



**STRATEGY FOR DEVELOPMENT
OF FINS
(2024-2030)**

Strategy Developed by:

- Marijana Sakač
- Anamarija Mandić
- Milica Pojić
- Bojana Šarić
- Olivera Đuragić
- Pavle Jovanov
- Predrag Ikonić
- Tamara Dapčević Hadnadić
- Dragana Kostić

Consultant for Strategy Development:

Danijela Toljaga Nikolić

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1. INTRODUCTION

The Institute of Food Technology in Novi Sad (FINS) at the University of Novi Sad is one of the leading research institutions in the Republic of Serbia in the field of food technology.

The institute's academic activities focus on achieving outstanding research results in food and feed science, the development of sustainable and innovative products, testing technologies and methods, environmental improvement, and enhancing the quality of nutrition and public health. Through these efforts, FINS contributes to the advancement and excellence of research work in Serbia.

The Institute emphasizes **its role in the transfer of knowledge and technology** to business entities and the wider public through its recognizable motto *Place Where Science Meets Industry*. This highlights its long-standing commitment as a bridge between scientific research and its application in the business environment. FINS serves as a space for collaboration, knowledge exchange, and the achievement of common goals in science and industry, contributing to the enhancement of the competitiveness of domestic science and industry on an international level.

By disseminating research results, the Institute contributes to increasing awareness and knowledge about sustainable patterns of producing safe and healthy food, leading to better health and quality of life for people.

By improving the conditions in already established research and commercial pursuits, the Institute will be able to contribute to the advancement of science, the application of innovative scientific discoveries, and raising awareness about the importance of **science, scientific progress, technological development, and innovation**.

To achieve the outlined improvements and enhance their impact on societal trends, a *Strategy for Development of the Institute of Food Technology in Novi Sad* has been developed for the period from 2024 to 2030. The Strategy defines strategic areas of development and strategic goals based on comprehensive analyses of the external and internal environment, as well as a plan of initiatives that should lead to their realization.

The implementation of the planned initiatives in the upcoming period will contribute to the achievement of the Institute's strategic goals, which are:

1. Enhanced internal capacities of the Institute,
2. Increased scientific excellence, and
3. Improved commercialization of scientific results.

The implementation of planned initiatives aims to confirm the leadership role of the Institute in the field of food and feed in the Republic of Serbia. We hope that this will create the conditions necessary for the Institute to achieve the status of a national significance institution. Although this vision is not integrated into the Strategy text, it will certainly be subject to review when planning initiatives in the upcoming period, once the legislative frameworks are established, and personnel solutions and other conditions for obtaining this status are reassessed. All planned initiatives outlined in the Strategy are fully aligned with the goals for improvement that need to be achieved as a prerequisite for acquiring the status of a national significance institution.

To enhance the internal capacities of the Institute, the focus from 2024 to 2030 will be on implementing training programs for employees, improving the management system of the Institute, digitizing work processes, maintaining and upgrading the functionality of basic assets and infrastructure, enhancing collaboration with relevant stakeholders, and boosting promotional activities. The key outcomes of these efforts will include an improved work environment and updated knowledge and skills for employees, which are essential for a modern organizational structure. Additionally, these initiatives aim to increase scientific excellence and the commercialization of research results. This strategic goal should also ensure greater visibility for the Institute and increased participation of researchers in relevant national and international bodies that regulate, support, and promote scientific research and knowledge exchange.

Increased scientific excellence, aimed at enhancing the Institute's positioning and exclusivity in the field of food technology in Southeast Europe and facilitating partnerships at the EU level during the specified period, will be achieved through targeted management of scientific personnel, an increase in the number of registered research projects, and the improvement of the quality of scientific output. The core of these initiatives will focus on adhering to good scientific practices, organizing training sessions, motivating researchers, and encouraging their creativity. Additionally, there will be an emphasis on the principles of open science and advocating for the use of available open research infrastructure.

To enhance the commercialization of the Institute's scientific results, innovative solutions with commercial applications will be developed, aimed at promoting economic and social welfare in the Republic of Serbia. Actions will be organized to expand the scope and types of collaboration with the industry, improve the services of the Institute's accredited Laboratory and pilot plants, and provide educational programs for producers and consumers to enhance knowledge and skills related to contemporary trends and practices in food technology.

The Strategy for Development of the Institute of Food Technology in Novi Sad for the period 2024 to 2030 was adopted by the Institute's director on April 29, 2024, following a public discussion involving all permanent employees and receiving positive feedback from the Scientific Council. This Strategy is aligned with the Strategy of Scientific and Technological Development of the Republic of Serbia for the period 2021 to 2025, Power of Knowledge, and the Strategy for General Economic and Social Development of the Republic of Serbia, as well



as other national, regional, and European strategies, including the *Smart Specialisation Strategy of the Republic of Serbia* for the period 2020 to 2027.

2. DESCRIPTION OF ACTIVITIES

The Institute of Food Technology in Novi Sad (FINS) was established by the decision of The Executive Council of the Autonomous Province of Vojvodina, based on the research potential and nearly 50 years of tradition and experience of the departments for grain and flour technology, sugar technology, meat technology, fruit and vegetable technology, and feed technology, which operated within the Yugoslav Institute of Food Industry and the Faculty of Technology in Novi Sad.

FINS began operations as an independent organization on January 1, 2007. It was accredited by the decision of the Ministry of Education, Science, and Technological Development of the Republic of Serbia.

Since December 21, 2007, FINS has been part of the University of Novi Sad, following the decision of the University Council, and is located within the university campus.

The primary activities of the Institute include:

- Research and innovation,
 - Implementation of projects at national, regional, and international levels,
 - Innovation activities, and
 - Publishing activities.

Activities stemming from the scientific research work include knowledge transfer and collaboration with the business sector, realized through:

- Activities of the Laboratory for Food Technology, Quality, and Safety (FINSLab),
- Technology transfer through projects, consulting, design, preparation of feasibility studies, and reports, and
- Educational activities.

The primary activity of the Institute is scientific research focused on food science and food technology, with a particular emphasis on the development of technologies and sustainability in the food and feed production chain. This includes quality and safety testing, the creation of new value-added products using innovative and traditional technologies or functional ingredients rich in bioactive compounds, including alternative and sustainable raw materials. Additionally, the Institute examines structural properties, food authenticity, and the protection of geographical indications. A special segment of the scientific research work that contributes to understanding consumer preferences, perceptions, and reactions to products is the area of sensory testing and consumer science, in which the Institute has extensive expertise.

The scientific research activities of the Institute are aligned with national and European strategic priorities, as well as contemporary industrial demands and trends. This work is carried out through the implementation of national and international projects, the results of which are documented through published papers, presentations, monographs, chapters in monographs, as well as technical solutions and patents.

