

**STRATEGIC RESEARCH PLAN**

**OF**

**AGRICULTURE UNIVERSITY OF TIRANA**

**(2016-2025)**

Tirana, June, 2016

# 1. BACKGROUND

The research is one of the main missions of the University and together with the technology transfer and innovation are essential factors for an economy which is orientated towards knowledge. According to definition of the Law on Higher Education, the Universities have as their fundamental mission the education, research, development and knowledge and technology transfer as well.

The Draft Strategy for Research in Albania for the period time of 2016 - 2021, notes that: "The European Union (EU), where Albania aspires to join, has set clear objectives related to research and innovation to make the EU the most competitive economy in the world". Albania, as well as other candidate and associated countries of Western Balkan, is lagging behind in these developments due to the need to focus on finding the "foundations" for a sustained growth (education, legal frameworks, poverty reduction etc). However, in Albania the time has come to invest more in the innovation and transfer of knowledge, in order to realize our long-term development goals.

The research is an integral part of the academic role and a key factor in academic promotion. Teaching at the University is supported by scientific research. The quality of education programs and academic scientific research strongly determine the reputation and prestige of Higher Education Institutions. University activities has traditionally been oriented towards three missions, which consists in learning, research and service/extension for the community. Members of the academic staff of the universities ought to be teachers, researchers and service-oriented professionals.

Agricultural University of Tirana (AUT) conducts research and education activities, although the focus and balance of these activities presents variation. The University also is trying to step up the technology transfer to business and other organizations. Research and the education are linked to knowledges. The main function of research is to produce new knowledges, while the main function of education is to develop and disseminate knowledges in society. Nowday, it is becoming clear the need to use the research as a way to improve the teaching and learning of knowledge.

Education and scientific research are the main activities carried out at the Agricultural University of Tirana. The aim of AUT, as the only center of education and research in the field of agricultural science, is the realization of innovative teaching and research activities. It is entirely possible to occurs thanks to dedicated professional academic staff, as well as appropriate laboratory infrastructures available to AUT, that is continuously strengthened by means of various national and international projects.

The principles on which AUT will be supported to achieve its objectives are those recommended by ERA Principles as follows:

1. More effective scientific research facing increasing competition at national and international level through (i) maximizing the efficiency of public money invested, (ii) the competition in international programs promoting the competitiveness of researchers and improving the funding and (iii) the quality evaluation from organizations/bodies/international institutions that rely on international standard;
2. The optimization of international cooperation in terms of competition by strengthening relation with neighboring countries and regional programs;
3. Opening the market for researchers to facilitate the mobility, training and career;
4. and through dissemination, exchange and knowledge transfer;

The research work at AUT is conducted in Departments and Research Teaching Groups-RTG which are parts of each Faculty. At the university level, Scientific Research Office pursues, coordinates, assists and reports realization of scientific research work.

## **2. LEGAL CONTEXT FOR SCIENTIFIC RESEARCH**

### **2.1 The legal framework for research**

The research in Albanian Universities, since 1999, is regulated by Laws on Higher Education (1999, 2007, 2015) and the Strategies for Scientific Research (2000-2015 and 2016-2025). In 2009, it is adopted the Strategy of Scientific Research, Technology Transfer and Innovation 2009-2015 through Ministerial Council Decision No. 863 dated 29/07/2009 (Official Paper No. 137, 2009); Decision No. 1007 dated 08/10/2009 "For a change in Decision No. 863 dated 29/07/2009 "Approval of the Strategy of Scientific Research, Technology Transfer and Innovation 2009-2015" (Official Paper No. 155, 2009).

The aims of this strategy were: (i) to increase the public spending on research up to 0.6% of GDP in 2015, (ii) increase the gross spending for research-development (R&D) from foreign sources of EU up to 40% of total funds, (iii) establishment of 4-5 centers of excellence in research-development and (iv) the doubling of the number of researchers, through the brain gain and the training of new researchers. The above objectives were not fully implemented and the causes are being analyzed in the context of the preparation of Scientific Research Strategy for the years 2016-2025.

### **2.2 The AUT legislation Context**

Currently, AUT established in 1951, it consists of 5 faculties and 22 departments. During the last two decades, there have been positive changes in AUT related to the structure, focus and objectives of the research. Starting from the period 2000 to 2015 in academic structure of the Agricultural University of Tirana have been some changes, which brought the establishment of main and basic units able to issue diplomas as follows:

1. Faculty of Biotechnology and Food Technology (2003);
2. Department of Agro-Environmental and Ecology (2001);
3. Department of Aquaculture (xxx)
4. Department of Rural Development and Tourism (xxx);
5. Department of Informatics (xxx);

The first two units and their respective programs are supported with expertise and financially by EU funds through the TEMPUS program. According to the Law on Higher Education (2007) and Strategy of Scientific Research (2009) many of Research

Institutes that belonged to the Ministry of Agriculture and Food (Institute of Plants Protection, Fisheries, Food, Forest, Zoo-Technics) became part of the AUT structures (2009) as the basic unit or part of teaching research groups at the Faculty of Agriculture and Environment, and the Faculty of Biotechnology and Food, empowering departments with researchers and laboratory infrastructure.

According to the Law and the Statute of AUT's the scientific research is carried out in departments, coordinated by the office of the vice/dean of research, while at the university level the research activities are coordinated and directed by the Division of Scientific Research consisting of three offices: Office of the Promotion of Academic Titles and Degrees, Research & Scientific Cooperation Office and the Projects Management Office. In addition, at the AUT other offices support research (Business Relations Office, Career and Public Relations Office).

### **3. THE STATE OF RESEARCH IN AUT**

The object of our research work at AUT is focused on: conducting of applied research, innovation and technology transfer and being a leader and reference research center at national and regional level. We aimed to actively collaborate in solving the dilemmas of national development in the field of policies and agricultural technologies, development of agro-industries, environment, forestry and food security based on European best practices. Furthermore, we guarantee a stable educational environment, with a dynamic curriculum to enable students with analytic, logical and communication skills and appropriate for a changing dynamic environment. Research should serve effective teaching, in order the student to be able to carry out investigations, analyse and solve every day problems using knowledges and skills gained in their studies. To promote a culture of research among students, it is important to help and support them in developing research capabilities.

It is the duty of the University:

1. To guarantee students a rigorous innovative education in order to equip them with sustainable skills, analytical, decision-making and entrepreneurship to succeed both in education and employment field;
2. To accomplish an intensive analysis of curricula to give students what is more attractive, facing the challenges of the time. To guarantee students other programs and opportunities that fulfill the students and employers needs, as well as the application of the research;
3. To enable the research expertise to extends to all levels of study.

The research profile at AUT has a platform that extends across a wide range of disciplines, supported by T&RG, former research institutes, now an integral part of AUT, doctoral students. AUT is currently facing a number of challenges and dilemmas of agriculture development in general. Therefore, we must find the best way of organizing to bring research to modern standards levels. At the same time, in order to be more attractive to real economy, the research topics should response to the scientific research strategy of our country. AUT should play a leadership role in the technological development and scientific research in the fields of agriculture, economy, veterinary, agro-environment, forests etc. AUT should return to an institution to perform trainings, expertise and should be part of the agricultural policy making. For this we aim:

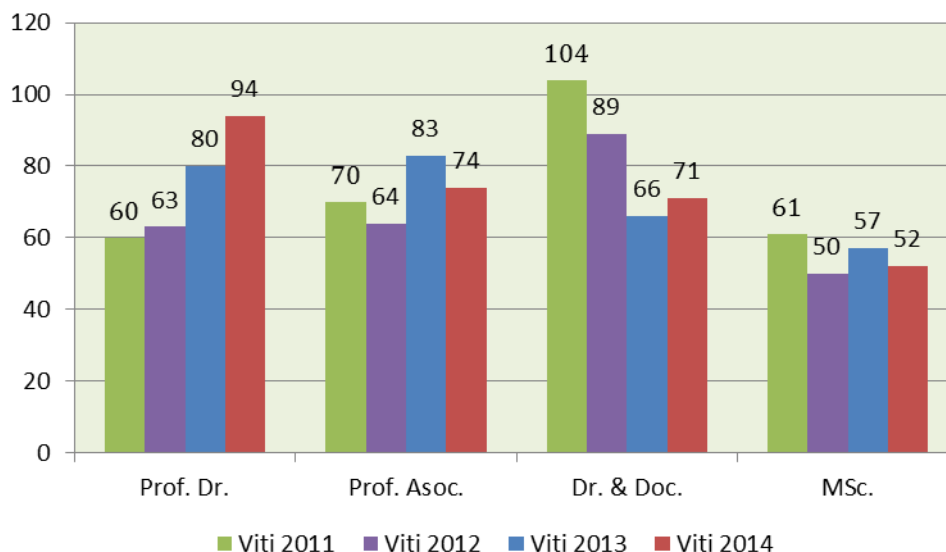
- To be improved in order to enhance the research quality;
- To rise the international research profile;
- To encourage multi-disciplinary and interdisciplinary research;
- To promote the technology transfer.

An important task of AUT, regarding to the research and development, is promoting and supporting the knowledge and technology transfer from the university towards the business world. The university should also be included in mutual cooperation relationships with other universities (University of Tirana, University of Korça, Polytechnic University, etc.) and private and public organizations. It is worth emphasizing that cooperation with other universities in the country are being strengthened as a result of involvement in joint projects such as Tempus or Erasmus Mundus (ongoing Erasmus +). This cooperation is more pronounced at the level of teaching, curriculum design or joint study programs. This cooperation is not satisfactory for scientific research for reasons we will explain below. Follow up is presented the research situation in AUT until the year 2015.

## 1.1 HUMAN RESOURCES AND STRUCTURE OF RESEARCH

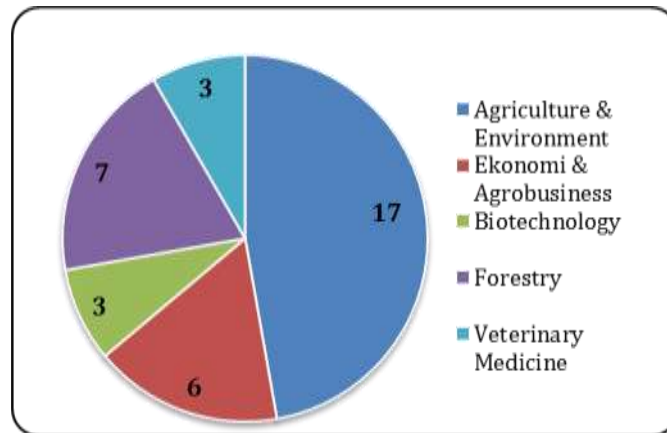
### 1.1.1 Human resources

AUT academic staff involved in teaching and research process consists of 291 academic staff with permanent contract. Figure 2.1 shows the composition of the academic staff in the period 2011-2014.



**Fig 2.1: Total number of employees at AUT in the period 2011-2014**

The figure above shows that "Professor" group in 2014 represents approximately 1/3 of the staff and together with "Associated Professor" constitutes about 60% of total staff. Professor's category from 2011 to 2014 has increased approximately 50%. Almost 100% of the staff has realized short-term mobilities (1-3 months) in the corresponding departments of the EU countries with the financial support of the TEMPUS, ERASMUS MUNDUS and ERASMUS +program (for the period 1994-2014). The number of lecturers completed doctoral studies abroad is presented in the figure below.



**Figure xxx. The number of staff completed the doctoral studies abroad (in the EU)**

Approximately 20% of the member staff at the Faculty of Agriculture and Environment and Forestry Sciences have completed doctoral studies abroad while this percentage for the Faculties of Economics and Agribusiness, Biotechnology and Veterinary Medicine is 8, 10 and 6% respectively. Approximately 45% of them have completed doctoral studies in Italy, Germany (25%), Spain (10%), France (10%) and 10% in other countries. Master studies are completed abroad by 35% of member staff in USA, Germany, Italy, Spain and Greece.

The AUT member staff have good language competences, the majority uses English language (over 80% of staff), while some German and French. Many of them use good or very good Italian. The linguistic competence is the basis for carrying out mobilities exchanges and the best way for internationalization of the University.

### 1.1.2 The basic research structure

The basic research unit are Research-Teaching Group. This structure consists of the related modules programmes and scientific research fields and it is composed of 5 or



more members staff of the same department. The organization, procedures and the decision-making is done in departments while the T&RG propose themes/axes of research, topics of Master's Program students, doctoral and planning of Science Lab Supplies. The T&RG are presented below, according to faculties and departments of AUT, with respective experimental activity and the problems associated the scientific research.

