



Policy Brief

Mainstreaming biodiversity
into local coastal development:
Key findings for the Paracas
Bay Area, Peru

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Introduction

This policy brief summarizes the key findings from our study: “Biodiversity mainstreaming into decision-making processes within the Paracas Bay Area (Peru)”. It highlights the existing opportunities and critical information gaps for sustainable development in the area. This project was carried out by the following partners: Universidad Peruana Cayetano Heredia, Heriot-Watt University and Planeta Oceano, thanks to the funding provided by the Global Challenges Research Fund (GCRF) from the Scottish Funding Council to Heriot-Watt University.

The project chose the Paracas Bay Area (PBA) as a case-study due to its relevance as an ecologically and culturally rich site for coastal Peru, and because it is an expanding urban setting where multiple key economic activities overlap. Despite the importance of nature and biodiversity in Paracas, there is an ongoing lack of biodiversity mainstreaming into the multiple decisions taken by the local, regional and national authorities, jeopardizing local sustainability. Hence, we believe this study provides critical insights into why and how to mainstream biodiversity within the Paracas Bay Area in an effective way.

The main findings presented here are divided into four dimensions: legal, institutional, social and information availability. We selected these dimensions based on (1) the literature review by Karlsson-Vinkhuyzen et al (2017)¹, (2) the draft on the Action Plan for Biodiversity Mainstreaming by the CBD (2020) and (3) the adaptation of such information to the context of the case study by the researchers. It is worth noting that the criteria were subsequently validated by 15 experts external to the project.

- A** The legal and policy framework for biodiversity mainstreaming
- B** Institutional planning and involvement in biodiversity mainstreaming
- C** The social dimension supporting biodiversity mainstreaming
- D** Availability of resources and data sources to assess and monitor biodiversity

¹ Mainstreaming biodiversity in economic sectors: An analytical framework, 2017 from Karlsson-Vinkhuyzen, S., Kok, M. T., Visseren-Hamakers, I. J., & Termeer, C.J.



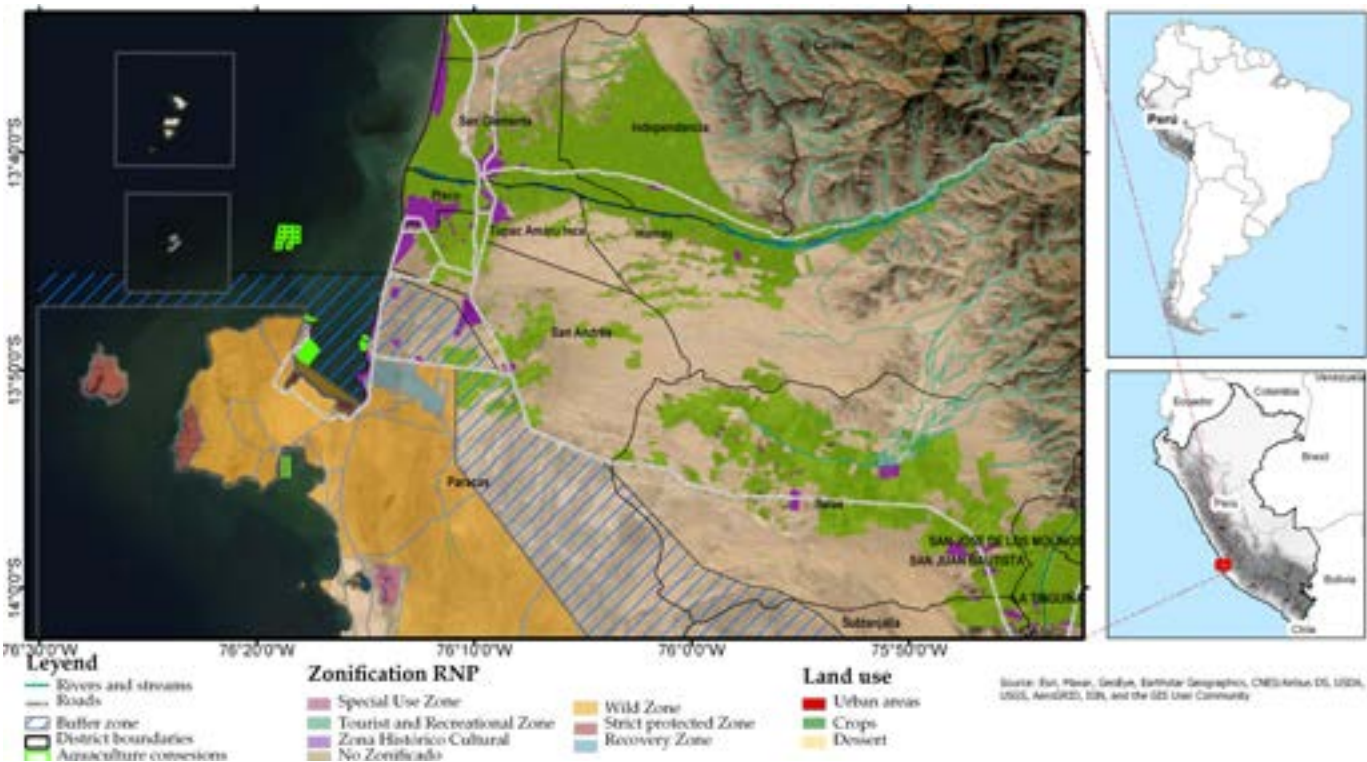
By biodiversity mainstreaming we understand the following:

