Route Chart

Science, Technology, Knowledge and Innovation for the Austral Macro-Zone in Chile (2020-2030)

NODO CIENCIA AUSTRAL

Science, Technology, Knowledge and Innovation for the Austral Macro-zone in Chile

(2020-2030)

Project Execution:

Universidad de Magallanes

Universidad de Aysén

INACH Instituto Antártico Chileno

ciep

Sponsored by:

Spanish version

www.nodocienciaaustral.cl

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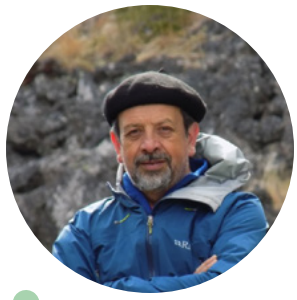
Nodo Ciencia Austral aims to support and co-run territorial public policies regarding the process of decentralization in Chile, creating a bond with citizens, public organizations and the private world to progress in the positioning, sustainability and strengthening of science, technology and knowledge for the Austral Macro-Zone

FOREWORD

DR. JUAN CARLOS ARAVENA
Director of Nodo Ciencia Austral



The creation of Nodo Ciencia Austral has opened a new scenario, allowing representatives from Aysén, Magallanes and Chilean Antarctic to plan together the development of science, technology, knowledge and innovation (STKI) for their territories.

Nearly two years later after the beginning of this experience, a broad team of almost 30 professionals—including scientists, psychologists,engineers, journalists-; all of them from the Austral Macro-Zone— met every week with the aim to strengthen the territorial linkage of the STKI ecosystem within the macro-zone and create a Route Chart for the next ten years. We also recognize that this has been an opportunity for the governance of local institutions and actors to be part of the different initiatives developed. Some of the outcomes from this period have delivered a robust assessment of the scientific abilities and the data systematization in the territories, along with a collaborative network. The above-mentioned processes, a territorial characterization has been made, which has allowed us to identify territorial conflicts, gaps and niches, which in turn have enabled the visualization of the challenges upon which it has been possible the creation of initiatives and projects. This has allowed us to elaborate programs and activities for the Route Chart.

Nodo Ciencia Austral plays a part as supporter and co-agent of a territorial public policy consistent with the process of decentralization that Chile is facing. Therefore, the binding with the society, public organisms, and private actors is strengthened. As a result, the ecosystem STKI in the macro-zone improves its territorial positioning, sustainability and consolidation. In this scenario, climate change and conservation from a biocultural perspective rise as the main points from which design the development of Science within the Chilean austral zone, highlighting its importance for global processes with high impact in the wellbeing of local communities.

After months of work and participative agencies such as the Comité de Coordinación Macrozonal (Macro-zone Coordination Committee)—gathering more than 400 agents from the scientific-technological ecosystem in the territory—, the work in NODO started aligning with other relevant roles, such as serving as common land to suggest new initiatives from the same interdisciplinary and interregional team. For instance, the Nodo was strengthened, the Subantarctic Natural Laboratories and an open science project. Furthermore, we are planning a third year of Nodo Ciencia Austral, thanks to the new call opened by the National Agency for Research and Development to give continuity and funding to these initiatives. These progresses guarantee that the instrument Nodo will become permanent. This has been an unexpected outcome.

DR. CAROLINA GAINZA
Undersecretary of the Ministry of Science,
Technology, Knowledge and Innovation

«I have enjoyed and suffered the patagonian meadows in the deadly stillness of snow and in the futile tragedy of the winds, and I treasure them as a motherland double and contradictory of tenderness and desolation»

GABRIELA MISTRAL. *DESOLATION*, 1922

The Ministry of Science, Technology, Knowledge and Innovation has the aim to democratize knowledge. Therefore, the ministry's current task is the creation of public policies and programmes that benefit the link between investigation works from diverse areas of knowledge and social, political, economic and cultural wellbeing. Carrying out this task means to develop new forms of sensitivity in order to be able to listen, pay attention and understand diversity and the several challenges in the different territories and regions.

Consequently, a main principle of this Ministry is decentralization. Understanding that this is not only a task for the territories, but, even more important, it is a work to create and cooperate with the territories, in such a way that programmes, actions and initiatives rise from the dialogue and effective linkage with the people inhabiting all regions of Chile.

This decentralization and sensibilization task is particularly important in the Austral Macro-Zone, which has been defined as an entrance to the imaginaries, ways of living and social and natural landscapes in the subantarctic and antarctic territory. The region of Aysén represents the starting point to Chilean Patagonia, with protected wild areas being more than half of its land and 17 sub-antarctic territories, among parks, reservations and monuments. The region of Magallanes and Chilean Antarctic, in turn, has 11 protected natural territories, between

parks and reservations. Since 1978, this region has been recognized as the entrance to the Antarctic and Cabo de Hornos; and, since 2019, is recognized as a natural laboratory. Thanks to the presence of diverse research centers and their multiple international relations, in 2020, the Chilean Antarctic Statute announced a national plan for the development of scientific research in the area, which will allow the region to become an entrance and niche for the international development of Antarctic scientific research.

During two years, Nodo Ciencia Austral conducted an exceptional work in order to characterize and socialize the potential of intersectoral collaboration and transdisciplinary research, with the aim to picture new futures and opportunities within these two immense entrances. In this sense, assessments and reflections presented here will contribute widely to the strengthening of the knowledge ecosystem and to share the results and impacts from R+D+i, according to the local needs and opportunities and to the economic, cultural and social welfare for the residents of the Austral Macro-Zone.

In a sense, it could be declared that with this book the different teams from University of Magallanes, University of Aysén, Chilean Antarctic Institute and the Ecosystems Research Center of Patagonia follow the pioneer path of Gabriela Mistral, who in 1922 arrived in Punta Arenas to develop learning and knowledge spaces, where seemed to be impossible before, to the end of the world; a mission facing distance and desolation from the opportunities and tenderness provided by knowledge.

We strongly believe in the value of diversity of point of views given by those who cohabit a same territory, from their own uniqueness, knowledge, interactions and places

PATRICIA MUÑOZ PALMA
Deputy Director of Networking, Strategy, and Knowledge, National Agency of Research and Development of Chile (ANID by its Spanish acronym)

In the National Agency of Research and Development we have focused on strengthening the territorial point of view when it comes to design our new instruments, therefore providing answers to the necessities coming from territories with diverse realities and consequently with different challenges for the development of science, technology, knowledge and innovation in Chile.

This territorial approach needs, undoubtedly, the point of view offered by the different actors functioning in each territory, particularly in times where our citizens demand more participation and involvement in the design of actions generated by the government.

Beyond this civic perspective, we strongly believe in the value in diverse points of view given by those who cohabit a same territory, and reflect from their singularities, symbols, knowledge, interactions and places. This form to understand the relationship between science and society allows us to bring the different realities to our consciousness, enabling the integration of new knowledge.

The book in our hands synthesizes and describes the work of the first two years of Nodo Ciencia Austral execution. We celebrate this work, which has been carried out in a collaborative and participative manner, increasing

the link between science and the people. Being able to articulate the different academic entities, public, private and civil organisms, chasing a common goal, that resulted in a Route Chart of the STKI for the Austral Macro-Zone, looking to the year 2030.

The findings of Nodo during the assessment stages and the detection of gaps are the fruit of these two years. The information-gathering considered surveys to the citizens, participatory conversations, diffusion and dissemination activities as a way of joining-construction of science, technology, knowledge and innovation development for the Aysén and Magallanes and the Chilean Antarctic regions.

In addition, the articulation organized by Nodo enables the coordination of the work of different public and private organizations under a common agency: the Macro-Zone Coordination Committee (MCC). This has permitted delivering consistency to the work, prioritizing goals, needs and urgencies in the Macro-Zone.

Being able to get closer to a Macro-Zone Governance System and to a Open Science Model capable of democratizing the access to scientific information, plus the Manage of Initiative in STKI, are the three main points of action addressed by Nodo Ciencia Austral, with the aim of decrease the gaps detected during the assessment stage.

As National Agency of Research and Development, we agree on the relevance these three points have for the development of STKI within the Macro-Zone, and we renew our agreement to accompany this process, putting a disposal our human and technical teams, systems and scientific information platforms, and also constantly rethinking our instruments so they can respond to the challenges brought by the climate change crisis, heritage and biodiversity care, intercultural integration and other global phenomena occurring in the Austral Macro-Zone.

CHAPTER 1

Nodo Ciencia Austral

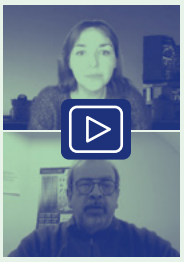
The project Nodo Ciencia Austral aims to favor researching, development, innovation, and entrepreneuring for the Austral Macro-Zone

¿WHAT IS NODO CIENCIA AUSTRAL?

The project Nodo Ciencia Austral is an initiative seeking the strengthening of the science, technology, knowledge and innovation system (STKI) for the Austral Macro-Zone in Chile. Furthermore, Nodo wants to facilitate results and impacts from researching, development, innovation, and entrepreneuring (R+D+i+e) to society, delivering solutions adapted to local needs in order to create greater impact on cultural, social, and economic wellbeing of citizens.

On one hand, Nodo aims to identify gaps stopping scientific and technological development among Aysén and Magallanes and Chilean Antarctic areas. On the other hand, Nodo seeks to define priorities and propose a strategy for the Macro-Zone. In order to reach those goals, Nodo has defined as specific goals establishing and coordinating a collaborative network for the R+D+e system; creating an intersectoral and local assessment for building and setting up collaboratively a Route Map and urgent projects to benefit the Regions.

The Nodo project «Node for the Acceleration of STKI Territorial Impact 2020» is carried out by University of Magallanes (UMAG), University of Aysén, the Research Center in Patagonian Ecosystems (CIEP by its spanish acronym) and the Chilean Antarctic Institute (INACH by its Spanish acronym), and funded by the National Agency of Research and Development (ANID).



Play video

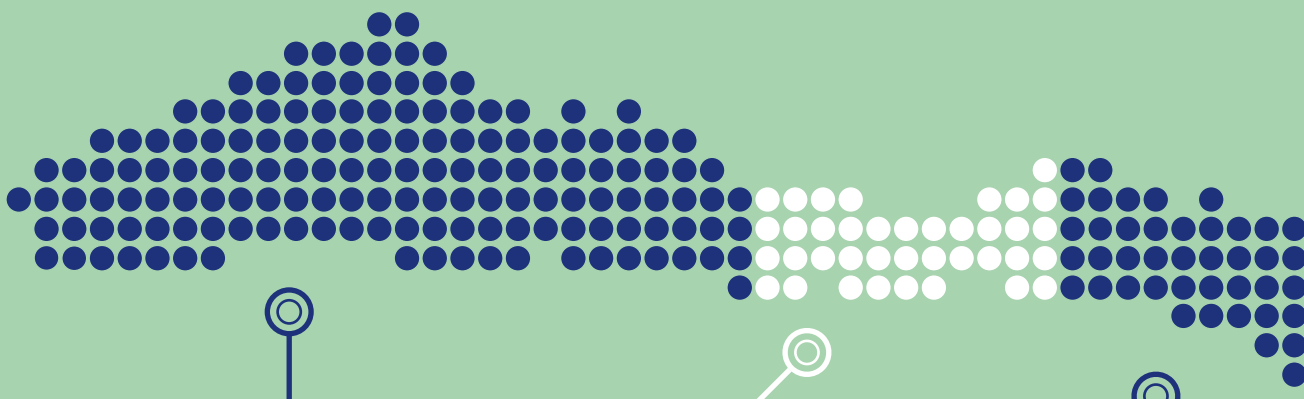
Watch an interview with Dr. Juan Carlos Aravena, director of Nodo Ciencia Austral

NATIONAL NODOS

Working in "nodes" means that the ecosystem of STKI is created by different agents (research institutions, government and non-government organizations, diverse companies, universities, educative centers and citizens, among others), and that such ecosystem constitutes a complex net of nodes interacting according their different activities, goals and interests boosting creation, transferring and interchanging knowledge. (National Strategy for Innovation STKI).

At the end of 2020, Deputy Direction of Networking, Strategy and Knowledge executed the first call for Nodo Instruments seeking the Boost of Territorial Impact of STKI, aiming at the articulation of local ecosystems of STKI. During these first two years of working they have been able to identify and recognise the gaps in the development of STKI among five Macro-Zones in Chile. They have established main priorities according to the needs or specific areas, and they have created or proposed different Route Maps (RM) to address them.

Thus, the five Nodes functioning among the country have identified gaps and carried aout development designs, building in an articulated participative and collaborative manner with different agents, the diverse territorial challenges in STKI.



NORTHERN ZONE

Northen Macro-Zone STKI Node

Arica and Parinacota, Tarapacá, Antofagasta and Atacama

www.nodomznorte.cl

CENTRAL ZONE

Node CIV-Val

Valparaíso and Coquimbo

www.nodociv-val.cl

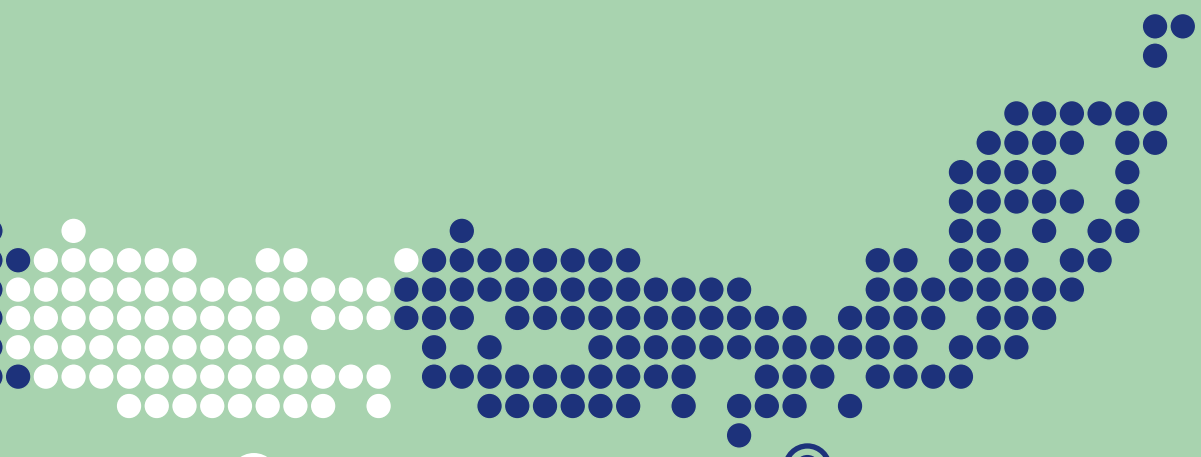
CENTRAL SOUTHERN ZONE

Central Southern STKI Node

O'Higgins, Maule, Ñuble and Biobío

www.nodocs.ctci.cl

Throughout Chile, ANID has allocated five Nodes to Boost the Territorial Impact of STKI, focused on needs and opportunities for the different Macro-Zones



