

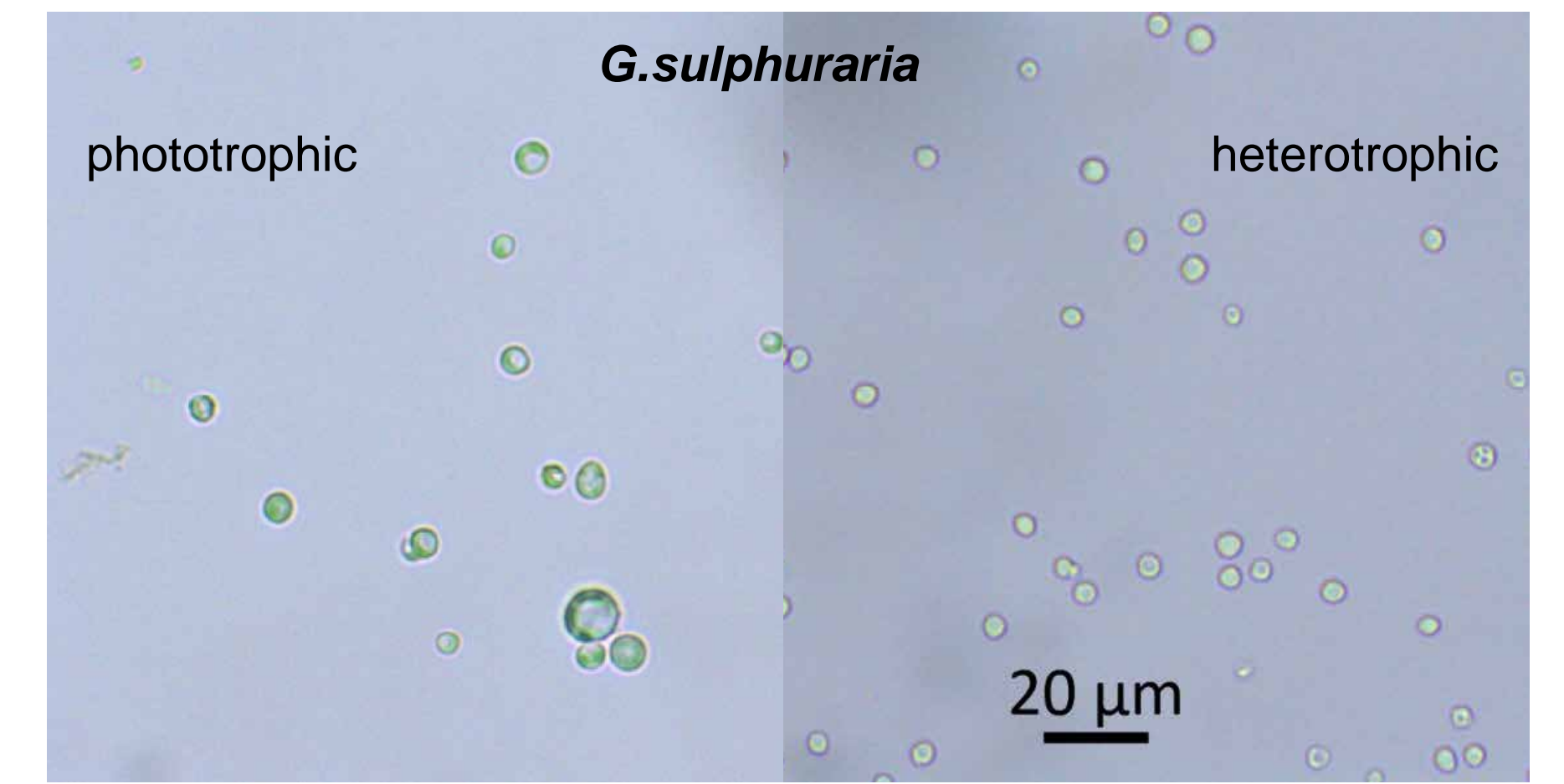
CLIMAQUA: Establishing an innovative and transnational feed production approach for reduced climate impact of the aquaculture sector and future food supply

