

Integrating Nature into Policy
and Investment Decisions

Contributions of Natural Capital Approaches to the Implementation of Public Policies in Chile

Case Study



Geographical location



Project stage



Policy areas



- Compensation mechanisms
- Planning

Sectors involved

- Energy
- Agriculture
- Forestry
- Water
- Tourism and recreation

Ecosystem services

- Water supply - quantity
- Water regulation
- Water purification
- Climate regulation
- Habitat
- Recreation

This report synthesizes the methodological aspects, the activities carried out, and the results obtained in the project, “Contributions of Natural Capital Approaches to the Implementation of Public Policies in Chile,”¹ which was developed under the Regional Technical Cooperation (TC) “**Transforming policies and investment through the integration of rapid approaches to Natural Capital Assessment and Accounting**”. This TC was financed by the Global Environment Facility (GEF) and implemented by the Inter-American Development Bank (IDB). The technical work was led by Stanford University’s Natural Capital Alliance. The main beneficiaries and co-designers of this TC in Chile are the Natural Capital Committee (NCC)²—an inter-ministerial body made up of the Ministries of Finance, the Environment, and the Economy, Development, and Tourism, with advice from the Central Bank of Chile (BCCh) and the National Council of Science, Technology, Knowledge, and Innovation for Development (CTCI). This work also received funding from the Gordon and Betty Moore Foundation.

This project in Chile is also part of the **People, Planet, Prosperity (3Ps)**³ project, through which the Natural Capital Alliance (NatCap) (formerly known as the Natural Capital Project), based at Stanford University, collaborates with the IDB, the Asian Development Bank, and the World Bank through pilots in 16 countries, to expand the use of natural capital approaches around the world.

Summary

This pilot project in the Río Bueno basin aimed to generate biophysical, economic, and spatial information to understand the contributions of ecosystems to human well-being and productive activities in the region, and to demonstrate how this evidence can be used in public policy decision-making in Chile. As an applied exercise, its usefulness for the regulatory instruments of the recently created Biodiversity and Protected Areas Service (SBAP) of Chile was explored, with emphasis on the Biodiversity Offsets Instrument⁴ of Law No. 21,600.⁵

The analysis characterized the supply, use, and monetary value of key ecosystem services (ES) in the area and integrated these results into spatial products — including ecosystem services supply maps,

an economic map, a regulatory criteria map, and a portfolio of preferred restoration areas — which, combined, allow the identification of strategic areas for restoration where environmental and socioeconomic opportunities and policy priorities converge.

Together, these products provide inputs for local decision-making; for example, they strengthen planning, support coherence across policy instruments, and enable more cost-efficient decisions based on ecosystem and economic evidence. These outputs were complemented by an analysis of public policy instruments, aimed at identifying concrete opportunities for integrating natural capital information into decision-making processes.

1 For more details on the methodological aspects and results of the project, see the [Final Project Report](#).

2 The **Natural Capital Committee**: was formalized in 2023 in response to the biodiversity loss crisis and the need to incorporate the value of nature and the ecosystem services it provides into Chile’s sustainable development.

3 **People, Planet, Prosperity: Integrating Nature into Policy and Investment Decisions**, Natural Capital Project, Stanford University, 2025.

4 Biodiversity Offsets System (Art. 38 Law No. 21,600) defines criteria to compensate for biodiversity loss, incorporating ecosystem functionality and measurable goals.

5 **Law No. 21,600** – Biodiversity and Protected Areas Service (SBAP) – Creates SBAP and the National System of Protected Areas, establishing principles such as the valuation of ecosystem services.



Natural capital approaches make explicit the benefits that nature delivers to people, so that they can be incorporated into decisions and incentivize investments in ecosystems, improving the well-being of both people and nature. This includes both natural capital assessments and natural capital accounting.

Background

Chile faces growing challenges in terms of biodiversity, water security, and sustainable development, which has driven the country to move towards decision-making that explicitly recognizes nature's contributions to human well-being and the economy. This marks a fundamental shift in the way nature is understood in economic and development planning — not as a liability to be managed, but as a strategic asset that generates social benefits and enables economic prosperity. In recent years, the institutional and regulatory framework for integrating natural capital into regional planning, environmental management, and sustainable development strategies has been strengthened, including through the approval of Law No. 21,600 that creates SBAP and establishes new instruments such as the Biodiversity Offsets System. This progress is part of international commitments such as the Nationally Determined Contribution (NDC),⁶ as well as national priorities reflected in the National Biodiversity Strategy,⁷ which reinforce the need for robust information and applied tools for decision-making.

