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**Co-ordination of Research Policies
with the Western Balkan Countries**



THE AGRIFOOD RESEARCH ENVIRONMENT IN MONTENEGRO

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THE AIM OF THE REPORT

- The report provides a brief overview of the agrifood research environment in Montenegro.
- It includes key facts and figures concerning policy framework, current trends as well as short overview of main drivers of agrifood research in Montenegro.

AGRICULTURE AND AGRIFOOD INDUSTRY

In 2000-2008, the country is experiencing some positive trends significant for creating a more **stable** macroeconomic environment

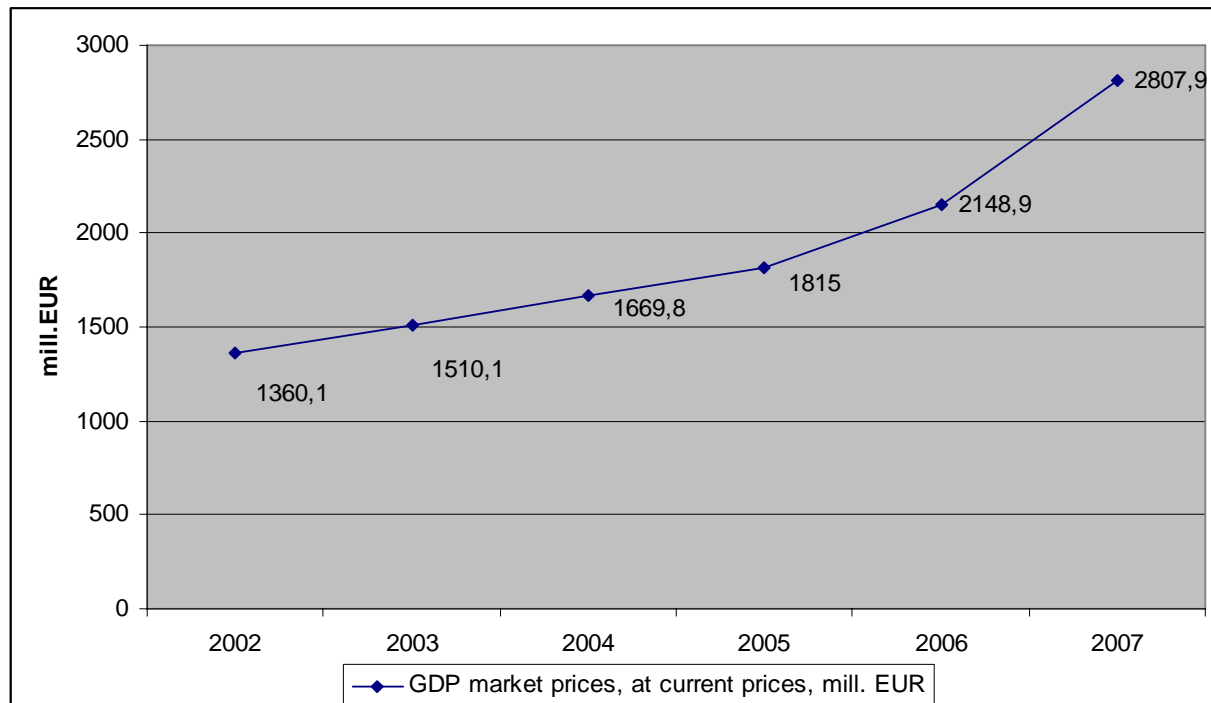