National scientific research projects implemented since the establishment of the Institute to date include projects funded by:

- The Ministry of Education, Science, and Technological Development of the Republic of Serbia (basic research and technological development projects from 2007 to 2019),
- The Provincial Secretariat for Higher Education and Scientific Research of AP Vojvodina (short-term projects of special interest for sustainable development in AP Vojvodina and projects significant for the development of scientific research activities in AP Vojvodina for defined project cycles),
- The Science Fund of the Republic of Serbia (from 2019 to 2023, calls such as PROMIS, IDEAS, Collaboration with the Diaspora, and the Green Program), and
- The Serbian Academy of Sciences and Arts.

Since its establishment in 2007, the Institute has implemented a total of 83 national projects, with researchers from the Institute serving as coordinators for 46 of those projects.

Currently¹, the Institute's researchers are engaged in 10 projects, of which 8 are coordinated by the Institute. These projects are funded by the Science Fund of the Republic of Serbia and the Provincial Secretariat for Higher Education and Scientific Research.

The Science Fund of the Republic of Serbia is currently financing three projects coordinated by researchers from the Institute – one from the IDEAS call, one from the Green Program, and one from the PRISMA call. Additionally, researchers from the Institute are participants in one project from the IDEAS call and one from the PRISMA call (from 2022 to the present).

The Provincial Secretariat for Higher Education and Scientific Research of AP Vojvodina is currently financing three projects significant for the development of scientific research activities in AP Vojvodina for the project cycle 2021–2024, as well as three short-term projects of special interest for sustainable development in AP Vojvodina in 2023, coordinated by researchers from the Institute. In one of these projects, the Institute participates as a collaborator. Additionally, the Institute currently holds a coordinating role in a one-year APV project aimed at collaboration between research organizations founded by AP Vojvodina and research organizations from the Republic of Srpska.

The Institute places great importance on **international cooperation**, which opens up new opportunities for accessing scientific projects funded by international funds through the establishment of partnerships with foreign institutions. This collaboration strengthens infrastructure capacity, promotes the mobility of research staff, and facilitates networking with other institutions.

Since its establishment, the number of completed and ongoing international projects totals 80, of which the Institute has been or is currently the coordinator for 34 projects (25 bilateral cooperation projects, 9 projects from the H2020, FP6, Eureka, FAO, and IPA cross-border cooperation programs). Researchers from the Institute are engaged in 6 ongoing international

¹ Status on April, 29, 2024.

projects funded by HE, H2020, FAO, and bilateral cooperation, as well as in 5 ongoing COST actions.

With the aim of supporting the development of innovations and encouraging the application and commercialization of research results, the Institute also engages in **innovation activities** focused on:

- Mastering and implementing new techniques and technologies applicable in the food industry,
- Utilizing by-products of the food industry and agriculture to meet the zero waste concept and principles of circular economy,
- Improving food products by creating formulations that contribute to human health and respect the demands and needs of personalized nutrition, and
- Implementing innovative projects, as well as generating technical solutions, patents, and other forms of intellectual property in the field of food and feed technology, with an emphasis on creating new and improving existing products, technologies, processes, and services.

The Institute is also active in **publishing**, contributing to its visibility and recognition at both national and international levels. Since 2010, the Institute has been publishing the journal *Food and Feed Research*, which focuses on the field of food technology (<http://foodandfeed.fins.uns.ac.rs/>). This journal is a successor to *Food Processing, Quality & Safety*, which was published from 2007 to 2009. *Food and Feed Research* (print edition until 2023: ISSN 2217-5369; electronic edition: ISSN 2217-5660) has been ranked in category M24 (national journal of international significance) since 2017, according to the decisions of the Commission for establishing proposals for the annual list of categorized journals, in accordance with the criteria of the Regulation on the Categorization and Ranking of Scientific Journals ("Official Gazette of RS", no. 159/2020). The journal is indexed in EBSCO databases, Scopus, EuroPub, UDL-Edge, Directory of Open Access Journals (DOAJ), CAB Abstracts, Chemical Abstracts, and Ulrich's Periodical Directory. It operates under a platinum open access model, with no subscription fees or author charges, and is licensed under CC BY 4.0. Additionally, the Institute's publishing activities include 15 monographs in the field of food and feed, published from its establishment to date (<https://fins.uns.ac.rs/publications/>).

The commercialization of scientific research at the Institute is achieved through knowledge transfer and collaboration with the business sector. This activity is primarily carried out by providing laboratory services in the modern, accredited Laboratory for Food Technology, Quality, and Safety (FINSLab), which, in addition to its scientific orientation, offers testing of food and feed quality and safety to clients from the industry. The Institute also continuously organizes inter-laboratory comparisons in the field of food and feed testing, which participating laboratories use as important evidence of their competence.

Knowledge transfer also includes technology transfer services through projects, consulting, design, feasibility studies, reports, and other similar activities, as well as educational activities



such as organizing congresses, seminars, workshops, and training sessions. The goal is for the Institute to share its expertise, experience, and the latest scientific knowledge with business entities and the wider public.

The Institute emphasizes its role in transferring knowledge and technologies to business entities and the general public through its recognizable motto *Place Where Science Meets Industry*, highlighting its long-standing commitment. The Institute acts as a bridge between scientific research and its application in the business environment, creating space for collaboration, knowledge exchange, and achieving common goals between science and industry.

3. ANALYSIS OF THE INSTITUTE

3.1. Organizational Structure and Description of Activities

The Institute of Food Technology in Novi Sad is organized according to the organizational chart shown in Figure 1.