SOUTHERN ZONE

South Connection Node

Araucania, Los Rios and Los Lagos

www.nodoconexionsur.cl

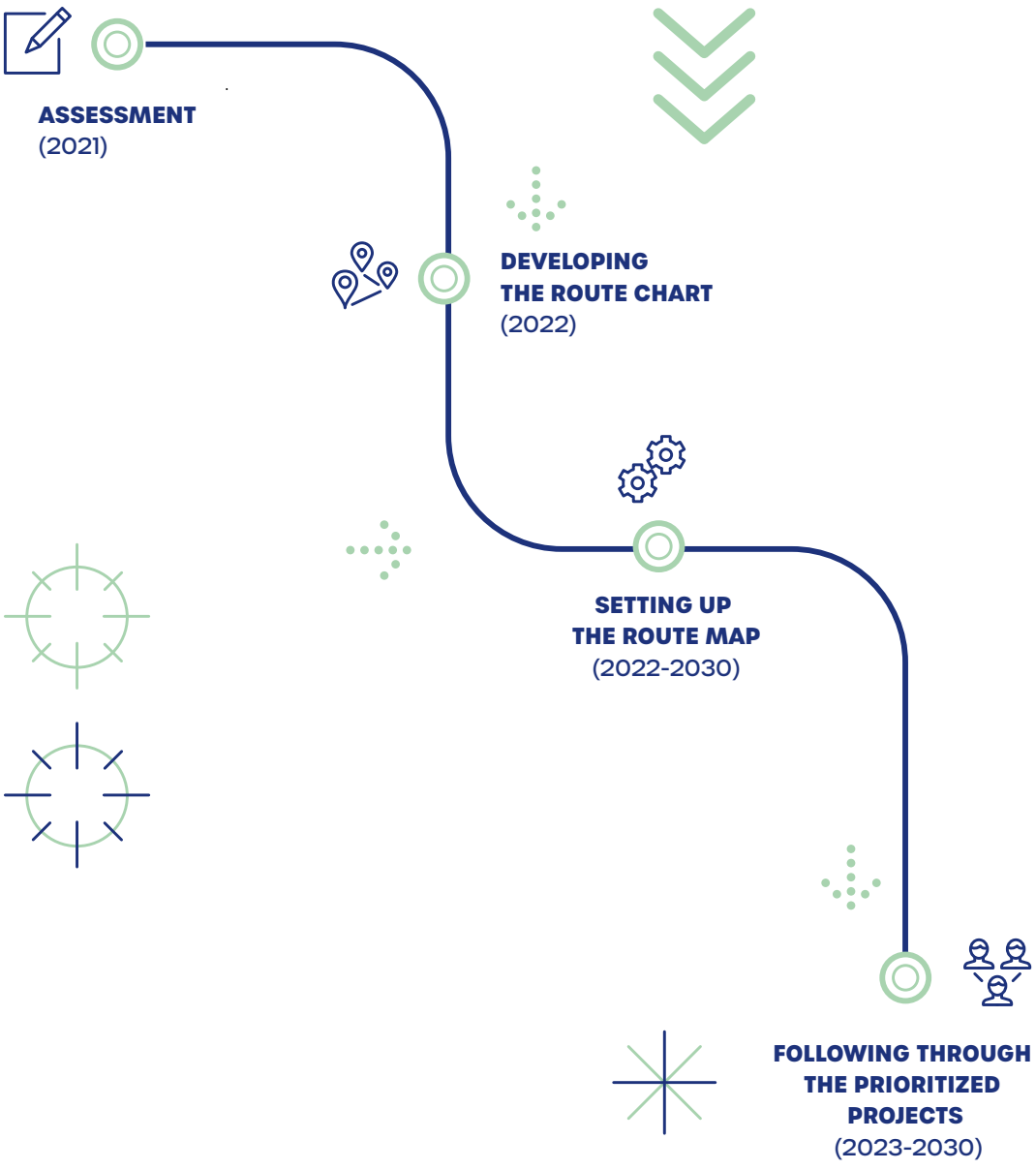
AUSTRAL ZONE

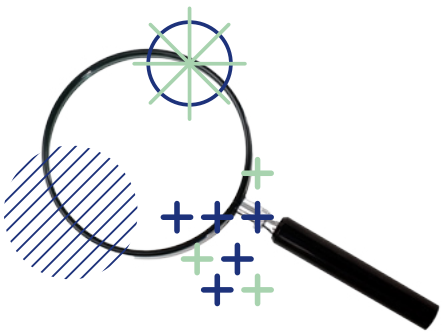
Austral Science Node

Aysén and Magallanes and Chilean Antartic

www.nodocienciaaustral.cl

PROJECT STAGES



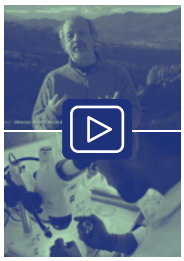


The first stage was to perform an intersectoral and a specific assessment. The first mentioned assessment identified the main socio-economic trends, the long term transformations, socio-environmental and socio-cultural controversies and conflicts; and also the priorities of public policies. The specific assessment analyzed human capital attributes, the educational offer, facilities, and specifically identified the lines of scientific and technological research.

In order to perform the above-mentioned assessment, political analysis instruments were carried out, and; a database from projects and publishings publicly available was created. All which has been used, through participative processes, to build up the priorities of topics related to science, technology, knowledge and innovation (STKI) for the Austral Macro-Zone, whose main outcome has been the Route Map from 2020 to 2030.

CHAPTER 2

Assessment of the Austral Macro-Zone



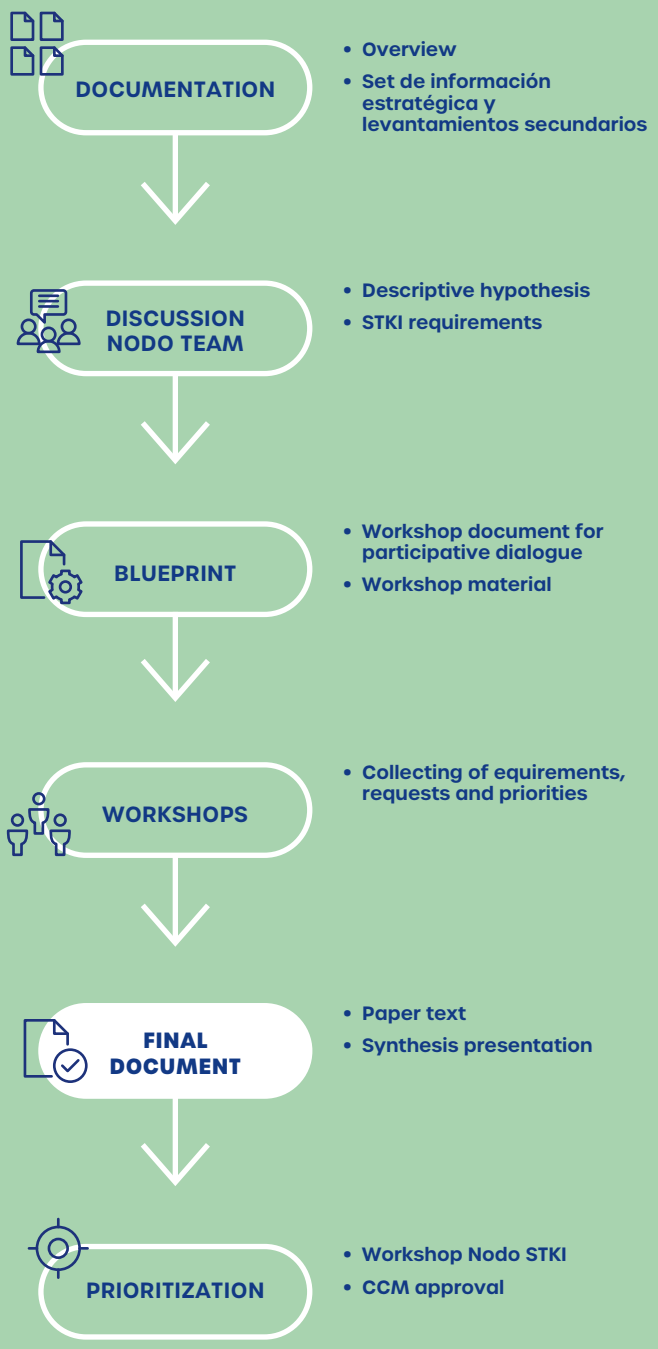
Play video

Watch this assessment video

The relevance of knowing the specific capabilities in the Austral Macro-Zone is vital to enable an integrated perspective of the different realities in Chile for the creation of public national policies for science and technology.

In this sense, Nodo Ciencia Austral aimed to: identify the gaps impeding scientific-technological development, establish priorities, and recommend a strategy to strengthen the local ecosystem of STKI.

ASSESSMENT PROCESS



METHODOLOGY

The first stage of Nodo Ciencia Austral consisted on developing an intersectoral assessment and a specific assessment about the economic and social state of the regions of Aysén and Magallanes and Chilean Antarctic, prioritizing constitutive and long term aspects, aiming to identify useful elements for the creation of policies about productive promotion, as well as science, technology and innovation policies. During this phase,instruments and participative processes were analyzed. Then, they were systematized according to the main topics related to STKI for the Austral Macro-Zone that helped to draw the Route Map to 2030.

The **intersectoral assessment** includes a general presentation, an analysis of STKI abilities in the Macro-Zone and the territorial development. Also, it presents a preliminary study which identifies socio-economic and public policies characteristics and challenges; controversies, demands, and requirements for the environment of Austral Macro-Zone according to the scientific and community point of view.

The **specific assessment** analyzes the abilities in STKI in the Macro-Zone according to seven variables requested by the ANID: investigation, scientific based innovation, human capital, facilities, equipment, partnerships, and natural laboratories. This allows the creation of indicators through collection of data and to identify the most explored investigative and developing lines in both zones.

These assessments collect participative, documental, quantitative, and qualitative information. For the participative process, meetings and workshops were performed with the Government Macro-Zone Coordination Committee, with the Broaden Committee and Citizens

Dialogues. The preliminary results led to the elaboration stage of a Route Chart.

The assessment stage was built up from the participative process, which invited key agents in the Macro-Zone to be part of broader workshops and citizen dialogues in order to validate progress, collaborate in the definition of priorities and specific areas of the ecosystem. Finally, to generate costumed solutions for the local needs.

ASSESSMENT CENTRAL CONCEPTS

- Research
- Scientific based innovation
- Human capital
- Facilities
- Equipment
- Partnerships
- Natural laboratories

Intersectoral Assessment and Baseline Study

RONALD CANCINO • Research Group on Complexity, Culture, Science and Technology. Southern Social Research Center UFRO

FELIPE BUSTOS • Senior Coordinator for Specific and Intersectoral Assessments. UFRO

MANUEL MORA Analysis • Scientific and Technological Capabilities. UFRO

YENNIEL MENDOZA • STKI Indicators and Macrozonal Analysis. UFRO

MARCO HERRERA • Regional Socioeconomic Analysis. UFRO

CAMILA ACEVEDO • Socio Ethnic Policies and Controversies. UFRO. Databases

INFORMATION SOURCES

- Participative workshops with academic and public sector agents.
- A socioeconomic assessment that analyzes transformations since 1960 until today.
- Studies that analyze current instruments for public policies.
- Specific scientific abilities analysis from scientific publishings (WOS, Scopus and SciELO) y ANID projects, Corfo, FIA, Inach, and others, from 2015 to 2020.

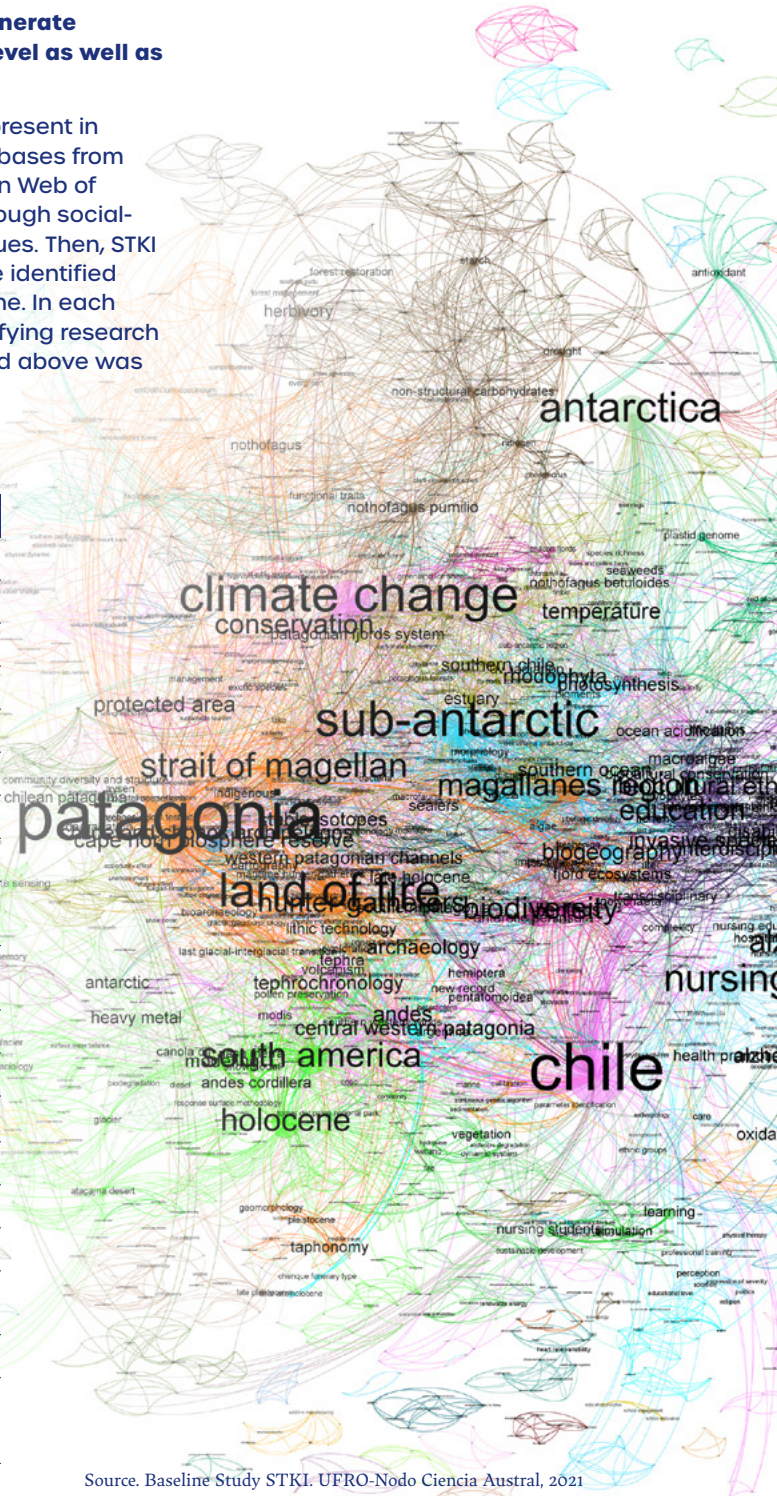
Main Findings

Knowledge creators, through their work, generate recognizable research lines on a personal level as well as for the territory where they work.

To be able to identify which STKI abilities are present in the Macro-Zone, during the assessment, databases from scientific projects and publishings available on Web of Science, Scopus and SciELO were created, through social-cognitive nets and using lexicometric techniques. Then, STKI areas and the most developed concepts were identified within the researches in the Austral Macro-Zone. In each area, a deeper analysis was conducted,identifying research lines and challenges for the STKI. All mentioned above was used as a key input to create the Route Chart.

