RESERVA
ELEMENTAL

Towards a model for

Effective Conservation and Sustainable Development

Contents

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RESERVA
ELEMENTAL

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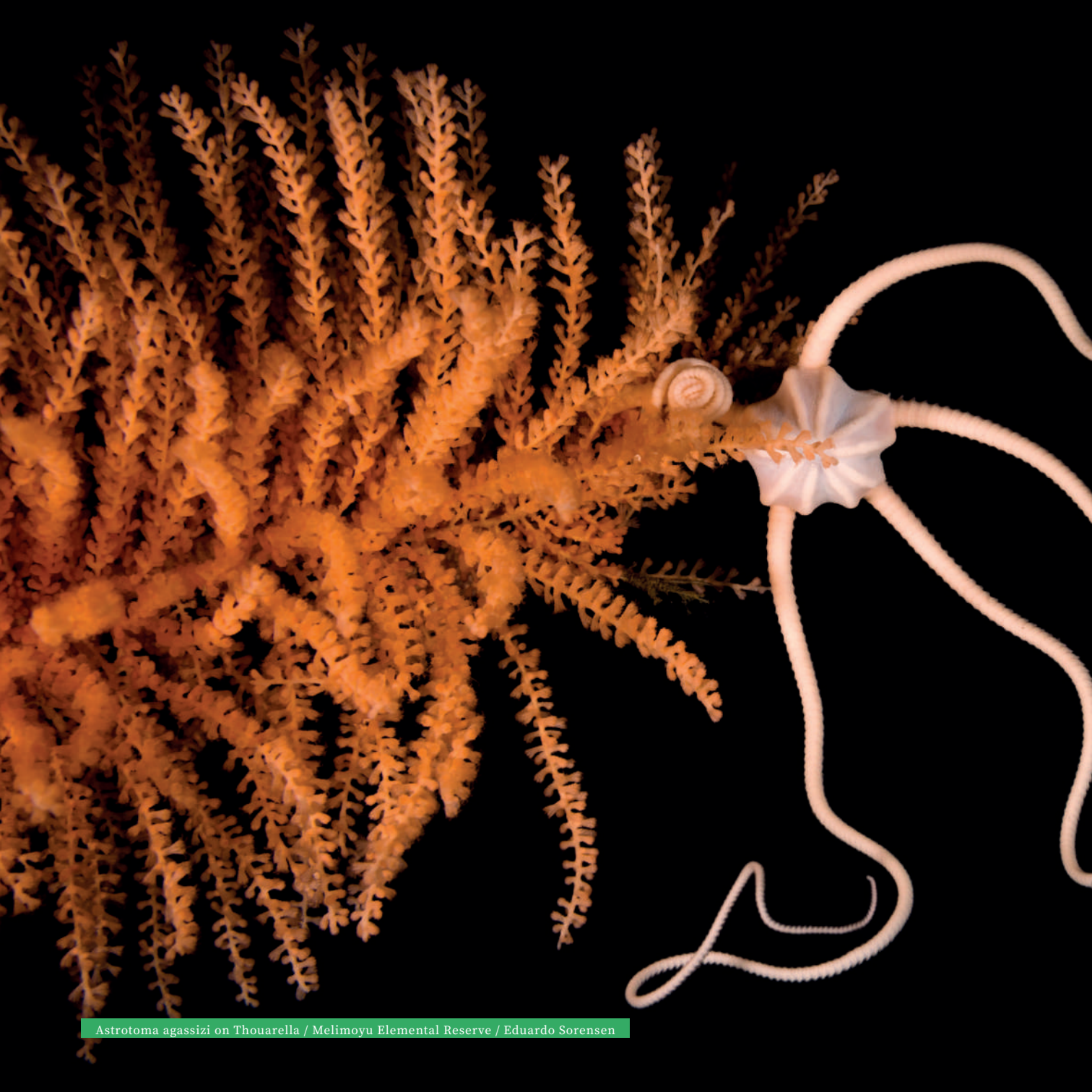

Astrotoma agassizi on Thouarella / Melimoyu Elemental Reserve / Eduardo Sorensen

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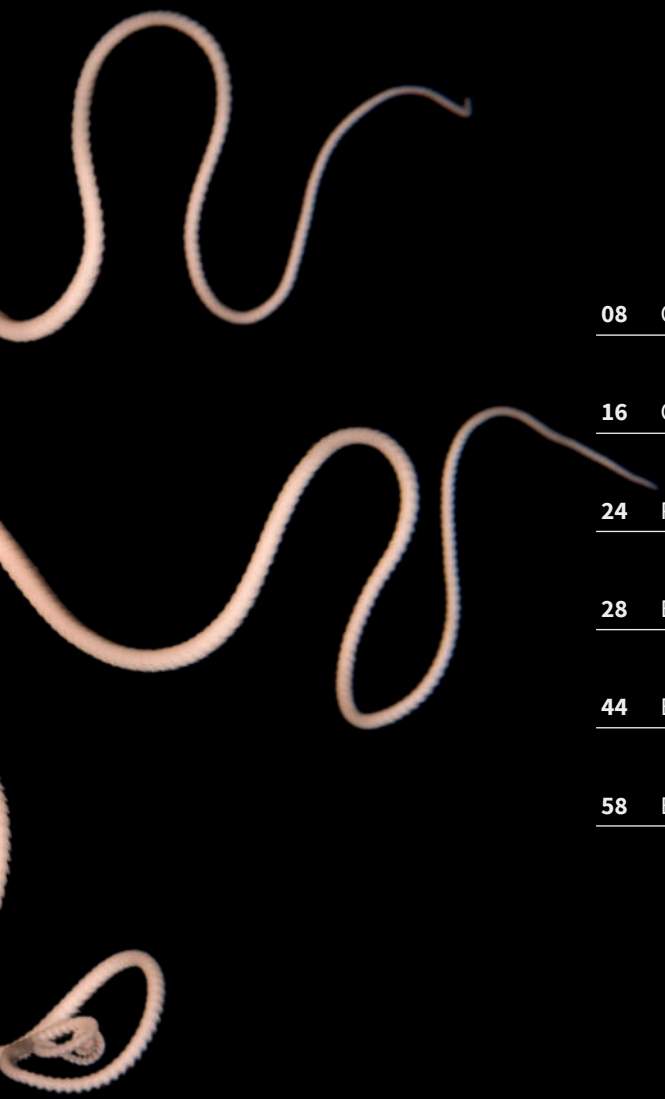

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We are platforms for science, education, culture, and sustainability.

Melimoyu Elemental Reserve / Ricardo Concha

CHAPTER I

Climate crisis, a global emergency

Francesco Ungaro / Pexels

Although until recently climate change was an issue that only worried a handful of people, today its effects are undeniable, and have substantially changed the course of our lives.

Prolonged droughts, flooding, melting ice caps, more intense hurricanes and desertification are just a few of the devastating phenomena that seem to be worsening uncontrollably.

The effects of climate change have created uncertainty in many fields, and as yet technological advances have been unable to adequately deal with them.

There are many signs that our planet is changing. And these changes are no longer only seen on the news or on social media. Instead, they are right here, in our own backyards. The climate crisis has reached our homes.

