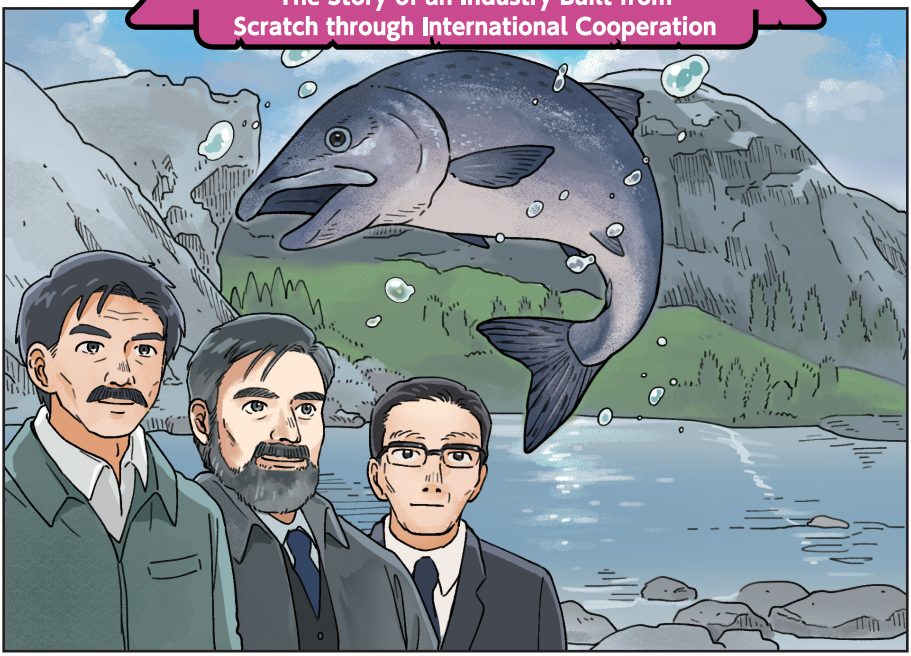
Project History (Manga Edition)

Chile

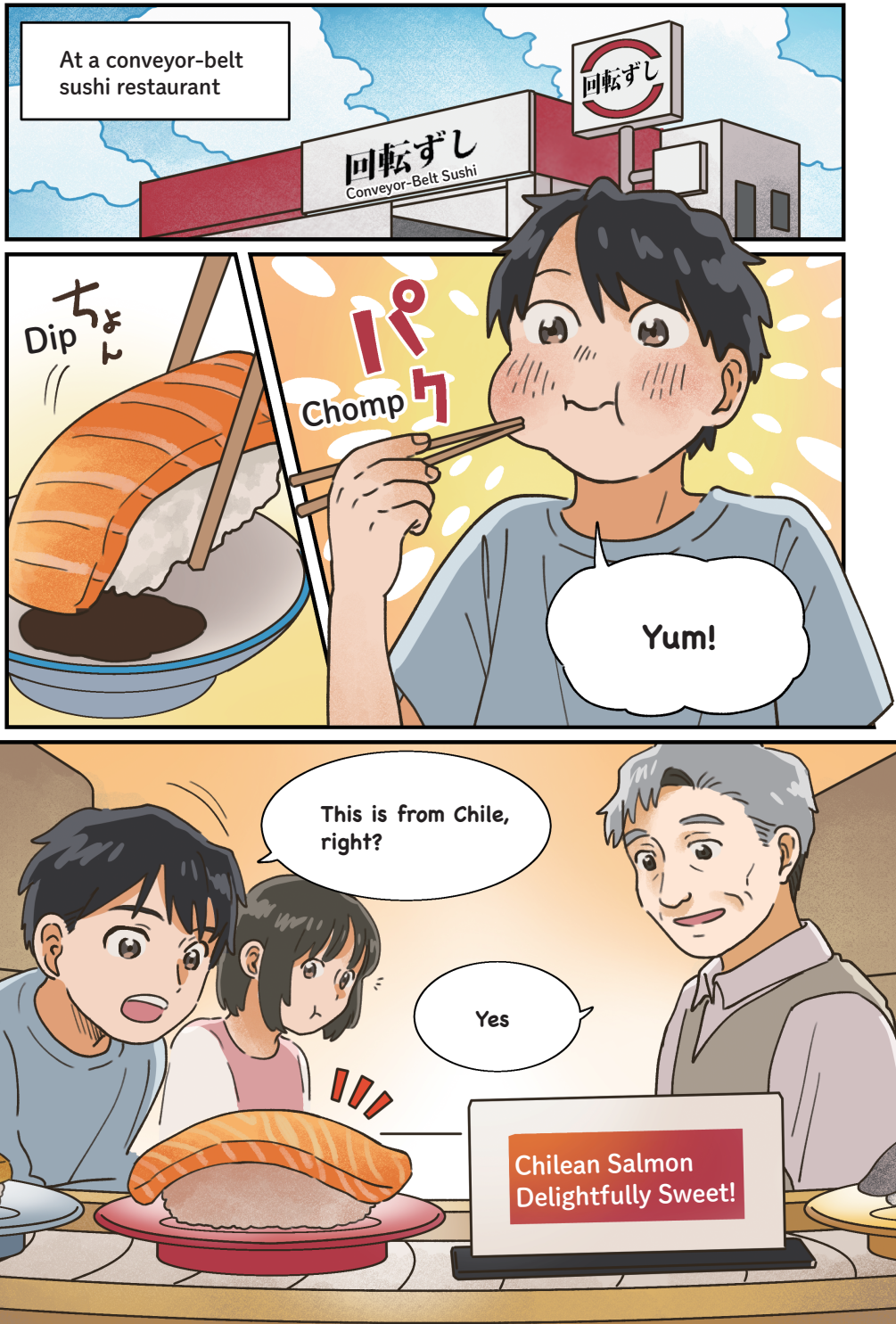
The Japanese Experts who Helped Make Chile a Salmon Export Powerhouse

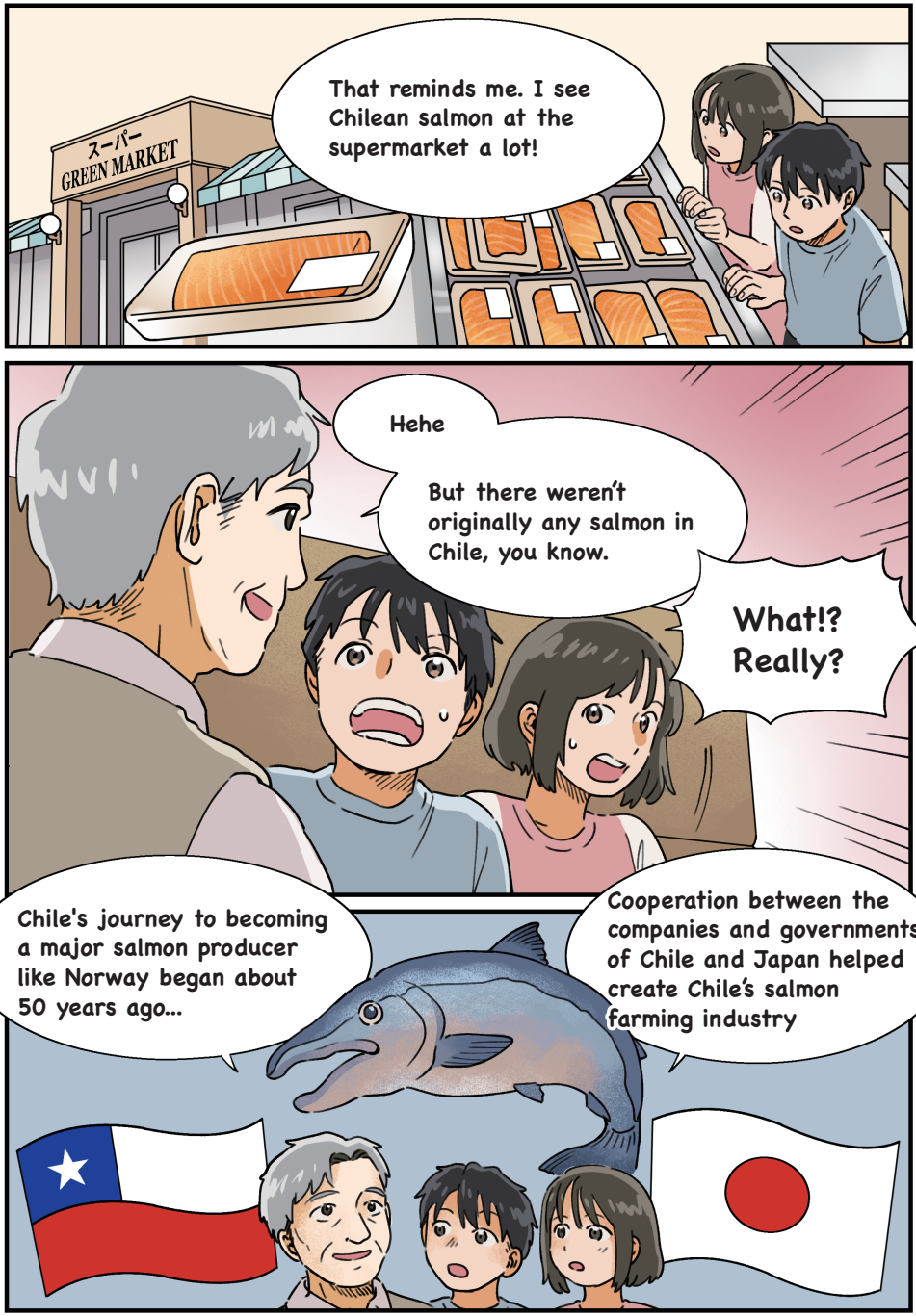
The Story of an Industry Built from Scratch through International Cooperation

