> , the <u>operating company</u> is required to abide by those laws. If IRMA requirements are more stringent than <u>host country law</u> , the company is required to also meet the IRMA requirements, as long as complying with them would not require the company to violate <u>host country law</u> .   |
| 1.2—Community and Stakeholder Engagement                      | Engagement with <u>stakeholders</u> in the assessment and management of <u>biodiversity</u> , <u>ecosystem services</u> and <u>protected areas</u> shall conform to the requirements in Chapter 1.2.<br><br>In particular, criterion 1.2.3 is important to ensure that <u>stakeholders</u> have the capacity to participate in assessments and the development of management plans. Also, 1.2.4 ensures that communications and information are in culturally appropriate formats and languages that are <u>accessible</u> and understandable to affected <u>stakeholders</u> , and provided in a timely manner. |
| 1.4—Complaints and Grievance Mechanism and Access to Remedy   | As per Chapter 1.4, the <u>operating company</u> is required to have an operational-level <u>grievance mechanism</u> available to <u>stakeholders</u> , including procedures for filing complaints, and having complaints recorded, investigated and resolved in a timely manner. <u>Stakeholders</u> who have complaints related to the <u>operating company’s</u> assessment, mitigation, monitoring or other issues related to <u>biodiversity</u> , <u>ecosystem services</u> or <u>protected areas</u> will have access to raise these issues.  |
| 2.1—Environmental and Social Impact Assessment and Management | The screening and assessment of the <u>mining project’s</u> impacts on <u>biodiversity</u> , <u>ecosystem services</u> and <u>protected areas</u> as per 4.6.2 and 4.6.3 may be carried out as a stand-alone assessment or as part of an ESIA; or data collected for one may feed into the other. Similarly, the <u>biodiversity</u> management plan or its equivalent may be incorporated into the mine’s larger environmental and social management plan.  |
| 2.4—Resettlement  | IRMA’s resettlement chapter addresses both the physical and <u>economic displacement</u> of communities. Resettlement may lead to impacts on <u>biodiversity</u> and <u>ecosystem services</u> , or <u>protected areas</u> depending on the location of resettled communities. The potential impacts of resettlement on <u>biodiversity</u> and <u>ecosystem services</u> , or <u>protected areas</u> should be identified during the Resettlement Risk and Assessment Process (See 2.4.1.2.c), and any necessary <u>mitigation</u> developed accordingly to 4.6.4.  |

<sup>248</sup> IFC. 2012. Performance Standard 6— Biodiversity Conservation and Sustainable Management of Living Natural Resources with Guidance Notes. [https://www.ifc.org/wps/wcm/connect/a359a380498007e9a1b7f3336b93d75f/Updated\\_GN6-2012.pdf?MOD=AJPERES&KBA Partners.2018.Guidelines.on.Business.and.KBAs:Managing.Risk.to.Biodiversity.<https://portals.iucn.org/library/sites/library/files/documents/2018-005-En.pdf>](https://www.ifc.org/wps/wcm/connect/a359a380498007e9a1b7f3336b93d75f/Updated_GN6-2012.pdf?MOD=AJPERES&KBA%20Partners.2018.Guidelines.on.Business.and.KBAs:Managing.Risk.to.Biodiversity.<https://portals.iucn.org/library/sites/library/files/documents/2018-005-En.pdf>)

| CROSS REFERENCES TO OTHER CHAPTERS |   |
|------------------------------------|---|
| 2.6 —Reclamation and Closure       | Chapter 2.6 requires companies to come to agreed post-mining land use with <u>affected communities</u> , and communities and <u>stakeholders</u> are included in the development of reclamation and closure plans. So if the post-mining agreed uses require <u>restoration</u> of ecological systems or <u>habitat</u> that may not qualify as <u>important biodiversity values</u> or <u>priority ecosystem services</u> , then companies would still be expected to document that in their reclamation plan and carry out necessary activities to achieve the agreed uses.   |
| 3.7—Cultural Heritage              | If during the screening process the <u>operating company</u> identifies <u>protected areas</u> specifically designated to protect cultural heritage, the company will be expected to conform with requirements in Chapter 3.7.  |
| 4.1—Waste and Materials Management | Mine waste management approaches may pose risks to <u>threatened or endangered species</u> , <u>biodiversity</u> , <u>ecosystem services</u> or <u>protected areas</u> . These risks may be identified and evaluated during the screening, and if necessary, assessment processes in Chapter 4.6. The risks may also be identified during the Waste Facility Assessment process (4.1.4).<br><br><u>Mitigation</u> strategies may be developed as per 4.1.5, or developed as part of or integrated into the Biodiversity Management Plan (see 4.6.4). Any assessment and mitigation development processes should include input from experts and <u>stakeholders</u> that have expertise in <u>biodiversity</u> , <u>ecosystem services</u> or <u>protected areas</u> issues. |
| 4.2—Water Management               | Chapter 4.2 requires Site Characterization and Prediction of Potential Impacts (4.2.2) of mine water management on communities and the environment. If analyses reveal that there may be water-management-related impacts on <u>biodiversity</u> (e.g., effects on <u>habitat</u> or water supply for <u>threatened and endangered species</u> ), <u>ecosystem services</u> (e.g., reduce flood regulation, availability of drinking water), or adverse effects on waters located in <u>protected areas</u> then the significance of the potential impacts should be further assessed (as per 4.6.3), and <u>mitigation</u> measures developed accordingly to 4.6.4.  |
| 4.3—Air Quality                    | The air quality screening process in 4.3.1 may reveal the potential for significant impacts to <u>important biodiversity</u> , <u>priority ecosystem services</u> , <u>critical habitat</u> (including <u>threatened species</u> ) or the <u>conservation values</u> of <u>protected areas</u> from <u>mining project</u> air emissions. If this is the case, then the significance of the potential impacts should be further assessed (as per 4.6.3), and <u>mitigation</u> measures developed accordingly to 4.6.4.  |