### *Faculty of Agriculture and Environment-FAE*

In this Faculty operate 19 Teaching -Research groups, belonging to six departments. These groups co-ordinate scientific research activity within and outside the department.

Research is focused on the following topics:

1. Sustainable agricultural development in order to increase the welfare of farmers and the Quality Assurance & Food Safety;
2. Adoption of new production technologies and orientation towards sustainable agricultural and livestock production;
3. Rational and effective use of inputs in agriculture;
4. Environmental protection and the environmental rehabilitation of degraded ecosystems;
5. Spatial planning and the management of natural resources;
6. Improvement of the food safety;
7. The use of clean technologies, bioenergy and organic production;
8. Improvement of cultivars/indigenous breeds.

In each academic year is determined that research has remained fragmented again. This appears in the selection of thesis topics at all study levels, Master of Science, Professional Master. In this way, scientific researches in most cases are superficial, sporadic and often unknown to the department and not bring real contribution in order to solve the daily problem, currently facing the Albanian agriculture. Some of reasons for the occurrence of this phenomenon can be mentioned as follow:

- Lack of declaration and recognition of the development priorities in the sectors of agriculture, environment and farming;
- Lack of coordination of scientific research between teaching and research groups within and outside the department;
- Lack of financial motivation of academic staff;

- Lack of responsibility of the T&RG for Diploma themes (all categories of them) and other problems;

This situation should be resolved by transferring responsibilities to the research base unit "T&RG". Making public the agriculture development priorities whether medium or long term will bring to a better coordination of scientific activities between teaching and research groups. Creation of the Department of Aquaculture and Fisheries is an innovation that should be mentioned, aiming to respond to the demands of this sector and filling the gap that Albania has in the development of aquaculture and fisheries on scientific basis.

### *Faculty of Economics and Agribusiness-FEA*

The academic staff of FEA's is organized in twelve T&RG, covering important aspects of economy and management (economics, statistics, agricultural policies, rural development, management, marketing, management of rural tourism, rural sociology, finance, accounting, mathematics, computing). Considering the above composition of the T&RGs, the scientific research is an important activity of the academic staff in FEA. Thus, the scientific research has been focused on the priority research areas as follows:

- The strategies and policies of integrated rural development.
- The regional developments and the policies of regional and inter-regional integration.
- The agriculture policy and the analysis of their assessment.
- The strategies for inputs and outputs managing in agriculture.
- The strategies and policies of agribusiness management.
- The strategies and policies on integration of farmers in markets.
- The management & marketing problems in the value chain.
- The strategies and policies of financing private enterprises for their sustainable development.
- The strategies and policies for the development of rural tourism.
- The management of strategies in agriculture inputs and outputs.
- The policies of management of agrobusiness companies.
- The alternatives of cooperation in Albanian agriculture.
- The strategies and policies for the development of rural tourism.
- The problems of marketing in the value chain.

It is visible the fact that FEA has a complete compliance between priorities of scientific research at the faculty level and the activities of the T&RGs and this should be assessed as a positive phenomenon. Considering the problems in general associated with T&RGs, academic staff and research priority areas we may conclude:

- Considering the general level of the academic staff qualification, it can be concluded that there are all the possibilities for further improvements in scientific research.
- The operation of the T&RGs in academic and research activities also remains a problem.

We judge that the weight of scientific research should be increased, considering it as one of the main pillars of the faculty activity.

### ***Faculty of Biotechnology and Food-FBF***

The Faculty of Biotechnology and Food (FBF) during the year 2014 has worked to consolidate the scientific research activity in the several scientific research directions in T&RGs. FBF has 7 T&RGs with consolidated scientific themes. The faculty of Biotechnology and Food (FBF) during academic year 2014-2015 was organized in three departments, the Department of Agro-Food Technology, the Department of Food Science and Biotechnology and the Department of Chemistry and Food Research Centre, organized into 7 Teaching & Research groups as it follows:

- Agrifood Technology
- Engineering Process for Food Processing
- Microbiology and Food Biotechnology
- Organic Chemistry
- Inorganic Chemistry
- Applied Molecular Biology in Foods
- Naturalness and Food Technical Standards

The scientific research in FBF is focused on "The study of technological and physical-chemical parameters of raw materials and food products, in terms of continuous improvement of quality and food safety".

**The Agrifood Technology Group** aims to study the enological potentials of indigenous grape varieties, alcoholic distillates production of high quality; relationship between indigenous varieties of olive oil and its quality and determination of their profiles, technological studies for fruits and vegetables production, the food sensorial evaluation, food safety management.

**The Food Sciences Group** focuses on the study regarding the functional properties of food components (for the purposes of processing, storage and feeding).

**The Group of Microbiology and Food Biotechnology**, focuses on the study of production biotechnological parameters and storage of food products, through the recognition and evaluation of physico-chemical parameters and microbial processes as well as microbial analyzing of various food products for the presence of various pathogens microorganisms in these products.

**The Group of Process Engineering of Food Processing** performs scientific research in two areas:

- Joint studies with the Department of Industrial Chemistry in FSN on processing of agricultural and forest waste in bioreactors for biogas production.
- Finding solution to the problems for designing and improvement of different lines and processes of food industry (projections of heat exchangers and pasteurizers device for the dairy industry).

**The Group of Biology and Nature Conservation** study the integrated assessment of biological resources in terrestrial and aquatic environments, the protection of agriculture environment for a qualitative cultivation of raw materials used in the agro-food industry. The activity of this group is carried out in the Laboratory of Biology, IFSV and other laboratories in the country.

### ***Faculty of Forest Science - FFS***

The FFS performs scientific research activities in the field of forestry and wood technology. Based on the wide range of problems, dictated by the complex development of forest sector and pastures in our country as well as the growing development of the wood industry, the attention of the academic staff of FFS is directed

at those areas that are considered modern even for other countries to Europe, as follows:

- The study of aquatic vegetation surfaces in coastal areas of the country.
- The development of the forest sector in historical background.
- Development of inventory and monitoring methods for medicinal plants.
- The dendroecological study of forest species grown in extreme stationary conditions.
- Increasing the capacity of teaching and research in the fields of forest policy and economic development.
- Micro and macroscopic, physical properties, mechanical technology of wood processing and wood-based materials.
- Assessment of wood defects and their impact on the quality of products.
- The technology of mechanical wood processing.
- Conservation, wood preservation and wood artworks restoration.
- Study of technological parameters of wood polishing and gluing.

#### Faculty of Veterinary Medicine – FVM

The FVM has four departments and three of them are specific and unique at the university and country level: Department of Functional Subjects, Department of Veterinary Public Health and the Department of Clinical Subjects. The Department of Functional Subjects consists of two research-teaching groups and generally conducts research in basic areas of Veterinary Medicine such as:

- Comparative anatomy;
- Metabolic problems in the small and large animals ;
- Evaluation of heavy metal contents and other polluting substances in the animal tissues and blood;

The Department of Veterinary Public Health has three teaching and research groups focused on:

- Bio-pathology and zoonoses;
- Food safety and public health;
- Risk reduction analysis and food safety assessment;
- Environmental conditions and animal herd health management.

The Department of Clinical Subjects consists of three research-teaching groups and conducts research in the following areas:

- Pathologies of ruminants and surgery;
- Reproductive pathologies of domestic animals;
- Pathologies of monogastric animals.

The research fields at FVM in 2015 are summarized as follows:

- Surveillance and Management of Zoonotic Disease Outbreaks;
- New technologies in animal reproduction;
- Contemporary therapeutic applications for the treatment of animal diseases in individual and herd level;
- Study of normal biochemical and hematological indicators in farm producing animals, poultry and fish and the impact of various environmental factors.

According to the Law on Higher Education (2007) the T&RG is considered the basic core of scientific research. Besides the educational process, the task of T&RG is a better coordination of scientific research inside and outside the department. T&RG due to poor motivation and funding, lack of regulations and job descriptions, increased competences of Departments, as well as ways of reporting from the Department - Faculty - Rector have overshadowed the role of T&RG. Starting from 2012, the heads of T&RGs are paid for their duties and this measure has been taken to increase their level of responsibility. Although there is a growing role of T&RG in the AUT, problems in their particular role that relates to the implementation of scientific research were noted.

The main problems are:

- **R&TG leaders seem to be still relatively formal;**
- **Lack of the described responsibility tasks of R&TG leader described on University and Faculties documents (Statutes and Regulations);**
- **Scientific research is not seen as one of the basic directions of the R&TG activity;**
- **Lack of an action plan for each R&TG;**
- **Research platform developed by Heads of R&TG often seems formal;**
- **There are many cases that doctoral students supervised by academic staff of the same R&TG are involved in unrelated research topics, or complementary to each other.**

## 2. RESEARCH INFRASTRUCTURE

### 2.1 Scientific Laboratories

In different departments of AUT a significant number of scientific laboratories have been set up. Many of them can be considered as full complete laboratory and a scientific research direction can be carried out completely. The establishment of these Laboratories was made possible by different funding programmes such as TEMPUS, WB, GTZ, CBA, NPRD (ARTI), direct government funding. We are presenting a brief report on some of the scientific laboratories, as well as didactic, in the respective faculties.

At **FAE** these labs are in use (connected with the department): Laboratory of Biotechnology, Biochemistry, Environmental Science Laboratory, Laboratory of Genetics and Biotechnology, Chemistry and Physiology of Animal Nutrition, etc. It should be hailed the work done by the Department of Plants Production for the full operation of the two laboratories, the Seeds Testing Laboratory and Plant Biotechnology Laboratory.

**Animal Biotechnology Laboratory** at the Department of Animal Product serves for the realization of scientific research by doctoral students with the main objective the study of genetic diversity.

The research infrastructure of Aquaculture and Fisheries department consists of Aquaculture and Fisheries Laboratory in Durres and Tapiza didactic unit. **Aquaculture and Fisheries Laboratory** in Durres is fully operational for the implementation of scientific research. During the year 2014 the laboratory has participated in a number of projects financed by the Albanian institutions and international donors, in the framework of international projects funded by FAO and Adriamed MEDITS (EC). **Aquaculture and Fisheries Laboratory** due to this funding is regarded as the reference institution and covers the data processing for small pelagic fish and demersal fish.

**The didactic experimental Unit in Tapiza** covers experimental teaching practices for students of fisheries management program and experiments of Diploma thesis of Master of Science and Doctoral Programs in the field of aquaculture.

**Bacteriology and Mycology Laboratory** at the Plant Protection Laboratory under the Plant Protection Department operates for the implementation of the plant protection

service based on law no. 9908, dated 24.04.2008. and additions to the Law no. 9362, dt. 24.03.2005 "On plant protection service". Based on the above law, Article 3, paragraph 1, letter c, the Department of Plant Protection is defined as one of the components of the plant protection service. Article 5, paragraph 1 of the above law defines the diagnostic laboratory at the Department of Plant Protection (Mycology, Bacterology, Virology, Nematology and Ntomology) as Reference Laboratory unique in Albania. It serves as a reference point for the State for certification and permission of the trade of plants and seeds in the market. There has been voltage fluctuations in the electric supply system, and frequently interruptions of the water supply lasting several hours.

In the **Laboratory of Agro-Environment Science** during 2014 approximately 584 samples of soil, water, plants, sediment and fertilizer are analyzed, covering a total of 5133 indicators. Compared with 2013, there has been a increase of 40% of the number of indicators analyzed, enabling the contracting of performed services in a total value of 4,893,380 ALL. This amount is about 4 times higher than in 2013. During the year 2015 the receivable amount collected from monitoring the environmental indicators was about 12,700,000 ALL. Besides the workload and the amount of money given above there are carried out research activities for **23 doctoral students**, working independently in the laboratory.

The most important development of this laboratory in 2014 is the fact, at the end of September has completed all necessary procedures for obtaining the **Certificate of Accreditation**. The Science Laboratory of Environment successfully passed the final evaluation of the Accreditation Process and received the Certificate of Accreditation. This gives this laboratory, the status of the strongest and most credible environmental analysis in Albania.

**The Science Laboratory of Environment** is the first laboratory accredited in the Albania system of public universities and thus it will have a direct impact on the process of accreditation and ranking of this department in the near future. The laboratory meets the requirements of the Implementation Standard No. 17025 for managing the quality of the testing system.

A very positive development for the Department in 2014 was the signing of a very important service contract with third parties and specifically the contract with **Devoll Hydropower Company** with a value of approximately 4 million ALL for water quality monitoring. Along with this new contract, it has been renovated and continues



normally the Antea Cement Company contracts with a value of 900 000 ALL on the monitoring of wastewater from this Processing Unit.

This lab was equped with a special account number as well as a special NIPT number, thatwould make this laboratory more flexible and more motivating on its activity. The facts mentioned above in connection with signing of two very important contracts with foreign companies, makes this process more vital.