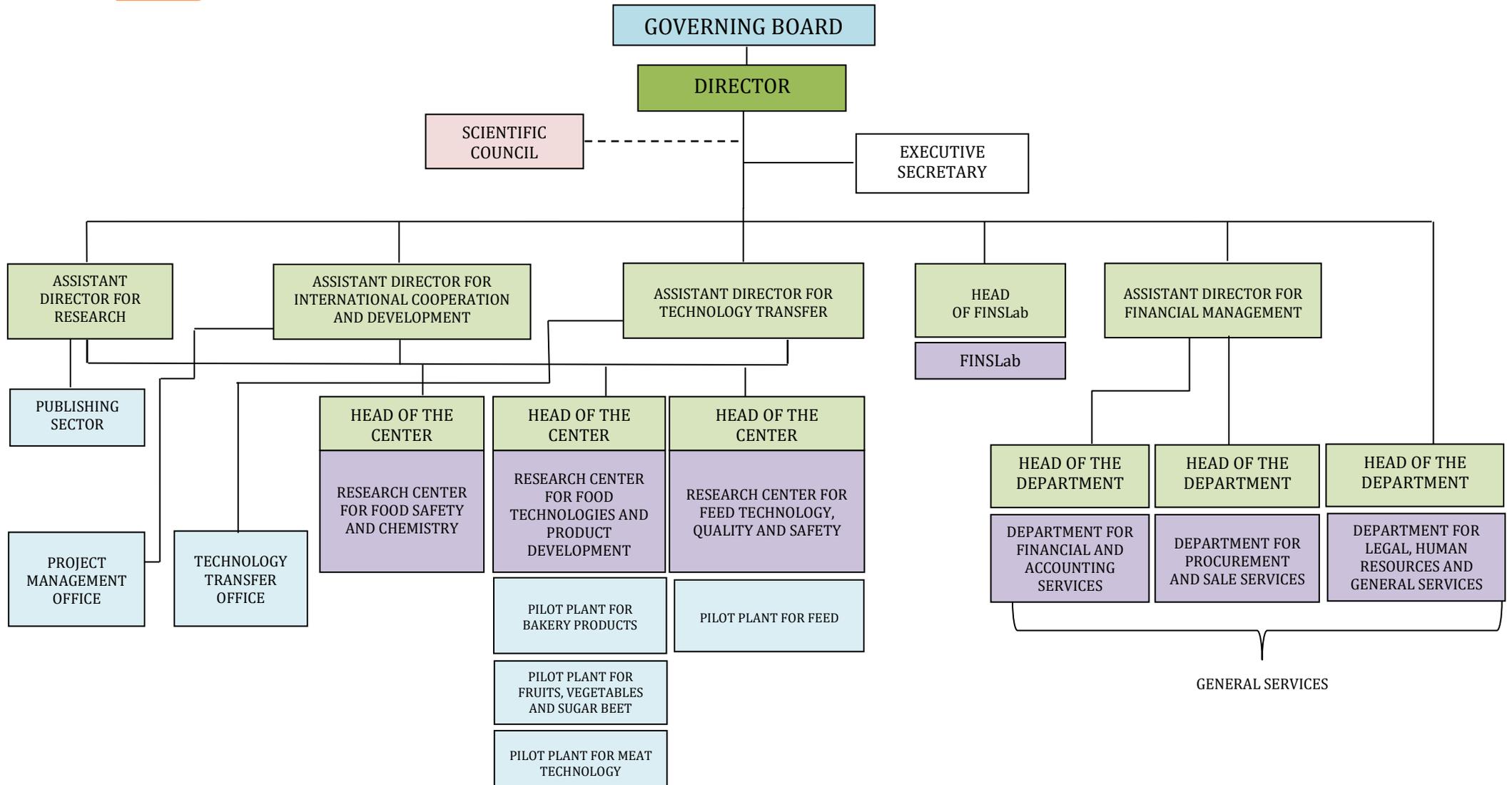


Figure 1. Organizational chart of the Institute of Food Technology in Novi Sad



At the Institute, there are:

- Research Centers,
- Laboratory for Food Technology, Quality and Safety (FINSLab), and
- Professional Services.

The research work at the Institute is organized into three research centers:

- Center for Food Safety and Chemistry,
- Center for Food Technology and Product Development, and
- Center for Feed Technology, Quality and Safety.

The Center for Food Safety and Chemistry focuses on analyzing the composition, quality, and safety of raw materials, final products, and by-products of the food industry. The researchers' activities include:

- Development of modern sample preparation techniques,
- Implementation of contemporary analytical methods,
- Testing for chemical and microbiological contaminants,
- Biological (genetic) testing,
- Application of "green" extraction techniques, and
- Development and characterization of functional ingredients for further application in formulating food and feed products.

Through its activities, particularly the development of modern analytical methods and testing of functional ingredients from various sources, including agro-industrial waste, the Center's research topics are largely aligned with and complementary to the research conducted in the other two centers. The Center also supports the development of new analytical methods for the needs of the FINSLab laboratory, thereby enhancing the commercial value of its research capabilities.

The Research Center for Food Technology and Product Development focuses on creating and reformulating food products, with a particular emphasis on developing products for special consumer categories and improving traditional and innovative food production processes. A significant area of research within the Center is sensory analysis of food and consumer science.

The Center relies on laboratory testing of the structural and rheological properties of food, which provides insights into the technological characteristics of products. This information is crucial for their complete characterization and market placement.

Within the Center, there are three pilot plants:

- Pilot Plant for Bakery Products
- Pilot Plant for Fruits, Vegetables and Sugar Beet
- Pilot Plant for Meat Technology

These pilot plants conduct research and development of new food products. In addition to achieving a higher level of technological readiness, the pilot plants enable the creation of solutions based on market needs, thus having significant potential to strengthen the Institute's collaboration with industry stakeholders.

The Research Center for Feed Technology, Quality and Safety focuses on scientific research and activities related to the commercialization of research outcomes, specifically the application of findings and other knowledge and skills in the field of technology, quality, and safety of feeds. Research is conducted in the following directions:

- Utilizing by-products from the food industry and agriculture to meet the zero waste concept and principles of the circular economy, as well as employing alternative sources of nutrients and
- Improving feed products by creating formulations that contribute to the health and well-being of animals and humans (functional food), while adhering to consumer demands and needs.

To carry out part of the experimental testing in these areas, the Research Center for Feed Technology, Quality, and Safety comprises:

- Feed Technological Laboratory
- Pilot Plant for Feed Technology.

The research staff of the Institute, grouped into these three centers, participates in the following key processes:

- Application for scientific research projects at national and international levels,
- Implementation of activities on national and international research projects,
- Publication of scientific papers, studies, monographs, and books,
- Establishment of connections and collaborations with researchers from other research institutions, regions, and EU territories (and beyond), strengthening researcher mobility,
- Innovative activities (applications for projects in innovation and infrastructural strengthening, development of technical solutions and patents),
- Knowledge transfer (consulting, project design),
- Quality control in the Laboratory for Food Technology, Quality, and Safety,
- Dissemination of research results to relevant stakeholders through organizing congresses, seminars, training sessions, workshops, media appearances, and activities on social media, and
- Publication of the journal *Food and Feed Research*.

Expert and professional teams of the Institute possess expertise in the following areas:

Food and feed quality and safety:

- Determination of the quality of raw materials and products in accordance with legal regulations,
- Commercial quality of raw materials,
- Food safety (determination of the presence of undesirable substances),
- Microbiological safety and shelf-life of products,
- Rheological testing of raw materials and products,
- Molecular biology food testing, and
- Technological characteristics of raw materials and products.

Bioactive Components and Functional Food

- Extraction of bioactive compounds,
- Qualitative and quantitative analysis of bioactive compounds, and
- Design and characterization of functional products and value-added products.

Valorization of By-Products in the Food Industry

- Alternative sources of protein,
- Alternative sources of fiber,
- Alternative sources of energy, and
- Alternative sources of bioactive compounds and other nutrients.

