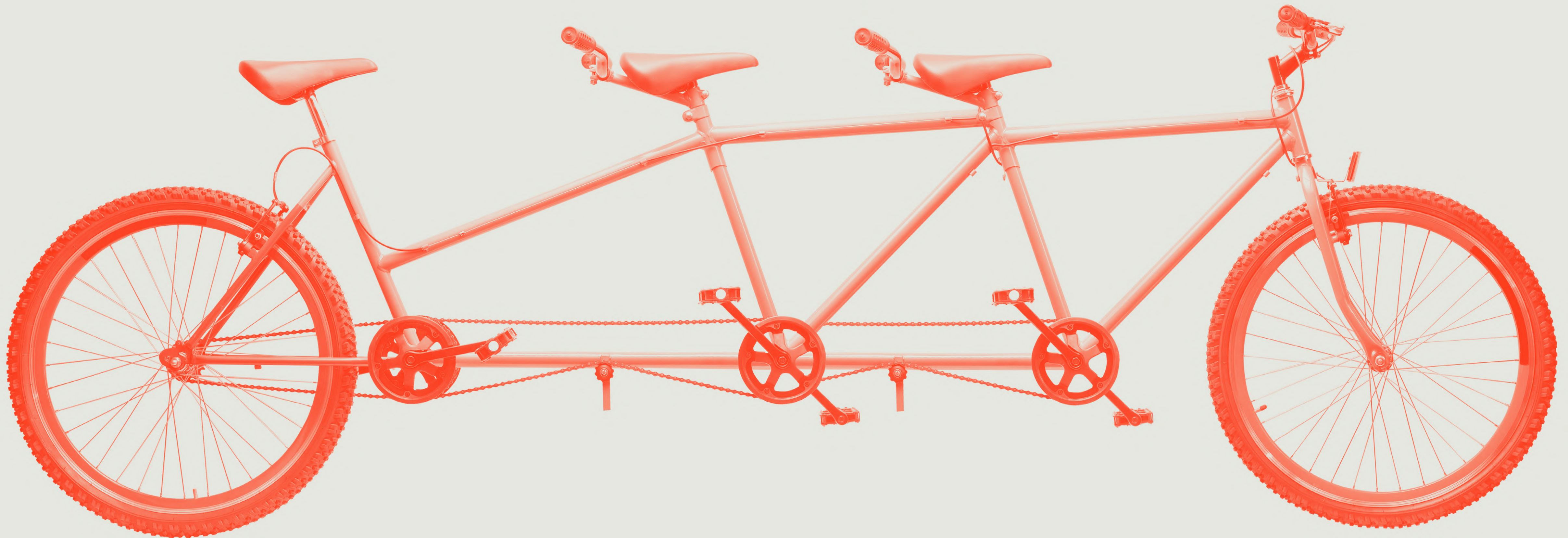


SJFFA HUB

Stories of collaboration

2023
Annual
Report



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We welcome you to learn about the stories and experiences of the people and initiatives that were part of SOFOFA Hub in 2023.

Through collaborative work and the support we provide in different instances, we have connected those with needs and challenges with those who can provide different solutions, integrating their capabilities and opening new avenues.

Collaboration from within

At the SOFOFA Hub office, it is usual to see the managers gather around a table, often sharing lunch with the rest of the team in this space, which allows them to get to know each other and strengthen ties.

Because if there is a verb that is conjugated there, it is collaborate.

Coming together on this occasion, are Alan García, executive director at SOFOFA Hub; Mariana Thielemann, manager of entrepreneurship; María Paz Merino, executive director at CBT; and Javier Obach, manager of circular economy.

“We all participated in the design of this office, so we feel it’s ours,” Alan says. They made sure it was a comfortable place, certain that this contributes to a relaxed environment, which has an impact on work and productivity.

At SOFOFA Hub, spaces reflect a way of understanding work: they are open, flexible, and even interchangeable, so that those who labor there have the option of not always sitting at the same spot. Because, they say, there are no hierarchies, and everyone does a bit of everything. “We play well instinctively. We have placed high demands on ourselves, but without setting strict rules,” Alan explains. Mariana adds: “We trust each other. There is much spontaneous help and collaboration: we are very complementary.”

The spirit of collaboration is contagious, Alan believes. “When companies come and meet here, trust is generated; there is a desire to share.”

Alan García

“If a team is committed and participates in every aspect of the process, it will be able to lead it and push it forward. And if it works, the team will want to scale it.”

Mariana Thielemann

Conversation



Javier Obach
 Circular Economy
 Manager

Mariana Thielemann
 SOFOFA Hub
 Entrepreneurship Manager

Alan García
 SOFOFA Hub
 Executive Director

María Paz Merino
 Executive Director at CBT

The spirit of collaboration is contagious, Alan believes. “When companies come and meet here, trust is generated; there is a desire to share.” This is like a club of companies, and the greatest value is generated in the interaction between peers,” he says.

This dynamic, which they implement with their partners and which helps them build community, started to be replicated in 2023, with the entrepreneurs. At these instances, they function as articulators. “Someone told us we were like the DJs of innovation,” says Mariana. At SOFOFA Hub, there is flexibility to innovate and think as a group.

Regarding the process experienced over the last year at Venture Client, Mariana has observed that it is more firmly established and it no longer requires so much effort to sensitize and persuade. “Each company has to involve operational teams in the challenge, and today, it is something that works much more smoothly; there is good predisposition. It’s a more efficient and effective conversation because they have already internalized it. We also feel part of these companies because we have to understand what they do, where their individual issues lie, so we can go out and look for solutions

and carry out the selection process,” she says.

Meanwhile, at the CBT, María Paz notes that thanks to the continuing conversations they have with companies, universities, and entrepreneurs, the group of collaborators they can contact in formal and informal instances has grown. “They trust us. They like the work we do and they are always available to support us.” She says this has been crucial in advancing the CBT’s goal: “to get industry to approach biotechnology and dare to do things.”

In the case of Territorio Circular, an important milestone in 2023 was preparing the Practical Guide for Circular Management, which was developed in collaboration with SOFOFA Hub partner companies and SOFOFA, in a process that was jointly led. “I think the guide was a beautiful meeting point, understanding that we are indeed first cousins seeking a common purpose,” Javier says. “We are an ally for the authorities, in terms of what they need to regulate for an innovative future, one with different paradigms,” Alan adds about SOFOFA Hub’s relationship with the public sector.

“We have generated an image, a reputation within the ecosystem”.

María Paz Merino



“Our intention is to become part of each territory, learning about what is happening there, to generate trust, empathize with the needs, and find solutions”.

Javier Obach

Board of Directors

Members were appointed in December 2021, for the 2022–2023 period.



Manuel José Casanueva
 SOFOFA Advisor
 GTD Vice President

Gonzalo Russi
 SOFOFA
 General Secretary

Fernanda Soza
 ChileMass
 Executive Director

Francisco Ruiz-Tagle
 CMPC
 General Manager

José Guzmán
 vice-President at
 Agrosuper

Alan Meyer
 General Director for
 Chile, Peru, and Ecuador
 at Mercado Libre

María José Montero
 Director of Impact
 Investment and Sustainability
 at FIS Ameris

Rosario Navarro
 SOFOFA President

Sebastián Ríos
 Pucobre General Manager

ROSARIO NAVARRO,
SOFOFA PRESIDENT

Leading the coming changes

Elected in 2023, with broad support as the first woman president of SOFOFA in 140 years, the entrepreneur and Sonda vice-president, Rosario Navarro believes that companies are the great engine for transformation and innovation, and that SOFOFA Hub is a space for exploration, to detect possibilities for growth and innovation.



How would you define SOFOFA Hub?

SOFOFA Hub is the purest space for exploration, where deep issues of uncertainty and disruption are put forth, which are faced collaboratively, to detect possibilities for growth and innovation.

How much emphasis does SOFOFA Hub place on innovation?

It has instilled the idea that science, technology, and innovation are not exclusive to universities, but that many actors participate within this ecosystem, and companies are the great engine for transformation and innovation. The Hub managed to turn the screws and say: from industry, we know where the spaces for opportunity and the links with knowledge are.

What challenges do you foresee for the future?

For me, the Hub is an actor and a pillar within SOFOFA. We are in a very deep transformational challenge. There are

companies that have already started to take steps, but in general, in Chile, we are far behind, and nobody is going to wait for us. I feel the challenge for Chile to be an actor and a protagonist of these coming changes; I see the country has the context, the natural capital, the human capital, but now we have to believe in ourselves.

In your opinion, which companies should set their sights on biotechnology?

I believe we must make biotechnology's potential more accessible; in the food industry, in forestry, clothing, in materials like concrete. There are numerous things where it will be present that people do not yet suspect. If we are going to make resilient materials, biotechnology is a very important component. At the Hub, we should have food companies, salmon farming, the pharmaceutical sector, and all the industries with stakes in biotechnology.

**FOUR DEFINITIONS
BY ROSARIO
NAVARRO**

Articulation

“SOFOFA Hub plays a role not only connecting companies and their challenges with available solutions, but also with academia, with knowledge and innovation centers in other parts of the world, instances that would be very hard for a company to tap into on its own. This articulating role also brings more comprehensive challenges to the table.”

“It is the key to profound transformations. When you look at things from a single perspective, you lose the richness of diversity. On the other hand, when you put companies with different realities, and from different sectors, to look at a problem simultaneously, it generates a collaborative environment that allows for the achievement of better innovations and results in the future.”

Collaboration

“Innovating is difficult when you’re opening a frontier that is still very much on the cutting edge. Therefore, the support from an expert entity, whose purpose is to mobilize innovation and deep transformations in business models, provides certainties and allows people to go down a road that others have already traveled.”

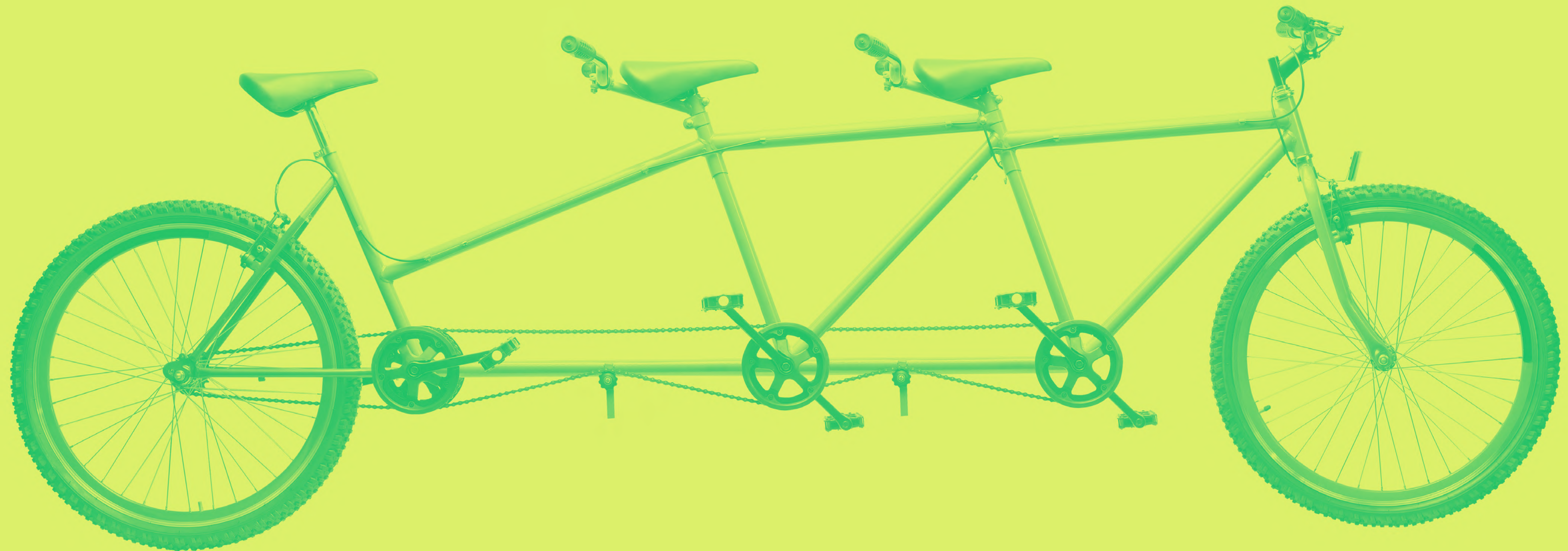
“As a country we have traveled a virtuous path in the world of early startup incubation and development. But clearly, the challenge is how those innovations become big business and scalable solutions. Hence the importance of making that leap forward as a country, to transfer knowledge, and to make small science-based technology companies grow and generate market share.”

Support

Scaling

Partners

Our partners have been pioneers in understanding collaboration as part of the innovation required today. Moving towards collaborative models requires, in addition to rethinking processes, an internal cultural change.



What does it mean to be a partner?

It means participating in all instances of collaboration promoted by SOFOFA Hub, based on the needs of each company, with exclusive conversations where innovation experiences are shared, novel solutions are found, and learning spaces are created.

