

• Nutrition-sensitive aquaculture for more sustainable aquatic food systems

Maria J. Darias,
IRD, UMR Marbec, Montpellier, France

Brett M. Macey,
Department of Forestry, Fisheries and the Environment, Cape Town, South Africa

Background

Access to varied, nutritious, safe and affordable food is an essential priority in the fight to end malnutrition. Food of marine origin – fish, invertebrates, seaweed and other aquatic plants harvested or cultivated in freshwater or saltwater ecosystems – constitutes the world’s most commercially-traded food group. Although it represents an essential source of nutrients, this food group is largely absent from the food policy discourse. Global fishing quotas have remained relatively stable over the past three decades, and aquaculture now produces more biomass than fishing. Nevertheless, in order for aquaculture to continue providing healthy food and a means of subsistence to the world’s growing population, its production methods will need to be environmentally, economically and socially responsible and sustainable.

Contact

maria.darias@ird.fr

Further reading

LEAPE J. et al., 2023 – « The Vital Roles of Blue Foods in the Global Food System ». In : von Braun J. et al. (eds), *Science and Innovations for Food Systems Transformation*, Springer, Cham. <https://www.ird.fr/lmi-limaqua-laboratoire-interdisciplinaire-africain-daquaculture-marine-durable-et-sensible-la>

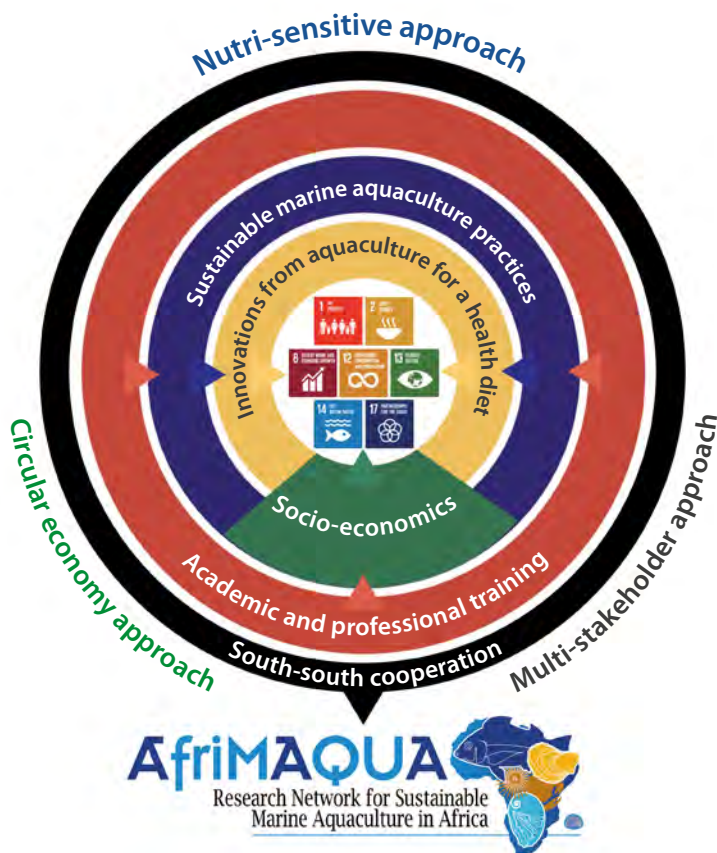
Products of marine origin in the food system

In spite of their undeniable importance for health and well-being, particularly for vulnerable groups such as pregnant and breast-feeding women and children, aquatic foods are generally overlooked in debates and decisions regarding food systems, which tend to focus primarily on agriculture and livestock. For example, SDG 2 expresses an ambition of achieving “zero hunger”¹ by 2030, but it does not mention fishing or aquaculture and its list of targets contains no specific recommendations regarding production systems for food of marine origin, despite the fact that fish accounts for 17% of animal protein and 7% of the total dietary protein consumed worldwide. In many countries, fishing and aquaculture policy is dictated exclusively by economic considerations, often with an emphasis on high-value products destined for export, with scant regard for their contribution to food security and well-being. There are many potential ways to shift this paradigm, including efforts to ensure that fishing and aquaculture are better included in decision-making processes concerning food systems, supporting the role of small-scale fishing and aquaculture in the food supply, and championing nutrition-sensitive aquatic food systems, to name but a few.