Sensory Evaluation of Food and Consumer Science

- Sensory and analytical evaluation of products, and
- Consumer testing and acceptability analysis.

Traditional Food and Geographical Indication

- Preparation of documentation for the protection of traditional products and geographical indication labels.

Food Technology and Animal Feed

- Development of new processing technologies,
- Optimization of technological processes, and
- Implementation of quality systems.

The Institute also has qualified personnel to provide consulting services (evaluation of existing conditions and recommendations for process improvement, formulation of new products, tests and analyses necessary for product market placement, production in pilot plants to obtain product prototypes, and process demonstration) and project design (preparation of studies and conceptual projects, development of technological projects, creation of business plans, feasibility studies, preparation of investment programs, technical control of projects, technical and technological supervision of plant construction).

The research centers of the Institute include **pilot plants**, which are key elements for the development of innovative food products and technologies at a higher level of technological readiness (TRL 5-6). The pilot plant for bakery products, the pilot plant for fruits and vegetables and sugar beets, as well as the pilot plant for meat technology, are part of the Center for Food Technology and Product Development, while the pilot plant for animal feed is an integral part of the Center for Feed Technology, Quality, and Safety.

The Institute's **pilot plants** are used for:

- Development of new products – They allow researchers to experimentally develop new products, test recipes, optimize processes, and assess the performance of new products in controlled conditions, enabling service users to reduce risks and costs associated with product development in an industrial environment.
- Application of new technologies.

- Food production for commercial purposes – They enable the production of food on a smaller scale, which can be crucial for food manufacturers looking to test new products or assess their functionality in experimental in vivo research.
- Organization of educational events, workshops, and practical demonstrations – These facilitate the exchange of knowledge and experiences between industry experts, the scientific community, and educational institutions, aimed at improving overall understanding and expertise in the field of food technologies.

To support international collaboration, the Institute established the **Project Management Office (PMO)** in 2021. The most significant activities of the Project Management Office include:

- Searching for and recording project calls of interest for which the Institute can apply.
- Organizing training for employees on project writing and management.
- Providing administrative support during the application and/or implementation of projects.
- Supporting the monitoring of financial flows during project implementation.
- Collecting and analyzing data for reporting on project progress.
- Assisting in planning, resource management, and project coordination.
- Maintaining a central repository of projects, which includes records of submitted and completed projects, project-related documents, reports on identified risks and mitigation measures, experiences, and observations.
- Adapting project management methodologies to new best practices and assisting teams in effectively implementing the updated methodologies.

The primary responsibility for the work of the Office lies with the Assistant Director for International Cooperation and Development, who also leads it, while the secondary responsibility falls to the Assistant Director for Science.

The permanent members of the Office include the Assistant Directors for International Cooperation and Development, Science, Technology Transfer, Finance, and representatives of researchers appointed by the Institute's Scientific Council.

Members of the Office selected through an internal competition include internal reviewers, financial managers, and project administrators. The Office also consists of representatives of the Institute in international and domestic organizations in which the Institute is a member, as well as researchers tasked with searching for project calls in which the Institute can participate.

The commercialization of scientific research work, knowledge transfer, and collaboration with economic entities is achieved through the activities of the **Technology Transfer Office (TTO)**, established in 2023. The TTO is led by the Assistant Director for Technology Transfer and includes researchers specialized in various fields of the Institute's scientific research.

The general objectives of the Technology Transfer Office are related to:

- Developing knowledge and skills for the intellectual protection of innovative solutions, as well as for assessing the value and overall commercial potential of

registered patents, technical solutions, and other forms of intellectual property in the process of knowledge and technology transfer.

- Enhancing opportunities for effective commercialization and implementation of scientific research results through collaboration with businesses, aimed at increasing the competitiveness of the economy and improving society as a whole.
- Promoting the transfer of knowledge between the Institute and the business sector by implementing innovative ideas and jointly applying for national and international projects.

Ethical issues at the Institute are addressed by two bodies:

- The Ethical Commission for Research Involving Human Subjects in nutrition and data analytics, whose work is defined by the Ethical Codex.
- The Ethical Committee of the Institute of Food Technology in Novi Sad, which monitors the ethical aspects of research activities, provides opinions, implements the standards set forth in the Codex, mediates in cases of conflicts among employees, and conducts training related to ethics in scientific research. The Committee's work is defined by the Codex of Conduct in Scientific Research at the Institute of Food Technology in Novi Sad.

Testing for scientific research purposes and analyses of the quality and safety of food and animal feed for third parties are conducted in the accredited **Laboratory for Food Technology, Quality, and Safety (FINSLab)**, which has been accredited by the Accreditation Body of Serbia since 2007 and includes 136 methods within its scope of accreditation.

Within FINSLab, there are 7 departments:

- Department for Trade Quality,
- Department for Rheological Testing,
- Department for Microbiological Analyses,
- Department for Sensory and Technical Analyses,
- Department for Chemical Analyses,
- Department for Molecular Biological Testing, and
- Department for Microanalytics

Additionally, there are two services:

- Quality Assurance Service, and
- Technical Service.

The overall organization and activities are in accordance with the requirements of the reference standard SRPS ISO/IEC 17025:2017.

In addition to testing the physical, chemical, microbiological, sensory characteristics, and safety parameters of food and animal feed, FINSLab also issues statements of compliance, opinions, and interpretations of test results. It provides assistance in the preparation of product declarations and specifications and develops new analytical methods according to user requirements.

The Institute's general services carry out tasks in the areas of legal affairs, human resources, administrative tasks, financial and accounting activities, procurement and sales, public relations, publishing, security, and facility maintenance, as well as auxiliary and other professional tasks. The heads of general services are the direct professional organizers of the work of the Office and executors of specific tasks and assignments.

The general services of the Institute include:

- Department for Financial and Accounting Services,
- Department for Legal, Human Resources and General Services, and
- Department for Procurement and Sale Services.

The **Department for Financial and Accounting Services** is responsible for tasks and activities that contribute to the realization of the Institute's core activities, such as bookkeeping tasks, financial and operational activities, financial control and reporting, and other related tasks.

The **Department for Legal, Human Resources and General Services** combines tasks and activities that contribute to the realization of the Institute's core activities, such as administrative tasks, legal and human resources functions, investment and ongoing maintenance activities, and other related tasks.

The **Department for Procurement and Sale Services** combines tasks and activities that contribute to the realization of the Institute's core activities, such as public procurement and procurement not subject to the law, logistics activities, warehousing and inventory management, sales and marketing, publishing, and other related tasks.

3.2. Management of the Institute

The governing bodies of the Institute are the Director and the Governing Board, while the scientific body of the Institute is the Scientific Council.

The Director manages the Institute and is appointed by the Governing Board based on a decision made by the Provincial Secretariat for Higher Education and Scientific Research of the Autonomous Province of Vojvodina.