There can be no doubt, global warming is now a global emergency, and in order to ensure the continuity of human life and the life of the other 8 million species who share our home, all the many spheres of modern society must act as one.

Although we may have been part of the problem, we can now be part of the solution.

In an act of intergenerational ethical solidarity, we must take responsibility for the world we leave for our children and grandchildren, and recognize that if we don't act now, they will be left facing the dire consequences we were unable to contain.

It is in this context that sustainable development and conservation have become vital parts of the political, social, economic, and environmental agendas.

Environmental Conservation

Environmental conservation can be understood as a **"set of actions or initiatives geared towards the preservation of biodiversity in a given area, regardless of whether its ecosystems are aquatic, land-based, mixed, or microbial. Such initiatives can be public, private or part of a public-private collaboration"**.[1]

At an international level, there have been many different efforts to coordinate actions to combat global warming.

The **Kyoto Protocol** (1997) which Chile is part of, is an international agreement whose objective is to reduce emissions of the greenhouse gases that cause global warming. Among these are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O) and industrial gases.

The protocol came into force in 2005, and currently 197 countries have ratified the agreement. It is part of the United Nations Framework Convention on Climate Change (UNFCCC), which was adopted in 1992 as part of the Earth Summit in Río de Janeiro.

The commitments within the Kyoto agreement will last up until 2020, which is when the Paris Agreement will come into effect. The purpose of this agreement is to reinforce the global response to climate change in the context of sustainable development and efforts to eradicate poverty.

The Paris Agreement establishes two concrete measures:

Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change.

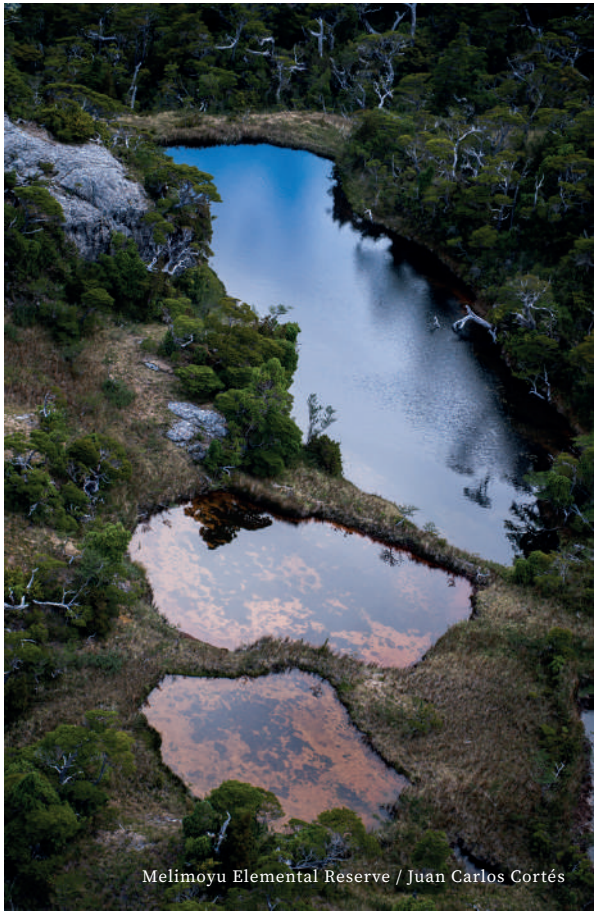
Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production.

—

[1] Evely, Fazey, Lambien, Lambert, Allen, & Pinard, 2010; Fundación Senda Darwin, 2013; Montoya, 2009.

Darwin's frog
Melimoyu Elemental Reserve
Ricardo Concha

Andean condor / Jean Vella



Melimoyu Elemental Reserve / Juan Carlos Cortés

Whale Expedition / MERI Foundation Scientific Team / Melimoyu Elemental Reserve

Sustainable Development

At an international level, alongside global warming, countries have recognized the importance of working towards sustainable development, which can be defined as **"actions that meet the needs of the present without compromising the ability of future generations to meet their own needs"** (UNESCO, 1987).

According to the definition of the World Commission on Environment and Development (1987), sustainable development must ensure that the needs of the present are met without jeopardizing the ability of future generations to meet their own needs.

Likewise, the commission emphasizes the limits of our biosphere's ability to absorb the effects of human activity. It points out the global need for equal conditions, and places emphasis on the direction of investment, the aims of technological development and the institutional changes that are required, alluding also to the necessary political will that will allow us to advance towards a new model for sustainable development.

Melimoyu Elemental Reserve / “Navigators” Program / Carlos Echavarría

The UN Sustainable Development Goals (SGDs) are designed to encourage environmental conservation, while also adding new dimensions associated with economic growth and social development. It is understood that these three pillars should complement one another, as a goal in one area cannot be accomplished without the help of the other two.

Towards the end of 2019, as part of the lead up to COP25, a group of delegates from several countries met in Costa Rica. The teams, from countries such as France, Finland, Gabon, Granada and the UK, met to set up an initiative called the **High Ambition Coalition for Nature and People,** whose main objective is to bring 30% of the planet under the protection of conservation programs by 2030.

It is an ambitious goal that implies a series of measures such as reforestation and ocean conservation to reduce CO2 levels in the atmosphere.

It also represents a great challenge as the increase in conservation efforts must come hand-in-hand with social development and, for example, must not affect the production of staple foods or the availability of housing for the most disadvantaged sectors of society.

Agenda 21 calls on governments to define strategies for sustainable development. It states that they should, “build upon and harmonize the various sectoral economic, social and environmental policies and plans that are operating in the country”.

It is clear, then, that environmental conservation can no longer be considered a merely ecological endeavor, but rather as a vital tool for combating climate change that is characterized by a multi-sectoral approach, and which requires coordinated intervention from the public and private sectors, and civil society.

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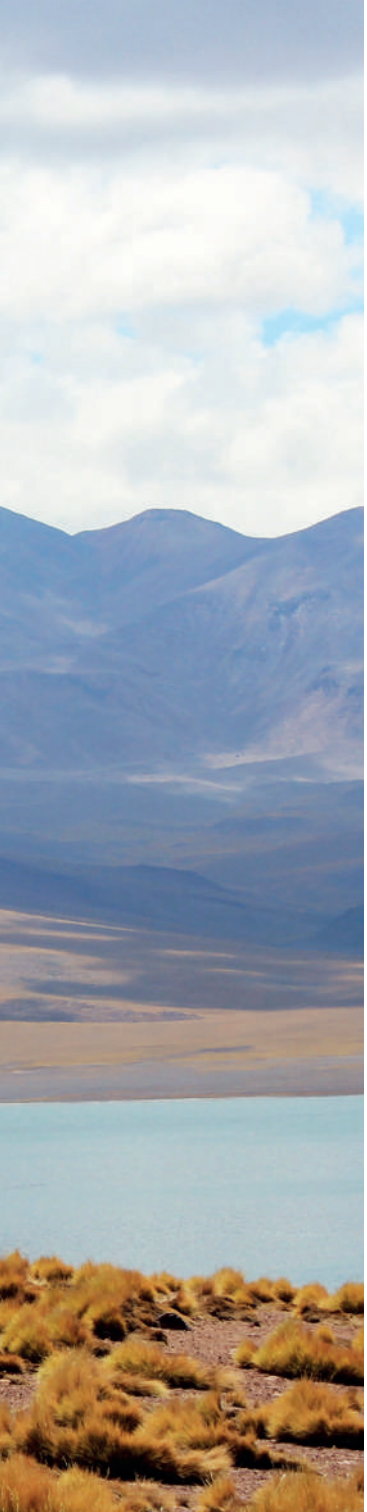
[2] United Nations

CHAPTER II

Chile, cradle of biodiversity

Los Flamencos National Reserve / San Pedro de Atacama / Paula Porto



In environmental terms, Chile has two structural axes: a latitudinal gradient that runs from 17 to 56 degrees south, and an altitude gradient that runs from deep ocean trenches of -8,000m to mountain peaks of 7,000m. Furthermore, its continental surface area measures over 742,000km2, and is more than 4500km in length (Ministry of the Environment, 2018).