Molymet

EDGARDO CISTERNAS


Research and Development Manager

Molymet: Chilean company.

Processes: 35% of the molybdenum and 70% of the rhenium in the world, metals that are used in engineering works, in aeronautics, and even in household products.

Productive plants: Chile, Germany, Belgium, and Mexico.

SOFOFA Hub Partner since: 2020.



“SOFOFA Hub has expertise and know-how in the areas of innovation and generating ecosystems. It doesn't come from theory, but directly from those who are experiencing the need to innovate,” says Edgardo Cisternas, Molymet's research and development manager.

What were your expectations for 2023 at SOFOFA Hub?

We wanted to learn from the other partners, because they are companies from different industries with much experience; they are powerful people with very solid strategies. And, secondly: to take advantage of the Venture Client program. There are other companies that have their own venture capital programs or that participate in other instances of innovation challenges, but in our case, we decided this would be our only open innovation platform.

What have you learned from the exchange with other partners?

We meet in the executive committee every two months and there, we review the SOFOFA Hub agenda and spend time discussing different partners' innovation strategy issues. In that instance, we learned about Agrosuper's experience with innovation campaigns. They have managed to establish a robust system for collecting and selecting ideas from their workers. It is Molymet's wish to have something similar. It has to be developed considering our own culture, but it is interesting because one sees it is indeed something long term, that matures little by little, until it achieves a system that can gather ideas -and sometimes very good ones- from people who are in the field in different areas.

What contribution do you think you have been able to make to the other partners?

Over the years we have learned to navigate R&D projects under the Tax Incentive Law, which has quite a complex application process. We've told the other partners about the results, the success we've had, and how it's worthwhile for the more formal areas, like finance and accounting, to be involved, which will help make it a kind of shared responsibility.

Why has it been important to be a SOFOFA Hub partner?

The SOFOFA Hub team gets very excited when there are opportunities for innovation. They are very proactive and have developed a muscle to continually push companies to keep things moving forward. They're quite relentless, always asking: do you need anything, how do we do it, how are you doing?

The expectation Molymet set for 2023 at SOFOFA Hub was to learn from the other partners and take advantage of the Venture Client program.

Pucobre

SEBASTIÁN RÍOS
General Manager

PuCobre: Chilean capital company.

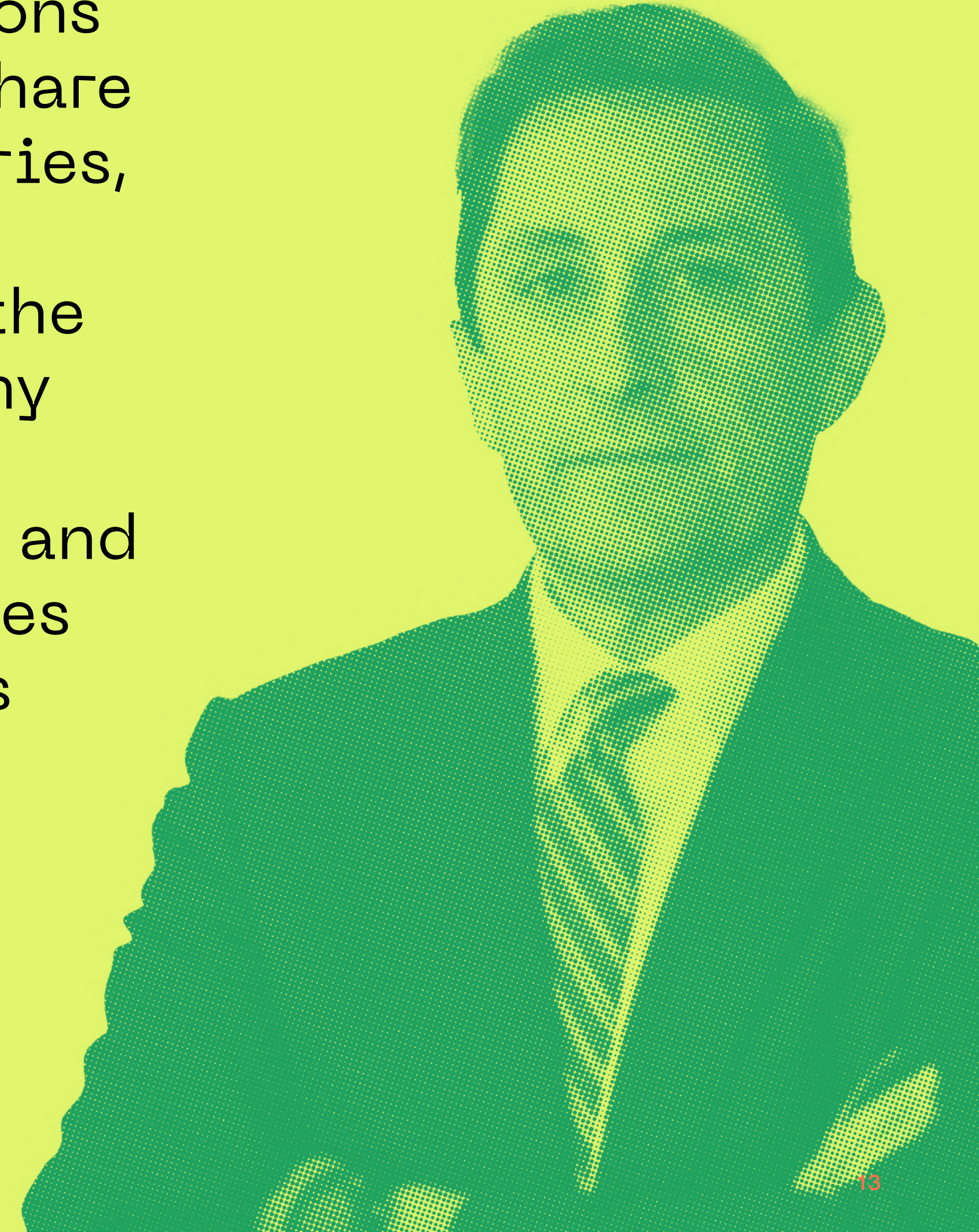
Exploits: Specialized in medium-sized copper mining.

Produces: Copper cathodes and copper and gold concentrates.

Operations: Mainly in the Atacama Region, with roots in Copiapó and Tierra Amarilla.

SOFOFA Hub Partner since: 2020.

"For 2023, our expectations at SOFOFA Hub were to share experiences, success stories, and failures, in order to improve and to sharpen the muscle that each company must have, to be able to access new technologies and solve their own challenges through innovation," says Sebastián Ríos, general manager at Pucobre.



What have you learned from the exchange with other partners?

We have learned how important it is to have a well-established innovation model, with clear governance, and a shared roadmap inside the organization. We have relationships with businesses, suppliers, and other leading companies in the mining industry, but we did not have a clear system to relate to innovators, startups, and people who are developing knowledge -not necessarily for mining, but which we can often apply- and we were able to incorporate this into our innovation model.

What contribution do you feel you have been able to make to the other partners?

We have contributed some concrete examples of interactions with startups: how we work with these companies, how we have guided them, so that they can finally develop products that have a clear market and that solve a real problem on the ground.

Why has it been important to be a SOFOFA Hub partner?

It is a good instance to accelerate processes that allow innovation to enter your company. and through this innovation, really address the challenges of productivity, safety, cost deficiency, commercialization, and marketing that each one may have in a better way.

"What's important it is to have a well-established innovation model, with clear governance, and a shared roadmap inside the organization". says Sebastián Ríos.



CMPC

MARIANA PARODY

Competitiveness Manager

CMPC: A global company, born in Puente Alto, Chile, over 100 years ago.

Produces and markets: Wood products, cellulose, packaging products, paper, tissue, and personal care products.

Operations: With an industrial and commercial presence in 12 countries.

SOFOFA Hub Partner since: 2020.

“CMPC has open innovation challenges with accelerators in other parts of the world, but they don’t have a space like SOFOFA Hub, where we can share with other partners. It opens up your mind a bit. It allows you to see spaces for improvement, evolution, and learning. And it gets you where you want to go faster,” explains Mariana Parody, competitiveness manager.

What have you learned from the exchange with other partners?

We have analyzed solutions based on other companies' challenges, for example, regarding cable theft, which we used for the issue of timber theft, which we did not have as a challenge, and for which we may have found a possible solution. With SOFOFA Hub we are seeing a bit of the world, and this also allows us to accelerate the entrepreneurial ecosystem in Chile.

What contribution do you feel you have been able to make to the other partners?

CMPC's innovation management system is something we have strengthened considerably. We have created innovation governance, monitoring the management of specific innovation goals in the world of customers, in the world of efficiency, in the world of sustainability, reinforcing training. We are constantly reviewing and improving, and we have experiences to continue to showcase.

Why has it been important to be a SOFOFA Hub partner?

I think that sometimes you don't have all the internal capacity, or the networks, to be able to capture or identify potential startups or businesses that could collaborate and have a valuable impact on our company's own challenges. SOFOFA Hub has created that scouting network and a method that gives our internal team a break. We are also creating a space for collaboration with partners from different industries. As this becomes more robust - if different companies come in, with different points of view and different degrees of maturity - we will all grow.

"With SOFOFA Hub we are seeing a bit of the world and that also allows us to accelerate the entrepreneurship ecosystem," says Mariana Parody.



Agrosuper

CRISTIÁN MEYER
Innovation Manager

Agrosuper: Company founded in Doñihue, O'Higgins Region, in 1955.

Manufactures and markets: Chicken, pork, turkey, and processed food products.

Exports: To over 50 countries, with offices in Mexico, the United States, Italy, South Korea, China, and Japan.

SOFOFA Hub Partner since: 2020.



"We've been building it together", says Cristián Meyer, Agrosuper's innovation manager, about the work method at SOFOFA Hub. "They have been able to empathize and connect with companies and their realities."

What were your expectations for 2023 at Sofofa Hub?

We wanted to use the Venture Client model: our hypothesis is that, by collaborating with five other companies, we will be more attractive, so that our challenges can be taken on by world-class startups, which we would not be able to reach on our own; the value offer is scale. And the other condition is agility. Collaborating among five can be slower than doing it alone, so it's a challenge: you have to be agile. In 2022, there was a call, in 2023 there were two, which is a step forward. We are starting to lubricate the model.

What have you learned from the exchange with other partners?

We have learned openness to the world. We are still very local, very national, very Latin American, but there are other companies that are everywhere, with a bigger scale and a bigger budget, and therefore they are more attractive.

What contribution do you feel you have been able to make to the other partners?

We speak from doing, rather than from advertising. We share our general innovation model; that is a good practice we did. I don't see those formalities elsewhere. Here, we set up a presentation and then we talk.

Why has it been important to be a SOFOFA Hub partner?

The most powerful argument is that you will be able to solve the issues in your business. If companies are farther behind, they will be able to accelerate their learning curve, and spend less time understanding how to do this. There are rights: you will be able to see, learn, and implement. But you also have duties: you have to dedicate agenda, time, and focus.

From the exchange with other partners, he highlights having learned about being open to the world. "We are still very local, but there are other companies that are everywhere," says Cristián Meyer.



SQM**IGNACIO MAJLUF**

Management and Sustainability Manager

SQM: Global mining company founded in 1968 in northern Chile.

Produces and develops: Products such as lithium and derivatives, iodine and derivatives, potassium, specialty plant nutrients, and industrial chemicals.

Exports: To over 100 countries.

SOFOFA Hub Partner since: 2023.

“The collaborative environment generated at the Hub is remarkable, given that companies have a responsibility to society as a whole, and not only to their shareholders.”



What were your expectations for 2023 at Sofofa Hub?

In September 2023, I became manager of management and sustainability at SQM's Nitrates Iodine division and started participating in the Hub, learning about the different programs, in order to maximize our participation in each line of action, the connection of business challenges with entrepreneurs, and the opportunities and synergies we have with biotechnology.

What do you value about collaborating with companies from different industries?

There is an African proverb that I like to quote: "If you want to go quickly, go alone. If you want to go far, go together." In order to tackle society's major challenges, it is necessary to think big and to create partnerships between different actors, to support the common goal of achieving sustainable development that considers the impacts on the different dimensions of sustainability (environmental, social, and economic). The collaborative environment generated at the Hub is remarkable, given that companies have a responsibility to society as a whole, and not just to their shareholders. Through the dialogue and the structure of its programs, it is possible to reflect on how to face certain business challenges that have a social impact, such as the responsible use of natural resources and energy.

Why has it been important to be a SOFOFA Hub partner?