RESEARCH LINES IN THE MACRO-ZONE

- **Biomedicine, biomolecular and aging**
- **Early settlements and paleoenvironment**
- **Climate change**
- **Paleoclimate and paleoenvironment**
- **Forest ecology**
- **Subantarctic macroalgae**
- **Conservation and protected areas**
- **South America-Antarctic Connection**
- **Collaborative Biocultural and Teaching Ethics and Perspectives**
- **Patagonic Archipelagos and Marine and Terrestrial Ecosystems**
- **Subantarctic Algae Bioresources**
- **Lakes Carbon Balance**
- **Nursing, Promotion and Health Education**
- **Western Central Patagonia Archaeology**
- **Dendroecological Studies**
- **Marine Biodiversity and Benthic Communities**
- **Natural Products, Functional Nourishment, and Health**
- **Patagonic Archipelagos Archaeology**
- **Modeling of Antropic Distress Dynamics and Resilience for Sustainable Development and Torres del Paine**
- **Patagonic Fauna and Megafauna**



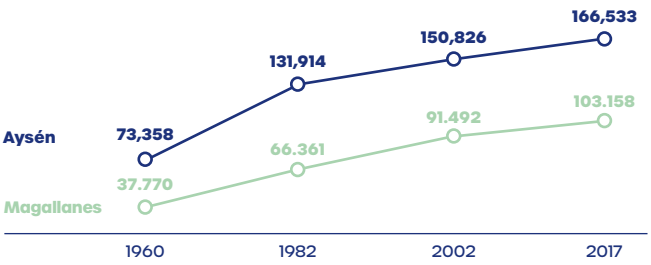
Source. Baseline Study STKI. UFRO-Nodo Ciencia Austral, 2021

During the last years, a growing population has been experienced in the Macro-Zone, which in turn, has brought an urban development, mainly in the Region of Magallanes and the Chilean Antarctic

Aysén
REGIONAL CAPITAL:
COYHAIQUE

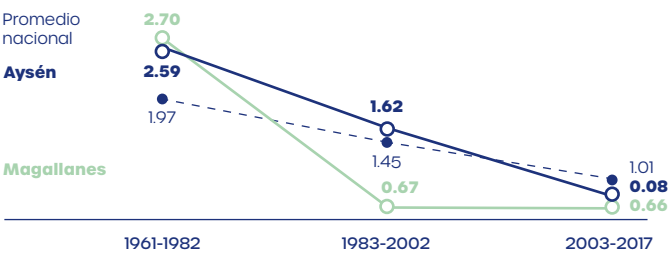
Magallanes and the Chilean Antarctic
REGIONAL CAPITAL:
PUNTA ARENAS

Aysén and Magallanes total population



Source: Population and Housing Censuses

Annual Population Growth Rate

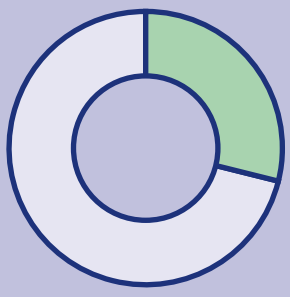


Source: Population and Housing Censuses

The fishing and chemical industries have high levels of productivity in Magallanes, which may catalyze the research line priorities in the territory

30%

Aysén fishing contribution to the Chilean GDP



22%

Magallanes manufacturing contribution to the Chilean GDP

GDP Percentages for Sectoral Frameworksin 2019

	GDP Percentage in 2019		
Sectors	**Aysén**	**Magallanes**	**Nacional Total**
Agropecuary-silvicolous	1.54	1.22	3.11
Fishing	**29.62**	3.74	0.64
Mining	0.00	7.59	10.71
Manufacturing Industry	5.14	**22.11**	11.26
Water, Gas and Power Supply, and Waste Management	0.51	2.35	2.94
Building	5.75	6.46	6.90
Commerce, Restaurants and Hospitality Industry	6.48	8.58	12.20
Transportation, Information and Communications	**10.28**	**10.33**	9.40
Financial and Business Services	**8.51**	**10.16**	16.79
Housing and Real Estate Services	4.96	6.40	8.20
Personal Services	**12.89**	**10.44**	12.76
Public Administration	**14.33**	**10.63**	5.10
GDP at Factor Cost	100.00	100.00	100.00

Source: Authors' work based on Central Bank, Chile statistics.

A deeper education specialization and human capital encouragement according to the territorial characteristics

Workers Schooling Percentage by Sectors, 2017

Sectors	Aysén	Magallanes	National Average
Agriculture, Cattle Industry and Silviculture	7.62	9.72	8.83
Fishing	9.84	9.90	9.89
Mine and Quarry Extraction	12.61	13.94	12.98
Manufacture Industries	10.73	11.24	11.65
Power, Gas, Water Supply	12.01	12.78	12.63
Building	9.89	10.54	10.88
Wholesale and Retail Commerce	11.30	11.65	11.67
Hospitality Industry and Restaurants	11.32	11.98	12.10
Transportation, Storage and Communications	11.12	11.87	12.06
Financial Intermediation	14.12	13.90	14.83
Real-Estate, Rent and Business Activities	13.11	13.03	14.07
Public Administration and Defense	13.49	14.55	13.75
Teaching	14.45	14.86	15.11
Health and Social Services	14.92	14.92	14.89
Other Social and Community Services	12.18	12.92	12.85
Homes with Domestic Workers	7.95	9.23	9.62
Other Activities	12.00	13.00	12.82

Source: Authors' work based on CASEN 2017.

Workers University Degree Percentage by Sectors 2017

Sectors	Aysén	Magallanes	National Average
Agriculture, Cattle Industry and Silviculture	4.51	12.56	3.40
Fishing	7.54	6.88	6.19
Mine and Quarry Extraction	16.04	30.56	19.78
Manufacture Industries	3.54	6.34	10.50
Power, Gas, Water Supply	11.93	29.51	21.33
Building	7.58	7.96	9.33
Wholesale and Retail Commerce	8.56	8.85	8.60
Hospitality Industry and Restaurants	11.39	12.84	8.93
Transportation, Storage and Communications	7.31	10.50	10.78
Financial Intermediation	12.87	26.45	42.03
Real-Estate, Rent and Business Activities	24.44	24.17	36.46
Public Administration and Defense	33.90	35.37	32.61
Teaching	43.01	53.98	53.06
Health and Social Services	45.33	36.67	38.46
Other Social and Community Services	20.29	13.28	18.65
Homes with Domestic Workers	0.00	0.00	3.33
Other Activities	20.79	16.63	18.91

Source: Authors' work based on CASEN 2017.

- There is a low offer of strategic programs to attract and produce human capital, and training in specific skills for both regions.

- There is scarce regulation of extractive activities looking for an environmental equilibrium between all economic activities in the area.

- Peatland ecosystems are at risk due to high water demand for extractive activities.

- Mining in the area has pollution negative consequences and an excessive use of water; mining tailing location, and environmental destruction such as forest, valuable ecosystems and carbon reservoirs.

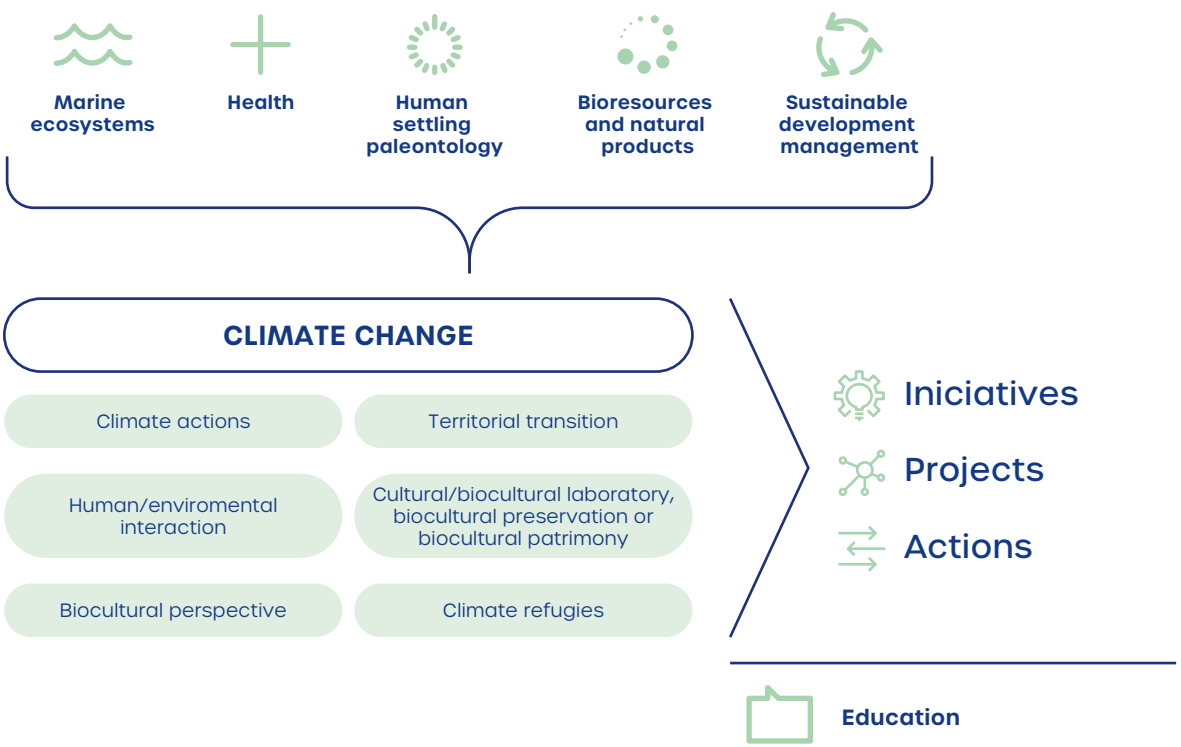
- Aquaculture industry overloads the ecosystems and affects shore collectors and craft fishing, and contributes to water pollution.

- A greater amount of initiatives related to science, technology, knowledge and innovation is observed in Magallanes compared to Aysén, therefore, the kind of incentives will differ according to the area.

PRIORITIZED AREAS

Prioritized areas were defined from the assessment of scientific abilities and dialogues with agents from the Macro-Zone. Eight strategy areas have been identified. Challenges for such areas are selection and prioritization for the Macro-Zone. Education was considered a topic crossing all areas.

It has been defined that climate change is the area that allows for the articulation and enhancement of capabilities in science, technology, knowledge, and innovation in the Austral Macro-Zone.



GAPS AND OPPORTUNITIES IDENTIFIED

Training and insertion of human capital

- Training, retention, and attraction of advanced human capital, and training in specific competencies.
- Improvement and specialization of human capital.
- Definition of priorities for a regional program of advanced human capital training, articulated with incentives for attraction and retention.

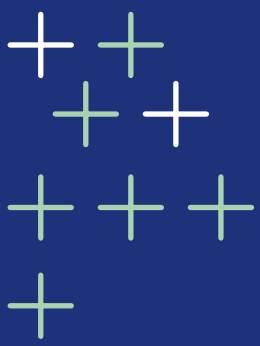
Networks (Strategy and Knowledge)

- Strengthening of conditions that facilitate the development of STKI.
- Establishing relations between scientific research and the territories.
- Delivering Information and knowledge according to the main topics, conflicts and controversies.
- Promoting interdisciplinary and transdisciplinary perspectives and creating new models.
- Portfolio of projects and initiatives for the strengthening of institutions and Austral Node in order to bring together the different agents.
- Bringing together and defining programs with a solid territorial priority in the analysis and management for the STKI considering the impacts of extractive activities.
- Designing and delivering of information and knowledge systems about territories, projects, scientific and territorial impact, among others.
- Defining territorial research and valuing the scientific and natural spontaneity.

GAPS AND OPPORTUNITIES DETECTED

Applied Research and Innovation

- Researching agenda about territorial transformations and new social demands.
- Management units strengthening for the innovation in the process of relevance and management of technological innovation for plans management and collection for technological developments and innovation and productive chaining portfolios based on STKI.
- Research agenda focused on the socio-environmental effects and impacts analysis and the consequences for tourism, and the scientific research lines.
- R+D+i agendas well territorialized and capable of connecting with law plans (or nourish them).
- R+D+i agenda to support the management of atmospheric pollution and waste management
- Establishing, with regional universities, industry related scientific-technological development plans.
- Coordinated agenda focused on STKI with a territorial focus and management in the rural areas.
- Cultural service supply based on the social value and appropriation of local and global science.
- Organization of research and development abilities in tourism with local networks, as well as R+D+i lines related to marine and terrestrial ecosystems, climate change, archaeology and products development based on natural resources.
- Research program and initiatives organized between STKI institutions related to art, culture and territorial and regional identities.
- Strengthening of management of innovation units in institutions of regional STKI.
- Differentiated agendas in research for the STKI collection of demands in Aysén and Magallanes.



Organization, Instruments and Regulations

- **Establishing R+D+i programs linked to constant funding.**
- **Supporting the creation of a environmental, scientific and regional civil governance and a macroregional of analysis, keeping, protection and conflicts and controversies management.**
- **Collecting change, adjustments, and new instruments of development suggestions, investment programs and agreements to program a decentralized governance of STKI.**
- **Creating scientific expert networks to decide based on evidence**
- **Updating policies about climate change and pandemics.**
- **Agendas and solid scientific abilities related to analysis of risks and impacts in «controversial areas».**
- **Enhancing the abilities of regional governors for a decentralized governance of STKI.**
- **Showing proposals of design and alignment of public policies about STKI challenges.**
- **Defining agendas, investment programs and organization to create proper conditions based on STKI.**
- **Sector Prioritizing for growing and productive transformation based on STKI and creation of new sectors.**
- **Strengthening the information and indicators system of STKI for tracking, monitoring and assessing impacts.**

CHAPTER 3

Development of the Route Chart

Play video

Watch this video about the assessment process

After the successful first year in the assessment stage, the process of developing the route chart began, based on the main action areas according to the needs of the Macro-Zone.

MAIN ACTION AREAS

After the assessment of the Austral Macro-Zone in the first stage of Nodo Ciencia Austral, the plan for the route chart was developed based on cross-cutting main action areas of the project, which helped define and delimit the rest of the process. In addition, the support for prioritized initiatives or projects was studied by formulating at least two pilot initiatives, which are currently in progress.

All these actions aim to generate greater participation from key agents in the initiatives promoted by Nodo, in the appropriation of these topics by civil society, and in the establishment of a permanent governance proposal for the STKI in the Austral Macro-Zone.

In 2021, Nodo Ciencia Austral won the project «Strengthening the Nodes to Boost the Territorial Impact of STKI 2021», to reinforce the execution during the second stage

Macro-Zone Governance System

Open Science Model

Initiative Management in STKI

MACRO-ZONE GOVERNANCE SYSTEM

The first central topic aims to design a system that counteracts the fragmentation problems, the lack of organization and the scarcity of coordination among agents involved in STKI matters in the regions of Aysén and Magallanes and the Chilean Antarctic. In this way, the project seeks to promote the coordination of relevant actors in these areas, consolidating the Macro- Zone Coordination Committee (CCM by its Spanish acronym) to plan it as a permanent collaborative workspace. Based on the 2021 assessment and previous work, it was established that the development of the STKI in the Macro-Zone must prioritize two challenges: climate change and conservation from a biocultural perspective. Therefore, during 2022, work was done on the design of a STKI governance system for the Macro-Zone, which counteracts problems that are expressed, for example, in the duplication of efforts in addressing critical issues such as the effects of climate change on the territory.

For this design, document review, interviews with NODO members, a descriptive organization by roles according to mandate and review from interviews were used, and finally, the collected information was systematized. Then, the governance instances of the STKI currently in operation in the Macrozone were identified, including their objectives, activities, procedures, participants, roles, and responsibilities. The regulatory framework for the governance of the STKI was also characterized, with a clear and comprehensive description of the legal and administrative components in which any new governance design proposed must be located. The literature on STKI governance was reviewed to integrate theoretical, conceptual, and methodological approaches developed in Chile and other countries in the design of a model contextualized to the territorial reality.