In the Department of Animal Product through the efforts of the relevant staff, the Genetics Laboratory has conducted scientific research works and contractual relations services for third parties. It realizes accurately the protocols procedure analysis, technical readiness of equipment, supplies and other laboratory tools, including chemical reagents and other accessories. A challenge for this department is putting into full operation the nutrition laboratory through activation of new doctoral students.

**The scientific research activity of FBF is** carried out on Olive oil laboratory, Fruits and Vegetables Laboratory, Alcoholic Drink Laboratory, Sensory Testing Laboratory and Food Research Center.

Faculty research topics responds to the directions of the research and technological development policy of the country in the field of food science, microbiology, food biotechnology and food safety quality. This activity is expressed through scientific themes of research groups, materialized in Diploma graduation themes in Master of Science and Doctoral Students Programs. Based on the new faculty study programs of three levels, there is an improve of the thematic directions of research by promoting this activity of faculty and academic staff in the field of biotechnology and food.

Scientific laboratory of food has deficiencies in equipment, reagents and base consumables in order to fulfill their duties according to covering competences. Financial funds taken this year was not sufficient to realize all the necessary requests, but at least provided the most necessary reagents and chemicals needed.

**Scientific Laboratory of Chemistry** requires the completion of laboratory infrastructure (such as plumbing installations and aspiration) and basic materials (reagents, consumables) and equipment.

Above mentioned laboratories and other such as cereales laboratory, laboratory of storage and packaging of food products, sensory analysis laboratory **are functional** but further improvement on infrastructure is necessary. The **FFS** performed the scientific research activity in the field of forestry and wood technology. Several laboratories belong to the departments of this faculty such as Botany laboratory, Silviculture laboratory, Geodesy laboratory, Wood study and material testing laboratory, Woodworking laboratory etc. There, in addition to didactic process, the experimental testing for scientific research purposes are also performed.

**Laboratory of Food Safety of Animal Origin** at FVM is set up in the framework of the program for Quality and Equality in Education (QEE). It is equipped with devices that are dedicated to analytic control of food with animal origin such as autoclaves, centrifuges, PCR device, distilled water device, Milkoscan, thermostat and consumables as well. The laboratory was established according to contemporary parameters ensuring also the microclimate conditions.

**Laboratory of infectious diseases.** It is equipped with necessary devices to perform analysis:

- Microbiological, mainly bacteriological (culture, subculture, culture staining)
- Serological (agglutinating tests and ELISA's system, i.e. direct, indirect immunological diagnosis)
- Molecular (conventional PCR)
- Western Blot (Western Blot)

**Although many laboratories as a very significant tool of research are setting up, again the level of research is not the one expected. Research can and should be improved because:**

- I. In AUT there are research staff qualified to organize and run scientific research works;**
- II. AUT's laboratories are equipped to satisfactory levels in general;**
- III. Strengthening of laboratories with equipment, chemicals and facilities is quite possible in the context of applied research projects in AUT but also with internal university funds;**

**IV. A large number of regularly doctoral students can actively become members of basic units for the implementation of their scientific research and services;**

**V. There have been financial and technical assistance opportunities through participation in mutual international projects and agreements.**

In the research analysis in each faculties, it is concluded that the research at AUT is not yet at a required level, and not only because of:

- R&TG are not functioning properly;
- the lack of infrastructure;
- the lack of supply with chemicals in continues order;
- the lack of various laboratory equipment due to deficiencies that can be avoided.

Conducting research requires continuous supply of scientific laboratories with specific and very costly chemicals and laboratory facilities. AUT operate in research projects funded sufficiently by ARTI, bilateral projects (Italy), EU projects and other donors. So a funding source for the provision of various chemicals or consumables must be the **scientific research projects**. Despite that, it is necessary that each faculty to define a certain amount of money for the purchase of chemicals and laboratory facilities, in order to follow the requirements of R&TG experiments.

The scientific laboratories showed difficulties in terms of putting on operation and efficient use different apparatus or equipments. This is the direct responsibility of the respective academic staff who continuously monitor in details the laboratories. If the departaments capacity and R&TG are not in accordance with laboratory bases that they dispose, or the research interests in this case does not match, it is recommended the lab equipments to be transferred to other academic units.

For more efficient use of all equipment, and thus for all scientific research laboratories, and for keeping them in working condition, it needs as soon as possible: the engagement of *technical and maintenance staff* at University level, available to respond to all needs of the aforementioned of equipment maintenance; or the sustained signed contracts with companies or individuals that provide maintenance services for laboratory apparatuses.

Another situation observed is costly duplication of equipment within the same faculty or university. This may be due to *lack of cooperation and coordination of research when ordering and buying equipment for laboratories in different faculties*. The lack of such cooperation has made the research to return into a practice almost individually. Certainly, research is costly and expensive, and therefore can not be allowed the luxury that scientific laboratories to operate in such away. Laboratories need to be open and to cooperate and mutually utilize each other's equipment.

In developed countries the research tends to move towards joining efforts and the creation of consortia with extremely broad basis. We surprisingly continue to work individually. Certainly, we seek to realized cooperation with foreign partners, but stangely, we appear "rigid" in cooperation between us. It is not reported yet any joint research between R&TG within the Departaments or between R&TG with nearby research topics.

Reports received from various faculties, generally have the form of "demands" for AUT's headquarter and the administration in general. Actually, we think that the time has come for putting fully in service the research laboratories. The budget provided by different projects, which are considerable in number, is sufficient to fulfill the laboratories with the necessary equipment or chemicals. For this reason it is recommended: Coordinators of projects and R&TG leaders should be more cautious in ordering equipments and/or facilities in frame work of different projects;

The ordered and purchased equipment must performed the full realization of analysis in laboratories and there should not be ordered equipment that do not comply each other's activities;

Head of the R&TG must take responsibility for the performance of the group and the financial expenditures;

It is imperative to start research work in scientific laboratories, even modest one;  
Necessarily, all the doctoral students, the most quantity of the analysis should performed inside the AUT.

### **2.1.2 Experimental Basis**

Fish Cultivation Centre of Tapiza

In the vicinity of the University, a complex of artificial lakes owned by the University (transferred from the former Fishery Institute), it serves the aquaculture students to perform their teaching practices. Aquaculture professionals and doctoral students are conducting their research in order to increase reproduction of freshwater fish. This center is considered as a very good natural laboratory for students of Aquaculture and Fisheries for all levels of study. There are many students who perform their "modest" diplomas for BSc thesis, even for those of Msc Program, regarding the problems of reproduction, nutrition and genetic improvement of fish freshwater as carp, amur etc.

### **Experimental Didactic Economy**

This experimental base, with an area of 134 ha of agricultural land, is situated only 5 km away from the University. At this facility, all field trials and other experimental studies are performed. This experimental economy is considered as a unique case for all universities in Albania and it remains the most powerful research field laboratory for several faculties as FAE, FVM and the FFS. In fact, it is a strong base that is not found in any of our country universities. This center is not currently performing its functions and consequently finding the modalities for an effective reorganization of direction is imperatively a necessity. EDE is a center when a series of experiments with agricultural cultivars or farm animals could be organize.

Taking the "certificate of ownership" for EDE, it guarantees continuity of this experimental field, but it must be used as well in the interest of research. EDE's unit should be seen important especially for the certification of seeds and forest, fruits seedlings; technological schemes for the cultivation of herbs and their financial and economic analysis. This will create more opportunities for scientific research studies but also for the added income or revenue.

### **The Mixed Food Producing Animal Farm**

For the needs and realization of research and clinical practice with the students of FVM, FAE, within the premises of the AUT, operates a mixed food producing animal farm consisting of cows, sheep, goats and bees. It's a small unit but very important to carry out some specific research such as balanced nutrition diet, hematological analysis, production disease in farm animals and bioenergy applications.

### 3. THE SCIENTIFIC RESEARCH ACTIVITY

The scientific research activity of the academic staff of AUT includes a range of activities, such as research projects, participation in conferences, symposiums, activities related to the staff qualification, research study and Doctoral and Master of Science Thesis Defense, scientific supervision, publishing of scientific paper, monographic and partial monographic published in international monographic series. Quite interesting is the commitment of academic staff in particular levels of scientific and academic qualification, providing rational solution of important problems of country's economic sectors, particularly the agriculture.

#### 3.1 Participation in Scientific Research Projects

In the last period, the AUT academic staff is engaged in many projects. The main source of research funding is the state budget and through various projects funded by national and international organizations. In the last academic years the member staff of AUT is engaged in several research national and international projects such as ARTI “National Programs of Research and Development”, Bilateral Cooperation Programme (Italy, Greece, Austria etc), international projects, projects funded by the World Bank, EU, IPA, Tempus JEP, Word Learning, DAAD. A significant number of projects are underway to be completed on due time. In total in AUT during 2014, 68 educational and research projects are in progress and a general overview is given in the following table.

**Table 4.1. Total projects completed or in progress in AUT during 2015**

No.	Faculty	Projects					Total
		NPRD (ARTI)	Bilateral	BE (Tempus, Erasmus, IPA)	FAO, PNUD	Others	
1	Faculty of Economy and Agrobusiness	2	-	10	1	5	18
2.	Faculty of Agriculture and Environment	5	4	19	5	1	34
3.	Faculty of Veterinary Medicine	2	2	-	-	-	4
4.	Faculty of Forestry Sciences	-	-	2	-	1	3
5.	Faculty of Biotechnology and Food	-	-	2	-	5	7
6.	Genetic Resources Centre	-	1	-	1	-	2
<b>Total</b>		<b>9</b>	<b>7</b>	<b>33</b>	<b>7</b>	<b>12</b>	<b>68</b>

## Summary information on research projects - FAE

In the last years at FAE, two important TEMPUS projects have been awarded, respectively to the Department of Plant Production and the Department of Agro-environment and Ecology, and is considered a major achievement which has made its contribution to the Faculty as in the provision of equipment for scientific research and improving the quality of teaching as well.

The data from the table above shows that in total there are 34 projects provided by the faculty, 12% of them are projects funded by the Albanian Government and 88% are bilateral and multilateral projects with foreign universities partners in the region and beyond. This indicates a serious work done by our academic staff and sustainable and continuous relationship of the faculty with our Western partners countries. Considering, the financing of scientific research by the Government will continue to be limited and getting funds from private companies in Albania is almost impossible, the efforts for international cooperation through the implementation of projects financed by the governments of other countries and international organizations and institutions should be considered a specific target for all departments.

Certainly *“Enchancing of Légumes Growing in Europe throught innovative breeding and Sustainable cropping” (FP7)*, represents a particular success, not only to the Department of Horticulture. Such a research program will constitute a very valuable experience. In this projects is included all academic staff and the majority of doctoral students being part of the Horticulture Department.

## Summary information on some of the research projects - FEA

During the year 2014 at this faculty, a total of 18 projects financed from EU funds through TEMPUS projects have been in progress, as well as in the framework of EU, IPA Funding and country institutions such as MADA, BESA Fund etc. A projects overview is given as follows:

- IPA: ADRIATIC FOOD and TOURISM: Innovating Gsmes
- EC: The impact of policy instruments on the farming systems in Albania
- TEMPUS: Regional Joint Doctoral Programme in Entrepreneurship and SME Management for Western Balkan Countries-DOCSMES
- TEMPUS: Developing knowledge about the information for lifelong learning and knowledge economy in the Western Balkan Countries

- BESA Fondation: Assessment of the potential for lending to farmers' economic areas of Lushnje - Fier - Berat
- EU: Market of capitals. Project of EU (realized on Stock Exchange of Turkey by the Academy of Banking in Belgium).
- BE: TEMPUS-JPHES project "Lifelong learning for sustainable agriculture in Alps-Danube-Adriatic Region - LifeADA"
- The Swedish National: Financial Management Authority: Develop a manual on Project Cycle Management. Trainer module procurement (PRAG)
- Senior-A, REC Sweden: Preparation of the Regional Conference for the initiative "Clean Albania 2014"
- Tempus: The impact of policy instruments on the farming systems in Albania
- EC: The impact of policy instruments on the farming systems in Albania
- GIZ-DANIDA: Support for Agriculture and Rural Development in disadvantaged areas
- European Commission through FAO: Support for Agriculture and Rural Development Strategy
- United Nations - Office of Evaluation: Evaluation of the impact of the operations of UNDP to achieve the Millennium Development Goals
- IPA programs: The Adriatic Olive -Grove (AOGRPSL) 245
- NPR&D (ARTI): Study and Analysis of Innovative Financing for Sustainable Forest Management in the South west Balkan", 2012-2014
- NPR&D (ARTI): National Programme for Research and Development: "Water and Energy". Develop strategy for effective use of forest biomass and agro-economic assessment
- Erasmus: Finance-Accounting (just started).