Fig.1. GDP market prices (at current prices) mill. EUR

AGRICULTURE AND AGRIFOOD INDUSTRY

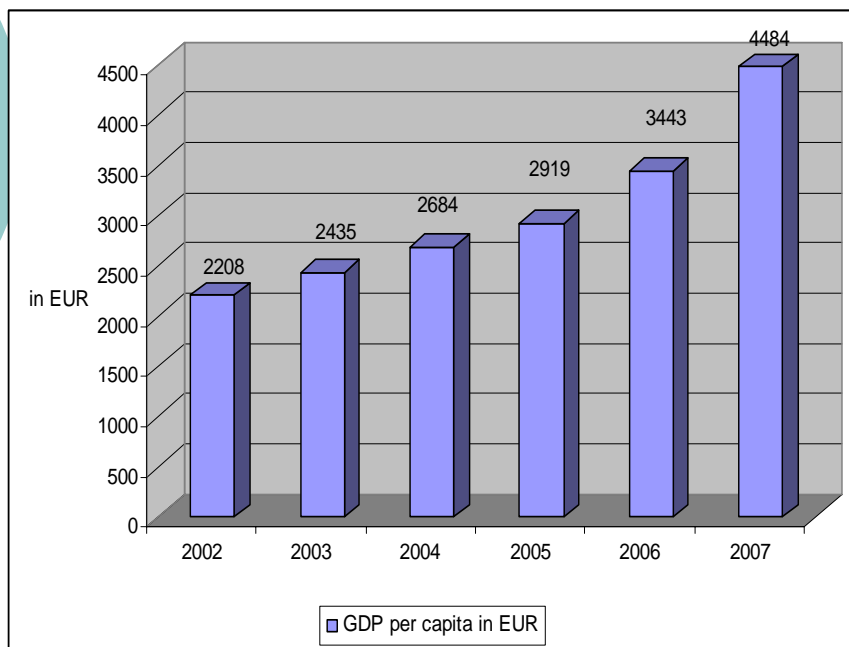


Fig. 2. GDP per capita in Montenegro in EUR

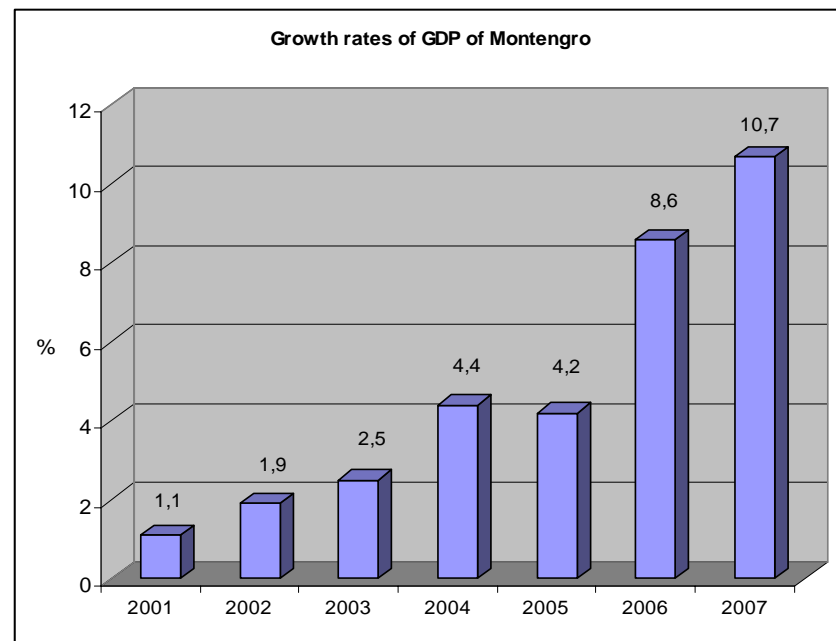


Fig. 3. Growth rates of GDP in Montenegro

The per capita GDP in Montenegro in 2007. was **4 484 EUR** (Fig. 2).
Gross domestic product growth at constant prices in 2007 was **10,7%** (Fig. 3).

AGRICULTURE AND AGRIFOOD INDUSTRY

The share of GAO of six main sectors in Montenegro was 71% GDP. Food production and agriculture still **play an important role in the economic development** of the Montenegro.

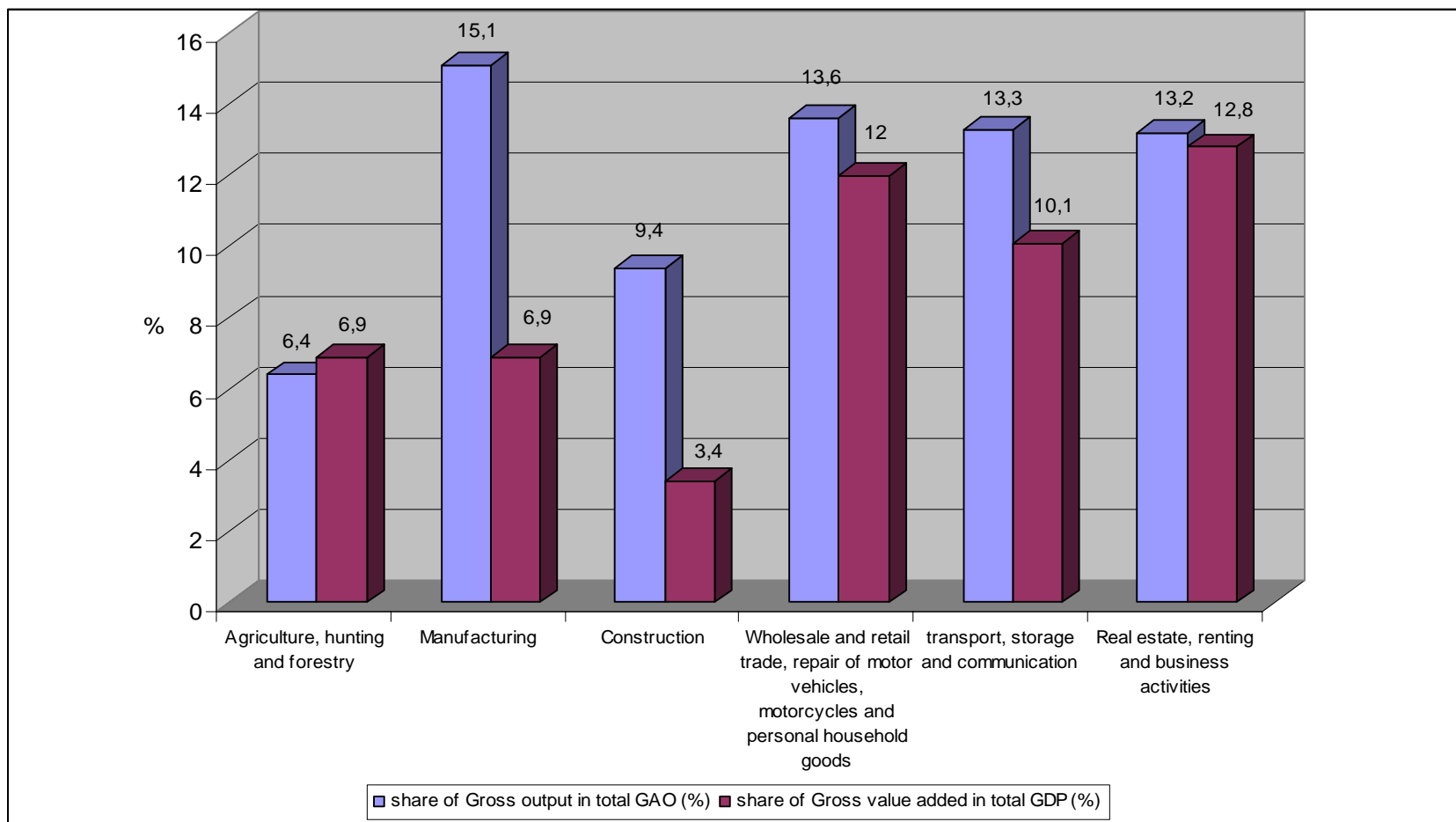


Fig. 4. GROSS output according to NACE and GDP at current prices, 2007.