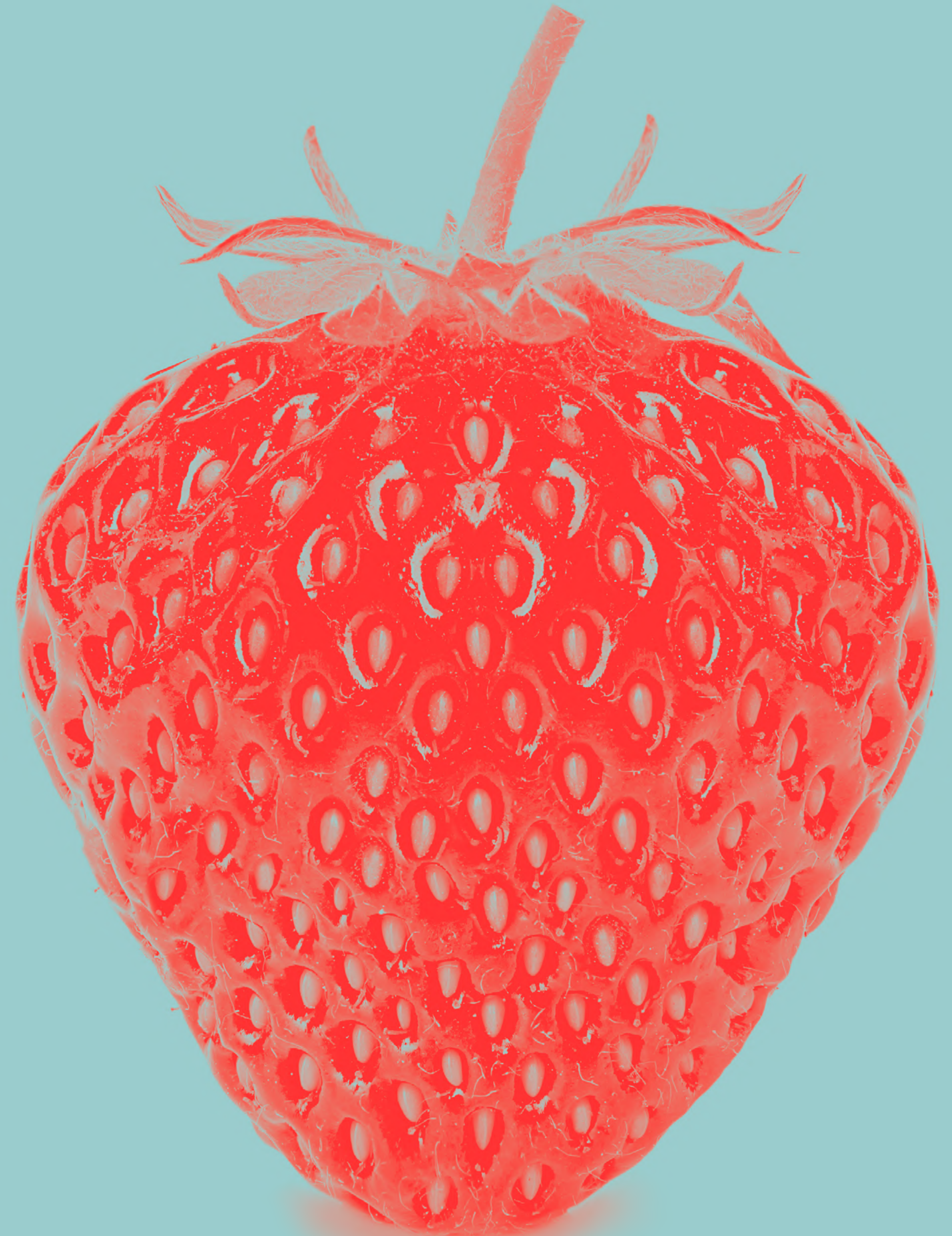
I am convinced that in matters of sustainability, the efforts of different actors are not isolated, but rather, they are joint endeavors in which companies, startups, universities, and the government have a role to play. Therefore, the Hub's articulating role makes a lot of sense to me, in order to accelerate the innovation cycle and create enabling conditions that support innovation.

"I am convinced that in matters of sustainability, the efforts of different actors are not isolated," says Ignacio Majluf.






The Translational Biotechnology Center's mission is to bring biotechnology closer to the industrial sector and to generate enabling conditions for its development in Chile, creating a real impact on company productivity.



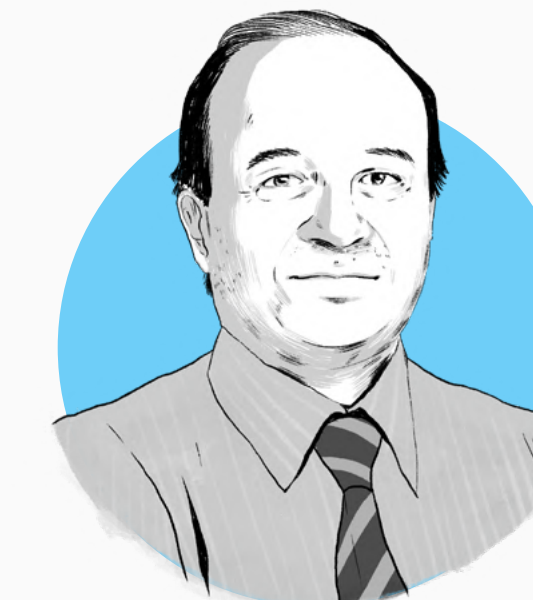
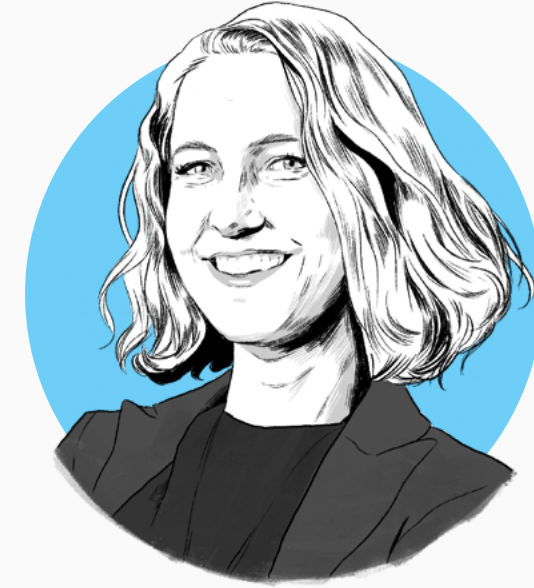
"Today, Chile is a natural space for biotechnology, first, because of its incredible biodiversity, but also because the country is making a firm commitment towards sustainable productive development. Biotechnology is, without a doubt, the technology for sustainability, and that gives it immense value at present. For this reason, together with Anid, we have strengthened the work CBT carries out, in its mission to bring biotechnology closer to industry, and to seek solutions in the innovation and entrepreneurship ecosystem, to bolster its use and applications in the productive sector."



Aisén Etcheverry
Minister of Science, Technology,
Knowledge, and Innovation

CBT Committee

It brings together representatives of three key areas for biotechnology industry development: universities, research and development centers, and the corporate sector.



Rosario Navarro
SOFOFA President

Eduardo Abeliuk
TeselaGen Founder

Manuel José Casanueva
SOFOFA Advisor
GTD Vice President

Isaac Kohlberg
Chief Technology Development
Officer
Harvard University

Mauricio Cañoles*
CBT Partner R&D Centers
Representative
Ph.D. Research and Business
Affiliate, UC Davis
Chile Life Sciences
Innovation Center

Jennifer Alfaro**
CBT Partner R&D
Centers Representative
Scientific Director,
Merken Biotech

Gonzalo Russi
SOFOFA General Secretary

Rolando Chamy
CBT Partner Universities
Representative
Director at Núcleo de
Biotecnología Curauma,
Pontificia Universidad Católica
de Valparaíso

* On the CBT Committee until September 2023

** Joined the CBT Committee in October 2023.

Hemisferio Biotech

This instance seeks to accelerate the development of products and services based on biotechnology, generating capabilities and knowledge for scaling up within the national science and technology ecosystem.

(BIO)TECHNOLOGIES WITH AN IMPACT

The second version of Hemisferio Biotech brought together 25 applicant startups that responded to the call from the Center for Translational Biotechnology (CBT), which seeks to accelerate the development of biotechnology-based products and services at the scaling-up stage.

Of the eight projects the Technical Selection Committee shortlisted, three went on to the Technological Due Diligence stage, where commissions composed of three technicians review and deliver rubrics regarding the level of technological maturity, the relevance of the work plan and budget, the business model and market opportunity, as well as the social, economic, and environmental impacts.

At the end of this process, two companies were selected to receive CBT support for 24 months, starting in 2023, which implies technical follow-up, co-financing, and linkage with the market and with investors.

TWO EXPERTS:



PABLO FERNÁNDEZ

He is the venture capital manager at Venturance, a general fund management company that, through this area, seeks to invest in biotechnology projects. It is not the first time he participates in Hemisferio Biotech, where he was part of the technical selection committee, together with other experts. He says that in his evaluation of the shortlisted projects, he seeks to answer the question: can this project achieve large scale and impact? “There are not many instances dedicated to biotechnology matters, and I think it is good they are supported locally,” he explains about the importance of Hemisferio Biotech. He adds: “One of the problems with biotechnology in Latin America is there are few funds available to support it, and they do so up to very early stages.” For investors, he explains, it is more interesting if they can take on more mature projects. “Hemisferio Biotech is dealing with that space that was not as well covered by other funding mechanisms.”



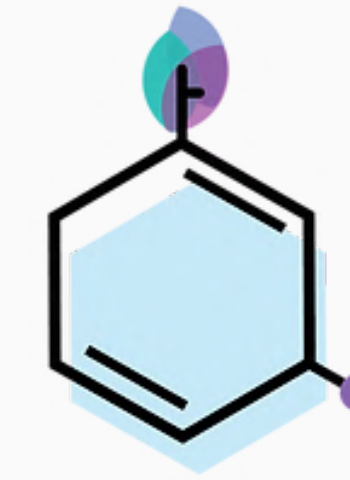
LIONEL CORTÉS

He is head of development and projects at CCU's Compañía Pisquera de Chile, where he has been dedicated to cocktail development for over 10 years. He was one of the experts who participated in the Technological Due Diligence that assessed Frankles, one of the awarded startups. It was his first time fulfilling this role at Hemisferio Biotech, and he says it was a worthwhile experience, since he came in contact with this startup, which will present projects to him in 2024. “Our company works very hard on the issue of product development, on innovation,” he explains. For this reason, he values the opportunity to interact with new companies, as well as with the other people who evaluated the applicants. “Since we are a holding company, we can also give feedback to the other sister companies.”

DANIELA VAISMAN BOTANITEC

🌐 Polyphenols for stressed plants

Botanitec is a startup that designs and produces biotechnological solutions for the agricultural industry, based on natural principles. It was selected in Hemisferio Biotech's second call, to work with CBT in scaling up the development of its most recent product: Botan Estrés, an antioxidant composition for plants. Today it is present in four countries.



"Of the programs in which I have participated, this is the one with the best support. They are alert, asking what they can help us with, in terms of the rules, regulations, and registration in other countries, which for me is the most difficult aspect at the moment. And they get on it."

"I have a lot of friends in the biotech industry, and some of us have our own companies, our own startups: we call ourselves 'the biofriends'. We are always telling each other what calls are open, and we support each other because this is a difficult field", says Daniela Vaisman, a civil engineer in Biotechnology, PhD and Master in Engineering Sciences, specializing in Chemistry, from Universidad de Chile. She is the founder and manager of Botanitec, a biotechnology company based on circular economy, which develops solutions for agriculture out of natural active ingredients. Through her biofriends, Daniela learned that the Center for Translational Biotechnology (CBT) had the Hemisferio Biotech program, which accelerates the development of products and services based on biotechnology. She decided to apply and was selected.

She presented an innovative product: Botan Estrés, an antioxidant composition with polyphenols as its active ingredient. She seeks to position the product in the agricultural industry, to combat the effects of abiotic stress, "for example: high

temperatures in summer, frost in winter, and waterlogging of roots during floods. There are also times when plants are more susceptible to pathogens, so this product prepares them by stimulating their immune system, so they are less affected by these organisms," she explains. She adds it also helps plants adapt to climate change. "We have to give them tools to make them more resilient, so that this adaptation does not affect them too much."

Hemisferio Biotech has a Due Diligence instance that allows validating the potential of the selected projects with experts, and transferring valuable information to successfully materialize their plans. For Daniela, the goal was to scale up Botan Estrés at the production level, penetrate the market, conduct further trials with producers, and internationalize it. "I loved the Due Diligence because they looked for roles that were very relevant and diverse, for the assessment: they invited one of the members from a winery, a member from a supplies company, and a regulatory

Last year, they were able to test their product in some of the fields of Viña Concha y Toro. "Fortunately, we did well with the Cabernet Sauvignon trials and were able to increase yields by 40%," Daniela says.

expert, to identify the existing gaps so this product would not fail. It was very good feedback."

In terms of the support she has received from the CBT, Daniela lists several advantages: "On the one hand, there are resources, because it is very expensive for us to travel to take data and do the analysis, to evaluate the impact of our products, so that is already a big help. But also, the fact that an institution like SOFOFA Hub is supporting something like this speaks to the fact that the industry and the market are looking for this kind of solutions. It's great support because when you are knocking on doors, it makes it easier."