“It is the process of integrating mechanisms, standards, indicators and public perceptions towards biodiversity conservation in all economic sectors, institutional policies and development plans in the PBA. The purpose of this process is to achieve and maintain healthy and resilient biodiversity, ecosystem functions and services by ensuring that these are considered at all stages of development and by all actors associated with the area”.

This definition was developed by the team as part of the project.

The Paracas Bay Area (PBA)

PBA is located in the coastal desert of the Ica region, Peru. It comprises the Paracas, San Andrés and Pisco districts and covers 24 kilometres of coastal extension, limited by the Pisco Bay on the north and the Paracas Peninsula in the south (Figure 1)².



It is a site of ecological and cultural relevance. This area is recognized under the Convention on Biological Diversity (CBD) as an Ecologically or Biologically Significant Marine Area (EBSA), it harbours wetlands recognized by the Ramsar Convention on Wetlands and over 400 coastal and marine species; including endemic, threatened and migratory. Moreover, two protected areas partially cover the region: the Paracas National Reserve, and the Guano Islands, Islets and Capes National Reserve System. Both are managed by the national agency for protected areas of Peru (SERNANP)³.

Industrial and artisanal fishing, as well as tourism and other local economic activities take place within PBA. They depend directly and indirectly on local biodiversity. Due to activities' dependence on nature, these are vulnerable to potential environmental risks associated with climate change (e.g. stronger

ENSOs⁴ or droughts), negative environmental impacts caused by the activities themselves (e.g. ships' fuel spillage, human-wildlife conflicts during fishing activities), and the cumulative impacts of the aforementioned.

Integrated and participative planning in the PBA, among the three districts, is necessary to achieve long-term sustainability in the area, both environmentally, economically and socially speaking. Thus the need raises to involve all. Thus, the need arises to involve all stakeholders and focus the conversation on biodiversity and environment when we consider local growth and development.

² Trend analysis and spatial overlap of land use in the Paracas Bay

³ Diagnostic for the institutional dimension of analysis

⁴ El Niño Southern Oscillation phenomena



The legal and policy framework for biodiversity mainstreaming

Normative and legal structures shape local contexts and set the foundation for developing impactful changes.

Current scenario:

We reviewed international treaties and policy instruments relevant to Peru and the PBA. A series of legal and policy instruments support biodiversity mainstreaming in the PBA, including both legally binding international treaties and national legislation.

1. International Legal Framework

International law provides globally agreed standards to strive towards. Knowledge on how these agreements effectively help the attempt to introduce biodiversity mainstreaming is of importance to support processes in a local context. A series of international instruments (both legally binding and non-legally binding) are relevant to biodiversity mainstreaming in the PBA. They are: The 1992 Rio Declaration, The 1992 Convention on Biological Diversity, The Ramsar Convention, The Convention on the Conservation of Migratory Species of Wild Animals (CMS), The Agreement on the Conservation of Albatrosses and Petrels (ACAP), The Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC), The Convention for the Strengthening of the Inter-American Tropical Tuna Commission, The Agreement on the International Dolphin Conservation Program (AIDCP), The Permanent Commission for the South Pacific (CPPS), and The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

2. National Legal Framework

National legal frameworks relevant to biodiversity mainstreaming in the PBA, which were assessed in relation to relevant international policy and instruments, include some of the following:

- The **National Strategy on Biodiversity to 2021** and its Action Plan (2014-2018) aims for the sustainable and effective management of biodiversity in at least 17% of Peru's land environment and 10% of its marine environment by 2021. An updated National Strategy will be developed in response to the CBD Post-2020 Global Biodiversity Framework.

