



BLUEAIR



BLUE GROWTH SMART ADRIATIC IONIAN S3

Accelerating innovation collaboration in Slovenia's sustainable blue economy

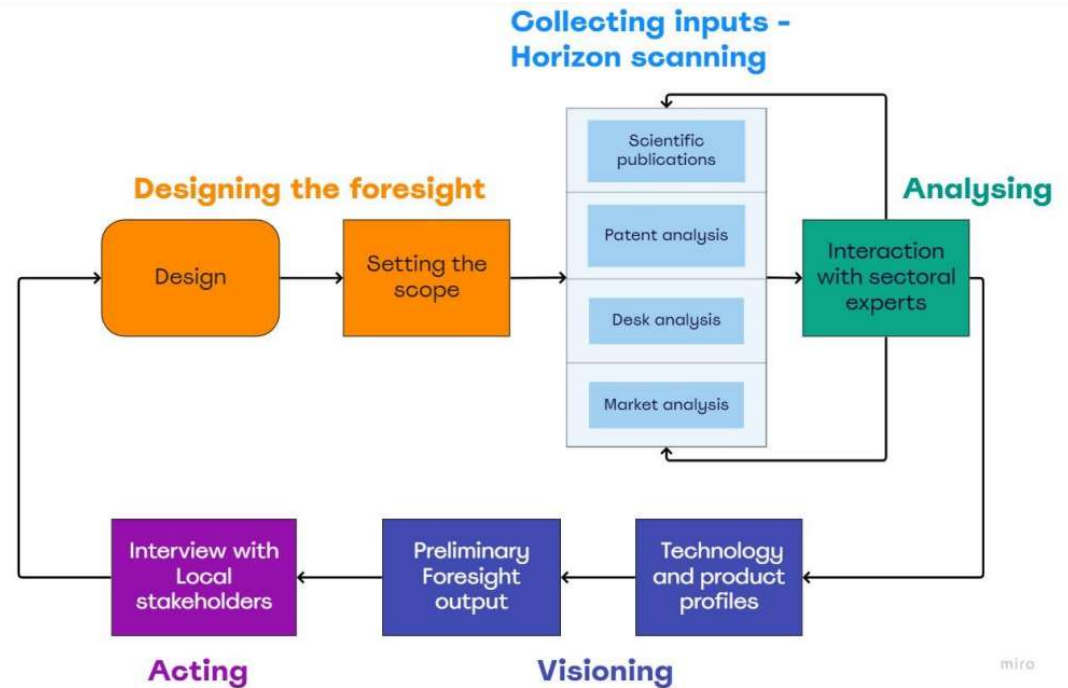
11th May 2023

Noemi Tomasi - Area Science Park

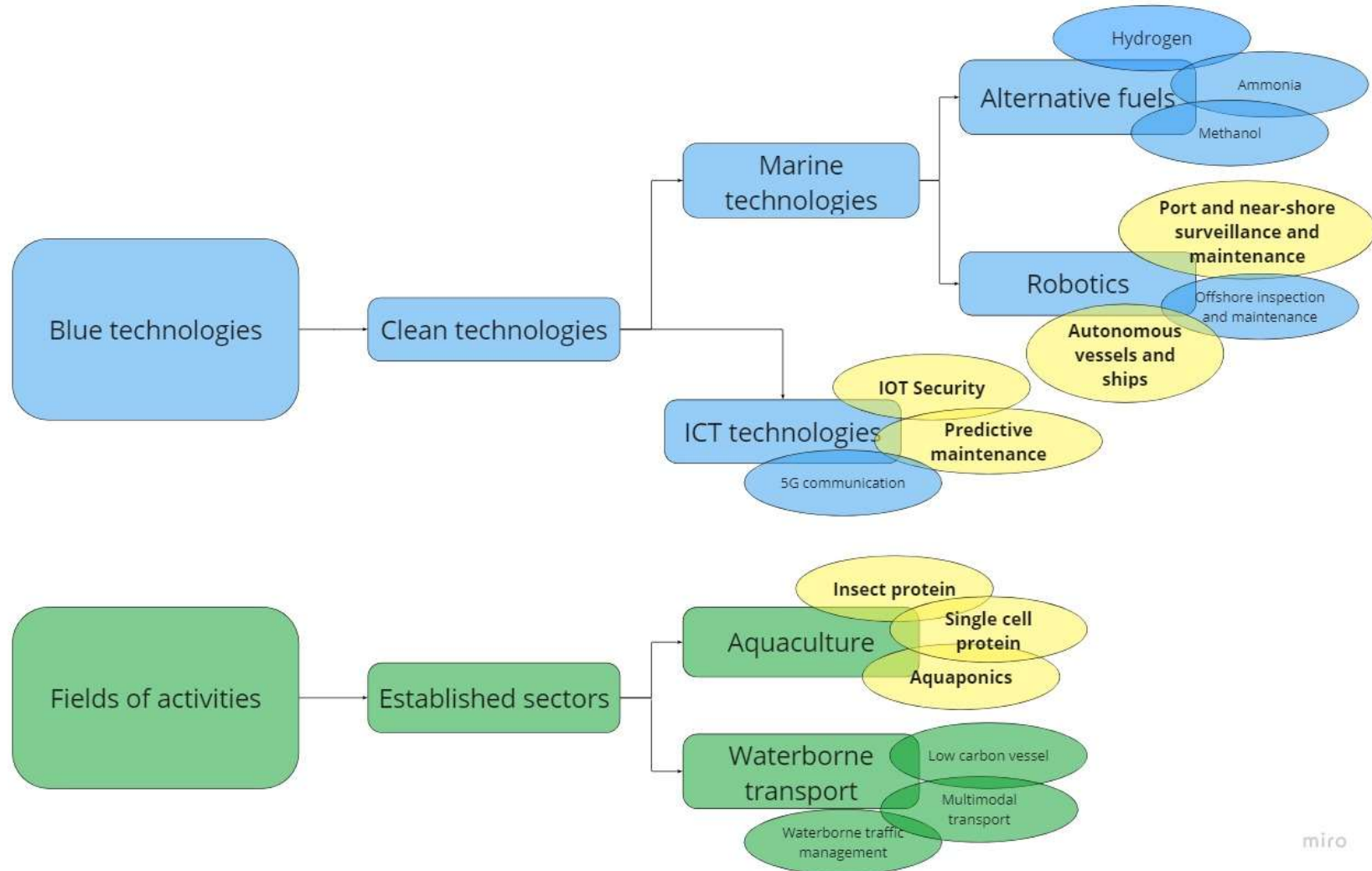
BLUEAIR: Technology foresight



The **BLUEAIR technology foresight** provides quality information on global forces, research and industry trends that may shape the current and future technologies of selected blue economy areas in the Adriatic Ionian region.



Technology foresight: setting the scope





Marine robotics is at the beginning of its development but can allow the maritime industry to address several challenges with many advantages.

The adoption of robotics will impact the expansion of the maritime industry, also in the Adriatic-Ionian region, for example for: **environmental security and restoration, expanding deep-sea and offshore operations, improving security against piracy, safe, low-cost and uninterrupted transportation, ecosystems monitoring**

