

USSEC VII AQUACULTURE INVESTMENT WORKSHOP

Efficiency with Innovation for Investment security and business sustainability!

SEPT. 28 - 29 / 2021



INNOVATION IN THE CHILEAN AQUACULTURE INDUSTRY ECOSYSTEM EVOLUTION

Adolfo Alvial

Executive Director Club Innovación Acuícola and ORBE XXI



THE FIRST WAVE



VII AQUACULTURE INVESTMENT WORKSHOP

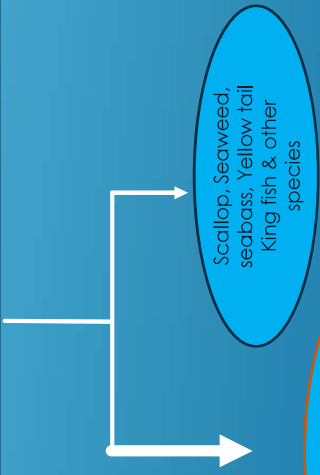
SSOY.ORG

U.S. SOY FOR A GROWING WORLD

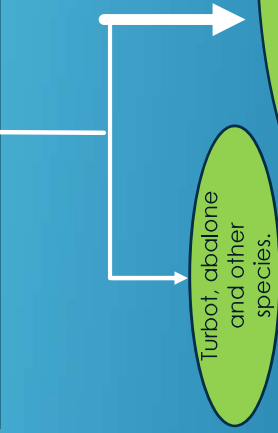
AQUACULTURE DEVELOPMENT: TWO EVOLUTIONARY LINES IN CHILEAN AQUACULTURE

Aquaculture of native species
mussel, Scallop, Seaweed...