A key milestone in this process was the 2023 constitution⁸, of the Natural Capital Committee (NCC), an inter-ministerial body in charge of advising the Chilean President on the measurement, valuation, protection, and restoration of Chile's natural capital. The NCC promotes an agenda aimed at generating interoperable information, strengthening institutional

capacities, and supporting the design of instruments that integrate natural capital into public policies. Despite the work of the NCC, there are still significant gaps in the availability and articulation of information on the state of ecosystems, their functioning, and the benefits they deliver to society, which makes it difficult to effectively incorporate them into public policy instruments.

In particular, the NCC identified a key gap: the lack of integrated information – biophysical, economic and regulatory – that would allow natural capital approaches to be applied in an operational manner in public decisions, together with the absence of concrete spatial inputs to guide the implementation of specific actions and goals established in the different public policy instruments at the territorial level.

The pilot project in the Río Bueno basin addresses this gap, demonstrating methodologies for valuing and modeling natural capital in a specific territorial context and generating actionable and applicable evidence, in particular through the Biodiversity Offsets Instrument. The Río Bueno basin was selected for bringing together a useful combination of ecological, productive, and institutional attributes.

The Biodiversity Offsets instrument is explicitly part of the conservation hierarchy (avoid–minimize–offset), where offsetting/mitigating operates as a last measure to address residual impacts (i.e., those that cannot be avoided or minimized) on biodiversity during project development. **The goal of offsetting is to achieve net biodiversity gains that are measurable, additional, and lasting, which requires defining where and how to implement measures that are ecologically equivalent or strategically superior, and that deliver long-term results.** A critical challenge for the operation of the instrument is the identification of suitable areas for offsets: places where there is ecological feasibility (potential for recovery or effective protection), relevance to the impact (type of ecosystem, species, connectivity) and institutional and governance conditions that make the permanence of the results viable.

6 [Nationally Determined Contribution](#)

7 [National Biodiversity Strategy](#)

8 As part of an institutional process that has continued across successive governments.

In this context, this analysis demonstrates that natural capital information – the identification of the benefits that nature generates for people and the economy— can make decision-making around offsets more efficient and transparent. It enables the prioritization of areas where offset measures generate synergies with other social objectives—for example, where the restoration of native forests and wetlands contributes to specific ecosystem services like water security (regulation of flows, water quality) and climate security (carbon storage, reduction of vulnerability to extreme events)—reducing opportunity costs. It also increases transparency around public co-benefits of these actions because it provides traceable and comparable criteria to justify the selection of sites and types of measures, and the ability to monitor results with consistent metrics. Additionally, by spatially identifying benefits, this information allows for the design of offsets with a greater probability of durability, contributing to creating incentives for long-term permanence based on greater social return.

This work also includes a broader analysis of Chile’s policy mix, to understand its alignment with other SBAP instruments and with national ecosystem restoration goals.⁹ This pilot is an initial case that allows Chile to move towards a broader integration of natural capital approaches in public planning and management.