Last year, for example, they were able to test with Viña Concha y Toro. "It's the largest winery in Chile, and fortunately we did very well with the trials, so we already entered their program to apply the product in some of their fields. We made trials of our products on Cabernet Sauvignon and were able to increase yields by over 40%. In addition, there was less botrytis (a parasite) and we visually observed less impact, which is related to the fact that polyphenols stimulate the

plant's immune system, making it more resilient." With this, Daniela says, she hopes that more vineyards will open their doors to them and says there is already a project in Pica, with vines in the desert, which will use their product.

Daniela is happy with the experience. "Of the programs in which I have participated, it is the one with the best support. They are always paying attention, doing surveys and diagnostics, asking with what they can contribute or help us, in terms of rules, regulations, and registration in other countries, which for me is the most difficult aspect at the moment. And they get on it." Today her company is entering Peru, Argentina, Mexico, and the United States. "All this, thanks to the CBT," she assures.

Botanitec participated with Botan Estrés, an antioxidant composition that has polyphenols as the active ingredient, which stimulates plants' immune systems.



FRANCISCA SCHÄFER
FRANKLES

The nature
of flavors

Since they were selected by Hemisferio Biotech, the Chilean food flavoring company Frankles has been able to improve commercial management, prototyping, and flavors.



Biotechnology engineer Francisca Schäfer and her partner, commercial engineer Matías Henríquez.

In late 2020, at the height of the pandemic, Francisca Schäfer - a molecular biotechnology engineer - was enthusiastically experimenting in her laboratory. She had a clear objective: to extract natural flavorings and offer them to the food industry. One of the first fruits she worked with, she recalls, was passion fruit. “Now we buy 100% organic pulp, but back then, we were buying the fruit. When they arrived, we would split them... they were kilos and kilos.” Together with her partner Matías Henríquez, a commercial engineer, they made their first strides with Frankles, a startup devoted to producing natural flavoring for alcoholic and non-alcoholic beverages, in an attempt to reduce excess chemicals in the food industry.

Its initial flavorings were created from vegetable raw materials, such as fruits, pulp, fruit peels, and herbs. After three years of work, they have already achieved over one hundred flavors, but their beginnings were not easy. They were facing a closed-off industry. “It was very difficult to get to know the industry because everything is kept secret. We were

quoting flavorings, and no one would reveal the components,” says Francisca.

They soon discovered the reason: although a flavoring may be labeled as natural, its production uses petroleum-derived chemicals. “In Latin America, it is not a problem yet, but the regulations in Europe and the United States have increasingly serious warnings about this,” she says.

Solvents are needed to make flavorings, and they decided to use all-natural options, such as water and alcohol. In trying to make flavors for soft drinks, they discovered there are new green solvent technologies that allow different qualities to be extracted from a raw material. From an orange peel, for example, one solvent extracts antioxidants - used to preserve food - and another, color.

One of the great tools in this company is artificial intelligence. Thanks to it, at Frankles, they gather data to improve the methods by which an extract is transformed into a natural beverage ingredient. They have developed their own machine learning platform - called Nodex - to connect the data they collect from

"We were considering the challenge to start approaching other players in the industry, to make that transition to knock on bigger doors".



each extract, such as temperatures, the required solvents, and its antioxidant capacity. The machine learning model is fed this information, and it tells them how to obtain a flavoring from a certain raw material.

Thanks to the CBT, they were able to improve their flavors, which translates into better portfolios for customers and more concentrated flavorings. They have also been able to develop new formulas: "With the technology we had, we couldn't extract the molecules from blueberries and other berries. Until before the CBT, it was something we couldn't manage to do."

At the initial stage, Frankles would send concentrates to companies to test on their products, but they realized this was not an effective system.

With CBT funding, they added a food engineer to the prototyping team, who is in charge of testing and sending ready-made flavoring samples to customers. Another contribution they will have thanks

to Hemisferio Biotech will be to bring a commercial expert on board the team. "We set the challenge for ourselves to start approaching other players in the industry, to make the transition to knock on bigger doors. In that sense, the CBT has been key because it allows us to have a much closer relationship with potential customers. You come with their recommendation, and that also opens doors for you." Thus, they have been able to start conversations with Concha y Toro and CCU.

At one point, Francisca and Matías realized that it was not only worthwhile to extract flavors from fruits. They could also take advantage of industrial waste. Therefore, they are currently developing a pilot to extract compounds from agroindustry waste, such as coffee grounds, grape pomace, citrus peels, and olive oil. This way, they will be able to drive a circular economy in the future.

The CBT has provided them with access to

contacts and meetings "because they understand that this is scaling up simultaneously; on the one hand, we have the flavors, but on the other hand, it is key to push the technology." Francisca says that CBT monitoring is closer than what they were used to as a startup; they now receive monthly feedback covering technical and financial aspects. "For us the contact network and the technical side are crucial aspects of CBT support," she says. Learning has allowed them to optimize the processes, but it is a path that has only just begun. At Frankles, they know the technology they are handling is not only limited to the food industry, but also has great potential for cosmetics and pharmaceuticals, which they hope to explore in the future.

Francisca and Matías are currently developing a pilot to extract compounds from agroindustry waste, such as coffee grounds, grape pomace, citrus peels, and olive oil. This way, they will be able to drive a circular economy in the future.

A methodology for improved collaboration

The Science and Industry Meeting sought to encourage the link between companies in the food industry and teams from universities and research centers. From this exercise, a working methodology emerged for the joint development of research and innovation projects focused on biotechnology, in order to create value and in line with sustainable development.



A NEW WORK CYCLE EMERGES

In 2022, the CBT and Sofofa Hub participated in and supported the call for a Business Mission to Boston, which included representatives from companies like Pucobre, CAP Huachipato, Agrosuper, Carozzi, and Watt's, as well as members of the Concha y Toro Research and Innovation Center and the UNAB Center for Systems Biotechnology. Following this tour, which was aimed at learning about the innovation systems at various US cities and seeking possible biotechnological solutions for the mining and food industries, a work cycle emerged, involving workshops and challenges for the food and beverage sector, which took place between May and September 2023. There, the needs the companies raised were connected with possible solutions from research centers and universities, through HubTec.



THE FOUR CHALLENGES

The first stage consisted in defining the needs of the participating food industry companies: Carozzi, Agrosuper, Watt's, and Concha y Toro. Fifteen challenges were identified, which were then prioritized together with HubTec to define the top four priorities, which were validated in descriptive fact sheets. The challenges posed were: New alternatives for individual packaging; New alternatives for natural sweeteners; Vegetable replacement of natural gelatin; and Waste revaluation. At the end of this stage, Iansa was invited, who joined in with its innovation area.



WORKING GROUPS

Pilot spaces to meet and exchange were generated for each challenge, within working groups composed of representatives from the public and private sectors, as well as academics and researchers. The conversation provided an opportunity to ask questions, and to identify opportunities for collaboration and the development of innovative solutions, in possible joint projects. It also sought to create inputs to drive new regulatory frameworks in the processes of biotechnology-related industries.

TALKING FACE TO FACE

Penélope García, Assistant Manager of Innovation at Iansa.

"It was very interesting for us to find out what academia is up to and enrich ourselves from direct conversation, without intermediaries. I think it was also helpful for the researchers to understand what companies require. For example, researchers had questions whose answers are obvious to companies and manufacturers, but not to them: How do I make sure that what I'm researching is applied, and the company invests? This was one of those questions. Talking face to face, understanding the doubts from both sides, and how to solve them together helps all of us."



COLLECTIVE EFFORT

Ignacio Merino, HubTec Director.

"We are science-technology based and represent all universities and research centers. Interacting with the CBT has been enriching. In 2023, we achieved very concrete things, such as the Science and Industry Meeting, and establishing different methodologies to relate to each other. The work among the teams was very positive, with much learning in professional and human terms. It showed us a more collective and collaborative way of working with the companies, based on the challenges posed."





Inspiring others

CBT Conecta's fourth edition featured distinguished guests, including Andrés Mitnik, CEO at Strong by Form, who shared his story and his vision on entrepreneurship.

“A few years ago, I was wondering about how to fund a tech startup in the far corners of the world,” recounted Andres Mitnik, co-founder of the startup Strong by Form, which developed Woodflow, a high-performance digital wood that can replace materials such as concrete and steel. This Chilean civil engineer, who in his own words “has managed to hack how to develop technology in collaboration with large corporations,” was the keynote speaker at the fourth version of the CBT Conecta meeting, held on November 21, in Concepción, and organized by SOFOFA Hub and Startup Biobío, under the slogan “Transforming the world from businesses”. It brought together representatives of large companies, technology startups, and academia in the Biobío Region. The event has become one of the main innovation hubs in Chile.

United for genetic improvement

The CBT's joint work with Viña Concha y Toro and INIA shows the value of establishing partnerships between academia and industry, to solve, through the use of biotechnology, the challenge of mitigating the effects of climate change on grapevine crops. Researchers Humberto Prieto and Felipe Gainza explain how it works.

The grapevine crop -one of the most important for the country- is suffering the effects of climate change. Heat waves, prolonged droughts, and severe storms pose serious problems for vineyards. For this reason, since 2022, scientists from INIA and the Concha y Toro Research Center -promoted by the CBT- have joined forces to improve the genetics of this plant and make it more resistant. Biotechnology will not only serve to boost the wine industry, but also to make a technological leap in other types of crops.

Genetic editing of plants

"This is a bit of Martian technology," says Humberto Prieto, a biotechnology expert, referring to plant gene editing. He knows it is a complex issue for most of society and it is hard to communicate from academia. Moreover, these technologies are advancing so fast and are so specialized that constant efforts must be made to convince the private sector and government of their importance.

As a researcher at the Instituto de Investigaciones Agropecuarias (The Institute for Agricultural

Research), INIA, Humberto leads a world-renowned team in the field of fruit genetic engineering, especially grapevine. In recent years, thanks to an alliance with the CBT and with Concha y Toro, the area has regained vitality.

In his laboratory, Humberto says, they work with the vineyard's elite plants.

"The company has very clearly identified the plants that produce its best wines," he explains. "You take cuttings from them, take them to the lab, and put them into a cell culture system. There, you can make clones of that plant or do CRISPR-Cas9 editing to modify part of a gene. After this modification, the plant is rebuilt, but with this improvement." It is a way of taking the field into the laboratory in order to improve the different varieties of wine, such as Cabernet Sauvignon or Carmenere. Of course, this whole process involves great technical and technological requirements, and a lot of investment.

In 2023, they were able to consolidate their work, in terms of numbers and technology by-products. The

"The company has very clearly identified the plants that produce its best wines," explains Humberto Prieto, an expert in cellular biotechnology and researcher at INIA, who clones these plants in his laboratory.



Fruit trees do not have the genetic plasticity to adapt quickly to the climatic changes we are experiencing. The only tool that makes it possible to incorporate this resistance is gene editing, says Felipe Gaínza.

results, he says, were useful for SOFOFA and for the vineyard. “At the end of 2023, with that consolidated production, we pushed ourselves and went one step further. We are now in search of improved technologies, and that is the new challenge we set for ourselves in 2024.” They will be looking to work with a very particular type of cell, which is more powerful and specific than those they were making from plants they brought in from the field. The objective is to access other technologies already being used in other centers or regions, where companies are investing heavily in long-term research, such as the state of California or France.

Humberto says that, thanks to the alliance with the CBT, the genetic biotechnology of grapes has taken on a new impetus in Chile, an area in which the country was a world pioneer. With this new partnership, they hope to regain their former competitiveness.

Cell lines

As director of Viña Concha y Toro’s Center for Research and Innovation (CRI), Felipe Gainza devotes all his efforts to the genetic improvement of grapevines. “The expectation has always been to develop the enabling capabilities to do precision

genetic improvement. We have been meeting it step by step. We still have certain challenges and we have faced the bureaucracy of our own institutions, which are very large, but in the technical aspect we have made steady progress,” the expert in molecular biology says.

So far, they have made great strides in working with cell lines. They started working on grapevines and today, the platform is opening up to other plant species, as the business model contemplates making it attractive to other industries. Right now, they are initiating research with cereals and other fruit trees.

He says fruit trees do not have the genetic plasticity to adapt so quickly to the changes in climate we are experiencing. The only tool that makes it possible to incorporate this resistance is genetic editing, which, he adds, is a safe technology that has even been approved by the European Parliament, since February 2024.

The cellular expansion platform is a success story of how industry and academia can join forces. Felipe is clear that, in Chile, there is still no fluid exchange between the two sectors. But how to enhance this virtuous relationship? He suggests that academics should start valuing industry for its capabilities

and not just its economic resources. On the other hand, companies should have to “establish links with researchers early on, so that, as an industry, we can propose ideas based on our own pains, and charm researchers to take on those pains from the standpoint of science.” He knows it is a path that will be instilled over time. “Today, Concha y Toro is the main private partner in this consortium, but I would like to think that others will join in the future,” he says.