### **FBF, projects implemented as follows:**

- Adoption of Albanian standards of some foods groups with EU standards and Food Codex.
- The use of redox additives in flour of some wheat crops for rheological qualitative improvements properties of baking products.
- SeeCel project to promote the entrepreneurs initiative from the students.
- Agriculture abandonment land and bird Fishery Monitoring
- Fishery Monitoring
- "Design of the fruit drying process" and "Assessment of the "Aquila Liquori" winery wastewater discharge"
- "Some and Agronomic physico-chemical parameters in assesment of some soft wheat accessions from AUT fund".

In other faculties the number of projects is lower, it shows that these faculties should work more in having funds for scientific research from national and international competitive projects. In fact, more efforts should be undertaken to apply in the context of other programmes financed by the EU such as Horizon 2020, Erasmus Plus. It is noteworthy once again the Department of Horticulture which is part of the project



"Growing enhancing of légumes in Europe" through innovative breeding and Sustainable cropping" in the framework of the FP7 program. The efforts of researchers or academic staff to apply for projects should be commended, because as many projects selected, the more income will be for AUT, therefore as consequence more revenue for the scientific research.

The last two years are characterized by the involvement of doctoral students into research projects. But the performance of projects not always has been without problems and mainly because of insufficient funding problems. Certainly, doing research in conditions of such insufficient or almost sporadic financing it may not be easy. This is because the experiments should be set up at the right time and not only when funds are available.

AUT should influence at MES in such a way that the funds coming from various projects are delivered at the right time and as planned by the research project management. It is the responsibility of the project coordinator to report at the Office of Project, Scientific Research Office, Financial Office, ARTI and MES for the annual performance of the project. Such reports should be required to be submitted to the Department, as well as to the Vice/Deans for research in each faculty. Reporting has to do not only regarding the financial issues but also with scientific terms, i.e. activities carried out, the results obtained, their publications etc. A good example is the reporting of scientific activities and results obtained in frame work of programme funded by ARTI (National Programme for Research and Development). In fact, sometimes these reports have fictitious character, in terms of the analysis carried out and the scientific results obtained. There is no question the AUT get benefits, mainly equipment and chemicals through projects, but the research realization often are questioned. The specific objectives and the expected results at the moment of composing and application of the project are ambitious, but their real accomplishment is far from what is written.

Application, commitment and project management in the context of research work is characterized by the following problems:

- a. Research is carried out more spontaneously and made possible by individual efforts made by professors outside the university;**
- b. Lack of funds (granted for research by the University, for the faculties and departments although the latter are considered as the basic unit of teaching and research activities);**

**c. Department involvement in projects is still limited.**

**To improve this situation, we think that it would be necessary that the departments develop a number of projects and introduce them to potential financing institutions or organizations.**

### **3.2 Publications and participation in national and international conferences**

Staff members of AUT are doing strong efforts to participate in different scientific activities as a result of cooperation with other foreign research and scientific institutions. The research results are presented through publications of various articles within the country and also abroad, as well as through participation in national and international conferences. It is very noted that the publication activity of AUT researchers is increasing in the number of publications in reviewed international journals, as well as with impact factor (IF). Certainly, this is a moment to be positively evaluated because it shows that scientific research results, although still moderate, represent an interest and are becoming familiar to foreign readers. Factors contributing to this phenomenon are:

- **Involvement of academic staff in the scientific and academic qualifications and the increasing request in the Ministerial Council Decisions;**
- **The need to meet obligations of the law and regulations for graduation and promotion for academic titles;**
- **The growing trend of organizing conferences with international participation.**

In the table below are given the published papers in 2013 by the academic University staff.

**Table 4.2. Total publications for AUT in 2013**

No	Faculties	Scientific Articles					Mono-graphy	Books
		Inside Albania	Abroad	With Impact Factor (IF <sup>1</sup> )	Total	Ratio Article/ Pedagogue		
1	Faculty of Economy & Agribusines	23	63	19	86	<b>1.12</b>	<b>7</b>	<b>11</b>

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<sup>1</sup> IF sipas Thomson Reuters

2.	Faculty of Agriculture & Environment	<b>49</b>	<b>84</b>	<b>24</b>	133	<b>1.66</b>	<b>5</b>	<b>5</b>
3.	Faculty of Veterinary Medicine	<b>17</b>	<b>27</b>	<b>9</b>	53	<b>1.06</b>	-	-
4.	Faculty of Forestry Sciences	<b>1</b>	<b>12</b>	<b>3</b>	13	<b>0.37</b>	<b>3</b>	<b>1</b>
5.	Faculty of Biotechnology & Food	<b>9</b>	<b>20</b>	<b>2</b>	29	<b>1.12</b>	-	<b>2</b>
6.	Centre of Genetic Resources	<b>7</b>	<b>13</b>	<b>1</b>	20	<b>2.22</b>	<b>2</b>	-
<b>Total</b>		<b>106</b>	<b>219</b>	<b>58</b>	<b>334</b>	<b>1.24</b>	<b>17</b>	<b>19</b>

From the above table we can provide the following statistics:

The FEA have published 86 publications in total, or 1,12 articles/lecturer, and publications within the country are approximately 27%, publications abroad are 73% and publications in journals with impact factor are 22%.

FAE have 133 publications in total, or 1.66 articles/lecturer from which publications in the country are approximately 37%, publications abroad are 63% and publications in journals with impact factor 18%. So even during 2014 it is noted an increasing tendency to publish in journals with impact factor, which was 13% in 2013. This is also as a result of the request for qualified staff in accordance with the requirements of the law for postgraduate qualification in Higher Education institutions.

FVM has published 53 publications within the country and abroad, or 1.06 articles/lecturer. In percentage the publications in Albanian language represent roughly 32%, abroad 68% and about 17% of them were published in journals with Impact Factor (IF according to Thomson Ruters).

The FFS have published a total of 13 scientific articles; or 0.37 articles/lecturer. National publications account approximately 7%, publications abroad 93% and publications in journals with impact factor account approximately 21%.

FBF have 29 publications in the country and abroad, or 1.12 articles/lecturer. Publications within the country, represents approximately 31%, publications abroad represents 69% and publications in journals with impact factor represents approximately 7%.

Intensing and diversing is the activity of participation in conferences, symposiums, scientific congresses inside Albania and abroad (table below). As it can be seen from the

data, during 2014 there were a total of 505 presentations versus 471 presentations in 2013, out of which 148 in national conferences and 357 presentations in international conferences. There is a notable increasing compared to previous years, especially participation in international conferences.

**Table 4.3. Total conference participation of AUT during 2013**

No	Conferences		Faculties/Center					
			FEA	FAE	FMV	FFS	FBF	CGR
1	National	With proceeding	27	53	17	4	-	-
		Without proceeding	15	-	23	7	-	2
2	International	With proceeding	61	128	7	2	18	7
		Without proceeding	32	52	29	16	6	-
<b>Total</b>			<b>134</b>	<b>233</b>	<b>76</b>	<b>29</b>	<b>24</b>	<b>9</b>

It is worth noting that in almost all cases, the researchers from AUT cover by themselves the financial costs to participate in home and abroad conferences. The best and perhaps the only option to fund staff participation in the conference are scientific research projects, the same practice used from many different international universities.

Last year FEA has organized an international conference, which focused on two very important issues and where participation through presentations and posters was significantly large. The conference "The impact of policy instruments on the farming systems in Albania" was supported by the European Commission (EC) Joint Research Centre (JRC). Thus, in the recent years have been organized five international conferences and respectively:

- In 2009 a conference with the theme: "Farm efficiency and vertical integration of stakeholders, as increased competitiveness factors. The role of private and public actors" was organized.
- In 2010 a conference with the theme: "Globalization and its effects on Albanian Agriculture & Agri-food Sector" was organized.
- In 2011, a conference with the theme: "Promoting agricultural development in Albania through better use of agricultural resources" was organized.
- In June 2012 a conference with the theme: "Efficiency & Production competitiveness in agri-business enterprises" was organized.

- In June 2013, in collaboration with FEA / UT and other stakeholders the conference with the theme: "Good governance in transition Countries" was organized.

FBF in 2014 has organized the international conference "Biotechnology in Agriculture", 150 scientific papers from 16 different European countries were presented.

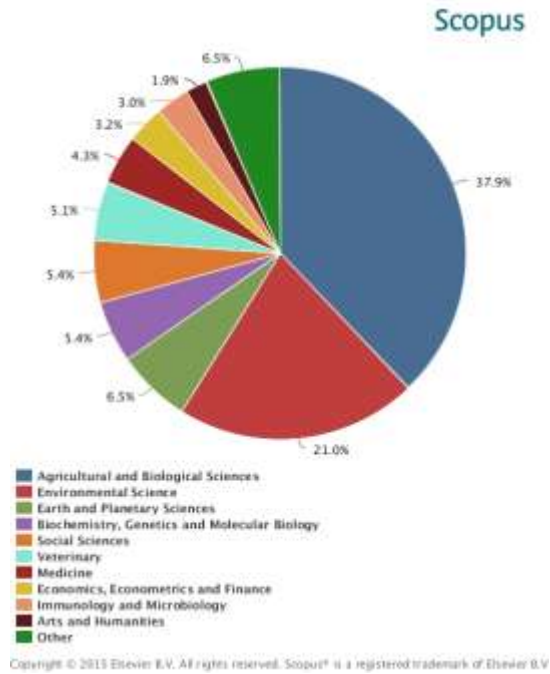
FAE has organized three international conference in the last three years:

1. "Green Energy and Environmental Sciences in Albania", 2014, about 70 articles from local and foreign authors were presented.
2. "On Soil", in 2015 in which participated researchers from 18 European countries, Canada and USA. The number of presentations (oral & poster) was around 190.
3. Terra Madre Balkans 2016 "*Putting Farmers first*" was attended by 350 researchers from 13 countries, mainly from Balkan countries and where 18 oral papers (foreign and domestic researchers) were presented.

### **3.3 Evaluation according to the "international metric"**

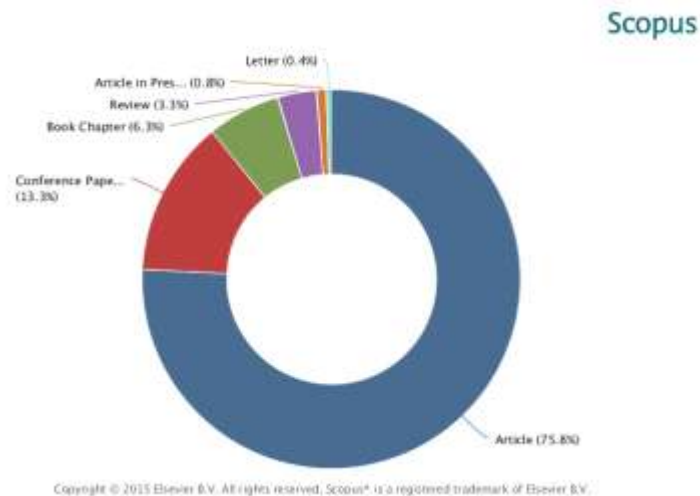
During 2013, based on the analyzes and reports of scientific work in several departments in the FAE, began to be used the international assessment and ranking of the authors that published scientific articles by using official and not official software. It is believed that this evaluation method (publication per year, total cited and cited per year) is more correct on general overview maintaining at least a principle often debated in Albania, placing the researchers in equal positions in a certain program. And even if the software is not "perfect" it is still extremely valuable for comparative analysis. From searches in SCOPUS for the dynamic, the structure of publications, and international relations of the University result that:

1. The publication structure for the last 20 years is dominated from Agriculture, Biology and Environment field. Publications in social sciences, economic and veterinary science reach approximately 5% of total publications (Graphic below)



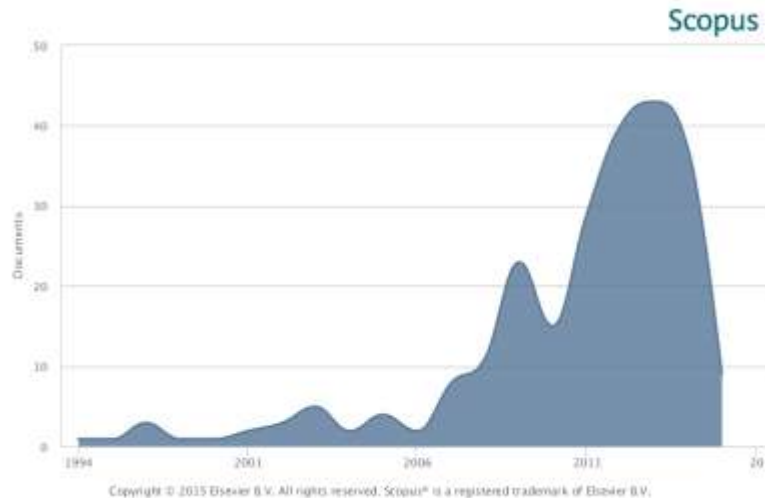
**Graphic xxx, Publishing structure in the last 20 years of the UBT staff (1994-2014)**

- About 76% of all publications are scientific papers and only 13% are the conference publications, while the review articles are only 3%.