Key Outcomes

1. Integrated information on natural capital for decision-making

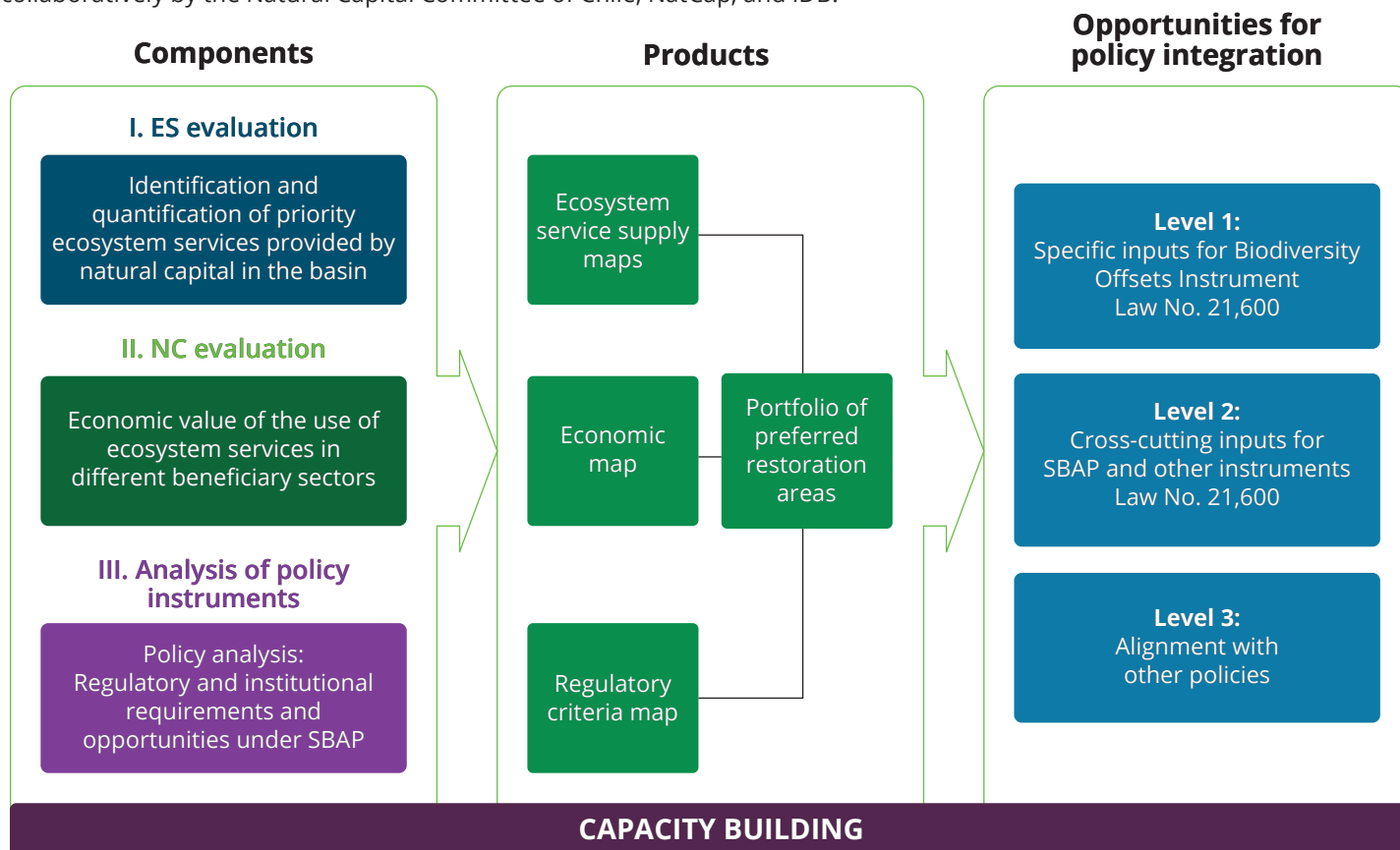
The pilot included different components, detailed in Figure 1, from which the team generated integrated biophysical, economic, and spatial information on natural capital, specifically the flows of six key ecosystem services in the Río Bueno basin: water supply and regulation, water purification (sediment and nutrient retention), carbon storage, provision of habitat, and recreation. This allowed for demonstrating different ways people and economic sectors depend on nature. The integrated and spatially explicit analysis provides a fundamental technical basis for measuring and assessing current dependencies on natural capital, prioritizing various actions in the region, and aligning offset projects with public policy goals.

The set of spatial products generated includes maps of the supply of ecosystem services, a map of the economic value of the current use of these services, a map of criteria from the biodiversity offsets regulation, and a portfolio of preferred areas for restoration derived from an optimization model. These products convert technical evidence into inputs directly usable by the Biodiversity Offsets Instrument and by other management and public policy instruments. Together, they allow for the operational application of natural capital information at different levels, to identify areas where the priorities of the biodiversity agenda and sectoral co-benefits converge, facilitating spatially targeted decisions and serving as a technical input for the coordinated and efficient application of various policies.

⁹ National Plan for Landscape Scale Restoration in Chile, which will incorporate 1,500,000 hectares of landscapes into restoration processes by 2030, prioritizing those with the greatest social, economic, and environmental vulnerability. Long-Term Climate Strategy (MMA, 2021); Landscape Restoration Plan (MMA, 2021).



Figure 1. Summary table of the project’s methodological process, implemented collaboratively by the Natural Capital Committee of Chile, NatCap, and IDB.



2. Practical application of the Biodiversity Offsets Instrument

The information on natural capital was applied to identify areas where ecological, economic, and regulatory priorities overlap. This result provides a practical tool to increase the efficiency of restoration and offsetting interventions in areas that maximize environmental and social benefits and minimize opportunity costs. This integration showcases the

capacity of the approach to generate inputs directly applicable to a specific instrument, in this case to the Biodiversity Offsets Instrument, strengthening the efficiency, coherence, consistency, and traceability of the decisions associated with its implementation. The project also analyzed the opportunities for integrating natural capital approaches into the other SBAP¹⁰ instruments and their connection to sectoral agendas (level 2 and level 3 of Figure 1), as detailed in the [Final Project Report](#).

¹⁰ Certification System for Biodiversity and Ecosystem Services (Art. 51); Remuneration for Ecosystem Services (Art. 52); Ecological planning (Art. 28).