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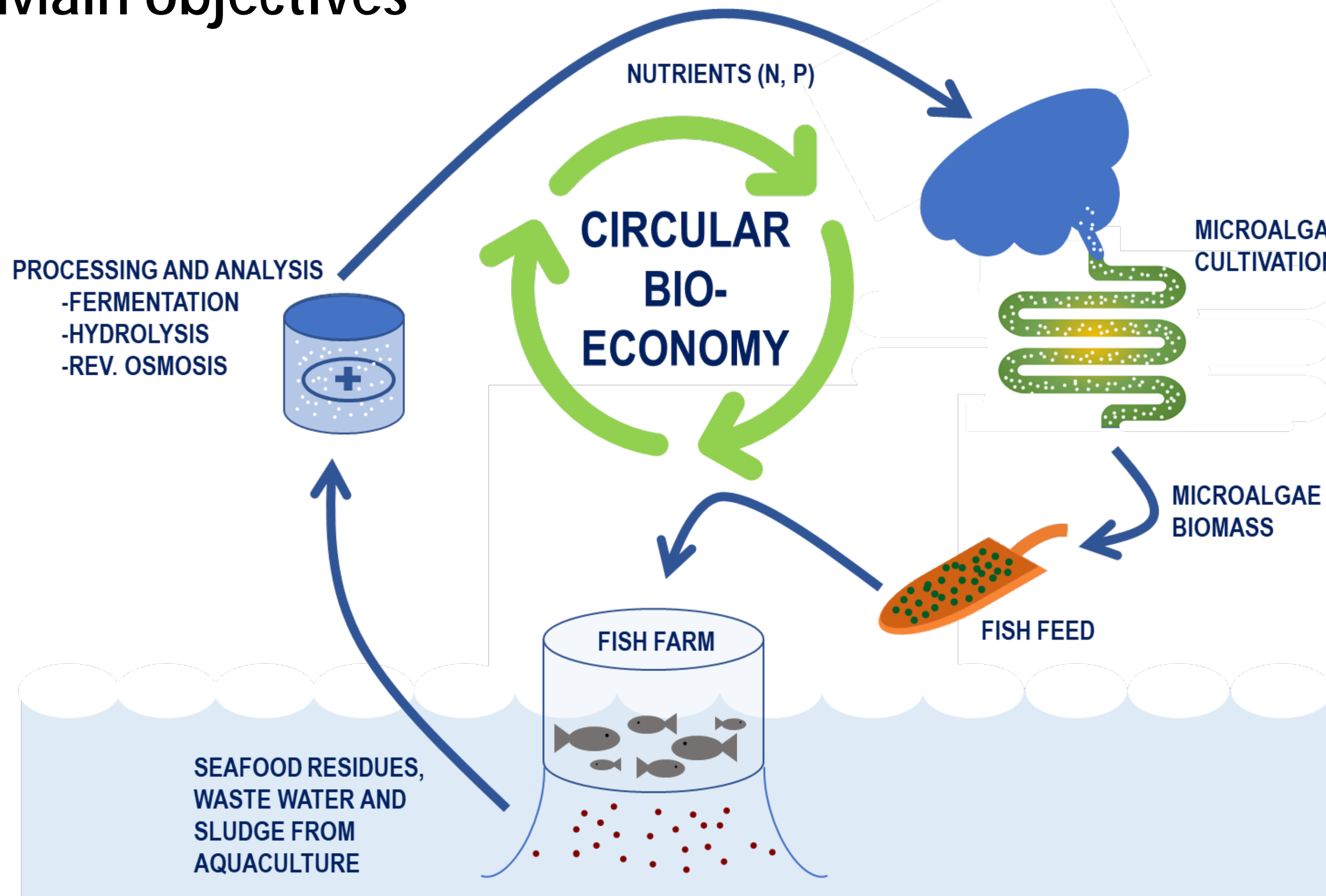
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Project description in brief:

The main objective of CLIMAQUA is to develop a flexible system for the production of *Galdieria sulphuraria* (*G. sulphuraria*) biomass that can be used in a decentralized manner in the areas of aquaculture and fish processing, thus contributing to regional development and the reduction of greenhouse gases. The scientific, but also technical working objective of the project is the development of feed production technologies adapted to local environmental conditions based on *G. sulphuraria* in combination with the treatment of low-value side streams and the recycling of nutrients from inorganic and organic wastewater, sludge and fish residues from aquaculture.