R+D+I focused in new specs for aquaculture and basic technologies development

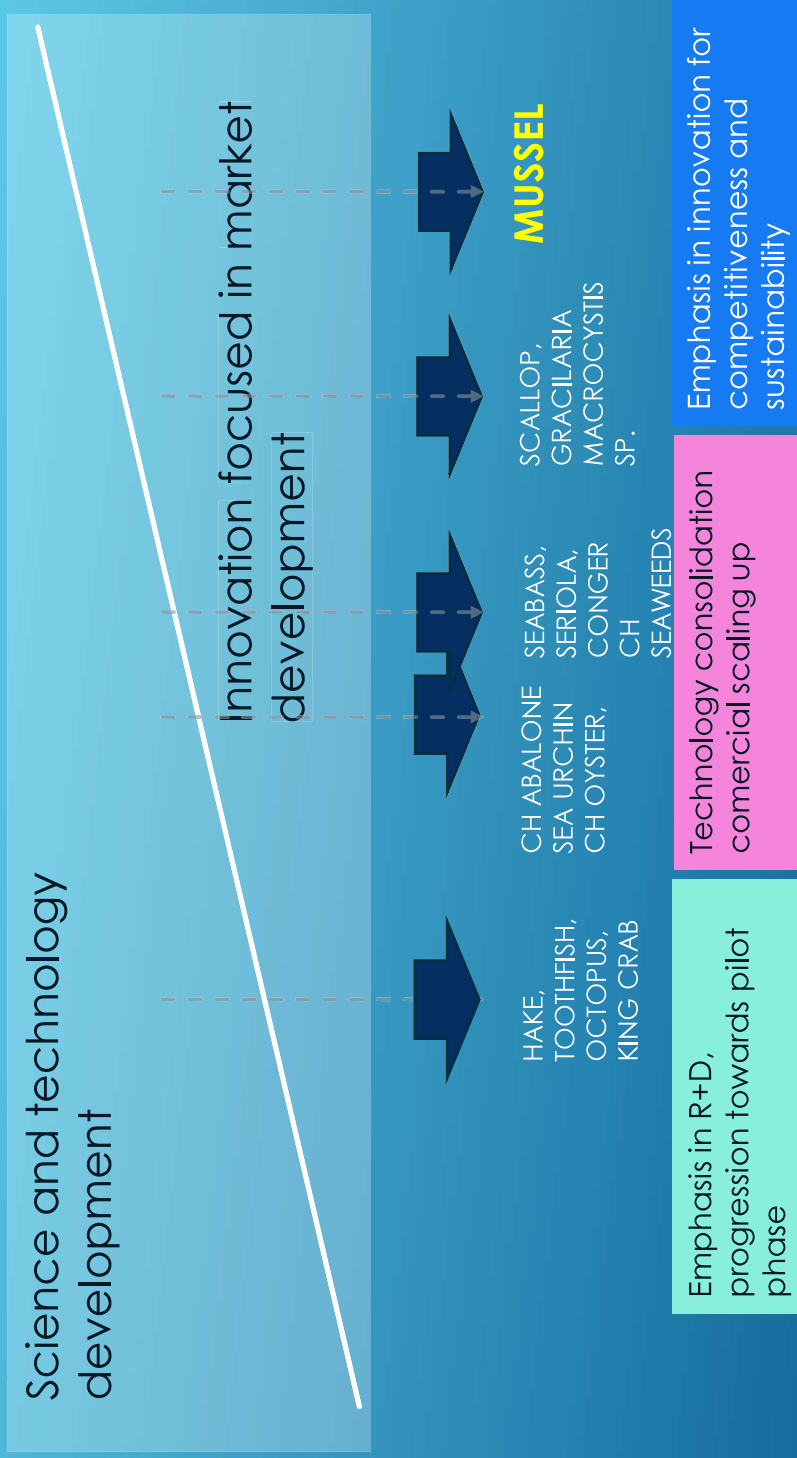


Aquaculture of Exotic species
Salmonids, Japanese oyster, Abalone, Turbot...



R+D+I focused in technology transfer and development of domestic capacities

INNOVATION EMPHASIS IN NATIVE SPECIES



VII AQUACULTURE INVESTMENT WORKSHOP

SOY.ORG

U.S. SOY FOR A GROWING WORLD

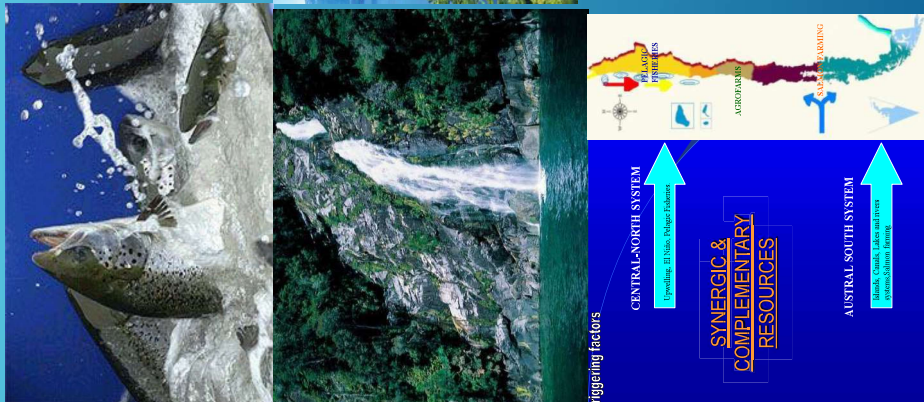
... BUT SALMONIDS DOMINATE THE INDUSTRY (SINCE THE MIDDLE 80'S)

Rapid market innovation and commercialization

Huge space to farm salmon advantageously.
Innovative pontoons and cages

In the same country, basic feed raw materials & Development of domestic feed diets...

...AS WELL AS QUALIFIED HUMAN CAPITAL



CHILEAN SALMON AQUACULTURE: A GREAT SCALE INNOVATION

An industrial innovation based on
an unprecedented successful
**technology transfer and
adaptation process**



WELL, EVERYTHING SEEMS TO BE IN PROGRESS THROUGH THESE STEPS...