Project Components

1

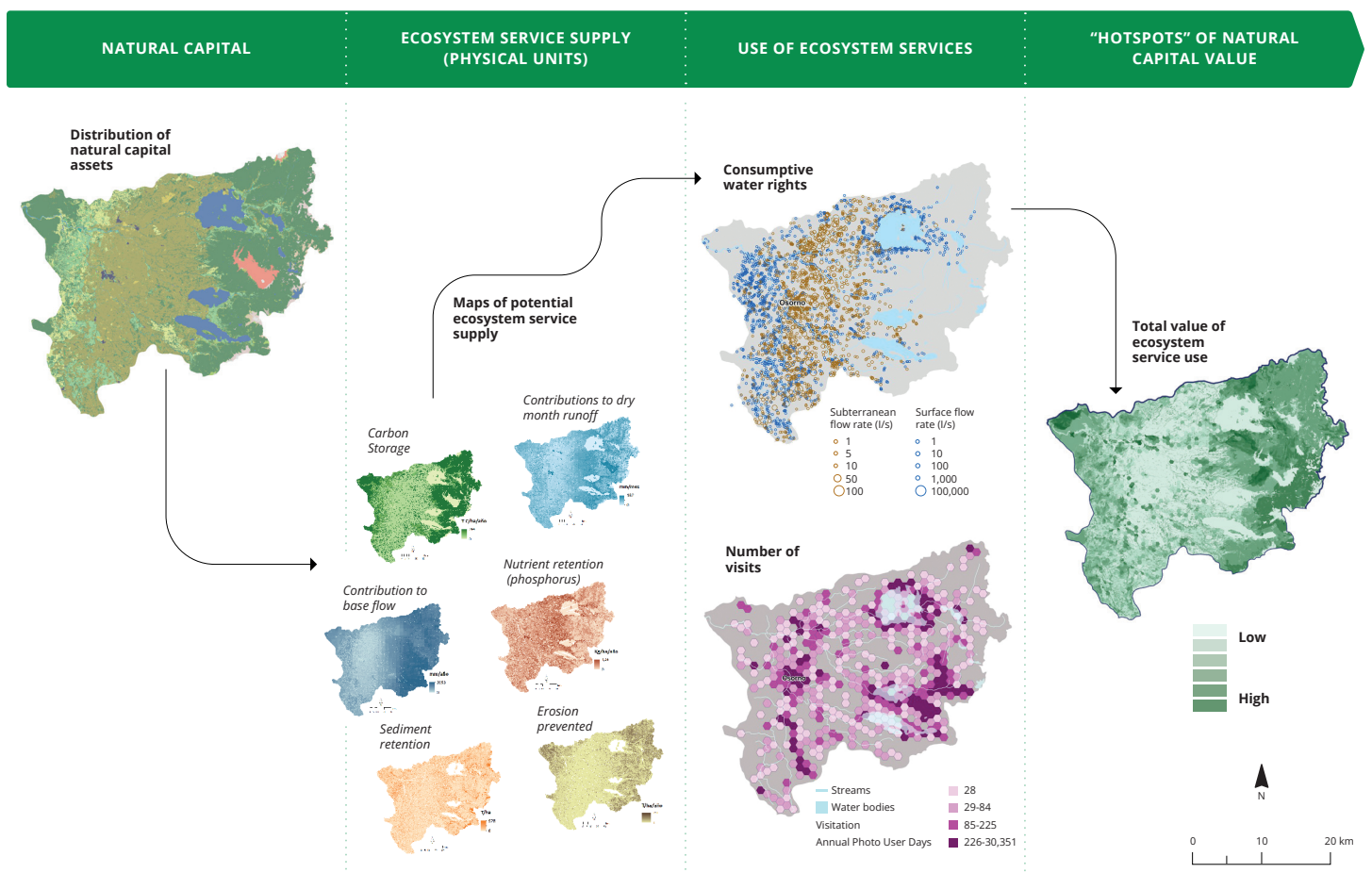
Ecosystem Services Valuation

The project quantified the supply of key ecosystem services—water provision and regulation, sediment and nutrient sequestration, carbon storage, habitat, and recreation—using the InVEST tool.¹¹ These analyses made it possible to estimate where and to what extent the landscape generates ecosystem services essential for human well-being and various productive activities. From the results, the team generated **maps showing potential supply**, which represent the functions of

the basin’s ecosystems, and allow the identification of areas with the greatest contributions to water availability (quantity and quality), carbon storage, and recreation opportunities.

The potential supply of ecosystem services was complemented by an analysis of their actual use by various beneficiaries within the territory. This involved identifying the locations of diverse water and recreation users, as well as the ways in which they depend on the services provided by ecosystems. Integrating supply and use made it possible to visualize who benefits—where, and to what extent. This, in

Figure 2. Process of modeling and assessment of the potential supply and use of the selected ES in the Río Bueno basin.



11 InVEST (Integrated Valuation of Ecosystem Services and Trade-offs) is a free and open-source suite of software and tools developed by the Natural Capital Alliance at Stanford University.



turn, enabled the creation of maps highlighting areas where natural capital currently sustains functions of particular relevance for people and productive activities—such as access to water for human consumption, agriculture, forestry, climate regulation, and recreation.