The Andes mark the eastern border, with the Atacama Desert to the north and the Pacific Ocean to the south and west.

All of this means Chile is a markedly heterogeneous country in terms of its environmental conditions and biodiversity. And it is these conditions, along with the country's geological history, that have given rise to the existence of incredibly unique species. So much so, in fact, that Chile might be better thought of as a "continental island".

The Founding of Elemental Reserves in Chile

At their inception, the Elemental Reserves were intended to be cultural, educational, and scientific parks that would host the programs of our Tata Mallku, Caserta, and MERI Foundations, which have, for the past 17 years, dedicated themselves to Chile's Holistic and Sustainable Development under the global administration of Filantropía Cortés Solari (FCS).

Nevertheless, both the scientific research carried out on the flora and fauna in the Elemental Reserves, and the evidence gathered through educational and cultural programs held for local communities highlighted the need to rethink these areas as spaces for Effective Conservation. That is to say, that they would stand to benefit from a holistic approach that, despite the unique geographical qualities of each park, could be replicated in other areas.

It was this shift in thinking that gave rise to the Puribeter, Likandes, and Melimoyu Elemental Reserves.

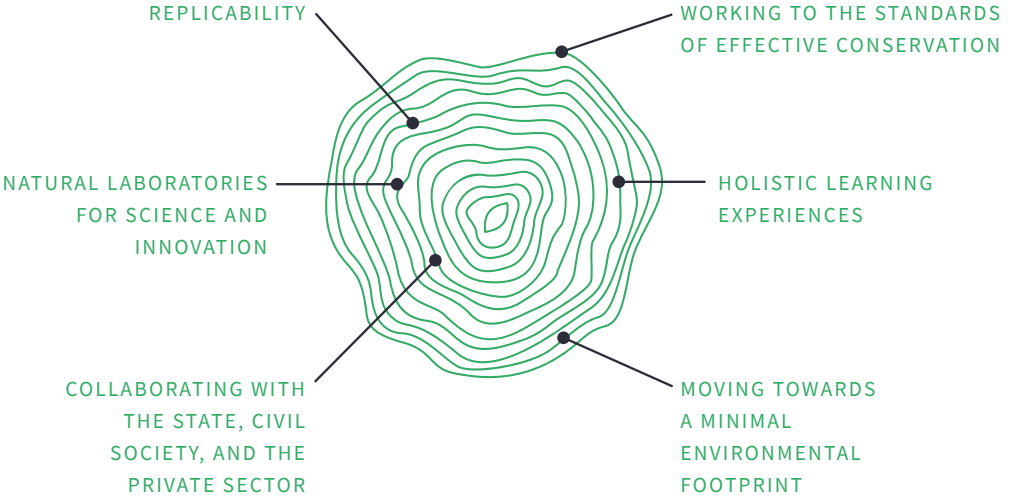
Puribeter Elemental Reserve / Carlos Echavarría

Likandes Elemental Reserve / Carlos Echavarría

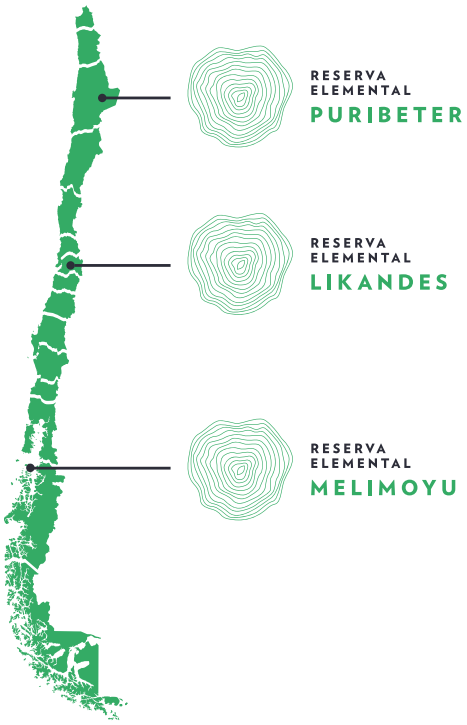
Melimoyu Elemental Reserve / Ricardo Concha

The Principles of the Elemental Reserves

Since the very beginning, FCS has striven to build a model for conservation and management under six guiding principles, and these principles are what governs the work of our Elemental Reserves:



Standards for Effective Conservation



Each reserve has a Conservation Master Plan: a system of work that establishes the conservation goals in each park using a tried and tested methodology (IUCN) to relieve the threats faced by the ecosystems they protect.

This is a network of parks where programs for

Science
Education
Culture

converge, all in the aid of **effective conservation.**

Holistic learning experiences

The Elemental Reserves were created to aid the communities that surround them, and to put science at the service of conservation. In order to ensure this, we created environmental education programs that focused on first-person experiences and that put the information and scientific knowledge of each park's ecosystems in the hands of the local communities.

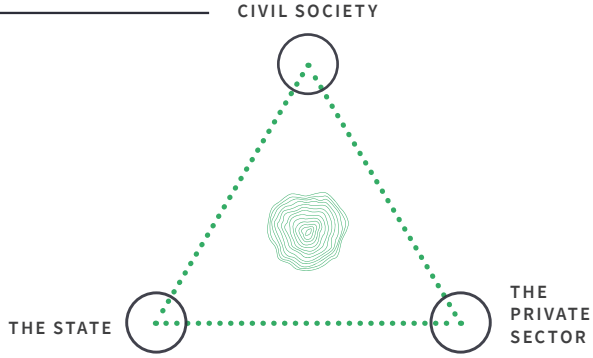

Melimoyu Elemental Reserve / Carlos Echavarría

Minimal environmental footprint

All our reserves are working towards operating with a minimal environmental footprint. This means not only investing in clean infrastructure, but also developing awareness-raising programs regarding the responsible use of natural resources and the local ecosystem.

The virtuous triangle

Philanthropy can be defined as private actions taken for the public good. This is why our Effective Conservation programs seek to forge alliances with the public and private sectors, and civil society —the so-called Virtuous Triangle— to ensure the maximum effectiveness and impact of our efforts.



Puribeter Elemental Reserve / Carlos Echavarría

Likandes Elemental Reserve

Natural laboratories

Our Elemental Reserves are like huge natural laboratories where scientists can monitor and test the latest advances in environmental research, innovation, and education.