**Graphicxxx. Nature of publications of AUT**

- Publication dynamics in the recent years is several times higher in the years 2013, 2012 compared with 2006.



**Graphic xxx. Number of publications for the period 1994-2013 (AUT)**

Problems in publications and conferences organization:

- Thematic of different authors refer or publish is sporadic or unknown to them as a research field. This refers to the desire and efforts of many staff members to meet in anticipation the criteria set for obtaining the academic titles.
- Number of publications in journals with IF remains low and even the value of IF only in few cases is higher than 1. The articles do not bring any particular contribution or innovation in the research field, or their value is only local one, it means that it does not exceed the borders of Albania. This is again an indicative of a modest research conducted at AUT. Doctoral study programs based on state standards, should normally have a positive impact on increasing the scientific research and as a consequence improving the quality of publications.
- Forced by the requirements of the Law and Regulations, the authors of scientific articles, often placed fictitious names, without contribution of any kind, based only on social relations and not on research merits. In Albania this phenomenon is widespread among all public universities and brings false results on research contribution, on the calculation of the exact number of IF, on the number of scientific articles, etc. There are cases when there are co-academic staff members who have no connection with the area in which the research is performed, or co-authored represents a large number of individuals (till 10 authors). This leads to a fictitious increase of "scientific activity".

- A positive step is the publication from AUT in national and international scientific journals or different conference proceeding for all members of the academic staff as well as online presentation in the official website of AUT of all doctoral presentations. But it must also publish all publications online *which is a requirement of the Senate decision at the meeting on May 15th 2012 and has not yet been realized. After placing the Telematics network project, all pedagogues have to upload in their own webpage the list of publications and participation in conferences.*

One of the decisions of the Senate meeting on May 15, 2012 state "To be considered as part of the publications, only those publications or participation in conferences belongings to fields of research that is covered from the department and the candidate who is looking for an academic title has to reflect own activities". AUT has also approved a regulation on the ethics of scientific research, which clearly states what is considered a violation of the code of ethics and measures to be taken.

This means that there are not missing instructions or directives to dispute and refuse any violations of ethics in research. It is suggested that for a standardization and unification of the scientific activity of all academic staff, international certified models to be used, which provide a full comprehensive overview activity for everyone. For this reason is proposed *Publish or Perish* or SCOPE model, which are programs that give opportunities to automatically provide information about the number of scientific articles or the number of citations per year. However, this does not resolve the problem of "trafficking names " or "unmerit authorship" problem that continuously strongly arises, even in this analysis.

We should seek even other paths to evaluate the scientific activity of the academic staff, such as being the first author of scientific publications, especially in cases where candidates are aiming promotion, or being the author of correspondence, when it comes for supervising a research (doctoral processes or research project).

### **3.4 The participation of students in research**

Last year students of Bachelor and Master of Science participate in research activity through Diploma thesis. The most estimated researches are presented on conferences organized by the University/Faculties and also on special conferences that they organize themselves in the student associations. Students Association of FEA for the last five years have organized 5 student conferences, event that will be presented with details below:



FEA Student Conferences are activities organized from students with the purpose of providing intelligent explanations for various problems affecting agriculture, agribusiness, agricultural policies, agro-tourism, finance, accounting, business information technology and other fields related to agriculture. Organizers of the event are third year's Bachelor and Master of Science students of the Faculty of Economics and Agribusiness.

The organization of these conferences passes through academic filters. Briefly, the stages of their organization are: the opening call for application, assessment of applications by the Conference Board, the announcement of the winners, handing over a preliminary version of the paper and giving suggestions, the delivery of the final version, the preparation of the summary of the articles/papers and development the proceedings of the conference. The Conference Board is a unit that performs the function of assessing the compliance of the applications with the conference central themes and the determination of the Evaluation Commission of best articles.

This board is composed of 3 students and 2 pedagogue. The Conference Board announces the criteria to be met for inclusion in a such activity, on the basis of which is made also the articles filtering. Most of the criterias are related to academic writing. A very special element is JEL classification. Students should classify their works accordingly to the JEL methodology, which is also the international classification of academic research. Another Conference Board task is the preparation of a book with the students works, which is distributed to attendees and some copies are sent to the university library as well as publishing them on the website dedicated to this conference (<https://sites.google.com/a/ubt.edu.al/konferenca-studentore/>). The abstract book reflects all academic requirements.

A review of five conferences held by students are displayed in the following table. There, it is written the central theme, the number of published themes, the number of participating students, conference organization date and whether or not a book is published with the abstracts of the presentations.

Conference	Main Topics/Theme	Published Themes	No of participating students	Date of activity	Summery book
I	The Albanian economy facing the current development challenges	14	34	31/05/2012	Yes, 216 pages
II	The behavior of economic agents facing the current	21	65	12/06/2013	Yes, 287 pages

	development challenges - Students points of view				
III	The problems of integration of the Albanian economy on the support of the sustainable development - Students points of view	24	63	30/05/2014	Yes, 301 pages
IV	Analysis of the Albanian economy and the social development trend - Students points of view	24	63	05/06/2015	Yes, 268 pages
V	Albanian economy approach towards technology and innovation -Students points of view	15	39	03/06/2016	Yes, 181 fage

Agricultural University of Tirana strongly supports this activity believing that in this way evaluates student performance, enable them towards academic world requirements and educate a generation with the values of academic work ethics. It runs alongside the university's purpose regarding education, scientific research and knowledge transfer, according to the areas it covers.

### 3.5 Periodicals of AUT

The Journal "**Albanian Journal of Agricultural Sciences** " is a reviewed and official scientific journal of AUT with ISSN 2218-2020, which is published online four times on year and once as hardcopy at the end of the year. , The journal has an international editorial board for the assessment of received articles. During the year of 2014 on this magazine are published 60 articles, and can be noted that it is significantly increased interest of foreign authors for publication in this journal.

The journal is indexed in several important databases as DOAJ, AGRIS (FAO), CAB abstracts and Global Health, EBSCO and ProQuest database. In 2012 the journal received a value of coefficient of Copernicus Index of 5:19 and for the year 2014 a value of Copernicus Index of 71.16.

Another scientific journal is "**Economics and Agribusiness in Albanian**" which belongs to FEA. Considering the role and importance of the scientific research in the Faculty, as it is already known, in January 2010, was published the first issue of the

scientific journal of FEA's "Economics and Agribusiness" which is already involved in a series of scientific publications. In 2012 the journal "Economy and Agribusiness" was equipped with ISSN. Also it is applied for a listing with Copernicus index, which we hope to achieve soon. So far there are published 5 issues, from 2012 and ongoing journal issue will be published every 6 months. During 2013 were published two issues, respectively no. 6 and 7, with 15 articles for each edition. During 2014 were published two issues, respectively No. 8 and 9, with 28 articles.

## 4 RESEARCH THROUGH THE DOCTORAL DEGREE PROGRAM

Research at the University is realized mostly through doctoral program which was adopted from the Bologna Declaration for research in the European Area of Higher Education. At the doctoral level, students are expected to deeply engage in research activities and meet their goals. This means that they need to get acquainted and be familiar with modern scientific methods of research, whatever will be their discipline.

Based on Law no. 9741, dated 21.5.2007 "On Higher Education in the Republic of Albania", as amended, in AUT are opened Doctoral Study Programs, "Doctoral Degree Schools", which last at least 3 academic years and include 60 credits for organized theoretical studies. Doctoral Degree Schools has began operating since 2010 in all faculties of AUT. Since the academic year 2013 - 2014, the Doctoral Degree Schools were not opened in any of Public Higher Education institutions, due to the preparation of the new Law on Higher Education (2015).

Funding of Doctoral Study Programs in Albania until 2015 was mix (half the public budget and half from the doctoral candidate). The obligation of the doctoral student was about 3,500 euros and the same amount was the support of the University through the state budget. In the New Law of Higher Education (2015) funding will be fully from university projects, Albanian government projects and state grants. On the other hand the doctoral system was almost part-time, students were involved in doctoral studies without work interruption. The new law transforms the doctoral preparation system, turning it to full-time studies at the Departments and TRG-s.

The following table provides information on registered doctoral students and those who defended the Doctoral Thesis during 2014. Currently in AUT there is a significant number of doctoral students, which is positive in terms of the high number of involvement in these studies, but on the other hand it is accompanied by an inflation and inadequate quality level.

**Table 5.1. Total number of Doctoral Students enrollment according to study areas and directions in AUT**

No.	Faculty Study area/ Direction	No. Doctoral Students	No. Doctoral Students graduated during 2014
1	Faculty of Economics and Agrobusiness	137	13
2.	Faculty of Agriculture and Environment	142	8
3.	Faculty of Veterinary Medicine	43	5
4.	Faculty of Forestry Sciences	28	6

5.	Faculty of Biotechnologies and Food	22	5
<b>Total</b>		<b>372</b>	<b>37</b>

The number of doctoral students between faculties is unbalanced. The number of the students for lecturer in FEA and FAE is close to 2.0 while for the other three faculties is close to 1.0 or two times lower. This is a result mainly from the lack of funding in some research areas (veterinary and forests) or few academic capacities (biotechnology and food).

### **Doctoral Co-Supervisor with a Foreign Partner**

As it is stimulated in the Law of Higher Education in AUT, there are Co-Supervisor at the FAE, FFS, FVR. These Co-Supervisors enable international experience and laboratories to be used by doctoral students. All doctorates carried out in partnership have been funded by AUT and a foreign university based on bilateral agreements, mostly with German, French and Italian universities. Their advantage is cost reduction and increased research efficiency. Doctorates carried out in international partnerships have been very successful in their output, especially in publications with very high IF. It is an increasing opportunity due to offers from European and bilateral programs.

**Internationalization** of Doctoral Study Program is very important. It should be found opportunities to support mobility at the doctoral level in the framework of inter-institutional cooperation. A good option would be that of excellence, in particular for academic staff. In the case of AUT, as well in other Albanian universities, mobilities are a good tool to train young researchers in disciplines or research fields when the capacities or infrastructure is lacking or is moderate. Internationalization of doctoral studies can be done through recruitment of foreign academic staff, organizing international workshops, conferences, development of joint international programs and co-supervision. Other tools can be used as well, such as online conferences, e-learning etc. AUT has a great opportunity thanks to the cooperation with CINECA and the Telematic network.

University should increase the level of research collaboration in doctoral program with industry, business sector, independent research organizations and public services. Creating strong links between the university and other sectors will support the efforts to strengthen knowledge transfer as a determining factor in innovation.

## 5 QUALITY ASSURANCE AND SWOT ANALYSIS

### 5.1 Quality Assurance in Research and Evaluation of Academic Staff Performance

Academic Career evaluation is realized through the acquisition of academic titles and doctoral research. The evaluation system for each level of staff and doctoral qualification is based on merits expressed in the quality of studies and other academic performances. As staff performance are considered all the scientific contributions expressed through publications and research used in the context of teaching. Staff is aimed to be: (i) able to face challenges and achieve the specific objectives of the institution, (ii) able to internationalize research and (iii) to carry out the research for society benefit.

Through research, particularly in the framework of doctoral program, AUT is aimed to:

- Promote a multi-disciplinary approach for scientific issues
- Prepare doctoral students to enter in the market, which includes establishing contacts and partnership with socioeconomic actors,
- Make doctoral students and their research more known and more attractive for the job market.
- Provide students with an area (nationally and internationally) to exchange expertise and experience.
- Pursue the professional integration of each student.
- Take part in international partnership
- Ensure international movements during and after the Doctoral Degree.

Quality assurance is carried out through security procedures and controls for the research institution. Research is assured from the following complete Legal and Institutional package:

- Law no. 9741, dated 21.5.2007, "On Higher Education in the Republic of Albania" (amended), section 69, 70, 71; (This is the old law)
- Law no. 80/2015, "On Higher Education and Scientific Research in Higher Education Institutions in the Republic of Albania"
- Ministreal Council Decision (MCD) no. 467, no. 18/07/2007 "On the Definition of the Criteria and Procedures for Scientific and Pedagogical Qualification of the Academic Staff";

- MCD no. 864 dated 5.12.2007 "Opening of Doctoral Studies Programs in HEIs" and defining the conditions to be met by the student to get a diploma for scientific degree "Doctor" (as amended);
- Regulations on Ethics in Research and Publishing Activities in AUT, (approved by the Academic Senate, 2014).