- The **Master Plans of the RNP and RNSIIPG** (both dated 2016-2020), guide actions within these areas. The updated process of both Plans is planned for 2022. Similarly, the recently declared Nasca Dorsal National Reserve is awaiting its own Master Plan.
- Guidelines and a Methodological Guide for Plans related to the **Integrated Management of the Marine Coastal Zone** exist, with regional and local governments having the competence of guiding these plans. In 2016-2017, the Ica Region established a Regional Technical Group and declared its Integrated Management Plan of regional interest, yet this document remains under formulation. Similarly, **Ecological and Economic Zoning (EEZ)**⁵ is of high relevance in the PBA. so, in 2009, the Regional Government of Ica declared EZZ and spatial planning of regional interest. However, no further progress was identified through our research.
- The **National Environmental Impact Assessment System (SEIA)**, established in 2001, is a single and coordinated system for the identification, prevention, supervision, control and anticipated correction of negative environmental impacts. Environmental authorization is given to policies, plans and programs based on Strategic Environmental Assessments (SEA), and to investment projects based on Environmental Impact Assessments (EIA), at the national, regional and local levels.

Although the SEIA states the obligation to approve or update sectoral regulations for citizen participation, to date, this has not been met by most governmental sectors. Failure to enhance citizen participation could account for stakeholders' perceptions concerning reduced opportunities to engage in decision-making.

Additionally, this system is not equipped to assess cumulative impacts from multiple sources as legislation does not require that cumulative impacts are understood to approve a plan, project or activity. Furthermore, SEAs have not been used in the Ica region; still, they could be used with existing tools such as EIAs, as in other Peruvian regions, such as Loreto, where the SEA was applied to the update of the Concerted Regional Development Plan (PDRC).

⁵ A dynamic and flexible process that helps identify different alternatives for the sustainable use of territory and resources within a given landscape.

- In conclusion, while the Peruvian legislation is generally well-aligned with international policy and legal frameworks relevant to biodiversity mainstreaming, it is recommended that increased efforts be made to further incorporate requirements for assessing cumulative impacts on marine and coastal ecosystems, ecosystem functioning and services. Furthermore, institutional processes can also benefit from increased stakeholder participation and coordination across different maritime zones and committees (e.g. enhanced cooperation between COMUMA and COMAEM to achieve greater effectiveness and avoid overlapping competences), and also between different levels of government (e.g. in order to promote the Integrated Management Plan of the Coastal Marine Zone of the Ica region), as further discussed in section B below.

The Peruvian Legal Framework has established several institutions that apply for the PBA context, meaning, that some needs for management and fiscalization in the PBA fall within the jurisdiction of the following institutions:

- **The Multisectoral Commission for the Environmental Management of the Coastal Marine Environment (COMUMA)**, created in 2013, integrates 14 public institutions and 11 technical working groups to coordinate, articulate and monitor management in coastal and marine areas. Currently, this platform does not host a working group on biodiversity mainstreaming or incorporate effectively this approach within the Integrated Coastal and Marine Zone Management working group.
- **The Ministry of Production (PRODUCE)** is responsible for monitoring, control and surveillance of fishing activities, including overseeing stock assessments and allowable catch quotas. Furthermore, its legislation includes biodiversity considerations.
- **AGRO RURAL** manages the extraction of guano, use and commercialization of guano fertilizer from seabirds, which mainly benefits small and medium-scale farmers. Furthermore, its legislation includes biodiversity considerations.
- **DICAPI** controls and monitors the activities carried out in the aquatic environment to ensure compliance with the national legislation on these economic activities and international conventions.





Institutional planning and involvement in biodiversity mainstreaming

Strong plans and strong institutions are required to effectively mainstream biodiversity.