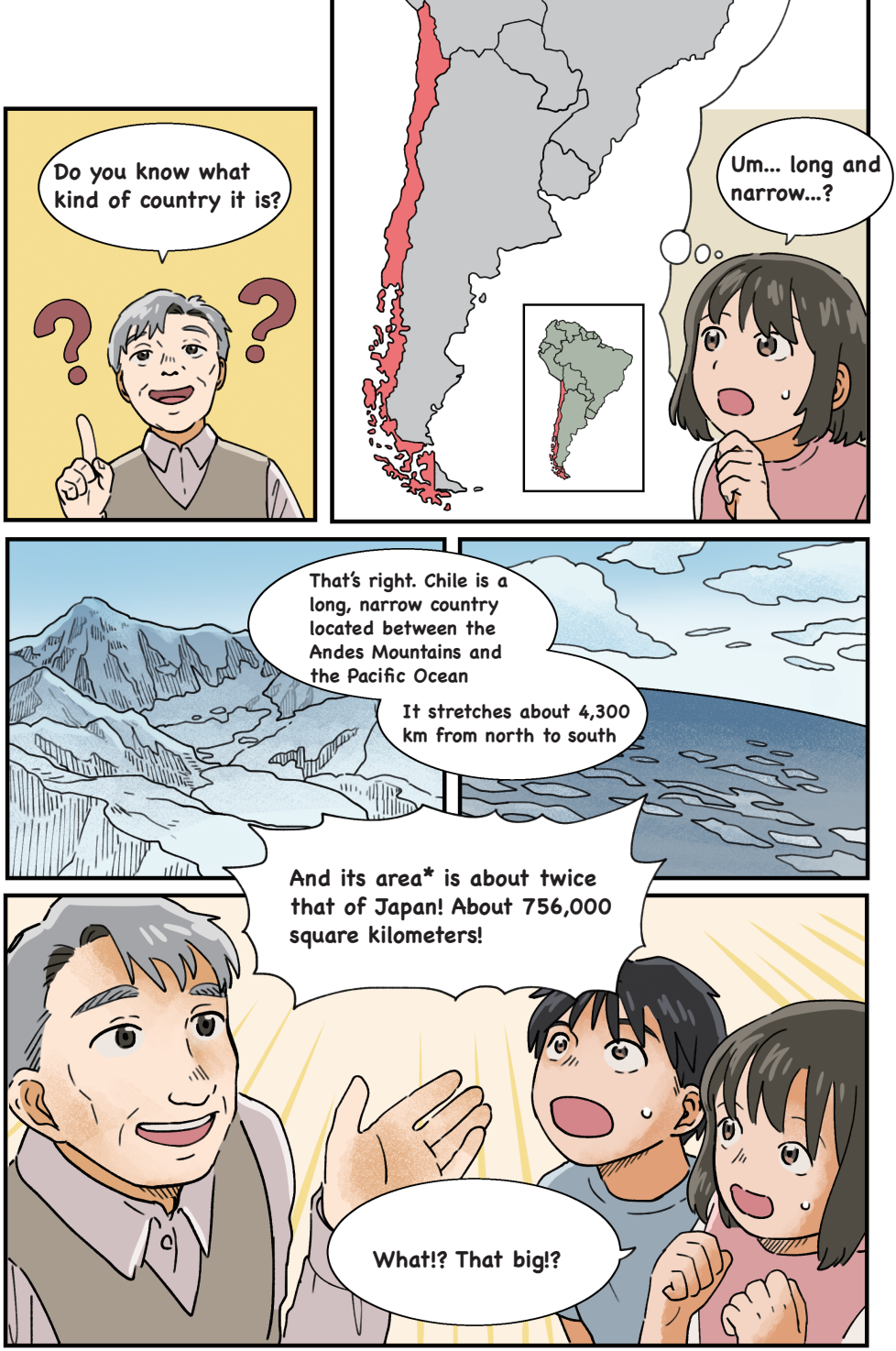


Original Story & Supervision: Akio Hosono
Manga: Amekashi/Uchitsukasa

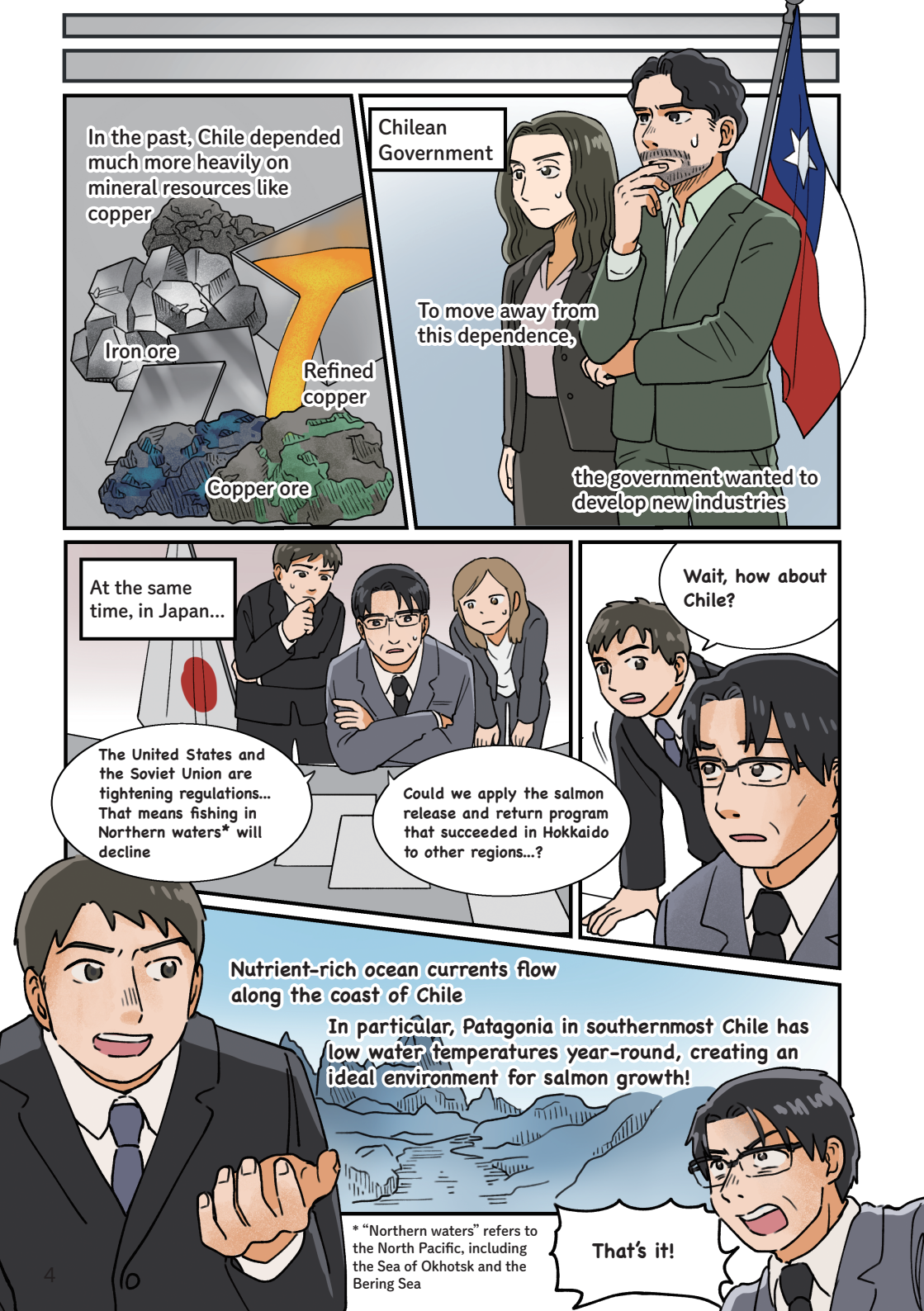
JICA
Japan International Cooperation Agency


At a conveyor-belt sushi restaurant
回転ずし
回転ずし
Conveyor-Belt Sushi
Dip ちょん
Chomp パク
Yum!
This is from Chile, right?
Yes
Chilean Salmon Delightfully Sweet!

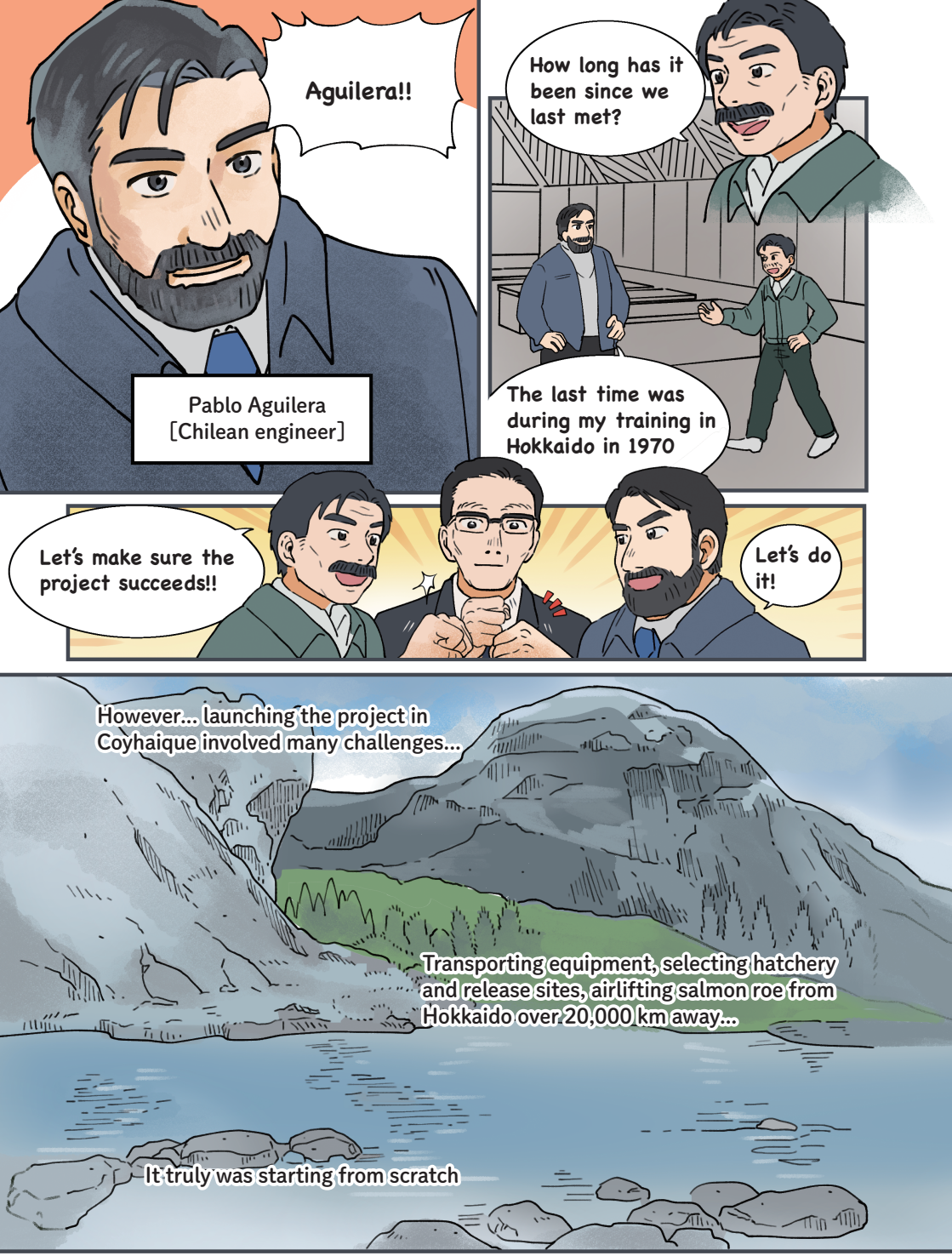

That reminds me. I see Chilean salmon at the supermarket a lot!
スーパー
GREEN MARKET
Hehe
But there weren't originally any salmon in Chile, you know.
What!? Really?
Chile's journey to becoming a major salmon producer like Norway began about 50 years ago...
Cooperation between the companies and governments of Chile and Japan helped create Chile's salmon farming industry

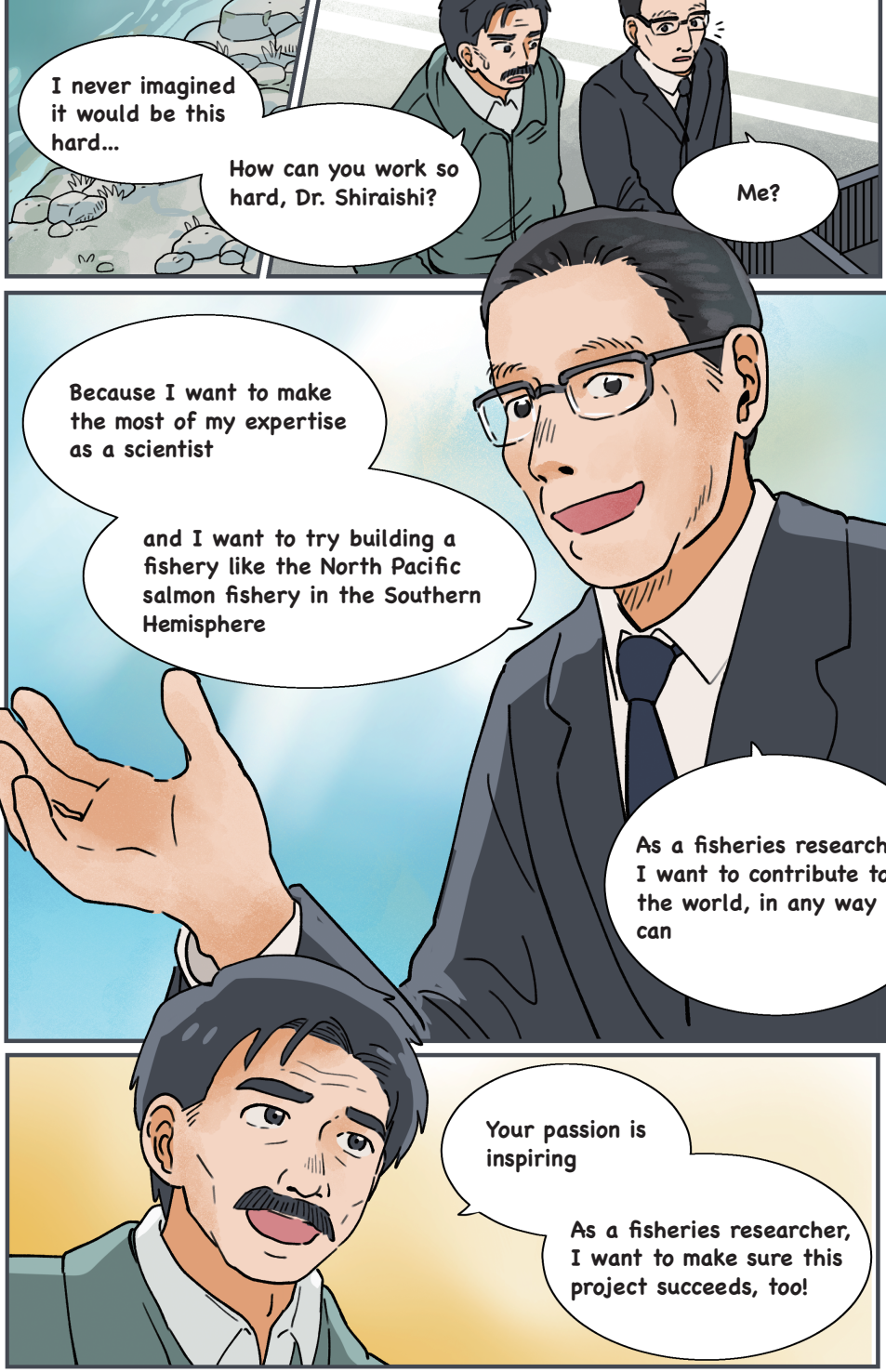


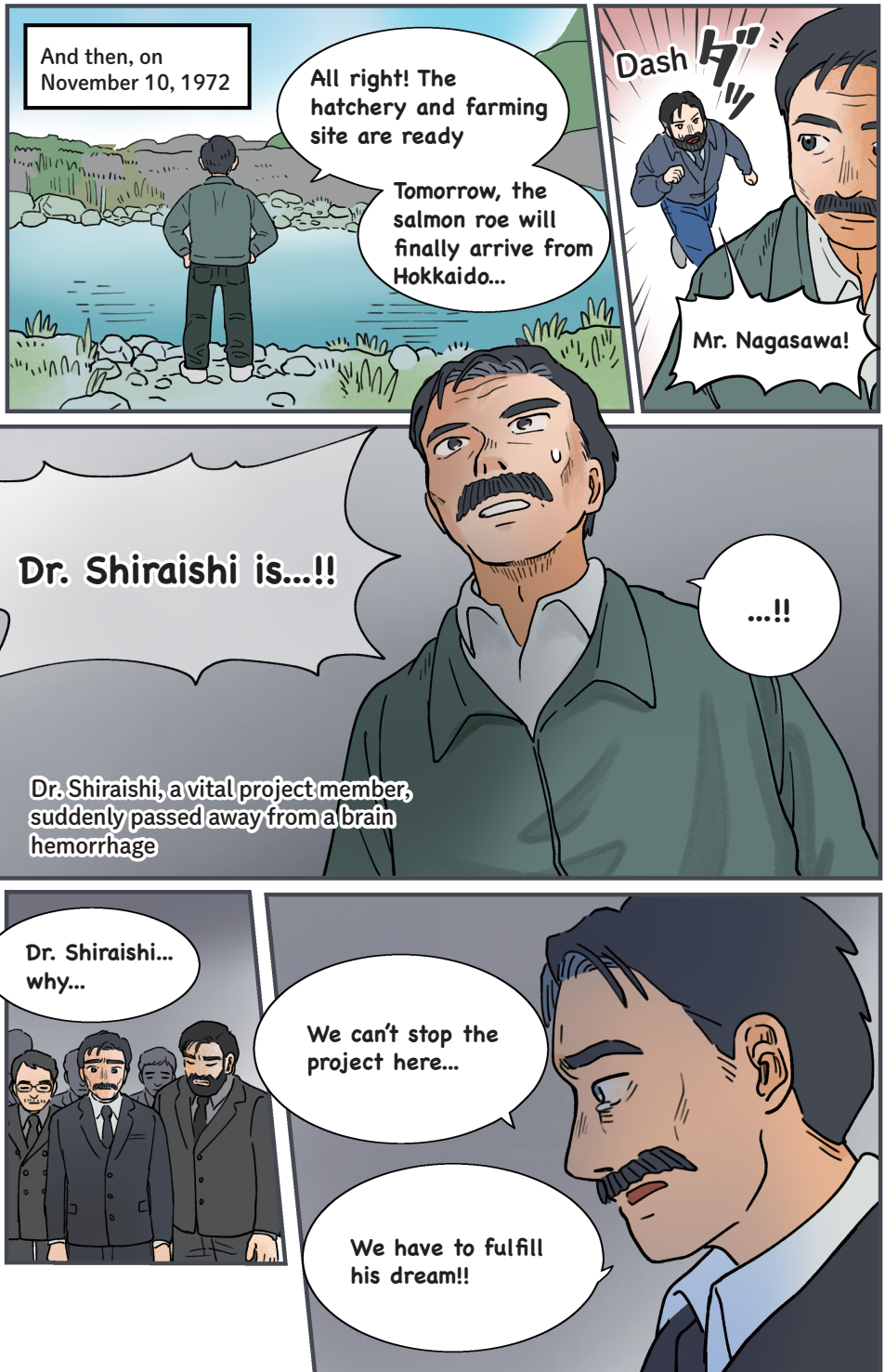
* This does not include parts of the Antarctic claimed by Chile