CONSOLIDATION PHASE



FAST GROWTH AND MARKET PENETRATION

COMMERCIAL PRODUCTION START

2000's

• **New comprehensive regulation**

- Private/public Cooperation
- Vigilance programs and SIGES starts.
- Knowledge & Integrated Mgmt Systems shared

1990's

• **Production increases rapidly**

- Association reinforces with INTESAL
- Phytoplankton monitoring
- R+D specialized centers

85-90

• **First commercial scale productions & exports.**

- Quality seal
- New products
- Domestic feed
- Veterinarian services

Before 85

• **Technology transfer**

- R&D dominate



VII AQUACULTURE INVESTMENT WORKSHOP

SOY.ORG

U.S. SOY FOR A GROWING WORLD

THE CRISIS

Diseases and indicators of poor environmental management were evident. High concentration of sites, absence of a zone management program, poor sanitary control, and lack of biosecurity measures.

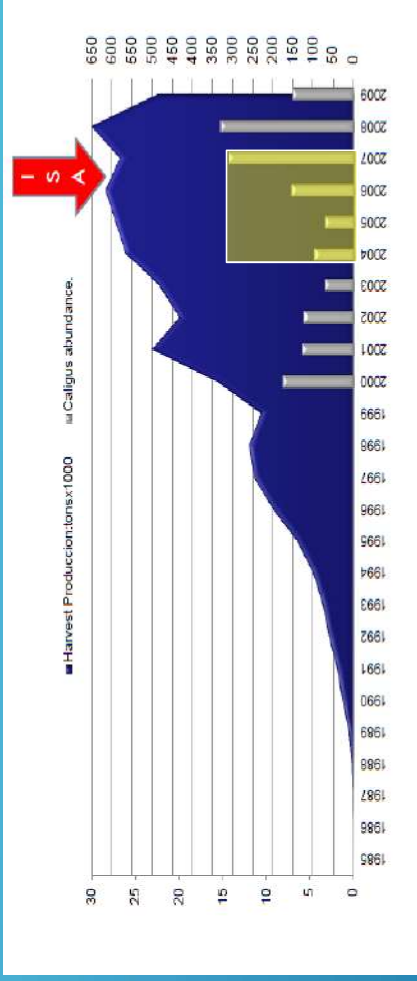


Since 2004 to 2007, there was a gradual decline in Productive Ratios



This trend reached its maximum point when Caligus bloomed (at the end of 2006) and ISA started in Atlantic salmon (in July 2007)

THE ISA CRISIS CONCLUDED THE VERY FIRST WAVE



Behind this: insufficient **knowledge** of our environment, with territorial saturation, poor biosecurity, and lack of adequate regulations. Local **science** was clearly insufficient.