AGRICULTURE AND AGRIFOOD INDUSTRY

Montenegro is a **net importer** of agro-food products.

Total trade in agro-food products **grows** continuously in period 2000-2007.

The **deficit grows as well**. The major export products are **wine and tobacco**. Export-import coverage amounts to **28%**.

Montenegro's most important market of agro-food products is Serbia-participated in the total imports with more than 50,0%, and in export with more than 80,0%.

Trade with EU amounted to 23,5% EU members are important partners especially in import (29,4%), while their share in export is moderate (2,4%).

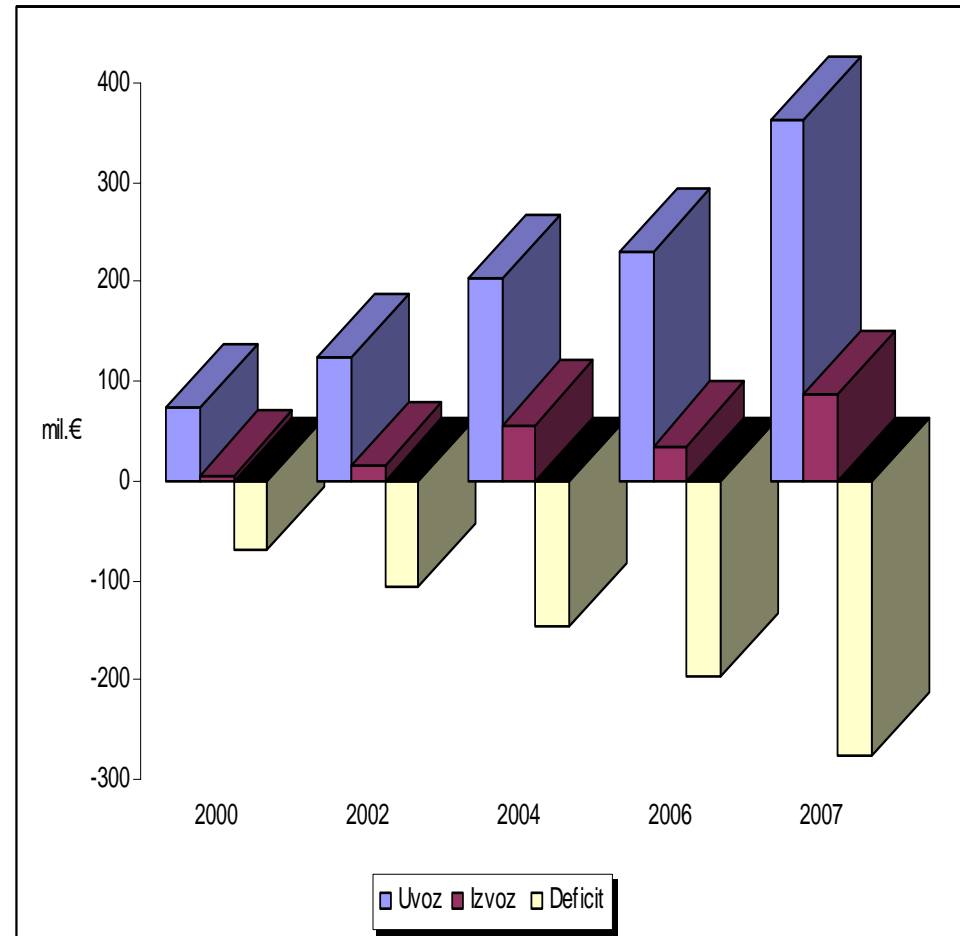


Fig. 5. Foreign trade (export, import and debt) of agriculture products of Montenegro, 2000-2007.

AGRICULTURE AND AGRIFOOD INDUSTRY

- In 1961 and 2003, the share of the **active agricultural population** in the total number of active population has been reduced from 53,6% to **8,8%**.
- Agricultural area in Montenegro covers **38% of total surface area** (2003). With about **0,84** ha per capita, represent an important economic attribute.
- Arable land, orchards and vineyards occupy only 58.262 ha or **12%** of total agricultural area.