Based on this information, a proposal for a STKI governance model for the Southern Macro-Zone will be designed, co-constructed and validated by the expanded CCM and various local actors from the macrozone, with special participation from the regional governments of Aysén and Magallanes and the Chilean Antarctic and the Ministry of Sciences.

The first main point aims to design a system that counteracts the problems of fragmentation, lack of articulation, and little coordination of agents.

Learn more

UNESCO Recommendation on Open Science

Watch video

Click and watch the video "Open Science"

The second main point seeks to democratize access to information on STKI generated in regional universities and professional institutes towards the communities of the Southern Macro-Zone. To do this, the recommendations of UNESCO will be followed, which will facilitate a more open, accessible, efficient, democratic, and transparent process of development and dissemination, in line with the Sustainable Development Goals, and international instruments for human rights and protection of the rights of indigenous people.

In this way, a work guideline was defined for the coming years to promote open sciences within the Macro-Zone. An assessment was prioritized that identifies the research data management capabilities and scientific information of member institutions of the Node, through surveys of researchers and interviews with key agents, and the characterization of sources and institutional initiatives for access to data and scientific and technological information from institutions identified as relevant, as well as workshops to collect proposals for the Node.

It was also proposed to develop a course based on UNESCO's recommendations on open science, aimed at all people interested in the generation and transmission of knowledge, such as teachers, researchers, public officials, artists, artisans, and professionals linked to knowledge transmission. This instance seeks to enable key actors to share a common language and enhance collaboration spaces; learn about the development of open scientific knowledge; follow the best use and participation in shared research facilities; and generate more inclusive and accessible knowledge and scientific processes for the community, with open dialogue between different knowledge systems. Ultimately, people who complete the course will be invited to join an Open Science Table, where work will continue on implementing the concept through a macrozonal program associated with the Route Chart to promote this new paradigm in the way of doing and understanding science, taking into account the needs and particularities of the territory.

Finally, the development of a web geoportal was prioritized to facilitate both access to scientific information and the co-construction of knowledge around the relevant issues for the Macro-Zone: climate change and biocultural conservation. In this way, it is hoped to address one of the most sensitive issues for the advancement of open science in the Macro-Zone: the difficulty of establishing collaborative, effective, and impactful dialogues between centers that generate scientific knowledge and the rest of society. This includes influencing public policies, cooperating with the private sector, and involving local communities in both accessing and generating knowledge.

The second main point aims to democratize access to information generated in universities and regional professional institutes for the communities.

Open Science Week

During October 2022, the Nodo Ciencia Austral implemented the «Open Science Week.» Initiative, which seeks to create a participatory space to inform, educate, and sensitize agents in the STKI ecosystem of the Macro-Zone about the concepts, values, needs, and international institutional framework that promotes open science.

The week included activities such as virtual seminars, field trips with students and families, plays, and conversations surrounding the «Citizen Perception Survey on STKI in the Macro-Zone.» These activities received support from institutions such as Explora Aysén, the Regional Ministry of Science, researchers from the Center for Research in Patagonian Ecosystems (CIEP by its Spanish acronym), and the University of Magallanes.

The third main point aims to support promising initiatives that need to be prioritized according to the results of the Route Chart

The third main point aims to support promising initiatives identified during the assessment process. In the first instance, the goal is to create a portfolio of identified and prioritized projects, and then move on to the formulation of projects for their submission.

The Route Chart has considered the articulation of initiatives and projects according to the capacities and participatory activities in an ascending distribution.

This process has included the following activities:

- Transferring abilities on the methodology of the Route Chart to the Nodo's team.
- Spreading the Route Chart methodology to specific key agents.
- Developing file cards for each initiative or program with relevant information for key agents' evaluation.
- Validating and prioritizing programs through a survey and participatory activities such as the extended CCM.
- Updating programs and initiatives with agents who have expressed interest in participating or incorporating new initiatives through personalized interviews for each agent.
- Adjustments in the Route Chart.
- Bidding for the professional service to develop pilot initiatives.

FIRST SOCIAL PERCEPTION SURVEY OF SCIENCE FOR RESIDENTS OF THE SOUTHERN MACROZONE

Citizen evaluation of STKI in the Macro-Zone

During 2022, a team of researchers from Nodo Ciencia Austral organized the electronic survey «Citizen evaluation of priorities for the development of science, technology, knowledge, and innovation in the Austral Macro-Zone (Aysén and Magallanes and Chilean Antarctic)» as a manner of assessing the public perception regarding science, technology, knowledge, and innovation in the region.

The survey results show that respondents value science and believe it helps them in their lives, but they do not fully trust science and technology. Additionally, while they thought that STKI is important for regional development in the Macro-Zone, they considered the current competencies to not be particularly noteworthy.

Participants from Magallanes also expressed their perceptions about regional capabilities somewhat differently than what was expressed in the Macro-Zone results. For example, they ranked transportation and energy higher in their priorities than their counterparts in the Aysén region, but found fewer competencies in the area of education. Among the participants, 99.6% thought that STKI will bring benefits to the development of their region in the next twenty years.

To gauge their perception of the role that STKI should play in addressing the strategic challenges facing the Macro-Zone, they were asked to rank their importance in addressing the twelve challenges identified within the current Regional Development Strategies (ERD by its Spanish acronym) for Aysén and Magallanes and Chilean Antarctic. Although all the challenges were perceived as priorities for STKI over the next twenty years, participants expressed that the three highest priorities were «the transversal incorporation of appropriate conservation and environmental protection measures» (95.6%), «an efficient, diversified, and low-cost energy matrix for consumers» (95.3%), and «the value that inhabitants place on their environmental heritage through adequate mechanisms for its protection and sustainable use» (93.5%).

These results will be used to inform citizen priorities for the development of STKI, as well as contribute to policies and programs related to this matter, providing evidence for decision-making that allows for the implementation of the Route Chart with a focus on local priorities.

Areas of the survey

«The importance of science in your life,»focused on opinions about how participants value scientific and technological knowledge in their daily lives.

«The state of science in your region,» focused on perceptions of the current link between science, technological development, and the Macro-Zone.

«The future of science in your region,» focused on perceptions about the role of science and technology in the Macro-Zone over the next twenty years.

565
participants

51.8%
Men

45.6%
Women

310
Aysén Region

255
Magallanes Region

WHAT DO CITIZENS EXPECT IN THE AUSTRAL MACRO-ZONE REGARDING SCIENTIFIC DEVELOPMENT IN THEIR TERRITORIES?

About the relevance of science in life

«Science is the greatest collective endeavor. It contributes to ensuring a longer and healthier life, monitors our health, provides medicine to cure our diseases, alleviates aches and pains, helps us to provide water for our basic needs – including our food, provides energy and makes life more fun, including sports, music, entertainment and the latest communication technology. Last but not least, it nourishes our spirit».

Science for Society, UNESCO.

1 de 2

agreed that «science and technology are creating artificial lifestyles».

80%

answer that «science and technology are making our lives easier and more comfortable».

92%

perceive that science helps to «their world understanding», «monitor health and prevent diseases» and «preserve the environment».

53.8%

agree that scientific-technological development could help to decrease social inequalities.

71%

perceive that «science and technology are changing our lifestyle too fast».

REGARDING SCIENCE AND TECHNOLOGY DEMOCRATIZATION IN THE AUSTRAL TERRITORY

Many survey participants mentioned that communication between the scientific world and citizens can improve. The majority expressed a high interest in science developing in their regions and were willing to participate actively and add their own and communities opinions.

Regarding the state of science in their region

«According to your opinion, do you think your region stands out in the following areas?»

Nº	Category	Outstanding	Some capabilities	Non exceptional
1	Turism	83.2%	11.3%	5.5%
2	Agriculture and cattle industry	52.0%	28.0%	20.1%
3	Environment	40.7%	31.4%	27.9%
4	Energy	35.8%	26.7%	37.5%
5	Scientific research	28.0%	34.3%	37.8%
6	Art and culture	20.0%	29.1%	51.0%
7	Industrial development	19.3%	23.0%	57.7%
8	Sport	17.3%	31.0%	51.7%
9	Health	14.0%	29.9%	56.1%
10	Education	13.2%	34.5%	52.3%
11	Housing	12.2%	28.9%	58.9%
12	Transportation	11.1%	26.5%	62.5%
13	Technological development	7.9%	21.4%	70.6%

Note: Ranking related to the perceptions in the highlighted areas

89.9%

think that «citizens should perform a more important role in the development of science, technology and knowledge».

30.9%

disagree with the idea that «science, technology and knowledge should be in the hands of experts».

80.9%

are willing to «actively be involved in initiatives about science, technology and knowledge».

Regarding the future of science in their region

Survey respondents expressed a conservative optimism about the role of science regarding future priorities in the Austral Macro-Zone.

99.6%

think that STKI will benefit regional development within the next twenty years.

+95%

perceive that will imply some risk for the development of the region within the next twenty years.

Areas requiring a greater increases of resources related to STKI, during the next twenty years

Focus Areas in the Macro-Zone	Priority		
	High	Medium	Low
Research focused on climate change and its effects	86.7%	10.3%	3.0%
Life quality	73.9%	22.9%	3.1%
Natural, cultural and territorial heritage	68.9%	25.7%	5.4%
Territorial and population changes	65.0%	29.2%	5.8%
Regional economic development	63.3%	32.7%	4.0%
Decentralization process	63.3%	29.7%	7.0%
Social processes of territorial development	57.9%	35.3%	6.8%

SURVEY CONCLUSIONS

TRACE GALE

Researcher at the Patagonia Ecosystems Research Center (CIEP by its Spanish acronym), Associated Researcher at the Cabo de Hornos International Center (CHIC by its Spanish acronym), and Deputy Director of the Austral Science Node.

The results of this survey will be used mainly to inform the project on citizen priorities for the development of science, technology, knowledge, and innovation (STKI) in the Austral Macro-Zone. They will also contribute to policies and programs related to this subject, providing evidence for decision-making that allows for the implementation of the Route Chart in a way that addresses local priorities. There are many notable results, such as:

Although 83.8% of participants believed that STKI is currently important for regional development in the Macro-Zone, most participants considered current competencies not particularly outstanding.

With 88.6% of participants in Magallanes and 79% of participants in Aysén agreeing, tourism obtained the highest consensus as an outstanding area in the macrozone. Understanding and supporting the development of sustainable forms of tourism seems fundamental in the coming years, especially in light of the risks and implications of climate change.

Agriculture and cattle industry were other areas considered outstanding in the Macro-Zone by more than half of the participants; however, the results here were influenced by the high evaluations of competencies in Magallanes (65.2% outstanding, 21.7% some competencies, and 13.1% nothing exceptional); in contrast, perceptions of capacities in this area were more balanced in Aysén (41.8% outstanding, 32.8% some competencies, 25.4% nothing exceptional).

These results illustrate the need to take regional differences into account when planning STKI strategies. In the case of Aysén, the results suggest that future research and technology should facilitate and inform the development of outstanding capacities. Meanwhile, in Magallanes, STKI efforts should be based on strong foundations, helping to foster innovation and plan for changing conditions to protect and strengthen competitive advantages.

Another notable difference between the regions was in the perception of participants about regional capacities in the energy area. While energy was highly rated in Magallanes (57.7% outstanding), 53.3% of participants in Aysén considered current capacities as «nothing exceptional,» and only 18.8% considered them «outstanding.» Perhaps this is a reflection of the current impetus of «green hydrogen» in Magallanes and the limited energy capacity in the capital and other communities in Aysén. Moreover, throughout the Macro-Zone, participants from capital communities perceive regional energy competencies as significantly higher than participants living in other communities, which may reflect the limited energy capacity in the more remote areas of the Austral Macro-Zone.

NODO AUSTRAL AND NATURAL LABORATORIES

The concept of a natural laboratory, relatively recent in scientific literature, refers to delimited places with unique attributes, where geological or evolutionary natural processes can be studied. These processes can occur at all levels, from the microscale (such as in the collagen of a fossil bone) to the level of locality, country or continent (Australia, Antarctica), to the macro-scale of planet Earth. The areas of knowledge covered include earth sciences, medical, social, political, psychological, ethology, communications, among others.

With its great diversity of ecosystems and unique characteristics, Chile is a territory with high potential for the existence of Natural Laboratories. In the case of the Austral Macro-Zone, its channels and fjords (which lack an equivalent geographic replica in the southern hemisphere above 47°) and the presence of the southernmost sub-Antarctic evergreen forests in the world make this zone a key place for the identification, study, and conservation of Natural Laboratories.

In this scenario, the Nodo Ciencia Austral seeks to incorporate the concept of Natural Laboratory into the discussion among the various social and institutional agents of the territory, through a proposal that integrates the conception of social, cultural, and economic development of the Austral Macro-Zone. Thus, it is expected to establish and coordinate a collaboration network for the development of research in the Natural Laboratories of the Subantarctic Region Macro-Category, assembling needs with specific areas and providing information about itself and its environment.

The proposed participatory process will strengthen the current mechanisms of articulation, participation, and appropriation of STKI with the local sectors and interest groups. Its diagnosis will allow identifying and prioritizing specific needs or areas for the Austral Macro-Zone and the country and identifying interest groups and beneficiary sectors of these needs or areas, in accordance with pre-existing initiatives in the southern territory.

The concept of a *natural laboratory*, relatively recent in scientific literature, refers to delimited places with unique attributes, where geological or evolutionary natural processes can be studied

PARTNERSHIP PROJECT

In 2020, the concept of natural laboratories was incorporated into the proposal of Nodo Ciencia Austral. However, due to the magnitude of the work, in 2021 ANID opened a new exclusive call for Natural Laboratory Nodes, which was awarded and merged into the governance system. This initiative is a collaborative instance that aims to promote scientific activity for the development of the Subantarctic Natural Laboratory through the articulation of a collaborative network of actors in the STKI ecosystem.

The project is called «Collaborative Network for the Development of Subantarctic Natural Laboratories: Strengthening Scientific Research and its Socio-Environmental and Economic Impacts in the Austral Macro-Zone.» It was awarded in the «Nodes for the Development of Natural Laboratories Research in Chile, 2021 Call» competition by the ANID Subdirectorate of Networks, Strategy, and Knowledge in 2022, and is being executed by the University of Magallanes, the Research Center in Patagonian Ecosystems, the University of Aysén, the Pontifical Catholic University of Chile, and the University of La Frontera.

NODO
Laboratorios Naturales
Subantárticos

Read more

Click on the Subantarctic Natural Laboratories Node website

Read more

Brochure Subantarctic Natural Laboratories Node website

Play video

Click the link to watch this natural laboratories video

WHAT ARE THE SUBANTARCTIC NATURAL LABORATORIES?

The Subantarctic Natural Laboratories are delimited sites within the subantarctic region, between 42° and 60° South, where geological and biological processes susceptible to global changes occur. They promote scientific development that integrates social dimensions, with an impact on the international scientific community and local communities. It is considered that scientific activity occurs in territories together with a diversity of productive, economic, and social processes.

Some conditions identified as necessary for the development of Subantarctic Natural Laboratories are the interaction of various scientific disciplines, the existence of installed capacities, and the contribution to territorial decentralization. Other conditions that are taken into account are the evidence of a gradient of anthropic intervention, articulation with public policies, and social movements.

