INDIMAPA

Practical guide for the application of the Index of Implementation and Management of Protected Areas

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Honorable Court of Accounts of the Province of Buenos Aires
Court of Accounts of the Province of Santa Fe

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Organization of Latin American and Caribbean Supreme Audit Institutions

Special Technical Commission for the Environment

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Ceiba pentandra, Tapajós National Forest, Brazil.

◼ Foreword

Dear readers,

As the Federal Court of Accounts (TCU-Brazil) becomes chair of the highest public audit organization in the global level, the International Organization of Supreme Audit Institutions (Intosai), it takes the opportunity to confirm its commitment and leadership also in the regional level.

TCU, as president of the Special Technical Commission for the Environment (Comtema), within the Organization of Latin American and Caribbean Supreme Audit Institutions (Olacefs), is proud to present the **Practical Guide for the application of the Index of Implemenation and Management of Protected Areas (Indimapa)**.

Indimapa is a tool dedicated to the assessment and follow-up of implementation and management of protected areas (PAs), as well as for communication of the results. The method was al-

Minister Bruno Dantas
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ready applied twice in major projects: the Coordinated Audit on Protected Areas, in 2014, and the second edition of said audit, in 2019. That made it possible to assess, in total, more than 2,500 Latin-American and European PAs, in 17 countries.

The tool was successful in providing standardized information about the implementation and management of PAs in countries with different sets of public policies related to the matter. Therefore, it allowed the production of international and regional overviews on the administration of these territories.

Besides, Indimapa accomplished to translate the results of the audits, frequently described in technical terms on the reports, to a plain language, easily comprehended by citizens. In addition to focusing the analysis on key aspects of the implementation and management of protected areas, from the perspective of the control, it allows representing the outputs of complex analyses in a visual and georeferenced way, which can be understood in a quick read.

This context presented the opportunity of sharing this tool with countries that have not participated in the previous coordinated audits, so they can replicate it in their contexts. Hence, this practical guide has two main goals: consolidate the knowledge and experiences accumulated in the two first editions of the audit, and make the Indimapa tool available for professionals from other audit institutions, so they can use it in their own projects.

This publication is dedicated especially to auditors from national and subnational audit institutions who face the challenge of conducting analyses of public policies related to nature conservation and protected areas. It is worth noting, however, that Indimapa can also be useful to other users, including policy makers, policy implementers and analysts.

I hope this guide is useful and contributes to your work.

Message from CCC

Dear readers,

It is a great satisfaction to witness the publication of the **Practical Guide for the application of the Index of Implementation and Management of Protected Areas – Indimapa**. This is a tool that has been developed by the Brazilian Federal Court of Accounts (TCU) for assessing protected areas in coordinated audits.

The development of Indimapa goes back to the period in which I was Deputy President of the TCU, in 2012. In that year, I proposed an audit with the purpose of evaluating the governance of Brazilian natural reserves, parks and forests. The inspiration for my proposal was the Rio+20 Conference, which I had recently attended.

In the following year, 2013, I assumed the presidency of TCU and Olacefs, and

Minister Augusto Nardes
President of the Capacity Building Committee of Olacefs

actively participated in the execution of the Coordinated Audit on Protected Areas. In that year, at the invitation of the Chico Mendes Institute for the Conservation of Biodiversity of Brazil (ICMBio), we made a technical visit to the Tapajós National Forest and to the Tapajós-Arapiuns Extractive Reserve, in the Brazilian Amazon rainforest.

The challenge in that audit was how to communicate, in plain language, the results of the assessment of hundreds of PAs to citizens. For that purpose, I proposed a methodology that allowed the visualization of results in a georeferenced color-coded manner, according to each area's level of implementation and management. This is how Indimapa was born.

This methodology has been increasingly applied. We started in the Brazilian Amazon, in 2013, with the support of the state-level courts of accounts in the region. In the following year, 2014, we expanded the application to the other Brazilian biomes and also to other Latin-American countries, joining our efforts to those of other supreme audit institutions. In 2019, in the second edition of said audit, we managed to repeat the application and involve even more nations in this project, including European SAIs. Thus, to this day, Indimapa has already been used by supreme audit institutions of eighteen countries, as well as ten subnational institutions. In total, Indimapa has already made possible the evaluation of 2,508 PAs.

At the present moment, I am in charge of the presidency of Olacefs' Capacity Building Committee (CCC), whose mission is to promote and manage professional and institutional capacity building among SAIs, which is a key factor for assuring the quality of coordinated audits. Hence, CCC accomplishes its mission by fostering and supporting initiatives such as the publication of this practical guide.

Since Indimapa allows consolidating results of assessments carried out in distinct contexts, this methodology is also a means for cooperation and union. Therefore, I express my hope that we may use it in future projects and keep contributing, by means of coordinated audits, to the sustainable development of our planet.

Tikal National Park, Guatemala.

Message from GIZ

The German Cooperation for Sustainable Development, implemented by *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) GmbH, feels honored for having worked in close cooperation with the Federal Court of Accounts (TCU), who, since 2018, is the chair of the Special Technical Commission for the Environment (COMTEMA) within the Organization of Latin American and Caribbean Supreme Audit Institutions (OLACEFS).

Within the realm of the Regional Project for Strengthening External Control in the Environmental Area, TCU, OLACEFS, and the German Cooperation worked in partnership for making external control for the environment even more relevant for the global agenda on sustainable development and achieve successful results.

The Project had, among its goals, strengthening auditors' capacities for conducting audits related to sustainable development topics, producing innovations that induce efficiency in external control activities and improving SAIs' communications with stakeholders.

The Index of Implementation and Management of Protected Areas (Indimapa), which assesses the level of implementation of these areas, was used on the Coordinated Audit on Protected Areas (2018-2020), carried out within the Cooperation Project, with the purpose of assessing them, communicating results and following up improvements and weaknesses in their management.

Indimapa contributed, mainly, to the Project's goal of developing and strengthening innovative models, methods, and tools, in addition to contributing to communicate results in a more effective way, including from a regional perspective.

The **Practical Guide for the application of the Index of Implementation and Management of Protected Areas** consolidates one more contribution from COMTEMA to one of the dimensions of the Regional Cooperation Project: strengthening audit teams' capacities. Such outcome is possible thanks to the dissemination of practical orientations for the application of the Index.

We compliment COMTEMA for preparing this relevant content which allows that Indimapa, significant innovation for the field of external control, is applied to diverse contexts with the purpose of strengthening the external control for sustainable development.

Silky shark (*Carcharhinus falciformis*), Jardines de la Reina National Park, Cuba.

Introduction

Protected areas (PAs) are an internationally recognized strategy for the conservation of biodiversity. The United Nations Convention on Biological Diversity (CBD), considered the main multilateral environmental agreement in the area of biodiversity, outlines that the establishment of a system of protected areas is a fundamental measure to promote conservation in situ, protect nature and its resources and combat the loss of biodiversity. In 2010, within the framework of the CBD, a set of targets, the Aichi Biodiversity Targets, was established to guide efforts in the period from 2011 to 2020. Target 11 states the following:

> **By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and by other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.**

Aichi Biodiversity Target 11, while objectively defining minimum percentages for the protection of continental and maritime territories, establishes other requirements for national systems of protected areas, including their effective and equitable management. In other words, good management is essential, together with effective governance, which contributes to the achievement of the objectives set for each of the areas created, which go beyond the protection of biodiversity.

In this context, the method presented here is inserted. The Index of Implementation and Management of Protected Areas (Indimapa) was developed to meet the need for evaluation and monitoring of the implementation and management of protected areas

from the perspective of external control, as well as the need to communicate the results of this evaluation to stakeholders and society itself in an effective, concise and simple manner. It is a method of international applicability, since it evaluates aspects common to the various protected area models existing in different countries.

It should be noted that the scope of the management aspects evaluated by Indimapa goes beyond the mere protection of these areas, encompassing not only environmental, but also economic and social aspects of their governance. Thus, the method is aligned with the concept of sustainable development proposed by the 2030 Agenda for Sustainable Development of the United Nations.

Indimapa was originally developed in 2013 and applied for the first time in 2013 and 2014, in the Coordinated Audit on Protected Areas. 1,120 protected areas were evaluated in Brazil and eleven other Latin American countries. Indimapa was applied for the second time between 2019 and 2020, in the second edition of the Coordinated Audit on Protected Areas. On this second occasion, 2,415 PAs were evaluated, including areas of Brazil and fourteen other Latin American countries, as well as Portugal and Spain. Of these 2,415 PAs, 1,028 were evaluated in both editions of the audit, so it is possible to follow up their evolution five years after the first work.

The following pages describe the background of the previous applications of Indimapa, the theoretical framework on which the tool is based, its objectives, the functioning of the indicators and index developed, and the data processing methods.

Background

Indimapa was originally developed in 2013, as part of the Coordinated Performance Audit in Brazilian Conservation Units[1] in the Amazon biome. The work involved the participation of nine State Courts of Accounts in the Amazon biome (Acre, Amazonas, Amapá, Mato Grosso, Maranhão, Pará, Rondônia, Roraima and Tocantins) and was coordinated by the Federal Court of Accounts (TCU-Brazil). The tool was originally developed to evaluate the management of the 107 federal protected areas located in the Amazon biome. However, the possibility of applying this tool to other federal PAs, as well as PAs from other levels of government and even protected areas in other countries, had already been considered.

The tool was developed based on the knowledge acquired by the audit team through research, interviews with Brazilian federal agencies involved in the management of protected areas and on-site visits.

In addition, Indimapa was also inspired by other existing protected area assessment tools. One of these was Rappam (Rapid Assessment and Prioritization of Protected Area Management). Developed by WWF (World Wildlife Fund), the tool follows standards defined by the International Union for Conservation of Nature (IUCN), offering comparability among protected areas worldwide.

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1. In Brazil, the international concept of protected areas is equivalent to that of conservation units. According to the Brazilian legal framework, these units are one of the protected area modalities, which also include indigenous lands, permanent preservation areas, legal reserve areas and lands occupied by remnants of Quilombola communities, which were not evaluated in that work.

Another tool consulted was METT (Management Effectiveness Tracking Tool), originally developed in 2002 by the World Bank/WWF Alliance for the Conservation and Sustainable Use. It is a simple application method, based on the completion of a questionnaire. It is one of the most widely used instruments worldwide to evaluate the effectiveness of PA management. Its application is one of the requirements for the approval of PA financing projects with the World Bank or the Global Environment Facility (GEF).

Indimapa also used as reference the Amazonas State Protected Area Implementation Effectiveness Indicators, created by the State Secretariat of Environment and Sustainable Development of the State of Amazonas (SDS-AM), in 2006; and the former Integrated Management System (SIGE, for its acronym in Portuguese), used by ICMBio to monitor the management of federal PAs.

Also in the Coordinated Performance Audit in Protected Areas in the Amazon Biome, in 2013, the tool was shared with the participating State Courts of Accounts so they could apply it to the areas under their jurisdiction. Thus, 140 state areas were evaluated, totaling 247 areas evaluated in this biome.

The tool was subsequently applied in the Coordinated Audit on Protected Areas carried out in twelve Latin American countries, based on the cooperation of their Supreme Audit Institutions (SAIs) within the framework of the Special Technical Commission for the Environment of Olacefs. The work was coordinated by the TCU in conjunction with the Office of the Comptroller General of the Republic of Paraguay (CGR-Paraguay) and had the participation of the SAIs of Argentina, Bolivia, Brazil, Colombia, Costa Rica, El Salvador, Ecuador, Honduras, Mexico, Paraguay, Peru and Venezuela. On this occasion, the indicators were pre-

sented to the participating SAIs, who proposed adjustments so that they could be applied to their respective protected area systems.

In this coordinated audit, while Brazil evaluated 206 federal protected areas in its other biomes, the other eleven countries evaluated a total of 667 areas. Thus, across 2013 and 2014, Indimapa was applied to a total of 1,120 protected areas on the Latin American continent.

In 2018, the TCU initiated a new audit process on the topic of protected areas. Prior to the planning of the work, on May 15 and 16 of that year, the 1st Comtema/Olacefs Face-to-Face Meeting was held and, jointly, the Feedback Workshop of the Coordinated Audit on Protected Areas. On this occasion, based on the contributions of the participants of the first edition of the audit and experts in the field, a report was generated that served as input for new adjustments in Indimapa and the

incorporation of lessons learned from previous applications.