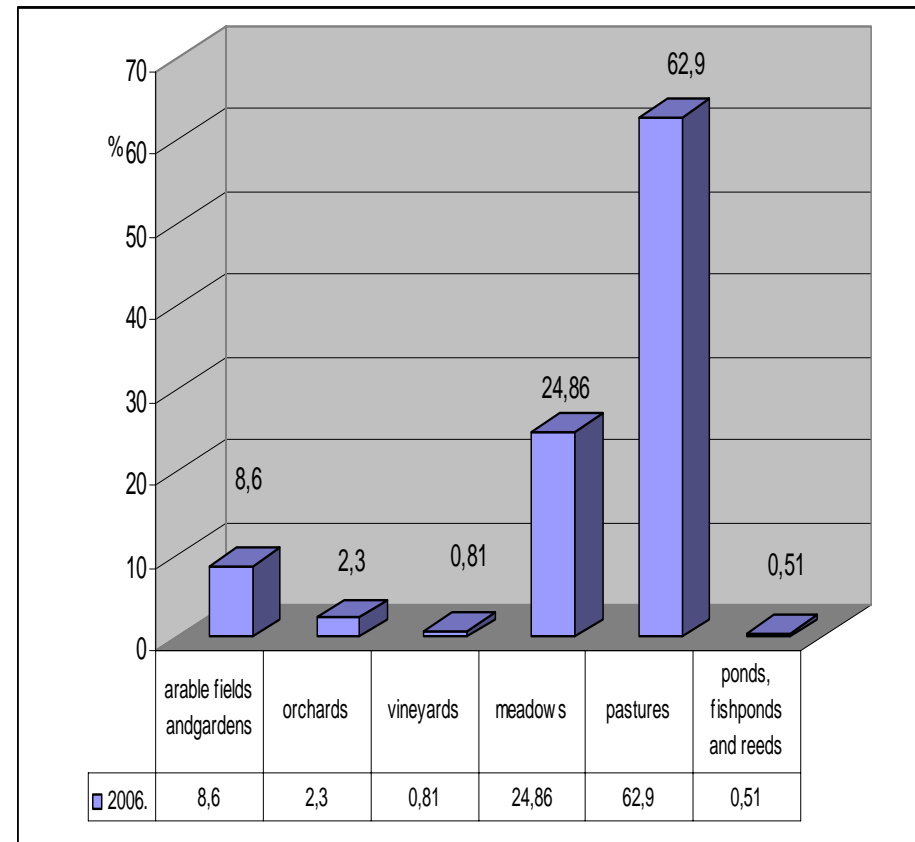
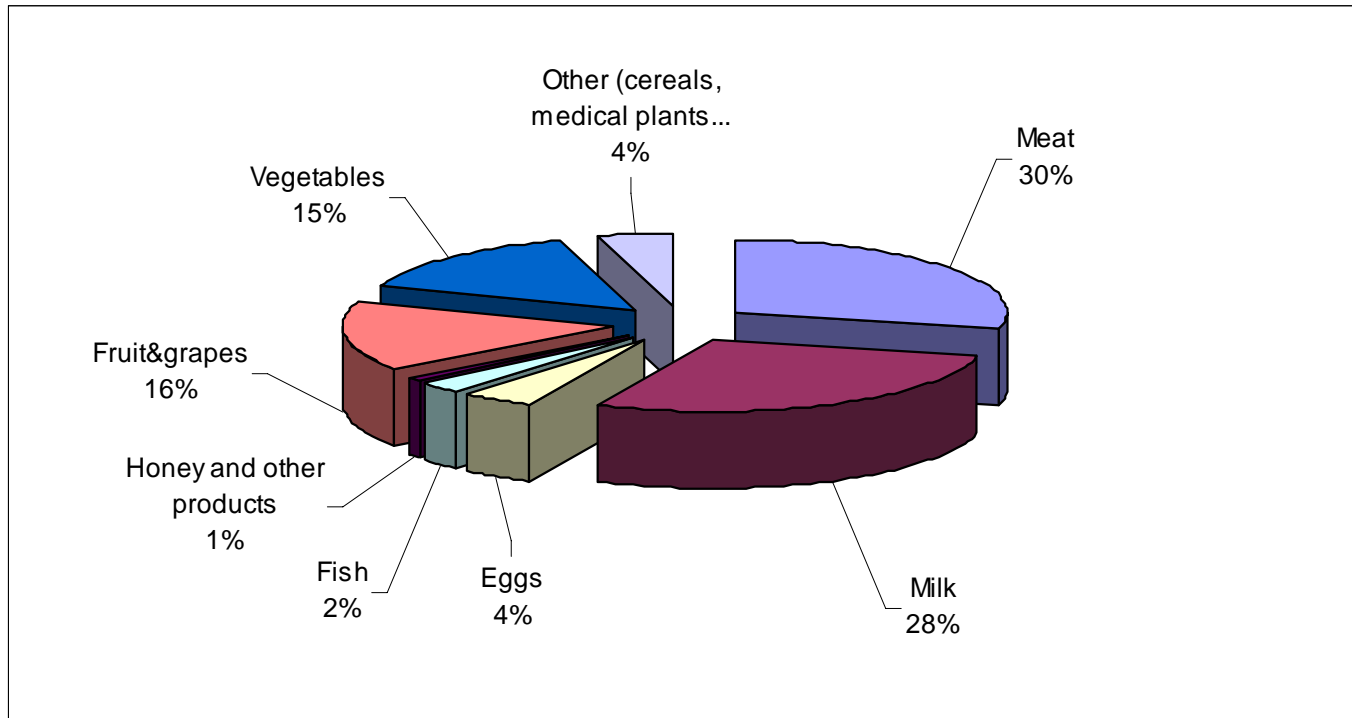


Fig. 6. Structure of agriculture land in Montenegro

AGRICULTURE AND AGRIFOOD INDUSTRY



The structure of Montenegrin agriculture:

1. **65% of livestock production** (the most significant products are cow, sheep and goat's milk and the production of lamb with traditional breeds. The only export potential for now is found in lamb production) and
2. **35% of crop production** (the production of wine as the only important export product is commercially significant, as well as vegetable production, and partially potatoes (only for domestic consumption). The production of cereals is negligible.

Montenegro does not fully use its production potential.

AGRICULTURE AND AGRIFOOD INDUSTRY

- There are 321 of agro-industrial enterprises. Employed in food processing industry was 4.544 or 2,91% of the total employment number (33,1% women).
- During the last few years Ministry of Agriculture initiated financial support to Montenegrin enterprises to introduce HACCP standards (food safety is a very important recent issue in Montenegrin agrifood companies).
- The share of Montenegrin agriculture, hunting and related services investment in fixed capital in 2007. was only 1,44%