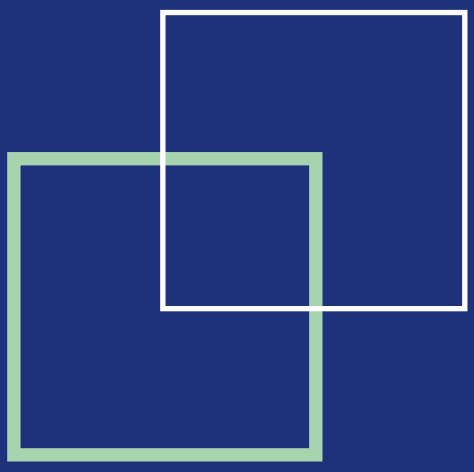
Through the Nodo Ciencia Austral, the aim is to strengthen relevant scientific research with the biological and cultural diversity of the Austral Macro-Zone. It is an effort of several institutions to increase the socio-environmental and economic impact of STKI activities in the territory.

The research team of the Node designated four pilot sites in the Austral Macro-Zone to carry out their monitoring, which will be hosted on a digital platform open to communities: Delta Pitipalena-Añihué, San Rafael Biosphere Reserve, Cabo de Hornos Biosphere Reserve, and Madre de Dios Archipelago.

Glaciar Exploradores, Aysén Region
DR. IÑIGO IRARRÁZAVAL.

CHAPTER 4

Setting up the Route Chart



After identifying the major axes of action needed, Austral Science Node begins the process of applying and evaluating the development of the Route Chart in the Austral Macro-Zone.

Preparation

The setting up stage of the Route Chart aims to socialize, specify, and validate its results with the Nodo Ciencia Austral project team, the Macro-Zonal Coordination Committee, and representatives from the public, private, academic, and civil society sectors. Thus, the goal is to delimit its scope of action and define strategies for deploying projects and initiatives in the short, medium, and long term.

As a result of the assessment stage, the setting up of the Route Chart focuses on specific programs and initiatives for the territories of the Macro-Zone, organized around the primary main points of action, with climate change and conservation from a biocultural perspective as the two main themes to be addressed. These challenges were validated in participatory activities that allowed for the structuring of the implementation and grouping of programs into research main points based on the structure suggested by ANID, adding a new main point that corresponds to policies, instruments, and regulations.

RESULTS

The preparation process of the Route Map has generated important results, being the most relevant the followings:

- **the collaboration and coordination of multiple agents with the Route Chart team in the Austral Macro-Zone**
- **a peaceful and integrated transition of the results of the assessment process into the preparation of the Route Chart, incorporating the challenges identified in that stage**
- **an operationalization of the Route Chart with a clear identification of the methodology for its implementation**
- **the identification of projects and initiatives articulated in 10 STKI Programs**
- **an evaluation of the Route Map through the application of a survey to more than 100 agents**
- **the prioritization, updating, and improvement of initiatives through participatory activities and specialized workgroups**
- **the socialization of the Route Chart with key public, private, and civil society actors**
- **the constant updating of the Agent Map to broaden their participation in areas with low representation in the project**
- **a direct and personalized communication with key agents who have not participated in the initiative**
- **a permanent collaboration and collaborative work with the Regional Ministry of Science, Technology, Knowledge, and Innovation (Regional Ministry Department of STKI) for the adjustment of the Route Chart**

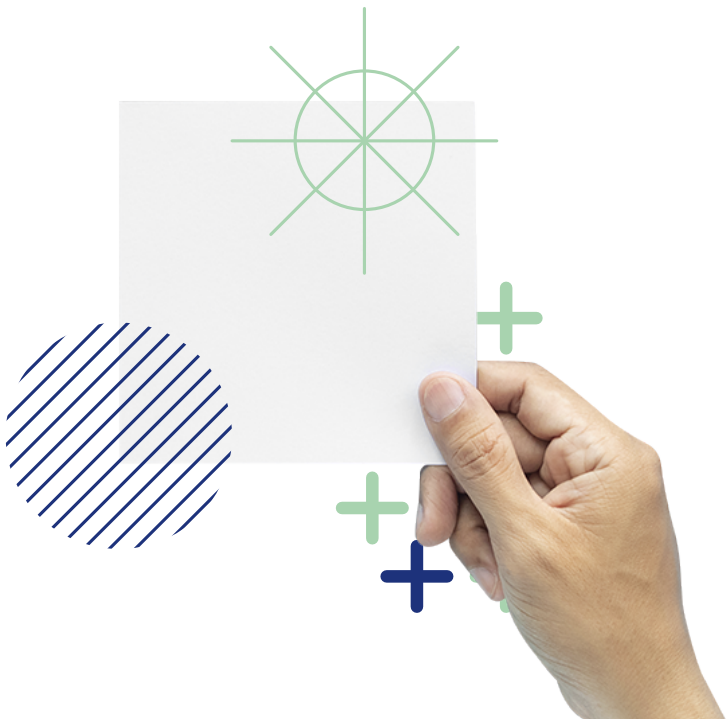
EVALUATION

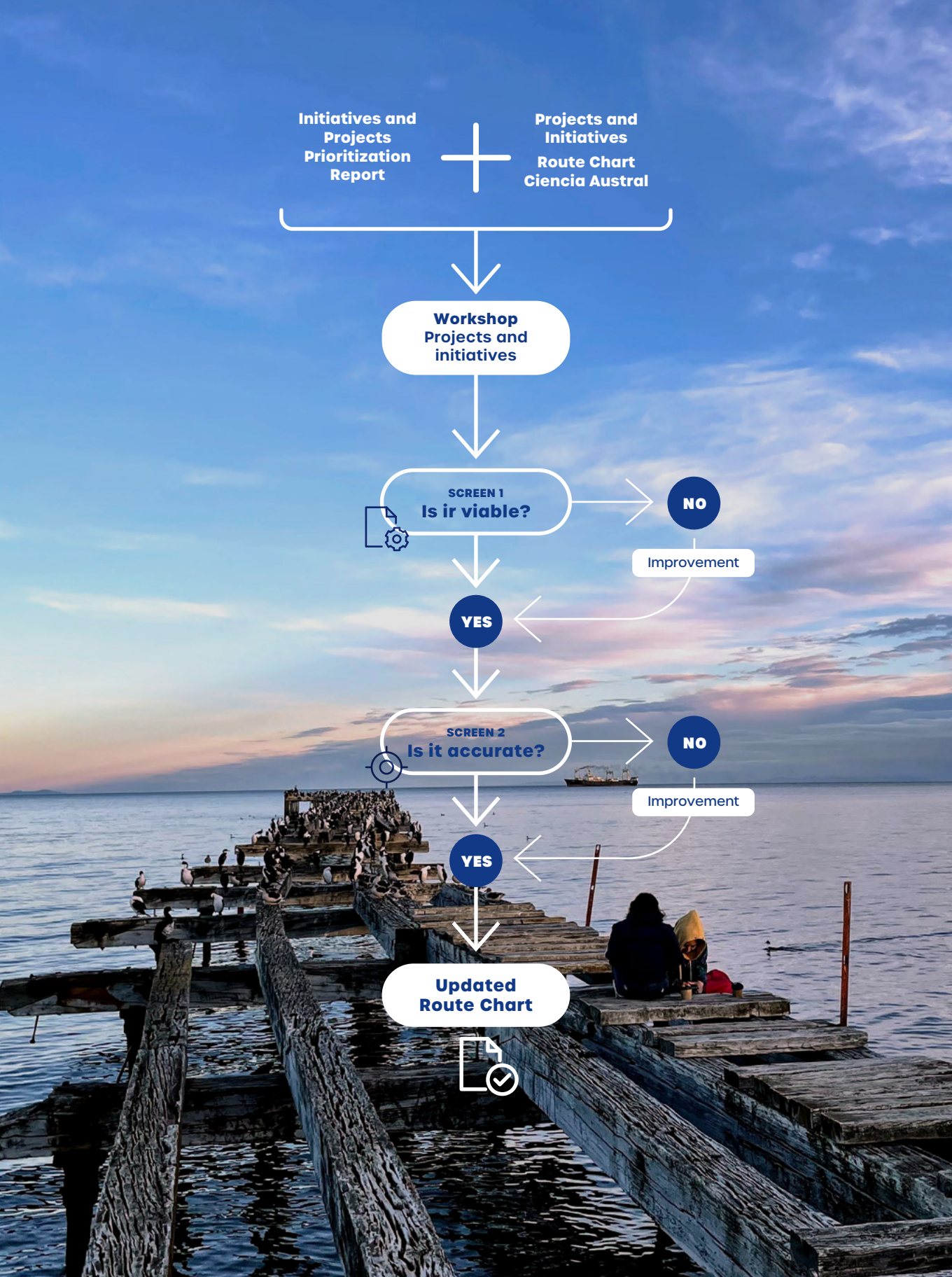
To assess the relevance and feasibility of the initiatives and programs, the «Evaluation and prioritization of Nodo Ciencia Austral projects and initiatives» survey was sent to the database of all key agents in the Macro-Zone, with over 400 contacts and 117 answers.

Subsequently, activities were organized to delve into particular aspects of the programs, collect new initiatives, and prioritize them in an expanded Macro-Zonal Coordination Committee and specialized working groups for each program, according to the relevance and interest of key agents. This process allowed for the improvement of projects and initiatives, evaluation of their feasibility based on sources of financing, and their relevance in the short, medium, and long term.

Through this process, gaps among agents and areas within regional territories were identified. For example, 82% of the agents who answered the project evaluation survey corresponded to the public and academic sector, 9.4% to civil society, and only 8.5% to the private sector.

Thus, the process of updating and energizing the 2023 Route Chart contemplates the socialization of the initiatives and results obtained in its implementation; the review of prioritized initiatives in the programs, and the identification of gaps regarding the areas and key agents of the territories with low representation and participation in implementation processes.




Initiatives and Projects Prioritization Report
Projects and Initiatives
Route Chart Ciencia Austral
Workshop Projects and initiatives
SCREEN 1
Is ir viable?
NO
Improvement
YES
SCREEN 2
Is it accurate?
NO
Improvement
YES
Updated Route Chart

IMPLEMENTING THE ROUTE CHART AND THE PRIORITIZED PROGRAMS

The methodology of the Route Chart included a second classification supplementary to the primary action main points, designed according to the four main points in the STKI programs, which group projects according to their thematic nature and fieldwork.

Unlike the action main points, the programs refer to a «ascending» classification, because they arise from the thematic configuration or performance of the different projects and initiatives. The programs aim to involve Route Chart efforts regarding cooperative, interdisciplinary, and inter-institutional projects where academic, public, private, and civil society abilities are coordinated to generate science, technology, knowledge, and innovation in relevant areas for the Austral Macro-Zone in the short, medium, and long term.

5
Human Capital Development Programs

7
Research and Innovation Programs

13
Networking, Coordinating and Collaborating Programs

5
Policies, Instruments and Regulations Programs

PROGRAM 1
R+D+I for the management of the sustainable agroforestry sector.

PROGRAM 2
Entrepreneuring and innovation with scientific and technological input

PROGRAM 3
R+D+I regarding climate change effects and impacts and anthropic action in austral ecosystems

PROGRAM 4
Instruments for the strengthening of STKI in the Austral Macro-Zone

PROGRAM 5
Planning and management in protected wilderness areas

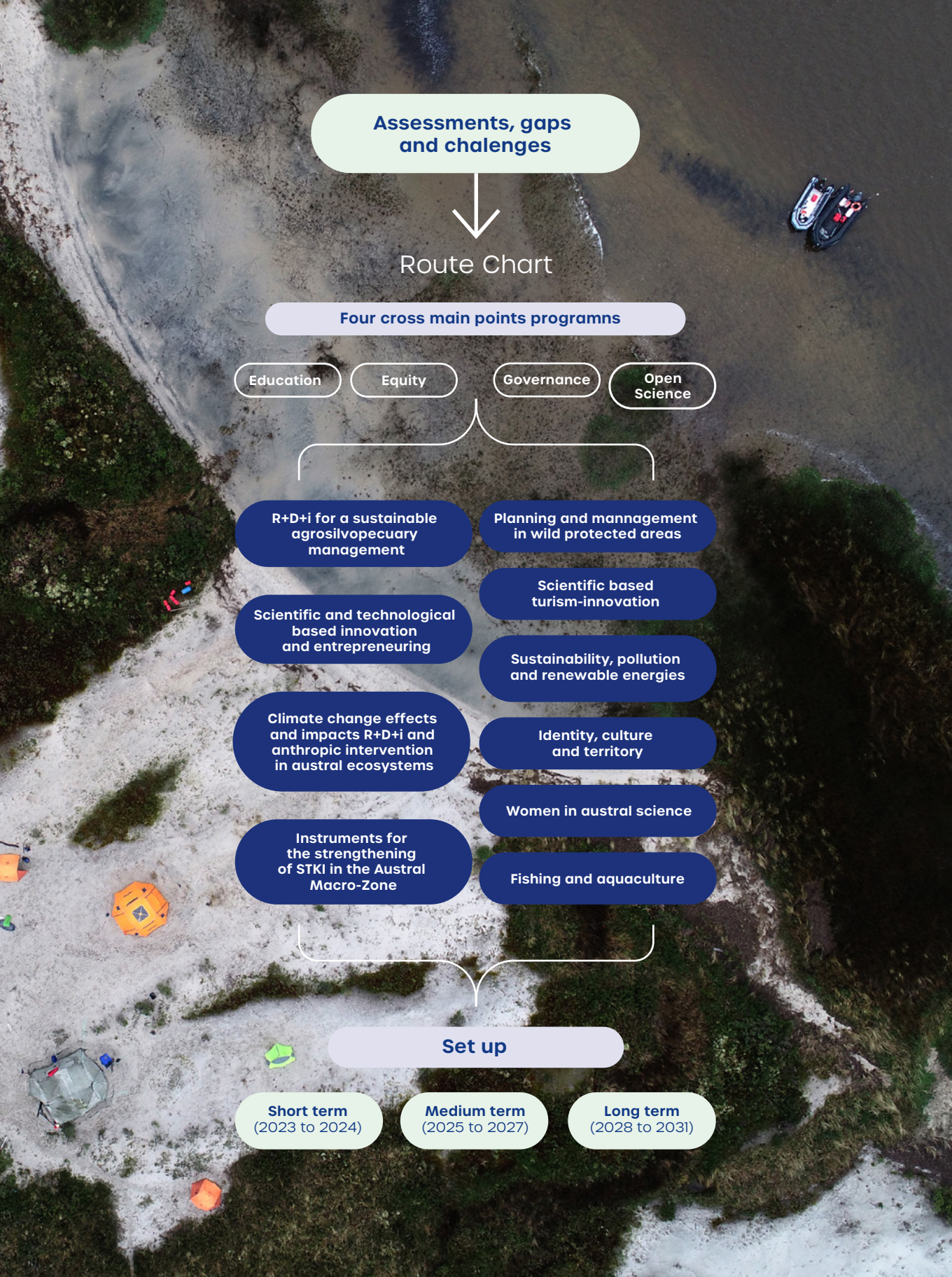
PROGRAM 6
Innovation in tourism with scientific input

PROGRAM 7
Sustainability, pollution and renewable energies

PROGRAM 8
Identity, culture and territory

PROGRAM 9
Women in Science

PROGRAM 10
Fishing and aquaculture


Assessments, gaps and chalenges
Route Chart
Four cross main points programns
Education
Equity
Governance
Open Science
R+D+i for a sustainable agrosilvopecuary management
Planning and mannagement in wild protected areas
Scientific based turism-innovation
Scientific and technological based innovation and entrepreneuring
Sustainability, pollution and renewable energies
Climate change effects and impacts R+D+i and anthropic intervention in austral ecosystems
Identity, culture and territory
Women in austral science
Instruments for the strengthening of STKI in the Austral Macro-Zone
Fishing and aquaculture
Set up
Short term (2023 to 2024)
Medium term (2025 to 2027)
Long term (2028 to 2031)

CHAPTER 5

Involvement and Traceability of Agents

Public, private and civil society agents in the Austral Macro-Zone have been constantly collaborating in each work activity of Nodo Ciencia Austral, from the assessment to the progress and results

¿WHAT ARE MACRO-ZONAL COORDINATION COMMITTEES AND HOW DO THEY WORK?