Current scenario:

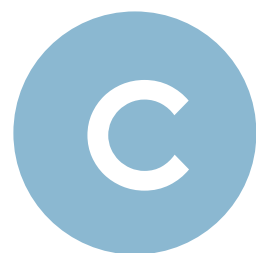
Our study carried out a review of multiple, multi-sectoral, local and national governmental development plans, to identify the degree to which they mentioned and incorporated biodiversity and related concepts. Different institutional plans relevant to the PBA recognize the importance of protecting natural resources and the economic potential of biodiversity and, to a lesser extent, mention biodiversity as a source of pride for the PBA. Nevertheless, both governmental and private sectors showed the following shortcomings:

- **Lack of concrete plans to integrate biodiversity:** The District Development Plans (PDC) of the PBA, for example, mention biodiversity, especially regarding the need to promote eco-tourism, tackle pollution, raise awareness or enhance conservation. However, these instruments do not provide explanations on how to specifically achieve biodiversity conservation, protection, or management, for example through specific actions, projects and indicators.

- **Limited use of spatial planning and integrated management:** The PBA is within one of the prioritized territorial units for the Integrated Management of Coastal Marine Areas (MIZMC) of the Ministry of Environment. However, the plan to guide the MIZMC process in this area has not yet been completed⁶. The Paracas District Development Plan (PDC) mentions land use planning; yet, to date, no updated territorial development plan has been generated. Even though this approach is highlighted in the PDC, mentions of spatial planning with an ecological approach are not found in the Institutional Strategic Plan (PEI).
- **Limited biodiversity integration and risk evaluations to guide management and adaptation.** Both RNP and RNSIIPG have monitoring systems for key species in the area. The Industrial Fisheries Sector (National Fisheries Society, SNP) collects fisheries and environmental data to guide fisheries management. Coastal infrastructure projects are also required to submit Environmental Impact Assessments. There has not been an integration of these databases.



⁶ Integrated Marine and Coastal Management (2023): Geoserver. Ministry of Environment of Peru. Retrieved: <https://geoservidor.minam.gob.pe/herramientas-de-gestion/manejo-integrado-de-zonas-marino-costeras/>



The social dimension behind biodiversity mainstreaming

Understanding how biodiversity is valued and integrated within the local community and local economic activities is critical to guide biodiversity mainstreaming.

Current scenario:

The complex PBA social context seems to meet certain conditions to advance biodiversity mainstreaming, such as the existence of participation processes, trust within associations or stakeholder interest in conservation. The interviews conducted in the study with key local stakeholders determined that trust and collaboration within and between sectors is low, coupled with reduced bottom-up participation in decision-making. Our findings regarding the PBA's social dimension are further detailed below:

1. Local stakeholders' relationships with local nature and culture:

Most stakeholders we interviewed acknowledged that nature supports local activities. Interviewees expressed interest in providing in-kind support to conservation activities, and environmental literacy was frequently portrayed, specifically regarding processes that relate to economic activities.

2. Key elements for community-based management:

- **Association, trust, and collaboration:** Trust between members of the same association was typically strong, while mistrust was common across each sector (e.g., between small-scale fishers and tourism operators) as well as towards industrial activities. Overlap of economic activities in the PBA potentially generates social conflicts regarding land use. Interviewees also revealed a widespread perception of corruption among authorities and leaders.
- **Gender equity:** Several women were identified as leaders in the tourism sector and to a lesser extent, in the aquaculture sector. Women's participation in small-scale fisheries was primarily limited to wife committees, even though women were said to potentially help manage family finances and sell the fishers' catch.

- **Capacity building:** Most of the small-scale fishers and tourism operators we interviewed mentioned previous participation in environmental training programs run by governmental or civil society organizations, yet some highlighted reduced training in other areas such as business and management skills.

3. Governance structures, participation, and decision-making processes:

While local stakeholders are included in participation processes (e.g., in Environmental Impact Assessments), most do not perceive they hold significant power over the decisions taken after these consultations. Interviewees mentioned the absence of spaces for multi-sectoral collaboration. Furthermore, concerns were raised regarding coherence, bureaucracy, informality, and perceived impractical overlaps of competencies within the PBA.

In contrast, some small-scale fisherfolk, aquaculture and tourism workers mentioned valued examples of participation with governmental entities, such as the Conservation Agreements with SERNANP. Spaces for collaboration within the PBA have included the Paracas Tourism Management Committee, as well as Protected Area management committees. There is untapped potential and interest for bottom-up participation among key stakeholders.

Local perceptions towards environmental changes and challenges

Most interviewees perceived decreases in fish and shellfish availability or diversity. Interviewees also noted various possible sources of negative environmental impacts in the PBA, including the use of dynamite fishing and pollution from ships, also recognizing the need for organised spatial planning



Availability of resources and data sources to assess and monitor biodiversity

One of the key ingredients for implementing biodiversity mainstreaming is having robust, policy-relevant, and readily available data to inform decision-making processes.