The Governing Board of the Institute consists of seven members appointed by the Provincial Government. Among them, the President and three members are appointed by the Provincial Government as its representatives, while the remaining three members of the Governing Board are proposed by the Scientific Council of the Institute from the ranks of researchers holding scientific or academic titles employed at the Institute.

Director of the Institute appoints four assistants:

- Assistant for Science,
- Assistant for International Cooperation and Development,
- Assistant for Technology Transfer, and
- Assistant for Financial Management.

The Laboratory for Food Technology, Quality, and Safety (FINSLab) has a Head of Laboratory.

The Assistant Director for Financial Management oversees the Department for Financial and Accounting Services and the Department for Procurement and Sales Services, while the Director of the Institute is responsible for the Department for Legal, Human Resources, and General Services.

The Assistant Directors and the Laboratory Manager are members of the Institute’s Collegium and are accountable to the Director for their work.

The Scientific Council of the Institute consists of 15 researchers (9 researchers holding the title of Research Advisor, 5 researchers holding the title of Research Associate or Senior Research Associate, and the President of the Scientific Council – the Assistant Director for Science by position). Each research center delegates a number of Council members proportionally to the number of researchers with scientific titles in the center, with the heads of the research centers being members of the Scientific Council.

3.3. Employee Structure

The number of employees at the Institute is 104, including 67 research scientists, 20 technical associates from the accredited Laboratory for Food Technology, Quality, and Safety (FINSLab) and pilot plants, and 17 staff members from the Institute's general service (see Figure 2).

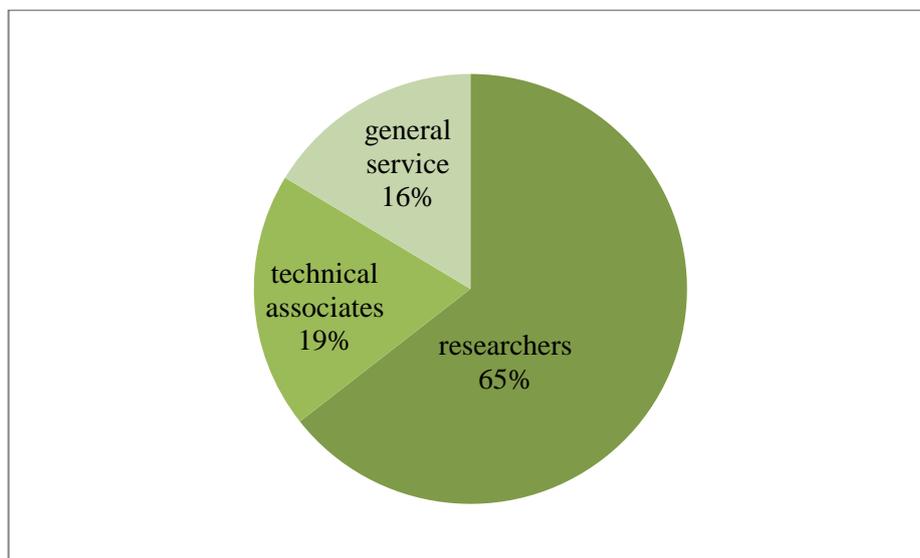


Figure 2. Employee structure at the Institute in 2024

The structure and number of employees at the Institute from 2018 to 2023 changed as shown in Figure 3.

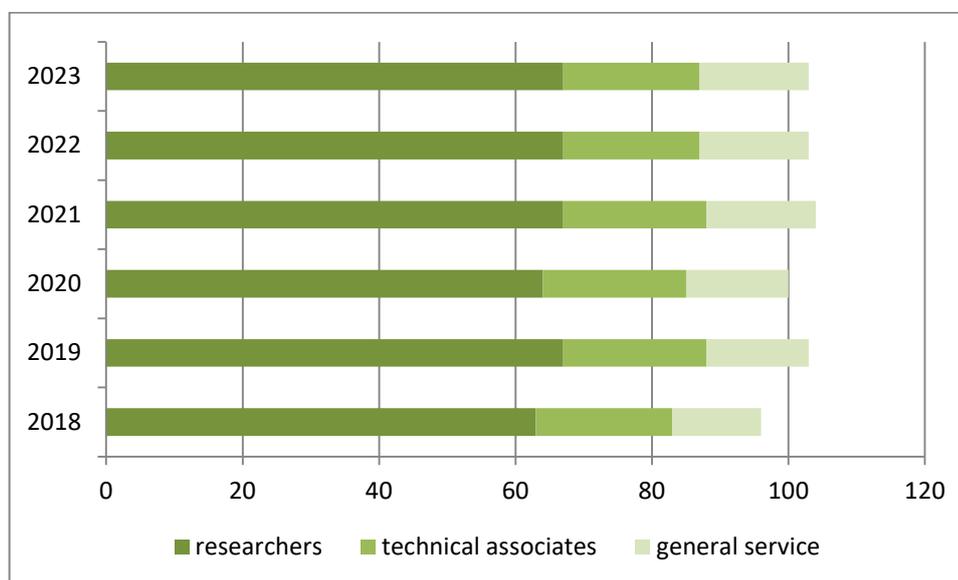


Figure 3. Number and structure of employees at the Institute during the period 2018–2023

The scientific research staff at the Institute consists of a multidisciplinary research team comprising technologists, chemists, biochemists, biologists, agronomists, an economist, and a mechanical engineer.

The structure of the scientific research staff at the Institute (January 2024):

Scientific/Research Title	Number
Principal Research Fellow	20
Senior Research Associate	17
Research Associate	13
Research Assistant	13
Junior Research Assistant	4
Total	67

Structure of the research staff by research centers:

The structure of the research staff of the Institute by centers is shown in Figure 4:

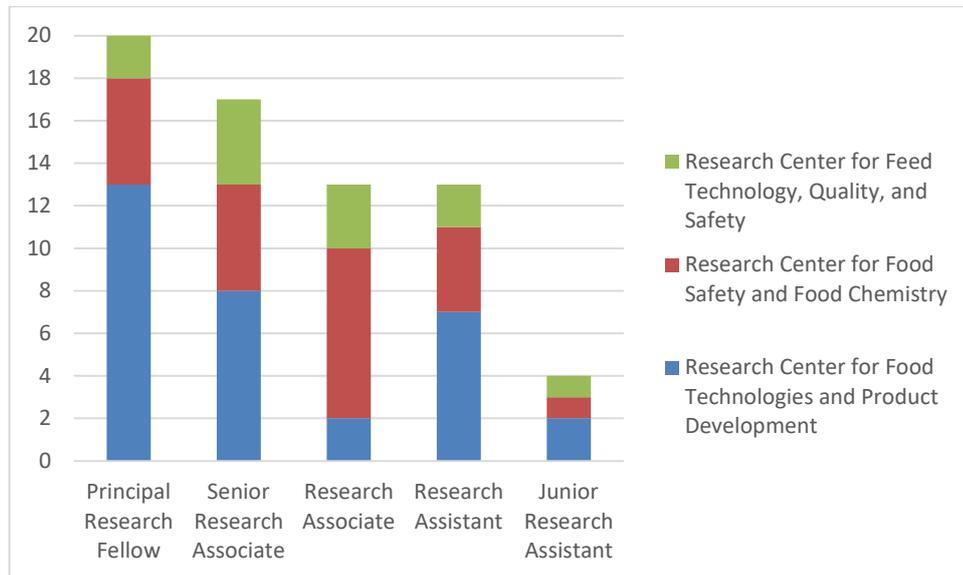


Figure 4. Structure of the research staff of the Institute by research centers in 2024