Read more

Macro-Zonal Coordination Committee

The Macro-zonal Coordination Committee (CCM by its Spanish acronym) is a monthly meeting where different institution agents related to STKI participate. The project considers a managing CCM and a broaden CCM. They help in the different stages of the project Nodo Ciencia Austral, such as, in the identification of relevant agents in the area, main topics and strategic areas and also they collaborate in the intersectoral assessment. The CCM does not include national representation authorities, authorities binding to new regional governance changes coming into effect since July 2021, agents that may be doubling positions or institutions located outside the region.

By September 2022, Nodo Ciencia Austral had conducted eight sessions with the managing CCM and eight sessions with the broaden CCM, which were called for the progress approval, for workshops by topics or for the results report.

Some of the CCM responsibilities are:

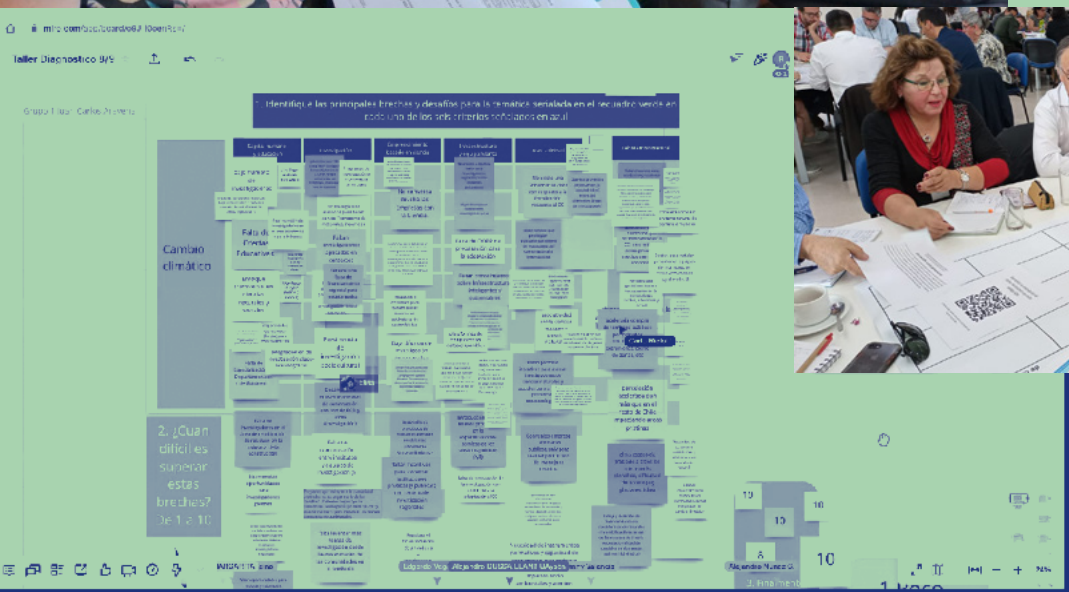
- Advising the project regarding the strategies
- Defining the functioning configuration and mechanism of the meeting
- Coordinating the different agents and regions part of the Macro-Zone
- Approving progress, results, and the work agenda for the implementation of initiatives
- Providing informed, convenient, pertinent and with a positive impact civil participation activities according to the project implementation

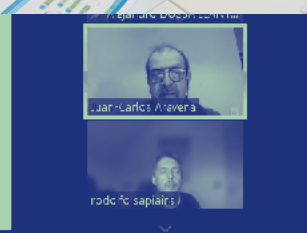
17 approval activities have been performed

8
Managing
CCM Meetings

7
Broaden CCM meetings
+ 2 participative workshops

+255
agents participated among
the Austral Macro-Zone



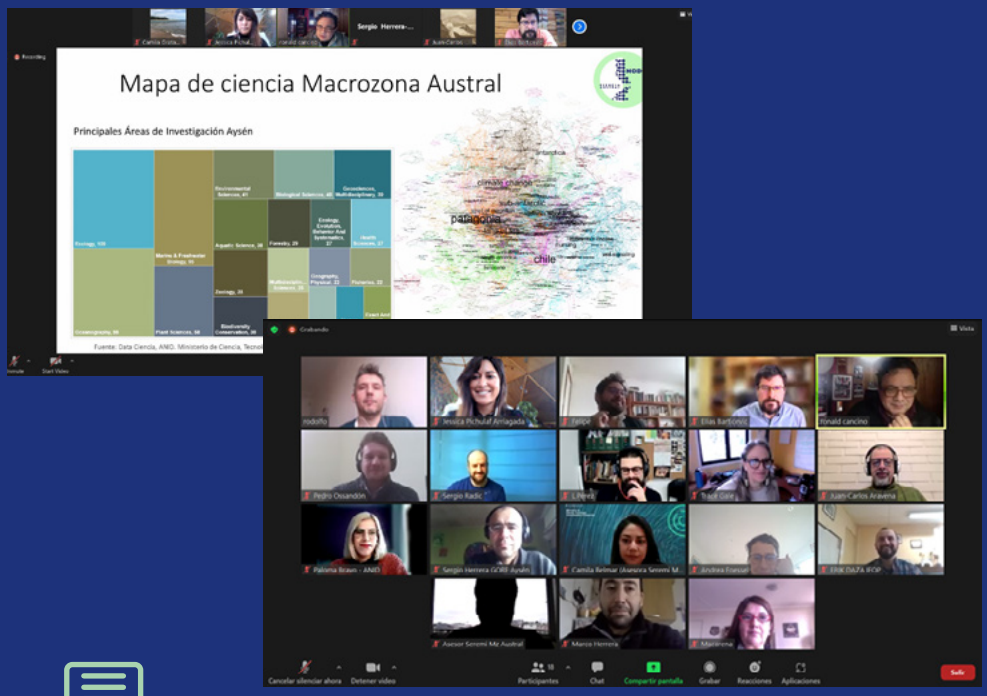


ORGANIZATION

The process of organization for the managing CCM considers the gender and territorial representativity. Important agents in this CCM are The Science and Technology Ministry Regional Department with its adviser team, and regional government professionals from both regions. Between all agents the CCM counts between 15 and 20 people, adding between 60 and 70 local actors (coming from the public, private, civil society and academic sectors) in workshop activities, where interactive and participatory methodologies have been used for the approval of key products and results of Nodo. Furthermore, since March 2022, the Director of the Nodo Macro-Zonal Subantarctic Natural Laboratory is part of CCM, with the aim to improve the collaboration between both projects. Moreover, according to the methodology Map of Agents, the broaden CCM has identified people related to the STKI ecosystem sorted in three big groups: creators, consumers and knowledge beneficiaries.

The CCM has been systematically meeting since 2021 with a growing and diverse participation of key agents from the Macro-Zone and has become the main governance space for the STKI in the context of the Nodo Ciencia Austral. This committee has allowed for the validation, adjustment, and updating of the implementation process of both the Route Chart and other activities related to open science and STKI governance. One of the contributions offered by Nodo is the management of the Actors Map, which has allowed for the expansion and updating of key agents in the Macro-Zone, facilitating their participation in validation and dissemination activities and collecting emerging initiatives and observations that arise in these meetings.

The CCM has played a central role in the process of positioning Nodo in the Macro-Zone as a coordination opportunity with increasing participation by key local agents in the Macro-Zone. At the same time, during 2022, progress has been made in a specialized report in the field of STKI governance, with the support of the Center for Climate and Resilience Sciences, (CR)2, which has allowed for the establishment of the normative framework of the regional STKI ecosystem, identifying laws and regulations, roles and responsibilities associated with public institutions, among other relevant data.



Committee Participants in the Macro-Zone Organization

PAMELA SANTIBÁÑEZ • Ministry Regional Department of Science, Technology, Knowledge and Innovation, Austral Macro-Zone (2019-2022)

VERÓNICA VALLEJOS • Ministry Regional Department of Science, Technology, Knowledge and Innovation, Austral Macro-Region (2022-2025) Austral Macro-Zone

CAMILA BELMAR • Adviser for the Ministry Regional Department of Science, Technology, Knowledge and Innovation, Austral Macro-Region

RODRIGO ARAYA • Regional Adviser and presidential delegate for the Aysén Region

TOLENTINO SOTO • Magallanes Regional Adviser – Science Commission

JUAN TORO • Association of City Councils from the Magallanes Region

MARCELO SANTANA • Association of City Councils from Aysén

CONRADO REDLICH • Association of City Councils from Aysén

PAOLA MILOSEVIC • Austro Chile

GUSTAVO SALDIVIA • Director of Aysén Regional Museum

JOSÉ VELÁZQUEZ • Chief of the Division Department, Regional Planning and Development Division for the Regional Adviser, Magallanes

SERGIO HERRERA • Planning and Development Division for the Regional Adviser, Aysén

ALEJANDRA LAFÓN • Director of IFOP Aysén

ERICK DAZA • Director of IFOP Magallanes

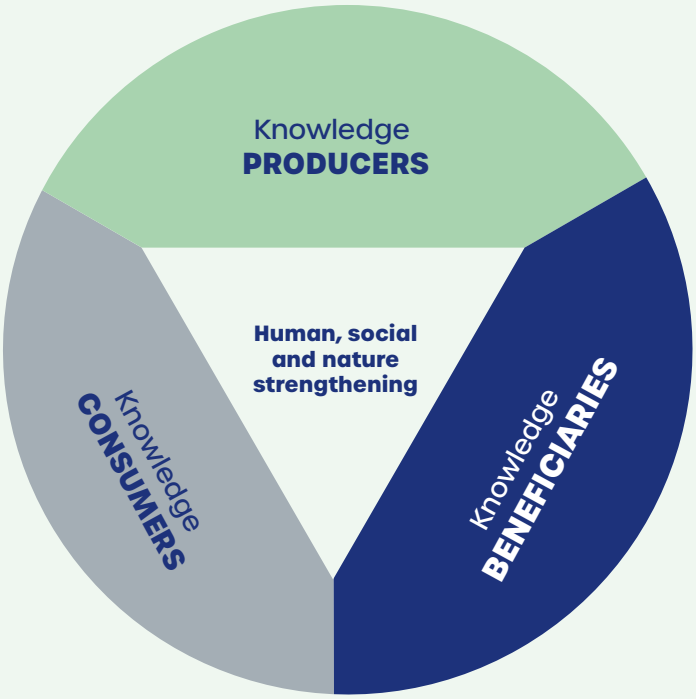
DANIELA DROGUET • Civil Society Agent (WCS)

PEDRO OSSANDÓN • Regional Government

EDUARDO JAKSIC • Confederation for the Production and Commerce, Magallanes

LAURA SÁNCHEZ • Director of the Nodo Subantarctic Natural Laboratories

¿WHAT DOES THE AGENTS MAP OF THE AUSTRAL MACRO-ZONE SHOW?



PRODUCERS
Applied and fundamental research

- CIEP
- INFORNIA Aysén
- INACAP Aysén
- U. Austral
- University of Aysén
- University of Magallanes
- INACH
- CEQUA
- UACh IDEAL
- IFOP
- INACAP Magallanes
- INIA Magallanes
- U. Santo Tomás
- WCS

BENEFICIARIES
Society

- Local communities
- Communitary and social agents
- Patrimony and cultural agents
- Native communities
- Educational institutions
- Macrozonal and regional community

CONSUMERS
Companies, public services, NGOs, Technological or knowledge transfer centers, intermediary entities.

- Public Services
- Regional Governments/Regional Advisers
- Municipalities
- Ministerial Regional Secretaries
- CORFO
- SERCOTEC
- FOSIS
- INDAP
- FIA
- Construction Chamber
- Mining and energy sector
- Turism
- Fishing and aquicultire sector
- Cattle, forestry and horticulture Industries
- Maritime and port services
- Conservation agents and suppliers

The Agents Map is a conceptual picture of the current scientific and technological ecosystem in the Austral Macro-Zone, which includes knowledge creators, direct consumers, and general beneficiaries

The knowledge-generating institutions perform both fundamental research and innovation and development (R+D) application. In the Aysén region, 56 registered doctors and 10 professionals with a master degree were identified, of whom 62.1% are men and 37.9% are women. In contrast, in the Magallanes region, 147 registered doctors and 49 professionals with a master degree were identified, of whom 58% are men and 42% are women.

Furthermore, the application of R+D through partnerships with consumers such as businesses and other institutions transforms fundamental science into commercial products and services. Users of this knowledge in various productive sectors include small, medium, and large businesses, innovative and basic business services, professional education centers, public administration, innovation financing entities, intermediary entities, and technology transfer centers.

Finally, society in its various forms is the beneficiary of the knowledge generated through the work of these entities, contributing to a higher level of wellbeing and improving the quality of life in the Macro-Zone. The creation of the Agents Map has facilitated collaborative work among institutions in the Macro-Zonal STKI ecosystem, serving as input for the systematization of assessments and dialogue spaces that identify initiatives, projects, and programs. These initiatives, projects, and programs are updated and adjusted as new agents are integrated and share this space for systematic trust building.

Aysén Region

56 Medical Doctors

10 Professionals with a master degree

62.1% Men

37.9% Women

Magallanes and Chilean Antarctic Region

147 Medical Doctors

49 Professionals with a master degree

58% Men

42% Women

CHAPTER 6

Continuity Project

In 2023, the Nodo will seek to continue collaborative work to strengthen its territorial positioning, sustainability, and consolidation within the STKI ecosystem of the Austral Macro-Zone

The Nodo Ciencia Austral is an experience in territorial and decentralized articulation of the ecosystem of the Southern Macrozone, which has positioned itself as an important opportunity of governance for the institutions participating in the initiative and for the key agents involved through dissemination, participation, and approval of the results and products achieved. During these two years of work, gaps and challenges in STKI for the Macro-Zone have been identified, which in turn, allows for a shared vision of territory according to a biocultural perspective for climate change conservation, being them the priority main points for projecting development in the austral end of the continent.

In 2023, Nodo has secured funding for the Continuity of Territorial Nodes. Interdisciplinary initiative that translates into a team of more than 30 professionals and the incorporation of six new institutions that join the work promoted by: University of Aysén, University of Magallanes (UMAG), Center for Research in Ecosystems of Patagonia (CIEP) and Chilean Antarctic Institute (INACH).

The new associated institutions are the Patagonia Campus of the Austral University of Chile, the Magallanes Museum Network, the Cape Horn International Center (CHIC), the Fisheries Development Institute (IFOP), the Aysén Regional Museum and the Center for Quaternary Studies, Fuego- Patagonia and Antarctica (CEQUA).

Universidad Austral de Chile
Campus Patagonia

CHIC
CENTRO INTERNACIONAL
CABO DE HORNOS

Museo
Regional
Aysén

CEQUA

IFOP
INSTITUTO DE
FOMENTO
PESQUERO

1

To improve the territorial management of STKI and evaluate institutional possibilities for Nod within the public system

Proposals will be developed to identify the components, criteria, and standards to suggest and project a medium and long-term model of territorial management for STKI, and consider institutional alternatives for the continuity of Nodo.