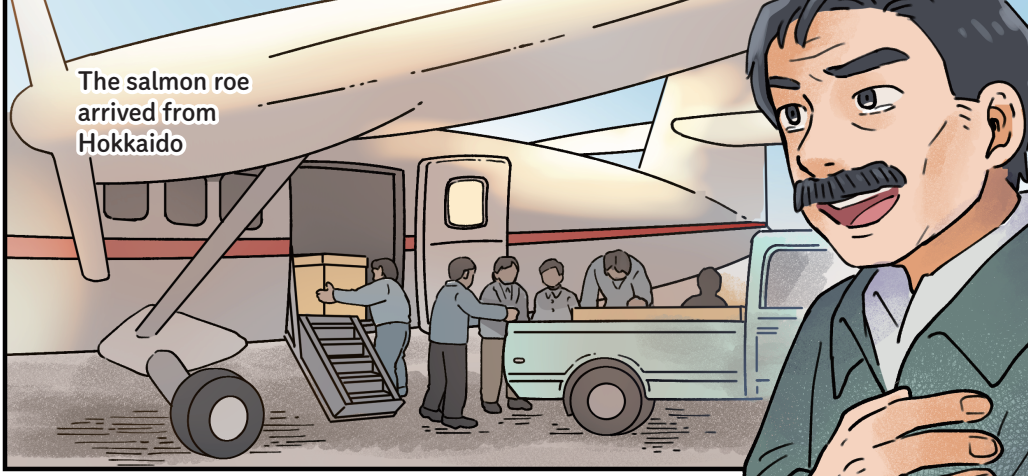

In the past, Chile depended much more heavily on mineral resources like copper
Iron ore
Refined copper
Copper ore
Chilean Government
To move away from this dependence,
the government wanted to develop new industries
At the same time, in Japan...
The United States and the Soviet Union are tightening regulations... That means fishing in Northern waters* will decline
Could we apply the salmon release and return program that succeeded in Hokkaido to other regions...?
Wait, how about Chile?
Nutrient-rich ocean currents flow along the coast of Chile
In particular, Patagonia in southernmost Chile has low water temperatures year-round, creating an ideal environment for salmon growth!
That's it!
* "Northern waters" refers to the North Pacific, including the Sea of Okhotsk and the Bering Sea

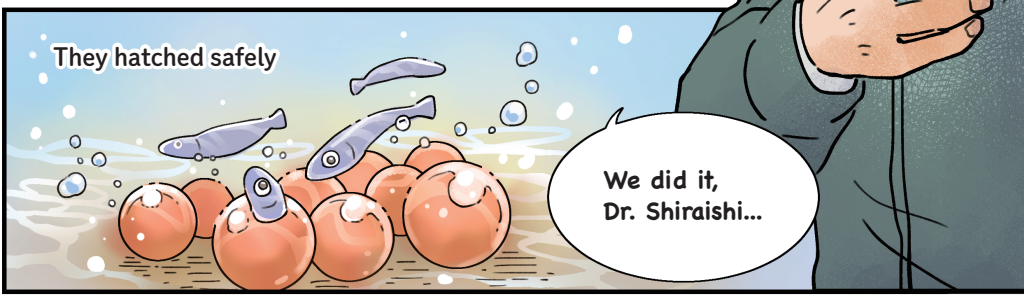

Since the interests of Japan and Chile aligned
a series of official cooperation projects between Japan and Chile was carried out to introduce salmon to Chile (referred to as "the Japan-Chile Salmon Project" in this book)
1972
Yoshikazu Shiraishi
Aliaky Nagasawa
So, this is Coyhaique, a town in the Aysén Region of southern Chile.
Mr. Nagasawa!
!


Aguilera!!
Pablo Aguilera
[Chilean engineer]
How long has it been since we last met?
The last time was during my training in Hokkaido in 1970
Let's make sure the project succeeds!!
Let's do it!
However... launching the project in Coyhaique involved many challenges...
Transporting equipment, selecting hatchery and release sites, airlifting salmon roe from Hokkaido over 20,000 km away...
It truly was starting from scratch


I never imagined it would be this hard...
How can you work so hard, Dr. Shiraishi?
Me?
Because I want to make the most of my expertise as a scientist
and I want to try building a fishery like the North Pacific salmon fishery in the Southern Hemisphere
As a fisheries researcher, I want to contribute to the world, in any way I can
Your passion is inspiring
As a fisheries researcher, I want to make sure this project succeeds, too!


And then, on November 10, 1972
All right! The hatchery and farming site are ready
Tomorrow, the salmon roe will finally arrive from Hokkaido...
Dash ダッ
Mr. Nagasawa!
Dr. Shiraishi is...!!
...!!
Dr. Shiraishi, a vital project member, suddenly passed away from a brain hemorrhage
Dr. Shiraishi... why...
We can't stop the project here...
We have to fulfill his dream!!

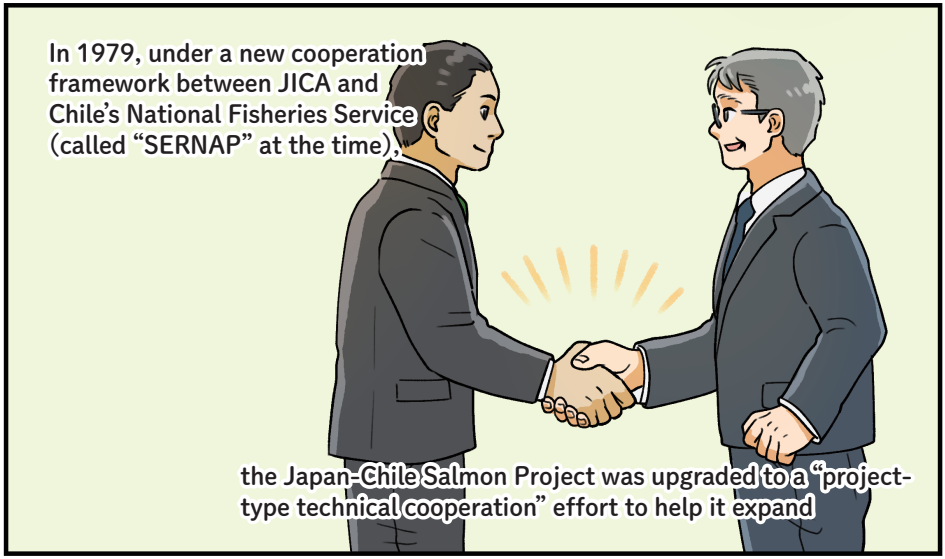

The salmon roe arrived from Hokkaido

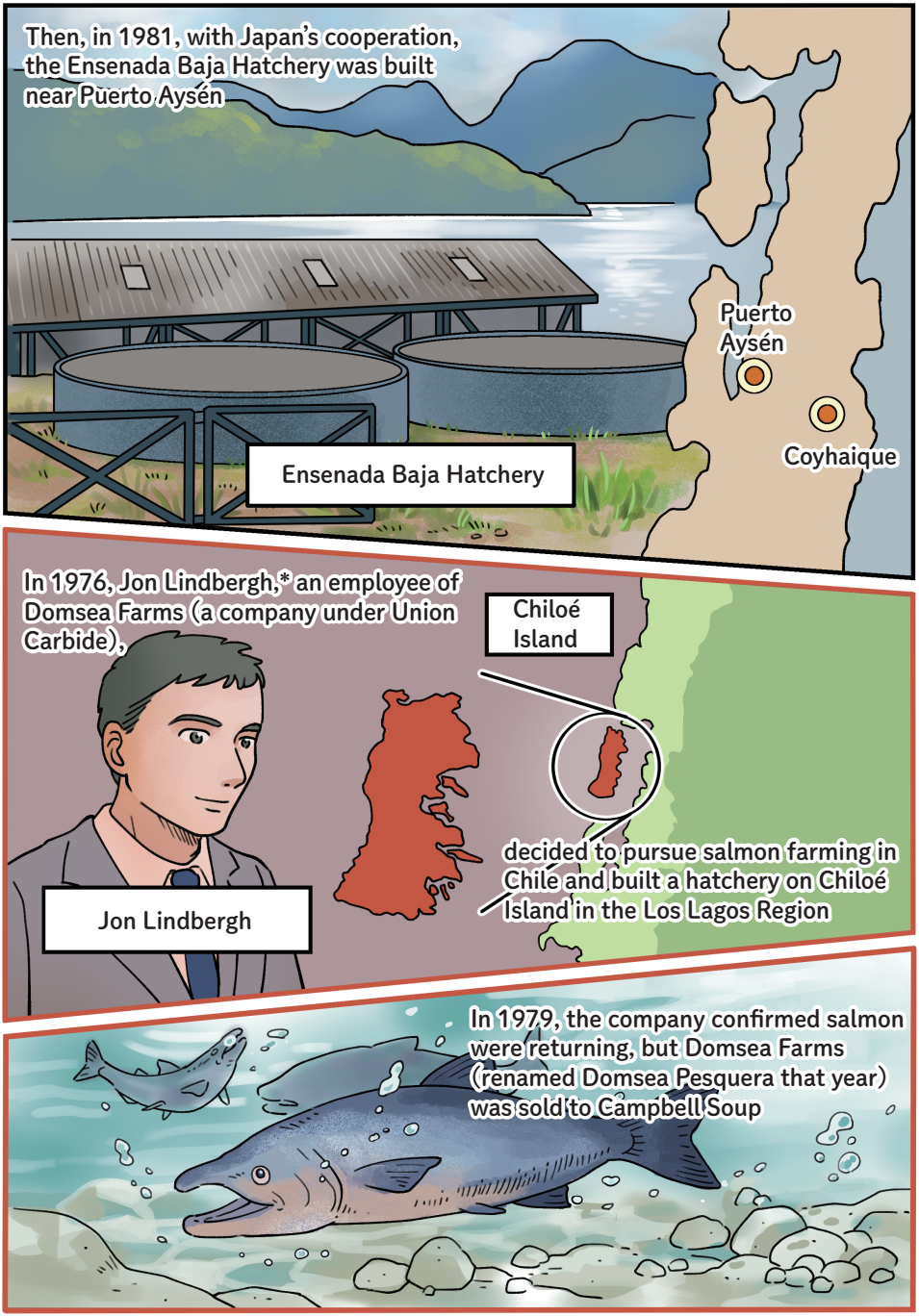

They hatched safely
We did it, Dr. Shiraishi...


After that, due to the 1973 coup
the project was suspended, and for a time, there were fears it would not continue

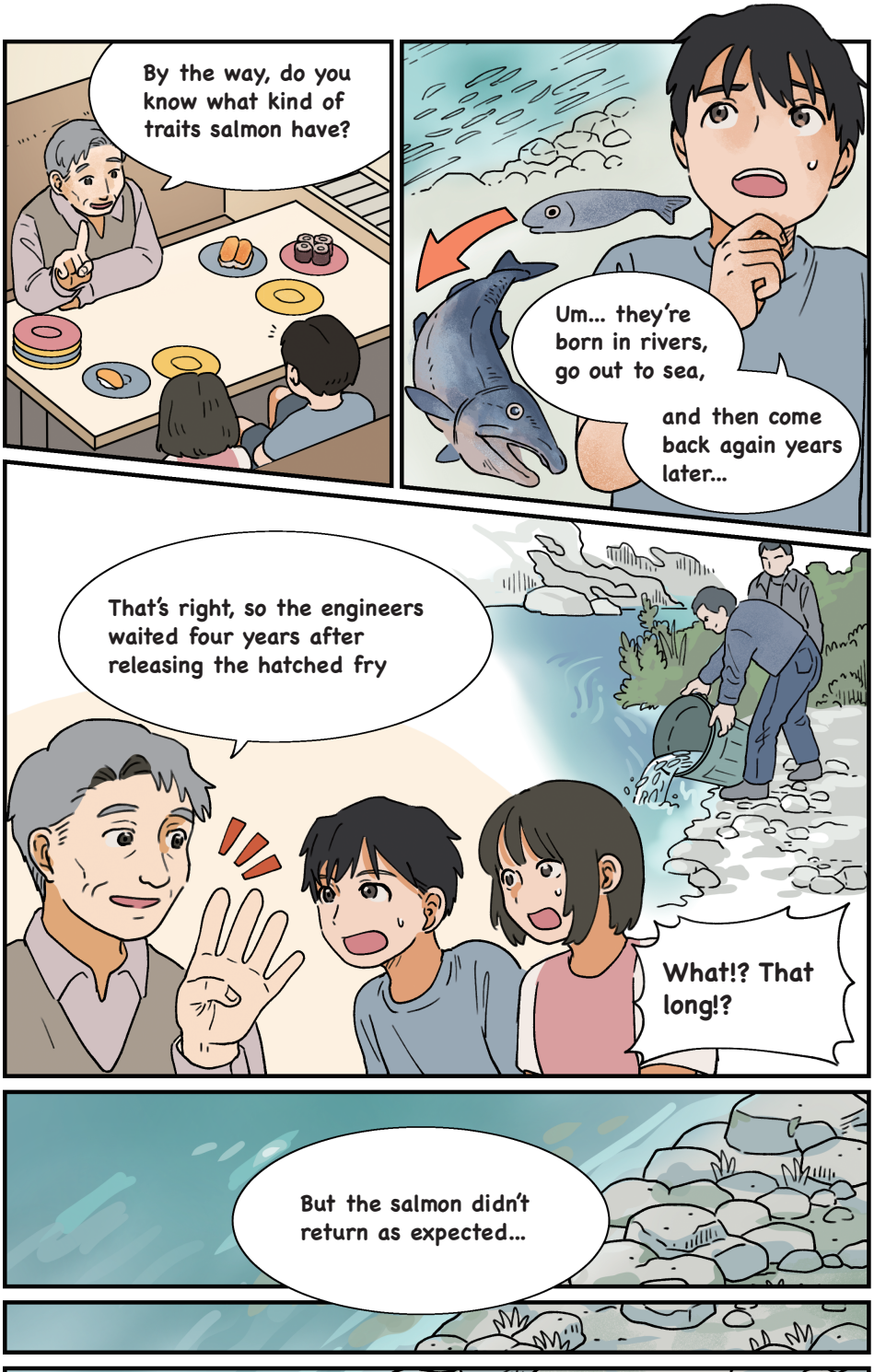

However...
The newly established Chilean government
This Japan-Chile Salmon Project is vital for our country!