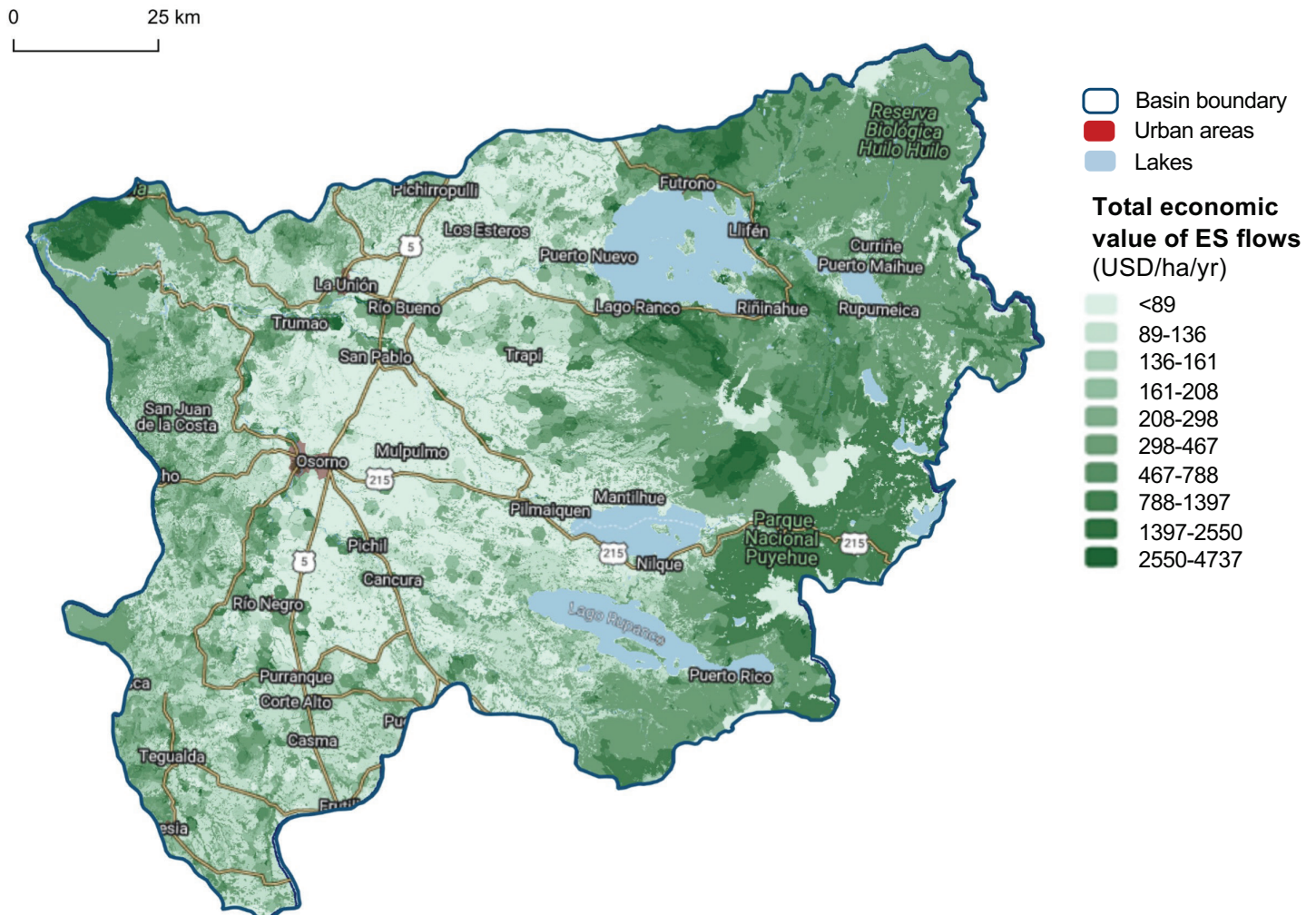
2

Economic Valuation

The biophysical results were integrated with economic valuation methods to show the benefits of ecosystem services in monetary units (USD/ha/year). Thus, the

economic value of each ecosystem service flow was estimated. The service flow was estimated. The estimated Total Economic Value (TEV) of ecosystem services for the Río Bueno basin amounts to USD **496 million per year**, considering the main flows of services currently modeled and valued. These values, in turn, were integrated into an **economic map** showing hotspots of ecosystem service flows based on monetary value. This map allows for spatial differentiation of the dependence of the population and economic sectors on natural capital, identifying the areas where different ecosystem services are currently used and where degradation of natural capital will generate greater economic vulnerability.