Institutional structure and policy framework

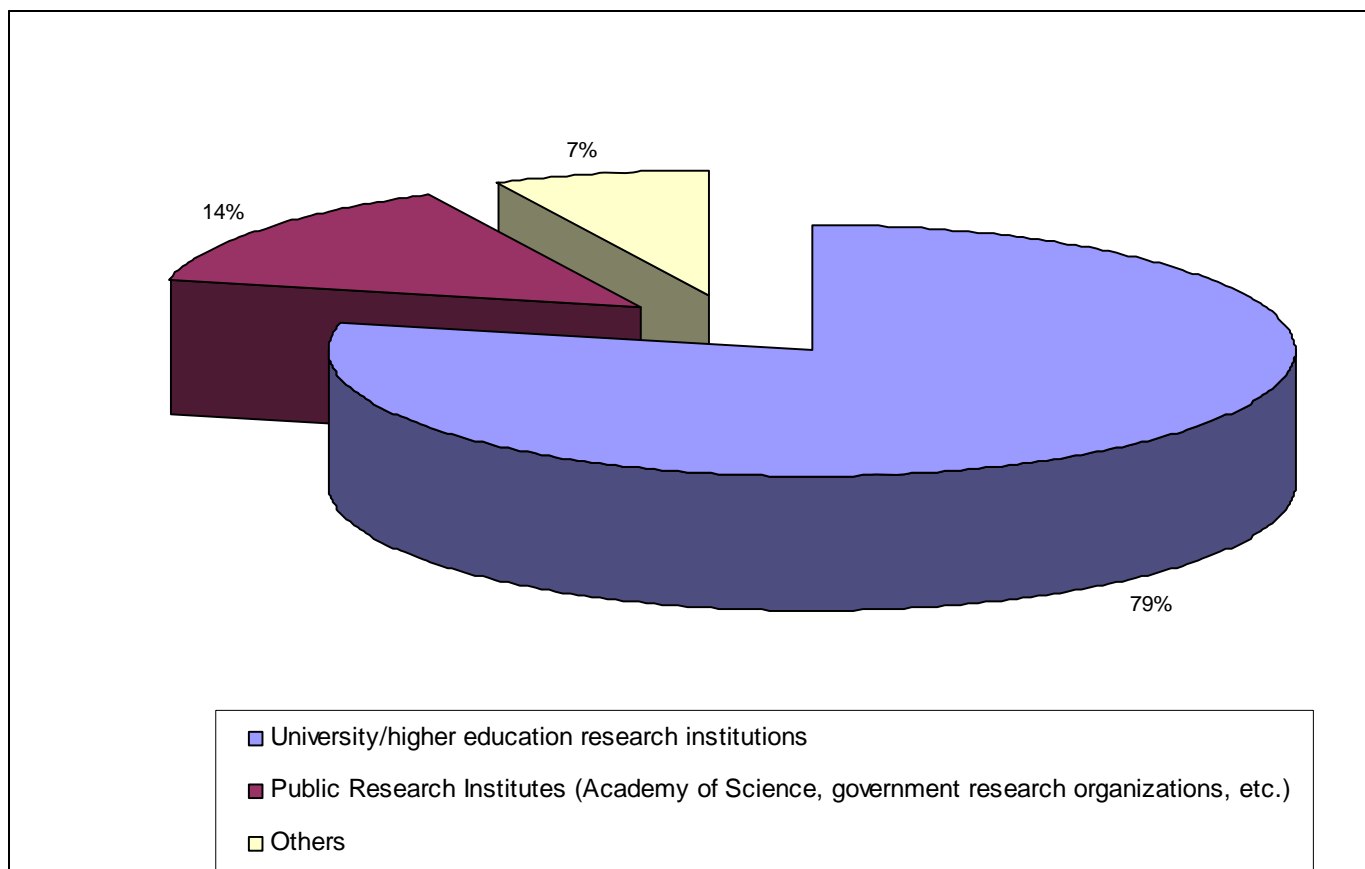


Fig.9. Agrifood research groups in Montenegro identified by type (%)

Institutional structure and policy framework

- The **Ministry of Education and Science** is responsible for overall scientific policy in Montenegro has regulated this issue with further legislative.
- In 2005 Montenegro introduced Law on Scientific-Research Activities (Official Gazette of Montenegro, No.71/2005) as a most important legislation in this area.
- According to the proposal of the Law on Scientific-Research Activities, Montenegro established the National Council for Scientific-Research Activities and prepared the Strategy for Scientific-Research Activities (2008-2016) which define annual budgetary increase, as a % of GDP, allocated to R&D until 2016.
- New Law on Higher Education was adopted in October 2003 and was created in line with Bologna objectives.
- The Ministry of Education and Science is responsible for the research in Biotechnical faculty and education in secondary school. There are 4 schools for agriculture, food processing and veterinary in Montenegro. One of them is vocational school (high school in Bar), and other are mixed schools.

Institutional structure and policy framework

- Montenegro has increased the number of bilateral S&T cooperation agreements and/or research projects, mainly with regional partners.
- Montenegro participated in the sixth framework programme for research (FP6), and in the seventh framework programme (FP7). This will increase the research opportunities within Montenegro.
- Since February 2007, Montenegro has also been a full partner in the NATO science for peace and security (SPS) programme, with a representative from the Ministry of Education and Science on the SPS Committee. Cooperation priorities have also been decided

Institutional structure and policy framework

The **Ministry of Agriculture, Forestry and Water Management** is responsible for overall agro-policy in Montenegro has regulated this issue with further regulative.

- The “Strategy on food production and rural development” (adopted in 2006) provides the basis for further major reforms and legislative work required for modernizing agriculture.
- The Strategy is based on **three pillars**: reforms of agricultural policy, harmonization of legislation with the requirements of European integration and institutional capacity building.