On Institutional level the quality system is ensured by:

- ✓ Scientific research groups, the base unit where ideas are formulated and the research is carried out;
- ✓ Department, the unit which ensures the legality and quality of research implementation;
- ✓ Dean office, together with the Vice/Dean of research and the Vice Dean for Doctoral Study Program, ensuring the implementation of legality, scientific cooperation, the proper operation of scientific units at the faculty level, etc;
- ✓ Rector office, together with the Vice/Rector of research issues, providing scientific cooperation, the operation of scientific units at the university and other institutions within and outside the country level, etc.
- ✓ Division of Scientific Research and Projects, at the Rector office, where is ensured the implementation of legality, research and publications quality and scientific cooperation.
- ✓ Regulation of Doctorate students admission criteria, Doctorate defending and procedures for scientific qualifications of the staff to get the title, "Associate Professor" and "Professor".

A number of procedures are required by departments for research activity, which ensures the implementation of the Law, the institution Statute and regulations, ensuring the transparency in front of all staff of the Department, as follows:

- Selection criteria of the candidates to be enroll on Doctoral Study Program such as the quality of the candidate, the capacity of member staff to supervise the research, the potential fundings;
- Defining research areas/axes;
- Determination of the Supervisor/Mentor of Doctorate candidates and providing necessary infrastructure;
- Discussion of research methodology for each research applicant;
- Monitoring of the research work through controls, scientific notes for each experiment;

- Reporting before the department (at least three times during their doctoral study) for each doctoral student;
- Final approval of the research and authorization through department vote for doctoral degree defending;
- Approval in the department of Doctoral Degree Evaluation Commission and approval with vote by the Council of Professors;
- Online publication of the summary of the thesis and use of special programs for plagiarism;
- Penalties for plagiarism are extreme (almost automatically rejecting the doctoral by the Council of Professors with proposal of Ethics Commission).

A system of procedures are obliged to apply for the academic performance evaluation: (i) Request and discussion of the evaluation committee in the department, (ii) the approval procedures in the council of professors and (iii) for professors, the final vote of the title will be done from the Titles Evaluation Committee in the University Senate besides the voting in the respective Professor Council of the department.

## **5.2 SWOT ANALYSIS**

The above description of the research situation, besides the academic performance, shows also a series of problems and difficulties in research. Taking into consideration that the research at the University is based on a new rules situation as dictates the New Law of Higher Education (2015) makes it even more necessary to be analyzed. There are a number of factors that dictate the research that can be objective. The university staff performance or lack of performance can overcome, reduce or even eliminate their impact by optimizing the research. Performances, obstacles, opportunities and threats are summarized in the table below:



## SWOT: Summary Table

Strengths	Weaknesses
<p><i>Academic staff/ assistant</i></p> <ul style="list-style-type: none"> <li>- Qualified staff in research and teaching;</li> <li>- 15% of staff doctorates in western countries;</li> <li>- 30% of staff have Master of Science Degree in western countries;</li> <li>- Most of the staff uses English and all the staff knows at least one foreign language;</li> <li>- All staff participating in programs and internships abroad in the framework of European Education Program and other programs (USA, Germany, Italy, Swiss, IPA program);</li> <li>- All staff is engaged in research programs (University and govern research and development programs);</li> <li>- Training and qualifications of young researchers of the departments staff are effective;</li> </ul> <p><i>Research infrastructure</i></p> <ul style="list-style-type: none"> <li>- There are several laboratories renovated (2011);</li> <li>- Good laboratory environments and sufficient space;</li> <li>- Each main unit has at least two laboratories serving for research;</li> <li>- Laboratories for research are separated from teaching laboratories;</li> <li>- Technical staff (laboratory technician) is trained;</li> <li>- Two laboratories are accredited according to ISO10017 and 10024 standards;</li> <li>- Three other laboratories are being accredited;</li> <li>- The existence of experimental base (134 ha), aquaculture reservations as experimental areas.</li> </ul> <p><i>Doctor Degree Program</i></p> <ul style="list-style-type: none"> <li>- Research topics requested by the Government and private operators (industry, business, municipalities);</li> <li>- Opening of Doctoral Schools (5) and the support of several study topics by departments;</li> </ul>	<p><i>Academic staff/ assistant</i></p> <ul style="list-style-type: none"> <li>- Recruiting new staff, in some cases, was taken without competition (for lecturer in applied engineering science);</li> <li>- The average age of academic staff, in some Departments (agro-environment, Manufacturing Plant, Forests and Vetrinari) is high (&gt; 50 years);</li> <li>- There is a lack in English knowledge in some departments and among lecturers over 55 years old;</li> <li>- Lack of motivation in the research due to unequal sharing of doctoral supervision, projects and university research programs;</li> <li>- Low number of staff participation in European applications, cross border, research and development programs of the NPRD;</li> </ul> <p><i>Research infrastructure</i></p> <ul style="list-style-type: none"> <li>- Despite the renewed laboratory tools there are still equipments that has not been set at efficiency, mostly for subjective reasons;</li> <li>- There are no regulation on working procedures (especially the use of time) in research laboratory (doctoral students and assistants) and in already accredited laboratories;</li> <li>- Some laboratory tools are not in function due to a minimum maintenance need;</li> <li>- Lack of contracts with tools maintenance agencies/companies and especially regarding their calibration;</li> <li>- There is a shortage of reagents/accessories mainly because of unplanning by the TRG/Departments;</li> <li>- There is no rational usage of expensive tools that are operative in only some of the laboratories due to the research coordination done by the Faculty and the Rector office;</li> <li>- Poor financial possibilities to constantly update the laboratory tools;</li> <li>- The Institution budget is weak in front of the requests for funds necessary for research;</li> </ul>

<ul style="list-style-type: none"> <li>- Cooperation between departments on common themes;</li> <li>- The presence of a staff with extensive knowledge to support research and especially specialized staff for analyses and data processing (informatics, chemistry, and physics)</li> </ul> <p><b>Quality Assurance</b></p> <ul style="list-style-type: none"> <li>- Detailed procedures and transparency in the department, are a high security element;</li> <li>- Council of Professors, Departments and Senate take part in the quality of research through debate and vote;</li> <li>- The selection, definition of the themes and research methodology are under permanent monitoring of the departments and the TRG;</li> <li>- The secret voting procedure on department, Council and Senate ensure quality in the assessment of the academic performance.</li> </ul> <p><b>Internationalization of the University</b></p> <ul style="list-style-type: none"> <li>- In 2015 AUT had 60 joint projects with European partners;</li> <li>- Several bilateral agreements (12 at University and faculty level, too) make possible exchange mobility for staff and students (Master);</li> <li>- Approximately 30 foreign university lecturers visit AUT (short term);</li> <li>- Doctoral degree on bilateral agreements are implemented with double supervision (from AUT and the partner University from the EU);</li> <li>- Organizing at least one international conference in AUT;</li> <li>- Publication of 1 up to 2 articles per year from each staff member, according to faculties and departments;</li> <li>- Participation at least in one international conference for each staff member;</li> <li>- Supervision of a doctorate per year for each lecturer with the title "professor";</li> </ul>	<p><b>Doctor Degree Program</b></p> <ul style="list-style-type: none"> <li>- Many research topics, often are not based on selected topics of application but related with individual staff interests;</li> <li>- Research Axes/themes are very broad, which means there is no research axes;</li> <li>- Disproportionate distribution of doctoral topics and doctoral candidates. Sometimes, authorities and departments/faculties get more than their real capacity to guide doctoral students;</li> <li>- Irrational financing scheme and research time for doctoral students;</li> <li>- Low cooperation with business and other economic actors to identify the problems of scientific research programming;</li> <li>- Publications in international journals in many cases are not qualitative and often they do not exceed 1.0 IF;</li> </ul> <p><b>Quality Assurance</b></p> <ul style="list-style-type: none"> <li>- Very low participation of international openences for doctoral degrees and academic titles evaluation;</li> <li>- Representatives of industry/business barely exists in Doctoral Degree defending process and other research activities;</li> <li>- Often the presentation of doctoral document is done in the absence of the MSc students;</li> <li>- Correct procedures to the qualification chain of the staff and doctoral students.</li> </ul> <p><b>Internationalization of the University</b></p> <ul style="list-style-type: none"> <li>- Low number of staff participation in projects, financially supporting individual mobility (Erasmus +);</li> <li>- Still the number of invited lecturers in the university is low;</li> <li>- Visits of AUT lecturers to EU countries or other countries is very low and in some department is inexistent;</li> <li>- Inactive participation in institutionalized round tables in international forums.</li> <li>- Weak access in research publishing house (Elsevier, Spring or Francis &amp; Taylor)</li> <li>- Low MSc students exchange from the AUT to EU universities on the Master Executive scheme;</li> </ul>
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	- Only one team from AUT (Horticulture Department) participates, as a partner in a project within the FP7 framework.
<b>Opportunities</b>	<b>Threats</b>
<p><i>Academic staff/ assistant</i></p> <ul style="list-style-type: none"> <li>- Opportunities for applications in European projects;</li> <li>- Very high cooperation requests from European universities;</li> <li>- Benefits for the PR&amp;D projects in 2016;</li> </ul> <p><i>Research infrastructure</i></p> <ul style="list-style-type: none"> <li>- The funds balance in the case of projects of different nature to renovate laboratory equipment;</li> <li>- Incorporate electronic engineers experts group for equipment maintenance;</li> <li>- Support Staff training in the framework of European and bilateral projects for a higher qualification in new analytical and measurements techniques.</li> </ul> <p><i>Doctor Degree Program</i></p> <ul style="list-style-type: none"> <li>- Increasing cross-border cooperation on topics of common interest in the framework of Cross Border projects;</li> <li>- Increasing number of PhDs candidates with joint guidance (one lecturer from AUT and one from European Universities);</li> <li>- Definition of research axes, according to TRG taking advantage of the new law on higher education.</li> </ul> <p><i>Quality Assurance</i></p> <ul style="list-style-type: none"> <li>- Detailed regulation for the research procedures, based on the new law.</li> </ul> <p><i>Internationalization of the University</i></p> <ul style="list-style-type: none"> <li>- Increasing participation in conferences, forums and qualitative publications;</li> <li>- Joint publishing with European counterparts for general or specific issues of our country / region;</li> <li>- Increasing access to the well known and internationally assessed journal sites;</li> </ul>	<p><i>Academic staff/ assistant</i></p> <ul style="list-style-type: none"> <li>- Reduction of the AUT budget (not enough funding from the state budget-university grants);</li> <li>- Reduction or maintaining the same level the revenues from services/contracts;</li> <li>- Not benefiting from different projects identified at the country level, regional and European level;</li> <li>- Not motivating staff according to academic performance;</li> <li>- Absence of individual ratings, with measurable indicators and accurate description of the research work.</li> </ul> <p><i>Research infrastructure</i></p> <ul style="list-style-type: none"> <li>- Wrong funding requests in the University budget lines and excluding laboratory tools in annual budget planning.</li> </ul> <p><i>Doctor Degree Program</i></p> <ul style="list-style-type: none"> <li>- Drastic shortage in the budget for doctorates research;</li> <li>- Fall of interest for research due to the demand for academic career, a drastic reduction in the number of students.</li> </ul> <p><i>Quality Assurance</i></p> <ul style="list-style-type: none"> <li>- Orientation of the University as an enterprise that consider profit as the primary task.</li> </ul> <p><i>Internationalization of the University</i></p> <ul style="list-style-type: none"> <li>- Drastic changes in government policy and international structures (EU) for the research.</li> </ul>

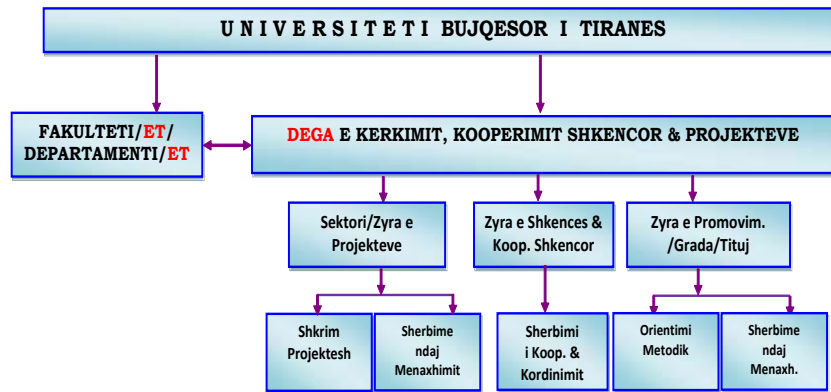
## 6 . ACTION PLAN

This mid-term action plan of the University coincides with three significant changes that have taken place recently. These changes oblige AUT to draft a document intended to have a mid-term effect on one of its mission, the research mission. Changes that have taken place are: (i) improving the quality of the “product” that University “produce” as a result of the positive dynamic development of our country in the last decade, (ii) The new Higher Education Law, and (iii) Changes of the administration staff after last university elections this year. These changes have created a favorable environment for redrafting the research development plans. This Research Strategy Plan is the first official document regarding the research of the Agricultural University since its foundation in 1951. It aims to serve as referring point and assure the basics for future actions being compatible with the University objectives. The strategy does not simply state the actions to be undertaken at University level – it is intended to detail actions at Faculty, Institute and Department level on one hand and to integrate those into the University-level frame on the other hand.

