

## POLICY BRIEF Edition 2

### At a glance

**Water saving:** INAPRO minimises the use of water by employing a double recirculation system.

**Reducing the environmental impact:** INAPRO allows the production of fish and vegetables in a nearly closed system without using antibiotics, reducing the amount of waste water in the fish unit and employing only a low amount of fertilisers for the plants.

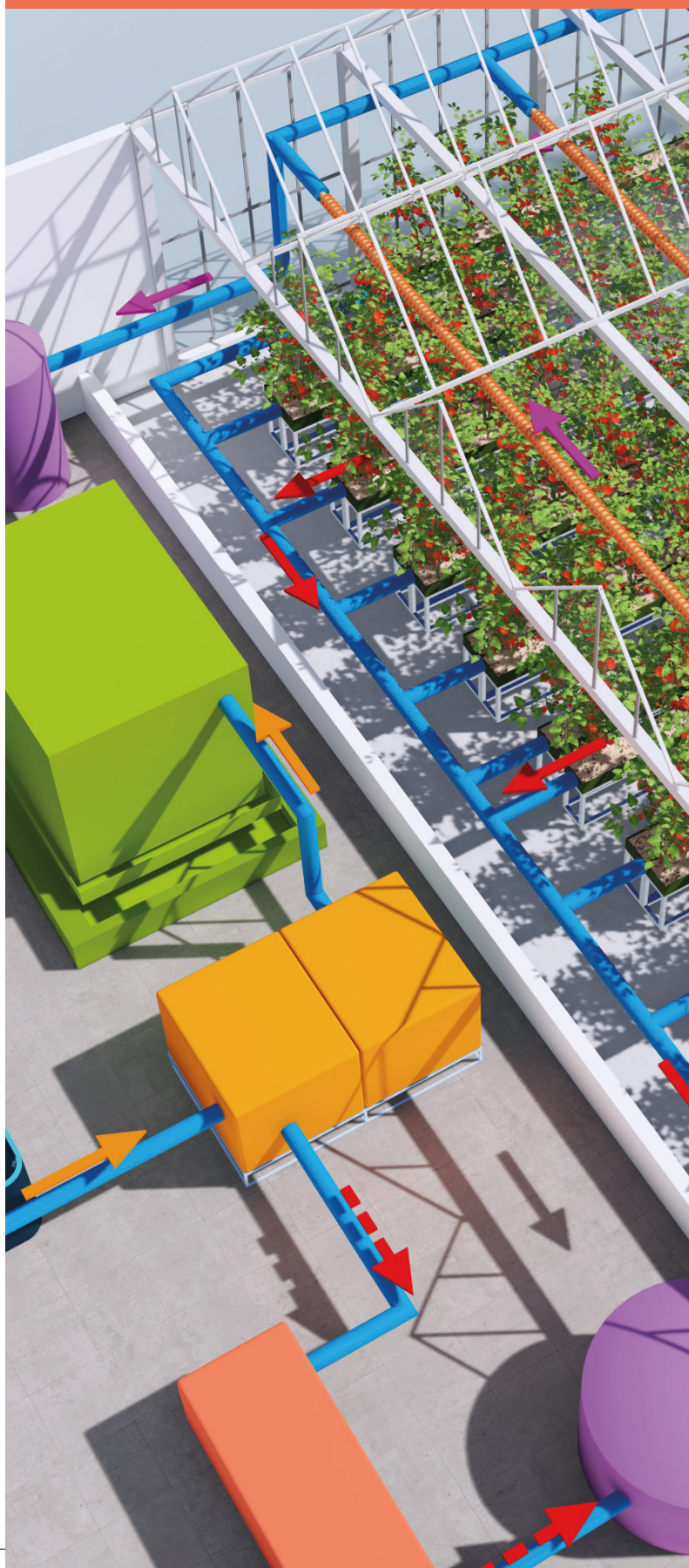
**Energy efficient:** INAPRO can be powered by different sources of renewable energy such as solar, wind and biomass cutting greenhouse gas emissions. Aquaponic products can be grown anywhere, cutting transport costs and emissions.

**Adaptable:** INAPRO can be applied to greenhouses of different sizes and located in different geographical areas.

**Dissemination:** INAPRO will mobilise the industry, mainly manufacturer and end user SMEs and related stakeholders to promote and propagate the innovative technological applications of INAPRO in the branch of food production.

**Market and jobs:** Being healthy and environmentally friendly, INAPRO products enjoy a decisive market advantage. The development of rural and urban aquaponic farms in Europe will foster green growth and will create jobs.

**Policies:** Supporting aquaponics development through related policies, research funding and structural funds is important to realise the values of above enumerated aquaponics advantages.



## Introduction

Aquaponics is a food production system that couples aquaculture with horticulture. The nutrient-rich water from the fish unit is used as fertiliser for the hydroponically grown crops, which therefore significantly reduces the sewage of the fish component.

INAPRO aims to improve current approaches to aquaponics through the integration of innovative technologies and to provide a model-based solution for an optimised management of water, energy and nutrients. The INAPRO aquaponic system allows an independent management of fish and plants units and ensures that the evapo-transpirated water in the greenhouse is regained and reintegrated into the fish tanks in order to minimise the demand for freshwater.