Agricultural policy objectives

1. ***Sustainable resource management***;
 2. ***Food safety***;
 3. ***Adequate standard of living and rural development***);
 4. ***Increase in competitiveness***).
- Law on Agriculture and Rural development is prepared for adoption in our Parliament. There are several very important laws and sub laws or rulebooks adopted in Montenegro from the 2001.
 - Agro-policy and further reforms are defined by new National program for food production and rural development

Institutional structure and policy framework

- The **University of Montenegro** is comprised of seventeen faculties, three scientific institutes, the University library and several specialist departments.
- The University of Montenegro is the only public university in the country. On the other side, private high education is continually growing.
- Today, Montenegro has two private Universities: UDG University and Mediterranean University.
- The University of Montenegro is taking steps to upgrade its quality assurance system. The qualification assurance (QA) procedures are still relatively new in Montenegro, and there is currently a lack of trained professionals in this field. Standards and guidelines for accreditation of study programmes and HEI in line with QA standards and guidelines in the European Higher Education Area (ENQA standards) were adopted by the National Council for Higher Education on 15 February 2007.
- A new Law is introducing a transparent system of recognition and evaluation of foreign diplomas.

Financing agrifood R&D

- The public expenditure in Montenegro for R&D was decrease from 0.42 % (1997), to 0.30% (2003), and remained at the same level in 2004.
- In 2007 MES financed:
 - 57,78% projects (equipm.),
 - 22,0 % for spetializations
 - 20,22% for international cooperation.

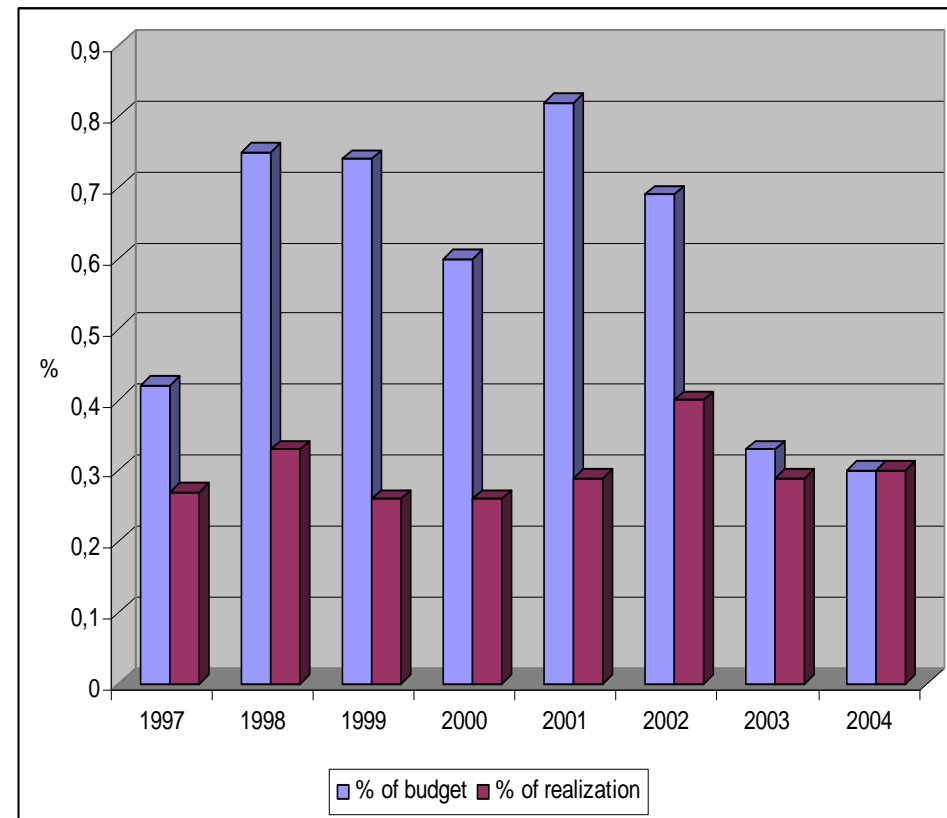


Fig. Public expenditure on R&D in Montenegro for 1997- 04

Financing agrifood R&D

Table 5. The overview of the annual research budget for R&D in Montenegro and EU-25^[1]

Godina	GBAORD				GERD			
	MNE	EU-25 ^[2]	Max	Min	MNE	EU-25	Max	Min
2002	0,06				0,14			
2003	0,05				0,08			
2004	0,08				0,18			
2005	0,03	0,74	1,5	0,09	0,16	1,86	3,7	0,37
2006	0,03				0,04			

Remarks: a. Government subsidies for R&D, as % GDP (GBAORD); b. Total consumption for R&D as % GDP (GERD)

[1] Source: Ministry of Education and Science according to official statistical data (MONSTAT);

[2] Eurostat, R&D Statistics – OECD MSTI 2006.