It is also important that the research strategy is coordinated with the other main goals of the University, such as teaching and knowledge and technology transfer. The Research Strategy Plan complies with several other dimensions including human resources, commercialization, internationalization, doctoral study programs, and finance. Three central pillars are intended to achieve the objectives that coincide with the **research of the highest quality**, to support and develop **competitive new academic staffs** that will have an impact beyond the academic walls in order to bring economic and social benefits. It is requested to capitalize our skills within the current structures and optimise the necessary interdisciplinary synergy to provide the right financial sources in fulfilling the highest standards of **research integrity**, and to assure the strategy harmonisation in all the University levels.

### 6.1 Restructuring the research scheme

In June 2016 after the University election for the purposes of coordination, control and increasing the role and weight of AUT research, the organization AUT chart changes were conducted by organizing and creating three offices at the University level: **Promotion of Academic Titles and Degrees Office**, **Research & Scientific Cooperation Office** and the **Projects Management Office**, according to the following concept.



By defining the specific tasks for each office combined with clear separation of tasks and duties in the vertical research hierarchy (faculty/department/ Teaching Research Group) will be assured coordination between basic units (departments) and faculties related to the scientific research priorities of AUT, quality control and research project management.

### 6.1.1 Actions

Result	Activities	Expected product	Assessment/Indicators	Who is responsible
Redesigning the research scheme – duties and responsibilities	Clear separation of tasks according to main research components and management system among research structures: University-Department-RTG	Research promotion and projects offices regulation, at AUT	Three offices and respective regulation with clear duties	Rector Deans Offices
	Project regulations management: Preparation-contact person-people involved duties and responsibilities	Projects management regulations	One regulation at University level	Project office at faculty level
	Responsibility assignment and research hierarchy. Functions and tasks of research group, departments, faculties commissions and Senate	Task assignment for RTG, departments, faculties commissions, assembly and senate	A Senate decision for clear segregation of duties between basic and main units	Research office, Deans Senate
	Checking functionality of the research groups	Controlling and reporting of structures performance	Yearly report	Research office
	Staff number increase in RTG-s	Restructuring the composition of the RTG staff, keeping a balance between teaching and research	Average number of researchers according to standards and best practices	RTG-s. Department, Deans, Rector

## **6.2 Academic Staff**

In some departments the high average staff age (>50) is becoming “threatening” for continuity of leadership in research. Evaluation of the research leaders, respectively professors experienced in research, priority financial support for them and their projects, interdisciplinary cooperation between TRG and between departments would be a evident activity input for the University. Monitoring the satisfaction of established research leaders at AUT, by ensuring that they are properly resourced to achieve their potential and motivation to remain at the University, is very important. Interdisciplinary cooperation between RTG-s and departments will be core point of achieving tangible results from research.

Apart from motivation of existing research staff to achieve institutional goals, it is also essential that we ensure recruitment of the very best research staff and enhance their skills and expertise through continued training and support. A relevant approach will be improving the recruitment processes of postgraduate doctoral level researchers (involving application of strict rules) and establishing the recruitment committee to identify and select the best candidates. Starting to support financially and logistically the university fellowships will be another action aiming their involvement in future potential research projects. University will also support them to develop their research experience in prestigious research centers in Europe and USA. This will help to increase their research reputation in near future. Increase the number of talented students recruited that have studied abroad will be main source for research capacity development at our University, meanwhile that new staff members will be supported for their doctoral studies in prestigious Universities in Europe, UK and USA.

### **6.2.1 Argument/Rationale**

Due to drastic political changes and specifics of the AUT, up to now efforts have been focused in Institutional Building. Although AUT is very active among Albanian Universities in partnership with other European universities and international projects, many of them were focused in capacity building and introducing new master programs in our University, leaving behind the training of the research staff. Slow steps have been made to research development, and staff training. Although the efforts done by the staff for preparation of theoretical programs, doctoral students involvement in research has been sporadic and they have not been intensively supervised by respective tutors. Increasingly, we will have to provide funding in order to recruit the best candidates (again in accordance with the new Law for Higher Education in Albania). It is also

essential that we ensure recruitment of the very best research staff and enhance their skills and expertise through continued training and support at department level.

### 6.2.2 Actions

Results	Activities	Expected product	Assessment/Indicators	Who is responsible
Increasing academic staff capacity through stronger recruitment, qualification, and training criteria.	Enhancing research through all staff involvement regardless the differences "different potentials" among TRG's /departments members	Increase participation of staff members in research (from 1-3 persons to 2-4 persons per project)	Academic staff number for each research project	RTG, Deps, Deans offices, Respective offices
	Engagement of new researchers into research through increasing their competencies and their involvement in the projects	- Young staff supported financially and logistically for post-doc qualifications; Young staff involved in international projects.	Number of new staff in post-doc position, at least 5 each year	Research Office & Office for foreign relations
	Improving the recruitment processes, involving application of strict rules taking into consideration: their higher degree performance, graduated in well known universities, recognized research activity and PhD-s in EU & USA universities	Best candidate's recruited. Heads of RTG-s and Departments will be crucial in recruitment process	Reviewing the regulation related to new recruitment	Departments Deans offices Senate
	Training of new academic staff especially on research methodology and staff qualification.	Number of trainings per each faculty & number of exchange staff with other EU partner universities	Yearly reporting about trainings and qualifications	Deans office Rector office
	Trainings for new programs on statistics, lab procedures and on instruments and tools widely used	Number of trainings related to new programs and providing access to internet for everybody (Subscription to reputational web-pages)	Yearly reporting	Rector office
	Training visits for specialties that requires updated skills in using instruments and tools (Labs and Informatics)	Number of staff trained and number of procedures learned by staff	Yearly reporting and trainings needs analysis	Rector office

## 6.3 Quality

Our commitment is to perform research of the highest quality and to continue to raise the level and ambition of our activities through involvement of staff members to achieve standards of excellence. In this regard, we will take active steps to ensure that the quality of our research is reflected by measurable performance indicators including national and hopefully international rankings and the Research Excellence Framework, and by publishing in well-known journal and participating in the important conferences, and attracting high levels of citations for the great majority of our outputs. Increasing the number of articles published in international journal with high impact factor and high level of citations is the product of a serious and fruitful research.

### 6.3.1 Argument/Rationale

The Faculty of Economy and Agribusiness achieved an excellent overall result in the 2008 Research Assessment, ranking among the best 100 faculties this year of the Shanghai Jiao Tong World University Rankings. However, yet there is reason for concern. Only one faculty took place in aforementioned ranking out of five that comprise the AUT. A number of great deals of research of the highest quality are produced by the university staff. Again we must consider other ranking tables which place more weight on citations per paper, an indicator neglected so far. According to *Ranking WEB of Universities*, AUT is ranked third among Albanian Universities, despite the fact that the ranking was done based on university web-pages.

Our advance in research has to be seen comparably to the other regional universities and in long term to European universities although it is never audited entirely. The principal weakness of the research at AUT is a larger proportion of unquoted papers - result of the “doing research for the sake of it” without thinking for the relevance of it to the real economic environment. Most of the staff participate in the conferences and submit papers into journal to reach the numbers required for getting promoted and not considering it as a continuous duty in the academic carrier and ambition. We also need to increase the number of scientific papers published in journal indexed with impact factor by Thomson and Reuters. In this respect, it is important to note that papers published in these journals tend to be more highly cited. It can be noticed that papers we produce in collaboration with other partners from European or American Universities attract considerably more citations on average than those we produce alone emphasizing the potential of partnerships to raise quality. Finally, in short run we have to be ranked in the first place among Albanian universities.



### 6.3.1 ACTIONS

Results	Activities	Expected product	Assessment/Indicators	Who is responsible
Increase quality of research	The ambition of research is the key element of the strategy - the ambition should be made clear in RTG-s and department research vision statements which in turn feed into Department, Faculty, and institutional goals	Clear research priorities for each RTG	Not more than one research field for each RTG	Departments
	Clear definition of the research procedures for each stage (data collection, analysis and discussion in department) according to research methodology for each research subject	Regulations for procedures and research monitoring	Research regulation at University level	Rector office Research offices
	Determination of the procedures for publishing the research work (discussion in department)	Regulations for research procedures	Research regulation at University level	Rector office Research offices
Increase quality of the dissertations	Candidates recruitment must follow the rule "best effectiveness of research money use" where the result will be assured	Strict rules for selecting the doctoral candidates	Reviewing the doctoral regulation based on guidelines and Minister Council Decisions (MCD-s)	Deans offices Senate
	Assuring the synergies among RTG-s of each department for better effectiveness (more than one doctorate per one subject)	Discussion and approval of relations between RTG-s at department level	Criterion for each department	Departments
	Regulation on analytical lab work for doctorate	Regulation on lab and experimental field work	Regulation at faculty level based on their specifics.	Dean office Departments
	Strict monitoring on plagiarism	Consequences of plagiarism and lack of ethic to be announced from the Ethic Commission of each Faculty to the doctorate	Regulation on plagiarism and it being well known by each doctorate	Departments Faculties
Increase quality of article published	High quality research work with interest for academic world.	Increased number of scientific papers published in journal indexed with impact factor by Thomson and Reuters	Number of published articles for each staff members and Nr. of IF. Yearly report	Departments Dean office Rector office
	Discussion and determination of each author in published articles, avoiding fictitious authorship	Drafted guidelines for assessment of IF contribution of each author in one article	Nr. of authors "contribution" in each article. Each staff member must achieve at least 0.5 IF per year	Science office at Faculty and University level
	Increase number of citations for each article	Number of citations for each author according to SCOPUS	Citation per each author. At least 5 citation/year/per staff	Science office at Faculty and University level

## 6.4 Infrastructure

Research infrastructure plays an important role in research quality and serves as motivation tool for research groups. Twelve labs are functional at AUT. During 2010-2012 many equipment were bought in the framework of a national program (approx. 140,000 million ALL); many labs were well equipped and modernized. In these labs are installed recent modern equipments (ICP, GCMS, HPLC, ADN analyzer), which enabled reliable results and good quality papers. Alongside, a well established experimental site (EDE, fish farm in Tapize, Animal experimental economy site, Experimental greenhouses, spaces for labs etc.) create great research potentials. Internet use and computers labs in specific faculties (AEF) are available to lecturers and support staff. All labs function according to Standard Operation Procedure-SOP, meanwhile that in the recent years Agro Environment and Ecology Lab is accredited according to ISO 10024 and it is competitive to other similar labs in regional level. Its results accuracy is tested in other labs, part of the international network and have resulted that they are reliable and comparable with similar measurement in other similar labs. Two other labs (in FVM) are under accreditation procedure supported by USAID.

### Argument/Rationale

Despite good situation in some labs, major part of the equipments and tools in other labs are dysfunctional for subjective reasons and in some cases for trivial reasons. Very modern equipments with high analytic and qualitative capacity (GCMS, HPLC) are out of function. The main cause for this situation is low level of staff engagement in research project. Number of projects and doctorates mentored by the RTG-s of the Chemistry department in FBU is very low (2-3 doctorates), while research projects are almost missing. This tepid situation brought lack of focus and interest to these instruments and tools with high value and great usage potentials in the situation of a limited finances university. For other labs there is little interest, too, due to weak performance of the research staff. Generally, where the research interest is low and the research groups are characterized by apathy, lab functioning and use is very low. Moreover article from those research groups are very low in number and low in quality.

