

# Research Brief

Biodiversity Information and Environmental Policy:  
Bolivia, Columbia, Ecuador, and Peru

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By  
Carmen Josse and Sigrid Vásconez

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## Introduction

Policies addressing the conservation of biodiversity and ecosystem services both need to be informed by scientific evidence about biodiversity and require ongoing generation of this information to continue to be effective. This interplay takes place in both national and international policy arenas. National legislatures and environmental ministries establish and implement environmental policies that both draw from and require the compilation of biodiversity information. Internationally, a growing number of conventions and agreements address biodiversity. Examples include the Convention on Biological Diversity (CBD), the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the United Nations Forum on Forests (UNFF), the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and the Ramsar Convention. Despite these mechanisms, the extent to which biodiversity information successfully informs policies depends in part upon the availability of this information, which in turn is influenced by demand for it by existing policies.

The need to utilize biodiversity information to inform public policy design and implementation is clear and convincing. To facilitate the process, obstacles that interfere with information access and use need to be identified and eliminated, and gaps in technical information need to be filled. The scientific data needed to guide biodiversity policies go well beyond flora and fauna figures or genetic bank registries, to trends in ecosystem extent and condition, and results of prior conservation investments. Obtaining this information requires an understanding of factors controlling its supply and demand, specifically the interactions between researchers as biodiversity data providers and decision makers and mid-level specialists from public agencies as data consumers.

The influence of research results over public policy and vice versa is not likely to be linear or causal, nor is it totally rational or systematic. There are times when robustly gathered information effectively contributes to public policy and decision-making processes. However, there are many examples in which the existence of evidence has had no effect on policy or decision-making. Also, public policy will sometimes require new information to be generated, whereas at other times it does not.

This project explores the degree to which environmental policies of the Andean countries of Bolivia, Colombia, Ecuador, and Peru affect the generation, type, and use of biodiversity information. The research drew on a conceptual framework of the public policy cycle (Figure 1), and examined documentary analysis and interviews with information generators and users. Although the four countries share geographic proximity, high levels of biodiversity, and limited resources for biodiversity information generation, each nation's political context is distinct. This comparative analysis of policy and information generation identifies common challenges and solutions to the effective use of scientific evidence in policy design. The findings can help bridge the gap between public policy information needs and its availability in the four countries.

## Objectives

The objectives of this study were to better understand the relationship between scientific biodiversity information and public environmental policy, particularly relating to biodiversity. The central questions are, for each of the four countries, to clarify the extent to which (1) biodiversity information influences the formulation and implementation of environmental policies, (2) policies guide the development of this information, and (3) gaps remain between policy needs and the information that is available.

## Definitions

**Public policy** encompasses a series of decisions or actions that are intentionally coherent, taken by different public or non-public actors with varying resources, institutional links, and interests, to resolve a politically-defined, collective public problem. This group of decisions and actions gives rise to formal acts with variable levels of enforceability that tend to modify the conduct of social groups (**target group**) that, it is assumed, caused the collective problem needing to be resolved, in the interest of social groups that suffer the negative effects of the issue in question (**final beneficiaries**).

The **users** of biodiversity information are decision-makers and mid-level specialists from public agencies.

The **generators** of biodiversity information are researchers and those who want to influence decision-makers (directly, indirectly, tacitly, or explicitly). Academia (universities and private research centers), NGOs, consultants, and experts (including from public research institutes) are included in this category.