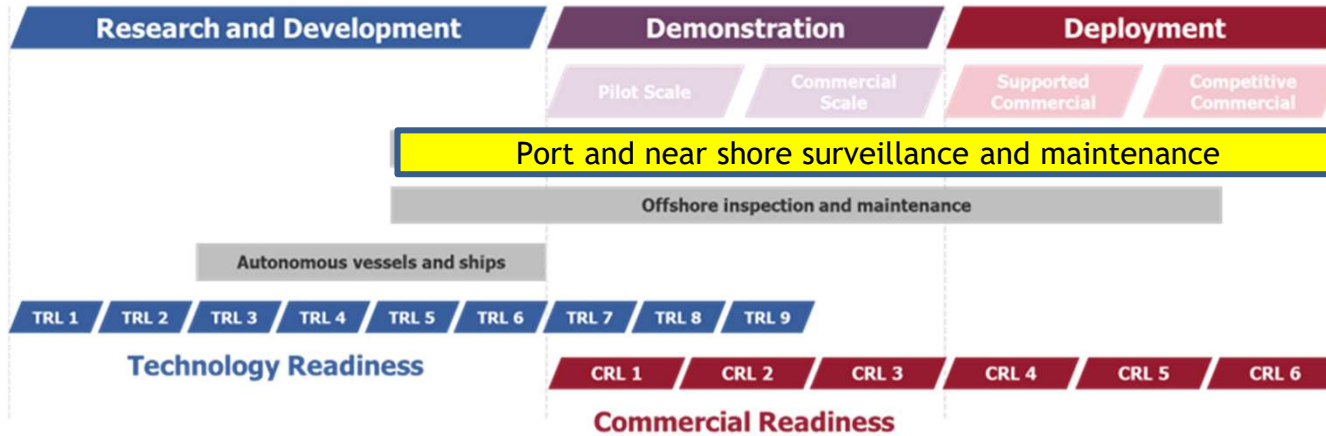


Autonomous USV for water sampling and surface surveying.

Source: [H2O Robotics](#) and Lux

Research

Port and near-shore surveillance and maintenance

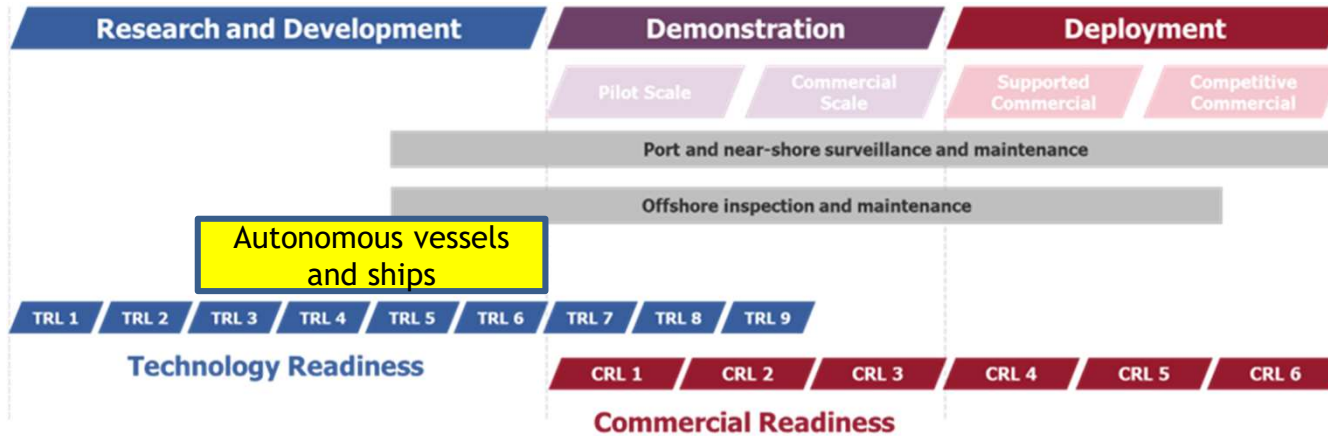


Promoters: digital growth and innovation, electrification of ports, exceptional maneuverability in narrow or challenging locations.

Inhibitors: fragmented shipping industry, legacy equipment and methods, data security risk.

Queensland University of Technology (QUT) has developed an underwater bot, dubbed LarvaBot to safeguard the 2,900 km coastline of the coral reef. Source: [QUT](#) and Lux Research