In 1976, the Dr. Shiraishi Hatchery, named in memory of the late Dr. Shiraishi, was completed
With Japan's cooperation, state-of-the-art experimental equipment was installed

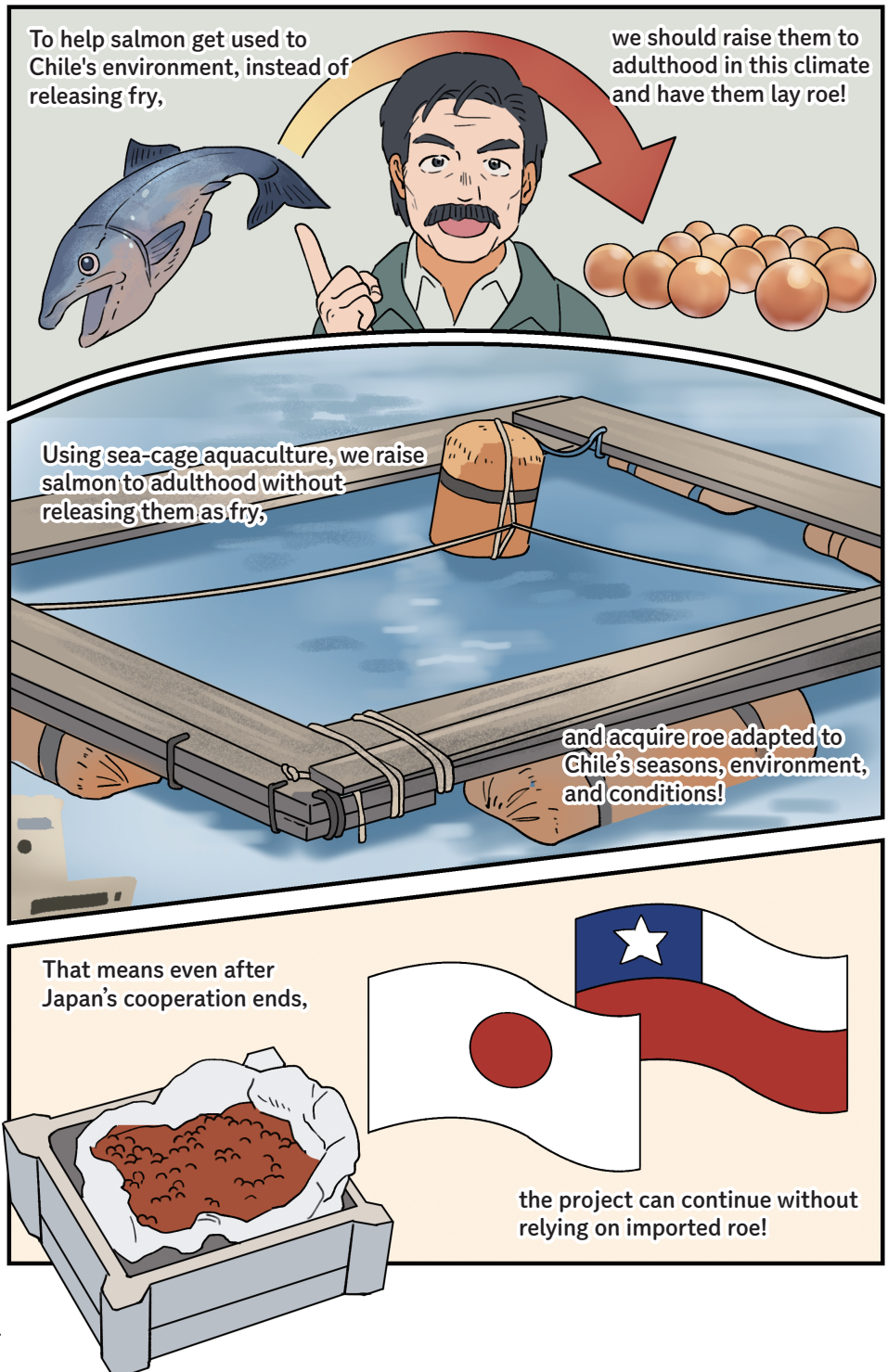

In 1979, under a new cooperation framework between JICA and Chile's National Fisheries Service (called "SERNAP" at the time),
the Japan-Chile Salmon Project was upgraded to a "project-type technical cooperation" effort to help it expand

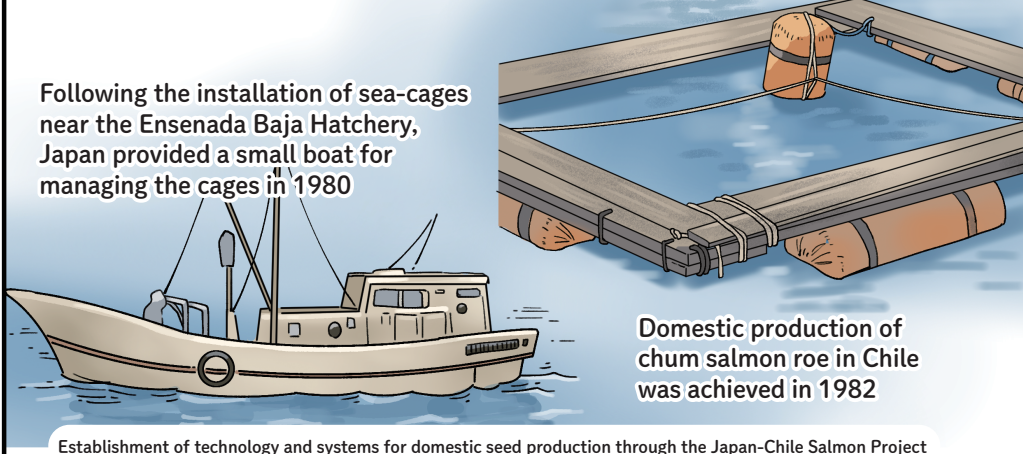


* Jon Lindbergh is the second son of Charles Lindbergh, who made the first solo nonstop transatlantic flight. Charles Lindbergh is well-known thanks to a film about the flight titled *The Spirit of St. Louis.*

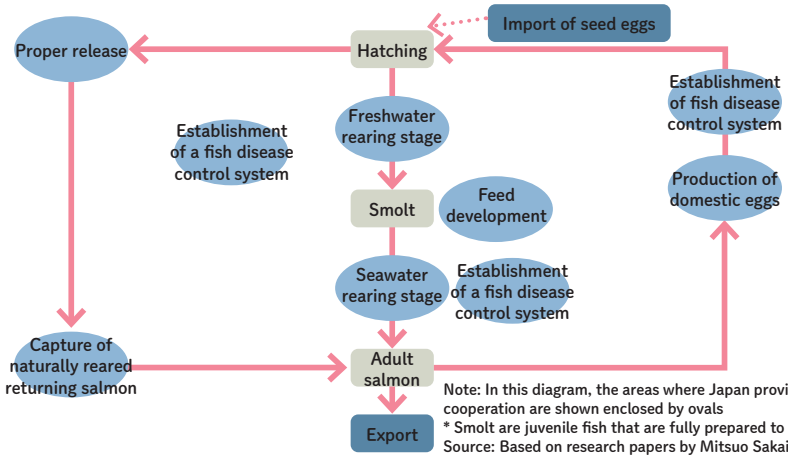

By the way, do you know what kind of traits salmon have?
Um... they're born in rivers, go out to sea,
and then come back again years later...
That's right, so the engineers waited four years after releasing the hatched fry
What!? That long!?
But the salmon didn't return as expected...


Too few adult salmon are returning...
If the number of returning salmon doesn't increase,
the supply of roe from Japan will stop and the project will end...
Clench
What should we do...?
What if we try something different!?

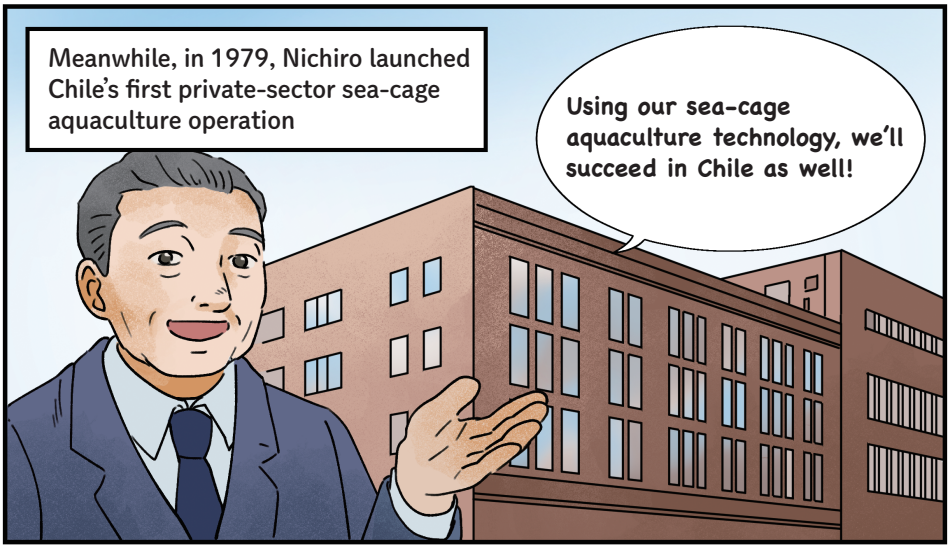

To help salmon get used to Chile's environment, instead of releasing fry,
we should raise them to adulthood in this climate and have them lay roe!
Using sea-cage aquaculture, we raise salmon to adulthood without releasing them as fry,
and acquire roe adapted to Chile's seasons, environment, and conditions!
That means even after Japan's cooperation ends,
the project can continue without relying on imported roe!

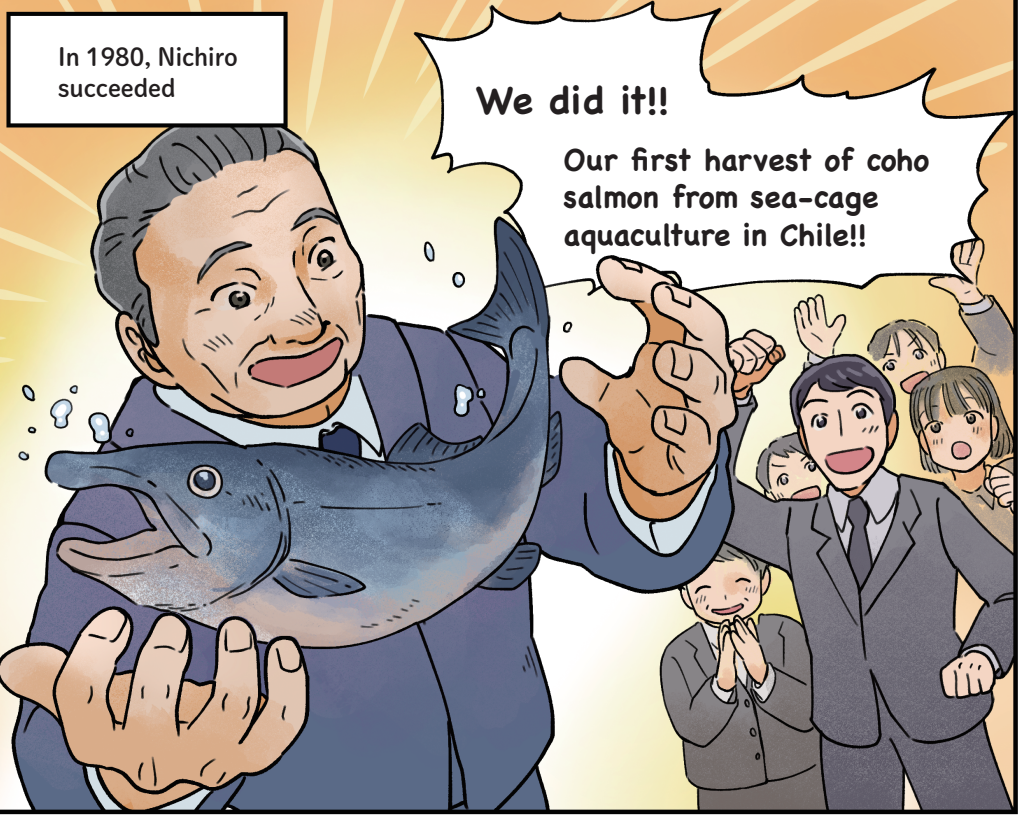


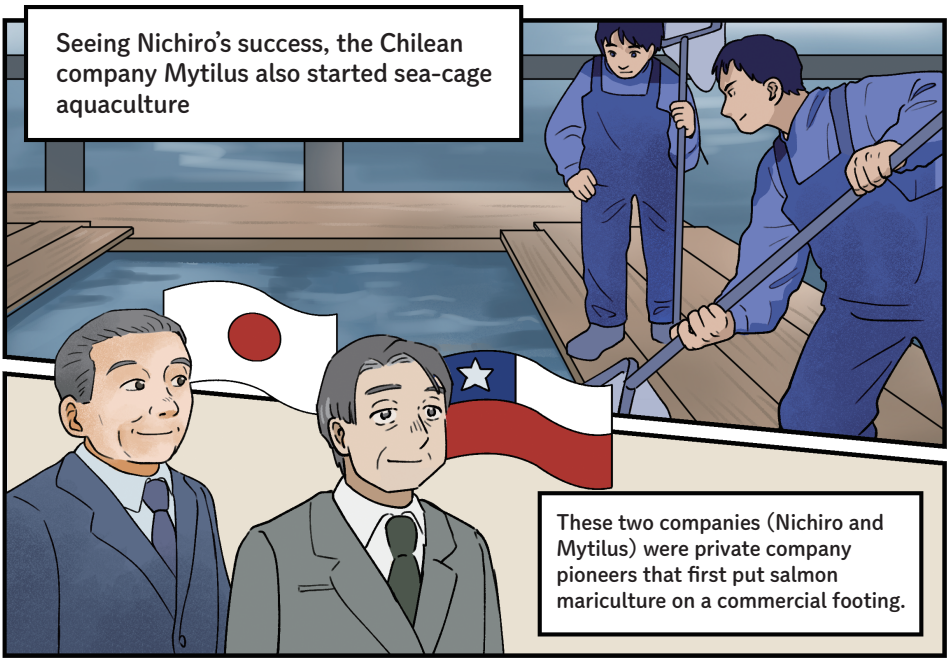
Establishment of technology and systems for domestic seed production through the Japan-Chile Salmon Project