On the one hand, Felipe says, the partnership has allowed them to better manage the available technology and be part of an active collaboration network. On the other, they have accessed funds with which they have managed to almost double the original investment. He also recognizes that new business and innovation opportunities have been gradually opening up, which are attractive from a scientific and technological perspective. The ecosystem has thus become stronger and more dynamic.

Venture Client



The Venture Client SOFOFA Hub program, which is carried out in partnership with leading companies in industry, seeks to accelerate innovation cycles through a method that facilitates adopting technologies.

“After three cycles of the Venture Client SOFOFA Hub program, we already see solutions that could lead to solving some of our operating challenges. Today, we find in this model an opportunity for real collaboration and learning between companies in industry, creating development and making our value chain more sophisticated, to foster science and technology.”



Felipe Alcalde
Innovation and Information Manager
at CMPC

CHALLENGE

The road traveled

CMPC

In the first half of 2023, Patricio Quiroga, road project engineer at CMPC’s Forestal Mininco, participated in the Venture Client SOFOFA Hub and shared a challenge in his area: to find a product to stabilize roads that endures forestry operations and provides the same conditions as gravel. This is because “going out to look for gravel is increasingly difficult and costly because of the distances from one side to the other, as well as legal and environmental paperwork,” he explains.

Thereafter, the process of finding a solution was set in motion. Venture Client’s journey began with SOFOFA Hub’s search for startups that fit the challenge. In this case, three companies that presented value proposals were pre-selected, and finally the Canadian company Cypher Environmental, which showed the best results in the laboratory tests, was chosen. First, they evaluated the technical, economic, and environmental feasibility of replacing gravel with “Road Stabilizr,” the product developed by Cypher. Then they did lab tests, where they tried to simulate the conditions they would encounter in the field, on land with different types of soil. Finally, they started constructing the pilot, which is made to

> The challenge posed by the Forestal Mininco area within CMPC was to find a product to stabilize roads that could endure forestry operations and deliver the same conditions as gravel.

full scale, in 800 linear meters. “We have a savings potential that is interesting, and the most important thing is that our forestry operations are not interrupted because the road might fail,” Patricio details.

Nearing the end of the cycle, he highlights some of the aspects that struck him about how the challenge was met. The first is SOFOFA Hub’s ability to absorb the details of the challenge and seek alternatives. Also impressive was the richness of the discussion that took place at in-person meetings where he shared with the other partners. “You learned about the challenge of other companies participating in the process, so it generated a very good knowledge-based discussion,” he describes. And finally, the process was handled in such a positive manner. “The schedule was planned from the beginning, and all the milestones were met on the set dates, which is also relevant,” he comments, and adds: “This way of looking for new solutions was well executed and standardized, and I think that’s key in developing a project.”



Patricio Quiroga
Road Project Engineer at CMPC's
Forestal Mininco

“This way of looking for new solutions was well executed, and standardized, and I believe that is key in developing a project,” says Patricio Quiroga, road project engineer at CMPC’s Forestal Mininco.



"They make a very good reading of the challenge, to achieve a good understanding of what the solutions are," highlights Fabián López, regarding the Venture Client team at SOFOFA Hub.

CHALLENGE

The lesson learned

Molymet

Fabián López, manager of innovation and operational excellence at the MolymetNos subsidiary, worked on two challenges at Venture Client SOFOFA Hub, during 2023. In the first semester, the challenge was to try to recover water lost through evaporation in the cooling towers of its industrial plants. In the second half of the year, they sought an alternative for a marketplace-type supply platform.

Molymet has internal systems in place to determine issues, so identifying them was simple. In addition, "the idea is to favor those that are of common interest, not only for a specific company, but hopefully those that can also be attractive for the realities of other partners," Fabián López explains.

In the first challenge, they tested a proposal from the Canadian company RHST, but found they did not have enough time to carry out such a development. Indeed, it was a problem for which there is currently no ready solution, but one that requires a great deal of development. "I realized the solutions we were searching through SOFOFA Hub had been alternatives that were more mature, at the market level. The first idea we put forward implied research that was too complex. We didn't see any industry solutions,

> Molymet highlights that the Venture Client process works very well when it comes to finding mature solutions in industry.

so perhaps that's why the results weren't the best." Therefore, he points out, they decided the next challenge would be digital, since there were more alternatives for solutions. "We saw you had to travel the path once, to understand how it worked," he says.

They noted that an important part of the Venture Client program's time is devoted to searching for solutions in the market, so "it works very well to the extent that we seek solutions that are already consolidated in the industry. Therefore, our challenge selection also has to be consistent with that. That is the great virtue of this process: it frees us from having to do the research", and from the resources and effort this work implies.

Fabián also values SOFOFA Hub's contribution, particularly the Venture Client team: "They make a very good reading of the challenge, to achieve a good understanding of what the solutions are. There is really very little effort we have to put forth; it is mostly about making decisions."

CHALLENGE

Opening opportunities to innovate Pucobre

> Over this process, the company has incorporated techniques to discover where its needs lie. It also created an innovation committee in which several managers participate.

Felipe Ugarte, strategic planning manager at Pucobre, says that participation in Venture Client SOFOFA Hub was the company’s first experience of this kind. They decided the challenges should be in sync with their strategic lines of action, and that there could be startups in other industries with solutions that fit theirs, trusting that collaboration would enhance what would happen along the way.

The process began with a program presentation by members of SOFOFA Hub to representatives from different areas at Pucobre, during a workshop in Copiapó, to raise ideas and identify where the challenges lay. Later, the SOFOFA Hub team returned to visit them in the field, to further refine which issues offered opportunities for innovation. This is how Pucobre came up with two challenges in the first 2023 Venture Client call for proposals: the automated detection and extraction of ungroundable elements at mining sites (iron, cables, etc.), and real-time granulometric characterization (measuring the size of rock compounds) for mines.

Over the process, the company has incorporated techniques to discover where its needs lie, and it

created an innovation committee that brings together the general manager, plant manager, mine manager, technology manager, and Felipe Ugarte.

Although in the first challenge they did not reach the scaling-up stage, as it was not profitable for Pucobre, they value the learning achieved from working with the Belgian company Metheore, which proposed ways of applying the solution and with whom they remained in contact for future conversations. “You must understand from the beginning what the business case will be and assess early on how this can be incorporated into an operation: testing is one thing, but then you have to scale it,” says Felipe Ugarte.

In the second challenge, they are in the proof-of-concept stage with two startups: the Canadian company Motion Metrics and the Chilean company Innovaxion. As they were enthusiastic, they also decided to add a new challenge, during the second semester in 2023. They are in the selection stage, after discussing several proposals for real time ore characterization and grading, during the processes of mineral extraction and plant supply.



Felipe Ugarte
Strategic Planning Manager
at Pucobre

Pucobre presented two challenges in the first 2023 call for proposals: the automated detection and extraction of ungroundable elements at mining sites and granulometric characterization (measuring the size of rock compounds) in real time.



CHALLENGE

Opening eyes

CMPC

> The challenge was to find technology that would make it possible to use veneer from wood damaged in forest fires.



Gina Cerda
Development and
Innovation Head at
CMPC Maderas

“It’s a very attractive mechanism that opened our eyes to look for more challenges, to take advantage of this tool,” says Gina Cerda of CMPC Maderas, about the Venture Client.

Gina Cerda, head of development and innovation at CMPC Maderas, says that her participation in the Venture Client SOFOFA Hub was the first time that her business area did open innovation, seeking an external solution to an internal challenge. “We realized that collaborative work in terms of innovation provides an important support, as we initially thought we had to solve everything internally. But it opened our eyes to the fact that this is not the only way,” says Gina.

During the second half of 2023, the challenge was to find technology that could allow the use of veneer from wood damaged in forest fires, in the manufacture of plywood, a timber by-product, and thus achieve the regulatory adherence required by the North American market.

Two companies were selected in the search to answer this challenge, Dynea and Plantae Labs, who proposed different experimental solutions.

After visiting the plant to ensure the industrial tests do not affect the production process, they are currently in the lab, at the proof-of-concept stage.

From the work with SOFOFA Hub, Gina Cerda emphasizes the support and interest in understanding the challenge’s dimensions, “from what our concerns

were, to understanding the issues, to conveying them in a good way to their networks”. She adds that it would have been difficult for her area to reach interested companies as quickly and broadly, without Venture Client as intermediary. “It’s quite an attractive mechanism that opened our eyes to look for more challenges, to further take advantage of this tool.”



CHALLENGE

Multiple
objectives

Agrosuper

> Agrosuper has participated in this program on three occasions, with very different challenges: from finding solutions to water efficiency in their processes, to finding startups with whom to do new business.

Rodrigo Arias, head of innovation & ventures at Agrosuper, highlights four characteristics in the work done with SOFOFA Hub, specifically with the Venture Client program. The first is that, being a hub, it is about corporate people speaking to other corporate people. “We all understand the internal politics, the roles, the leaderships. That generates a very rich process,” he describes. The second aspect is permanent monitoring, where he emphasizes “these topics must also be relevant to the organization.” Thirdly, there is a flexibility and a permanent intention to improve and make the necessary adjustments. Finally, the coverage of possible solutions has expanded with each call for challenges.

Agrosuper has its own venture client area and has participated in the three calls of this SOFOFA Hub program, including both launched during 2023. The first time they participated, their challenge was to find solutions to water scarcity and efficiency in animal breeding and at processing plants, and they moved forward with two solutions; with one of them, they have just completed the proof of concept, and expect to analyze the results in the near future. The second time, the approach was to work on the

energy efficiency of industrial plants, with a focus on refrigeration systems. They also found a good solution, says Rodrigo Arias, although he admits that these are slow processes, given the specific and complex challenges they have posed. During the last time, which took place in the second half of 2023, they set out to find startups that wanted to do business with raw materials derived from pork and chicken production. They found two companies, although they made no progress with either. However, Arias assures that they will continue to participate, with new challenges during 2024.

“We are vertically integrated, and have a lot of very different operations, so we have many challenges. Hence, one of the criteria for prioritizing them is to identify where there is a relevant problem, one that has a certain degree of urgency, an issue that is relevant to the organization,” he explains. He adds that, while everyone agrees that reducing the carbon footprint is imperative, the need is more concrete, if the objective is more specific and has an impact in the business. Commitment, he says, is generated not only when there is a concern for innovation, but when it is an issue that affects day-to-day operations.



Rodrigo Arias
head of innovation
& ventures at Agrosuper

Given that we are vertically integrated, and our operations are highly varied, we have many challenges that are diverse and different. One of the criteria to prioritize them is to identify where there is a relevant problem, one that has a certain degree of urgency,” Rodrigo Arias explains.



CHALLENGE

Focus the
search

SQM Lithium

In the second semester of 2023, SQM Lithium participated for the first time in Venture Client SOFOFA Hub, with the aim of finding solutions for waste monitoring and traceability, at industrial sites. The company had set the goal of reducing its waste by 50% by 2020 but lacked several metrics to be able to assess and monitor performance. “This prevents us from being able to trace waste properly, to set goals and indicators by area that allow us to reduce the amount we generate, and to valorize what we are separating,” explains Valentín Barrera, assistant manager for sustainability at SQM Lithium.

When the process got underway, he reports the solutions they received to their problem were very generic, which made them realize that it was important to have a better categorization and specificity for the challenge. Thanks to SOFOFA Hub support, they narrowed down the questions among the participants, and are currently in the testing stage with two solutions that propose different concepts for the same problem. If they perform well, they could scale both.

They have noticed that internal behavior has changed radically in the areas where they have implemented recycling stations, where they separate

> SQM Lithium worked on the challenge of establishing indicators to monitor industrial waste, during their first experience in the SOFOFA Hub Venture Client.

non-hazardous industrial waste - such as PET bottles, cardboard, plastics, and cans - and indicators that show whether the separation is done properly. “Workers already know it’s an important issue and it is being measured, so it allows us to trigger these medium- and long-term goals faster”, he explains.

For the second half of this year, they are planning a new challenge, considering issues coming from their operations, and having more clarity on the objective and how to measure it, so that it adds the most value in the shortest time and is as efficient as possible.

“We want to give it a spin, so it interconnects our objectives of increasing local suppliers, circularity, decarbonization, and improving our shared value with communities. Why not raise a challenge that encompasses all these concepts?” asks Valentín Barrera. “To implement a sustainability strategy, it is key to have this kind of collaborative and strategic partnerships that help us to open our minds a little bit”, he concludes about the participation in Venture Client SOFOFA Hub, since they have been able to observe what other companies do and broaden the spectrum of potential solutions.



Valentín Barrera
Assistant Sustainability
Manager at SQM Lithium

They have noticed internal behavior has changed radically, in areas where they have implemented recycling stations, along with indicators that show whether separation is well done.



International connection

Business Finland Chile is the Finnish government's trade office that has been Venture Client SOFOFA Hub's partner since its inception. Its task is to be the bridge between the needs of Chilean companies and the solutions and experience that Finnish companies can provide.