On the other side, lack of coordination between labs and support service administration is another concern. Chemical reagents are missing and/or simple tools, cheap ones, which can be affordable by the University budget. Furthermore, time needed from ordering the chemical reagents to on site delivery is very long (take months), and this is unacceptable in research. Planning of equipment tools and instruments in the drafting phase of research projects (including all projects -PKZH, EU, IPA, BB, and other funding institutions ) is mandatory requirement, but often

project writers forecast small amounts of money in this budget line and more money for mobility, trainings, workshops and conferences. By establishing clear rules without ambiguity, on project preparation and management, the Rector and Deans offices will aim budget increase for infrastructure renovation with special focus on expensive research tools and instruments.

#### 6.4.1 Actions

Results	Activities	Expected product	Assessment/Indicators	Who is responsible
Increase capacity and quality of research labs	Yearly inventory of labs and their functional equipments	Increased efficiency in laboratories and equipment Physical movement of equipment (especially unique ones) from one lab to another with higher performance.	Number of analysis per each lab per year	Rector office Deans offices Departments
	Investments for buying the latest generations-tools	One ICP, GCSM yearly bought from the university budget	Nr. of equipments/tools used in high quality research	Rector office Administrator
	Assure tools and instruments maintenance	A group of technicians must be operational for maintaining the research equipment. Sub-contracting a company for maintaining expensive equipment (in cases university is unable to do it internally)	A group of technicians (2 persons) available for maintaining the research equipment. Sub-contracted company (maybe foreign) for special services/maintenance of equipments (in cases university is unable to do it internally)	Rector office Administrator
	Assure chemical reagent on time as requested from research groups	A regulation dealing with research tools and instruments demand, deadlines and supply on time will be necessary.	Drafted regulation on Departments and University administration relations	Rector office Administrator

### 6.5 Interdisciplinary Cooperation

The advantage of being unique in Albania and interdisciplinary scope of the University will be used to secure top position among Albanian Universities and regional leaders in targeted fields. Building upon existing successes, we will identify those themes, where through key recruitments and investments, we can construct a broad front of excellence. We will work to increase the partnership with regional and European research leaders.

At the same time we will exploit our wide range of capabilities of individual groups in AUT and the relationship with other universities within the country, to form new and ground-breaking interdisciplinary combinations across the full range of subjects. Our Departments and Faculties will play an important role in taking forward this agenda but no internal structure, process or system should be a barrier to interdisciplinary working. We will not let success in these themes distract us from the

critical importance of research and the freedom and creativity needed to achieve excellence and impact. We will nurture and support scholarship and fundamental research.

### 6.5.1 Argument

The University recognizes the importance of interdisciplinary funding at its foundation with the formation of several departments, Faculties and research centers but the trend towards interdisciplinary challenges (not least in funding initiatives) means that we need to be able to configure our capabilities in all areas of research activity. An inherent AUT advantage is the wide range of areas in which we can be engaged at a good quality level. There is also increased recognition by funding bodies in national and European level of the benefits of scale and critical mass in achieving world class status. In some areas, there is no option but to commit substantial resources if we are to be a serious player.

Our departments and TRG-s work somehow isolated from other departments and faculties in other Universities, while combination of specific skills and competencies and financing focus is very important in achieving significant results. Synergies between AUT research groups (focused on applied research) and UT or UP research groups (focused on basic research) will be a solid base for establishing excellent research centers.

### 6.5.2 ACTIONS

Results	Activities	Expected product	Assessment/Indicators	Who is responsible
Increase collaboration within university and with other Albanian universities	Clear collaborative objective between RTG-s within the department	Increase collaboration between RTG-s within the department	Description of rules and benefits from joint founded projects by university sources.	Rector office University Board Administrator
	Establish a solid base for collaboration between RTG-s in different faculties by forming new and ground-breaking interdisciplinary combinations across the full range of subjects	Increase collaboration between RTG-s and departments among faculties		
Increase collaboration with foreign universities	Increase collaboration with regional similar Universities/Faculties	Increased number of cooperation agreements with regional, EU and other countries Universities/Faculties	Number of agreements (estimated average trend 20% increase each year)	Foreign relations office and RTG-s/Dep./Fac.
	Increase collaboration with European similar Universities/Faculties			

## 6.6 Internationalization

As the oldest academic and research center in Albania (1951), AUT is in partnership with many universities and researcher in Europe. AUT diplomas (especially agronomy and veterinary diplomas) have been recognized in European countries, not simply because of bilateral agreements but mainly due to the fact that a number of AUT professors have been graduated in Austria, France, Italy etc, before 1945. Personal recognitions have played a role in new AUT staff education (especially PhD-s).

A bolder presence in international research net is undoubtedly an important objective and priority in context of globalization, innovation, technology development and information flows. In the last decade, have been organized many international conferences, and regional workshops. We took the chance to be involved in debates and face different opinions on research thanks to programs lunched by EU and USA. In this context we have been involved mainly in bilateral conferences with partner institutions from Italy, Germany, France, Greece and Turkey. Within IPA Cross-Border Collaboration program AUT moved up innovation and technology transfer. After '90-s more than 20 new researchers have finished PhD-s in European Universities and more than 10 teams from AUT lead research projects with partner institution from Germany, Italy, France Czech Rep., Swiss, Bulgaria, Greece, Turkey and USA.

### 6.6.1 Argument/Rationale

Although achievements, our efforts lag behind our regional competitors for wide international collaboration. We have not exploit the potentials we had for international collaboration; TRG-s/Departments were more interested in students and staff exchange (TEMPUS and recently ERASMUS +) than joint research project. From AUT there is only one team part of the consortium FP7. This is because of low capacities to create excellence centers at AUT. On the other hand, we have not been ready in terms of resources to initiate the consortia creation with international partners. The interest of reputational research centers for a country like Albania (with limited/modest financial resources for advanced research) for basic research projects is still low, an obstacle that we need to overcome. It's time to apply in other advanced research programs in accordance with country economic development.

### 6.6.2 Actions

Results	Activities	Expected product	Assessment/Indicators	Who is responsible
Increase University presence through article published,	Publishing with international partners. High performing teams/Staff	Qualitative articles, more cited, and increased collaboration with analog regional and European	Number of joint publications Yearly reporting for joint article publication.	Science Office , Project Office Foreign Relations Office University Board

conferences and relevant debates in foreign countries.	motivation	universities.		
	Staff participation with papers and posters in international conferences.	Increased number of staff and papers presented in international conferences.	At least one international conference per each faculty (in Albania). It is intended that in any joint conference at least 50% of papers and posters must be from AUT.	Rector office Deans offices Departments
	Staff participation in international conferences.	Increased AUT participation in international conferences. At least one researcher for each RTG.	Number of participants in international conferences. Financial yearly support (100%) of 40 staff members for participation in international conferences in Europe and 5 in other countries	Rector office Deans offices Departments University Board Administrator
	Proceedings publication for every conferences organized at AUT.	Number of conferences and proceedings books	Proceedings for each conference will be financially supported by AUT	Rector office University Board Administrator

## 6.7 Knowledge transfer/Impacts

It is university mission for knowledge, research findings and advanced technologies in agricultural field and rural development to be transferred to end user. Our work must have an impact beyond academia and yield economic and social benefits whenever the opportunity arises. We will establish and maintain key relationships with external partners in business, the NGO-s, government and public bodies and other organizations, in our city, in Albania, in Albanian spoken territories and in our region and beyond with a view to shaping our research agenda. We will seek to bring to market the intellectual property arising from our work.

We will ensure that individuals receive parity of esteem for translational research and knowledge transfer. Through a successful history of impact, we will assure our sponsors and stakeholders that we merit the investment made in our research and transfer our work with intellectually challenging problems of real world relevance. We will ensure that we identify and communicate widely the substantial body of our work that addresses social challenges such as sustainability, energy efficiency, natural resource management, sustained rural development, environment and health safety, food safety and increasing farm economic profitability. In this and other ways research will also contribute to the University's goal on social responsibility.

### 6.7.1 Argument/Rationale

We judge that the environment for knowledge transfer in AUT is a very good one due to the geographical position, links with production enterprises, capacities, tradition and problems mainly identified. We are located in Tirana, the capital of Albania, with which we have not so good relations. Relatively successful collaborations, especially in terms of internship students and doctoral research subject, have been established with companies such as Carrefour, Delta Group etc. There is no strong relation between the University and Regional Directorate of Public Health regarding food safety, or Agriculture Directorate and other sectors interested in our research subject. Partnerships with the Agricultural Research Centers in Albania are critical to our activity and we are the only academic center in Albania dealing with Agricultural Sciences. In terms of knowledge transfer, there is much to be done in terms of measured indicators and there is much to be done for completing the extensions profile and clarifying the professional competencies of research groups of AUT, as a unique center at national level.

However, even this level is far from being satisfactory in the current environment when the basic reason for continued research funding rests heavily upon its ability to demonstrate economic development impact. At the same time, research funding agendas are increasingly defined in terms of grand challenges, for the developing countries (as it is poverty reduction in the case of Albania). Even without these external pressures the University is committed to ambitious goals of Agricultural and rural development in Albania. Our ability to project and make present the value of what we do via the internet or by other means remain a challenge in the competition conditions faced in Albania and in our region, too.

### 6.7.2 Actions

Results	Activities	Expected product	Assessment/Indicators	Who is responsible
Enhance relations with businesses, farms and governmental institutions	Clear identification of relations with businesses, institutions and farms seeking their needs for knowledge transfer	Completed list of needs for knowledge transfer in all fields covered by AUT.	Number and needs prioritization	Rector office Deans offices Departments RTG
	Training course provided by each RTG and Department	Drafted list of training courses	Number of training courses	
	Bilateral Agreements between MARDWA, MEDTTE and MMF for setting up pilot sites for training and research in government interest	Accomplished agreements with respective ministries	Number of agreements	

	Close relations with local authorities to support business and especially farms needs	Complete list of local and business partners	Number of local partners and businesses per each county	
	Enhance relations with financial institutions of rural development.	Higher number of projects financed by rural development agencies (public and private)	Number of projects	

**6.8 Resources**

Taking into consideration financial crises and priorities of the government budget, expectations on increase research financing are too low. Of course, research is a University priority and finding financial support is a challenge that must be managed in the following two directions: economizing public funds by increasing their efficient usage and increase our capacities to be competitive in national and regional scale. Although agriculture share in GDP is decreasing (24%), still in any possible development scenario it will be a priority sector. We must profit on this opportunity. To achieve our research ambitions we will draw upon a broad range of financial, physical and knowledge resources.

While seeking to increase our share of research from domestic resources we will also diversify them to achieve a substantial increase in funding from business, European programs and other international sources. This in turn will help us to engage our research more effectively in the agendas these funders are pursuing. We will strive to provide and make effective use of state of the art facilities and equipment. Our administrative support will be integrated, using fit-for-purpose information systems, and ensuring that the needs of our researchers and sponsors are met comprehensively. Recognizing that the time of researchers is a scarce and valuable resource we will seek to organize commitments to maximize quality time for research and teaching.

**6.8.1 Argument/Rationale**

Finances came from two sources: (i) public, from the yearly govern grant, intended for the University and the Research and Development Program and (ii) projects financed from international organizations (local and foreign). Based on statistics funds coming from NPRD “ARTI” counts for not more than 20% of research fund, whereas cross border projects and those financed from international agencies and other national bodies counts for more than 60% of research funds. Dedicates EU research funds amounts are low due to their destination, mainly into capacity building, staff and students exchange. Doctoral Study Program is 50% financed with university funds. A



study at university level serving as a guide for prioritizing research funds is missing, apart from national scheme. There is a need for research funds planning within University budget each year.

## 6.8.2 Actions

Results	Activities	Expected product	Assessment/Indicators	Who is responsible
Increase research funds from University budget	Increase research funds from University budget for projects identified as priority by University and/or co-financing as it is requested	10 million ALL increase in research funds in the first year and additional 10 million ALL each consecutive year. In 2025 the university research fund will reach approximately 100 million ALL (nearly 1 million Euro)	Ten projects financed in the first year up to 50 projects in 2025.	University board Administrator Rector Senate  RTG Departments
Increase research funds from businesses	Accomplished agreements with businesses dealing with: agricultural consultation, specific assistance for balances and development plans, qualitative agronomics, zoo technical and environmental monitoring.	20 million ALL increase in research funds in the first year and additional 15 million ALL each consecutive year	Five research projects financed	
Increase research funds from research projects	Active participation, in partnership with European/regional Universities, in applications for joint research projects.	Number of applications will be increased by 100% since the first year.	Number of applications , staff involved and RTG-s	
Increase research funds from governmental sources	Active participation in applications within Research and Development Program	Number of applications will be increased by 100% since the first year.	Number of applications , staff involved and RTG-s	