Autonomous vessels and ships



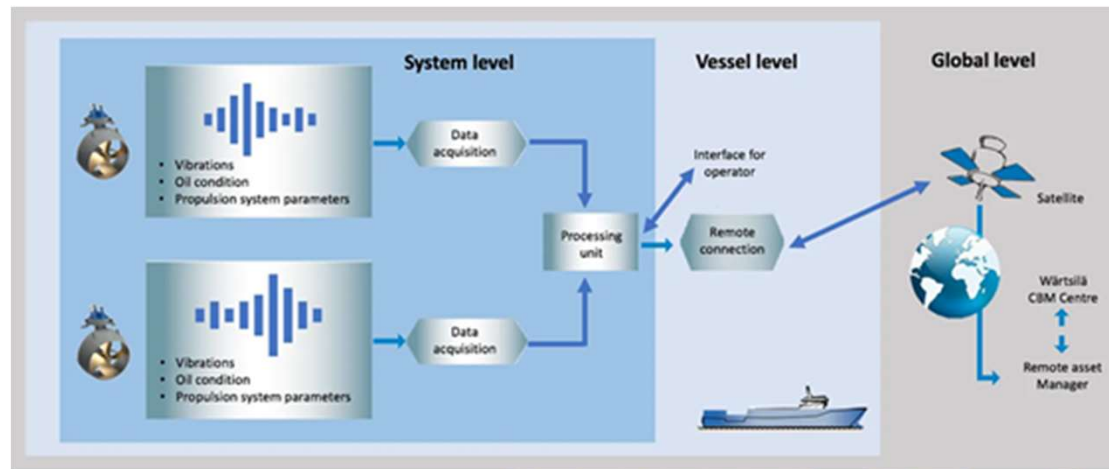
Samskip and Ocean Infinity will develop hydrogen powered remote-controlled container ship to link the Netherlands and Norway. Source: [Samskip](https://www.samskip.com)

Promoters: all around efficiency, possibility of market expansion and hydrogen and ammonia transport

Inhibitors: massive upfront investment, uncertain regulatory guidelines, missing human congnizance

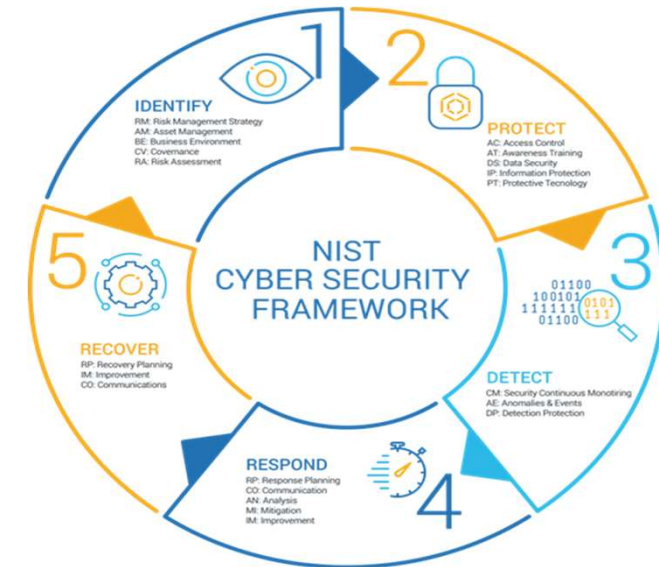
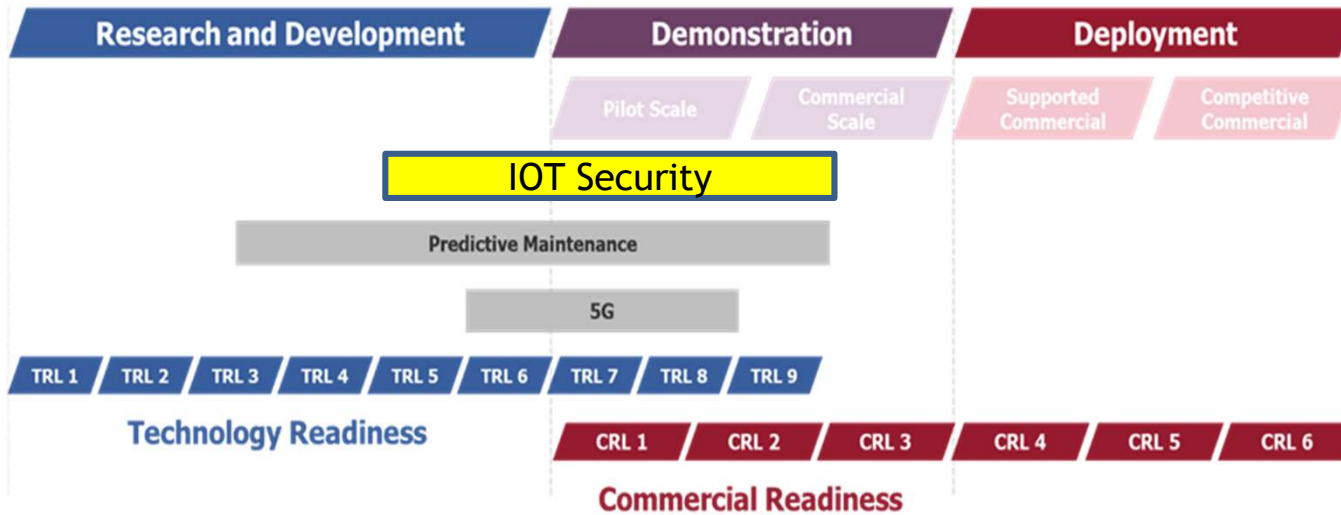