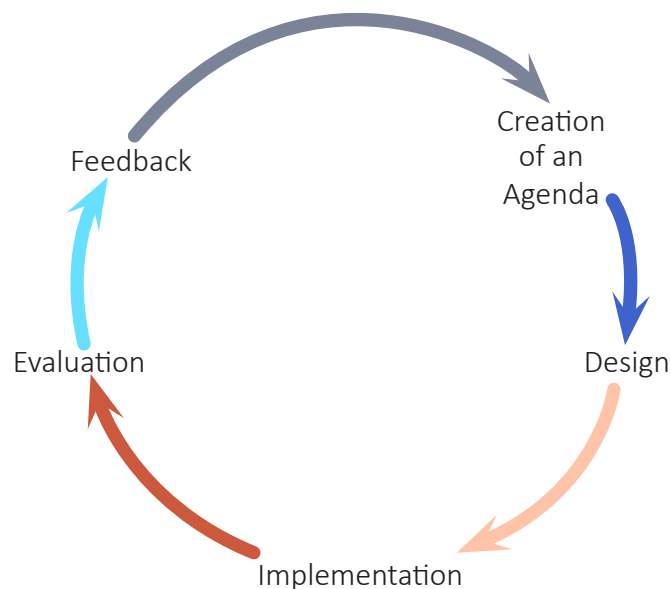


Figure 1. Public policy cycle

The public policy cycle begins with the recognition of a public problem (creation of an agenda) and continues with the design of a strategy for its resolution. The strategy is then implemented and finally it passes through an evaluation process. Feedback from the evaluation allows the definition of the problem to be modified or be resolved.

## Methodology

Two key sources were used for this study: (1) Analysis of environmental public policies in effect in the four countries, and (2) interviews of biodiversity information users and generators for the selected environmental public policies (Figure 2). Using this research framework to document how policies incorporate scientific evidence in the cycle of the selected public policies, the following questions guided the development of a survey for the interviews:

- How can scientific evidence become more (effectively) interrelated with public policies?
- What factors and conditions are prerequisites for influencing public policies?
- What research and information gathering designs are appropriate for specific public policy questions?
- How can substantive research for policies be encouraged?

In addition, a comparative analysis was conducted of national environmental information portals in the four countries to assess their success in managing and making environmental and biodiversity information available.