"A natural laboratory is a unique area in the environment that attracts global scientific attention, and when they occur in developing countries such as our own, there are comparative advantages that are not replicable in other parts of the world" (Aguilera & Larraín 2018).

Replicability

We believe that a full understanding of the threats facing our environment, using science, environmental education, and community outreach schemes, allows us to properly focus and measure our conservation projects and their impact. It also ensures the conservation model is replicable.

CHAPTER III

Private conservation in Chile

Melimoyu Elemental Reserve / Ricardo Concha

Chilean conservation legislation describes the concept of Protected Areas, which can be understood as **a geographically defined area that has been designated or regulated and managed with the aim of achieving specific conservation goals** (Supreme Decree N° 1963, of 06.05.1995, from the Ministry of Foreign Affairs, Agreement on Biodiversity).

Traditionally, the majority of Chile's protected areas have been created and run by the State as part of the National System for Protected Areas of Wilderness (SNASPE), (Dudley, 2008)[3]. According to the SNASPE, **Chile has 14.5 million hectares of protected land, amounting to 19% of the country's total area.** These parks are concentrated mainly in and around the ice fields and glaciers, which are hugely significant freshwater reserves for both the nation and the world.

There are also different kinds of protected area in Chile, including: National Parks, National Reserves, Forestry Reserves, Natural Monuments, Wilderness Region Reserves, Protected Marine Coastlines, Marine Parks, Marine Reserves, Natural Sanctuaries and Privately Protected Areas.

—

[3] Senda Darwin Foundation, 2013

The FCS's Elemental Reserves fall into the category of **privately protected areas.** The definition of this concept has changed over time, along with the requirements associated with it. Nevertheless, there are two commonly accepted definitions:

The first, defines them as "geographical areas that are, legally or by other appropriate means, clearly defined, recognized, dedicated to and managed for long term nature conservation and all the ecosystemic services and cultural values that this entails" (Dudley, 2008).

The second, establishes that they are "geographically defined areas that are managed in such a way as to produce positive sustained results in the long term with relation to the in-situ conservation of biodiversity. Their functions and services are associated with ecosystems and, wherever necessary, with cultural, spiritual, socio-economic and other values deemed important at a local level" (Meeting of the Parties of the Convention on Biological Diversity, 2018).

It should be mentioned that many of the areas protected by the State are hugely important in terms of their ecosystems. However, the State is incapable of protecting all the eco-regions and freshwater reserves in our country, meaning private reserves are becoming more and more important to both national and international biodiversity.

Currently, there are a number of clearly established guiding principles for private conservation projects, including:

Voluntariness: The landowner's participation should be free and voluntary, not imposed.

Additionality: The actions undertaken go above and beyond what is mandatory. Projects should be considered in the long term, as things that will stand the test of time.

Co-responsibility: Rights and obligations are shared in order to optimize park management.

Graduality: The process is rolled out gradually in line with the skills and opportunities at hand, with objectives established for the short, medium and long term.

Transparency: There are publicly available verification systems in place, as well as established internal means of communication for the publishing of developments and achievements.

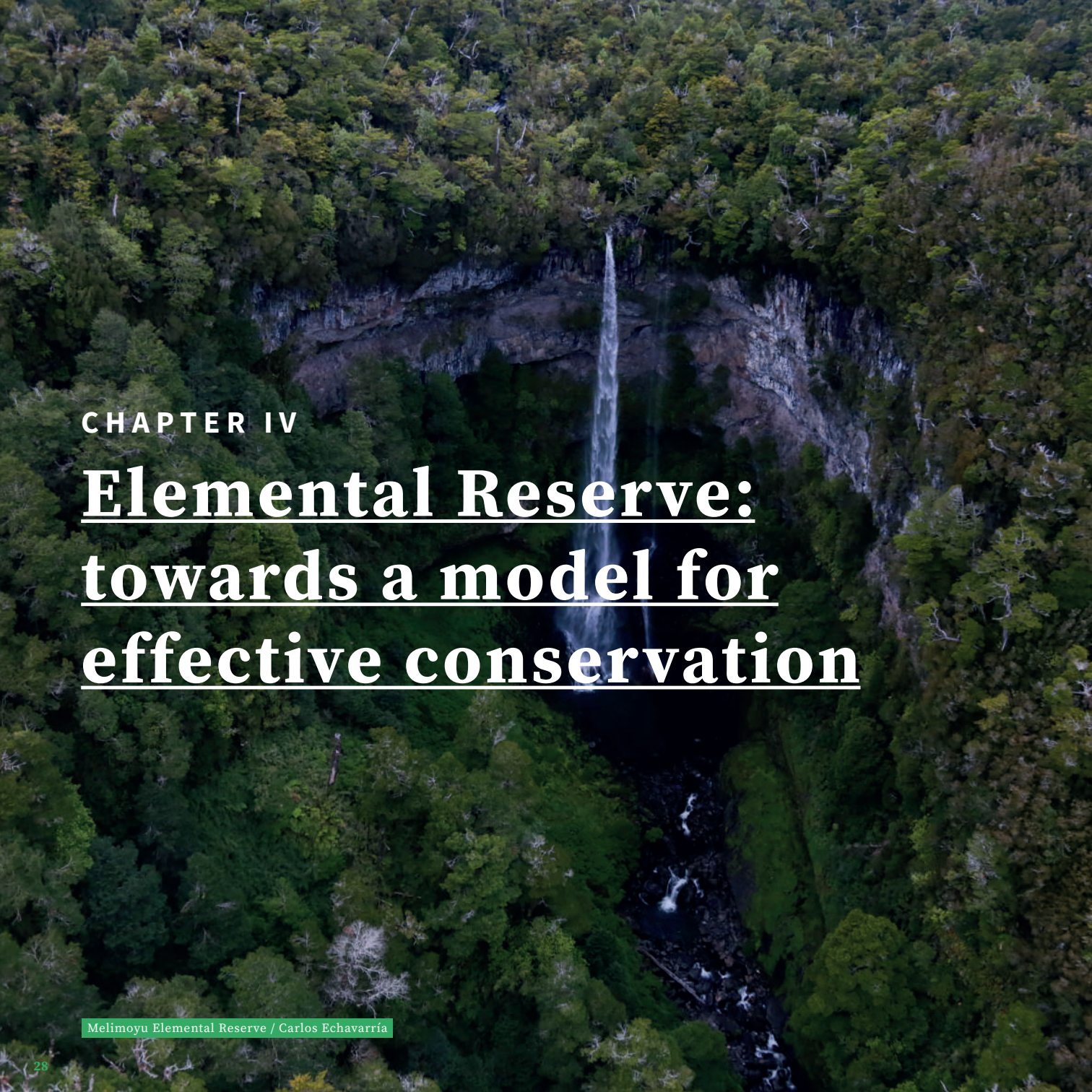
Privately protected areas must make explicit, among their main objectives, the conservation of natural environments including at least one clearly defined ecosystem that is specific to the local area, as well as the development of productive practices that are compatible with environmental conservation.