Financing agrifood R&D

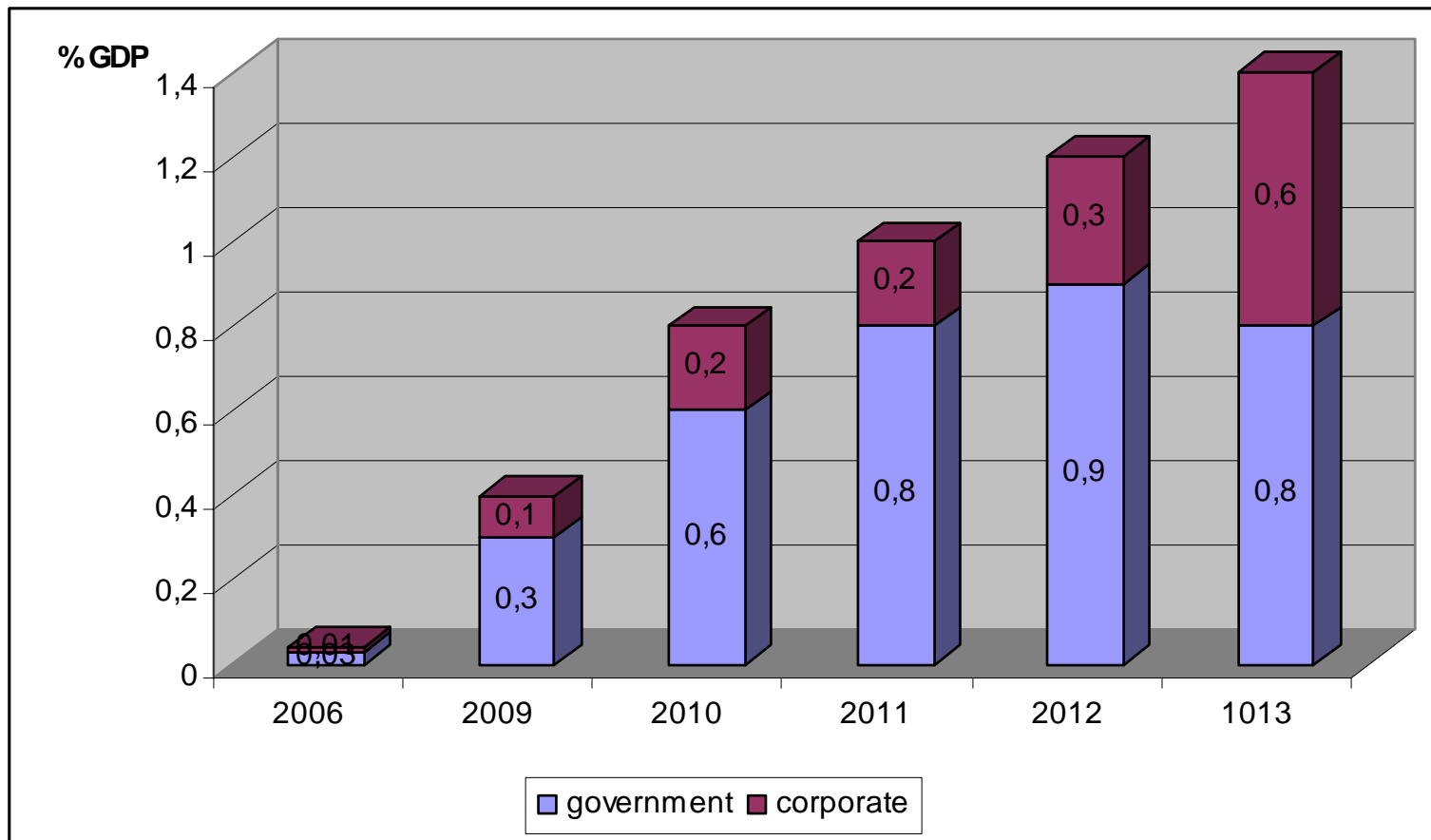


Fig. 11. Financing of R&D in Montenegro

Financing agrifood R&D

- Agriculture by its nature, is a very sensitive sector that needs sound and efficient institutional support. In providing that institutional support, Biotechnical Faculty Podgorica plays main role, since it is the only research institution in the whole Montenegrin agriculture.
- The mission of Biotechnical Faculty is to be backbone of the institutional support to the agricultural sector by providing three type of activities: Research, High education and Services.
- In 2008 Faculty is financed by University of Montenegro 45%, Ministry of Agriculture Forestry and water Supply 40% and 15% on commercial bases.

Financing agrifood R&D

- The share of the Biotechnical Faculty and Institute for Marine Biology in total agricultural budget was increase from 23,5% (2005) to 30,95% (2008).
- A draft law on agriculture and rural development and a national programme for food production and rural development for 2009-2013 were adopted by the government in September 2008.
- In addition, the budget allocation for agriculture and rural development was increased by 25% compared with 2007.

Human resources

- According to the MONSTAT, the total number of scientists-researches was increase from 602 (2003) to 671 (2007), but the total number of assistant researchers with higher education degree was decreased from 312 (2003) to 276 (2007).
- During the same period (2003-2007) the number of completed basic research works is increased from 3 to 4, developmental research works from 23 to 33. The number of completed applied research works is decreased from 166 to 7.
- By January 2009, 10 agrifood research organisation units belonging to one research institution- Biotechnical Faculty.
- Therefore, the number of researchers on a Full Time Equivalent (FTE) basis in the Montenegrin agrifood sector is approximately **80** (**57** at Biotechnical faculty- **32** employees are researchers with PhD, **14** with Master degree and **11** technicians in R&D; **14** at Institute of Marine Biology- **9** employees are researchers with PhD, **5** with Master degree and others are researchers employed at the ministries and business sector).

Human resources

- More than 2/3 of the research personnel work on scientific fields: vineyard growing, wine making and orchard growing, sub tropical cultures and continental fruit growing.
- Animal sciences seem to have a low share compared to the importance and potential of animal husbandry in the country. Similar situation is for economic, social and political sciences, forestry, veterinary etc.

Research infrastructure

- While agriculture remains a key economic sector in Montenegro, it is the least developed in terms of productivity and market orientation.
- There is a significant lack of know-how, capital and production efficiency in the whole agro-food chain and agriculture has to meet international standards both in terms of competitiveness and of food safety.
- Nonetheless, there is significant opportunity for development. Agriculture plays a key role for economic and sustainable development in rural areas and for regional development as well as supporting others activities such as tourism.

Research infrastructure

- The EAR supported rehabilitation of the food safety laboratories in the Biotechnical Faculty (Institute).
- Development of a laboratory examination role in food control in accordance with the EU concept of official control will be further supported.
- The idea is to enhance the capacity of the laboratories to fulfill that role in an economically efficient manner through improved technical performance and accreditation.

