



RESEARCH, INNOVATION AND KNOWLEDGE TRANSFER IN THE AGRO-FOOD SECTOR IN THE WESTERN BALKAN COUNTRIES/TERRITORIES: PHASE II

CROSS-COUNTRY MEETING

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Case study: North Macedonia

Branded baby organic salads - Aquaponics



Short introduction of the case

Branded baby organic salads - Aquaponica

Start date – end date	2018 to date
Type of innovation	Branded baby organic salads, aquaponics, bio-coal production – Sustainable Agriculture
Selection criteria	Technological innovation contributing to organic production; contributes to sustainability (particularly to environmental sustainability and climate change protection); involves international networking, national public funding; successful innovation from start-ups.
Addition information	<p>Aquaponica is a micro-company involved in agriculture and specialised in the production and sale of organic vegetables (organic salads) and semi-finished products throughout the whole year. The project of this micro company "Branded young organic salads" aims to introduce a new innovative production process that simultaneously provides quality control of the product "from field to shelf" in the point of sale, thus providing easy traceability of the production origin.</p> <p>The further company's innovation is production of bio-coal that is integrated into the greenhouse production of salads. The clean thermal energy obtained from pyrolysis is used to heat the greenhouse and also, the produced vegetables have a negative CO₂ balance.</p>

Key actors involved

Name of the actor	Type of the actor	Sector	Role
Aquaponica Ltd.	Micro-company	Private	Came up with the idea for the innovation, and implemented the innovation. Participates in changing the traditional agricultural practices, and consumers' awareness and habits on sustainable environment and healthy eating habits.
FITR	Government support for innovations	State	Financially supports innovations.
Balkan Biocert	Certification body	State	Issues certificates for organic production.
Consumers	Final users	Private	Final chain actors in the value chain, consulted in the process of creating a marketing plan and developing the online shop.



Innovation idea and inspiration, and start of the business

Problem definition/challenge for innovation	<ul style="list-style-type: none">✓ Agriculture in the country is considered as very traditional and mainly characterised with a low productivity. But, the owners of the micro-company “Aquaponika ” from Skopje, siblings who have an educational background in the IT and education sector, started this business because they wish to break the taboo that agriculture is a low-income business.✓ The owners considered that the problems with the conventional agricultural production should be overcome with improvement and modernization of the agricultural production by building a new business model with considering the environmental impact of the production and in establishing close relationships to consumers.
Start of the business	<ul style="list-style-type: none">✓ Luckily, in 2018, Aquaponika was one of the 130 domestic companies or consortia supported by the Fund for Innovation and Technology Development (FITR), within the first public call of the Economic Growth Plan of the Government of the Republic of North Macedonia (Public Call of 28.04.2018 – 11.06.2018), and the eleventh project in the agricultural field.✓ In 2020, the company received another financial support by FITR within the programme Action for Positive Climate Change (Public Call of 06.03.2020 – 20.07.2020), for introducing a bio-coal into the production of green salads (FITR, 2020a).✓ The project further had also won a special award for a study visit in Israel within Start Up Nation and Mentorship Programme supported by the Kayama Centre for Sustainable Design in Israel and Ministry of Foreign Affairs in Israel (FITR, 2020a).

Planning and implementation of the innovation

Suggested solution to the defined problem

Plan

- ✓ The project is a result of a **three years of practical experience and learning of the processes for aquaponics** growing of plants and fish in a small greenhouse, designed **for domestic purposes** within the immediate family of its founders, funded exclusively by **owners' capital**.
- ✓ To **develop** and to **commercialize energy efficient and cost effective greenhouses aquaponics production** with **minimal negative impact on the environment**.
- ✓ The innovation is in introducing **new agricultural products with innovative business model**, and then the innovation was further developed in **producing a bio-coal** that was integrated into the production of the salads in greenhouses.

Implementation

- ✓ **New production line of baby organic salads** (arugula, lettuce, spinach and chard) whose leaves are not larger than 10 centimetres, and which are **immediately washed and packed after being harvested** (on the fields).
- ✓ The products are **promptly distributed**, and by **shortening the value chain**, this market channel provides traceability and brings the freshness from the fields to the consumers' plates (in this way, a maximum quality is achieved, but also the confidence of the customers in organic production is increased).
- ✓ The **company started to develop an online shop** to respond and adapt to the changing behavior of consumers caused by the COVID-19 pandemic (but, this was also financially supported by FITR within the programme COVID-19 measures - Organic online-green antivirus shield COVID-19, Public Call of 29.05.2020 – 03.07.2020).

Realisation of the innovation

Results

Direct results

- ✓ The company cultivates **1 ha of arable land**.
- ✓ The eco-products of the production line are **sold in the largest cities of the country mainly through supermarkets** (such as, Tinex, Reptil and Markt), as well as **through the online shop Paket.mk**.

Indirect results

- ✓ **Positive example that should encourage other farmers to think about sustainable agriculture and sustainable business models within short supply chains.**
- ✓ **Increasing the awareness of the consumers in encouraging their healthy eating habits.**
- ✓ **Developing consumers' habits of a greater responsibility for the environment.**

SWOT analysis

Strengths

- Realisation of a business idea into a micro-business, involving in innovative agriculture production and business model,
- Inspiration to other people to get engaged in agriculture, and modernise the agriculture production in a sustainable manner,
- Inspiration of a short-supply chain developed, with developing close customer relations,
- Consumers' benefiting from the healthy food with no harm to the environment.

Opportunities

- Available financial support from a public institution (in this case FITR) that supports innovations and technology development during different phases of innovation development (initial businesses development, improvement of the businesses, adaptation of the businesses to the changing environment due to internal and external factors etc.),
- Development of a trade mark,
- Reach more customers with the online shop and thus, further develop the business.

Weaknesses

- The business had not produced sufficient profit to cover its expansion and adapting to the needs of the changing market without further support by FITR,
- There are just few external actors/stakeholders involved in the innovation process.

Threats

- If the projects' selection by FITR (or other public institutions) is not done on objective basis (under true merits of the applicants), this selected case-study and other supported projects are doomed to failure, and many other prospective projects may be financially hindered to progress.

Ways to overcome Weaknesses and Threats of the case so to successfully implement this case on a broader scale

- **Include all relevant actors and segments** in such innovative projects and **establish strong relations with other actors in the chain**, such as: other farmers producing same or similar products (salads in this case), farmers' associations to support their networking activities, advisors (advices on the possible risks), experts from academia and other consultants (for developing of sustainable business plans), funding partners (Governmental grants are often the easiest source of funding, with the least control of realisation).
- **Use successful cases as positive examples and inspiration to other farmers**, which is essential for the future development of the agricultural sector (although it is very difficult to inspire a large mass of agriculture producers in rural areas because they are casted out from the modern markets, still they can be used for increasing the visibility for the possibilities and opportunities for innovations in the urban areas) - **there is a risk that at one point, the supply to overreach the market demand for this particular investment so new, international markets should be reached considering the 'niche market' concept.**
- **Monitoring system for supported projects to be introduced by the FITR**, and also the **application process to the voucher schemes of the FITR** (support for motivating private sector to collaborate with the academia) to follow **less complicated procedures.**
- Considering that the competent Ministries do not have funds and measures to support the research and innovation process (only 1% of the IPARD funds so far are appointed to innovation, however, the selected Macedonian case study of 'Aquaponica' would be not eligible under the current IPARD program), therefore, one suggestion is that **FITR should launch a specific agricultural fund for innovation** which will focus more on these type of innovations or **more emphasis on innovation and research to be given in the next IPARD.**
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THANK YOU FOR YOUR ATTENTION!

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