Then, in its first phase, the audit was carried out in coordination with eight Brazilian state Courts of Accounts (Acre, Amapá, Amazonas, Maranhão, Mato Grosso, Pará, Rondônia and Roraima). TCU evaluated the 334 PAs existing in 2019 at the federal level, while the states analyzed 153 PAs, totaling 487 federal and state protected areas evaluated.

Subsequently, the tool was also replicated at the international level, in the second edition of the Coordinated Audit on Protected Areas, within the Comtema/Olacefs framework. The international stage was executed in 2020, under the coordination of the TCU, with the participation of seventeen countries (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, El Salvador, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Peru and Dominican Republic, in addition to the

guests Spain and Portugal), as well as the Honorable Court of Accounts of the Province of Buenos Aires.

Thus, another 1,928 areas of those countries were added to the 487 Brazilian PAs evaluated. Therefore, the second edition of the audit evaluated a total of 2,415 protected areas.

Finally, it should be noted that, of these 2,415 PAs, 1,028 were evaluated in both editions of the audit, allowing, for the first time, a follow-up of the evolution of their implementation and management, based on historical analysis.

Los Nevados National Natural Park, Colombia.

■ Concepts used

Protected Areas

Indimapa analyzes protected areas since the establishment of these areas is the main global strategy for the protection of biodiversity *in situ*, which is the conservation of ecosystems and habitats in their natural environments (Chape, Harrison, Spalding, & Lysenko, 2005).

According to Article 2 of the Convention on Biological Diversity, protected area is "a geographically defined area, which is designated or regulated and managed to achieve specific conservation objectives". IUCN adopts a very similar concept, which states that a protected area is "a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (IUCN apud Borrini-Feyerabend et al., 2015).

Implementation and mangement of protected areas

For Indimapa, the implementation and management of a protected area mean a continuous process that includes: providing these areas with the necessary resources for their management; the coordination with other actors that share their governance; and the operation of processes oriented to the PA's objectives, in accordance with the audit questions and classified according to Indimapa's indicators.

Objectives of the Indimapa methodology

The three main objectives of the Indimapa are: **evaluation** of the implementation and management of protected areas, **monitoring** over time, and **communication** of the results of the analyses. Each of these objectives is detailed in the following paragraphs.

Evaluation

One of Indimapa's objectives is to provide a diagnosis of the implementation and management situation of protected areas. Several management aspects were selected for analysis, organized into thirteen indicators. These aspects reflect, in some cases, the availability of resources for protected areas; in others, the coordination between entities in PA governance; and even management results. The indicators will be discussed in more detail later.

It should be noted that Indimapa is a tool for international application. Thus, already in the first edition of the audit, the method was developed so that the results could be consolidated at the end, even if they were applied by different actors to different contexts. Therefore, it was necessary to find common aspects in the management of protected areas across different backgrounds. In addition, the ways of obtaining data are standardized, to generate data that can be tabulated.

Finally, it is worth recalling that the indicators were improved in subsequent opportunities, incorporating contributions from participants in the previous edition of the audit and from experts, as mentioned in the Background section.

Monitoring

The International Standards of Supreme Audit Institutions – Issai 300 (Intosai, 2019b) provide for the monitoring of audit findings and recommendations, and corrective actions implemented by the audited entity. The purpose of supervision is to provide feedback on the results of these corrective actions. Indimapa was also built to be a monitoring instrument. It can be reapplied, and the new data generated can be used for a historical analysis of the implementation and management of protected areas, which also allows to verify the implementation of the recommendations made by the institution in previous audits. Therefore, the tool must also have standardization and comparability over time, which can be obtained by maintaining the same criteria when reapplied.

Communication

The third objective of Indimapa is to be an instrument to communicate the results of the audit. According to Issai 300 (Intosai, 2019b) "to be comprehensive, a report should include all the information needed to address the audit objective and audit questions (...). The report should be as clear and concise as the subject matter permits (...)."

Indimapa seeks to achieve this complete, clear and concise communication through the visual presentation of the results in maps (georeferencing) and graphics. By offering a more accessible language, it allows reaching a broader audience when communicating the results of the audit.

If, on the one hand, Indimapa represents an advantage in accessibility, on the other, the information needs to be simplified. Thus, the indicators, or-

ganized on a scale ranging from zero to three points (as explained further on), are simplifications of the results found in the audit. Indimapa provides more compact information, while the report provides more technical and detailed information. In this way, the instruments complement each other, and both are very important for the effective communication of audit results to distinct audiences.

Eduardo Avaroa Andean Fauna National Reserve, Bolivia.

Implementation and management indicators

Scope and scale

The evaluation carried out through Indimapa is organized around thirteen indicators, each of which reflects an aspect of implementation and management of protected areas.

Table 1 lists the thirteen indicators evaluated by Indimapa.

Table 1 - Implementation and management indicators

Indicator	Aspect evaluated
G	Management Plan
H	Human resources
S	Financial resources
E	Administrative Structure
T	Territorial Consolidation
F	Protection
P	Research
B	Biodiversity monitoring
C	Participatory management (management committee)
M	Management by traditional and/or local communities
U	Public use
L	Coordination in the PA
N	Concessions

Source: prepared in-house.

Each of these indicators is evaluated on the basis of three components, which detail the implementation and management requirements that together lead to full compliance with the aspect evaluated by the respective indicator. Non-compliance with any of the components corresponds to zero implementation of the indicator. And, the more components fulfilled, the better

the implementation of the aspect evaluated by the indicator, up to the situation of full compliance.

It is important to clarify that, in relation to each of the components, only two values are possible: requirement met (1) or not met (0), that is, it is a binary criterion. Thus, when the values of the three components are added together, the indicator can only present integer values between 0 and 3.

Based on this, each indicator is evaluated on a scale ranging from zero to three points.

The document *Results Consolidation Criteria* explains all the scores assigned to each of the indicators (Appendix B).

It should be noted that not all implementation and management aspects represented by the above indicators are applicable to all PAs analyzed. While there are indicators that evaluate topics of general application in protected areas, such as management plan (G), financial resources (S)

and human resources (H), there are others that apply only when the PA meets certain requirements, for example, management by traditional and/or local communities (M) and public use (U). In some cases, these indicators are considered not applicable (NA) to these areas, and are not part of their evaluation, not being included in the calculation of the index (detailed later, in the topic "index of implementation and management"). The Results Consolidation Criteria (Appendix B) also details the criteria for the applicability of the indicators.

Information sources and data collection

Indimapa uses different sources of information to verify compliance with the indicators and components. Data can be drawn from official systems, reports and communications, information obtained from interviews and questionnaires with protected area representatives, and direct observations from on-site visits.

It is recommended, whenever possible, to compare more than one source of information to verify compliance with the components. It is possible, for example, to compare the data in the system with the official communications of the government agency, or to test the information provided in the questionnaires at the time of the on-site inspections. In the event of a discrepancy, it is up to the auditor to further examine this point and try to identify the most appropriate assessment.

In cases where data from bases, communications and reports are not available or reliable, the questionnaire or interview with protected area representatives (administrators or other responsible parties) may be used. It should be noted that the PA manager, being inserted in the area's context, is the most appropriate person to provide information about it, although this may imply a certain degree of subjectivity in the analyses. However, in many cases, it is the best information available.

Therefore, regarding data collection, this guide provides a questionnaire template with the essential questions for the completion of Indimapa (Appendix A). The questionnaire should be used in conjunction with the *Results Consolidation Criteria* (Appendix B), which detail how the information from the former will be converted into the component and indicator assessments. The questionnaire can be supplemented with additional questions if the auditor wishes to better support his or her analysis. In addition, it can be shortened if it is determined that certain information can be obtained by other means. Because it is a long and dense questionnaire, shortening may be advantageous to increase the number of complete responses. The questionnaire can also be adapted to better reflect the design of the protected area system within the context in which it will be applied, but care should be taken to ensure that the information obtained through it is sufficient to complete the Indimapa in accordance with the *Results Consolidation Criteria*.

Applying the questionnaire electronically is recommended. One of the advantages of this method is the greater ease in tabulating the responses, since electronic survey platforms generally offer the possibility of exporting them in table formats. On the Internet, there are good e-survey platforms that offer their services, or part of them, free of charge, such as *LimeSurvey* and *SurveyMonkey*. Thus, from the tabulated responses, and through formulas that reflect the guidelines of the aforementioned *Results Consolidation Criteria*, the calculation of Indimapa values can be automated.

Another advantage of the e-survey is the reduction of inconsistencies and errors in the answers. In some of the questions of the questionnaire, depending on the option marked by the respondent, certain questions are omitted. The electronic survey platforms allow you to program this flow in a way that avoids errors in filling out the questionnaire.

Regardless of whether the questionnaire is applied physically or electronically, there may be inconsistencies in filling it out. This guide provides, in Appendix C, guidance for identifying and solving them.

It should also be remembered that the Indimapa is only one of the data collection techniques that can be used in a protected area audit. It provides important information for analyses, but these must be complemented by other analyses in order to obtain evidence to support the audit report. In other words, Indimapa's results should not be interpreted in isolation, but rather in support of the audit findings.

Criteria

According to Issai 100, audit criteria are "benchmarks used to evaluate the subject matter. (...) and may be drawn from various sources, including laws, regulations, standards, sound principles and best practices" (Intosai, 2019a). The criteria can be considered as the optimal situation of the object

under evaluation. The Indimapa indicators follow this rationale, by defining criteria that, if not met, show discrepancies that will help form the audit findings along with information from other sources.

This guide includes, in Appendix D, a list of international criteria that were used as the basis for the indicators of Indimapa.

Olive Ridley sea turtle (*Lepidochelys olivacea*), Las Baulas de Guanacaste Marine National Park, Costa Rica.

Implementation and management index

The implementation and management index is the arithmetic mean of all the indicators applicable to the PA. It should be noted that, although the indicators can only present integer values from 0 to 3, the index, being a mean, can present non-integer values, on a scale from 0.00 to 3.00. The index represents an even greater synthesis of the data collected in the Indimapa application.

The main objective of the index is to present the general situation of the implementation of each PA. The closer to zero, the lower the degree of implementation and management of an area. On the other hand, the closer to three, the better its implementation and management. It should be noted that good implementation and management will imply better conditions for the area to be effective, i.e., to achieve the objectives for which it was created. However, a high implementation and management index does not necessarily imply PA effectiveness.

The following is an example of a fictitious park. The indicator "management by traditional and/or local communities" is not applicable in this case. On table 2, we see that the index of this PA, which corresponds to the mean of its applicable indicators, demonstrates high implementation.

Table 2 – Example "A" of a fictitious PA: indicators and index

	Indicators	Values
G	Management Plan	3
H	Human resources	2
S	Financial resources	2
E	Administrative Structure	3
T	Territorial Consolidation	1
F	Protection	3
P	Research	1
B	Biodiversity monitoring	2
C	Participatory management (management committee)	3
M	Management by traditional and/or local communities	NA
U	Public use	1
L	Coordination in the PA	3
N	Concessions	1
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Source: prepared in-house. Key: NA = not applicable.

One of the limitations of the arithmetic mean synthesis is that homogeneous weights are assigned to the various indicators, without assigning different weights for each process. On the other hand, the assignment of weights, although it can be understood as desirable, requires an evaluation to define criteria, which also implies subjective questions. For this reason, we choose to maintain homogeneous weights.

Visual communication of results

One of Indimapa's objectives is the accessible communication of the audit results. Therefore, various visual resources are used to communicate Indimapa's results.

Radar charts

The **radar chart** allows to intuitively communicate the strengths and opportunities for improvement of the implementation and management of each PA. In this type of graph, the indicators are arranged on radial axes, forming a figure similar to a radar or a spider web.

The point that represents the degree of implementation of each indicator (from zero to three) is marked on each axis. The line formed by connecting the points of the neighboring axes forms a polygon. This polygon allows, in a quick glance, to identify peaks (high points) and valleys (low points), as well as the general situation of the management of the area (shown by the expansion or contraction of the polygon of the graph in the background grid).

Chart 1 and table 3 offer an example of radar chart built from indicators of a ficticious PA.