Chañar fruit / Puribeter Elemental Reserve / Carlos Echavarría

Melimoyu Elemental Reserve / Ricardo Concha

Glacier at Melimoyu Elemental Reserve / Carlos Echavarría

Melimoyu Elemental Reserve / Ricardo Concha



CHAPTER IV

Elemental Reserve: towards a model for effective conservation

Melimoyu Elemental Reserve / Carlos Echavarría

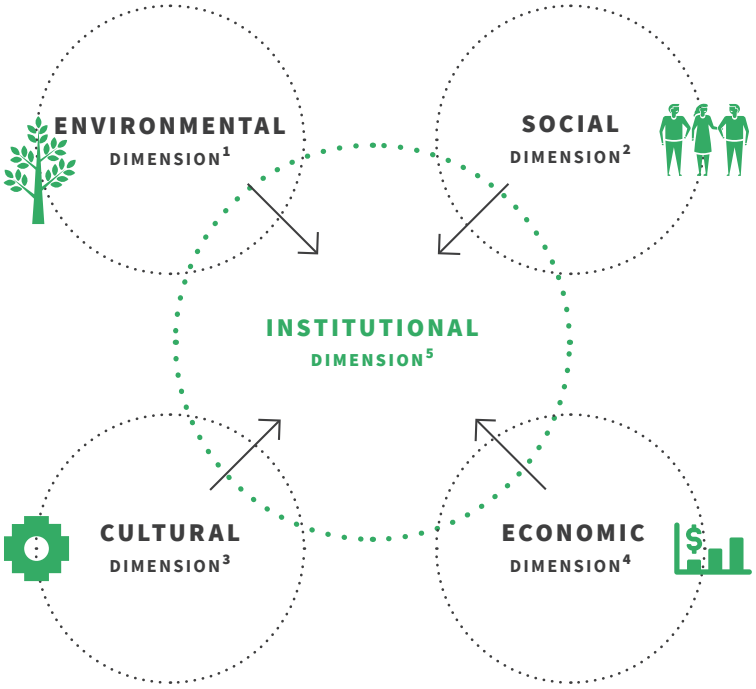
As privately protected areas, our Elemental Reserves can be defined as **territories for the Effective Conservation of Chile's natural and cultural heritage.**

The network of parks is fully equipped with infrastructure that minimizes their environmental impact while, at the same time, guaranteeing their ability to support scientific research and environmental education among other activities. As a result, they are perfectly positioned to raise community awareness regarding their ecosystems and the threats they face.

Effective Conservation: a multi-dimensional model

We know that conservation requires a multi-dimensional approach, and that it goes beyond the strictly ecological sphere. Our Elemental Reserves have helped us to understand that Effective Conservation means working in four dimensions simultaneously: the environmental, social, cultural and economic dimensions.

According to international standards of Effective Conservation, robust institutions are essential to assuring conservation, which is why the institutional dimension is the central axis of this multi-dimensional approach.



Melimoyu Elemental Reserve / Carlos Echavarría

Llama / Puribeter Elemental Reserve / Carlos Echavarría

Puribeter Elemental Reserve

Likandes Elemental Reserve / Carlos Echavarría

[1] Environmental Dimension

The preservation of an ecosystem is a fundamental dimension of conservation. For this reason, the ecosystem in question must be constantly monitored by teams of scientists. This dimension aims to guarantee sufficient scientific studies of the species inhabiting an area, specifically those that are endangered by human activities. This way, we can better understand, analyze, and monitor the area in order to propose solutions that aim to put an end to these observed threats.

As a part of FCS, the **MERI Foundation** (www.fundacionmeri.cl), in partnership with various national and international research centers and institutions, carries out programs for scientific research and environmental education in each of our Elemental Reserves.

Gather information about the land and its inhabitants

Each reserve has undergone technical studies to define:

› The conservation subjects and the threats they face

› The associated lines of research

Scientific studies become the source of Environmental Education programs for the local community

Blue Whale

[2] Social Dimension

Conservation cannot be thought of as a phenomenon that is separate from the community. We see the community as not merely an observer, but rather a protagonist in the struggle for socio-environmental conservation. Indeed, the community is the focus of our efforts to bring in people who are committed to conserving the natural and cultural heritage of the land they live in. As such, any Sustainable Management Plan must necessarily include the local community, both in terms of raising awareness and in terms of co-designing locally relevant programs in order to promote sustainable development for the land and the people who live there.

The **Caserta Foundation** (www.caserta.cl) is the institution in charge of the Holistic Education, Mediation and Sustainable Leadership programs we run in each of our Elemental Reserves. Caserta's programs are based on the FCS's experiential and holistic education model, which is called the Holistic Map of Human Development. Our Elemental Reserves work with the Caserta Foundation to run open-air holistic education programs that aim to help participants to build knowledge, attitudes and abilities that will help them resolve environmental problems.

BUILD TRUST → COMMITMENTS FROM CIVIL SOCIETY → COMMUNITY PARTICIPATION IN PROGRAMS

Dialogues are held with civil society and the local community

Collaborations and alliances are forged with all members of the community

Social programs must be developed with active community participation

Likandes Elemental Reserve / Carlos Echavarría

[3] Cultural Dimension

Our conservation plans are also built on the concept of interculturality. We are aware of the essential need for a collaborative framework in these kinds of projects, and as such we know how vital it is to assure a functional and permanent dialogue with all the groups and cultures in our communities. This helps us guarantee that our conservation programs will be even more relevant on a local level.

As our Elemental Reserves are inserted in areas known for their natural and cultural heritage, understanding and respecting the local cultures is fundamental to building, hand-in-hand with local communities, programs that can properly promote our country's cultural heritage.

INTERCULTURAL DIALOGUE → **KNOWING RESPECTED MEMBERS OF THE COMMUNITY** → **PROJECT CO-CREATION**

Respect and understand the local community when designing programs that will change the face of the land

Forge strategic alliances with communities

Carry out actions that have real local importance

Traditional Knitting / Puribeter Elemental Reserve

4 Economic Dimension

One of the key challenges to conservation, whether public or private, is its own financial sustainability. Although Effective Conservation means managing a territory using a scientific, social and cultural approach, it also requires a solid strategy that will guarantee financial sustainability over time. It is the objective, then, of this dimension, to put in place mechanisms that will allow areas that have been declared under Effective Conservation to remain as such, without the need for further financial resources.

DEVELOP A SUSTAINABILITY MODEL FOR THE RESERVES → **PROMOTE INTER-SECTORAL COLLABORATION** → **PROMOTE ECONOMIES OF SCALE**

Develop management indicators that will pave the way for sustainability

Encourage dialogue between the public and private sectors and civil society to gather funds and generate sustainability.

Link the Elemental Reserves to the local community in order to encourage economic development in areas such as sustainable tourism.

Melimoyu Elemental Reserve / Ricardo Concha

[5] Institutional Dimension

Private conservation must be supported by a robust institutionality that will remain in place in the long term. As such, the objective of this dimension if to ensure that the areas under Effective Conservation remain that way for generations to come.

All of these dimensions seek to assure that conservation work can continue unhindered in the medium and long term, not only in terms of maintenance, but also in terms of the expansion of privately protected areas. This is in line with the 30% goal established by the High Ambition Coalition for Nature and People and the SDGs, which call for a focus on holistic development that addresses environmental conservation, economic growth, and social development.