Piia Nummela
senior advisor
Business Finland

Piia Nummela says the task is to identify coincidences. She is a senior advisor at Business Finland Chile, the Finnish government's trade office, who seeks to support the challenges posed by the Venture Client program, by tracking down companies in her country that can respond to these problems.

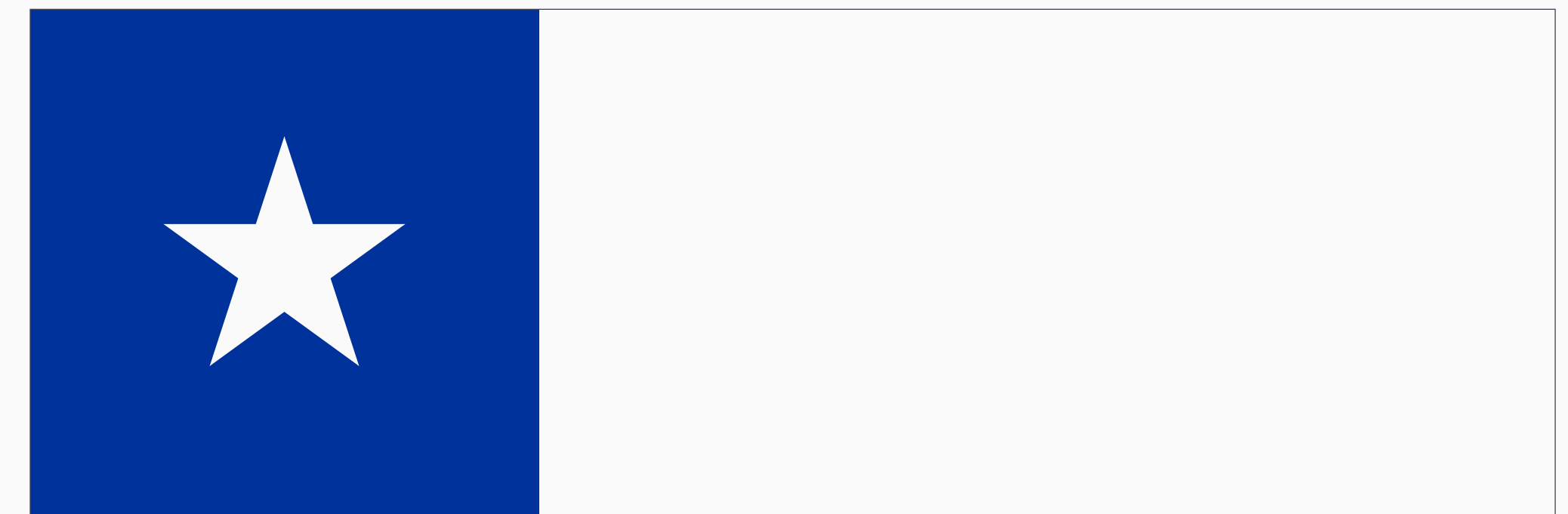
"What we at Business Finland are looking for is for more Finnish companies to collaborate with Chilean companies. So, the work the Venture Client team does to identify challenges in local companies can become opportunities for Finnish companies. For us, an important part of the work has been done when someone identifies an opportunity with a potential Chilean client," she explains.

Over 10 Finnish companies have participated and what they've valued most is the speedy application process, along with the clarity in terms of the time frames and required steps. "It is important, in this kind of initiatives, that companies receive feedback; it is understood that not all of them will be chosen, but it

is equally important that they understand why. With the Venture Client team, we have always been able to get to that point," adds Piia. She also highlights the work that SOFOFA Hub does before launching each Venture Client call. "You can tell they do profound work with the Chilean companies that participate in the program, and that is very valuable because it shows the companies have a real interest, and they have the resources."

Piia has found Venture Client SOFOFA Hub to be a very practical way for companies to work together: "Collaboration around innovation is very important. Because of the kind of problems we face as a society, there are many issues that are mixed together, and in order for us to solve them, we must understand that companies are specialists in something, but they need different kinds of knowledge, experience, and roles. That way we can achieve something bigger than what a single company could."

Connectors



> Over 10 Finnish companies have participated and what they've valued most is the speedy application process, along with the clarity in terms of the time frames and required steps.

INNOVATIVE SOLUTIONS



Pearls of water

It was in a Canadian startup, RHST, that Venture Client SOFOFA Hub found a possible answer to the challenge of mitigating water loss through evaporation, in the cooling towers of Molymet's plants.

Thomas Gradek is the founder of RHST, a Canadian startup, whose passion led him to create a biomimetic solution, the name given to innovations inspired by nature. In this case, in response to the water crisis, he replicated the mechanism active on the surface of lotus leaves, which are able to contain evaporation and conserve water. Thomas began this work in 1992, and it took him 26 years to develop WaterPearls, a product used primarily in agriculture, which he has exported from Canada to places like China, South Africa, and the United States.

Through Venture Client, RHST proposed an alternative for a challenge posed in 2023 by Molymet: using these water beads as a possible solution for water loss through evaporation, in the cooling towers of the Chilean company's plants. Their proposal sought to condense the water that evaporates in the cooling towers, so that it could be recovered. They have advanced to the laboratory testing stage.

"Molymet and SOFOFA Hub are part of the private sector, while in several research projects there are

governmental or ministerial programs, so there is much difference in terms of speed and being action-oriented. This is an accelerated way to bring a solution to fruition," says Thomas about the experience of participating in Venture Client. "When you show there is potential, they are willing to take you to the next level and test on a commercial scale," he adds.

Regarding his personal motivation to seek this kind of solution, he mentions he has five grandchildren and is concerned about the sustainability of planetary resources, such as water. "I want my grandchildren to have a good life, so efficient water use is something I want to solve," he says, noting that at Venture Client SOFOFA Hub, they are looking for those solutions.

> It was in the efficiency of lotus leaves to retain water that Thomas Gradek found inspiration for an innovative solution to the water crisis: WaterPearls.



INNOVATIVE SOLUTIONS



Digital Tree Inventory

OCELL is a Munich-based climate technology startup that presented a complementary solution to the challenge CMPC posed of finding digital alternatives for forest inventories.

Forest inventories allow for a better estimation of timber volume and quality, by sampling trees in a plantation. This process of collecting data from wood resources is usually done in the field and requires facing different types of hazards, due to the topography, the weather, and others factors. It is costly and requires specialized teams. Therefore, CMPC proposed, through Venture Client SOFOFA Hub, to find a complementary solution.

OCELL is a German climate technology startup that seeks to unlock the full potential of forests, through cutting-edge technology and data-driven climate projects. To do so, they process aerial photography and data from other sources to create “digital twins” of forests, using artificial intelligence. They were contacted by SOFOFA Hub to submit a possible proposal for the challenge. After an initial pitch with the Chilean company that lasted fifteen

minutes, their contact continued and intensified, once CMPC decided to work with OCELL, for whom this is the first project in South America.

“It’s good to get to know the people you’re working with personally, and I think that was an important part of the project”, says Joshua Weber, OCELL’s sales manager, who spent ten days in the Biobío Region, in 2023, running the pilot that consisted of measurements on 700 hectares at a CMPC farm. Together with Florian Schwarzfischer, OCELL’s forest product expert, he took samples in the field, while gathering remote data from aerial images taken by a local supplier with a drone. “Together with CMPC, we were able to collect very detailed data and compare the results with what they had obtained. It has been a very constructive collaboration”, he adds.

Weber says he appreciates the external support provided by SOFOFA Hub, because, since the process is well structured, it allows them to shorten the time it takes to make decisions and start working. For OCELL, it was also the first time working with a company the size of CMPC. “It was a very steep learning curve,” he assures.



To carry out the pilot, which consisted of measuring a 700-hectare farm in the Biobío Region, they took field samples and aerial photographs, using a drone.

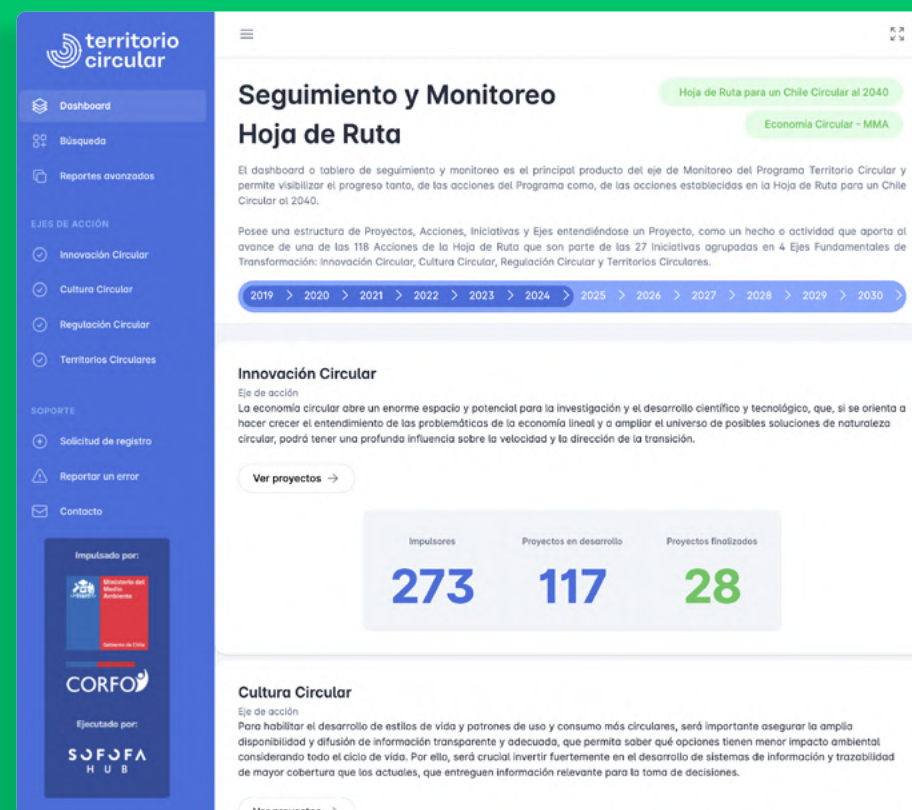
Territorio Circular

The purpose of this program is to improve territory competitiveness and sustainability, through the articulation of innovation ecosystems for Circular Economy.



“Initiatives have multiplied, ministries that are doing things on their own, and companies getting involved. So, I think we have managed to create positive energy around the concept”.

Tomás Saieg
Head of the Circular Economy Office
at the Ministry of the Environment



DASHBOARD 2.0

During 2023, a 2.0 version of this tool was developed to follow up on the 27 initiatives and 118 specific actions set out in the Roadmap for a Circular Chile by 2040. In its first version, it was an informative online platform, which reported on over 500 projects that contribute in the implementation of these actions. In this update, which will be officially launched in 2024, the Dashboard will not only be a reference tool, but also interactive and participatory, where users who want to make their projects visible will be in charge of updating the status every six months.

“Most of these policies and strategies are not monitored to this extent. And when it is done, it is

done internally, so I think it is very valuable to have it in place, that it is transparent, and updated. It was one of the Roadmap commitments and it has allowed us to keep the plan alive,” explains Tomás Saieg, president of the Territorio Circular Executive Committee and head of the Circular Economy Office at the Ministry of the Environment. He adds: “Often, the destination is not efficient or transparent, but here we have achieved permanent, open monitoring; anyone can access the Dashboard with indicators, and I think that helps maintain the spirit that this is not over, and that it has a mobilizing effect.”

CORFO PROGRAM

Packaging that is more sustainable

Among the applicants, seven companies were selected to CORFO's Innovation Challenges program. Among them, there are small and medium-sized companies and universities, which will execute their projects in two stages of up to ten months each.

In May 2023, CORFO launched a call for proposals for its Innovation Challenges program, whose objective was to find solutions to challenges of public interest or from specific productive sectors. With the support of the Territorio Circular program, the search for sustainable packaging was proposed, to accelerate circular economy in the food and beverage industry. Through technologies that incorporate circular strategies, the objective is to reduce negative externalities, generated throughout the life cycle of packaging.

Felipe Ahumada, an executive at the Technological Development Sub-directorate of CORFO's Technological Capacities Management, was part of the team that worked on elaborating this challenge, since it was first considered in 2022. "Territorio Circular's contribution consisted in articulating organizations that are part of the circular economy ecosystem, especially in the areas of eco-design and life cycle analysis, because as these issues emerged, we needed the participation of experts with a complementary perspective," he says. Thus, they

created a workspace to have a better understanding of the problem and to be able to crystalize it in this challenge. "The Territorio Circular brand brought together different actors, and that was also very useful for us, in order to build a common vision, regarding the challenge we had set," he adds.

Mariana Soto, general manager at CENEM (the Chilean Center for Packaging) also values Territorio Circular's contribution, with their articulation of the public and private sectors, in the innovation and entrepreneurship ecosystem. "It is essential because it brings together companies and the government, generating that virtuous link that is so necessary to move forward in becoming more sustainable."