Chart 1 – Example "B" of a ficticious PA: radar chart
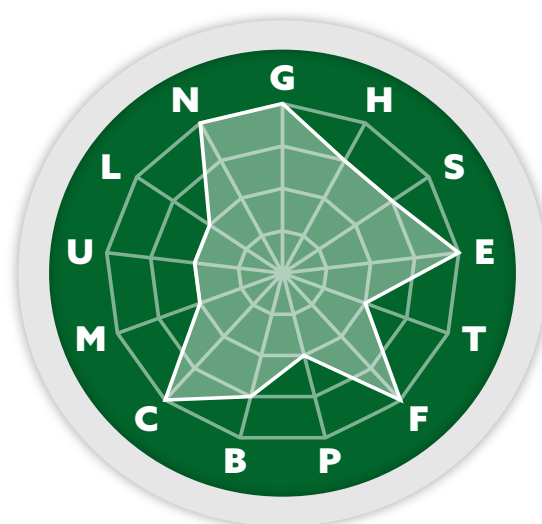
Source: prepared in-house.

Table 3 – Example "B" of a fictitious PA: indicators

	Indicators	Value
G	Management Plan	3
H	Human resources	2
S	Financial resources	2
E	Administrative Structure	3
T	Territorial Consolidation	1
F	Protection	3
P	Research	1
B	Biodiversity monitoring	2
C	Participatory management (management committee)	3
M	Management by traditional and/or local communities	1
U	Public use	1
L	Coordination in the PA	3
N	Concessions	1

Source: prepared in-house.

The radar chart can be used both individually for the PAs, and in a consolidated way, for the entire sample or some of its subgroups. In the case of consolidated information, the values will not be restricted to integers and can occupy any position on the axis.

Traffic light

To quickly communicate the result of PA implementation and management indices, a color code similar to a traffic light can be used. In this scheme, each color represents a range of PA implementation and management. Green represents the high degree of implementation and management (score in the top third of the zero to three scale); yellow represents the medium degree of implementation and management (score in the middle third); and red, the low degree (bottom third). The following table shows this resource.

Table 4 - Ranges of the implementation and management index

Color	Implementation and management range	Peak Index Value
🟩	High	$2 \leq i \leq 3$
🟨	Medium	$1 \leq i < 2$
🟥	Low	$0 \leq i < 1$

Source: prepared in-house. Key: i = index of implementation and management.

In the same way as the radar chart, this color code can be used both for individual PAs, as well as for consolidated results of groups or the entire sample.

Georeferencing

Indimapa also allows georeferenced communication of the evaluation results. The aforementioned traffic light color code can be used to code protected areas on a map, thus classifying them among the three implementation and management ranges. One of the benefits of this feature is to facilitate the systemic visualization of the implementation and management status of the PAs in a territory, country or region. Another benefit is associating the geographic dimension with the results. For example, larger areas will have more prominence on the map. Regional trends can also become more evident (regions with less accessible PA, or that suffer greater pressure, etc.). On the other hand, smaller areas tend to have less prominence or even disappear.

The following figure shows the results of the application of Indimapa in the second edition of the Coordinated Audit, between 2019 and 2020.
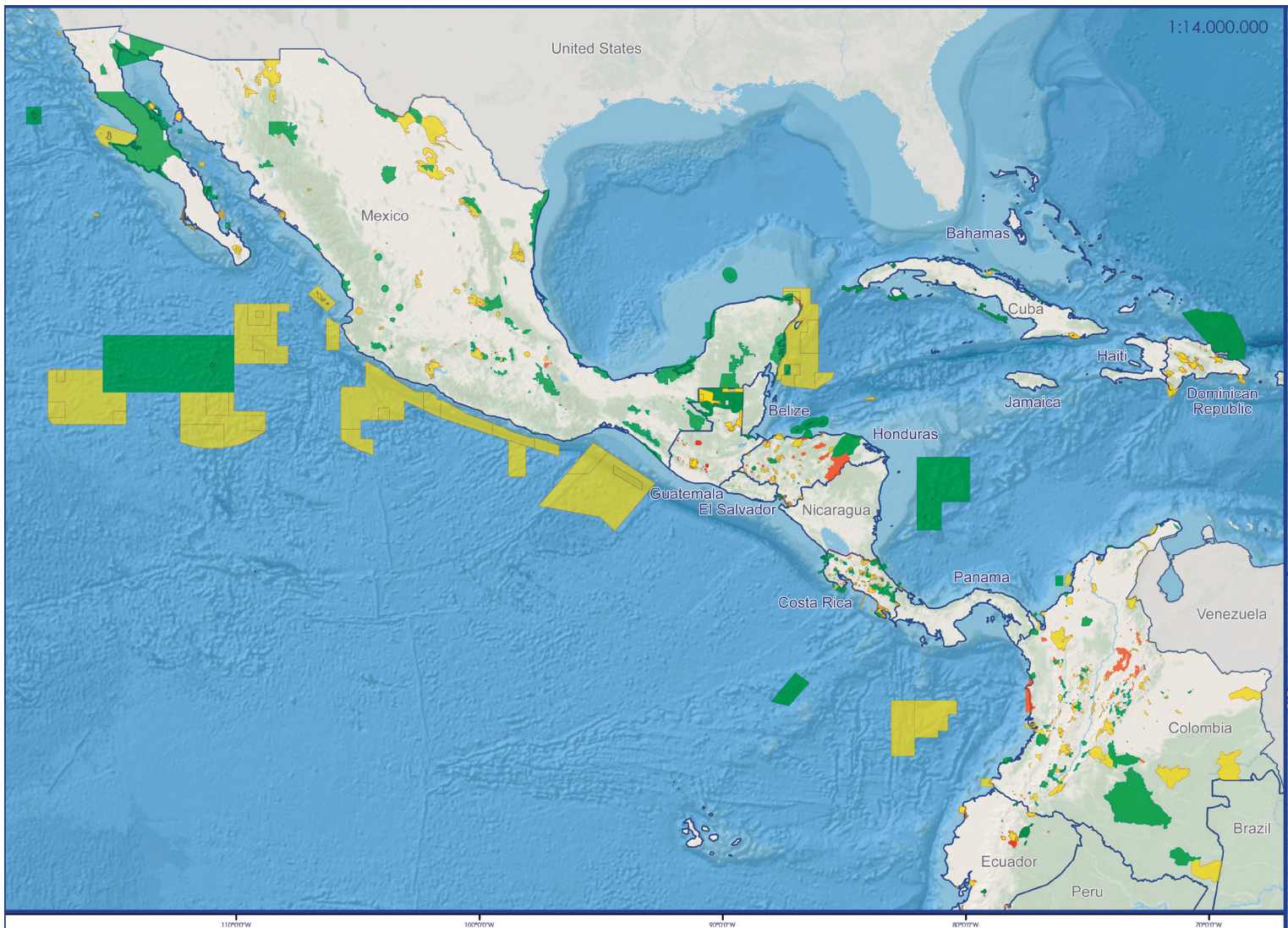
PROTECTED AREAS
COORDINATED AUDIT

INDIMAPA 2019

- ▇ High 2 ≤ i ≤ 3
- ▇ Medium 1 ≤ i < 2
- ▇ Low 0 ≤ i < 1

389   940

PA

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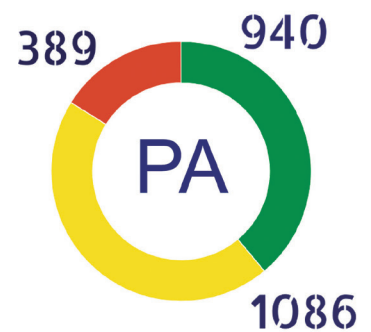
Geographic Coordinated System. Datum: WGS 1984. Source. Country boundaries: Natural Earth. Protected Areas: WDPA; Indimapa 2013/2014; files from the Provincial Organism for Sustainable Development (OPDS) of the Province of Buenos Aires, organized by the HTCBA's audit team; Brazilian Institute of Geography and Statistics; Chico Mendes Institute for Biodiversity Conservation (Brazil); National Protected Areas Registry of Colombia; National System of Conservation Areas (Costa Rica); Ministry of Environment and Sustainable Development (Paraguay); Environmental and Marine Geographic Information System of the Azores (Portugal); Portuguese Institute for Nature Conservation and Forests. INDIMAPA: supreme and subnational audit institutions participating in the Protected Areas Coordinated Audit.

german cooperation
DEUTSCHE ZUSAMMENARBEIT

Implemented by:
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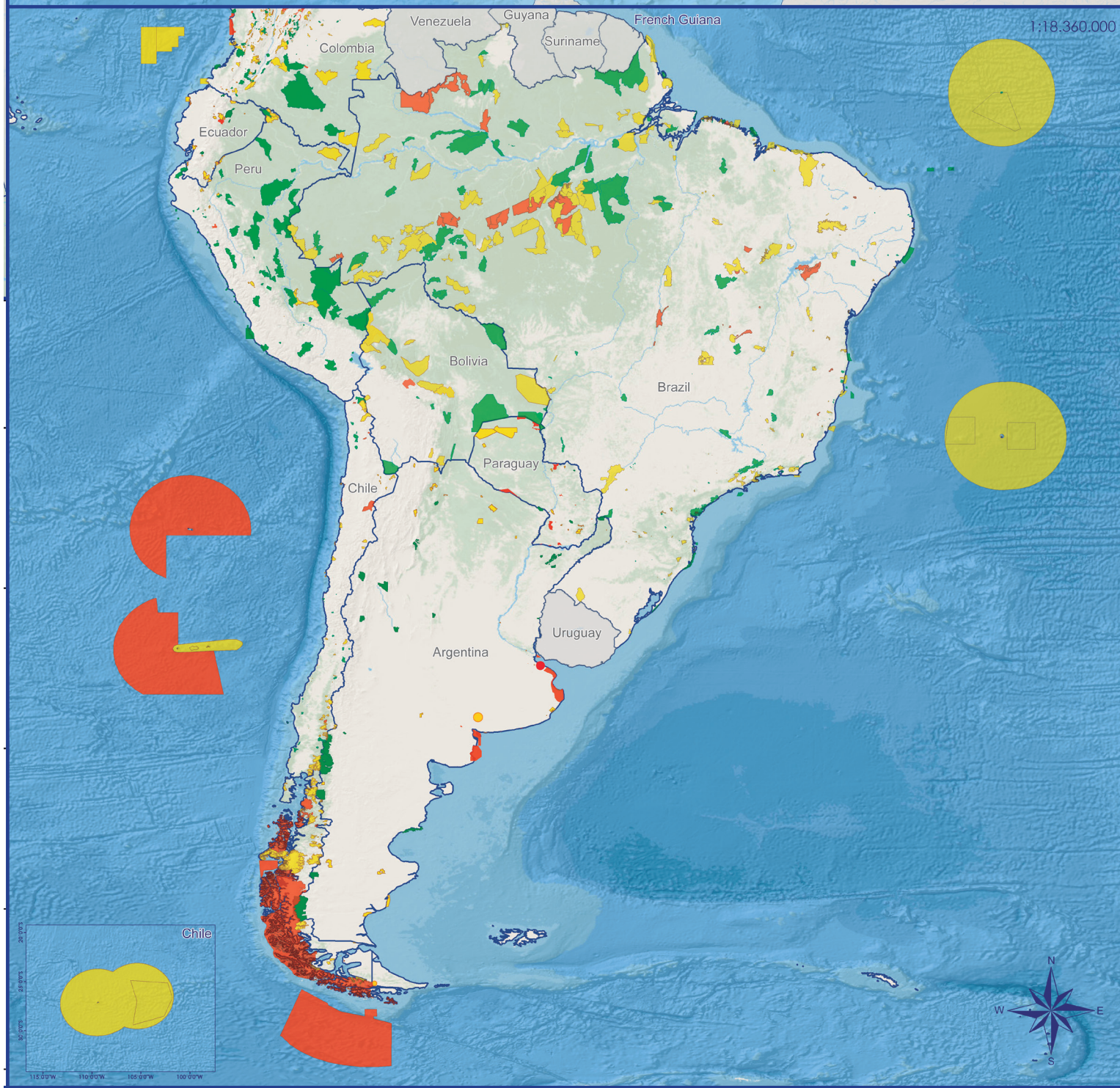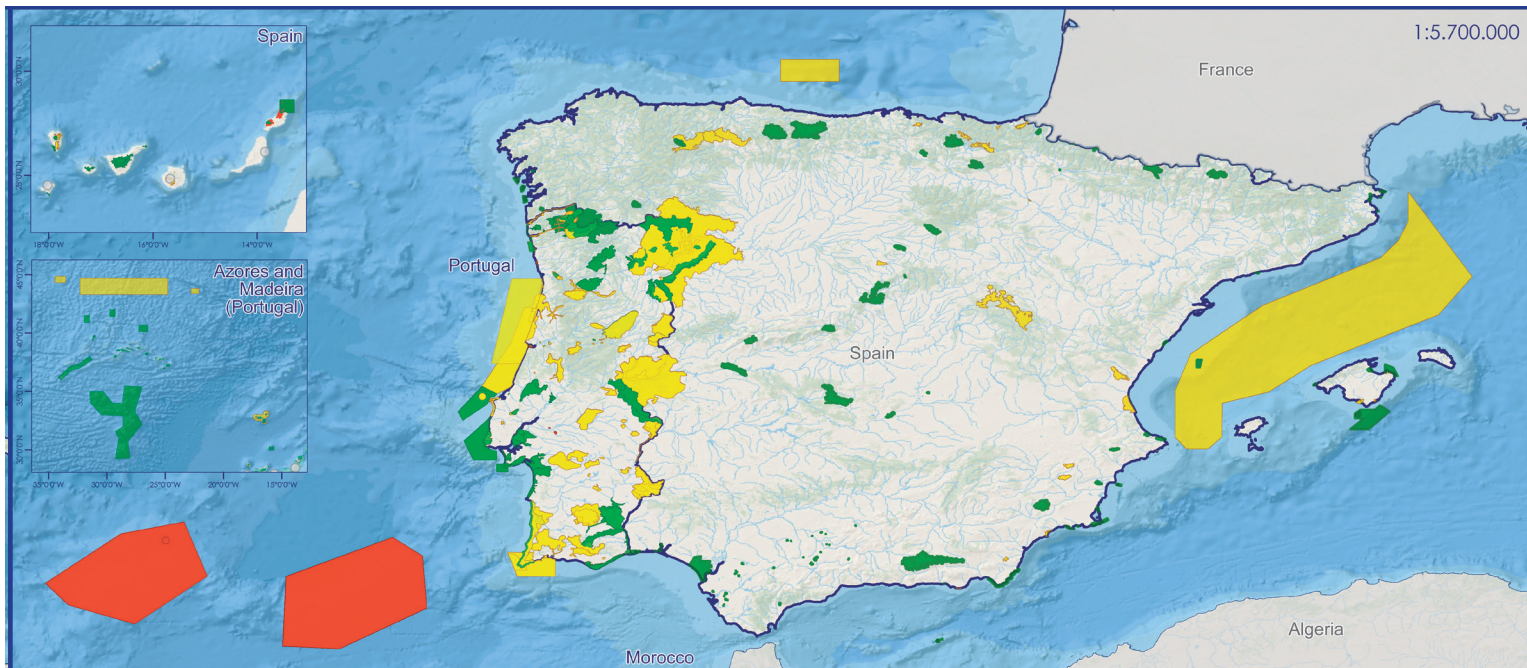
◼ Final considerations