Melimoyu Elemental Reserve / Ricardo Concha

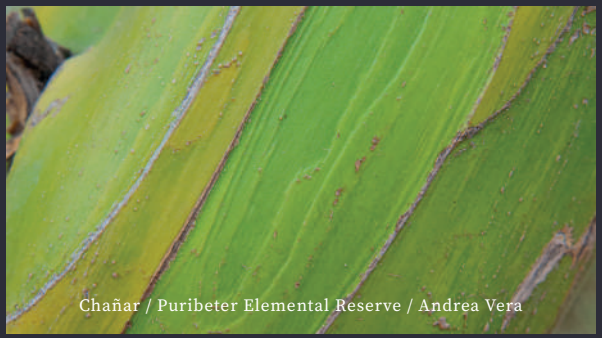
Territorial approach methodology

Our Elemental Reserves in Chile have, over the years, developed what we call a territorial approach methodology, which guarantees replicability and comparative analysis.

It is a six-stage process that culminates in the establishment of natural and/or cultural Conservation Objectives in each territory.


Quillay / Likandes Elemental Reserve


San José Creek / Likandes Elemental Reserve / Carlos Echavarría


Chañar / Puribeter Elemental Reserve / Andrea Vera


Magellanic Woodpecker / Melimoyu Elemental Reserve

TERRITORY: Territorial classification.

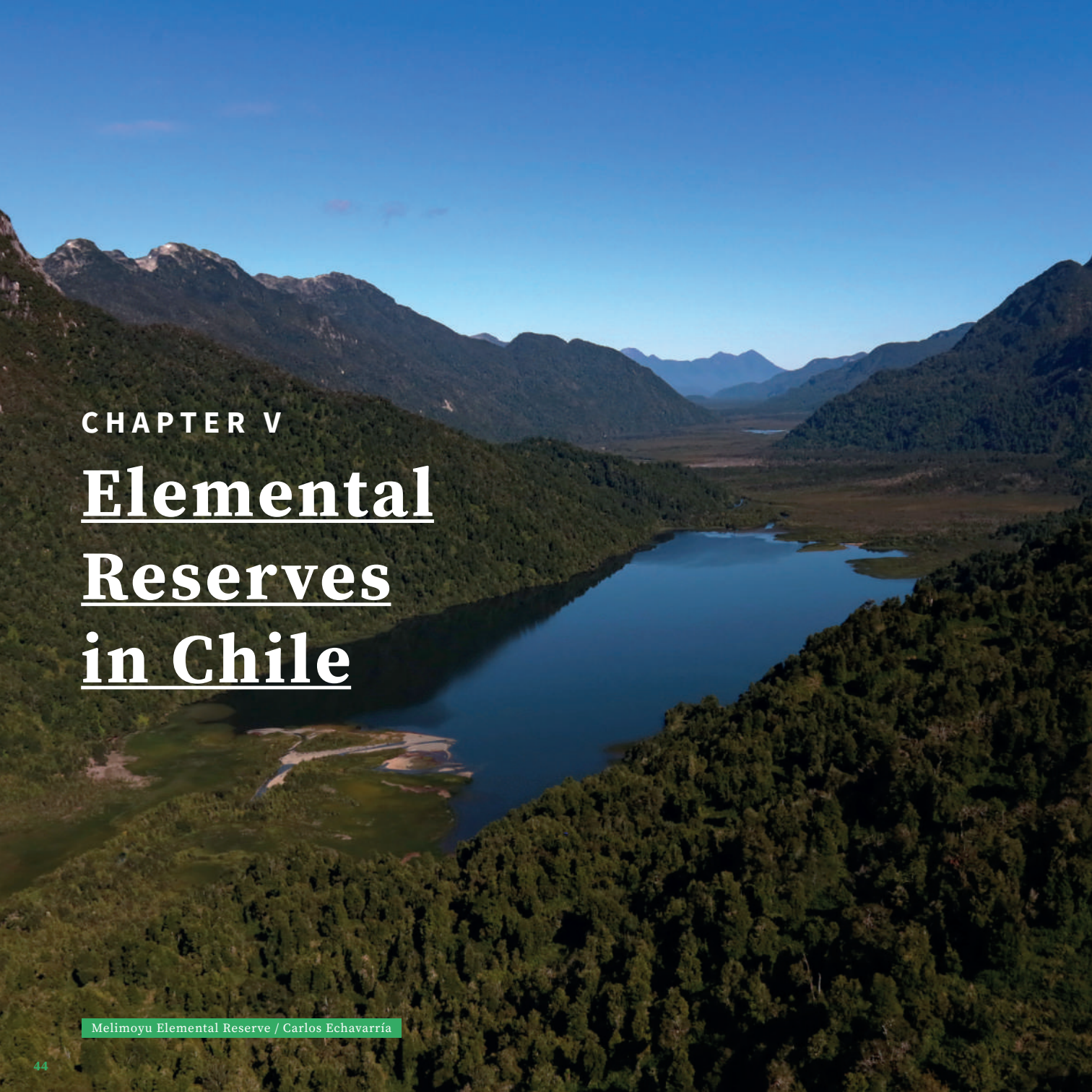
NATURAL CONTENTS: Research in and application of knowledge of the natural and physical sciences pertaining to the land: geomorphology, geology, climatology, hydrology, edaphology, ecology, ethology, etc.

SOCIAL CONTENTS: Research in and application of knowledge of the social sciences pertaining to the land: geography, sociology, anthropology, archaeology, history, economy, political science, etc.

CULTURAL CONTENTS: The identification of languages, symbols, codes, social practices, interests, values and perceptions, among others, in the land that is to be protected.

TERRITORIAL DYNAMICS: The interrelation of the biophysical factors and human cultures within the territory.

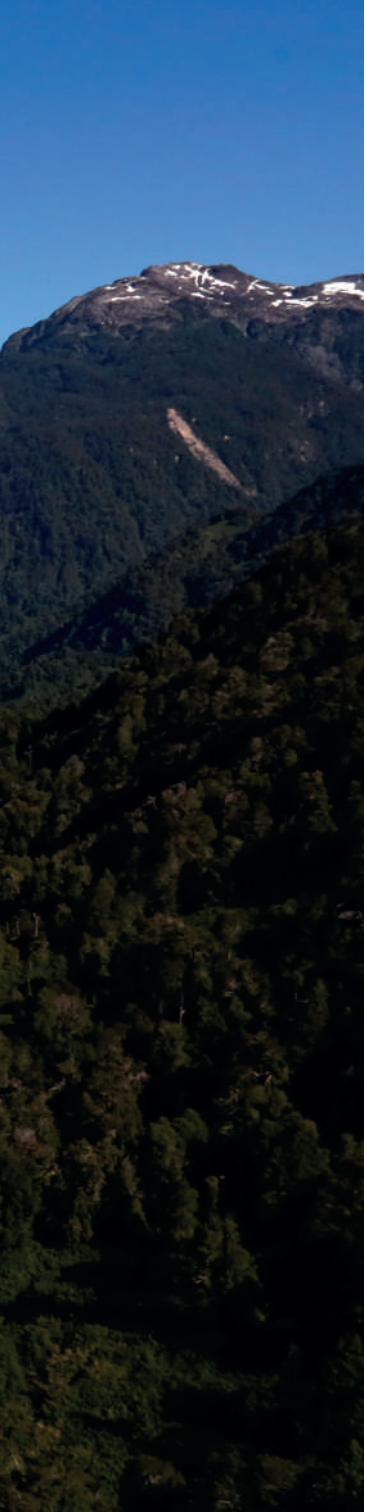
DEFINITION OF SUBJECTS FOR INTERVENTION AND PROGRAM DESIGN: The definition of objects of study, based on their local importance.