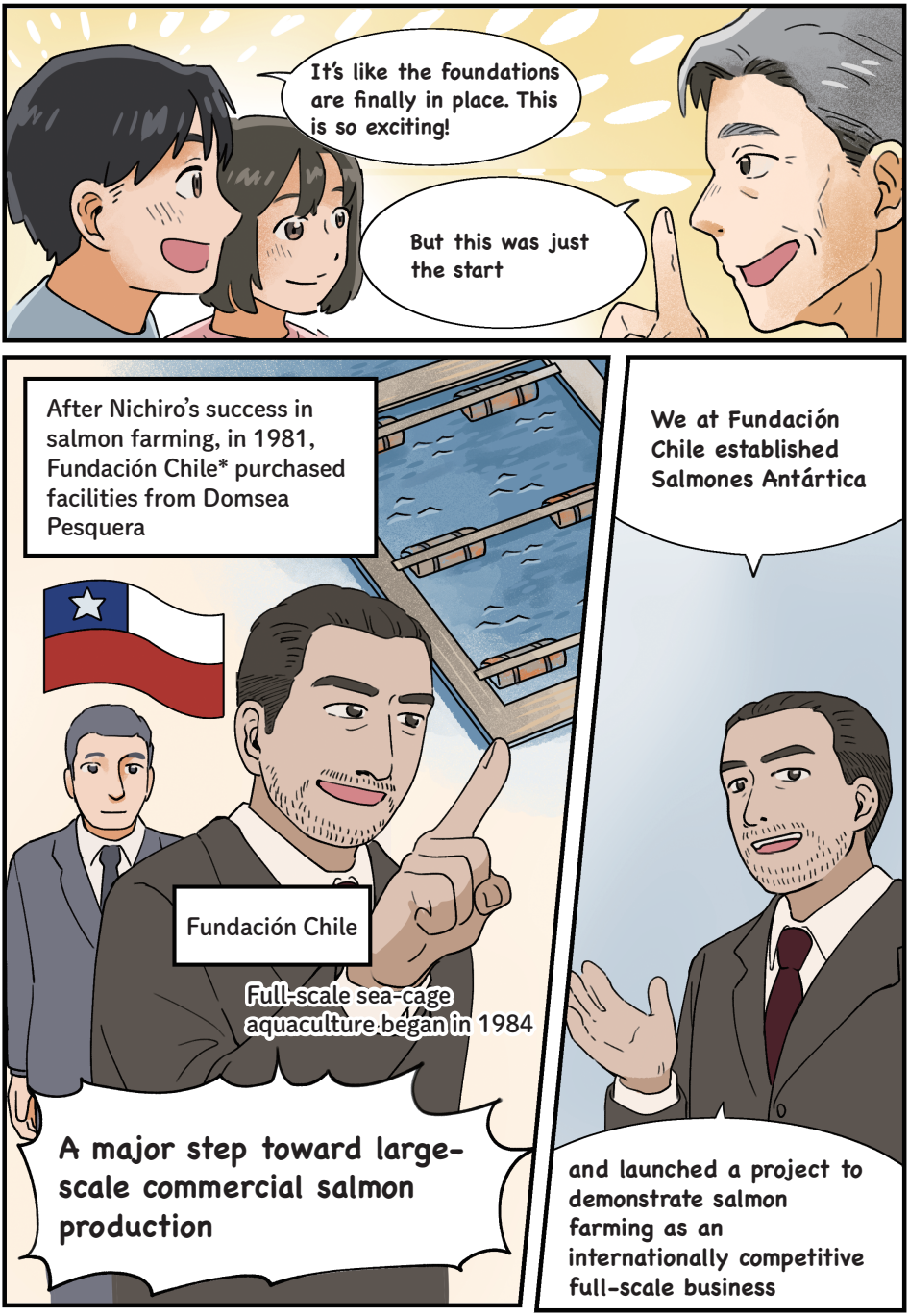


Note: In this diagram, the areas where Japan provided technical cooperation are shown enclosed by ovals
* Smolt are juvenile fish that are fully prepared to grow in seawater
Source: Based on research papers by Mitsuo Sakai

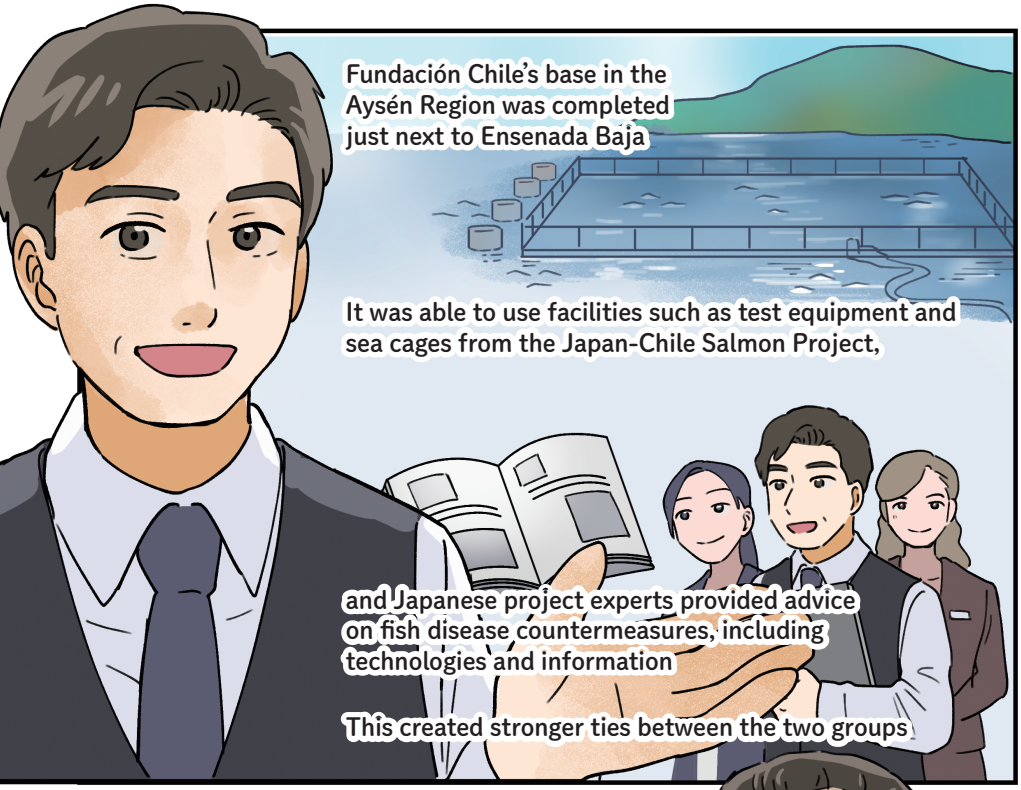


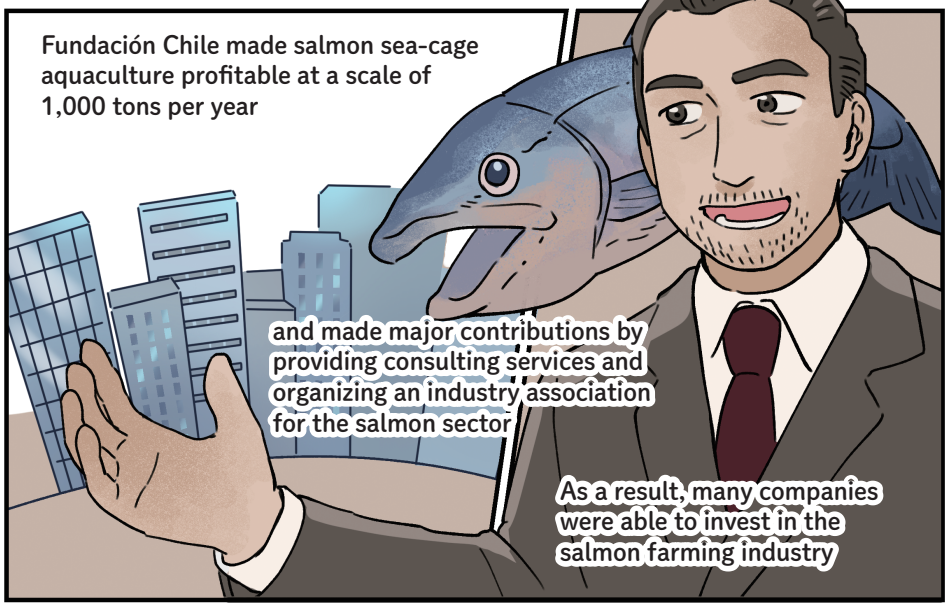

In 1980, Nichiro succeeded
We did it!!
Our first harvest of coho salmon from sea-cage aquaculture in Chile!!

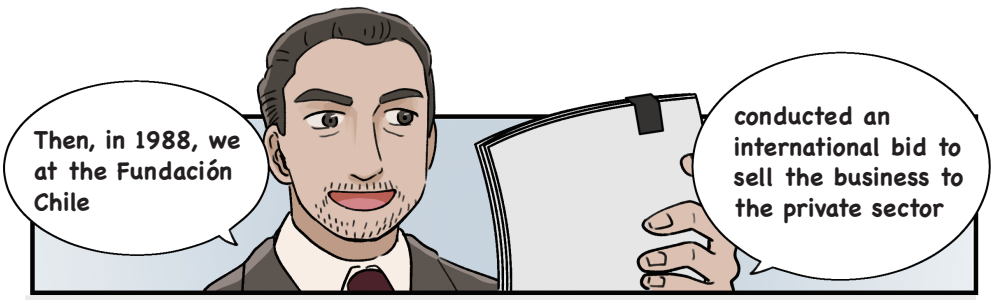

Seeing Nichiro's success, the Chilean company Mytilus also started sea-cage aquaculture
These two companies (Nichiro and Mytilus) were private company pioneers that first put salmon mariculture on a commercial footing.



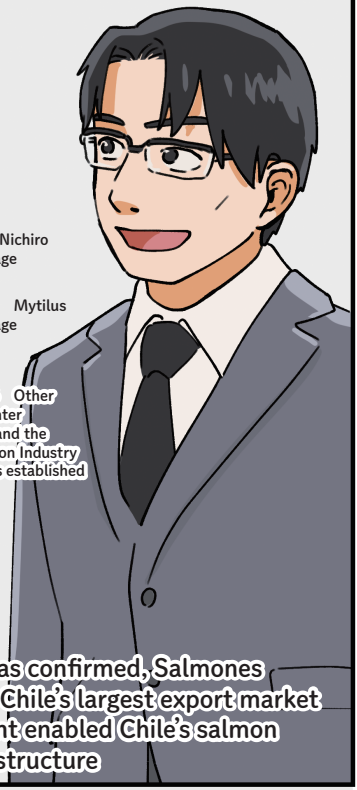
* Fundación Chile is a semi-public organization that develops technology to establish industries, launches companies, helps them become established, and then sells them


Fundación Chile's base in the Aysén Region was completed just next to Ensenada Baja
It was able to use facilities such as test equipment and sea cages from the Japan-Chile Salmon Project,
and Japanese project experts provided advice on fish disease countermeasures, including technologies and information
This created stronger ties between the two groups


Fundación Chile made salmon sea-cage aquaculture profitable at a scale of 1,000 tons per year
and made major contributions by providing consulting services and organizing an industry association for the salmon sector
As a result, many companies were able to invest in the salmon farming industry