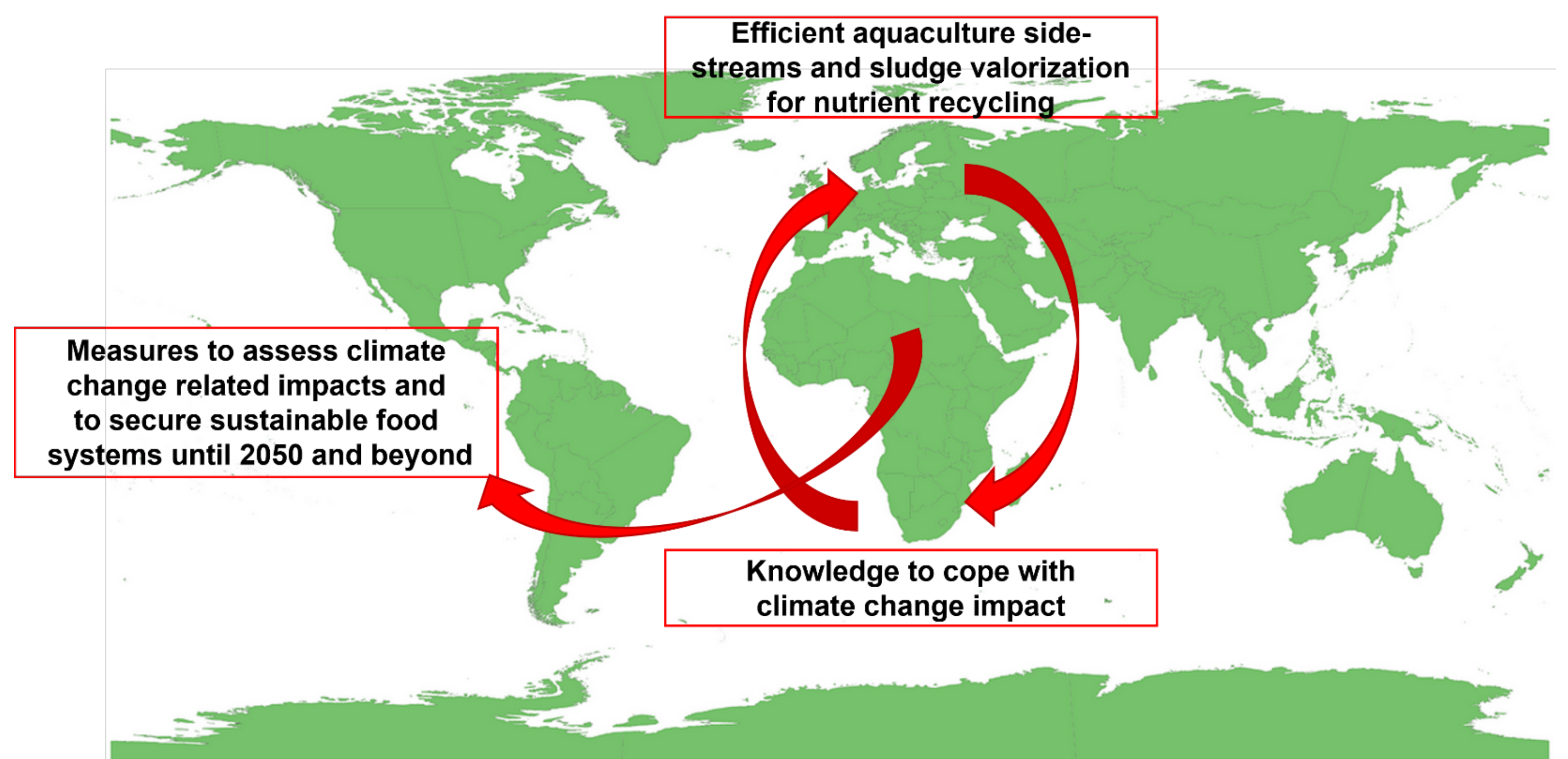
Main objectives



The transnational cooperation is characterized by an intense knowledge exchange from the South to the North and vice versa. South Africa and Kenya cope with climate situations challenging the constant supply of food. Norway has established efficient aquaculture food production systems and will work on methods for better utilisation of the side-streams. Further, Norway will develop missing knowledge on how to deal with climate change in the future, while South Africa will learn how to efficiently manage aquaculture side-streams. This cooperation strengthens regional capabilities and contributes to food security under climate change within 1.5 or 2 °C until 2050 and beyond.

CLIMAQUA results in an innovative process for converting and recirculating aquaculture side-streams (sludge and wastewater) in algae (*G. sulphuraria*)-based feed production for aquacultures. In conventional aquaculture, feed production is responsible for 50% of greenhouse gas (GHG) emission. The aim is to substantially reduce GHG emission by considering geographic and site-specific characteristics (temperature, sunshine duration etc.) and to design site-specific phototrophic or heterotrophic cultivations for almost completely ingestible feed.

CLIMAQUA builds on knowledge gained regarding aquaculture and feed production, and involves partners from Norway, Germany, Kenya and South Africa in order to broaden the applicability, not limiting the approach to a certain geographic area and assessing climate impact of feed production in different climate zones.



Special focus on socio-economic aspects:

Embedded in an assessment of climate impact and an investigation of social (including the stakeholders: Aquaculture farmers, feed and food processors as well as consumers), economic and environmental aspects, regional results gained, information to food demand authorities, the role of food losses and

waste management and feedback of stakeholders will be used to further improve resource utilisation efficiency and nutritive quality of produced food in southern and northern parts of the world to strengthen regional food supply.

Partners involved:

Institute for Food and Environmental Research	German Institute for Food Technology, Quakenbrück	Norwegian University of Science and Technology Institute of Food (Trondheim)	Norwegian Institute of Food, Fisheries and Aquaculture Research (Bergen)	Kenya Agricultural & Livestock Research Organization, Kenya	EBRU – Institute for Environmental Biotechnology at Rhodes University, South Africa	Agricultural Research Council, South Africa
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