Maritime ICT is rapidly evolving to keep up with the need for fast and accurate transfer and processing of enormous volumes of **data** generated and acquired at sea. As the whole system is increasingly being connected through the technology enabling the flow of information, instructions and operations, becomes essential to ensure the **security, usability** and **ease** of communication.



Flow diagram of Wartsila's propulsion condition monitoring service. Source: Wartsila and Lux Research

IOT Security



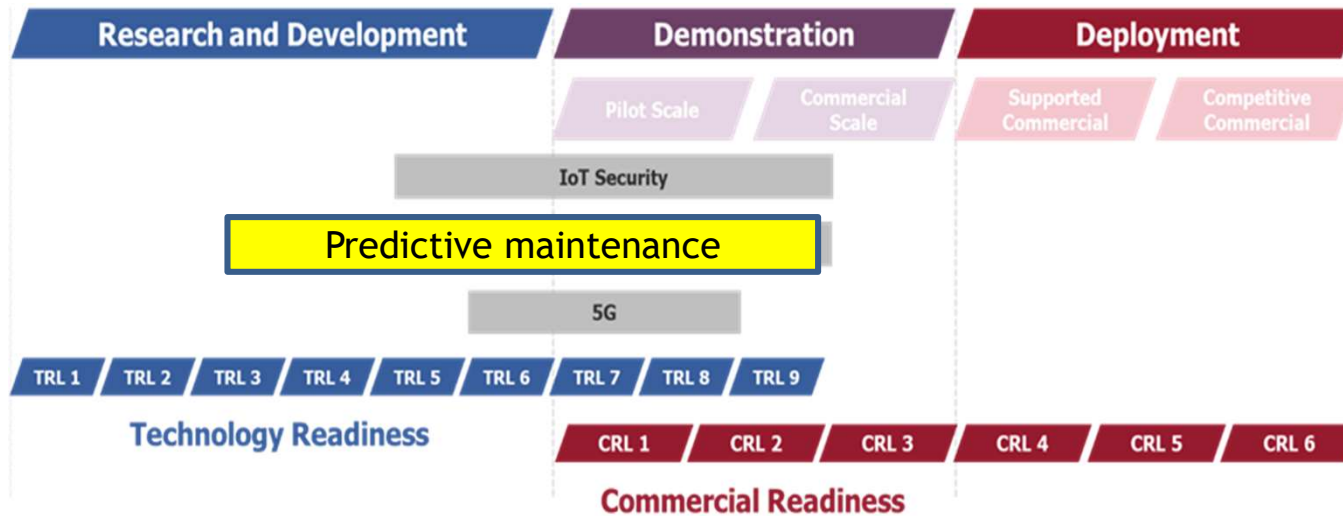
Promoters: adoption of robotics and autonomy, the boom of AI and blockchain, improved mindset and knowledge of human-IoT interaction.

Inhibitors: IoT will bring new type of vulnerabilities, lack of security for the connected devices and process, lacking global security standards.

NIST's IoT security framework. Source:

[Thales](#)

Predictive maintenance



Promoters: expanding envelope of operational challenge, increasing processing capacity and desire for autonomy, proven return on investment.