The winning bidder was us, Nippon Suisan, a Japanese fisheries company

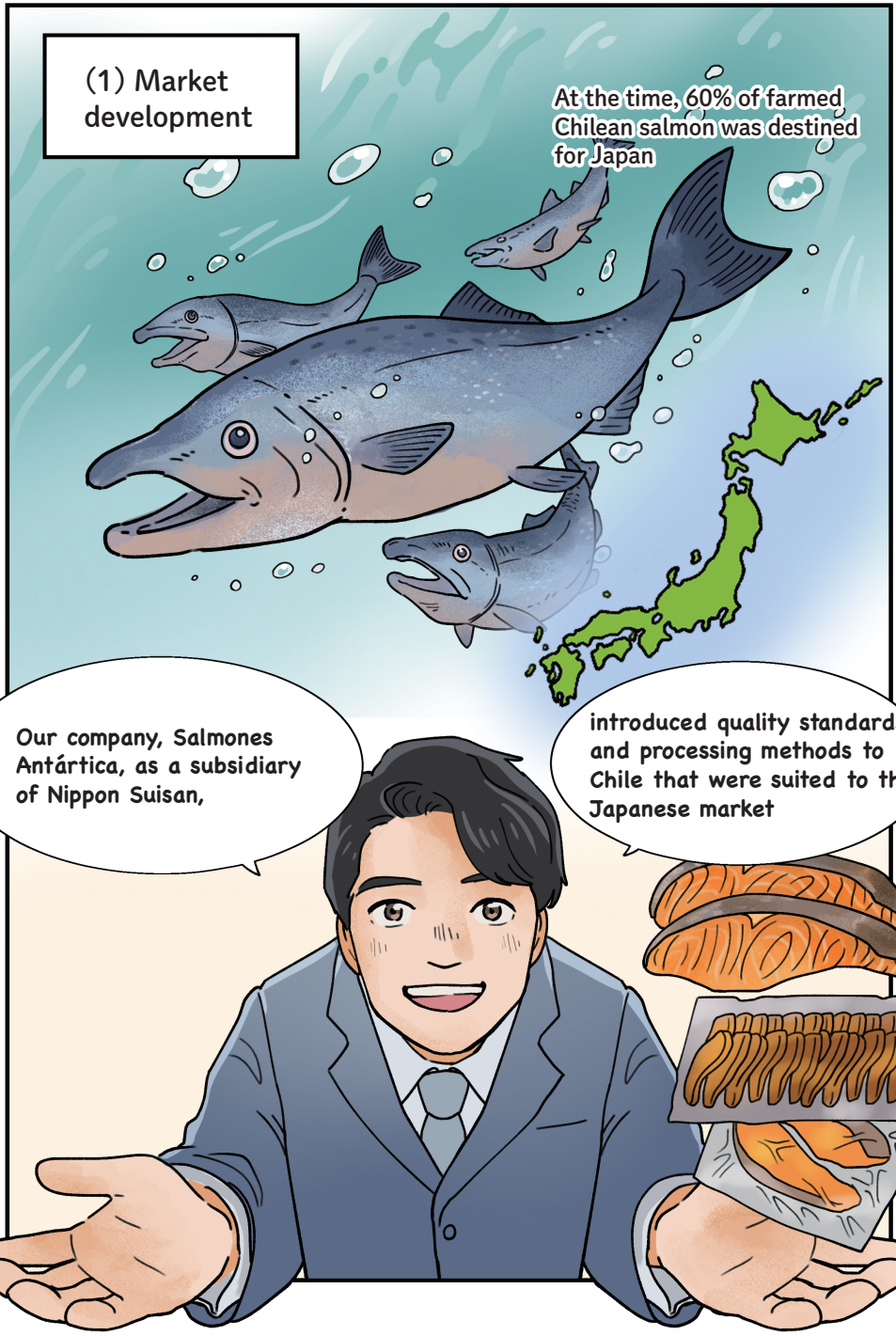


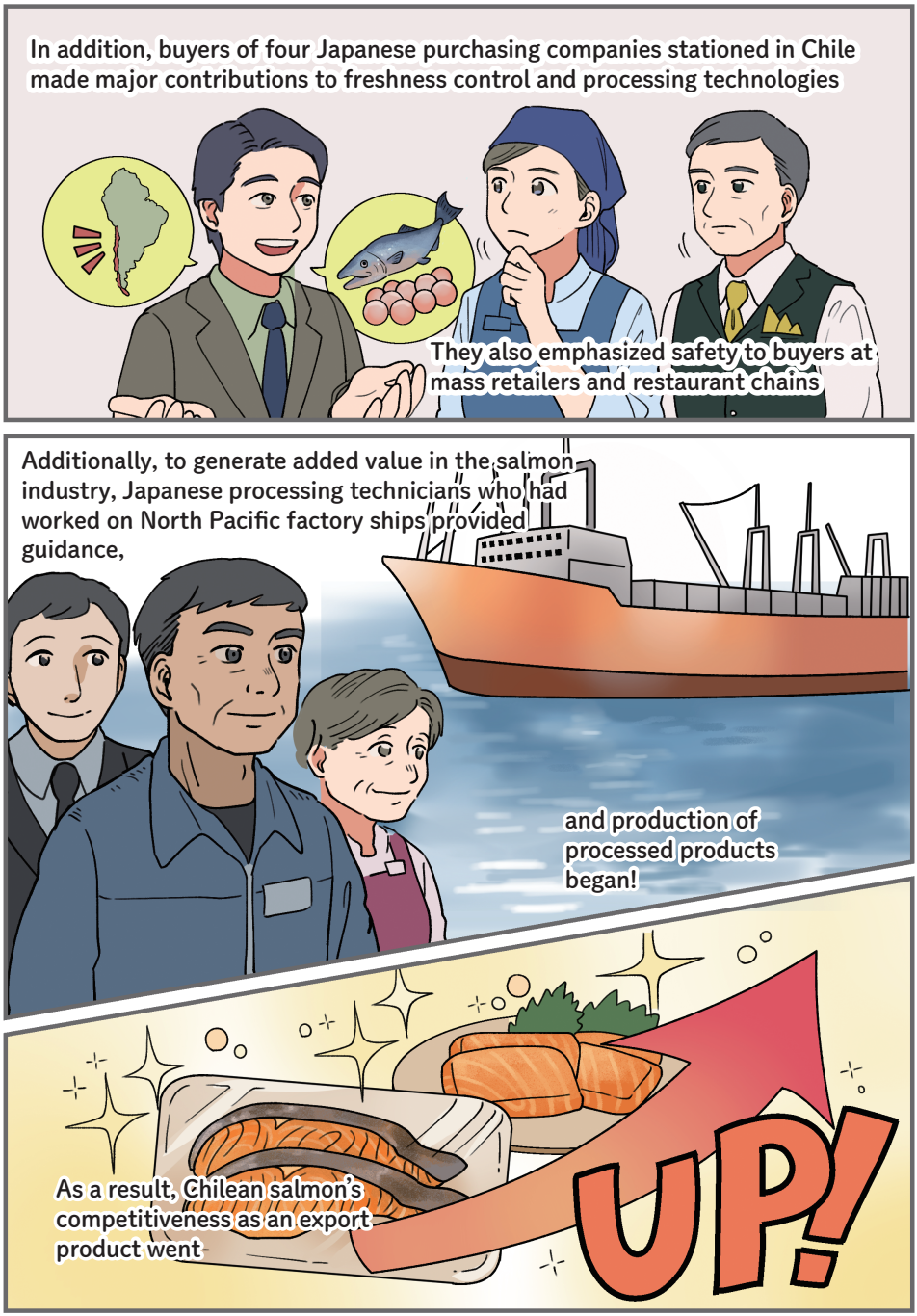
	Developments related to the Japan-Chile Salmon Project	Developments involving Fundación Chile, Nippon Suisan, and Salmones Antártica	Developments involving Nichiro, Mytilus, and other private companies
1965			
	1969 Japan Fisheries Association dispatches a survey mission	1974–79 Release programs by Domsea Farms (renamed Domsea Pesquera in 1979) under Union Carbide	
1970	1970 Trainee accepted in Hokkaido		
	1972–73 Technical cooperation through expert dispatch and provision of eyed roe (suspended by the 1973 coup)	1979 Campbell Soup acquires Domsea Pesquera	
1975	1974–79 Technical cooperation between Chile's SERNAP and JICA	1981 Fundación Chile acquires Domsea Pesquera	From 1979 Nichiro begins sea-cage aquaculture
1980	1979–87 Project-type technical cooperation between Chile's SERNAP and JICA	1981–87 Fundación Chile establishes Salmones Antártica and achieves 1,000-ton production	Around 1980 Mytilus begins sea-cage aquaculture
1985	1988–89 Follow-up technical cooperation between Chile's Fisheries Development Institute(IFOP) and JICA	1988 Nippon Suisan acquires Salmones Antártica	Around 1986 Other companies enter aquaculture and the Chilean Salmon Industry Association is established
1990	1990 onwards Fisheries Development Institute (ongoing programs)		

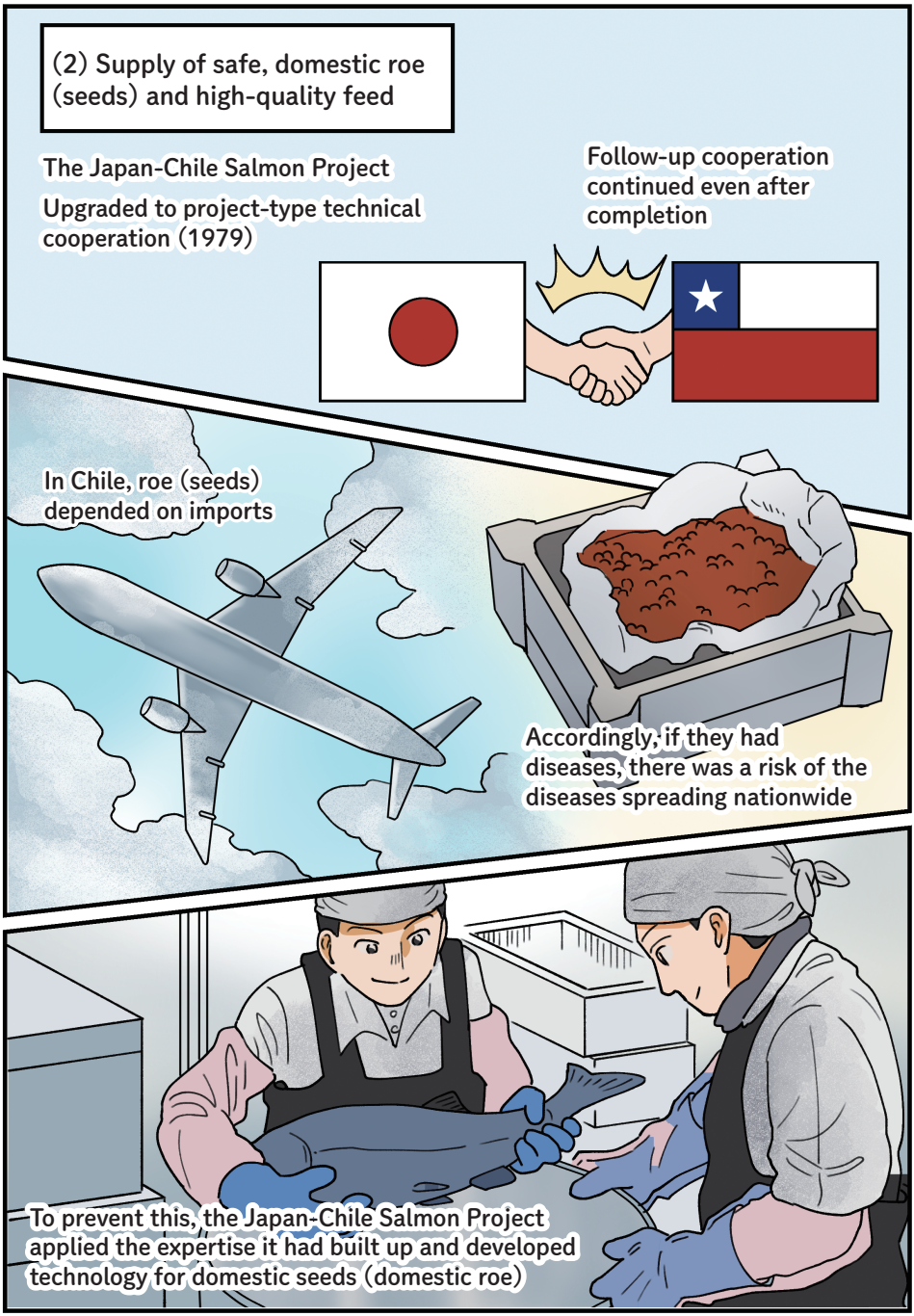
The commercial viability of the salmon business was confirmed, Salmones Antártica was acquired by a company from Japan, Chile's largest export market at the time, and the resulting increase in investment enabled Chile's salmon farming industry to form a self-sustaining growth structure

In the early stages of this development, Chile's salmon industry faced three challenges, and Japanese public and private sectors contributed to addressing them




(1) Market development
At the time, 60% of farmed Chilean salmon was destined for Japan
Our company, Salmones Antártica, as a subsidiary of Nippon Suisan,
introduced quality standards and processing methods to Chile that were suited to the Japanese market

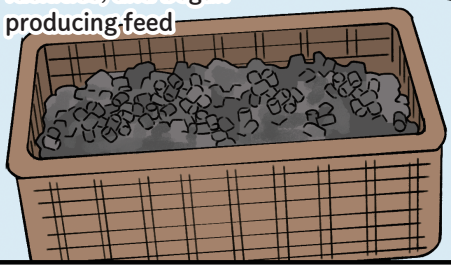

In addition, buyers of four Japanese purchasing companies stationed in Chile made major contributions to freshness control and processing technologies
They also emphasized safety to buyers at mass retailers and restaurant chains
Additionally, to generate added value in the salmon industry, Japanese processing technicians who had worked on North Pacific factory ships provided guidance,
and production of processed products began!
As a result, Chilean salmon's competitiveness as an export product went
UP!


(2) Supply of safe, domestic roe (seeds) and high-quality feed
The Japan-Chile Salmon Project
Upgraded to project-type technical cooperation (1979)
Follow-up cooperation continued even after completion
In Chile, roe (seeds) depended on imports
Accordingly, if they had diseases, there was a risk of the diseases spreading nationwide
To prevent this, the Japan-Chile Salmon Project applied the expertise it had built up and developed technology for domestic seeds (domestic roe)

Also, JICA's technical cooperation supported the development of pellet feed for fry and technologies for fish disease control

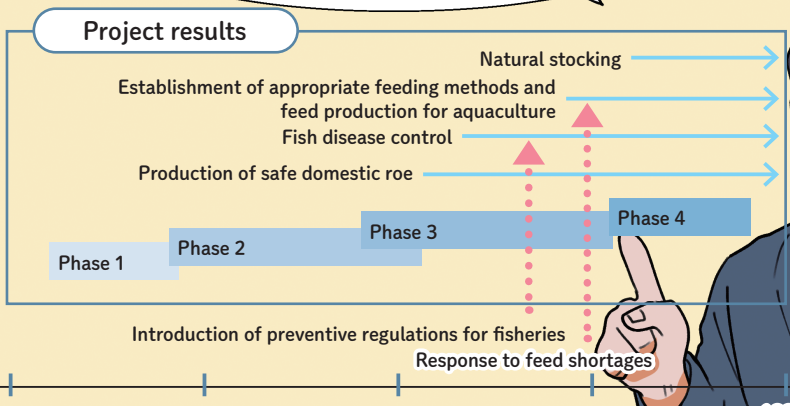
The project established a feed division, created laboratories,

set up production facilities, and began producing feed

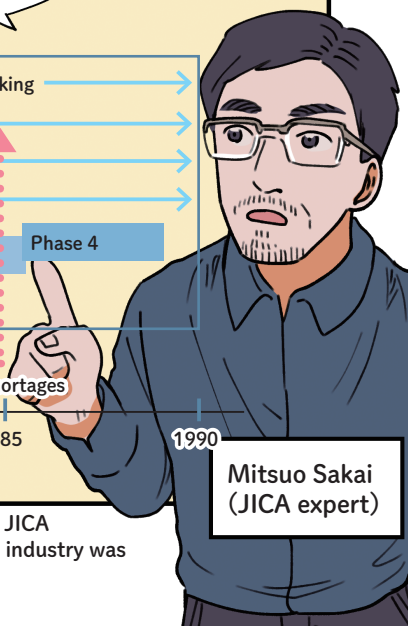


According to Mitsuo Sakai, a JICA expert involved in the project at this time, before fish disease or feed shortages occurred in the aquaculture industry:

We conducted countermeasures and development in advance, anticipating those challenges



Source: Based on research papers by Mitsuo Sakai



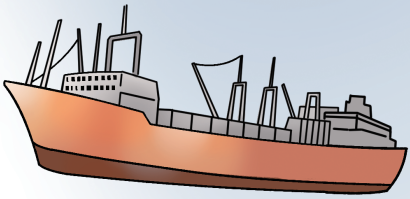
Note: Phases 1– 4 are an approximate indication of the phases of JICA cooperation. Phases 3 and 4 were the period when Chile's salmon industry was established, while Phases 1 and 2 were the preparation period.