To achieve the above mentioned, proposals will be constructed based on the results of a study on the regulations that rule STKI governance and calls to the managing CCM, with open workshops for all key agents in the Macro-Zone ecosystem. The purpose is to reflect on the best strategies to promote a collaborative model rather than a competitive one for the development of STKI with territorial impact, focusing primarily on the climate and socio-environmental challenges of the Macro-Zone.

2

To develop activities that allow for the updating and revitalization of the Route Chart and the consolidation of an action plan for the Macro-Zone

Programs and associated projects have been designed based on the gaps and challenges already identified. Currently, Nod is working on pilot projects that can be applied to different sources of financing in the medium and long term. In this sense, the challenges for 2023 are to evaluate the process being implemented and consolidate a medium and long-term action plan. This will be done with a participatory and flexible approach that allows for adjusting the Route Chart to emerging themes and new agents joining the work of Nodo.

3

To create capacities and set up specific activities for the improvement a participative science

The continuity project of Nodo Ciencia Austral aims to develop actions to strengthen capacities, social capital, and collaboration networks, considering two activities. The first one is a course to develop knowledge and skills to implement open science initiatives according to UNESCO's proposal, aimed at everyone who creates or spreads knowledge in the Macro-Zone.

In parallel, an educational program will be implemented focused on improving understanding and adaptation to climate change in the Macro-z¡Zone from a transdisciplinary approach aimed at local communities, in order to contribute to the development of more appropriate answers to this global challenge.

4

To implement initiatives addressing specific identified gaps and challenges in the Route Chart

The design for 2023 includes the implementation of four initiatives that address the identified gaps and challenges in the Route Chart, respond to relevant problems in the ecosystem, and contribute to local, regional, and Macro-Zonal development. These initiatives aim to build local capacities, facilitate collaboration among agents, enhance specific opportunities in the austral territory, and create conditions to enable the improvement of governance of STKI. The relationship between science and society will be a main focus. The impact on public policies, generation of knowledge for decision-makers, and innovation will be considered the means to address the complex interactions between public, private, and community sectors.

Summarizing, it is expected that by 2023 NODO will increase its positioning in the STKI ecosystem with more and better installed capacities, ongoing initiatives, and a medium and long-term perspective.

Nodo Ciencia Austral Project Team

MANAGEMENT AND COORDINATION

DR. JUAN CARLOS ARAVENA DONAIRE

Bachelor's and Master's degree in Biological Sciences, Ph.D. in Environmental Sciences. Director of the Gaia Antarctic Research Center at the University of Magallanes. With experience in managing regional, national, and international projects. Academic and representative of University of Magallanes in the regional Climate Change discussion table. Member of the National Panel of the Climate Science and Resilience Center (CR)2. Director of Nodo Ciencia Austral.

LORETO MEDINA MUÑOZ

Journalist and Bachelor's degree in Social Communications, with experience in production, research, content generation, and territorial engagement in cultural and scientific topics. Loreto actively collaborates in various activities of citizen participation in Punta Arenas. She is part of the general coordination team of Nodo Ciencia Austral and supports the governance main points of STKI, open science, and project prioritization.

DR. TRACE GALE DETRICH

Social scientist, MBA in Marketing, and a Ph.D. in Sustainable Use of Natural Resources. Researcher and Coordinator of the Sustainable Tourism Line at the Patagonia Ecosystem Research Center (CIEP). Great expertise in management, organization, and development of research teams and logistics, analysis of social science surveys, and in the awarding and execution of projects with regional, national, and international funds. Alternate director of the project.

ALEXANDRA SALAZAR MATURANA

Geologist. Research assistant at the Patagonia Ecosystem Research Center (CIEP). With extensive experience in project coordination and execution, development of scientific material, support for research related to tourism and climate change, and linking science with local communities. Part of the Coordination Team of Nodo Ciencia Austral for the Aysén Region.

JESSICA PICHULAF ARRIAGADA

Journalist and Bachelor's degree in Social Communication. With experience in developing assessment, plans, and communication consultancy. With knowledge of public policies, network generation, and implementation of engagement strategies aligned with regional needs. Coordinator of Nodo Ciencia Austral for the Aysén Region and the Communications Team. Professional in affiliation with the University of Aysén.

DR. RODOLFO SAPIAIN ARRUÉ

Psychologist, academic at the University of Chile, and associated researcher at the Gaia Antarctic Research Center of the University of Magallanes. Expert in communicating complex environmental issues, qualitative and quantitative research, project design, network creation, conflict resolution, and university teaching. Coordinator of Nodo Ciencia Austral for the Magallanes Region and the Chilean Antarctic.

TECHNICAL TEAM

DR. FLAVIA MORELLO REPETTO

Archaeologist and Bachelor's degree in Anthropology. Director of the Patagonia Institute of the University of Magallanes, academic coordinator of the Master's degree in Social Sciences with a mention in Heritage or Social Intervention, and principal researcher at the Cabo de Hornos International Center (CHIC by its Spanish acronym). With experience in research, university management, formulation, and execution of projects and programs with regional, national, and international outreach. Part of the technical team of Nodo Ciencia Austral.

DR. LAURA SÁNCHEZ JARDÓN

Ecologist, academic at the Coyhaique University Center of the University of Magallanes, and associated researcher at the Cabo de Hornos International Center (CHIC by its Spanish acronym) in biocultural conservation in anthropized ecosystems, subantarctic biodiversity, and biology of the Fungi kingdom. Develops participatory science initiatives. Directs the Natural Subantarctic Laboratories Node project and is part of the technical team of Nodo Ciencia Austral.

EDUARDO BARROS GONZÁLEZ

Social worker, policy advisor at the Omora Foundation, and member of the team working on the implementation of the Subantarctic Center in Puerto Williams. Route Chart Coordinator for Nodo Ciencia Austral.

SERGIO ACEVEDO

Political scientist associated with the Omora Foundation. Expert in the preparation of public opinion studies for public and private institutions, with specialization in the design and implementation of opinion surveys oriented to clients. Develops research and consultancy related to the legislative monitoring of bills related to the field of conservation. Analyst and professional in charge of the project's databases.

MSC. ANDRÉS ADIEGO SÁNCHEZ

Geographer. Master in Geographic Information, Technologies for Land Use Planning: Geographic Information Systems and Remote Sensing. Research assistant at the Patagonian Ecosystems Research Center (CIEP). With experience in territorial planning projects related to protected wilderness areas and local development in rural areas. Provides support in methodological aspects at Nodo Ciencia Austral.

DR. JOHNNY VALENCIA CALVO

Electronics engineer. PhD in Systems and Computer Engineering, academic at the University of Aysén. Researcher in applied sciences and engineering, energy markets and analysis, modeling, simulation, and measurement of physical and environmental phenomena. Expert in dynamic analysis and systems dynamics. Supports the analysis of modeling results in the Nodo Ciencia Austral project.

MSC.(C) ELÍAS BARTICEVIC CORNEJO

Journalist, Master's student in Social Sciences. Head of the Tender and Environment Unit of the Chilean Antarctic Institute (INACH). Responsible for planning, coordinating, and conducting scientific and technological studies of national institutions in the Antarctic Continent. Counterpart of INACH in the project's technical team, coordinates the development of a mapping of national Antarctic science, particularly in the STKI ecosystem of the Aysén and Magallanes Regions and the Chilean Antarctic, in order to characterize scientific production in the period 2009-2021.

DR. GABRIEL NÚÑEZ VIVANCO

Bioinformatics engineer and PhD in Biotechnology. With experience in leading work groups in both public and private systems and collaborating with national and international institutions in the development of technological solutions. Head of the Computer Engineering Program at the University of Aysén. Supports the analysis of results of the Nodo Ciencia Austral project.

TECHNICAL TEAM

FELIPE BUSTOS VELÁSQUEZ

Sociologist with experience in social studies on science, technology, and innovation, particularly in the area of science policies in Chile. Master's student in the program of Social Sciences at the University of La Frontera, in the process of writing his thesis where he focuses on the science, technology, and society line, particularly on the dynamics of knowledge production and the political economy of science. Analyst and professional in charge of the databases on Antarctic topics.

DR. MARCELO GÓNZALEZ ARAVENA

Biologist specialized in researching the impact of climate change on Antarctic marine species. He has been working at the Chilean Antarctic Institute (INACH) for over sixteen years and is Head of the Scientific Department. He is a member of the National Committee of Antarctic Research (CNIA) and Chilean representative to the Scientific Committee on Antarctic Research (SCAR). He is the institutional counterpart in the Nodo Ciencia Austral project.

DR. RONALD CANCINO SALAS

Bachelor's degree in Social Anthropology. Academic at the University of La Frontera, president of the Latin American Society of Social Studies of Science and Technology. He has specialized in modeling scientific capabilities, science and technology policies, and analysis of sociotechnical controversies. Coordinator of the UMAG-UFRO agreement for the construction of the assessment and Route Chart of Nodo Ciencia Austral.

DR. GIOVANNI DANERI

Oceanographer. Executive director of the Patagonian Ecosystems Research Center (CIEP). With experience in scientific management and leading research projects with regional, national, and international funding. Member of the Scientific and Technological Committee of the Aysén Region. Institutional counterpart in the Nodo Ciencia Austral project.

MSC. ANDREA FOESSEL BUNTING,

Commercial engineer with a Master's degree in International Development and an international Master's degree in University Management. Specializes in management of research and innovation projects. In charge of the Innovation, Technology, and Transfer Unit at the University of Aysén. Institutional counterpart in the Nodo Ciencia Austral project.

DR. SERGIO MARTINIC VALENCIA

Anthropologist specialized in qualitative methods and studies of the educational system. Evaluation of pedagogical policies and practices. Associate professor and academic director at the University of Aysén. Participates as an institutional counterpart in the Nodo Ciencia Austral project.

DR. GERARD OLIVAR TOST

Academic and Director of Research at the University of Aysén, with experience in the applications of modeling and simulation, nonlinear dynamics, complex systems, and control to science and engineering. These applications include power electronics and converters, bioreactors, and sustainable development. Participates as an institutional counterpart in the Nodo Ciencia Austral project.

DR. SERGIO RADIC SCHILLING

Agricultural engineer. Associate professor at the Department of Agricultural and Aquacultural Sciences, and Director of Research at the University of Magallanes. Participates as an institutional counterpart in the Nodo Ciencia Austral project.

ADMINISTRATION AND FINANCE

ANGÉLICA OYARZÚN JARA

Business Engineer. Deputy Director of Administration at the Patagonian Ecosystems Research Center (CIEP). With experience in planning, leadership and human resources management, as well as budget execution in projects. Supports the administration of the Nodo Ciencia Austral project.

DR. (C) LALY CASTRO RESTOVIC

Business Engineer associated with the Vice Presidency of Research and Graduate Studies at the University of Magallanes. Expert in the development of institutional projects financed by regional, national or international funds. Supports the administration of the Nodo Ciencia Austral project.

VERÓNICA LETELIER MAGGIO

Manager associated with the Gaia Antarctic Research Center at the University of Magallanes. With experience and efficiency in administrative management and handling of regional, national and international projects, both public and private. Responsible for the administration of the Nodo Ciencia Austral project.

ADVISERS

MSC. RODRIGO SANTIBÁÑEZ LEHUEDÉ

Bachelor's degree in History and Master's degree in International Studies, specialized in historical, legal, and diplomatic Antarctic studies. Worked as a professional on the team of the Climate Science and Resilience Center (CR)2 for the project on the regulation of climate governance and STKI governance in the Austral Macro-Zone. Provides consulting services for the Nodo Ciencia Austral project.

DR. PATRICIO PADILLA NAVARRO

Sociologist, PhD in Sociology. Professional at the Institute of Local and Regional Development of the University of La Frontera. Academic at the PhD in Social Sciences UFRO and at the PhD in Communication UFRO-UACH. Has participated in planning for the agro-food sector, the Nodo Conexión Sur, Sub-Antarctic Natural Laboratories, the Chilean Chamber of Construction, and science and technology policies.

CECILIA IBARRA MENDOZA

Civil Industrial Engineer, Master's degree in Technology and Innovation Management, and PhD in Science and Technology Policy. Full-time academic at the Faculty of Government and adjunct professor at the Faculty of Physical and Mathematical Sciences at the University of Chile. Works as a researcher at the Climate Science and Resilience Center (CR)2 and the Andean Geothermal Center (CEGA).

NODO CIENCIA AUSTRAL COMMUNICATIONS TEAM

CATALINA ESPINOSA PÉREZ DE CASTRO

Audiovisual Communicator and Master's degree holder with a specialty in Strategic Communication. With experience in management and dissemination of projects related to natural sciences in the Aysén Region. In charge of the Communications and Dissemination Department of the Center for Research in Patagonian Ecosystems (CIEP). She is part of the Communications team of Nodo Ciencia Austral.

CATALINA CAMUS CAMPODÓNICO

Bachelor's degree in Humanities with a major in History, Master's degree in Journalism, and a diploma in Territorial Development with Cultural Identity. Experienced in cultural management and strategic communication. Specializes in the development of social and cultural projects with a gender focus that aim to promote the well-being of Patagonian communities. She is a member of the Communications team of Nodo Ciencia Austral.

JESSICA PICHULAF ARRIAGADA

Journalist and Bachelor of Social Communication. With experience in the development of assessment, plans and communication advice. She has knowledge of public policies, network generation and implementation of strategies for engagement with the community aligned with regional needs. Coordinator of Nodo Ciencia Austral for the Aysén Region and the Communications Team. Professional attached to the University of Aysén.

CAMILA GRATACÓS BORROWMAN

Industrial Designer. Experienced in project development and management related to agricultural sciences and the environment, as well as communication strategies in the scientific field. Member of the Communications team of Nodo Ciencia Austral.

LORETO MEDINA MUÑOZ

Journalist with a degree in Social Communication, with experience in production, research, content generation, and territorial linkage in cultural and scientific topics. Actively collaborates in various citizen participation activities in Punta Arenas. She is part of the general coordination team of Nodo Ciencia Austral and supports the STKI governance, open science, and project prioritization main points.

COMMUNICATIONS OF COUNTERPART ASSOCIATED INSTITUTIONS

CAMILA BUVINIC BUVINIC

Journalist, with a degree in Social Communication and a diploma in Antarctic Affairs. She works in the Communications and Education Department of the Chilean Antarctic Institute (INACH), in charge of supporting special publications, scientific communication and the dissemination of Antarctic issues. She collaborates with the Communications team of Nodo Ciencia Austral.

RICARDO HARO BUSTAMANTE

Journalist, with a degree in Social Communication and a diploma in Public Strategies. He works as Communications Director at the University of Magallanes, with experience in development and management of communication in education and research topics. He collaborates with the Communications team of Nodo Ciencia Austral.

BÁRBARA BESA DONOSO

Journalist from the Communications Unit of the University of Aysén, with experience in media, press management, external and internal communications. She collaborates with the Communications team of Nodo Ciencia Austral.

PAULA ÁLVAREZ ROBLES

Journalist specialized in science communication, decentralization, regional development, cultural management and community engagement. Head of the Communications Unit at the University of Aysén. She collaborates with the Communications team of Nodo Ciencia Austral.