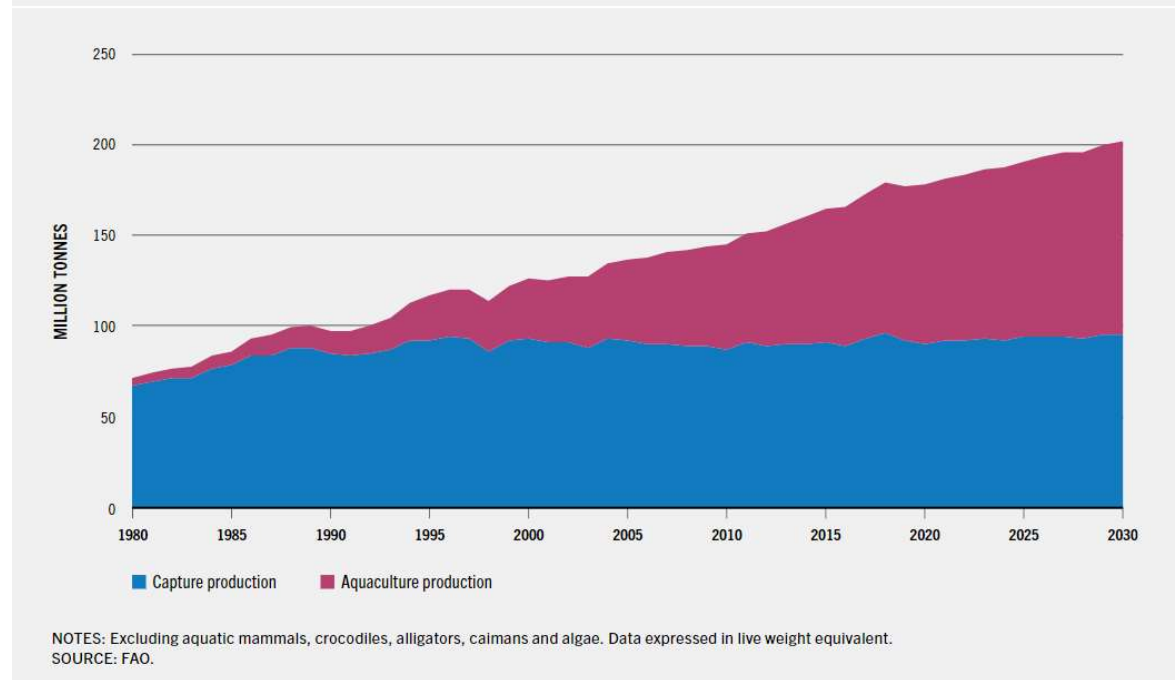
Inhibitors: upfront investment and integration, inhouse expertise or ease of adoption, the industry must adapt to acquire the technology.



According to FAO, aquaculture production is expected to increase to 106 million tons in 2030 with an overall growth of 22%.

Although aquaculture in the Adriatic-Ionian region is still in its preliminary stages, production is growing due to increased consumer demand for seafood products.

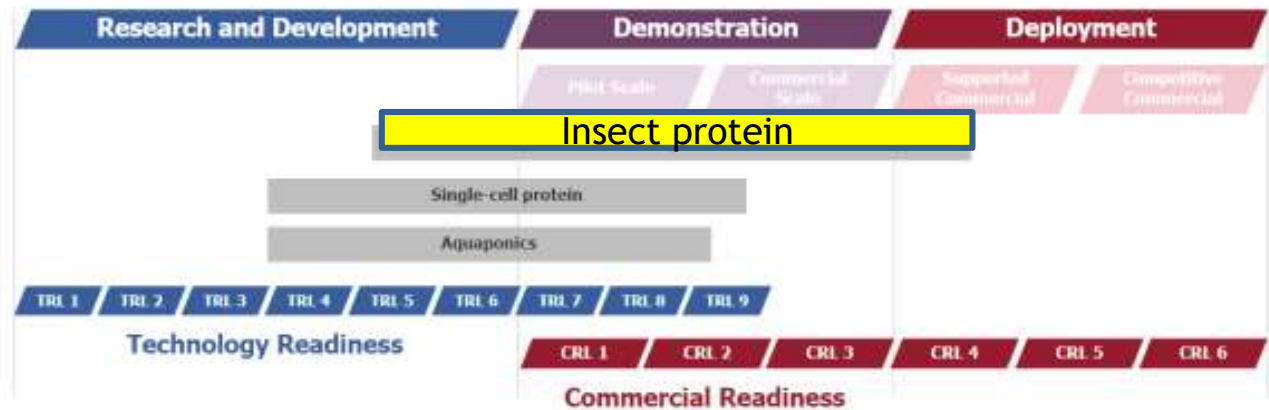
FIGURE 70 WORLD CAPTURE FISHERIES AND AQUACULTURE PRODUCTION, 1980–2030



World capture fishery and aquaculture production, 1980-2030 (FAO, 2022b)