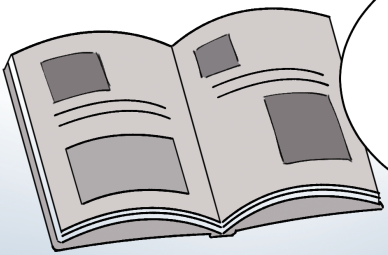
(3) Development of institutional infrastructure, such as laws, regulations, and quality standards

Based on the long-term experience of Chile's SERNAP*, the Chilean counterpart of the Japan-Chile Salmon Project,

1991

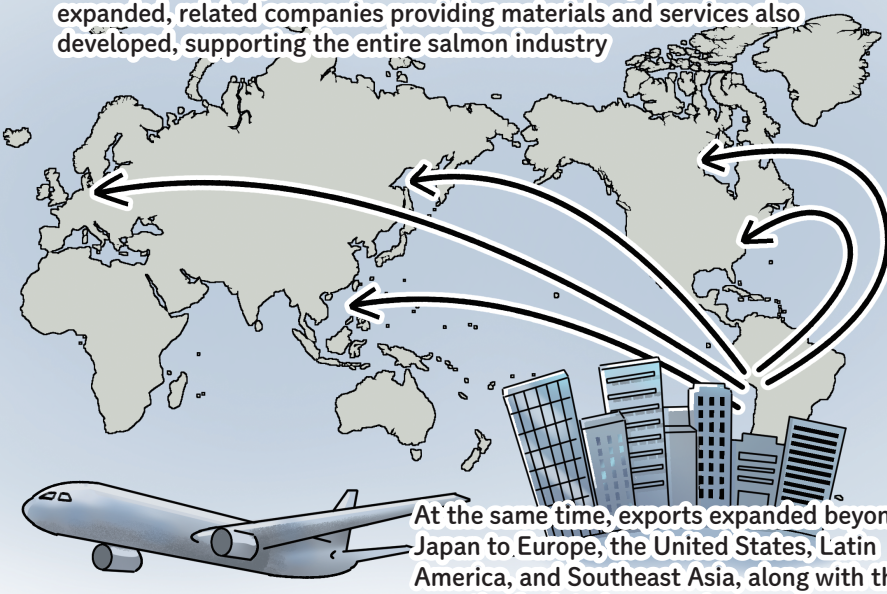
SERNAP
Servicio Nacional de Pesca





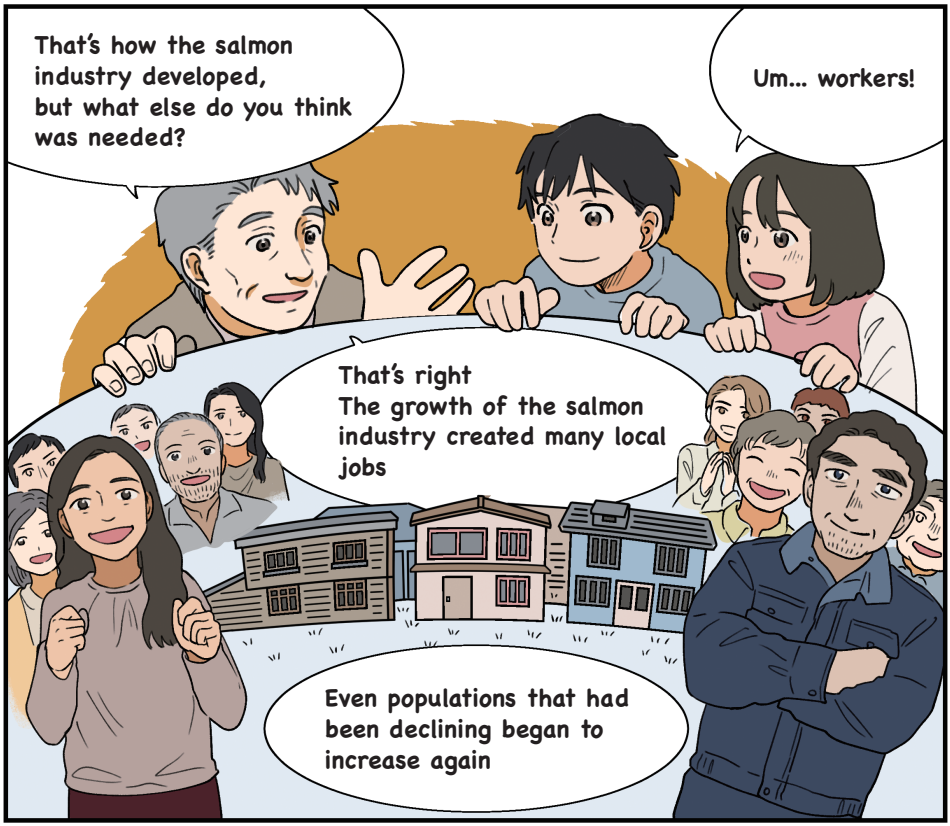
the General Law on Fisheries and Aquaculture, which provided a fundamental legal infrastructure, was enacted!

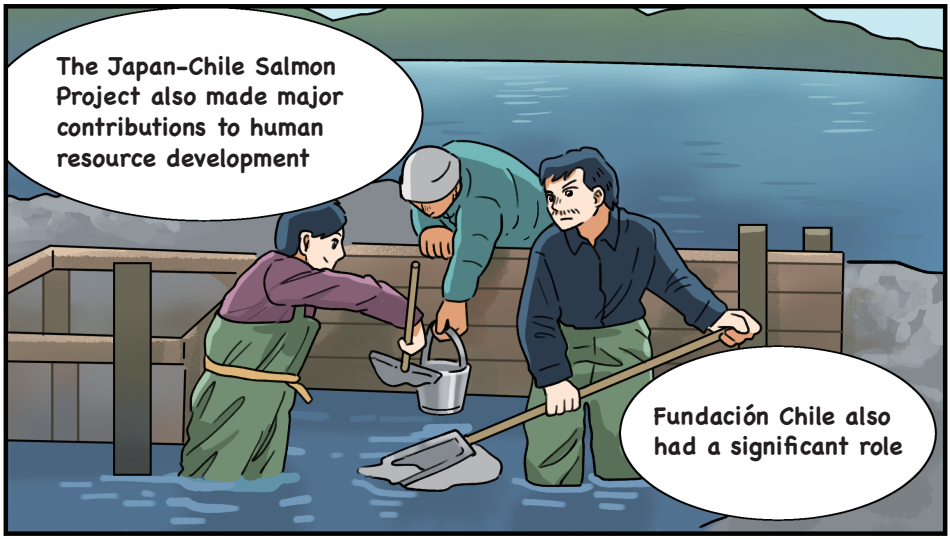
As overall salmon production increased dramatically and operations expanded, related companies providing materials and services also developed, supporting the entire salmon industry

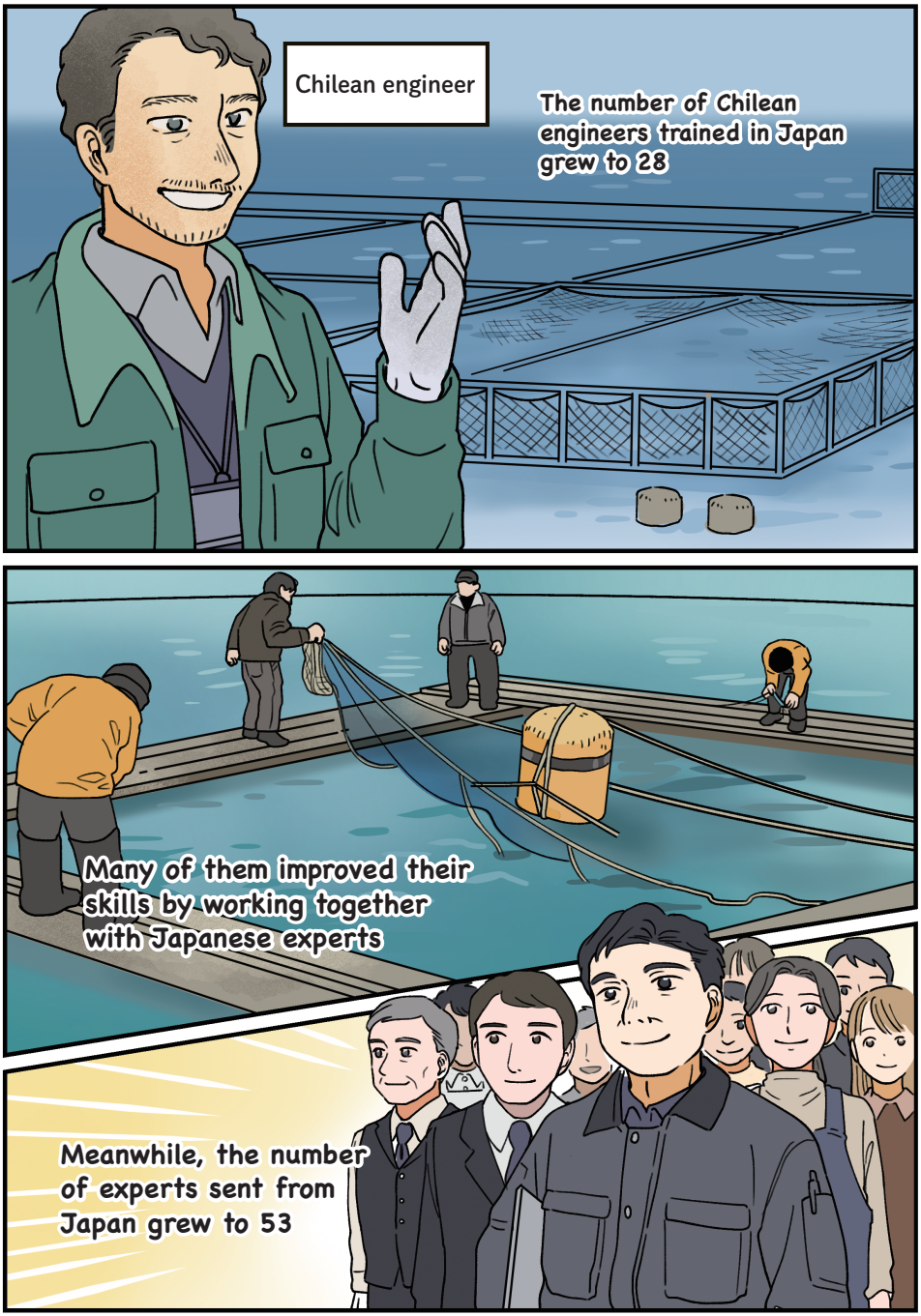


At the same time, exports expanded beyond Japan to Europe, the United States, Latin America, and Southeast Asia, along with the growth of related companies

* The Office of the Undersecretary of Fisheries of the Ministry of Economy, Development, and Reconstruction, formulated laws and regulations, and SERNAP was responsible for implementation based on them.


That's how the salmon industry developed, but what else do you think was needed?
Um... workers!
That's right
The growth of the salmon industry created many local jobs
Even populations that had been declining began to increase again


The Japan-Chile Salmon Project also made major contributions to human resource development
Fundación Chile also had a significant role


Chilean engineer
The number of Chilean engineers trained in Japan grew to 28
Many of them improved their skills by working together with Japanese experts
Meanwhile, the number of experts sent from Japan grew to 53

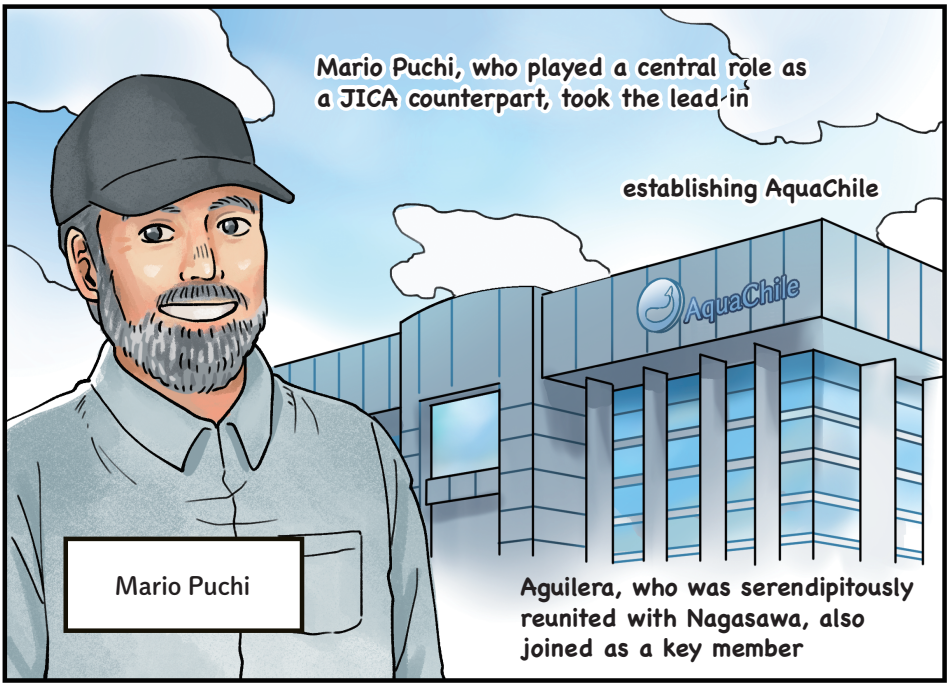
Many of the Chilean engineers with experiences of working in the Japan-Chile Salmon Project worked in Chile's salmon industry for years and still play central roles today

As evidence, the Chilean fisheries magazine, *Aqua*, featured 12 pioneers of Chile's fisheries industry in 2008,

and 11 of them were engineers involved in salmon farming, including 6 who had trained in Japan

Those who gained experience through the Japan-Chile Salmon Project and trained in Japan

later played leadership roles at many Chilean salmon companies



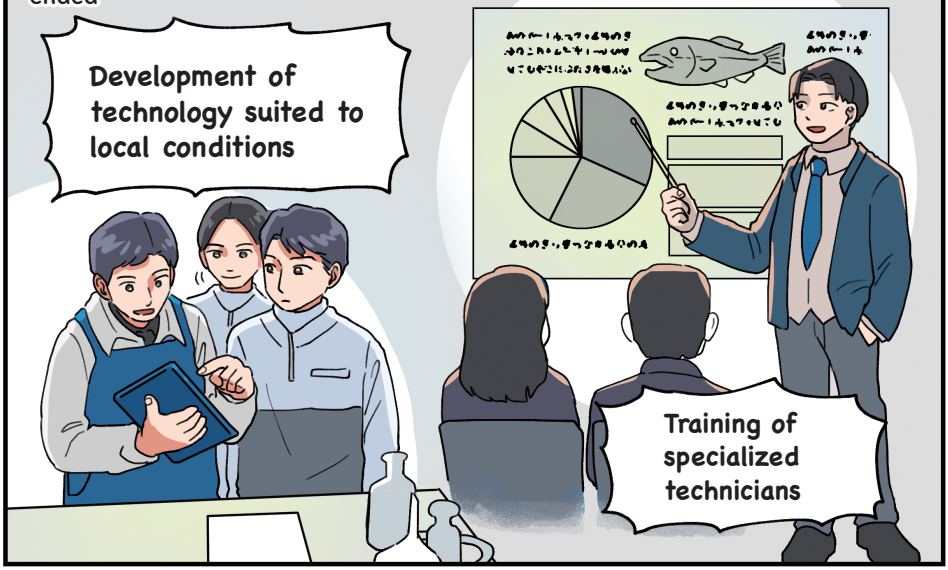
AquaChile expanded its business and became one of Chile's leading salmon farming companies

The Japan-Chile Salmon Project was like a school that trained pioneers who contributed to the development of the salmon farming industry