Figure 3. Map showing the updated Total Economic Value (TEV) of the six quantified ecosystem service flows, and the spatial distribution of this value across the basin. Values expressed in 2024 USD.



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Workshop held in Puerto Montt, with the participation of public entities responsible for implementing policies associated with natural capital. Photo credit: Paula Fournies



Workshop held in Valdivia, with the participation of public entities responsible for implementing policies associated with natural capital. Photo credit: Paula Fournies



3

Analysis of Policy Instruments

The team analyzed existing public policy instruments linked to natural capital, the Biodiversity Offsets Instrument, and other instruments contemplated in Law No. 21,600, with the aim of identifying information requirements, gaps, incentives, and concrete opportunities for the application of natural capital approaches. Specifically, in the case of biodiversity offsets, the team analyzed the criteria for the selection of preferred restoration areas, and created a map that allows for visualizing those areas of the territory that meet these criteria (Figure 4, regulatory criteria map).

Portfolio of Preferred Restoration Areas and Integration Opportunities for the Biodiversity Offsets Instrument

The three components described above were integrated to identify preferred restoration zones (i.e., those areas where the recovery of various types of prioritized ecosystems in the basin offers strategic opportunities for increasing ecosystem services with lower opportunity costs).

To define these areas, criteria representative of both natural capital and regulatory and institutional priorities for biodiversity management were superimposed to create: a map that identifies areas where restoration maximizes the supply of various ecosystem services and minimizes the opportunity costs of restoration (map of areas of high coincidence); a second map showing the high-priority areas according to the criteria of the Biodiversity Offsets Instrument regulation and the priority restoration sites; and a third map that identifies the places where restoration generates a greater increase in the economic value of natural capital benefit streams (see Figure 4). The construction of each of the maps is detailed in the [Final Project Report](#) that accompanies this document.

The integration of these layers allows for the identification of a portfolio of preferred zones where ecological and economic benefits converge simultaneously, as well as social values expressed in the regulatory criteria of biodiversity management.