CHAPTER V

Elemental Reserves in Chile

Melimoyu Elemental Reserve / Carlos Echavarría



Filantropía Cortés Solari has dedicated itself to Effective Conservation at three ecological reserves situated at strategic points throughout Chile: the Elemental Reserves. They are:

The Puribeter Elemental Reserve: Located near the town of San Pedro de Atacama, at 22° south, this area is of great value for the conservation and study of arid habitats, and also for astronomy.

Puribeter covers 47 hectares, 57% of which are set aside for conservation, while the others are used for traditional agriculture, and scientific and educational installations.

Likandes Elemental Reserve: Located in the Cajón del Maipo valley in central Chile, at 33° south, this area of sclerophyll forest in the Andean foothills is one of the areas most vulnerable to climate change in the country.

It is home to a network of waterways and canyons that feed into the San José Creek, and also to large areas of sclerophyll forest that are typical of the Andean foothills. It covers over 180 hectares.

Melimoyu Elemental Reserve: Located in northern Patagonia, at 44º south, near the Gulf of Corcovado, this park covers more than 16,000 hectares of old-growth forest and boasts 7km of coastline. The area's ecotone runs from temperate rainforest to sub-Antarctic brush.

Melimoyu is a vital area of conservation in the region, situated as it is among the fjords of northern Aysén. It is home to a wide range of endemic flora and fauna, such as arrayán trees, Guaitecas cypress, Darwin's frog, the chucao, kingfishers, and many more besides.

Furthermore, the Meliloyu Elemental Reserve is considered a gateway to the Gulf of Corcovado for blue whales seeking to feed on krill and socialize with other sea creatures.

FUNDACIÓN
CASERTA

Designs and implements holistic education programs

FUNDACIÓN
MERI

Carries out scientific studies and environmental education in the name of conservation

RESERVA ELEMENTAL
PURIBETER

22º 58´ 30´´S
San Pedro de Atacama,
Antofagasta Region

RESERVA ELEMENTAL
LIKANDES

33º 38´ 55´´S
San José de Maipo,
Metropolitan Region

RESERVA ELEMENTAL
MELIMOYU

44º 05´00´´ S
Melimoyu,
Aysén Region

Elemental Reserves: platforms for Effective Conservation with territorial identity

The infrastructure at our Elemental Reserves is designed for scientific and educational communities.

We see nature as one big classroom, where humanity can learn about life cycles and ecosystems, and communities can better understand the world they live in.

Our reserves have laboratories for scientific research and environmental education in the name of conservation.

Each Elemental Reserve has a special architectural design that fits seamlessly with the local communities and cultures, whilst also reducing the environmental impact to an absolute minimum.

These reserves seek to raise awareness of environmental issues and put forward plans for sustainable development.