Indimapa has proven to be a very useful tool for the execution of coordinated audits. Although it is not the only source of information used in these works, it has the advantages of offering a wide coverage for the analysis of protected areas and allowing data collection directly from people responsible of implementing the policy at the grassroots level, moving the analysis beyond the techniques carried out with the top management of public institutions. Therefore, it plays a relevant role in the systemic diagnosis of these areas, pointing out strengths and opportunities for improvement in the system as a whole.

In addition, it has been shown that Indimapa is also a valuable instrument for monitoring the evolution of PAs. If, already in 2014, its use allowed a broad overview of the implementation and management of these areas, replication in 2019 allowed for historical comparisons that contributed with

new information to the policy analysis. It should be noted that, despite being a tool in constant evolution and improvement, the evaluation criteria chosen remained, in essence, the same, corroborating their relevance.

The Indimapa also revealed great versatility. Designed for use in coordinated audits, it offers the possibility of generating standardized and consolidated information. This makes this tool applicable in different contexts. As discussed in the introduction to this guide, although the document has been dedicated especially to auditors, Indimapa can be applied by public policy analysts in general. Formulators and implementers, for example, can make good use of the instrument, and there are already experiences that demonstrate this: the Ministry of Environment and Natural Resources and the National Commission of Natural Protected Areas of Mexico applied Indimapa in 2017 as a self-assess-

ment tool (Conamp & Semarnat, 2017), which allowed them to monitor even then the progress of the system compared to the assessment conducted by the Mexican SAI in 2014.

It is also possible that the rationale and systematics behind Indimapa could serve as inspiration for the development of similar tools for the evaluation of other environmental public policies, or even policies from other areas of government action. This tool model is particularly useful for addressing challenges that are not limited to national borders, but require a coordinated response at the international level.

It is in this spirit that this tool is shared. Indimapa is expected to contribute to the management of public policies for protected areas, not only by providing evidence-based information to support decision-making, but also by promoting a culture of monitoring and encouraging governments to develop their own tools to evaluate actions related to the topic.

Tulum National Park, Mexico.

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Veined tree frog (*Trachycephalus typhonius*), Río Plátano Man and Biosphere Reserve, Honduras.

Appendix A: questionnaire template for representatives of protected areas

The **[name of the audit institution]** is conducting an assessment on protected areas (PAs) as part of the **[name of the audit or initiative of which the evaluation is part]**. The objective is to analyze government actions in the implementation of the protected areas policy, in order to assess whether there are regulatory, institutional and operational conditions for PAs to achieve the objectives for which they were created, also identifying opportunities for improvement and good practices.

The performance audit seeks to evaluate the efficiency and effectiveness of public programs and policies, the results of which are used as inputs to improve government actions and decision-making. Therefore, by answering this questionnaire, you will be helping the **[name of the audit institution]** to follow up on this policy and contribute to the strengthening of protected areas.

The **[name of the audit institution]** appreciates your cooperation.

Important information:

The questions in this questionnaire are **all mandatory** unless otherwise indicated.

Basic information about the protected area

Name of Protected Area	
WDPA ID (The WDPA ID is the globally unique identifier for each protected area in the World Database of Protected Areas (WDPA). It is a number of up to 12 digits and does not change over time unless the area designation changes or disappears).	_ _ _ _ _ _ _ _ _ _ _
	( ) The PA does not have this identifier.

IUCN Protected Area Management Category

( ) Ia. Strict nature reserve

( ) Ib. Wilderness area

( ) II. National Park

( ) III. Natural monument or feature

( ) IV. Habitat/species management area

( ) V. Protected landscape/ seascape

( ) VI. Protected area with sustainable

    use of natural resources

National Protected Area Management Category

( ) [Option 1]

( ) [Option 2]

( ) ...

1. Human resources

1.1 Is the number of available personnel compatible with the PA's needs?

( ) It is fully compatible with the needs.

( ) It is partially compatible with the needs.

( ) It is not compatible with the needs.

Please write your comment here (optional):

For the following questions, consider the following concepts:

- **General objectives:** objectives of conservation, management and/or sustainable use of the category to which the PA belongs.
- **Specific objectives:** specific objectives of conservation, management and/or sustainable use for the area under assessment, that is, that justified the creation of this PA.
- **Essential activities for PA management:** those that, if not carried out, represent a great risk to the achievement of the area's specific objectives

With this in mind, answer:

1.2 Relative to the past five years, assess the effect that the <u>number of staff available</u> had in the performance of essential activities for the management of the PA.

( ) The essential activities have been carried out satisfactorily thanks to the number of personnel available.

( ) The essential activities have been carried out satisfactorily thanks to the number of personnel available.

( ) Essential activities **have not been carried** out due to lack of staff.

( ) Essential activities **have not been carried** out for other reasons, despite the fact that the PA has sufficient personnel.

Please write your comment here (optional):

2. Financial resources

Consider the following concept of **external resources** for the following questions: resources from **national or international non-budgetary sources** (for example, foreign governments, multilateral funds, international organizations, private entities, etc.), **even if executed through the budget,** and excluding those from the PA's own income (for example, income from PA visits).

Comments

The concept of external resources can be adjusted according to the legal framework of each country. This part of the research seeks to evaluate the availability of financial resources in the PAs, as well as the composition of the available resources. Therefore, what matters is to separate the resources of government origin and those that come from the PA effort in one group, and the resources coming from alliances and compensations with other actors (civil society, private sector, funds and international organizations) in another group. The objective is to evaluate the financial autonomy of the national system of protected areas and its dependence on external aid.

2.1 Are the financial resources available compatible with the PA's needs? Consider both budgetary and external resources.

( )   They are fully compatible with the needs

( )   They are fully compatible with the needs

( )   They are not compatible with the needs.

Please write your comment here (optional):

_____

2.2 In relation to the last five years, evaluate the effect that <u>financial resources available (from budgetary and external sources)</u> **had on the performance of essential activities for the management of the PA.**

( )   The essential activities have been carried out satisfactorily thanks to the financial resources available.

( )   Essential activities have been carried out, despite the lack of financial resources.

( )   Essential activities **have not been carried out** due to lack of financial resources.

( )   Essential activities **have not been carried out** for other reasons, even though the PA has sufficient financial resources.

Please write your comment here (optional):

_____

2.3 Does the PA receive <u>external resources</u>**? If yes, what are those sources?**

( )   Yes.

( )   No.

Sources of external resources:

_____

2.4 Does the PA depend on <u>external resources</u> **to carry out** <u>essential activities</u>**?**

( )   It does, since without external resources it would not be possible to carry out the essential activities or part of them.

( )   It does not, since external resources only finance accessory activities of the management.

( )   It does not, since the PA does not receive external resources.

Please write your comment here (optional):

_____

3. Administrative Structure

3.1 Does the PA have an administrative headquarters (either inside or outside the PA)?

(   ) Yes, the PA has an administrative headquarters (although shared with other institutions or assigned by other institutions).

(   ) No, the PA does not have an administrative headquarters.

Please write your comment here (optional):

_____

3.2 Regarding the equipment and furnishings of the administrative structure of the PA, answer:

(   ) The equipment and furnishings of the administrative structure of the PA satisfy the management needs.

(   ) The equipment and furnishings of the administrative structure of the PA do not meet management needs.

(   ) The PA has no equipment or furnishings.

Please write your comment here (optional):

_____

3.3 Regarding the services of the administrative structure of the PA (such as drinking water, electricity, telephone, internet, among others) answer:

(   ) Administrative infrastructure services meet the needs of management.

(   ) Administrative infrastructure services do not meet the needs of management.

Please write your comment here (optional):

_____

4. Management Plan

Comments

This section seeks to evaluate whether the PA has planning tools. Depending on the laws of each country, this tool may have different names or may not even be mandatory. Teams should identify how their country's laws and regulations handle this issue and adjust the questionnaire to their reality. If it is not mandatory or there is no specific instrument provided by law for PA management planning, the term "management plan" should be replaced by "planning instruments."

4.1 Does the PA have a management plan?

(   ) Yes.

(   ) No, but it is in the process of being prepared. **Go to question 5.1.**

(   ) No, and it is not being prepared. **Go to question 5.1.**

Please write your comment here (optional):

4.2 Is the management plan aligned to the specific objectives established in the PA creation act?

(   ) Yes.

(   ) No.

Please write your comment here (optional):

4.3 What is the degree of implementation of the PA management plan?

(   ) Total = more than 90%

(   ) High = between 60% and 90%

(   ) Medium = between 30% and 60 %

(   ) Low = between 0% and 30%

(   ) Null = 0

Please write your comment here (optional):

5. Participatory management

Comments

This section seeks to assess whether the PA has existing participatory management mechanisms. If the country's regulatory framework provides a specific mechanism for this purpose, the term "participatory management mechanisms" can be replaced by the name of the instrument. For example, in Brazil, management committees are provided for by law, which must observe the participation of various stakeholders in the management of the PA. Management committees are mandatory in all PAs. Thus, the Brazilian questionnaire used the term "Management Commiittee" instead of "participatory management mechanisms".