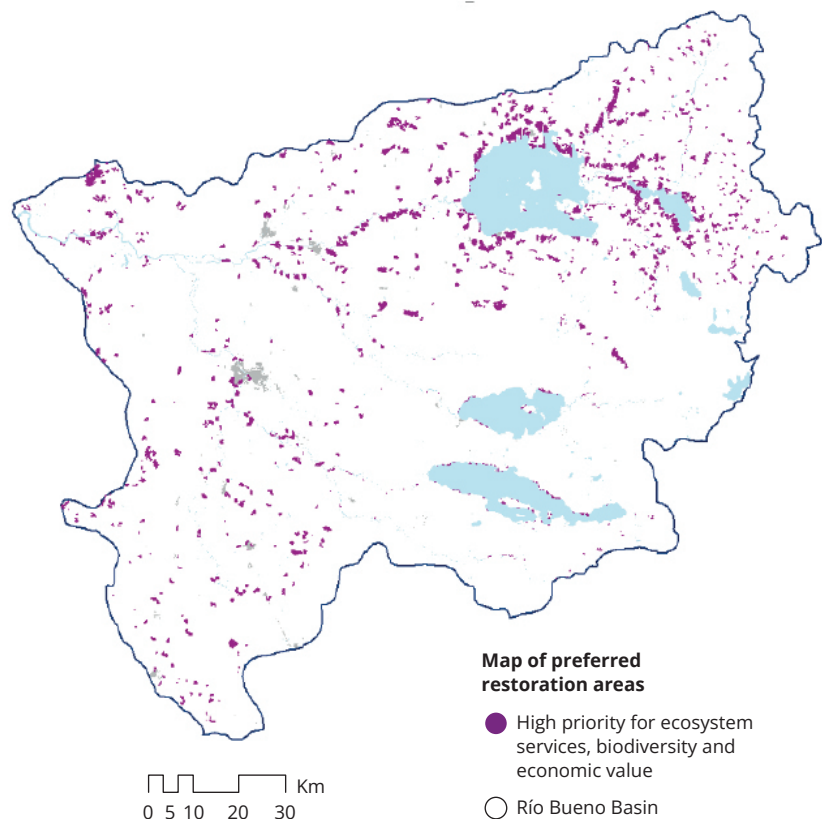
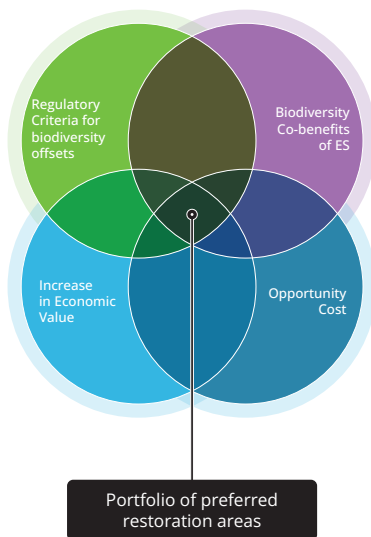
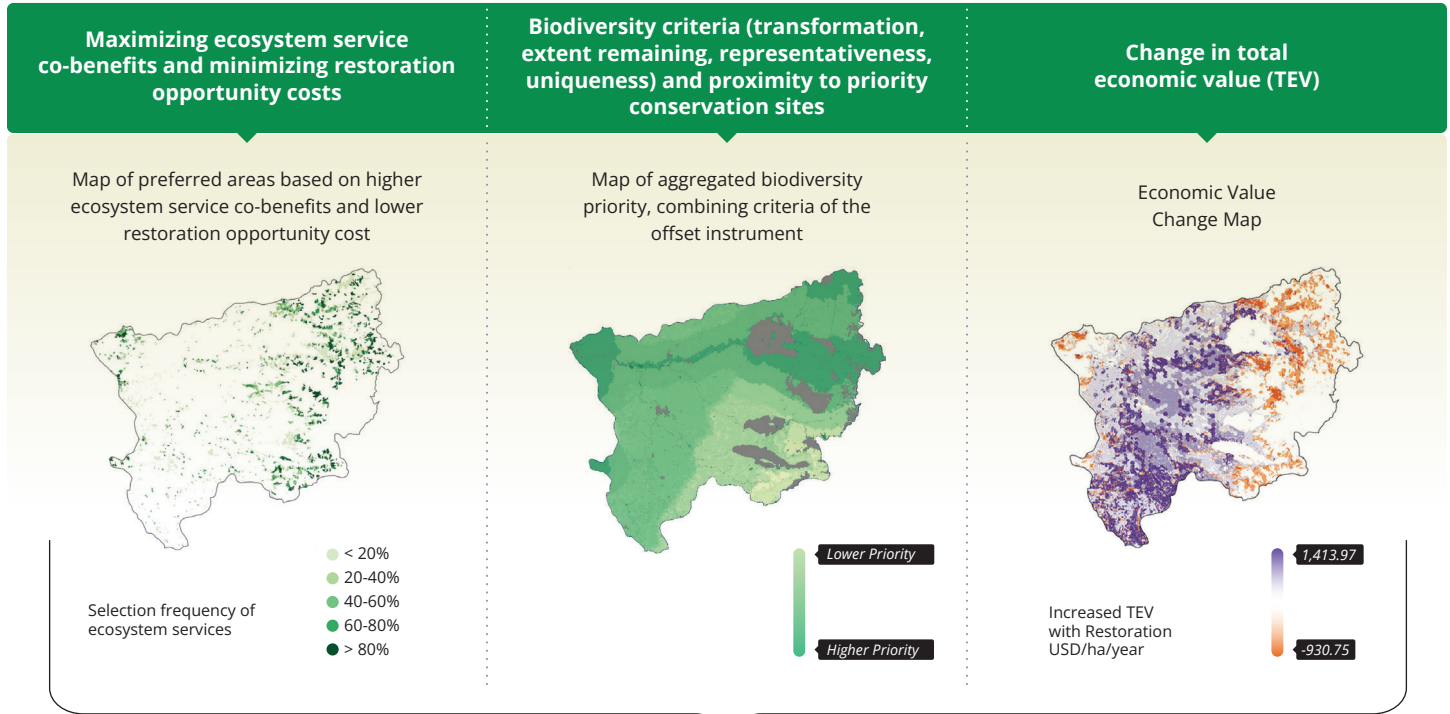
This information provides a practical tool for decision-makers: it allows for the comparison of offsetting alternatives and the spatial targeting and coordination of interventions considering the synergies, trade-offs, or complementarity of biodiversity restoration actions with multiple other social objectives, associated for example with climate mitigation or adaptation agendas, integrated watershed management, sectoral promotion, etc.

Likewise, by providing objective and spatially explicit criteria for comparing alternatives, it is a relevant input to guide the dialogue between regulators and project developers, assisting in the technical justification of the selection of offsetting sites within the framework of the instrument.

This pilot application demonstrates that the benefits of nature to people and the economy can be quantified and effectively integrated into existing instruments, with concrete contributions to their efficient implementation, coherent with other social objectives.

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Figure 4. Criteria considered to integrate natural capital approaches within the implementation of the Biodiversity Offsets Instrument: Aspects of biodiversity, ES co-benefits, opportunity costs, and increases in economic value are integrated to identify synergistic zones (or portfolios) to direct restoration actions. These zones are a key input to direct the planning and coordinated application of offsetting actions and coordination with other SBAP instruments.