RESERVA
ELEMENTAL
PURIBETER


Carlos Echavarría


Horses


Sebastián Tirado


Dunes / Carlos Echavarría

Puribeter Elemental Reserve / Andrea Vera

Licancabur Volcano / Carlos Echavarría

Sebastián Tirado

Chañar Bark
Andrea Vera

RESERVA
ELEMENTAL
LIKANDES


Adventure Program / Gerardo Manns

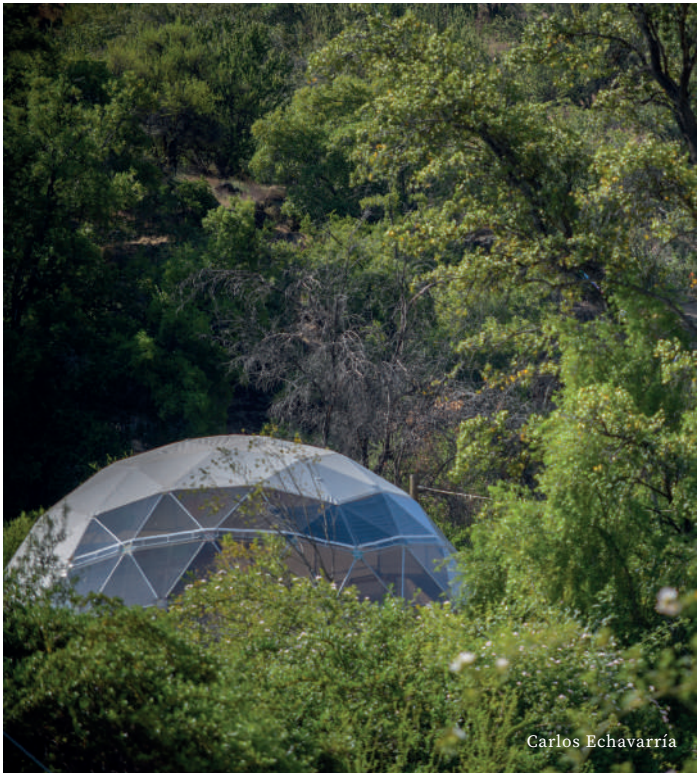

Carlos Echavarría


Espino

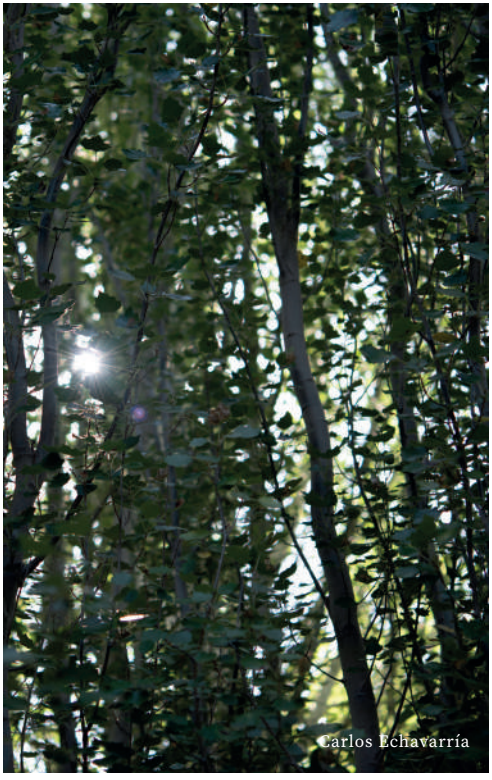

Loica

Thin Tree Lizard
Carlos Echavarría

Sebastián Tirado



Carlos Echavarría



Carlos Echavarría

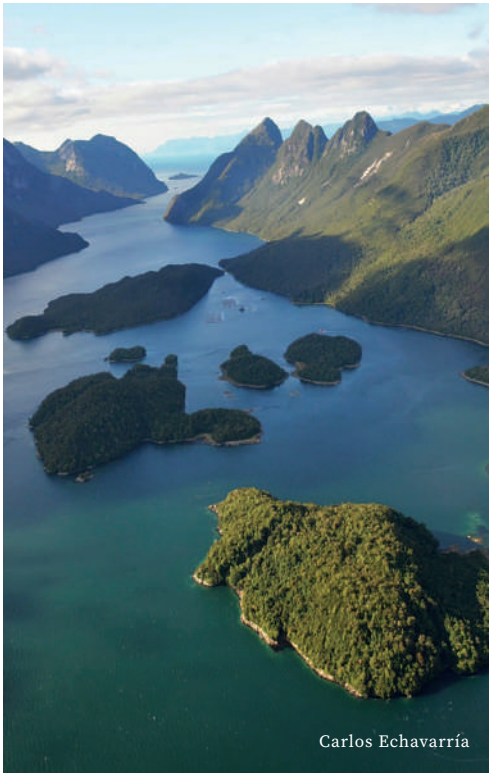
RESERVA
ELEMENTAL
MELIMOYU


Carlos Echavarría


Melimoyu Elemental Reserve / Eduardo Sorensen


Carlos Echavarría


Ricardo Concha



Carlos Echavarría

Ricardo Concha

Kingfisher / Carlos Echavarría

Elemental Reserves in Times of Crisis

In the context of our current Climate Change (CC) crisis, the Elemental Reserves, given their geographical locations and biodiversity, are more relevant than ever as bastions of ecosystem conservation, as well as being strategic locations for national campaigns of Effective Conservation and scientific research.

As our reserves are located along a strategic latitudinal axis, we are able to study environmental stressors and problems across a range of climate types. This will help us draw conclusions regarding how present and future generations can adapt to and/or mitigate the effects of the many changes we are observing.

In the short history of the Elemental Reserves, the MERI Foundation alone has set up and run 47 research projects in collaboration with over 20 research centers and Chilean and international universities. We have contributed to the training of over 150 undergraduate and post-graduate research students, and also to the creation and publishing of important scientific knowledge with papers in many different journals.

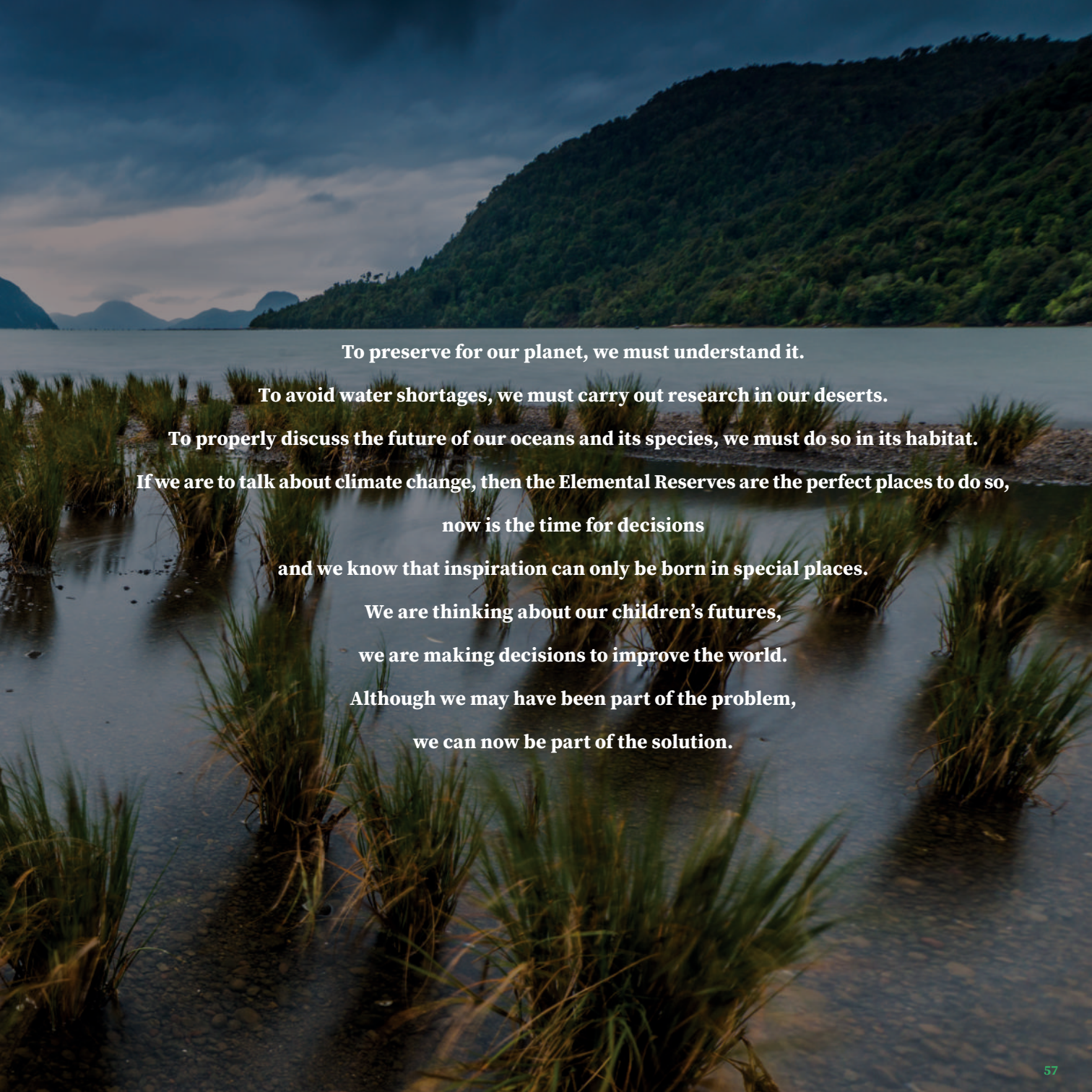
The challenge of successfully integrating science into local communities arises mainly from the need to get the community actively involved and participating in the programs at our Elemental Reserves, in order for community members to remain up to date on topics relating to the climate crisis.

We know that it is vital to collaborate in the creation of a society wherein the citizens take an active role in the solution of environmental problems. We are also aware of the need to encourage activities that will allow for the mitigation and reversal of the consequences of climate change for both present and future generations.

We are working diligently to ensure that the Elemental Reserves become areas that help us better understand our ecosystems, and that act as climate refuges for endangered species, providing environmental education programs that are relevant and beneficial to local communities.

San Pedro de Atacama / Kurt Cotoaga

Melimoyu Elemental Reserve / Eduardo Sorensen



To preserve for our planet, we must understand it.

To avoid water shortages, we must carry out research in our deserts.

To properly discuss the future of our oceans and its species, we must do so in its habitat.

If we are to talk about climate change, then the Elemental Reserves are the perfect places to do so,

now is the time for decisions

and we know that inspiration can only be born in special places.

We are thinking about our children's futures,

we are making decisions to improve the world.

Although we may have been part of the problem,

we can now be part of the solution.

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Quillay (*Quillaja saponaria*)

RESERVA
ELEMENTAL