INAPRO has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration. It is coordinated by the Leibniz-Institute of Freshwater Ecology and Inland Fisheries in the Forschungsverbund Berlin e.V. (IGB).

## Ressource Efficiency

The new INAPRO system is made of two independent systems for water recirculation, one for the aquaculture part and one for the horticulture part. The two systems are one-way connected to transfer the nutrient-rich fish water to the plants. Evapo-

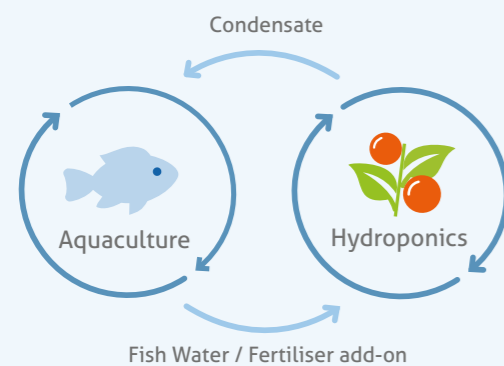
rated water in the greenhouse is regained via cooling traps and returned into the fish tanks.

This innovative technology allows the setting up of optimum conditions both in the fish and in the plants units, thus ensuring high productivity and enhancing resource efficiency. In addition, thanks to the integration of optimised filter systems and wastewater treatment, INAPRO can use water coming from different sources (including rainwater). The double water recirculating system, the recuperation of evapo-transpirated water and the potential use of rain water reduce the need for daily water input to less than 1-3% of system volume per day.

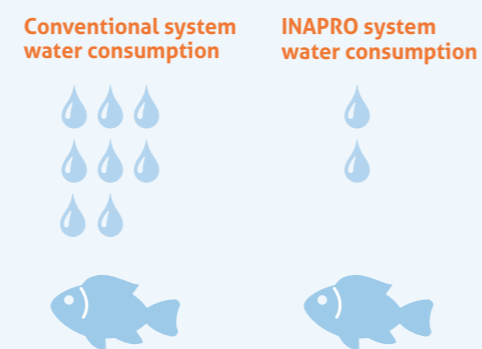
Depending on the geographical location of the greenhouse, the INAPRO system can be powered by different renewable energy sources such as solar, wind and biomass, thus cutting the energy costs that often represent a big economic burden for producers.

## Local and sustainable food production

INAPRO allows the production of local, sustainable and healthy food. The INAPRO system is scalable to greenhouses of different sizes, from large scale agricultural facilities to small urban farming sites and is adaptable to different geographical and climatic conditions. INAPRO can enhance the volume of locally produced food and improve the connexion between farmers and consumers.



The double recirculation system provides optimized conditions for the fish and plant part independently from one another to increase the productivity of both.



Compared to a conventional RAS which requires a daily water input representing 10% of the total amount of water circulating, INAPRO system cuts this rate to 1 to 3%.



INAPRO is proving its technical feasibility on a larger scale in different geographic and climate conditions. Demonstration facilities are built in Spain, Germany, Belgium and China.

By being locally produced, INAPRO products have a low carbon footprint. In addition, thanks to a highly efficient reuse of water, the system requires almost no fresh water input representing the perfect solution for rural areas suffering from water scarcity issues.

Furthermore, INAPRO responds to the growing demand for seafood without increasing the pressure on overexploited fish stocks. INAPRO produces healthy food free of contaminants as it uses only a minimal amount of fertiliser for the plants and no antibiotics for the fish at all. Moreover, as the food is produced through a closed system, no chemical is released into the surrounding environment avoiding negative impacts on soil and groundwater.

## Green growth

In spite of its great features, aquaponics is yet to spread onto the market. This is mainly due to a lack of stability, economic profitability, and technical and technological standardisation. INAPRO overcomes these technical barriers thanks to the integration of cutting edge technologies and the commercialisation of a model-based aquaponic system.

In Europe, aquaponics development is also undermined by the lack of a clear legal framework, making it difficult for entrepreneurs to invest in the sector in order to establish aquaponics facilities. INAPRO tries to overcome this obstacle by raising awareness of the potential of aquaponics and by encouraging policy-makers to act for the promotion of sustainable food production systems and to take aquaponics into consideration when drafting public policies in relevant domains.

Some Member States include aquaponics in their operational programmes linked to the EU structural funds. In particular, the European Regional Development Funds (ERDF), the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF) could be used by



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farmers and entrepreneurs to integrate the INAPRO system into existing facilities or to build new, resource efficient ones. These funds could also be used for the development of new innovative approaches to urban farming to provide cities with local, sustainable and healthy food.

Fish and vegetables produced with the INAPRO aquaponic system are high-value products for consumers concerned with sustainability. Further developments and exploitation of INAPRO both in rural and urban areas could create jobs, promote green growth, and could also back innovative SMEs in the EU. For this reason, it is important to support aquaponics development through entrepreneurial and food production related policies, research funding and structural funds.

## Contact

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