NODO CIENCIA AUSTRAL PRESS RELEASE

Nodo Ciencia Austral y su trabajo colaborativo para conectar la ciencia en la macrozona

Investigación, Portada UMAG, noticias

2022/06/06

> *A 20 meses de iniciada la implementación del proyecto Nodo Ciencia Austral en las regiones de Aysén y de Magallanes y la Antártica Chilena: su director el investigador Juan Carlos Aravena, y otros representantes de las instituciones que ejecutan esta iniciativa realizan un balance sobre los principales resultados y logros alcanzados. Un trabajo participativo, colaborativo y articulado que ha permitido comenzar a construir un sistema de gobernanza en esta materia y proyectar el desarrollo científico-tecnológico a nivel de macrozona*

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Noticias

INVESTIGADORES Y ESTUDIANTES PARTICIPARON DEL PRIMER DIÁLOGO MACROZONAL AUSTRAL: "DESAFÍOS Y PROPUESTAS PARA EL FUTURO"

Julio 22, 2021 | 454 vistas

Organizado por el proyecto Nodo Ciencia Austral

- *Más de sesenta personas participaron de esta actividad virtual donde pudieron interactuar con los expositores y también entregar sus propuestas para el desarrollo de la ciencia y la tecnología en Patagonia y Antártica.*

Esta semana, se llevó a cabo el Primer Diálogo Macrozonal Austral: "Desafíos y propuestas para el futuro" organizado por el proyecto Nodo Ciencia Austral que tuvo la participación de especialistas [illegible] sesenta personas, siendo una impor[illegible] sobre los desafíos de la Ciencia, Tecnología, Conocimiento e Innovación (CTCI)

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Regional

Universidades e Institutos Científicos de la macro zona Austral se unen para acelerar el impacto CTCI del territorio

READ MORE

- *El proyecto Nodo Ciencia Austral a través de su Comité de Coordinación Macrozonal ampliado llevó a cabo un taller en el que se abordaron temáticas claves para la futura hoja de ruta CTCI de la macrozona austral.*

READ MORE

Inicio › Ciencia

Ciencia | Nacional | Regional

Director Nodo Ciencia Austral: "Hemos forjado un trabajo colaborativo en ciencia entre instituciones que tenían una baja conexión en la macrozona"

Por **Canal Sur Patagonia** - Jue 8 septiembre 2022

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A 20 meses de iniciada la implementación del

Link minisitio pendiente

Read more

To know more about press diffusion, clik the link

Fue una fructífera jornada ampliada del Comité de Coordinación Macrozonal, instancia en la que se identificaron nuevos ámbitos y potenciales iniciativas.

HOJA DE RUTA EN CIENCIA Y TECNOLOGÍA AVANZA CON APORTES DE LAS COMUNIDADES DE AYSÉN Y MAGALLANES

34-07-2022 - 16:15

Compartir Twittear

Con una metodología de trabajo colaborativo e interactiva, el "Taller de Validación y Avance Hoja de Ruta Nodo Ciencia Austral" contó con la participación de cerca de 50 representantes de organismos de la sociedad civil, entidades públicas y privadas provenientes de la Macrozona Austral.

Con la premisa que la Hoja de Ruta (HDR) es de todos los habitantes de las regiones de Aysén y Magallanes y la Antártica Chilena, se realizó una fructífera jornada ampliada del Comité de Coordinación Macrozonal, instancia en la que se identificaron nuevos ámbitos y potenciales iniciativas que permitirán

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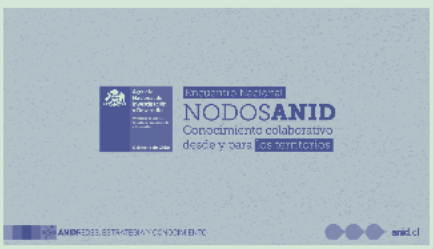
Equipo de Nodo Ciencia Austral viaja a Encuentro con actores CTCI de todo el país

Creado el 29 Nov a las 2:44 am



- **Con el propósito de posicionar los instrumentos Nodo y forjar redes de colaboración entre actores del ecosistema de ciencia y tecnología, el día martes 29 de noviembre se llevará a cabo el Encuentro Nacional NODOS-ANID en Santiago.**
- **Esta instancia reunirá a representantes de los nodos macrozonales y del Ministerio de Ciencia y Tecnología para co-construir una visión**

desde y para los territorios". Con esa invitación, la Agencia Nacional de Investigación y Desarrollo (ANID) ha establecido dentro de sus prioridades avanzar hacia una mirada

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Medio Ambiente 14 de febrero de 2022

Con foco en ampliar el acceso a la información científica avanza proyecto Nodo Ciencia Austral

Durante su segundo año de implementación, el énfasis estará en desarrollar el concepto de Ciencia Abierta.

Nodo Ciencia Austral

Un importante desafío enfrenta el equipo de científicos y

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TeHuelcheNOTICIAS.cl

Investigadores y estudiantes participaron del Primer Diálogo Macrozonal Austral: "Desafíos y propuestas para el futuro"

POR TEHUELCHE NOTICIAS — 22 de julio de 2022

Compartir

actividad virtual donde pudieron interactuar con los expositores y también entregar sus propuestas

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REGION DE AYSEN REGIONAL EL DIVISADERO, JUEVES 20 DE OCTUBRE DE 2022 13

Con sello ciudadano y variada oferta de actividades será la Semana de Ciencia Abierta

Coyhaique-. Obras de teatro y cortos animados inspirados en temáticas medioambientales; una charla abierta sobre la Hoja de Ruta en materia de ciencia, tecnología, conocimiento e innovación; salidas a terreno guiadas por científicos y científicas; además de presentaciones y conversatorios son parte de las actividades que darán vida a la "Semana de Ciencia Abierta", que se realizará entre el 25 y 29 de octubre, de manera presencial y virtual.

Se trata de una experiencia inédita, en la que el proyecto Nodo Ciencia Austral, abrirá sus puertas a toda la comunidad de las regiones de Aysén y Magallanes. En este contexto, el director del proyecto Nodo Ciencia Austral, Juan Carlos Aravena, comentó que esta iniciativa "es una oportunidad para informar, educar y sensibilizar a la comunidad de toda Macrozona. Es la primera experiencia del Nodo Ciencia Austral abierta a la comunidad en general y que se llevará a cabo en forma simultánea en ambas regiones. De esta manera, invitamos a toda la comunidad de

La Semana de Ciencia Abierta contempla

través de un formulario online. De visita en la región de Aysén, los investigadores Juan Carlos Aravena y Eduardo Barros darán una charla en Coyhaique titulada "Planificación Macrozonal hacia el 2030: Metodología y avances de la Hoja de Ruta en CTCI para las regiones de Aysén y Magallanes", que se realizará el miércoles 26 de octubre de 16:30 a 18 horas en el Salón Augusto Grosse del MOP.

En tanto, de manera virtual, la Dra. Trace Gale, Investigadora CIEP, liderará el conversatorio "¿Qué opinan los habitantes de la macrozona austral sobre la ciencia?", donde se presentarán los resultados de la primera encuesta ciudadana de percepción de la ciencia aplicada en este territorio. Por otra parte, el proyecto Nodo Laboratorios Naturales Subantárticos invitará a un mapeo participativo a cargo del biólogo Andrés Adiego. Además de otras actividades enfocadas en promover el desarrollo y difusión de la ciencia de manera abierta, accesible, eficiente y transparente, siguiendo las recomendaciones de Unesco.

Para estudiantes de enseñanza básica y

"Superhéroes del reciclaje" de la compañía "Reloj de Arena" y se realizará un ciclo de cortos animados que itinerará por los establecimientos educativos con una mediación a cargo de un equipo de investigadoras del proyecto. Mientras que en Coyhaique, la programación contempla una función de la obra "Aire" de la compañía regional Teatro Huevo, inspirada en el conflicto socioambiental de la contaminación de la capital regional. Además de visitas a Cerro Galera y Reserva Nacional Río Simpson guiadas por investigadores de CIEP y Universidad de Aysén, y monitores del

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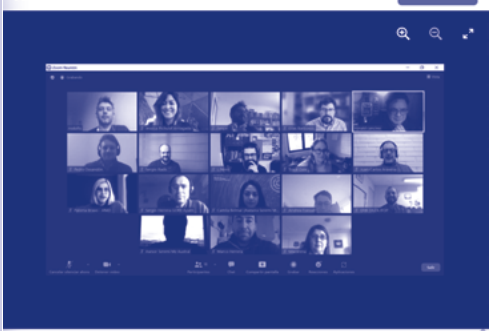

CIEP

ES DE ETAPA DE DIAGNÓSTICO

*Se revisaron principales avances y hallazgos en la etapa de diagnósticos y se reflexionó en torno a la ciencia y su contribución a la solución de problemáticas territoriales.

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Noticias

¿CUÁL ES EL ESTADO ACTUAL DE LA CIENCIA EN LA MACROZONA AUSTRAL DE CHILE?

Octubre 21, 2021 | 497 vistas

Tras intensos nueve meses de trabajo participativo, Nodo Ciencia Austral finaliza su fase de diagnóstico transversal y específico con importantes desafíos. Resultados preliminares que dan paso a la etapa de construcción de hoja de ruta.

La importancia de conocer las capacidades específicas de la macrozona es vital para que las políticas públicas nacionales en Ciencia y Tecnología sean con una mirada global de los diferentes escenarios del país. En este sentido, el Nodo Ciencia Austral para la aceleración de impacto territorial de la Ciencia, Tecnología, Conocimiento e Innovación (CTCI), busca identificar brechas que limitan el desarrollo científico-tecnológico, establecer prioridades y proponer una estrategia con el fin de robustecer el ecosistema de CTCI de las regiones de Aysén y Magallanes y la Antártica Chilena.

Como una forma de acercar la CTCI a las necesidades del territorio surge el proyecto Nodo Ciencia Austral financiado por la Agencia Nacional de Investigación y Desarrollo (ANID) y ejecutado por la Universidad de Magallanes.

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Crónica

Los resultados dan paso a la etapa de construcción de la hoja de ruta

Nodo Ciencia Austral finalizó fase de diagnóstico preliminar para establecer estrategias

● En Magallanes, las mecánicas y grandes empresas son las que han desarrollado innovación; se observa una recesión económica a largo plazo y surge urgencia por investigar sobre transformaciones territoriales y nuevas demandas sociales.

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Diagnóstico revela el estado actual de la ciencia en la macrozona Austral de Chile

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PUBLICADO
21 DE OCT DEL 2021
ARTÍCULOS DE PRENSA

Tras intensos nueve meses de trabajo participativo, Nodo Ciencia Austral finaliza su fase de diagnóstico transversal y específico con importantes desafíos.

Resultados preliminares que dan paso a la etapa de construcción de hoja de ruta.

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Nodo Ciencia Austral: taller birregional abordó principios para la gestión territorial de la ciencia

2022/11/04

Facultad de Ciencias, Facultad de Ciencias Económicas y Jurídicas, Facultad de Ciencias de la Salud, Facultad de Educación y Ciencias Sociales, Facultad de Ingeniería, Investigación, Portada UMAG, Pregrados, noticias

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La actividad se realizó en forma simultánea en Punta Arenas y en Coyhaique

"Se trata de la primera actividad presencial desde el inicio de la pandemia, realizada en forma simultánea en Punta Arenas y la región de Aysén.

¿Qué esperan los ciudadanos y las ciudadanas de la Macrozona Austral sobre el desarrollo científico de este territorio? Esta interrogante busca abordar esta encuesta online liderada por un equipo de investigadores(as) del proyecto Nodo Ciencia Austral financiado por la Agencia Nacional de Desarrollo e Investigación (ANID).

Todos los habitantes de las regiones de Aysén, Magallanes y de la Antártica Chilena, que sean mayores de 18 años, podrán participar de la encuesta denominada "Evaluación ciudadana de prioridades para el desarrollo de la Ciencia, Tecnología, Conocimiento e Innovación en la Macrozona Austral, que busca recoger de manera participativa información en la ciudadanía respecto a la relación ciencia, sociedad y territorio en la Macrozona Austral, facilitando antecedentes para la toma de decisiones que permitan implementar un plan de desarrollo (hoja de Ruta) que atienda las prioridades locales.

En ese contexto, el Director del proyecto Nodo Ciencia Austral, Dr. Juan Carlos Aravena, nos la Universidad de Magallanes, destaca que "esta primera encuesta en la Macrozona Austral, que y de la Antártida Chilena, está abierta a toda la comunidad, no solo se enfoca en el sector académico interesado en estos temas. Busca descubrir cuáles son las necesidades que la

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Organizado por el proyecto Nodo Ciencia Austral

Más de 70 personas participaron de "Diálogo Macrozonal Austral: desafíos y propuestas para el futuro"

● En la actividad digital pudieron interactuar con los expositores y también entregar sus propuestas para el desarrollo de la ciencia y la tecnología en la Patagonia y la Antártica.

Esta actividad potencia el vínculo en las macrozona Austral entre las regiones de Magallanes y Aysén.

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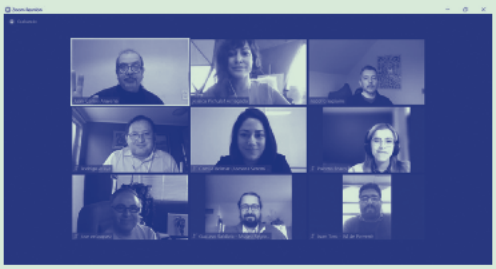
Noticias

NODO CIENCIA AUSTRAL AVANZA EN ETAPA DE DIAGNÓSTICO E IDENTIFICACIÓN DE ACTORES CLAVE

Mayo 24, 2021 | 810 vistas



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Nodo Ciencia Austral refuerza trabajo colaborativo con incorporación de nueva seremi de Ciencia de Aysén y Magallanes

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PUBLICADO
12 DE MAY DEL 2022
POST Y OTROS

En una nueva sesión del Comité de Coordinación Macrozonal, donde se reúnen actores relevantes del ecosistema científico-tecnológico de los territorios australes, se dio la bienvenida a Verónica Vallejos, nueva seremi de Ciencia, Tecnología, Conocimiento e Innovación de la macrozona, quien participará junto a su equipo de esta instancia participativa convocada por Nodo Ciencia Austral.

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Con la conformación del NODO #Ciencia Austral, se reunieron por primera vez actores #CTCI para desarrollar una planificación macrozonal #Aysén #Magallanes Pronto les contaremos como avanza esta hoja de ruta 💪🔬🌎Nota completa en 👉n9.cl/4tcfp

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Seremi Ciencia Macrozona Austral y 4 más

Nodo Ciencia Austral would like to thank all those who have participated in activities, workshops and meetings for the project. Their input has made it possible, that today, we know better our territory and marine area, their specificities, gaps and opportunities. Such insight will allow us to keep growing from the science, technology, knowledge and innovation perspective in pursuit of the well-being of each and every inhabitant in the Austral Macro-Zone.

Route Chart.
Science, Technology, Knowledge, and Innovation in the Austral Macro-Zone of Chile (2020-2030)

Nodo Ciencia Austral

University of Magallanes (UMAG), University of Aysén, Patagonian Ecosystems Investigation Research Center (CIEP) and Chilean Antarctic Institute (INACH).

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PUBLISHING TEAM:
Camila Gratacós
Catalina Espinosa
Catalina Camus
Jessica Pichulaf
Loreto Medina

DESIGN:
Negro.cl

PROOFREADING/TEXT EDITING:
Miguelángel Sánchez

ENGLISH TRANSLATION:
Olivia Hidalgo Hahn

PHOTOGRAPHY:
Nodo Ciencia Austral Archive
Istock.com

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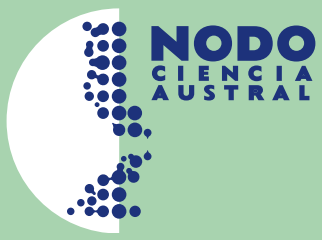
February 2023



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