5.1 Does the PA have participatory management mechanisms in place (even informal)?

( ) Yes.

( ) Yes, but they are not formalized by regulations.

( ) No. **Go to question 6.1.**

Please write your comment here (optional):

5.2 Do the participatory management mechanisms in operation adequately represent all the stakeholders in the management of the PA?

( ) Yes.

( ) No.

Please write your comment here (optional):

5.3 In your opinion, regarding the actors involved in the participatory management of the PA, are they active?

( ) The actors are very active.

( ) The actors are **not** very active.

( ) The actors are not active.

Please write your comment here (optional):

6. Coordination in the PA

6.1 Is there participation of <u>traditional and/or local communities</u> in and around the PA, in decision-making for the improvement of PA management and for the direct and/or indirect use of natural resources?

( ) There is a high participation in decision-making.

( ) There is low participation in decision-making.

( ) There is no participation in decision-making.

Please write your comment here (optional):

_____

6.2 Is there institutional cooperation with other <u>government agencies, national or subnational</u>, to improve the management of PAs and the direct and/or indirect use of natural resources?

( ) There is a great deal of cooperation.

( ) There is little cooperation.

( ) There is no cooperation.

Please write your comment here (optional):

_____

6.3 Is there cooperation between the PA and <u>non-governmental actors</u> (NGOs, private sector, universities, etc.) for the improvement of PA management and for the direct and/or indirect use of natural resources?

( ) There is a great deal of cooperation.

( ) There is little cooperation.

( ) There is no cooperation.

Please write your comment here (optional):

_____

7. Territorial consolidation

Consider the following concepts for the following questions:

- **Delimitation:** definition of the protected area boundaries by its creation act;
- **Physical demarcation:** : establishment of physical frames at the area boundaries;
- **Signposting:** visual communication of PA limits.
- **Land regularization:** process that includes the identification and definition of the property or right to use the land and real estate within the protected area, as well as their expropriation and compensation.

7.1 Do the boundaries defined for the protected area contribute to the achievement of its objectives?

(   ) Yes.

(   ) Yes, but the area could benefit from a redesign of its boundaries.

(   ) No, the current delimitation prevents the achievement of the objectives.

Please write your comment here (optional):

_____

7.2 What stage are the physical demarcation and signposting processes of the PA in?

(   ) The PA is demarcated and signposted.

(   ) The PA is only demarcated.

(   ) The PA is only signposted.

(   ) There is no demarcation or signposting of the PA.

(   ) It does not apply, because it is not possible to carry out signposting and de-marcation in the PA.

Please write your comment here (optional):

_____

Consider that the process of **land regularization** has been **concluded** when all PA lands are in the public domain and all necessary expropriations and resettlements have been completed.

7.3 What stage is the PA's land regularization process in?

(   ) The process has concluded. **Go to question 8.1.**

(   ) The process was not concluded, however, there was a minimal negative impact on the PA.

(   ) The process was not completed, and there was a significant negative impact on the PA.

(   ) Not applicable. **Go to question 8.1.**

Please write your comment here (optional):

_____

7.4 What are the difficulties faced in the land regularization process?

Check as many options as necessary:

(   ) Inconsistencies in the delimitation of the PA (boundaries defined in the creation standard, including overlaps).

( ) Inconsistencies in the chain of ownership of land and real estate located within the PA.

( ) Insufficient financial resources for compensation.

( ) Difficulties in the expropriation process.

( ) Difficulties in the community resettlement process.

Others. Cite:

_____

8. Protection

8.1 Does the protected area have planning tools for environmental emergency monitoring and response actions, such as a protection plan or fire management plan, among others?

(   ) Yes.

(   ) No, but planning instruments are being prepared to monitor and/or respond to environmental emergencies.

(   ) No.

Please write your comment here (optional):

_____

8.2 To what extent are the necessary resources available for environmental emergency monitoring and response actions (bases for supporting these actions, equipment, vehicles, fuel, among others)?

(   ) They are available and meet the needs of the PA.

(   ) They are available and partially satisfy the needs of the PA.

(   ) They are available, but they do not meet the needs of the PA.

(   ) They are not available.

(   ) Not applicable, since the PA is not under pressure that justifies intense environmental emergency monitoring and response actions.

Please write your comment here (optional):

_____

8.3 To what extent have the PA's environmental emergency monitoring and response actions been effective?

( ) The environmental emergency monitoring and/or response actions have been very effective.

( ) Only the monitoring actions have been effective.

( ) Only environmental emergency response actions have been effective.

( ) Despite the efforts, the actions have not been effective.

( ) Not applicable, since the PA is not under pressure that justifies intense environmental emergency monitoring and response actions.

Please write your comment here (optional):

9. Biodiversity monitoring

9.1 Does the PA carry out biodiversity monitoring activities? How often?

( ) Yes, biodiversity monitoring activities have been carried out on a regular basis, with a pre-established frequency.

( ) Yes, but biodiversity monitoring activities have been carried out sporadically, without a pre-established frequency.

( ) No, biodiversity monitoring activities are not carried out in the PA. **Go to question 10.1.**

Please write your comment here (optional):

9.2 Is the biodiversity monitoring carried out in the PA sufficient to generate information on the conservation results achieved?

( ) Yes, it is enough.

( ) No, it's not enough.

Please write your comment here (optional):

10. Research

10.1 Does the PA have an infrastructure to support research?

( ) Yes, and it is satisfactory.

( ) Yes, but it is not satisfactory.

( ) No, it does not.

Please write your comment here (optional):

_____

10.2 Are research needs and/or priorities identified in the PA?

( ) Yes.

( ) No.

Please write your comment here (optional):

_____

10.3 To what extent are the research results taken into account when planning PA activities?

( ) The results of research, where appropriate, are taken into account in planning the activities of the PA.

( ) The results of the research are not taken into account in the planning of the PA's activities.

( ) Does not apply, as the PA does not have information based on research.

Please write your comment here (optional):

_____

11. Management by traditional and/or local communities

11.1 Do traditional and/or local communities depend on PA resources or use those resources for their subsistence?

(   ) Yes.

(   ) No. **Go to question 13.1 .**

(   ) Not applicable, as there are no communities living in or around the PA. **Go to question 13.1.**

(   ) Not applicable, since the direct use of the PA's natural resources is not permitted. **Go to question 13.1.**

Please write your comment here (optional):

_____

11.2 Does the PA have instruments that regulate the access and sustainable use of natural resources by traditional and/or local communities?

(   ) Yes.

(   ) No. **Go to question 13.1.**

Please write your comment here (optional):

_____

11.3 What is the degree of implementation of the instruments that regulate access and sustainable use of natural resources by traditional and/or local communities?
Implementation is understood as the use of natural resources by traditional and/or local communities in accordance with the planned activities or the stipulated rules of the planning or regulation instrument.
(   ) Total = more than 90%

(   ) High = between 60% and 90%

(   ) Medium = between 30% and 60 %

(   ) Low = between 0% and 30%

(   ) Null = 0

Please write your comment here (optional):

_____

11.4 Does the PA have any way to monitor the economic and socio-environmental results of promoting the sustainable use of natural resources by traditional and/or local communities?

(   ) Yes.

(   ) No.

Please write your comment here (optional):

---

12. Public use

12.1 Does the PA have potential for public use (visits, recreation and environmental education)?

(   ) Yes.

(   ) No. **Go to question 14.1.**

Please write your comment here (optional):

12.2 Is the potential for public use of the PA being exploited?

(   ) Yes.

(   ) Partially.

(   ) No.

Please write your comment here (optional):

12.3 In relation to harnessing the potential for public use of the PA, evaluate the structure for visitors.

(   ) The structure for visitors is satisfactory.

(   ) The structure for visitors is not satisfactory.
Please write your comment here (optional):

12.4 In relation to harnessing the potential for public use of the PA, assess the number of staff available:

(   ) The number of staff available is sufficient.

(   ) The number of staff available is not sufficient.

Please write your comment here (optional):

_____

13. Concessions

> **ATTENTION**
>
> The "N - Concessions" indicator does not apply to all PA. It only applies to areas with the potential for concessions to exploit activities to the private sector. Since the concession of protected areas is a **strategic level** decision, information on the concession potential in each PA must be requested from those responsible for **strategic** management of the PA concession process (which may be the coordinating environmental agency of the protected areas system or another defined in the law).
>
> That is, this information should not be requested from each head of the PA through this questionnaire, but through the **request for official information to the responsible agency**.
>
> Thus, **it is essential not to forget to request official information from the government** on the areas that have concession potential, as well as the criteria used to define it. Without this information, it will not be possible to calculate the N indicator.

Consider the following concept for this section:

- **Concession:** instrument through which the government grants the management and/or sustainable exploitation of natural resources to individuals, including **concessions for exploitation of public use** and **forest concessions**, among others.

13.1 Does the PA have zones assigned for concessions (zoning)?

(   ) Yes.

(   ) No.

Please write your comment here (optional).

13.2 Are there evaluations that demonstrate how to facilitate the sustainable management and/or exploitation of natural resources by the private sector, such as economic and financial feasibility studies, as well as other inputs that are considered necessary to guarantee technical, operational and environmental viability of the activities and services included in the object of the concession?

(   ) Yes.

(   ) No.

Please write your comment here (optional).

13.3 Are there concessions established in the PA?

(   ) Yes.

(   ) No.

Please write your comment here (optional).

Additional information is welcome, and, in case you need more information or have questions regarding the questionnaire or the performance audit, please use the channels of contact with the audit team.

Contact E-mail: **[inform the e-mail of the person responsible of managing the application of the questionnaire]**

Phone: **[inform the telephone number of the person responsible of managing the application of the questionnaire]**

The audit team appreciates your participation and expresses the hope that this work can contribute to the improvement of the implementation and management of protected areas.

Appendix B : results consolidation criteria

Indicators of Implementation and Management of Protected Areas

The coordinated audit on protected areas aims to analyze government actions in the implementation of protected areas policy. One of the expected products is a national vision of the status of protected area management. To this end, the **indicators of implementation and management of protected areas** were created, which consist of a rapid evaluation of various aspects of management according to standardized criteria. This evaluation generates information that is easy to communicate and understand, which can be presented individually for each area, or in a consolidated manner, in the form of indexes.

All indicators are evaluated on a scale ranging from zero to three, where zero corresponds to null implementation of a given management aspect, while three corresponds to full implementation. Each indicator evaluates a management aspect, which is divided into three components. For each of these components that has been implemented, the PA receives one point, i.e., if all of them have been implemented, the indicator reaches the total score of three points.

The purpose of this document is to present each of the indicators with their respective components and evaluation criteria. By using these guidelines, it will be possible to produce data and information on PAs that can be consolidated and compared on the basis of common parameters.

Attention!

Not all indicators are applicable to all PAs. Some indicators are only applicable to certain categories or to PAs that meet certain requirements. This document also provides information on the applicability of each indicator.

Information source

The information that feeds the indicators may come from several sources, but the main ones are PA heads and official information provided by the environmental agency responsible for PA management.

Questionnaire

The application of the questionnaire is mandatory for PA assessment. A large part of the indicators is calculated on the basis of the answers to this instrument. It must be answered by the head of each PA, or failing that, by another official with knowledge of that area, designated by the environmental agency managing the areas.

The tables on the following pages indicate which questions feed each of the indicators. These tables also indicate which score should be considered for each management component according to the PA head's response to the questionnaire.

How to use the consolidation criteria

1. Identify, within the consolidation criteria, for each component of each indicator, what is the source of information, or the question in the questionnaire that allows its assessment.

S – Financial Resources
This indicator seeks to evaluate if the PA has sufficient financial resources to meet its demands, if these resources allow the essential activities of the PA to be carried out and if the area has continuous sources of financing.

Components	Information source	Value	Response
S1. Compatibility with needs Are financial resources (both from budgetary sources and external resources) compatible with the PA's needs?	Question 2.	1	They are fully compatible with the needs.
		1	They are partially compatible with the needs.
		0	They are not compatible with the needs.

2. If the source is a question from the questionnaire, check the answer of each PA's representative to that question and find, in the consolidation criteria, the value that matches the answer.