Current scenario:

Our assessment showed that Peruvian institutions are collecting useful information to guide biodiversity mainstreaming. However, the available information might not allow solid evidence-based decision-making due to the following reasons:

- 1. Information gaps:** We requested data and maps from relevant institutions regarding fishing and aquaculture, the natural environment and pollution in the PBA. Only 55% of the data we requested was received and it is likely that this generates a challenge for decision-making within national and local governmental institutions; for example, for effective marine spatial planning.
- 2. Data consolidation:** Corresponding data provided by governmental institutions were mostly accurate, at an appropriate scale for the PBA, and up to date. Nonetheless, the quality of the information received was highly variable. 52% of the data requests were provided in ineffective formats, hence limiting their use in assessments and analyses.
- 3. Information collected by different institutions:** Information (i.e. governmental data, Environmental Impact Assessments) still needs to be properly integrated into available information tools. GeoCOSTAS, a geospatial web tool from the Ministry of the Environment, is a platform that could provide marine and coastal information for management processes within the PBA.

Conclusion

The Paracas Bay Area (PBA) has remarkable potential for sustainable development in the long-term. Artisanal fishing, industrial fishing and tourism are critical economic activities that locals rely on economically, but also as a source of pride and identity, one that connects them to the Bay and its biodiversity.

Despite biodiversity's importance and people's interest in its conservation, here we found that local development plans do not consider nature nor biodiversity into their local development plans. Hence, there's great danger that nature will become severely degraded in people's pursuit for undertaking economic activities if no coordination nor planning is made. One of the main difficulties for this is going to be to include the need for specific strategies, updated information, and the availability of locally measurable indicators. In addition, there is a need to enhance land use planning and integrated management, as well as integrate datasets for risk assessment and adaptation.

Peruvian institutions are collecting useful information to guide biodiversity mainstreaming. However, our study revealed that information gaps, highly variable information, and a need to integrate information with available tools is required. Additionally, although there is alignment with international policy and legal frameworks, there is a need to further enhance stakeholder participation and cross-sectoral coordination, as well as incorporate the assessment of cumulative impacts in local planning and management processes.

In terms of the complex social context, our study revealed that certain levels of participation, trust, stakeholder interest in conservation and training programs exist in the area. Yet, trust and collaboration within and between sectors seems to be low, coupled with reduced bottom-up participation in decision-making.

Based on these findings, we have developed a second policy brief with recommendations to promote biodiversity mainstreaming for decision-making in the PBA (see "Mainstreaming biodiversity into coastal development: A sustainability roadmap for Paracas, Peru" policy brief). Thus, we hope this information is used to guarantee biodiversity conservation, as well as maintaining the lifestyles and sustainable development of local communities. Lastly, this case-study serves as an example to guide evaluations and biodiversity mainstreaming plans in other ecologically relevant coastal areas in Peru or other countries.

Glossary

- CBD:** Convention on Biological Diversity
- COMAEM:** Multisectoral Commission for State Action in the Maritime Area (Comisión Multisectorial de la Acción del Estado en el Ámbito Marítimo, COMAEM)
- COMUMA:** Multisectoral Commission for the Environmental Management of the Coastal and Marine Area (Comisión Multisectorial para la Gestión Ambiental del Medio Marino Costero, COMUMA)
- EBSA:** Ecologically or Biologically Significant Marine Areas
- EEZ:** Ecological and Economic Zoning
- GCRF:** Global Challenges Research Fund
- MINAM:** Ministry of Environment of Peru
- MIZMC:** Integrated Management of Coastal Marine Zones (Manejo Integrado de las Zonas Marino Costeras)
- PBA:** Paracas Bay Area
- PDC:** District Development Plans (Plan de Desarrollo Concertado)
Paracas National Reserve (Reserva Nacional de Paracas)
- RNP:** Guano Islands, Islets and Capes National Reserve System (Reserva RNSIIPG: Nacional Sistema de Islas, Islotes y Puntas Guaneras)
- SEIA:** National Environmental Impact Assessment System (Sistema SEA: Nacional de Evaluación de Impacto Ambiental)
- SEA:** Strategic Environmental Assessments (Evaluación Ambiental Estrategica)
- SERNANP:** Servicio Nacional de Áreas Naturales Protegidas por el Estado