In the accredited Laboratory for Food Technology, Quality, and Safety (FINSLab), food and animal feed testing activities are carried out by 59 individuals. In positions such as Laboratory Director, Deputy Director, Head of the Quality Assurance Department, responsible persons, technical coordinators, technological coordinators, leading analysts, and their deputies, there are 39 researchers who utilize their acquired scientific, research, and professional knowledge and skills, while optimally utilizing available infrastructural resources to reliably and efficiently meet the needs of the Laboratory's service users.

In FINSLab, the Quality Assurance Department employ 1 technical associate, 2 analysts in the microanalysis department (Bachelor of Technology VIII1 and Master of Technology VII2), 2 analysts in the microbiology department (Bachelor of Biology - Master VIII1 and Bachelor of Technology - Master VIII1), as well as 13 technical associates, 1 senior technical associate, and 1 sampler.

In the pilot plant for animal feed one technical associate is positioned.

The Institute's expert services consist of 16 associates. The assistant director for financial management oversees the work of two departments (The Department for Financial and Accounting Affairs and the Procurement and Sales), while the director of the Institute supervises The Department for Legal, Human Resources, and General Affairs.

The Department for Financial and Accounting Affairs employs 1 manager, 1 head of accounting, and 1 chief accountant. The Department for Legal, Human Resources, and General Affairs includes 2 lawyers, 1 business secretary of the Institute, 1 office and archives clerk, and 5 cleaning staff. The Procurement and Sales Department employs 1 manager, 1 procurement officer, 1 logistics and procurement officer, and 1 publishing activities associate.

3.4. Infrastructure and Material Resources

Establishing adequate infrastructure and ensuring the necessary material resources are crucial for the success of the Institute of Food Technology in Novi Sad. The spatial capacity, available technologies, software, and licenses required for effective research and development at our Institute are as follows:

- **Spatial Capacity:**

The total area of the Institute is 5,157.62 m², of which the laboratory space accounts for 870.23 m², the office space for 797.38 m², the pilot plants for 434.90 m², the storage area for 376.25 m², and the area of the modular educational center with a library and meeting room is 383.35 m² (310.52 m² + 36.33 m² + 36.50 m²).

- **Computer Network, Software, and Licenses:**

The computer network and software play a crucial role in the efficient management of scientific data, analyses, and communication both within and outside the Institute. The existing software tools and platforms we use are aligned with the needs of scientific research as well as the requirements of administrative operations. In addition to the software supporting laboratory devices, licensed software is also in use.

Since 2017, the Institute has established a digital repository for scientific papers based on the open-source DSpace platform, which is interconnected with all relevant platforms.

- **Available Technology:**

Properly equipped laboratories and technological platforms are key to conducting top-tier research in food and food technology. The existing technological resources include laboratory equipment, space, and pilot plants:

- **Sample Preparation Equipment**

- **Laboratory Equipment for Instrumental Analyses:**

- Amino acid analyzer
- Atomic absorption spectrophotometer
- Liquid chromatograph with triple quadrupole mass spectrometer
- Liquid chromatograph with diode array detector, fluorescent detector, and light scattering detector on an evaporated sample
- Gas chromatograph-mass spectrometer
- Gas chromatograph with flame ionization detector
- Ion chromatograph for sugar determination
- Automatic capillary electrophoresis device for proteins on a chip
- ELISA analyzer

- **Laboratory Equipment for Testing Structural Properties of Food:**

- Modular advanced rotational rheometer

- Capillary extensional rheometer
- Capillary viscometer
- Texture analyzer
- Differential scanning calorimeter
- Devices for determining subjective rheological properties of dough (Chopin, Petren, and Brabender)
- Volume analyzer
- **Laboratory Equipment for Microbiological Testing:**
 - Equipment for cultivating microorganisms
 - Autoclaves for sterilizing equipment and cultivation media
 - Laminar flow hoods for sterile conditions
 - Sterilizers for instruments
 - Microscopes for visualizing microorganisms and identifying their morphological characteristics
 - AW meter
- **Laboratory Equipment for Extraction Technologies:**
 - Device for accelerated extraction with solvents under pressure
 - Ultrasonic bath and probe
 - Lyophilizer
 - Micro- and nanoencapsulation device
 - Volumetric titrator according to Karl Fischer
- **Sensory Analysis and Consumer Science Laboratory:** Equipped according to the requirements of the SRPS EN ISO 8589:2015 standard, which includes material resources (space and devices for food preparation and presentation, and 12 ergonomically designed booths with uniform lighting and isolated from external disturbances), as well as a sensory panel consisting of trained panelists and evaluators capable of conducting sensory analyses of food.
- **Classical Chemical Testing Laboratory**
- **Laboratory Equipment for Testing Physical Characteristics of Grains and Animal Feed:**
 - Device for testing hardness and abrasion of pellets
 - Device for determining pellet durability in water
 - Laboratory sieves for dry and wet screening
 - Device for testing mixture homogeneity
 - Climate chambers
 - Vacuum dryers
 - Apparatus for determining bulk density of mixtures
- **Pilot Plant for Milling:** Equipped with Bühler laboratory mill MLU-202, Brabender® Quadrumat® Senior laboratory mill, Bühler laboratory separator for bran, and flour homogenizer.