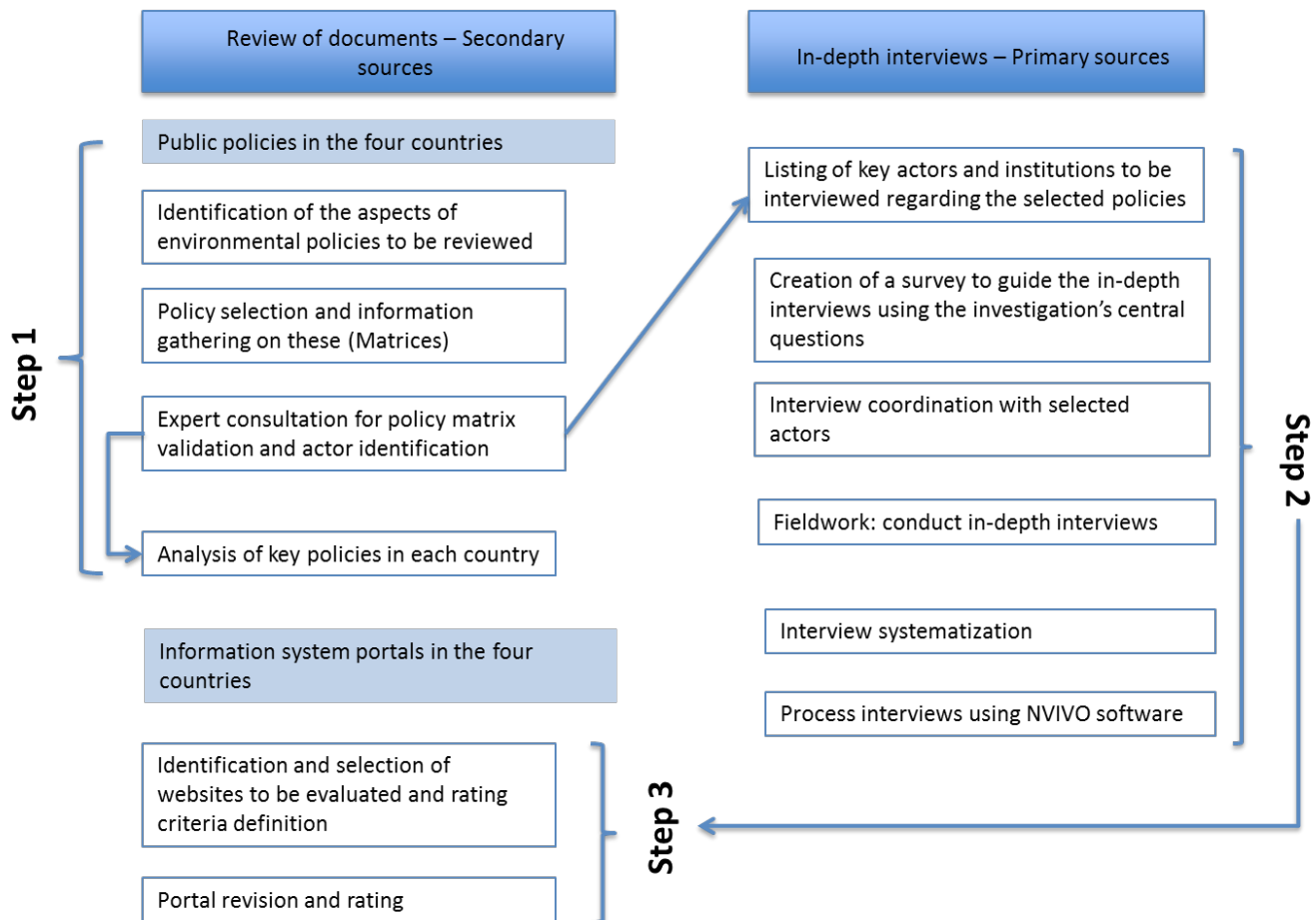


Figure 2. Methodological steps

## Relevant National Policies

### Bolivia

- **Framework Law of Mother Earth and Holistic Development for Living Well (No. 300).** This law establishes a vision and foundation for holistic development in harmony with Mother Earth. Biodiversity information is called for to inform sustainable natural resources, biodiversity, and land use plans, although the law does not provide concrete requirements for information.
- **Mitigation and Adaptation Mechanism for Integral and Sustainable Management of Forests and Mother Earth.** This mechanism requires information on the status of forests and ecosystems in the development of land use plans.
- **National Strategy of Conservation and Sustainable Use of Biodiversity 2002-2011.** To develop the economic potential of the country's biological diversity, this strategy biodiversity information gathering and monitoring, emphasizing the inclusion of local wisdom and ancestral knowledge.

### Colombia

- **General Environment Law of Colombia (Law No. 99), issued in 1993.** The framework instrument of Colombian environmental legislation, this law coordinates, promotes, and guides research activities about the environment and renewable natural resources.
- **National Policy for the Comprehensive Management of Biodiversity and Ecosystem Services 2012-2020 (PNGIBSE).** This policy organizes the generation of biodiversity information for national use, strengthening and fostering knowledge and information management to support decision-making.
- **National Strategy for the Prevention and Control of Illegal Wildlife Trade (2002), Diagnostic and Action Plan 2012-2020 (2012).** This plan calls for the compilation of information on wildlife populations and forest resource use rates, and an information system to manage these data.

### Ecuador

- **National Biological Diversity Strategy (ENDB) 2015-2030 and Action Plan for 2020.** These mechanisms guide compliance with the CBD, including biodiversity indicator development and the creation of the National Biodiversity Institute.
- **National Protected Areas System Policy and Strategic Plan 2007-2016.** These policies foster the generation and use of information to encourage the sustainable management of biodiversity.
- **National Climate Change Strategy 2012-2025.** This strategy calls for monitoring of the impact of climate change on biodiversity.

### Peru

- **National Strategy on Biological Diversity for 2021 and Action Plan 2014-2018 (EPANDB).** This strategy focuses on improving knowledge and technologies for the sustainable use of biodiversity, as well as the revaluation of traditional knowledge.
- **Environmental Research Agenda 2013-2021.** This policy actively promotes research, and sets priorities for environmental research.
- **National Forest and Wildlife Policy (2015).** This policy promotes biodiversity research and information for forests, emphasizing the sustainable biodiversity valuation and use.

## Results- Relationship Between Biodiversity Information and Policies

### **Is biodiversity information used in the generation of policies?**

The research and interviews conducted revealed evidence that policy makers use biodiversity information, but not consistently.

Overall, there is a positive trend toward the use of research results in policy design and the use of both scientific information and empirical data when policies are implemented. The country-based responses demonstrate that research influences policies most prominently in Colombia, Ecuador, and Peru, whereas in Bolivia interviewees were split in their opinion of whether research results influence policies.

The existence of participatory processes such as consultative workshops and direct communication channels between biodiversity information users and generators can influence the extent to which information is used in policy design. In Colombia and Peru, the process is highly to moderately participatory. In Ecuador, researchers have moderate participation in policy design. The evidence gathered for Bolivia suggests that the policy process is not very participative.