THE SECOND WAVE



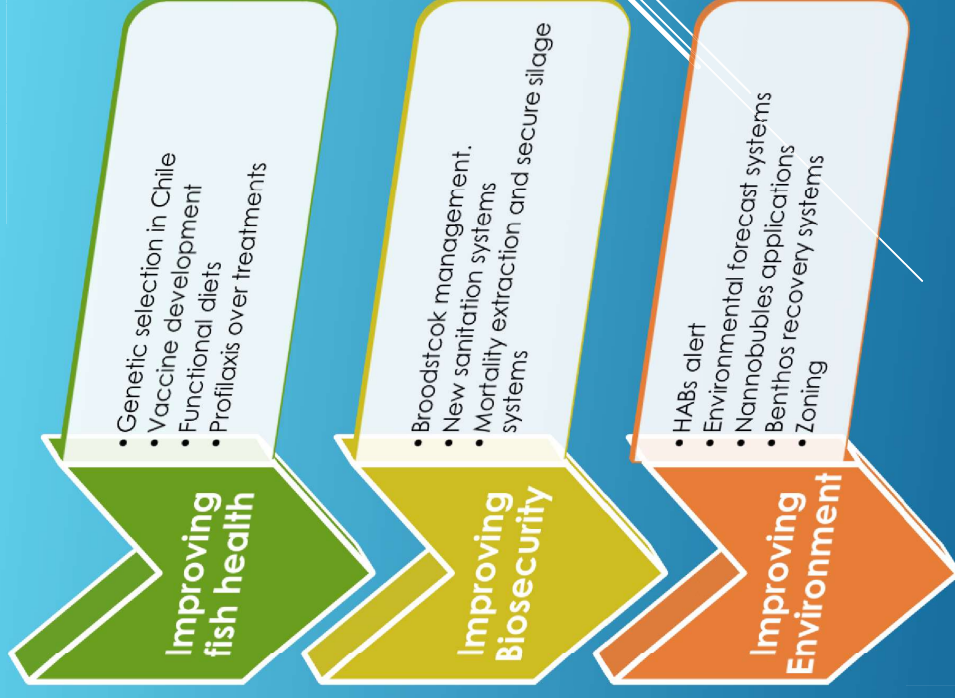
VII AQUACULTURE INVESTMENT WORKSHOP



U.S. SOY FOR A GROWING WORLD

TOWARDS A NEW PRODUCTION MODEL BASED STRONGLY ON R+D+I

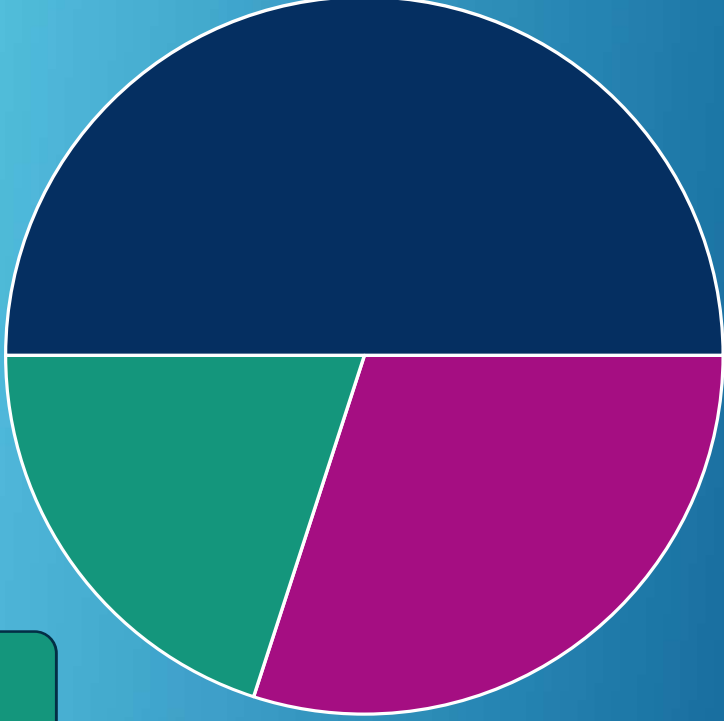
A second wave of innovation became relevant after the ISA crisis that demanded new knowledges, technologies and innovation in products and services **to improve environmental and sanitary conditions** as well as to reinforce **technological capacities and regulation.**



THE EXPANSION OF SUPPLIERS BASED ON SCIENCE AND TECHNOLOGY

A growing segment

PRINCIPAL SUPPLIERS, 1200



Category	Number
Intensive in workforce	600
Technology importers and adaptors	360
Developers of science and technology	240