TRL/CRL



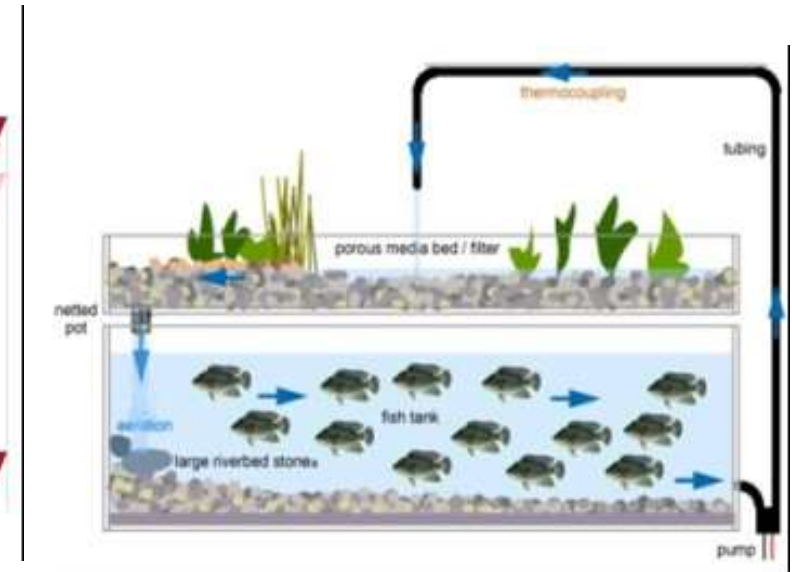
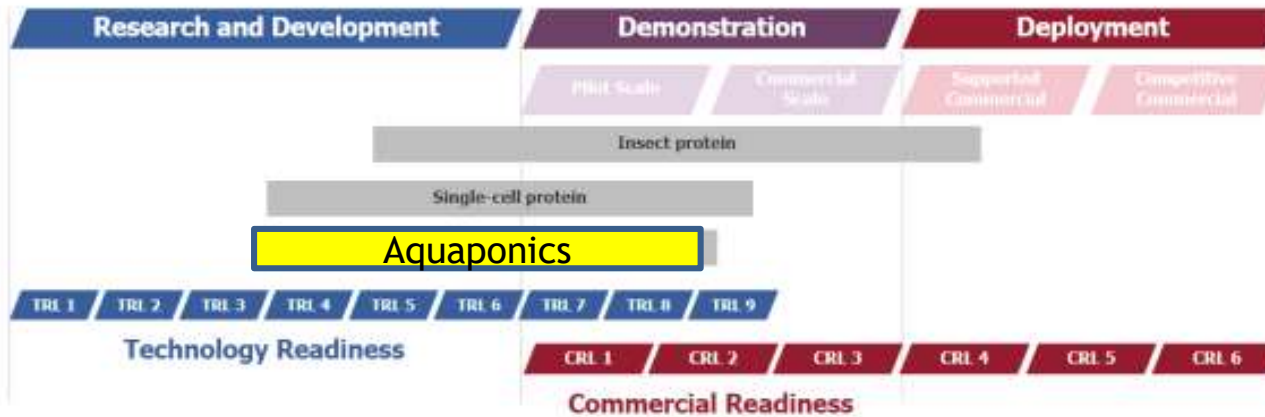
Promoters: changes in legislation, species development, product validation.

Inhibitors: low production scale, production efficiency, different dietary requirements.

Aquaponics



TRL/CRL



Basic Schematic of aquaponics system. Source: [Beckoi](#).

Promoters: localized production, growth in enabling technologies, expanding markets for a growing aquaculture industry

Inhibitors: managing nutrients and water quality at large-scale, regulatory challenges , High OPEX and CAPEX



Thank you for your attention!



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