Example of filled questionnaire.

2.1 **Are the financial resources available compatible with the PA's needs? Consider both budgetary and external resources.**

( ) They are fully compatible with the needs.

(X) They are partially compatible with the needs.

( ) They are not compatible with the needs.

3. In the table for calculation of the indicators, fill, in each PA's line, and in the row corresponding to the assessed component, the values you found in the criteria.

S. Financial resources			
Name of the protected area	Compatibility with needs	Impact on essential activities	Dependence on external resources for essential activities
Example biological reserve	1		

Tabelas por indicador

G - Management Plan
This indicator seeks to evaluate the existence of a management plan, or equivalent planning and management instruments, for each protected area (PA), as well as the instrument's adherence to the PA's objectives and its degree of implementation.

Components	Information source	Value	Response
G1. Existence Does the PA have a management plan?	If possible, use the official information of the managing agency and confirm with a questionnaire. If this is not possible, use only the questionnaire (Question 4.1)	**1**	Yes.
		0	No, but it is in the process of being prepared.
		0	No, and it is not being prepared.
G2. Alignment with the objectives Does the management plan align with the specific objectives stated in the PA creation act?	Question 4.2	**1**	Yes.
		0	No.
		0	*** If the PA does not have a management plan, this component should be evaluated as zero (in the electronic questionnaire, when answering "no" in the previous question, do not answer this question).**
G3. Implementation What is the degree of implementation of the actions established in the plan?	Question 4.3	**1**	Total = more than 90%
		1	High = between 60% and 90%
		1	Medium = between 30% and 60 %%
		0	Low = between 0% and 30%
		0	Null
		0	*** If the PA does not have a management plan, this component should be evaluated as zero (in the electronic questionnaire, when answering "no" in the previous question, do not answer this question).**

H - Human Resources

This indicator seeks to evaluate whether the PA has enough staff to meet its demands, as well as the impact of the amount available on the essential management activities of the area.

Components	Information source	Value	Response
H1. Existence of responsible party Does the PA have at least one person responsible for its management?	Use the official information of the managing agency	1	There is at least one person responsible for the management of the PA. Comment: the audit team may find different management models, such as integrated management nuclei, alliances and concessions, among others. The intent of this component is to assess whether there is at least one person whose assignments include, **expressly**, the management of the PA in question, even if not exclusively.
		0	There is no one responsible for the management of the PA.
H2. Compatibility with needs Is the number of personnel available compatible with the needs of the area?	Question 1.1	1	It is fully compatible with the needs.
		1	It is partially compatible with the needs.
		0	It is not compatible with the needs.
H3. Impact on essential activities Have the essential activities of the protected area been carried out taking into account the available personnel?	Question 1.2	1	The essential activities have been carried out satisfactorily thanks to the number of personnel available.
		1	Essential activities have been carried out, despite the lack of staff.
		0	Essential activities have not been carried out due to lack of staff.
		1	Essential activities have not been carried out for other reasons, despite the fact that the PA has sufficient personnel.

Los Cardones National Park, Argentina.

S – Financial Resources
This indicator seeks to evaluate if the PA has sufficient financial resources to meet its demands, if these resources allow the essential activities of the PA to be carried out and if the area has continuous sources of financing.

Components	Information source	Value	Response
S1. Compatibility with needs Are financial resources (both from budgetary sources and external resources) compatible with the PA's needs?	Question 2.1	1	They are fully compatible with the needs.
		1	They are partially compatible with the needs.
		0	They are not compatible with the needs.
S2. Impact on essential activities Have the essential activities of the protected area been carried out taking into account the financial resources available (from budgetary and external sources)?	Question 2.2	1	The essential activities have been carried out satisfactorily thanks to the financial resources available.
		1	Essential activities have been carried out, despite the lack of financial resources.
		0	Essential activities have not been carried out due to lack of financial resources.
		1	Essential activities have not been carried out for other reasons, even though the PA has sufficient financial resources.
S3. Dependence on external resources for essential activities Does the PA depend on external resources to carry out essential activities?	**Question 2.2**	0	*** If the answer chosen in question 2.2 is "essential activities have not been carried out due to lack of financial resources," this component should be evaluated as zero, regardless of the answer to question 2.4.**
	Question 2.4	1	It does not, since external resources only finance accessory activities of the management.
		1	It does not, since the PA does not receive external resources.
		0	It does, since without external resources it would not be possible to carry out the essential activities or part of them.

E – Administrative Structure

This indicator seeks to evaluate the availability of the administrative structure necessary for the management of the PA (administrative headquarters, furnishings, equipment and services) and if this structure meets the needs of the PA.

Components	Information source	Value	Response
E1. Administrative headquarters Does the PA have an administrative headquarters (even if it is assigned by another institution or shared)?	If possible, use the official information of the managing agency and confirm with a questionnaire. If this is not possible, use only the questionnaire (Question 3.1)	1	Yes, the PA has an administrative headquarters (although shared with other institutions or assigned by other institutions).
		0	No, the PA does not have an administrative headquarters.
E2. Furnishings and equipment Does the PA have furnishings and equipment to meet its management needs?	Question 3.2	1	The equipment and furnishings of the administrative structure of the PA satisfy the management needs.
		0	The equipment and furnishings of the administrative structure of the PA do not meet the management needs.
		0	The PA has no equipment or furnishings.
E3. Service Does the PA have services such as drinking water, electricity, telephone, internet, among others?	Question 3.3	1	Administrative infrastructure services meet the needs of management.
		0	Administrative infrastructure services do not meet the needs of management.

Tayrona National Natural Park, Colombia.

T – Territorial consolidation
This indicator seeks to evaluate what stage of the territorial consolidation process the protected area is in, if its boundaries are demarcated and signposted and if the boundaries defined by regulations contribute to the achievement of the area's objectives.

Components	Information source	Value	Response
Indicator applicability	PA Category	**NA**	The applicability of this indicator depends on the PA's national land ownership legislation. If the PA belongs to a category that does not require the expropriation of private property, this indicator does not apply.
T1. Land regularization What stage is the PA's land regularization process in?	If possible, use the official information of the managing agency and confirm with a questionnaire. If this is not possible, use only the questionnaire (Question 7.3)	**1**	The process has concluded.
		1	The process was not concluded, however, there was a minimal negative impact on the PA.
		0	The process was not concluded, and there was a significant negative impact on the PA.
		1	Not applicable.
T2. Demarcation and signposting In what stage are the processes of demarcation of boundaries (establishment of geodetic landmarks) and signaling (visual communication of boundaries) of the protected area?	Question 7.2	**1**	The PA is demarcated and signposted.
		0	The PA is only demarcated.
		0	The PA is only signposted.
		0	There is no demarcation or signposting of the PA.
		1	It does not apply, because it is not possible to carry out signposting and demarcation in the PA.
T3. Scope of study Do the normatively defined limits for the protected area contribute to the achievement of its objectives?	Question 7.1	**1**	Yes.
		1	Yes, but the area could benefit from a redesign of its boundaries.
		0	No, the current delimitation prevents the achievement of the objectives.

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F – Protection
This indicator seeks to evaluate whether the protected area has planning instruments and material resources to carry out monitoring actions and respond to environmental emergencies, and whether these actions are effective.

Components	Information source	Value	Response
F1. Planning tools Does the PA have planning tools to carry out monitoring actions and respond to environmental emergencies?	Question 8.1	1	Yes.
		0	No, but planning instruments are being prepared to monitor and/or respond to environmental emergencies.
		0	No.
F2. Material resources Does the PA have the necessary material resources (bases, equipment, vehicles, fuel, etc.) for monitoring actions and to respond to environmental emergencies?	Question 8.2	1	They are available and satisfy the needs of the PA.
		1	They are available and partially satisfy the needs of the PA.
		0	They are available, but they do not meet the needs of the PA.
		0	They are not available.
		1	Not applicable, since the PA is not under pressure that justifies intense environmental emergency monitoring and response actions.
F3. Effectiveness of the actions To what extent have the PA's environmental emergency monitoring and response actions been effective?	Question 8.3	1	The environmental emergency monitoring and/or response actions have been very effective.
		1	Only the monitoring actions have been effective.
		1	Only environmental emergency response actions have been effective.
		0	Despite the efforts, the actions have not been effective.
		1	Not applicable, since the PA is not under pressure that justifies intense environmental emergency monitoring and response actions.

Sierra de La Macarena National Natural Park, Colombia.

P – Research
This indicator seeks to evaluate if the PA has infrastructure to support research, if it knows its priority issues and if the results are used for improving the management of the area.

Components	Information source	Value	Response
P1. Infrastructure Does the PA have an infrastructure to support research?	Question 10.1	1	Yes, and it is satisfactory.
		1	Yes, but it is not satisfactory.
		0	No, it does not.
P2. Needs and priorities Has the PA identified its research needs and/or priorities?	Question 10.2	1	Yes.
		0	No.
P3. Use of research results To what extent are the results of research taken into account in the activities of the PA?	Question 10.3	1	The results of research, where appropriate, are taken into account in planning the activities of the PA.
		0	The results of the research are not taken into account in the planning of the PA's activities.
		0	Does not apply, as the PA does not have information based on research.

B – Biodiversity monitoring
This indicator seeks to evaluate the existence and frequency of carrying out biodiversity monitoring activities within the PA and also the sufficiency of this activity to generate useful information on the results achieved with the management of the area.

Components	Information source	Value	Response
B1. Existence Are biodiversity monitoring activities carried out in the PA?	Question 9.1	1	Yes, biodiversity monitoring activities have been carried out on a regular basis, with a pre-established frequency.
		1	Yes, but biodiversity monitoring activities have been carried out sporadically, without a pre-established frequency.
		0	No, biodiversity monitoring activities are not carried out in the PA.
B2. Frequency How often have biodiversity monitoring activities been carried out in the PA?	Question 9.1	1	Yes, biodiversity monitoring activities have been carried out on a regular basis, with a pre-established frequency.
		0	Yes, but biodiversity monitoring activities have been carried out sporadically, without a pre-established frequency.
		0	No, biodiversity monitoring activities are not carried out in the PA.
B3. Sufficiency Is the monitoring of biodiversity carried out in the PA sufficient to generate information on the conservation results achieved?	**Question 9.1**	0	*** If the answer chosen in question 9.1 is "No, biodiversity monitoring activities are not carried out in the PA," this component must be evaluated as zero, regardless of the answer to question 9.2 (in the electronic questionnaire, when answering "no" in question 9.1, question 9.2 is skipped).**
	Question 9.2	1	Yes, it is enough.
		0	No, it's not enough.

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C – Participatory management (management committee)
This indicator seeks to evaluate whether the PA has and implements mechanisms that allow the participation of different stakeholders in its management, if these mechanisms allow an adequate representation of the group of stakeholders interested in the management of the PA and have an effective impact on the management of the area.

Components	Information source	Value	Response
C1. Existence Does the PA have participatory management mechanisms (whether formalized or not)?	If possible, use the official information of the managing agency and confirm with a questionnaire. If this is not possible, use only the questionnaire (Question 5.1)	1	Yes.
		1	Yes, but they are not formalized by regulations.
		0	No.
C2. Representativeness Do the participatory management mechanisms in operation adequately represent all the stakeholders in the management of the PA?	Question 5.2	1	Yes.
		0	No.
		0	*** If the PA does not have participatory management mechanisms, this component should be evaluated as zero (in the electronic questionnaire, when answering "no" in the previous question, question 5.2 is skipped).**
C3. Activity Are the actors involved in the participatory management of the PA active (that is, do they meet regularly and participate in the management of the PA)?	Question 5.3	1	The actors are very active.
		0	The actors are not very active.
		0	The actors are not active.
		0	*** If the PA does not have participatory management mechanisms, this component should be evaluated as zero (in the electronic questionnaire, when answering "no" in the previous question, question 5.3 is skipped).**

Components	Information source	Value	Response
Indicator applicability	Question 11.1: depending on the answer to this question, this indicator does not apply to the PA	✔	Yes.
		NA	No.
		NA	Not applicable, as there are no communities living in or around the PA.
		NA	Not applicable, since the direct use of the PA's natural resources is not permitted.
M1. Existence of an instrument for access and use of natural resources Does the PA have instruments that regulate the access and sustainable use of natural resources by traditional and/or local communities?	Question 11.2	**1**	Yes.
		0	No.
M2. Implementation What is the degree of implementation of the instruments that allow access and sustainable use of natural resources by traditional and/or local communities? * **Implementation** is understood as the use of natural resources by traditional and/or local communities in accordance with the planned activities or the stipulated rules of the planning or regulation instrument.	Question 11.2	**0**	*** If the answer chosen in question 11.1 is "no," this component must be evaluated as zero, regardless of the answer to question 11.2 (in the electronic questionnaire, when answering "no" in question 11.1, question 11.2 is skipped).**
	Question 11.3	**1**	Total = more than 90%
		1	High = between 60% and 90%
		1	Medium = between 30% and 60 %%
		0	Low = between 0% and 30%
		0	Null
M3. Monitoring of economic and socio-environmental results Does the PA have any way to monitor the economic and socio-environmental results of promoting the sustainable use of natural resources by traditional and/or local communities?	Question 11.4	**1**	Yes.
		0	No.