- Intensivos Mano Obra
- Importadores Tecnologías
- Desarrolladores tecnologías



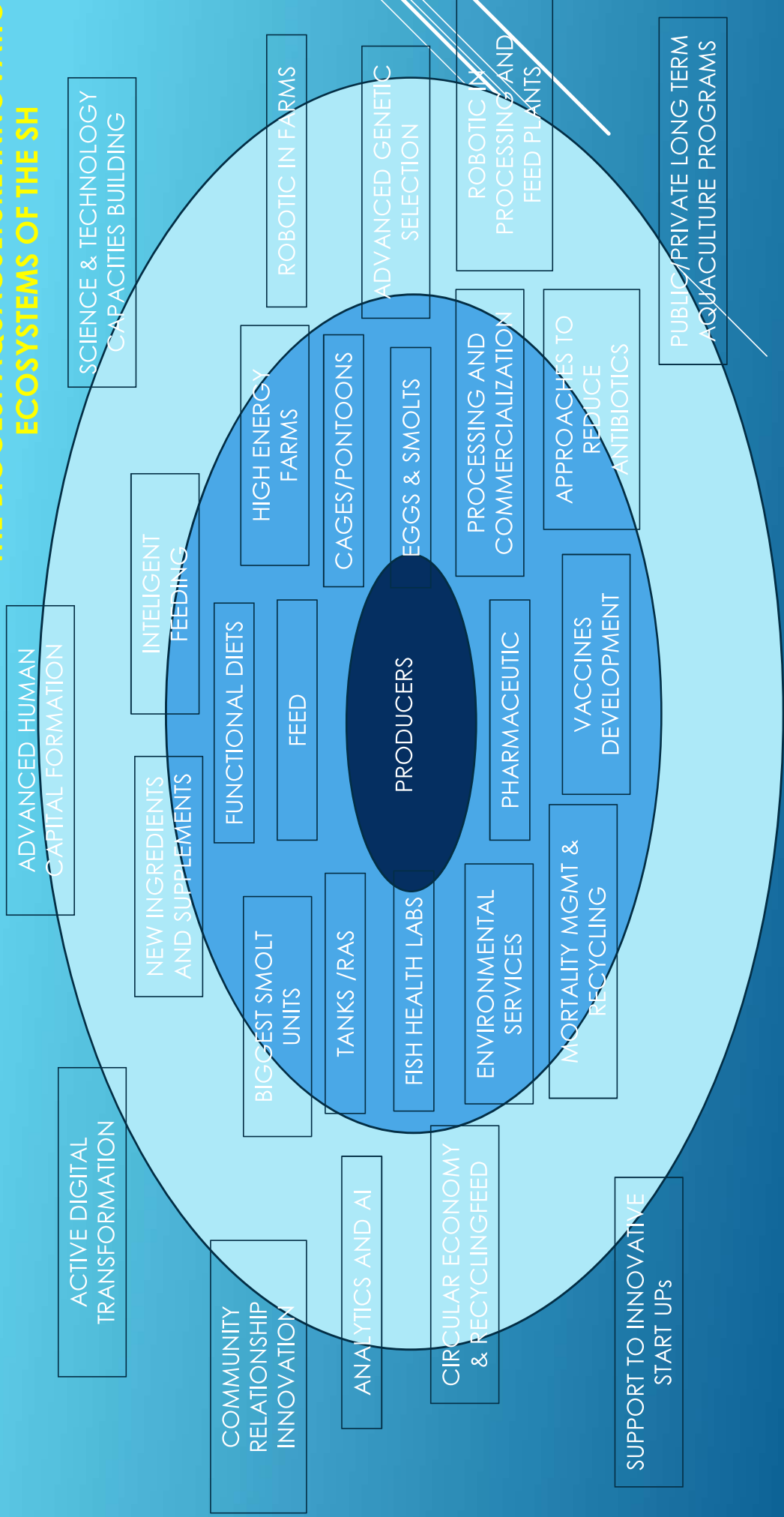
VII AQUACULTURE INVESTMENT WORKSHOP

SOY.ORG

U.S. SOY FOR A GROWING WORLD



THE BIGGEST AQUACULTURE INNOVATION ECOSYSTEMS OF THE SH





THE THIRD WAVE

NEW STAGE: COLLABORATIVE INNOVATION

Single efforts have open access to collaborative efforts to reinforce innovation and contribute more effectively to solving industry challenges.

Among them:

- Joint efforts to reduce antibiotic use
- Joint efforts to build a sustainable industry
- Joint efforts to develop offshore systems adequate to Chilean reality.
- Industry – academy's joint efforts to develop graduate programs focused on industry challenges
- Strategic specialized programs based on a four-helix approach to address the industry's major gaps



USSEC

VII AQUACULTURE INVESTMENT WORKSHOP

SOY.ORG

U.S. SOY FOR A GROWING WORLD

NEW STAGE: COLLABORATIVE INNOVATIONS. THE CASE OF THE AQUACULTURE INNOVATION CLUB,

Because most of the innovations were developed individually by a growing number of technology-based companies. Two years ago, an initiative arose to jump towards a **third wave** of reinforcing individual innovation capacities in companies while stimulating **collaborative innovation**



WHAT IS THE CLUB?

- ▶ A space **to strengthen individual and collaborative capacities** to innovate in the industry of aquaculture, based on trust and cooperation that provides regular services to its associates.