- **Pilot Plant for Bakery Products:** Equipped with various types of mixers, fermentation chambers, laminators, dough dividing, shaping, and forming machines, deck ovens, rotary ovens with shelves, and quick-freezing freezers.
- **Pilot Plant for Animal Feed:** Equipped with Bühler laboratory twin-screw extruder, Brabender® laboratory single-screw extruder, and Amandus Kahl laboratory single-screw extruder. To enhance the functionality of the pilot plant and expand the range of services, it is recommended to invest in upgrading existing extruders with wet extrusion equipment. The pilot plant is also equipped with mills (hammer mills, roller mills, crushers), mixers, steam conditioners, pellet presses, expanders, dryers, and vacuum coater.
- **Pilot Plant for Fruits, Vegetables, and Sugar Beets:** Equipped with a climate chamber that allows for control of temperature and relative humidity, and a vacuum cooker, currently using kitchen-level auxiliary equipment for fragmentation, mashing, centrifugation, clarification, filtration, and pasteurization. To enhance functionality, it is recommended to upgrade this auxiliary equipment to pilot level.
- **Pilot Plant for Meat Technology:** Equipped with a cutter, meat grinder, filler, aging chamber, smoking chamber, and thermal treatment equipment.
- **Food Packaging and Shelf Life Determination Equipment:** Including vacuum/MAP (modified atmosphere) packaging machine, portable gas analyzer for O₂/CO₂, climate chambers, and equipment for determining oxidative stability of oils.
- **Equipment for Presentations and Simultaneous Translation:** Within the educational center.
- **Institute Fleet:** Currently includes two pick-up trucks and two passenger cars. To improve passenger safety and reduce costs for preventive and corrective maintenance, it is necessary to plan for the replacement of existing passenger vehicles with new models.

3.5. Financing Methods

The sources of financing for the Institute include:

- budget funds (Ministry of Science, Technological Development, and Innovation for institutional funding since 2020 and for national projects until 2020; Science Fund of the Republic of Serbia; Provincial Secretariat for Higher Education and Scientific Research of Vojvodina; Ministry of Agriculture, Forestry, and Water Management; and the Provincial Secretariat for Agriculture, Water Management, and Forestry),
- Funds from international projects (Participation in programs such as FP7, H2020, HE, EIT, COST, IPA, FAO, CEI, CEPUS, and bilateral projects, and

- Own resources (FINSLab, technology transfer, and service analyses at both national and international levels).

The funding structure for the period 2018–2023 is illustrated in Figure 5.

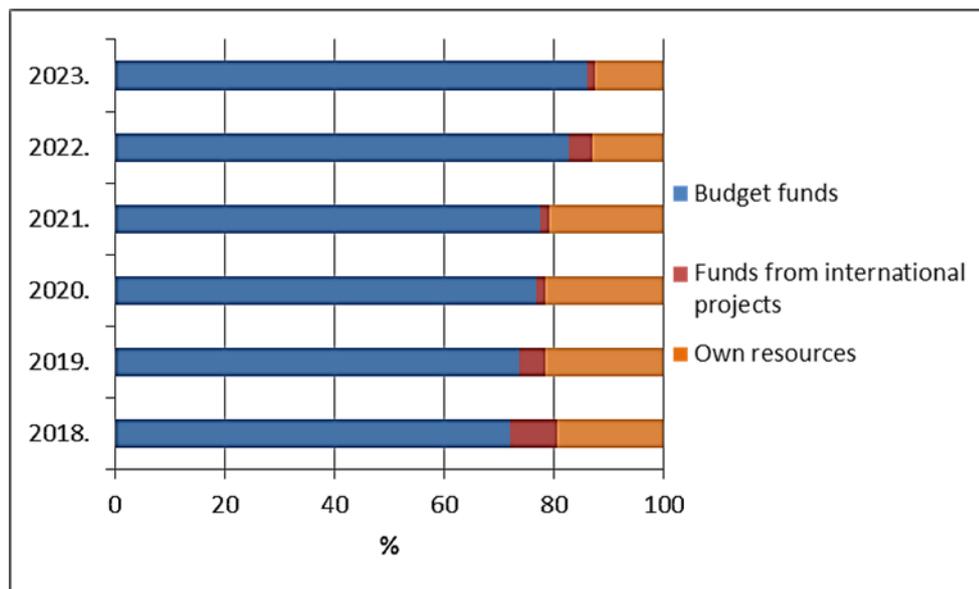


Figure 5. Funding structure of the Institute for the period 2018–2023

3.6. Success Indicators

National and International Projects

The implementation of scientific research work at the Institute is carried out through national and international projects.

National scientific research projects realized in the period 2018–2023 include projects funded by:

- Ministry of Education, Science, and Technological Development of the Republic of Serbia (fundamental research and technological development projects until 2019),
- Provincial Secretariat for Higher Education and Scientific Research Activities of AP Vojvodina (short-term projects of particular interest for sustainable development in AP Vojvodina and projects significant for the development of scientific research activities in AP Vojvodina for defined project cycles), and
- Science Fund of the Republic of Serbia (calls for PROMIS, IDEAS, Collaboration with the Diaspora, Green Program, and PRIZMA from 2019 to 2023).

International scientific research projects realized or still ongoing in the period 2018–2023 include FP7, H2020, HE, IPA cross-border cooperation projects, FAO, COST actions,

bilateral cooperation projects, KEP Projects for Western Balkan Countries, multilateral cooperation projects, and CEI.

Researchers at the Institute are currently engaged in 11 national projects, of which 9 are coordinated by the Institute, and in 6 ongoing international projects funded by HE, H2020, FAO, and bilateral cooperation, as well as in 5 ongoing COST actions.

Published Scientific Papers and Citations

The papers listed in the SCI (Science Citation Index) represent an important indicator of success in scientific research and have a significant impact on various aspects of the Institute's operations:

- They contribute to the increased visibility and impact of the Institute within the scientific community,
- They support building the international reputation of both the researchers and the institution, and
- They increase researchers' chances of receiving financial support for further research.

At the University of Novi Sad, the Institute has consistently been among the top (among the first 3 institutions) in terms of the number of SCI-indexed papers per researcher in a scientific rank, for the years 2018–2022. According to data available on the eScience website (<https://enauka.gov.rs/cris/ou/ou00272/other.html>), 3.51% of the total number of publications is in the M21a category, 6.43% are in the M21 category, 4.61% in the M22 category, and 7.22% in the M23 category.

The citation of scientific research papers has been recognized as a measure of impact in the scientific community and is a key criterion for success. According to data available on the eScience website, the citation count for researchers at the Institute in the Scopus database stands at 5,517 for 679 results, as of September 2, 2023.

The excellence of researchers has been confirmed by the list of scientifically excellent researchers published in 2024 on the website of the Ministry of Science, Technological Development, and Innovation, where 16 researchers are ranked in the top 10% and 8 researchers in the top 20% out of 67 researchers at the Institute (<https://nitra.gov.rs/cir/nauka/izvrsnost-u-nauci>).

Patents, Technical Solutions, and Other Indicators of Success in Technology Transfer

The commercialization of the Institute's scientific research results is carried out through innovation activities, specifically the development and promotion of technical solutions and patents in the fields of food technology and animal feed, with an emphasis on creating new and improving existing products, technologies, processes, and services.

From 2018 to 2022, the Institute generated 34 technical solutions, while the number of recognized patent applications was 7, out of a total of 12 submitted.