Capacity Development

The pilot project also contributed to strengthening the technical capabilities of consultants, public officials, and academics through collaborative work between NatCap, IDB, the NCC and a team of Chilean consultants and researchers. This work focused on applying the methodology of natural capital approaches and the use of tools for the construction of pilot project deliverables.

At the regional level, two workshops were held, one in Valdivia and one in Puerto Montt, which allowed dialogues with regional public services, identifying information gaps and collecting requirements for the implementation of the Biodiversity Offsets System. Two workshops were held in Santiago: one with the public sector, which made it possible to identify priorities and strengthen intersectoral coherence in how to incorporate natural capital approaches; and another with academia, focused on linking applied research with decision-making and exploring opportunities for methodological collaboration. In addition, training was carried out virtually on the methodological components, expanding the scope of the training process.

Together, these activities contribute to building a community of practice around natural capital and ecosystem services in Chile. This includes strengthening capacities to interpret and use biophysical, economic, and spatial information in planning, evaluation, and application of public policy.

Lessons Learned

The integration of natural capital approaches depends not only on technical advances, but also on strengthening data governance, inter-institutional coordination, local capacities, and standardization of processes. This allows the evidence generated to guide coherent, cost-efficient, and locally relevant decisions.

1. Transdisciplinary integration

The integration of ecology, economics, and public management was essential to generate evidence and models relevant to decision-making needs.

→ **Recommendation:** In future projects, strengthen interdisciplinary teams that work together from the methodological design to the interpretation of results, ensuring a comprehensive view.

2. Operationalization of natural capital approaches

One of the main challenges is to translate technical analyses into criteria and tools that guide concrete decisions: where to restore, where to offset, and how to prioritize public investments.

→ **Recommendation:** Develop clear operational guidelines, and use protocols and mechanisms that connect the results of natural capital approaches with public policy instruments, including procedures for offsets and regional planning.

3. Inter-institutional coordination and governance

There are still some gaps between the ecological and administrative scales, as well as coordination challenges between public entities involved in environmental assessment, restoration, oversight, and territorial management.

→ **Recommendation:** Strengthen institutional coordination at different levels (national-regional-local) and consolidate the NCC as a strategic convenor, promoting formal spaces for coordination to ensure coherence between instruments of the SBAP, SEIA, and other sectoral policies.

4. Data quality, traceability, and standardization

Environmental and socioeconomic information remains heterogeneous, dispersed, and limited in terms of georeferencing, which affects the accuracy and comparability of these types of analyses.

→ **Recommendation:** Move toward common data standards, traceability protocols, and interoperable systems that integrate information on ecosystem services and natural capital at the national level.

Pathways to Mainstreaming

The experience in the Río Bueno basin showed that natural capital approaches generate useful information to facilitate regional and sectoral decision-making, at relevant scales. The next step is to move towards its broader integration into public policies through strategic scaling, methodological standardization, and institutional strengthening.

In the coming years, the country will expand this approach to three macro-zones—north, center, and south—in order to represent Chile’s ecological and socioeconomic diversity. This process will be structured in three strategic pillars: (i) the integration of natural capital approaches into key public policies, using a modular and replicable methodological framework that allows parameters and data to be adapted to the needs of each region; (ii) the development of public and private financing solutions that recognize and promote the benefits of natural capital; and (iii) the generation of public information assets – products, guides and metrics – integrated into institutional platforms to facilitate their use at different levels of decision-making. This will also include a cross-cutting capacity development program together with academic institutions, public services, and professional networks in order to promote the application of natural capital approaches in the long term.

The mainstreaming of these approaches will require adapting local inputs to each context, improving the interoperability and cost-efficiency of the analyses, and strengthening institutional coordination between sectors and levels of government. In the future, progress will be made towards the incorporation of new ecosystem services, multiscale analysis, and climate scenarios, generating more robust and applicable evidence for coherent and cost-efficient public decisions throughout the country.

Read more and access the Final Report on this project page:

<http://bit.ly/3PsChile>.



Cover photo credit: Ana Luisa Araos.



For more information, visit the **3Ps project page**.
bit.ly/peopleplanetprosperity

The 3Ps project is funded by the Global Environment Facility, the Gordon and Betty Moore Foundation, and the Global Partnership for Sustainable and Resilient Landscapes (PROGREEN), a multi-donor trust fund of the World Bank.

Authors

Héctor Angarita
Roberto Pastén
Ana Luisa Araos
Xaviera de la Vega
Adrian Vogl
Paula Fournies
Ignacia López
Álvaro Shee
Vanessa Callau
Duval Llaguno
Juan Manuel Murguía
Valentina Saavedra
Mariana Del Río

Editors

Elana Kimbrell
Paula Fournies
Ignacia López
Vanessa Callau
Duval Llaguno

<http://www.iadb.org>

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