CLUB INNOVACIÓN ACUICOLA
JUNTOS FORJANDO EL FUTURO



WHAT DOES ITS VALUE OFFER?

The Club considers 6 areas of services for its associates.



--STRENGTHENING OF CAPACITY



-FINANCIAL SOURCES AND INSTRUMENTS



-ARTICULATION AND NETWORKING WITH PAIRS AND AUTHORITIES



-COLLABORATIVE INNOVATION ON INDUSTRY CHALLENGES



-COMMUNICATIONS



-PROMOTION AND MARKETING



CLUB INNOVACIÓN ACUÍCOLA
JUNTOS FORJANDO EL FUTURO

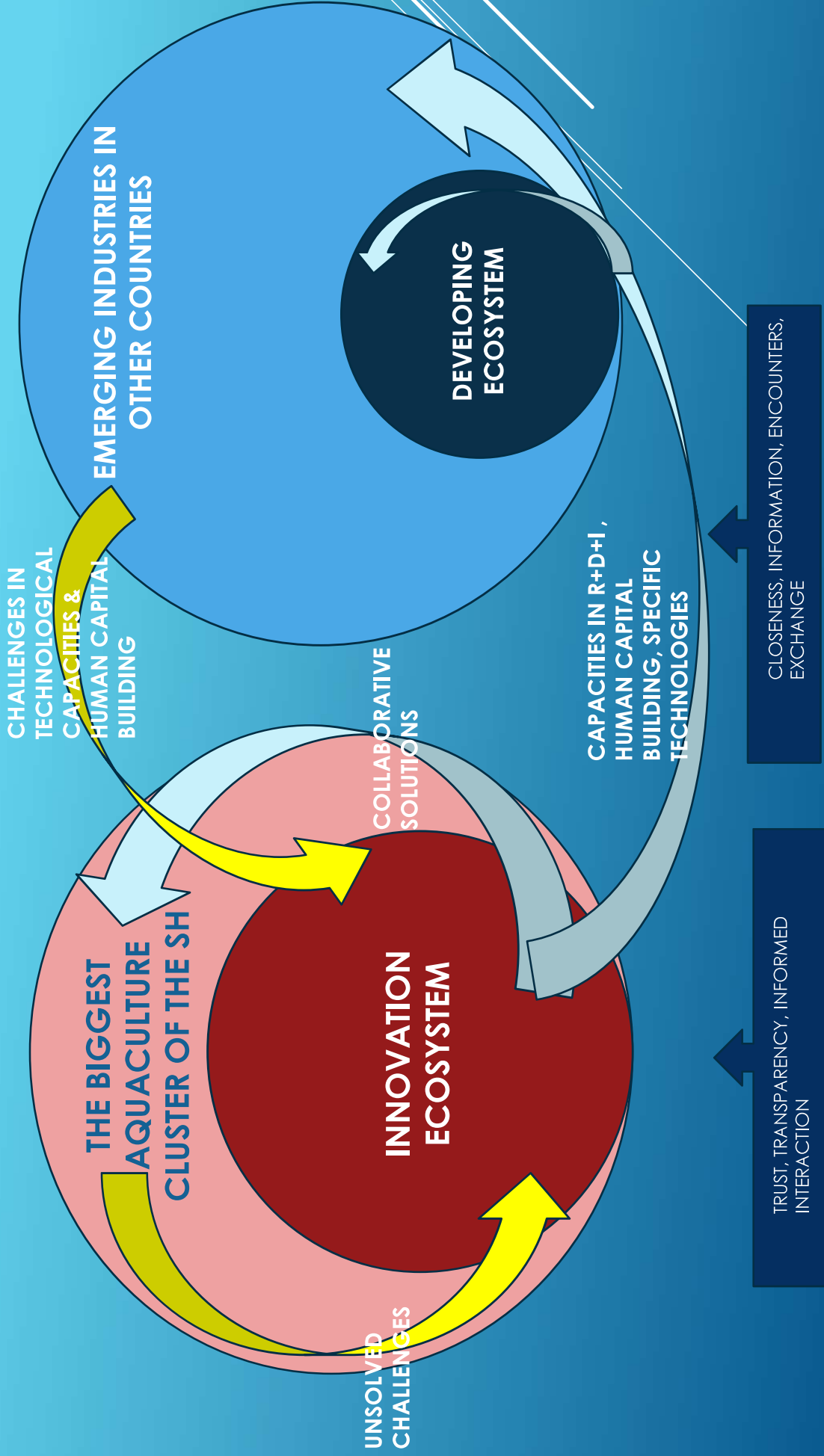


VII AQUACULTURE INVESTMENT WORKSHOP

SOY.ORG

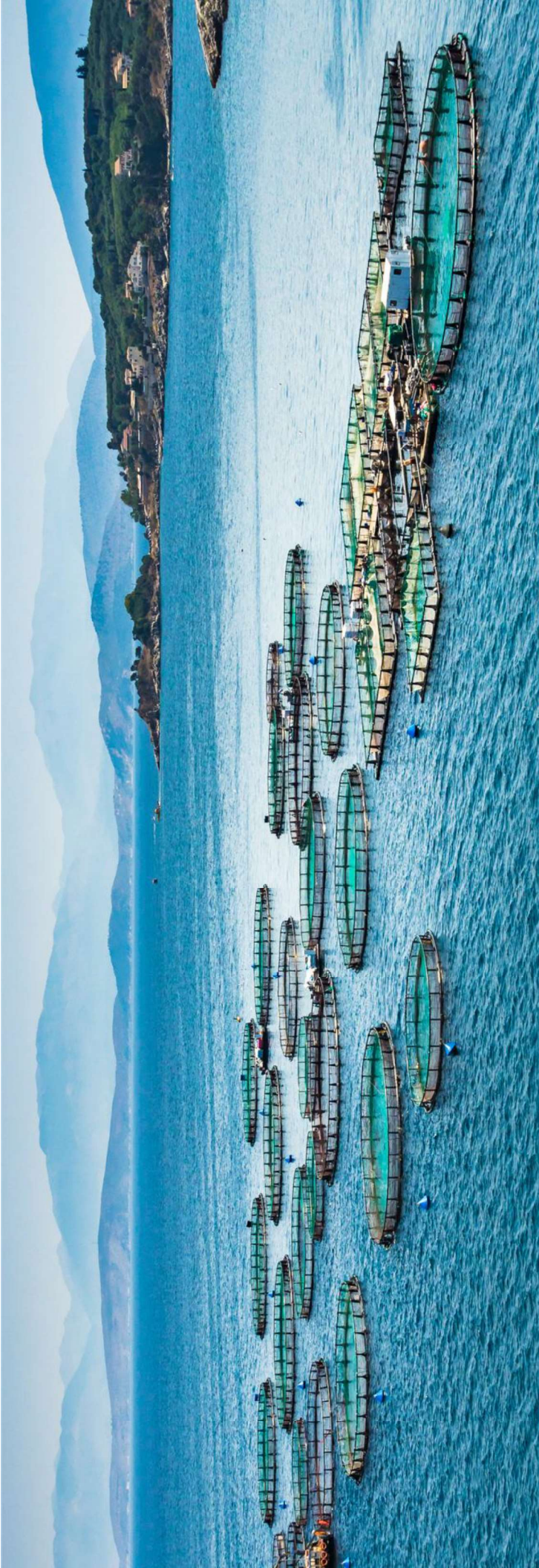
U.S. SOY FOR A GROWING WORLD

THE ECOSYSTEM'S STRATEGY



- ▶ Early innovation was fueled by the need to replace imports and overcome the remoteness of the target markets.
- ▶ Key suppliers were former employees of the producer companies who were intimately familiar with their requirements in order to develop active and effective technological adaptation and innovation.
- ▶ The ISA crisis evidenced that scientific knowledge was underestimated, particularly in the environmental field.
- ▶ As a result of the need for a new production model, R+D+i was stimulated, resulting in more scientific and technological capacities and a diversification of technology-based suppliers.
- ▶ A new era of collaborative innovation is under way, bringing optimism in terms of reaching a more sustainable and competitive industry in the short to medium term.

CONCLUSIONS



THANK YOU!



US SOY