Evaluations were carried out in July, and out of 20 applicants, 13 were pre-selected and received feedback. Finally, seven winners were chosen, including small and medium-sized companies and universities, which will execute their projects in two stages of up to ten months each.

To guarantee the environmental impact of these projects, the beneficiaries will use the simplified Life

Cycle Assessment (LCA) calculator for the packaging sector, an initiative promoted by CENEM, CORFO, and Dictuc, available in the Ecopackaging platform. "It is a concrete way of measuring the environmental impact of packaging, in a way that is easy and accessible to all; it should be used much more, in order to evaluate the impacts, on the one hand, and set mitigation goals, on the other," adds Mariana Soto.



Felipe Ahumada
Executive at the Technological Development Sub-Directorate of CORFO's Technological Capacities Management

Territorio Circular's contribution is to articulate those who are part of the circular economy ecosystem, "especially in the areas of eco-design and life cycle analysis," says CORFO's Felipe Ahumada.



www.corfo.cl/sites/cpp/convocatorias/reto_de_innovacion_envases_embalajes_alimentos_bebidas





ATACAMA BIOMATERIALS

**MOVED BY THE
DESERT IN BLOOM**

Their vision is to put an end to the plastics problem and to dedicate part of their profits to developing sustainability initiatives in the Atacama Desert, which took off when CEO Paloma González-Rojas developed a material called Woodpack, a cellulose-based product, while studying for a PhD at MIT.

In 2018, they formed Atacama Biomaterials, a scientific-technological company that uses artificial intelligence and robotics to analyze any biomass and transform it into a material that has similar properties to plastic, in terms of strength, but with a low carbon footprint.

In 2023, they went to market and applied to CORFO's Innovation Challenge with their biodegradable, compostable, and recyclable packaging in two product lines: nuts and coffee, and frozen products (with tests on hamburgers and pizza). They are currently in the first stage of validation, to be scaled up to a semi-industrial level, during the second phase. "We do this with the goal of seeing the desert in bloom again, instead littered with so much garbage," dreams José Antonio.

➤ They work using artificial intelligence and robotics to analyze any biomass and transform it into a material similar to plastic in terms of strength, but with a low carbon footprint.



Paloma González-Rojas
CEO

It was the landfills in the Atacama Desert that mobilized Atacama Biomaterials to take action. "We asked ourselves: Why do we utilize these eternal materials for short-lived use?" says José Antonio González-Rojas, third from left in the photo, together with the Atacama Biomaterials team in Chile.

ESSBIO

Thinking together

Territorio Circular played an articulating role between Essbio, a sanitation services company from Biobío, and a team of researchers from the Pontificia Universidad Católica, who are already working together to give a new use to sewage treatment sludge.

In 2023, Territorio Circular held the workshop “Circular Opportunities” in the Biobío Region, an activity that helped connect companies with the public sector and thus, generate new partnerships to contribute in the implementation of the “Roadmap for a circular Chile by 2040”.

In this context, Essbio started a new project with researchers from Universidad Católica. “We have a circularity rate of almost 90%,” says Marietta Montenegro, Essbio’s Sustainability Director. “However, we have two major challenges, which are the screening residue and the sludge, by-products that are generated when treating sewage.” In this new project, where they work with the university’s Engineering Department, they are testing the usefulness of this sludge in construction.

Marietta stressed the importance of the workshop, as it has served to enhance collaboration in the region and generate new synergies. “It’s a way to decentralize. On the other hand, it serves to promote the Roadmap for a circular Chile by 2040 throughout the country, because we need to bring these issues into the regions.”



Marietta Montenegro
Essbio's Sustainability Director

Recycling household oil

Essbio’s work was highlighted in 2023 by Territorio Circular for its “Toma la sartén por el mango” campaign, a program to recycle household oil. “We seek to teach environmental stewardship with a focus on water, through oil recycling,” says Marietta. It is a way to continue contributing to circular economy, as it gives this oil a new value, by transforming it into biodiesel.



Marietta Montenegro stressed the importance of the “Circular Opportunities” workshop, as it has helped to enhance collaboration in the region. “It’s a way to decentralize,” she says.

Seven practices for corporate circular management



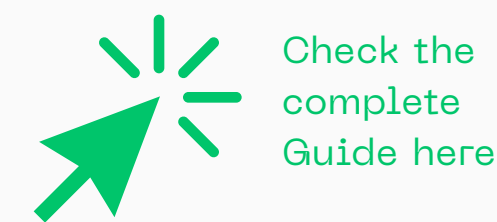
Anglo American is one of the pioneer companies in implementing the circular economy model, as are Agrosuper, Codelco, Collahuasi, Empresas lansa, Enel, Sacyr, and Pucobre. All of them participated in elaborating the Practical Guide for Circular Business Management, collaboratively developed and published by SOFOFA, SOFOFA Hub, and Territorio Circular.

Through a survey, these eight companies shared the innovative actions they have implemented. This 84-page document, which details seven best practices in circular economy management, was prepared with this information and seeks to inspire other organizations to put them into effect. Among them are the awarding of bids for commitment to circularity, and the incorporation of circularity in contracting services and purchasing goods.

Esteban Rojas, Anglo American's head of public and regulatory affairs, says they decided to participate because of the importance of

collaborative work, and the incorporation of circularity in their processes, as part of the sustainability attributes they seek to project as a company: "This is not altruism. It does not become something decorative, but rather, it goes to the core of the business - mining, in our case - and has allowed us to generate networks and spaces for large corporate profit."

Their contribution to the guide was based on their experience in fostering a circular culture within the company: "We often do not realize we are immersed in a circular process, so how do we create a culture and give our workers the tools, training, and capacity building to learn about circularity and how to take advantage of the processes and be more efficient in the use of resources? How one moves from thinking of waste to product is part of the culture and the change: it is identifying a new business opportunity."



"This guide is also a way to accelerate adopting a culture around circularity."

Esteban Rojas,
Head of Public and Regulatory Affairs, Anglo American

INNOVATORS FROM
NORTH TO SOUTH

Territorio Circular Award 2023

The first edition of this award - promoted by the Ministry of the Environment and CORFO, and executed by SOFOFA Hub - recognized those companies all over Chile, from the smallest to the larger ones, that promote circular economy models. Highlighted were those innovative solutions that improve competitiveness and sustainability, for example, by eliminating waste and pollution from the design stage, by promoting that products and materials remain in use, or by regenerating natural systems.



YADRAN,

LOS LAGOS REGION

TRANSFORMING SLUDGE INTO A NATURAL FERTILIZER

Yadran was founded in 1966 and is devoted to cultivating and processing salmonids. In 2023, it was the national award-winner of the Territorio Circular Award in the collaborative category, thanks to the work they carried out in partnership with ZeroCorp, to achieve the composting of fish farming sludge. As a prize, Yadran won a trip to IFAT 2024 in Munich, Germany, the world's most important environmental technology event, sponsored by the State of Bavaria Office for South America.

Pedro Gallardo, head of Las Quemadas fish farm, was responsible for leading the process within their operations. They had the challenge of valorizing the sludge generated at their facilities and avoiding its final disposal, so when Carlos Llanca, Yadran's environmental and circular economy coordinator, told them about ZeroCorp's work to transform industrial organic waste into a natural fertilizer, they immediately began to work on its implementation. "We thought it was an excellent idea, not only because this helped mitigate the environmental impact, but also because of the value this waste could take on, being used as compost."

In 2022, they visited ZeroCorp's waste management and treatment plant for the first time, to learn about its processes. In 2023, they had already gotten results: the project contributed to the



Pedro Gallardo
Head of Las Quemadas fish farm

"It helped us broaden our vision of waste, looking for sustainable alternatives to solve a problem," emphasizes Pedro Gallardo.

recovery of over 93% of the waste, where the fish farms specifically valorized more than 2,000 tons of sludge. "Moreover, this had a significant impact on CO2 reduction and on final disposal costs. It also helped us in the maintenance of our gardens, in the development of crops at some of the local communities, and we carried out environmental education activities with the Yadran family, where children learned about the process and were able to take compost for their gardens," explains Pedro Gallardo. "It helped us broaden our view of waste, looking for sustainable alternatives to solve a problem."



**THERMIKHAUS,
PUERTO VARAS**

TURNING CELLULOSE INTO THERMAL INSULATION

A decade ago, Andrea Opitz decided to leave her life in Santiago and return to Puerto Varas, her hometown. From there, she began her work at ThermikHaus, where she converts cellulose into thermal and acoustic insulation for houses and buildings in Los Lagos and Los Ríos regions. “Today we are the only re-valuators in the southern zone and we are very proud of that,” she says.

The company turns cardboard and paper waste into recycled paper sacks that are placed on walls, floors, and ceilings. The product is composed of up to 85% recycled paper and cardboard fibers and 15% boric salts, plus additives to make it fire resistant and prevent pests. In addition to carrying out the thermal reconditioning of houses, they offer the option of renting machines with tutorials, so that customers can do the work themselves and thus save costs.

In the initial stage, they would travel to Santiago to get the pulp, but in 2023, in order to avoid having to move over such long distances, they set up their own production plant in Puerto Varas. Today, they work with about 40 to 50 tons of pulp per month. “We have been forerunners, because the industry is still reluctant to incorporate this type of elements, but we are advancing a little bit more every day,” says Andrea.



Andrea Opitz
Civil Engineer and
ThermikHaus Founder

ThermikHaus turns discarded cardboard and paper into recycled paper sacks that are placed within walls, floors, and ceilings.



**REVALORIZA,
VIÑA DEL MAR**

THE FIRST WASTE REVALORIZATION PLANT IN CHILE

Revaloriza has embarked on a huge challenge: to manage waste from construction and large industries in a sustainable way. Located in the Valparaiso region, since 2018, they have been working with elements such as concrete, asphalt, wood, plastics, and scrap metal, which they revalue thanks to high-end technology. With the help of this company, a metalworks, a thermoelectric plant, or a carpentry workshop in the area can find a way to capitalize on their waste.

“We have certifications that, on the one hand, allow us to provide traceability and, on the other, to meet the regulatory requirements of the Ministry of the Environment,” says Karen Aguilera, founding partner. The objective is to prevent the proliferation of illegal dumps or landfills, where many construction companies discard their waste.

Industrial waste accounts for more than half of all waste nationwide, so the company’s work helps reduce environmental pollution, by transforming part of it into new raw materials that can be reused, for example, by creating mulch from shredded wood waste, or recycled aggregates from concrete. In these years, they have already recovered almost 100,000 tons of waste, which amounts to taking 62,000 cars off the streets.



Karen Aguilera
Environmental Engineer
and Partner at Revaloriza

In these years, they have already recovered almost 100,000 tons of waste, which amounts to taking 62,000 cars off the streets.



LIST OF AWARD—WINNERS:

National award—winner in the collaborative category: Yadran

South Zone

Individual small business category: ThermikHaus
Individual medium and large companies category: CMPC
Collaborative category: Yadran

Center Zone

Individual small business category: Revaloriza
Individual medium and large companies category: Territoria
Collaborative category: Essbio and Tresmontes Lucchetti

North Zone

Individual small business category: Epuhome
Individual medium and large companies category: SQM



More at:
territoriocircular.sofofahub.cl



This year's World Circular Economy Forum will be held in Brussels. "It would be ideal to host it, later in the near future, in Chile," projects Piia Nummela, Senior Advisor at Business Finland in Chile.

Meeting in Helsinki

Nearly two thousand attendees gathered in May 2023, in Helsinki for the World Circular Economy Forum (WCEF), which Finland has been leading since 2017, and which brings together top business leaders, politicians, and experts on the subject from around the world.

SOFOFA Hub executive director Alan García was invited by the Finnish ambassador in Chile and says that after almost two weeks of work, meetings, talks, and plenary sessions, he is convinced that Chile has a lot to contribute, in terms of circular economy. "We have made more progress than many countries, not only in the diagnosis and planning of a national roadmap, but also in the articulation of private initiatives driven by the productive sector," he says. And he adds: "To accelerate the transition to circular economy, we need to open up our challenges to international knowledge. Today, there are innovative solutions that we can incorporate into our companies."

Alan García, SOFOFA Hub Executive Director, and Belén Sapag, Chile's ambassador to Finland, at the World Circular Economy Forum.



Us



Mariana Thielemann,
Entrepreneurship Manager.

Javier Obach,
Circular Economy Manager.

María José Monti,
Outreach Activities
Advisor.

Giovanni Cruz,
Head of Administration
and Finance.

Tamara Sepúlveda,
Technology Initiatives
Coordinator.

Florencia Undurraga,
Attorney.

Macarena Carrió,
CBT Patagonia Director.

Alan García,
Executive Director.

Javier Mora,
Circular Initiatives
Coordinator.

Flavio Llanos,
Venture Client
Consultant.

Gabriela Meneses,
Administration and
Finance Analyst.

Andrea Guzmán,
Communications Director.

María Paz Merino,
CBT Executive Director.