3.7. Established Collaborations and Signed Agreements

From 2018 to 2022, the Institute established cooperation and signed partnership agreements with 18 institutions from both domestic and international locations.

4. VISION AND MISSION OF THE INSTITUTE

4.1. Vision

To become the leading institute in the field of food technology in Southeast Europe and an exclusive partner for collaboration at the EU level.

4.2. Mission

We achieve outstanding scientific research results in the fields of food science and animal feed, develop sustainable and innovative products and technologies, nurture tradition, and establish collaborations and partnerships with industry. By disseminating research results to the scientific community, industry partners, decision-makers, and the general public, we contribute to raising awareness about sustainable patterns of producing safe and healthy food, and, consequently, to better health and quality of life for people.

4.3. Values

The Institute upholds a set of values that are deeply embedded in our identity and influence all aspects of our work:

1. Tradition

A fifty-year-long tradition and experience, combined with continuous monitoring of new trends and achievements in both technology and scientific research, make us one of the key players in the development of technological innovations in the food sector in Serbia.

2. Exclusivity

We proudly stand out in Serbia for the breadth of our research focus, covering a wide range of technologies and scientific disciplines, through which we make a significant contribution to innovations in the food industry. Our unique strength lies in our ability to monitor the entire food production chain (the "farm-to-table" concept), providing us with a comprehensive

insight into food production processes and quality in Serbia and the region. This also allows us to integrate our scientific knowledge and achievements in addressing challenges. The Institute is equipped with pilot plants for various food technologies, which is our advantage in technology transfer, collaboration with industry stakeholders, and partnerships in international research consortia.

3. Multidisciplinary Research Team

Our strength lies in teamwork that integrates experts from diverse educational backgrounds and areas of expertise.

4. High Scientific Integrity and Excellence

Our research is not only recognized but also highly ranked on the list of the University of Novi Sad for the quality of scientific output. Our position at the top confirms our ability to generate knowledge that is of significant value to both science and society.

These values guide us toward achieving the Institute's strategic goals, creating a positive impact, and ensuring continuous progress in the field of food technologies.

5. STRATEGIC AREAS OF DEVELOPMENT AND GOALS

By 2030, the Institute will be dedicated to achieving its vision through the following strategic areas of development:

- 1. Enhancement of internal capacities**
- 2. Increase in scientific excellence**
- 3. Improvement of the commercialization of scientific results**

To enhance the Institute's internal capacities, and thereby contribute to increased scientific excellence and improved commercialization of research results, the focus in the coming period will be on:

- Implementing training programs for staff,
- Improving the Institute's management system,
- Digitalizing work processes within the Institute,
- Enhancing and maintaining the functionality of the Institute's core assets and infrastructure,
- Improving collaboration with relevant stakeholders, and
- Strengthening promotional activities.

In accordance with these strategic goals, specific objectives, necessary project initiatives, and performance indicators have been defined.

The scientific research work at the Institute encompasses activities aimed at the development of new products intended to improve the nutrition and health of both humans and animals. This work includes the application of modern technologies, as well as the development of process and analytical techniques used to examine and assess the quality of developed products. Research focus is also directed at exploiting the potential of indigenous and traditional raw materials and products. Circularity and efficiency in the use of bio-resources are fundamental concepts that focus on the optimal and responsible use of natural resources, as well as minimizing waste and its negative impact on the environment. Innovation ecosystems and addressing societal challenges represent approaches focused on the development of new and the improvement of existing ecosystems in which innovations and technologies are used to solve complex societal problems and challenges.

By analyzing the activities within the Institute's scientific research work, **five key research directions** have been defined:

1. **Development of Products for the Improvement of Nutrition and Health of Humans and Animals**
 - *Biotechnology-Based Products*
 - *Products for Special Consumer Categories*
 - Physically active individuals
 - Food for the prevention of chronic non-communicable diseases
 - Nutrition for children, the elderly, and women
 - Food for socially vulnerable categories
 - Personalized nutrition
 - *Isolation, Development, and Characterization of Functional Ingredients*
 - Profiling of bioactive compounds (analytics)
 - Technofunctionality (rheology, texture)
 - Bioactivity (bioavailability and bioaccessibility)
 - *Product Reformulation*
 - Fat replacers
 - Reducing sugar and/or salt content
 - Complementary proteins
 - Products with “clean labels”
 - *Animal Product Analogues*
 - Plant-based meat analogues
 - Plant-based milk analogues
 - *Functional Animal Feed Products*

2. **Application of Modern Technologies and Development of Process and Analytical Techniques**
 - *Application of Modern Technologies*
 - Extrusion
 - Fruit and vegetable storage
 - 3D food printing
 - Packaging and packaging materials for food products
 - *Development of Process Techniques*
 - Protein isolation
 - Green extraction methods
 - Removal of anti-nutrients
 - Techniques assisted by ultrasound, microwaves, and pressure solvents
 - Encapsulation
 - Coating
 - Lyophilization
 - Vacuum evaporation
 - *Development of Analytical Methods*
 - Multiresidual methods for food safety (pesticides and mycotoxins)
 - Omics techniques (transcriptomics, metabolomics, proteomics)
 - Determining and extending product shelf life
3. **Exploiting the Potential of Indigenous and Traditional Raw Materials, Processes, and Products**
 - Indigenous and ancient varieties of plant crops and animal breeds
 - Traditional food production methods
 - Quality and safety of traditional products
 - Geographical origin labels
4. **Circularity and Efficiency in the Use of Bio-Resources**
 - Valorization of by-products from agriculture and the food industry
 - Treatment of wastewater from the food industry
 - Alternative and underutilized raw materials
 - Bio-refinery processes
5. **Innovation Ecosystems and Addressing Societal Challenges**
 - Food security and safety
 - Value chain analysis
 - Sensory food analysis and consumer science
 - Socio-economic aspects of food technologies and co-creation

In order to achieve **increased scientific excellence** in the aforementioned areas, which will contribute to the positioning and exclusivity of the Institute in the field of food technologies



in Southeast Europe and strengthen partnerships for cooperation at the EU level during the specified period, the focus will be on:

- Targeted management of scientific personnel,
- Increasing the number of submitted research projects, and
- Improving the quality of scientific output.

In accordance with this strategic goal, specific objectives, project initiatives, and indicators have been defined.

Improved commercialization of scientific results is a strategic goal of the Institute, aimed at ensuring societal benefits through the aforementioned research areas, as well as contributing to the financial stability of the Institute. The focus in the coming period will be on:

- Increasing the level of commercialization of innovations,
- Enhancing cooperation with the industry,
- Expanding the scope of activities at FINSLab,
- Increasing the utilization of pilot plants for commercial purposes, and
- Implementing educational programs for producers and consumers.

In accordance with this strategic goal, specific objectives, project initiatives, and performance indicators have been defined.