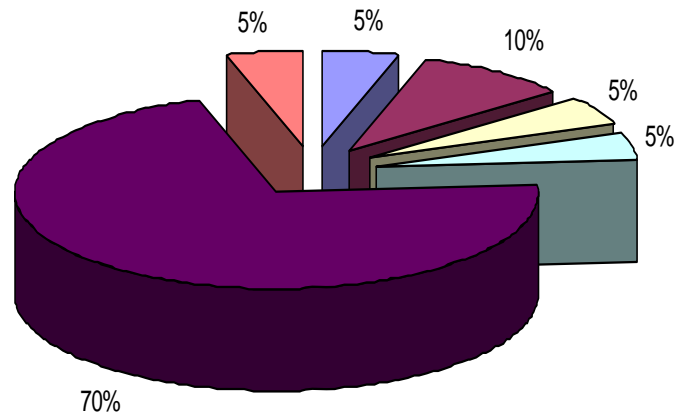
Research infrastructure

- Biotechnical faculty is recognized by its research and results achieved so far.
- The activities of Faculty are carried out through the organization of fundamental, applied and developmental research in many field of agriculture.
- Organizational chart is corresponding to the main research activities. Thus, the Faculty consists of ten research centers.

Research infrastructure

- **High education** is newest component of the Faculty (Institute) activities. High education is performed in accordance to Bologna declaration /process, organized in two divisions: Plant production division; and Livestock production division.
- **The services** provided by the Institute to the farming sector are twofold: Extension services are provided through: Livestock Selection Service and Plant Production Extension Service.
- There are several labs functioning in the BIP: Plant protection lab; Milk lab; Lab for agro chemistry and soil sciences; Wine (Oenology) lab; Pomology labs; Seed and seedlings lab; Feeds control lab in establishing.
- The role of these labs is more and more important. Some agrifood researches have done in othert institutions.

Innovative and scientific output



■ FP7 ■ SEE-ERA.net □ TEMPUS □ SEEDnet ■ National projects (MES) ■ IPA

Fig.12 Agrifood research projects in Montenegro

- FP7 projects: "Agri-economic policy analysis of the accession and the candidate states and the western Balkan countries"); We are in the process of preparing an application for one FP7 Project;
- ERA with two projects (SEE-ERA.net- "Development of Molecular Tools for FIG Genetic resources Characterisations and Preservation in WBCs", "Landscape and Regional Context of Insect Agrobiodiversity in Southeastern Europe: a Pilot Survey of selected Hemipteron Pests, their Parasitoids and Predators and Bee Pollinator Diversity"),
- TEMPUS- "Support Network for Improvement of the Strategic Planning")
- SEEDNet project for agrobiodiversity preservation in south eastern Europe is also ongoing one;
- IPA PROJECT-DEVELOPMENT OF FOOD SAFETY SERVICES, where are the participants: Biotechnical Faculty; Marine Biology; Institute for Public Health

Research competence

According to EU proposition Montenegrin agrifood R&D mostly means smaller projects.

- From 2007 onwards, Montenegro will receive pre-accession **financial assistance** under the Instrument for Pre-Accession Assistance (IPA). The 2007-2009 Multi-Annual Indicative Planning Document (MIPD) for Montenegro was adopted in June 2007. In 2007 a total of € 31.4 million was allocated to Montenegro.
- The main focus areas are public administration reform and rule of law, the business environment, transport, the environment, **agriculture and food safety**.
- The EU OBNOVA and CARDS funded projects assisted the sector of Montenegrin agriculture with a total of €10 million committed between 1998 and 2006, covering institutional and policy developments as well as investment in structures and equipment for Veterinary and Phyto-Sanitary controls.
- The line Ministry of Agriculture has thus developed its capacity to formulate agricultural policy and is aware of the challenges linked with the SAA implementation and WTO membership, as well as European integration

Research competence

- Over the last year, Agriculture was one of the most important sectors in the integration process.
- Bilateral and multilateral S&T cooperation will give the possibility to Montenegro to create the link with internal RTD market, also much stronger participation in European research endeavors, thus enhancing research perspectives in bilateral and multilateral activities.



Major research areas in Montenegro

According to the number of researches, the following areas seem important:

1. Plant production and protection
2. Management of natural and biological resources
3. Animal science
4. Economic, social and political aspects



Areas as interesting for cooperation

- Food safety
- Biodiversity: conservation of genetic resources & indigenous species
- Animal science: animal husbandry and zoonose
- Organic farminig

SWOT

STRENGTHS

- High level of development
- Fast growing rate after 2000
- Education and learning in agrifood field
- Stability in financing of agrifood research projects
- Current structure of institutional set-up
- Long term sustainability
- Relations between main stakeholders
- Existence of law and national bodies concerning the R&D or S&T framework

WEAKNESSES

- Limited public expenditure for S&T and R&D purposes and education
- Limits in human resources
- Lack of financial resources in order to renew technologies
- High imbalance on the external accounts (especially for agrifood)
- Recognition of the role of science in the overall process of economic development
- Lack of national standards in the evaluation of research activities and accreditation of R&D organizations
- Motivation of young scientists
- Small number of realized research projects
- Research infrastructure

OPPORTUNITIES

- Increasing economic activity
- International Funding Opportunities
- Increasing research funding
- Increased scientific support to policy making activity
- Increasing networking opportunities
- Interaction of the education institutions with the business sector
- Linkages with the research systems of other countries

THREATS

- Lack of agrifood researchers
- Ratio between applied versus basic research

Concluding remarks

- Agriculture is an important economic sector in Montenegro, but investments in the agrifood industry remain low.
- The sector is dominated by state-owned institutions (universities and public research units), which receive institution financing without linkages with industry. The number of researchers in the agrifood sector is estimated at 80 and most of them are at the Biotechnical Faculty.
- For Montenegro, as small country with certain limitations, it is extremely important to use its institutional resources in effective and efficient way. Making agrifood research more market-oriented and competitive remains a challenge for a longer period of time.



Thank you for your attention!