Guillermo Badillo,
Bio-business Certificate
Program Coordinator.

Mariela Rosas,
Circular Economy Monitoring
and Follow-up Coordinator.

* Not in the picture: Montserrat Roll, Project Analyst.

Governance Model

Board of Directors

- Manuel José Casanueva
- Alan Meyer
- Gonzalo Russi
- María José Montero
- Fernanda Soza
- Rosario Navarro
- Francisco Ruiz-Tagle
- Sebastián Ríos
- José Guzmán

Executive Committee

- Manuel José Casanueva
- Rosario Navarro
- Gonzalo Russi
- Felipe Alcalde – CMPC
- Cristián Meyer – Agrosuper
- Sebastián Ríos – Pucobre
- Ignacio Majluf - SQM
- Edgardo Cisternas - Molybmet

CBT Committee

- Manuel José Casanueva
- Gonzalo Russi
- Rosario Navarro
- Isaac Kohlberg (CTO Harvard)
- Eduardo Abeliuk (TeselaGen)
- Mauricio Cañoles (CBT Implementing Partner Research Centers Representative)
- Rolando Chamy (CBT Implementing Partner Universities Representative)
- Jennifer Alfaro (CBT Implementing Partner R&D Centers Representative)

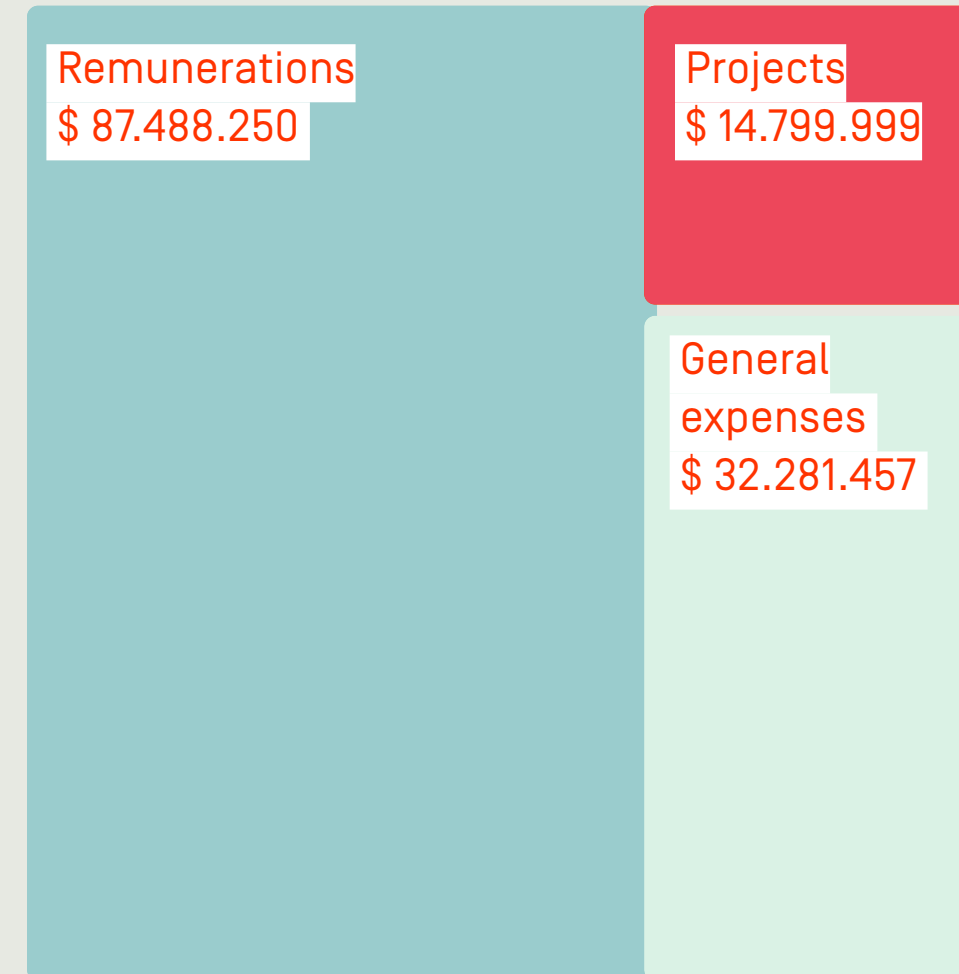


Figures

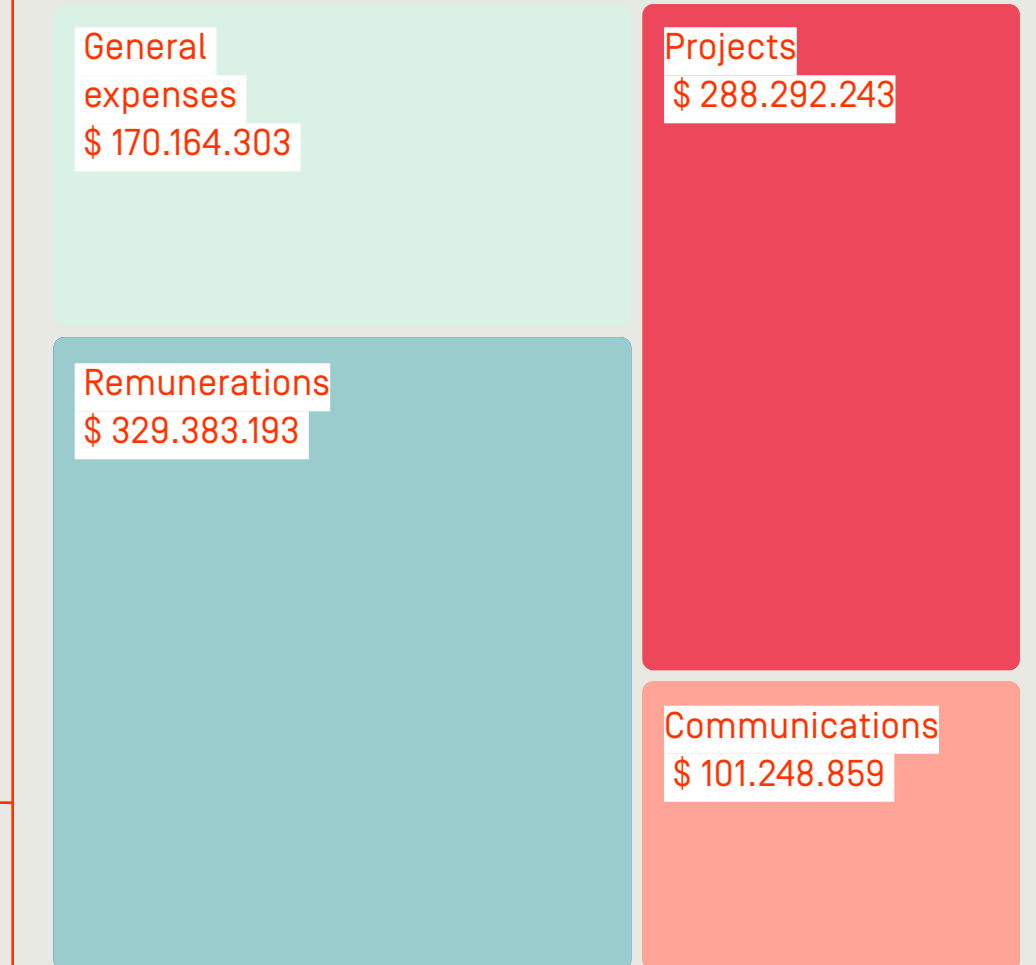
Funds uses and applications

SJFJFA HUB

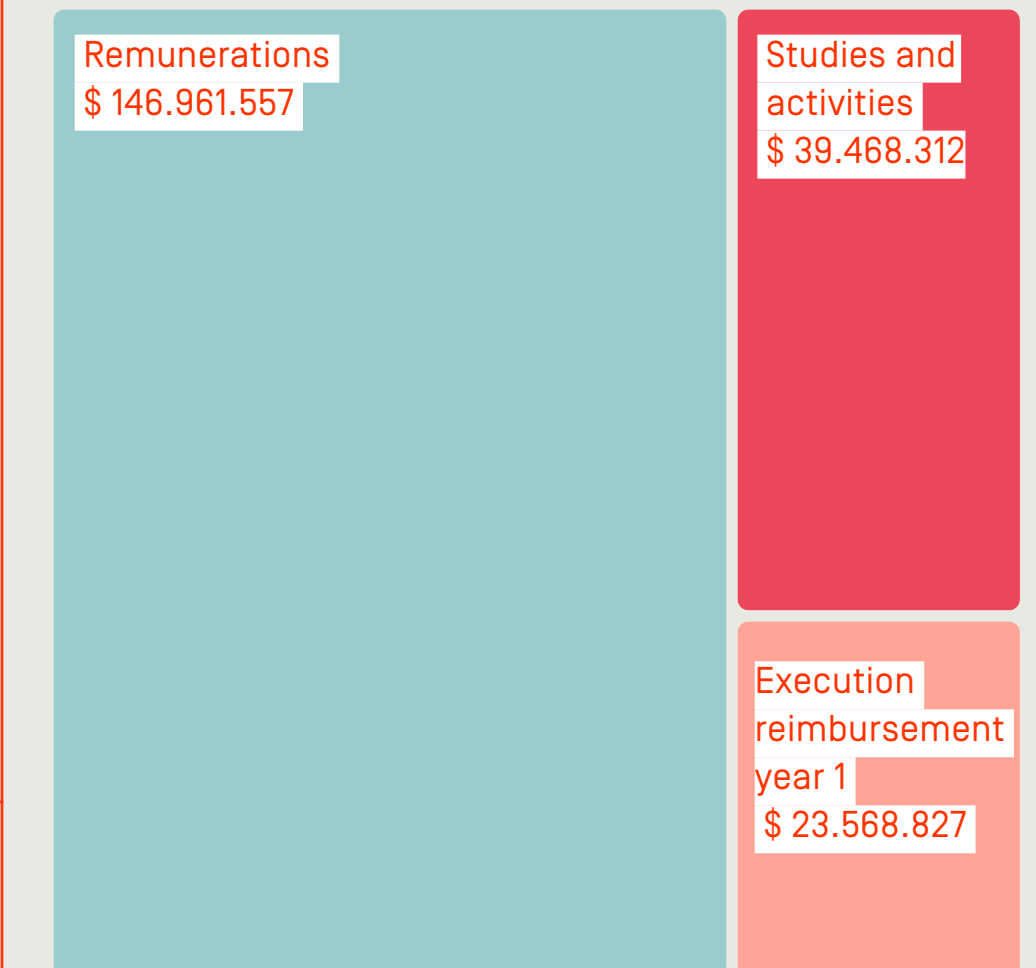
Balance 2022	\$ 113.459.791
Partner member fees	\$ 190.335.600
Total income	\$ 303.795.391
Total costs	\$ 134.569.706
Cash balance	\$ 169.225.685



Public funds pending balance by 12/31/2022	\$ 1.553.886.979
Public funds received during 2023	\$ 1.000.000.000
Project income	\$ 97.074.000
Total income	\$ 2.650.960.979
Total costs	\$ 889.088.598
Pending balance	\$ 1.761.872.381



Public funds pending balance by 12/31/2022	\$ 211.568.827
Public funds received during 2023	0
Total income	\$ 211.568.827
Total costs	\$ 209.998.696
Pending balance	\$ 1.570.131



Partnerships

SAG
 UDEC
 The Ganesha Lab
 Incubatec UFRO
 Hubtec
 Endeavor Chile
 Digital Innovation Hub INNOVATE
 UDD Ventures
 Incuba UdeC
 3IE UTFSM
 German Entrepreneurship/ Start 2
 Business France
 Ambivation
 MaRS Innovation District
 Chilemass
 Berlin Innovation Agency (BIA)
 INAM (Innovation Network for
 Advanced Materials)
 Minnovex
 Chilean Association of Nanotechnology
 Climatech Chile
 Bayern Innovativ
 Fiware Foundation

AHK Chile
 State of Bavaria Office for South America
 Canada Embassy
 Israel Embassy
 Israel Innovation Authority
 Business Finland
 CzechTrade
 Enterprise Singapore
 Australia Embassy in Chile (Austrade)
 Taram Capital
 Cube Ventures
 Mana Tech
 Mountain Partners
 ScaleX
 ACVC
 Austral Cap
 Dadneo
 Voima Ventures
 Pachamama Ventures
 Sonen Capital
 Simma Capital
 Savia Ventures
 Oikos

Digevo
 Cibersons
 Kayyak Ventures
 Antártica Ventures
 Broota
 Güil
 The Engine
 Wayra
 Columbia Global Center Stgo
 UC Innovation Center
 Startups Latam
 Impacta VC
 Chilean Navy Technological Innovation Center
 SENAI Brasil
 NUAM Exchange
 AIE Electrical Industry Association
 APEX Brasil
 Ethos VC
 MITACS Canadá
 Monashees
 CIC Cambridge Innovation Center
 OpenBeauchef - FCFM/Universidad de Chile

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