M – Management by traditional and/or local communities
This indicator seeks to evaluate the existence and degree of implementation of the instruments that regulate access and sustainable use of natural resources in protected areas by traditional and/or local communities, and the existence of monitoring procedures over the sustainable use of resources by these communities.

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U – Public use
This indicator seeks to evaluate the degree of exploitation of the potential for public use, and the adequacy of the structure and staff available for this process.

Components	Information source	Value	Response
Indicator applicability	Question 12.1: depending on the answer to this question, this indicator does not apply to the PA	✓	Yes.
		NA	No.
U1. Harnessing the potential Is the PA's potential for public use (visits, recreation and environmental education) being exploited?	Question 12.2	**1**	Yes.
		1	Partially
		0	No.
U2. Structure for visitors Does the PA have a satisfactory physical structure for visitors?	Question 12.3	**1**	The structure for visitors is satisfactory.
		0	The structure for visitors is not satisfactory.
U3. Staff available Is the number of people available for the process of public use in the PA sufficient?	Question 12.4	**1**	The number of staff available is sufficient.
		0	The number of staff available is not sufficient.

Ornate wrasse (*Thalassoma pavo*), Garajau Partial Nature Reserve, Madeira, Portugal.

L – Coordination in the PA

This indicator seeks to evaluate the participation of stakeholders in PA management, such as traditional and local communities, federal agencies and agencies from other government levels, civil society, the private sector, and academia, among others.

Components	Information source	Value	Response
L1. Coordination with communities (traditional and/or local communities) Is there participation of traditional and/or local communities in decision-making for the improvement of PA management and for the direct and/or indirect use of natural resources?	Question 6.1	1	There is a high participation in decision-making.
		0	There is low participation in decision-making.
		0	There is no participation in decision-making.
L2. Coordination with governments (government agencies at the same level of government and also at other levels) Is there institutional cooperation with other government agencies, whether federal, state, municipal, etc., to improve PA management and for the sustainable use of natural resources?	Question 6.2	1	There is great deal of cooperation.
		0	There is little cooperation.
		0	There is no cooperation.
L3. Coordination with non-governmental actors (NGO, private sector, academia, etc.) Is there cooperation between the PA and non-governmental actors (NGO, private sector, academia, etc.) to improve PA management and for the direct and/or indirect use of natural resources?	Question 6.3	1	There is great deal of cooperation.
		0	There is little cooperation.
		0	There is no cooperation.

	N – Concessions		
This indicator seeks to evaluate whether the PAs that have management potential for concessions are in conditions to take advantage of this potential.			
Components	**Information source**	**Value**	**Response**
Indicator applicability	Managing agency: consult the managing agency about which PA has the potential for concessions. All PAs should answer questions 13.1 to 13.3, but the indicator applies only to those identified by the government agency as having potential.	✓	If the managing agency has determined that the PA has the potential for concessions, this indicator is applicable.
		NA	If the PA was **not** indicated by the managing agency to have the potential for concessions, this indicator **does not apply**.
N1. Zoning for concession Does the PA have zones assigned for concessions (zoning)?	Question 13.1	**1**	Yes.
		0	No.
N2. Feasibility studies Are there evaluations that demonstrate how to facilitate the sustainable management and/or exploitation of natural resources by the private sector, such as economic and financial feasibility studies, as well as other inputs that are considered necessary to guarantee technical, operational and environmental viability of the activities and services included in the object of the concession?	Question 13.2	**1**	Yes.
		0	No.
N3. Established concessions Are there concessions for the management and/or sustainable exploitation of natural resources by the private sector established in the PA?	Question 13.3	**1**	Yes.
		0	No.

Appendix C : inconsistency check guide

This document presents inconsistencies repeatedly found in the Indimapa data, as well as orientation to resolve them. The inconsistencies are presented below by indicator.

It should be noted, however, that there is a type of inconsistency that can occur in all indicators, which is the evaluation of one or two components of an indicator as NA (not applicable) at the same time as the remaining component(s) are evaluated with a numerical value. The

Indimapa logic does not allow an indicator to be partially evaluated as "not applicable", since all indicators must be evaluated on a scale of 0 to 3, without exception. Therefore, an indicator must either have all three components evaluated, or it must be considered totally not applicable.

In addition to the inconsistency previously mentioned, the following tables demonstrate other frequent cases of inconsistency.

G – Management plan / planning instruments

Component	Inconsistent evaluation	Reason	Solution
G1. Existence	-	-	-
G2. Alignment with the objectives	G1 – 0 G2 – 1	The existence of a plan is a prerequisite for its adequacy.	Check with other sources of information if the PA has a management plan. If positive, the G1 component (existence) should be changed to 1. If not, the G2 component (alignment with objectives) should be changed to zero.
	G1 – 0 G2 – NA	The indicators must have all three components evaluated, or then none of them (in which case it should be considered not applicable - NA). Even if there is no management plan (G1 component), the other components are still applicable and should be evaluated as zero in case of non-compliance.	Change the G2 component to 0.
G3. Implementation	G1 – 0 G3 – 1	The existence of a plan is a prerequisite for its implementation.	Check with other sources of information to see if the PA has a management plan. If positive, the G1 component (existence) should be changed to 1. If not, component G3 (implementation) must be changed to zero.
	G1 G1 - NA	The indicators must have all three components evaluated, or then none of them (in which case it should be considered not applicable - NA). Even if there is no management plan (G1 component), the other components are still applicable and should be evaluated as zero in case of non-compliance.	Change the G3 component to 0.

H - Human resources
No recurring inconsistencies were found.

S - Financial Resources
No recurring inconsistencies were found.

E – Administrative Structure
No recurring inconsistencies were found.

T – Territorial consolidation

Component	Inconsistent evaluation	Reason	Solution
T1. Land regularization	T1 - NA T2 - Numeric value (0 or 1) T3 - numerical value (0 or 1)	The indicators must have all three components evaluated, or then none of them (in which case it should be considered not applicable - NA).	It may happen that certain areas do not need to go through a land regularization process, either because their legal nature exempts it (marine areas, for example), or because the law establishes so. However, even in these cases, considering that the indicator still assesses the PA demarcation and signposting and delimitation processes, it may be appropriate to evaluate the full indicator. In these cases, it is recommended to consider the component as completed, evaluating it as 1.
T2. Demarcation and signposting	T1 - numerical value (0 or 1) T2 - NA T3 - numerical value (0 or 1)	The indicators must have all three components evaluated, or then none of them (in which case it should be considered not applicable - NA).	Demarcation and/or signposting may not be possible in certain PAs (for example, in marine areas). If this is the case, the component should be considered fulfilled, being evaluated as 1.
T3. Delimitation	-	-	-

F – Protection
No recurring inconsistencies were found.

P – Research

Component	Inconsistent evaluation	Reason	Solution
P1. Infrastructure	P1 - NA P2 - numerical value (0 or 1) P3 - numerical value (0 or 1)	The indicators must have all three components evaluated, or then none of them (in which case it should be considered not applicable - NA).	It may happen that, in certain PAs, it is not possible or feasible to build research support infrastructure. If this is the case, the component should be considered fulfilled, being evaluated as 1.
P2. Needs and priorities	-	-	-
P3. Use of research results	-	-	-

B – Biodiversity monitoring

Component	Inconsistent evaluation	Reason	Solution
B1. Existence	-	-	-
B2.Frequency	B1 - 0 B2 - 1	The existence of a biodiversity monitoring process presupposes its frequency.	Check with other sources of information to see if the PA has a biodiversity monitoring process. If positive, the G1 component (existence) should be changed to 1. If not, the B2 component (frequency) must be changed to zero.
B3. Sufficiency	-	-	-

C - Participatory management (management committee)

Component	Inconsistent evaluation	Reason	Solution
C1. Existence	-	-	-
C2. Representativeness	C1 - 0 C2 - 1	The existence of a management committee or other participatory management mechanism presupposes its representativeness.	Verify through other sources of information if the PA has a management committee or other participatory management mechanism. If positive, the C1 component (existence) should be changed to 1. If not, the C2 component (representativeness) should be changed to zero.
C3. Actions	C1 - 0 C3 - 1	The existence of a management committee or other participatory management mechanism is a prerequisite for its actions.	Verify through other sources of information if the PA has a management committee or other participatory management mechanism. If positive, the C1 component (existence) should be changed to 1. If not, the C3 component (implementation) must be changed to zero.

Old Providence McBean Lagoon National Natural Park, Colombia.

M – Management by traditional and/or local communities

Component	Inconsistent evaluation	Reason	Solution
M1. Existence of an instrument for access and use of natural resources	-	-	-
M2. Implementation	M1 - 0 M2 - 1	The existence of an instrument for access and use of natural resources is a prerequisite for its implementation.	Verify through other sources of information if the PA has instruments for access and use of natural resources. If positive, the C1 component (existence) should be changed to 1. If not, the G3 component (implementation) must be changed to zero.
	M1 - 0 M2 - NA	The indicators must have all three components evaluated, or then none of them (in which case it should be considered not applicable - NA). Even if there is no instrument for access and use of natural resources (M1 component), the other components are still applicable and should be evaluated as zero in case of non-compliance.	Change the M2 component to 0.
M3. Monitoring of economic and socio-environmental results	-	-	-

U - Public use
No recurring inconsistencies were found.

L – Coordination in the PA

Component	Avaliação inconsistente	Motivo	Solução
L1. Coordination with communities (traditional and/or local)	L1 - NA L2 - numeric value (0 or 1) L3 - numeric value (0 or 1)	The indicators must have all three components evaluated, or then none of them (in which case it should be considered not applicable - NA).	It may happen that in some PAs there are no traditional and/or local communities with which it is necessary to coordinate (for example, in the case of marine PAs). If this is the case, the component should be considered fulfilled, evaluating it as 1.
L2. Coordination with governments (government agencies at the same level of government and also at other levels)	-	-	-
L3. Coordination with non-governmental actors (NGO, private sector, academia, etc.)	-	-	-

N - Concessions
No recurring inconsistencies were found.

Woman from the machiguenga ethnicity, protected by the Machiguenga Communal Reserve, Peru.

Appendix D: compendium of international criteria

Governance of protected areas

Borrini-Feyerabend, G., Dudley, N., Jaeger, T., Lassen, B., Broome, N. P., Phillips, A., Sandwith, T. (2014). **Governance of Protected Areas: From understanding to action.** Best Practice Protected Area Guidelines Series No. 20. Gland: IUCN. 126 p. Retrieved May 6, 2022, from https://portals.iucn.org/library/sites/library/files/documents/PAG-020-Es.pdf.

This publication is divided into two parts. The first part summarizes the four types of PA governance recognized by IUCN and how they can be integrated into coherent and effective PA systems, and presents (chap. 6, p. 57-62) the IUCN principles for good governance of the PA. The second part is a practical guide on analyzing, evaluating and improving the governance of an individual PA system.