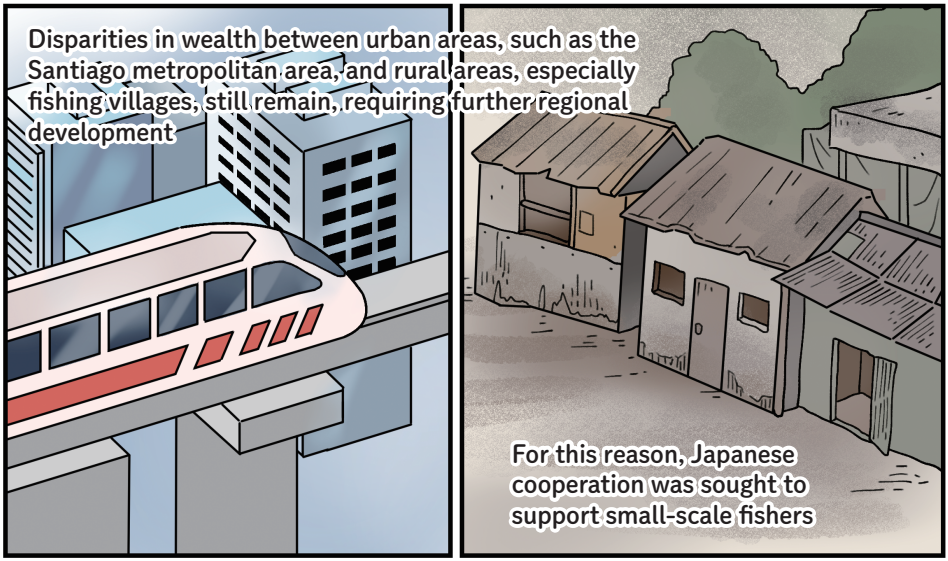


	Technological Contributions	Contributions to Industrial Development (including technology and essential elements such as workforce training)	Contributions to Socioeconomic Development
Preparation Phase	Provision of basic technologies		
Establishment Phase (Commercialization Phase)	Provision of basic technologies, research on salmon diseases, production of disease-free domestic seed, and feed production (especially for newly hatched fry)	(1) Cooperation in commercialization studies by the Fundación Chile (feasibility study (FS) type analysis), (2) Training of industry personnel	
Early Development Phase	Major contributions made through the final two years of the project and by ongoing activities from counterparts afterward, especially to domestic seed and feed production	Training of industry personnel, contributions through former counterparts it trained, and on-the-job training by counterparts	Broad contributions to socioeconomic development through industrial development, especially to regional development in the Aysén Region, where the project was implemented

Efforts were also made to ensure that the Chilean people could continue their activities and contribute to the salmon industry even after technical cooperation ended



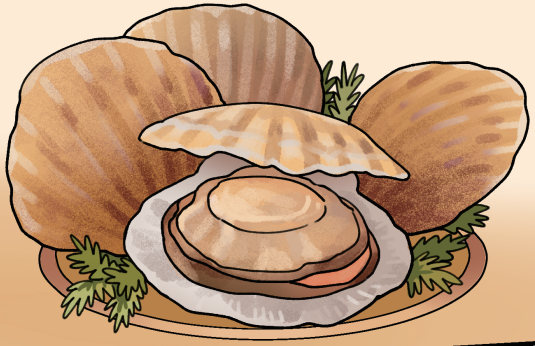
Issues facing fishing villages and initiatives



For example, in Tongoy Bay in the north,

UNIVERSIDAD CATÓLICA DEL NORTE CHILE

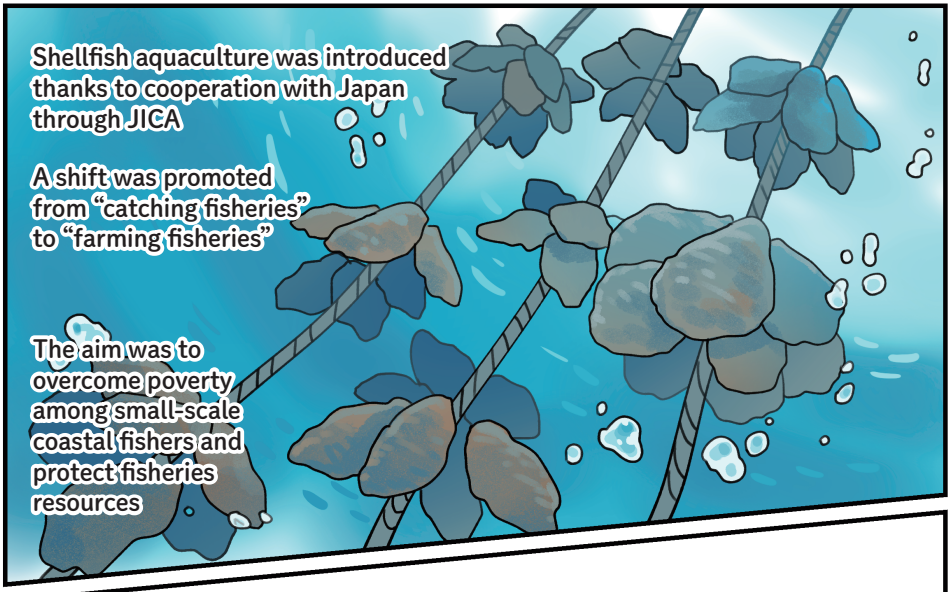
cooperation between Universidad Católica del Norte and Japan



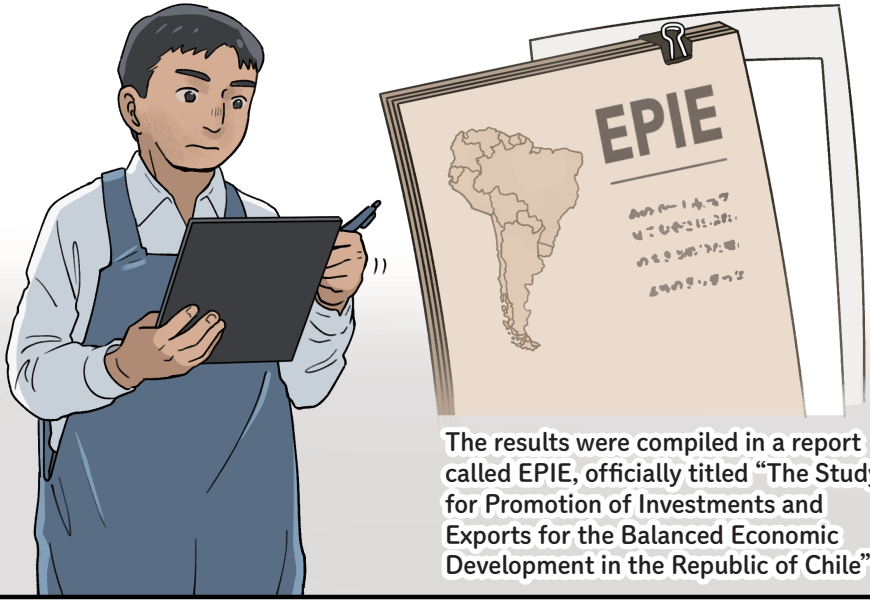
led to success in farming Chilean scallops, contributing to fisheries development in the region and benefiting small-scale fishers

Meanwhile, in an area near Puerto Montt, one of the regions where salmon farming developed, the Fundación Chinquihue was established

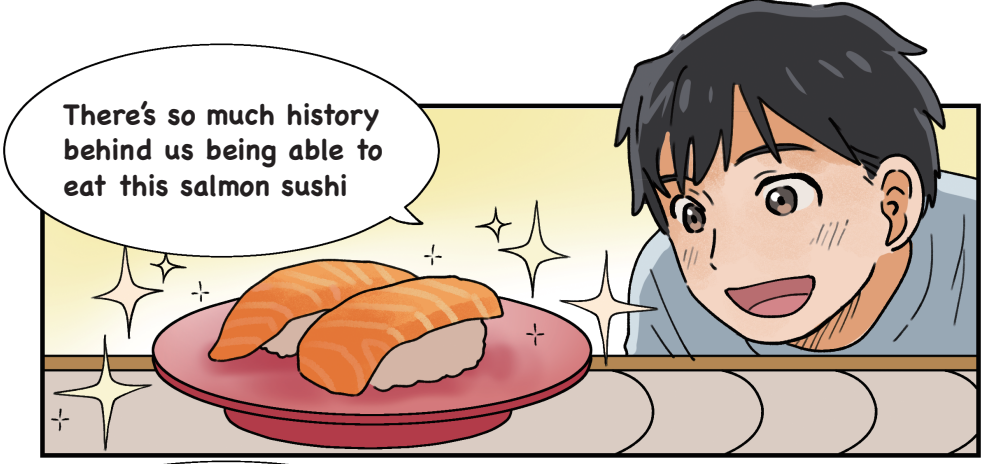
Fundación Chinquihue

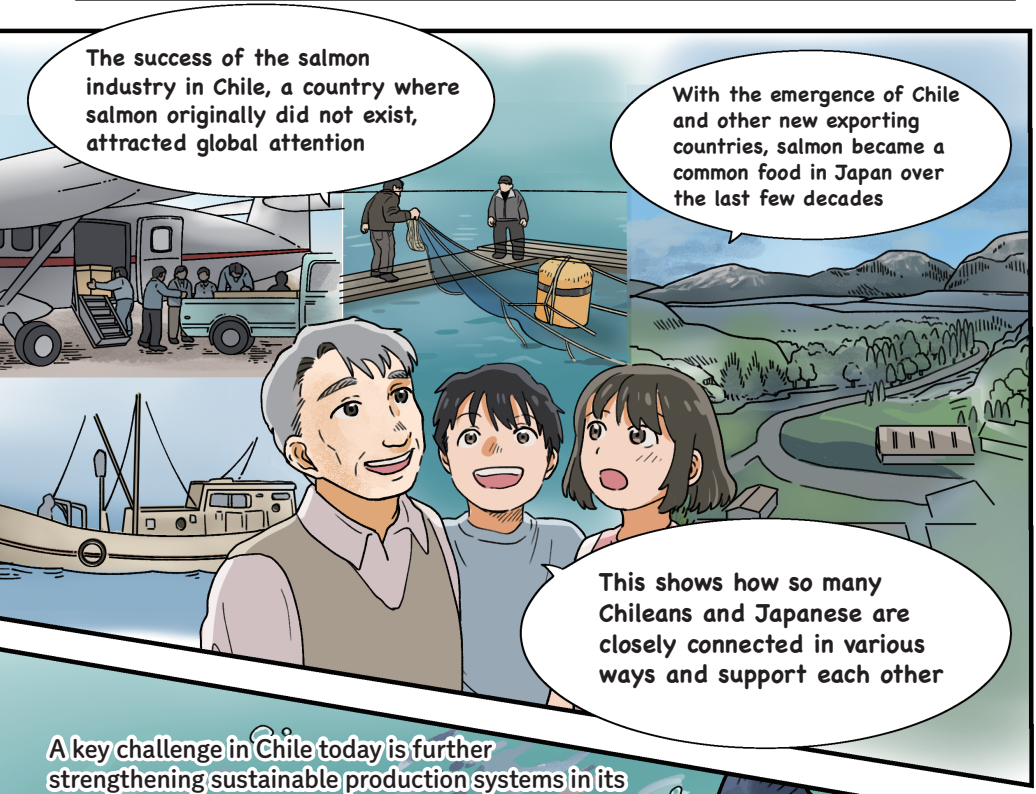


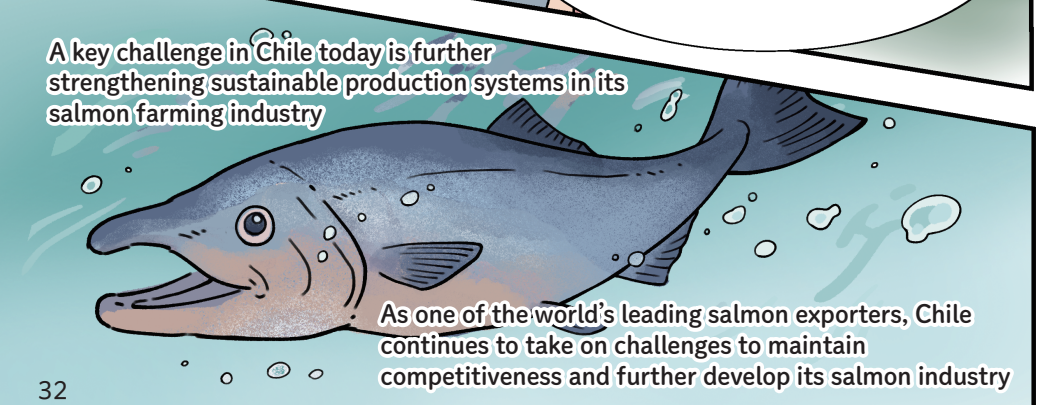
Additionally, the Ministry of Economy, Development, and Reconstruction, the Chilean Economic Development Agency (CORFO) and JICA conducted a joint study on expanding trade and investment to enable balanced regional development



The results were compiled in a report called EPIE, officially titled “The Study for Promotion of Investments and Exports for the Balanced Economic Development in the Republic of Chile”


There's so much history behind us being able to eat this salmon sushi


The success of the salmon industry in Chile, a country where salmon originally did not exist, attracted global attention
With the emergence of Chile and other new exporting countries, salmon became a common food in Japan over the last few decades
This shows how so many Chileans and Japanese are closely connected in various ways and support each other


A key challenge in Chile today is further strengthening sustainable production systems in its salmon farming industry
As one of the world's leading salmon exporters, Chile continues to take on challenges to maintain competitiveness and further develop its salmon industry

Japan International Cooperation Agency

The Japan International Cooperation Agency (JICA) aims to promote international cooperation and provide assistance to developing countries, as a sole Japanese governmental agency in charge of Official Development Assistance (ODA) implementation. "Leading the World with Trust" as its vision, JICA, with its partners, will take the lead in forging bonds of trust across the world, aspiring for a free, peaceful and prosperous world where people can hope for a better future and explore their diverse potentials.

Supporting the development of the salmon industry through technical cooperation and human resource development

Chile is one of the world's two largest salmon exporters. However, it never used to have salmon. Japan's cooperation began with surveys in 1969 and the acceptance of a Chilean trainee the following year, eyed salmon roe were transported in large quantities from Hokkaido, and basic aquaculture technologies, along with local hatching and rearing, were introduced. The cooperation was expanded and upgraded with the application of project-type technical cooperation scheme from 1979, and in the 1980s, cooperation continued with a focus on feed development, fish disease control, and technology for producing domestic seeds. These were done as countermeasures and developmental efforts in anticipation of technical challenges that arise in the early stages of industrial development. Work was also devoted to training the human resources and specialized technicians needed for the salmon industry. They went on to play active roles as pioneers of the salmon industry. This 20-year "Japan-Chile Salmon Project," combined with Fundacion Chile's efforts and foreign investment, drove the industry's development, making Chile a major source of salmon for Japan.

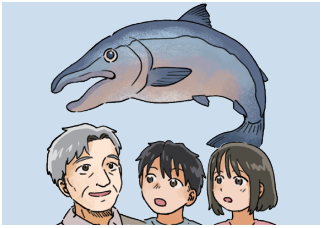


Chile

Project History (Manga Edition)

The Japanese Experts who Helped Make Chile a Salmon Export Powerhouse

The Story of an Industry Built from Scratch through International Cooperation



Planning, Production & Publication:
Japan International Cooperation Agency (JICA)

Original Story & Supervision:
Akio Hosono

Manga created by:
Amekashi/Uchitsukasa

Script written/Designed by:
KADOKAWA ASCII Research Laboratories. Inc./Sideranch Inc.

Issued in: January 2026

Check out the Project History Book here

This manga is an adaptation of a non-fiction book titled "The Japanese Experts who Helped Make Chile a Salmon Export Powerhouse-The Story of an Industry Built from Scratch through International Cooperation" by Akio Hosono