A nutrition-sensitive approach

Nutrition-sensitive food production is an approach which seeks to ensure the production of a varied food supply which is affordable, nutritional, culturally appropriate and safe, as well as being sufficient in both quantity and quality to meet human dietary requirements in a sustainable manner. In the specific case of food of marine origin, this means no longer regarding fishing and aquaculture exclusively as means of producing food, but also as means of creating well-being. This requires us to take socio-economic, environmental and cultural dimensions into proper consideration. In other words, the aim is to improve the nutritional contribution of fishing and aquaculture without compromising the essential functions of ecosystems, other food systems and means of subsistence. Adopting a nutrition-sensitive approach means promoting the sustainable diversification and intensification of aquatic food production, evaluating the nutritional content of different foodstuffs in the context of aquatic biodiversity (selecting, capturing and producing species not solely on the basis of their yield, but also with reference to their nutritional content), encouraging sustainable, nutritionally-efficient eating habits, feeding aquatic species with sustainable and nutritious fodder, e.g. foodstuffs rich in Omega 3, vitamins, minerals etc.

1 · Eliminating hunger and malnutrition by 2030, by guaranteeing universal access to safe, nutritious food in sufficient quantity, by establishing sustainable and resilient food production systems and agricultural practices.



Research, training and cooperation within Limaqua.

The Limaqua international joint laboratory

Although it has grown rapidly in recent decades, Africa's aquaculture industry – primarily focused on freshwater aquaculture – represents just 3% of global production. The continent's marine aquaculture industry is thus one of the smallest in the world. In this

complex context, the Limaqua international joint laboratory (the interdisciplinary laboratory for sustainable, nutrition-sensitive aquaculture in Africa) is running a research and training programme aimed at tackling the nutritional and sustainability-related challenges facing marine aquaculture. Based in South Africa, Limaqua is focused on laying the groundwork for a centre of excellence for

sustainable, nutrition-sensitive marine aquaculture in the interests of food security and nutrition, reducing poverty and contributing to wealth creation in the region (see illustration). This laboratory comprises an interdisciplinary team of South-African and French academics specialising in fields such as biology, biotechnology, socio-economics, food science and human nutrition, all united in the pursuit of a shared response to an essential research question: how can sustainable marine aquaculture contribute to food security and nutritional stability, while also working to reduce poverty and generate income? With this in mind, Limaqua is working: 1) to

develop sustainable marine aquacultural practices for priority species, drawing upon research into sustainable farming technologies, sustainable nutrition, animal health and well-being in different farming systems (i.e. the One Health approach) and interactions between aquaculture and the environment; 2) to develop an integrated approach to marine aquaculture, particularly by means of participatory workshops devoted to the co-construction of scenarios conducive to the development of nutrition-sensitive aquaculture; and 3) to develop innovative aquacultural products for healthy eating, including the various uses of by-products.

KEY POINTS

Nutrition-sensitive aquaculture is one of several approaches designed to capitalise on the potential of foods of aquatic origin, in the interest of ending malnutrition. It seeks to boost the nutritional efficacy of aquacultural production without compromising the essential functions of ecosystems, other food systems and means of subsistence. In this context, the international joint laboratory Limaqua, based in South Africa, is running a research and training programme aimed at tackling the nutritional and sustainability-related challenges facing marine aquaculture in this region, informed by the principles of sustainability science.

SUSTAINABILITY SCIENCE

UNDERSTAND, CO-CONSTRUCT, TRANSFORM

Volume 2

Collective thinking coordinated
by Olivier Dangles and Marie-Lise Sabrié

IRD Éditions

French National Research Institute for Sustainable Development
Marseille, 2023

D2S follow-up of the articles: Claire Fréour and Magali Laigne
Editorial coordination: Marie-Laure Portal-Cabanel
Cover: Charlotte Devanz
Design and layout: Aline Lugand

Cover photo: Rock painting, Cueva de las Manos, Argentina.
© IRD/O. Dangles - F. Nowicki/*Une Autre Terre*

Photo p. 14: Cast net fishing: casting the net (New Caledonia).
© IRD/P. Dumas

Photo p. 52: Farm work with a plough (Morocco).
© IRD/G. Michon

Photo p. 86: Launch of the participatory observatory on vulnerability to erosion:
training ecoguards (Anjouan, Comoros).
© IRD/N. Mirhani

Photo p. 112: Modelled map showing the damage caused by flooding
and the success or failure of recommended measures (Madagascar).
© IRD/Didem/Rijasolo

Photo p. 138: Rice LMI workshop on rice improvement to cope with the constraints of climate change.
© IRD/F. Carlet-Soulages

Photo p. 164: Graphic animation of the Franco-Brazilian network for the sustainable development
of the North-East semi-arid region (ReFBN) (Brazil).
© IRD/M. Disdier

This publication is open-access and made available to the public under the terms of the Creative Commons license CC BY-NC-ND 4.0, which can be viewed at <https://creativecommons.org/licenses/by-nc-nd/4.0/deed.en>. Under this license, the original work can be freely redistributed as long as the authors and publishers are credited and a link to the license CC BY-NC-ND 4.0 is provided. Modifications are not authorised and the work must be published in its entirety. The material may not be used for commercial purposes.



© IRD, 2023

PDF version ISBN: 978-2-7099-3003-1