Relevant content to complement the analysis of Indimapa indicators:

| Indicator	Aspect evaluated	Page / section	Comments
E	Administrative Structure	Chap. 2, p. 23	List of governance instruments and powers for PAs, including financial investments in infrastructure and provision of material or administrative support to meet PA needs.
T	Territorial Consolidation	Inside of the cover	Definition of a protected area as a defined, recognized geographic space with a specific objective and managed by effective means, whether legal or otherwise, to achieve long-term nature conservation, with associated ecosystem services and cultural values.
P	Research	Chap. 1, p. 10	Establishment of low-impact scientific research as the objective of all protected areas, when appropriate.
F	Protection	Section 8.8, p. 87-88	Methodology for the geospatial analysis of active damages and risks in Areas of Particular Importance (API) for the conservation of biodiversity and ecosystem services. It could complement the analysis of the adequacy of the control and protection measures against the threats and risks to which the PA is exposed.

Indicator	Aspect evaluated	Page / section	Comments
C	Participatory management (management committee)	Section 3.2, p. 32-36	Definition, characteristics and examples of shared governance of the PA, including a detailed discussion of the cross-border governance of the PA.
		Chap. 4, p. 43-48	Description of the IUCN PA matrix, which allows visualizing the different combinations of management categories and types of governance that may exist within the same PA or PA system.
M	Management by traditional and/or local communities	Section 3.4, p. 39-42	Definition, characteristics and examples of PA governance by indigenous peoples and local communities.
		Chap. 4, p. 43-48	Definition, characteristics and examples of PA governance by indigenous peoples and local communities.

Worboys, G. L., Lockwood, M., Kothari, A., Feary, S., Pulsford, I. (eds). (2015). **Protected Area Governance and Management.** Canberra: ANU Press, 966 p. Retrieved May 5, 2022, from https://press.anu.edu.au/publications/gobernanza-gesti%C3%B3n-de-%C3%A1reas-protegidas.

This publication broadly synthesizes current knowledge and cutting-edge thinking on the various aspects of PA governance, serving as a guide for developing the capacities of conservation professionals, especially PA managers, and aiming to improve the planning, management and governance of individual PAs and PA systems.

Relevant content to complement the analysis of Indimapa indicators:

Indicator	Aspect evaluated	Page / section	Comments
G	Management Plan	Chap. 13, p. 400-408	Discussion on the purpose of management plans and methodologies for their preparation.
H	Human resources	Chap.8, p. 234-235	Discussion about the people who have their presence recognized within the PA (officials and others).
		Chap.8, p. 238-239	Debate on human resource management in PAs administered by the government.
S	Financial resources	Chap.8, p. 238-239	Discussion on PA financial planning and management.

Indicator	Aspect evaluated	Page / section	Comments
F	Protection	Chap. 26, p. 823-850	Discussion on planning and operational aspects of response to a variety of environmental emergencies in the PA.
B	Biodiversity monitoring	Chap. 21, p. 670-676.	Discussion on monitoring the ecological status of PAs, including biodiversity monitoring.
C	Participatory management (management committee)	Chap. 7, p. 179-180	Definition, characteristics and examples of shared governance in the PA, including a detailed discussion on PA cross-border governance.
C	Participatory management (management committee)	Chap. 7, p. 187	Description of the IUCN PA matrix, which allows visualizing the different combinations of management categories and governance types that may exist within the same PA or PA system.
M	Management by traditional and/or local communities	Chap. 7, p. 183-186	Definição, características e exemplos de governança de APs por povos indígenas e comunidades locais.
M	Management by traditional and/or local communities	Chap. 7, p. 187	Definição, características e exemplos de governança da APs por povos indígenas e comunidades locais.
M	Management by traditional and/or local communities	Chap. 25, p. 789-822	
U	Public Use	Chap. 23, p. 715-750	This chapter discusses the management of visits and tourism in PAs.
L	Articulation in the PA	Chap. 14, p. 416-419	Discussion on PA coordination with other institutions, surrounding communities, etc.

Purple sea urchin (*Sphaerechinus granularis*), Garajau Partial Nature Reserve, Madeira, Portugal.

Borrini-Feyerabend, G., Bueno, P., Hay-Edie, T., Lang, B., Rastogi, A., Sandwith, T. (2014). **A primer on governance for protected and conserved areas. Stream on Enhancing Diversity and Quality of Governance, 2014 World Parks Congress. Gland: IUCN.** Retrieved May 5, 2022, from https://www.iccaconsortium.org/wp-content/uploads/2015/08/publication-Primer-on-Governance-for-Protected-and-Conserved-Areas-2014-es.pdf.

This publication very briefly presents the concepts of protected areas and conserved areas in a broader sense, the concept and types of governance, the IUCN matrix (categories of management versus types of governance) and the principles of good governance of the IUCN for protected areas.

Relevant content to complement the analysis of Indimapa indicators:

Indicator	Aspect evaluated	Page / section	Comments
C	Participatory management (management committee)	p. 7-8	Brief mention of shared governance among other types of PA governance.
M	Management by traditional and/or local communities	p. 7-8	Brief mention of PA governance by indigenous peoples and local communities.

Management of protected areas

Mitchell, B. A., Stolton, S., Bezaury-Creel, J., Bingham, H. C., Cumming, T. L., Dudley, N., Fitzsimons, J. A., Malleret-King, D., Redford, K. H., Solano, P. (2018). **Guidelines for privately protected areas.** Best Practice Protected Area Guidelines Series No. 29. Gland: IUCN. 100 p. Retrieved May 5, 2022, from https://portals.iucn.org/library/sites/library/files/documents/PAG-029-Es.pdf.

This publication presents 34 principles or guidelines related to privately protected areas (PPA), grouped by topics: establishment, management, incentives, guarantee of permanence, APP subtypes and their specificities, coordination with national PA systems, registration, role of APP networks. Each principle is illustrated with examples. Twelve case studies from different parts of the world are also presented, illustrating the application of the guidelines.

Relevant content to complement the analysis of Indimapa indicators:

Indicator	Aspect evaluated	Page / section	Comments
S	Financial resources	p. 19-20, Principle 2.3	Discussion on adapting management activities to a realistic PPA budget.
F	Protection	p. 19, Good Practice 2.2.3	Paragraph on risk assessment and development of a mitigation plan in PPA.

Arguedas, S., Vides, R., Castaño, L. (eds). (2015). **Lecciones aprendidas y buenas prácticas para la gestión de áreas protegidas amazónicas.** Quito: UICN-Fundación Gordon y Betty Moore. 133 p. Retrieved May 5, 2022, from https://portals.iucn.org/library/sites/library/files/documents/2016-030.pdf.

This publication systematizes the lessons learned in PA management during the ten-year period between World Parks Congress in Durban (2003) and Sydney (2014), focusing on good practices and the resulting success criteria for PA management in the Amazon.

Relevant content to complement the analysis of Indimapa indicators:

Indicator	Aspect evaluated	Page / section	Comments
S	Financial resources	Table 5, Topic D, Principle 8, p. 94	Criteria and success factors related to the financial sustainability of PAs.

Indicator	Aspect evaluated	Page / section	Comments
C	Participatory management (management committee)	Table 5, Topic A, p. 91	Criteria and success factors related to the existence of effective participatory governance structures.
		Table 5, Topic D, Principle 7, p. 94	Criteria and success factors related to the participatory management of the PA.
M	Management by traditional and/or local communities	Table 5, Topic A, p. 91	Criteria and success factors related to the existence of effective participatory governance structures.

International Union for the Conservation of Nature – IUCN (2016). **Lineamientos para la gestión compartida de áreas protegidas: Pueblos indígenas y tribales y comunidades locales en Centroamérica.** San José: IUCN. Retrieved May 5, 2022, from https://portals.iucn.org/library/sites/library/files/documents/2016-029.pdf.

This publication presents a proposal of general guidelines, built in a participatory way and supported by legal and empirical bases, for the shared management of protected areas in Central America, including the participation of indigenous populations and local communities.

Relevant content to complement the analysis of Indimapa indicators:

Indicator	Aspect evaluated	Page / section	Comments
M	Management by traditional and/or local communities	Section 4.2, p. 15-17	Principles for participatory PA management with human settlements
		Section 5, p. 18-24	Proposal of guidelines for the harmonization of PAs and territories with indigenous settlements or local communities.
		Section 6, p. 25-26	General recommendations for the participatory management of PAs with indigenous settlements or local communities.

Public-private partnerships

Gilroy, L., Kenny, H., Morris, J. (2013). **Parks 2.0: Operating State Parks Through Public-Private Partnerships.** The Buckeye Institute for Public Policy Solutions. Policy Study 419. Columbus: The Buckeye Institute, 2013. Retrieved May 5, 2022, from https://www.buckeyeinstitute.org/library/doclib/Parks-2.0-Operating-State-Parks-Through-Public-Private-Partnerships.pdf.

This publication discusses how budgetary pressures impact the management of North American national parks and how the model of public-private partnerships can represent a solution to this problem, through the transfer of responsibility for park activities, or even their management, to private sector actors.

Relevant content to complement the analysis of Indimapa indicators:

Indicator	Aspect evaluated	Page / section	Comments
N	Concessions	Section "Benefits of Park Operation PPPs"	Presentation of the benefits derived from public-private partnerships in the management of national parks.
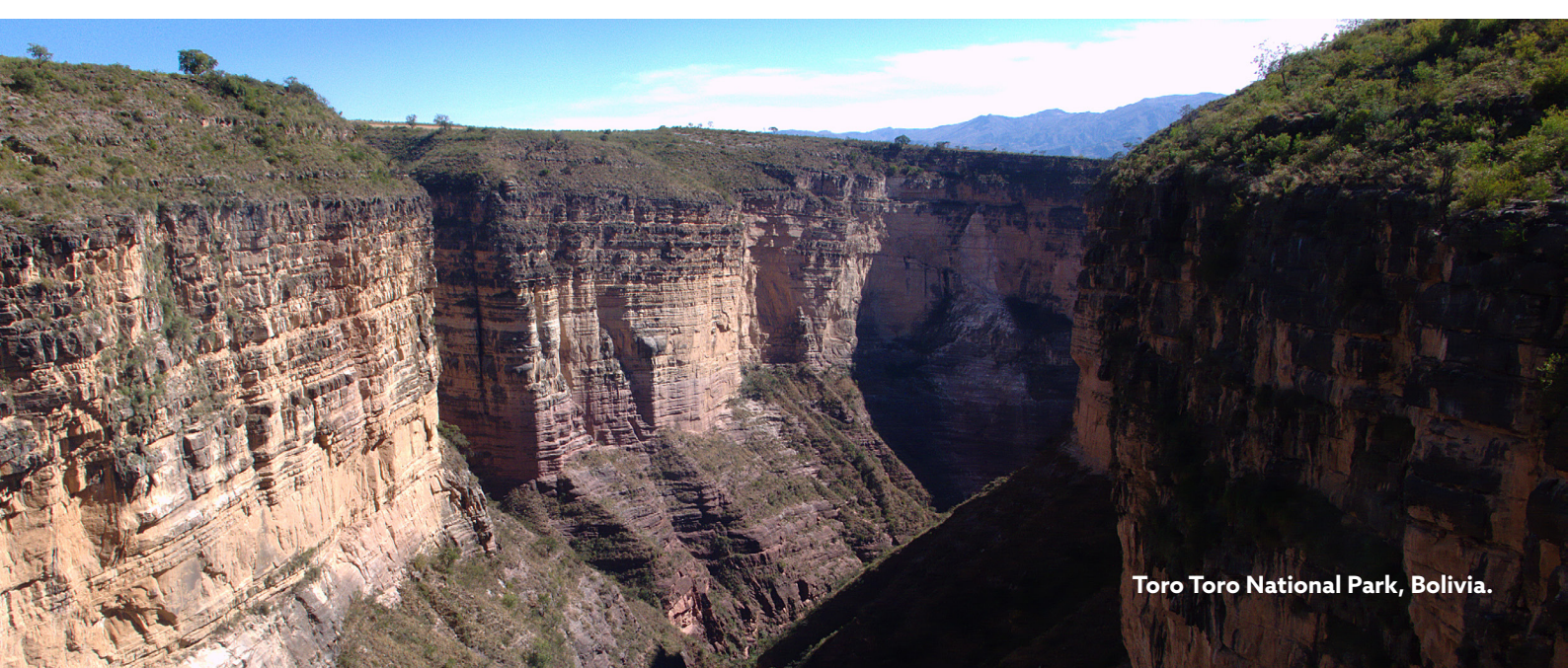
Toro Toro National Park, Bolivia.

Cajas National Park, Ecuador.

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