### **Who are the key public and private stakeholders that generate and use biodiversity information?**

NGOs see themselves as key information suppliers for policy design, providing continual technical support. Although NGOs emphasize their dedication to generate applied, multi-criteria information for decision-makers, in some countries public officials in general, tend to recognize the research of universities, national research institutes, or their governmental technical departments as the most common source of information for their needs. Paradoxically, academics do not see themselves as information providers for public policy. Clearly there is a gap between perception and reality among these players.

A country-based comparison of the origin of research results used in public policy shows national differences. National and regional universities were the first place that policy-makers in Colombia and Ecuador look for information to guide policies. In Colombia, the second most important source of this information is their national research institutes whereas in Ecuador it is NGOs. In Bolivia and Peru, policy-makers look first to NGOs for information and then national and regional universities.

Research institutes can be significant generators of biodiversity information for the public sector. This is especially true in Colombia, where public institutes such as Instituto de Investigación de Recursos Biológicos Alexander von Humboldt (IAvH), Instituto Sinchi, Instituto de Investigaciones Marinas y Costeras (INVEMAR), and Instituto de Hidrología, Meteorología y Estudios Ambientales de Colombia (IDEAM) fulfill a primary need for biodiversity information generation and research for public policy decision-making.

### **What types of biodiversity information are generated and used by policy makers?**

Decision-makers require distilled information that takes into consideration the economic implications of a decision, the affected human populations and their interests, and recommendations weighing the pros and cons of alternative approaches.

Public officials responsible for policy implementation use biodiversity information more directly. This kind of data includes geo-referenced inventories, conservation priorities, conditions of species population, CITES status of species, ecosystem inventories (including for coastal and marine environments in Colombia, Ecuador, and

Peru), threat and trend statistics, risk scenarios, and spatial data on deforestation rates and trends. Information related to climate change and ecosystem services such as water regulation is also used by policy makers.

**What are the mismatches between policy needs and biodiversity information availability? How can biodiversity information be better institutionalized in the public policy process?**

Biodiversity information users from all four countries agreed that existing data partially satisfies their information needs, and that there are gaps in research programs. Biodiversity conservation and natural resource management are becoming more complex, multi-sectorial, and multidisciplinary, requiring information on numerous topics, including pressures, cause-effect relationships, trends, biodiversity responses, cycles, thresholds, resilience, and vulnerability. This type of information is not readily available in existing information systems. Providing it will require systematization and institutionalized information management, which represents a serious challenge to governments and research institutions.

Beyond the gaps in biodiversity information availability, the most commonly mentioned constraints listed by the users relate to the characteristics of the information and its accessibility. Improvements in how results are communicated that address relevance to policy, visibility, dissemination vehicles, and timeliness would all serve to better satisfy the needs of information users.

Finally, institutional cultures should be addressed to increase political will by both information users and researchers to work to support each other. Specific incentives are needed to improve this relationship.

## Insights and Recommendations

Although scientific evidence has become more widely used in public policy design and implementation, and to a certain degree policies serve as catalysts to the production of biodiversity information, the response to this demand is disorganized or not institutionalized because of a lack of communication and coordination between the actors. Colombia and Peru show the most progress in this front, which is a reflection on the quality of their environmental and biodiversity information systems.

The increase in the complexity of environmental and socio-economic problems that public policy seeks to resolve requires new forms of information. The generation of this information is increasingly challenging. The supply of information through institutional channels lags behind demand. This gap is being partially fulfilled by external consultants, a situation that adds to the lack of organization and institutionalization of the process of information supply and demand. A resolution will require participation from both information providers and users to determine biodiversity information needs and how to channel this information effectively to public policy needs

Improving interactions between actors can be achieved through the following means:

- Sustained interest by both sides in maintaining dialogue and pursuing coordination
- Long term agreements between parties
- Updated regulations that facilitate research
- Increased funding for biodiversity research and information generation in formats relevant to decision-makers

Communication and information distribution can be enhanced through the following measures:

- Improved framing and communication of strategic information needs by the public sector
- Development of relevant information in time frames that match policy cycles
- Establishment of more effective distribution channels to ensure the availability of scientific information to users