INSTITUTE OF AGRICULTURAL AND FOOD ECONOMICS
NATIONAL RESEARCH INSTITUTE

The new solutions of the CAP 2013+ to the challenges of the EU member states agriculture

no 91.1
Warsaw 2013

MULTI-ANNUAL PROGRAMME 2011 - 2014

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The publication was prepared within the Multi-Annual Programme "Competitiveness of the Polish food economy in the conditions of globalization and European integration"

The purpose of the study is to analyse the new Common Agricultural Policy 2014-2020 solutions and their impact on the agro-food sectors and rural areas of the selected European countries.

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Cover Project
AKME Projekty Sp. z o.o.

Foreword and chapters: 1, 2, 3, 7, 9, 11, 12 translated from Polish into English and chapter 17 translated from Russian into English by Contact Language Services.

Individual authors of chapters shall be responsible for any possible errors.

ISBN 978-83-7658-426-3

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Foreword

The agricultural policy in the European Union (EU) supports operation of many types of agricultural activity based on traditional, industrial and organic models. The Common Agricultural Policy (CAP) objectives and mechanisms, as well as individual agricultural characteristics for respective EU Member States indicate that in the long-run the CAP functioning patterns undergo partial unification, although a model typical for a given country, which results from its specificities and internal conditions, still is and will be present. In the debate on the future of EU agriculture and the shape of the future CAP, questions are asked concerning the sustainable development based on the multifunctionality, competitiveness which pushes agriculture towards further concentration, specialisation and intensification, as well as structural changes and a new way of their implementation. This complex discussion is certainly not restricted by a rigid framework of the upcoming 2014-2020 budget period. Yet again, the fundamental issues are being settled concerning the objectives for co--operation between the European countries and methods of its implementation. This monograph discusses the debate on new CAP 2013+ measures in relation to the challenges of EU Member States agriculture perfectly. It covers many important themes of discussion on the perspectives of one of the most important areas of European integration – the agricultural policy.

The volume consists of 19 chapters developed by 17 representatives of the following research centres: Institute of Agricultural and Food Economics--National Research Institute, Warsaw; CER France Amiens Association d'Economie Rurale, France; Federal Institute of Agricultural Economics, Austria; University of Economics in Prague, Czech Republic; Institute of Agricultural Economics and Information, Czech Republic; University of Florence, Italy; Hradec Králowé University, Czech Republic; Czech University of Life Sciences, Czech Republic; Research Institute of Agricultural Economics, Hungary; Institute of Agricultural Economics in Serbia; Mediterranean Agronomic Institute of Bari, Italy; University of East Sarajevo, Bosnia and Herzegovina; University of Belgrade, Serbia; University of Podgorica, Montenegro; National University of Food Technologies, Ukraine; Institute of System Research in Agro–Industrial Complex of the National Academy of Sciences of Belarus and the Agricultural University in Plovdiv.

The authors of particular chapters are most interested in the view on CAP from the perspective of the food sector and rural areas' competitiveness. The monograph begins with a chapter by dr. Grzegorz Dybowski, portraying the broad context of the last CAP reform. It is formed mostly through the changes

on the global agricultural market and the operations run by the participating actors. In his study the author focuses on indicating the causes and consequences of the crisis on the world agricultural products market. The surge of food prices and their associated strong fluctuations, according to dr. Dybowski, reflect the new phase of the food market development, characterised by an increase in the importance of demand factors and the change of the price formation mechanism. The causes for such situation are complex, as the impact of the identified conditions is influenced by untraditional determinants, such as speculative action, the development of the biofuels market or the strengthening of the competition for land resources. The author points out that the shock on the global food market caused various effects, starting from the increase and uneven distribution of income, a loss of trust towards the markets, to the reactions of state governments, which take a form of short-term solutions and more strategic actions. Global changes described in the study thus imply the shape of the EU agricultural policy after 2013.

The situation around agriculture, which is modified by the unstable state of the markets and prices, and more and more set by the environmental factors and climate changes, has influence on the situation of farmers. In their case it becomes necessary to find effective ways to adapt to external changes, including the new agricultural policy. The identification and description of flexible adaptation measures are performed by dr. Pierre Yves Lelong, dr. Joanna Pawłowska-Tyszko and Sebastian Filipek-Kaźmierczak, MSc. The researchers claim that on the level of an agricultural holding there is a need for the implementation of new management instrument. They entail undertaking particular actions (rules of conduct) in the three types of projects: property, technical and economical. According to the authors, the intellectual capital is the agricultural holding's basis for development – that is, the knowledge acquired by a given farmer and the available information.

Economic actors of the agri-food sector in the Central and Eastern Europe (CEE) have taken a significant effort to adjust themselves to the changing conditions. The transformation of the socio-economic system and the following European integration, undoubtedly constituted a great challenge. The effects of economical changes for agricultural sectors of countries in eastern regions are of a particular interest within this context. The evaluation of the development of agriculture in Poland, Bulgaria, Romania, the Czech Republic, Hungary and Slovakia are performed by prof. Wojciech Józwiak and prof. Wojciech Ziętara. The authors claim that irrespective of the differing input state and the significant structural differences, modernisation is visible in all the analysed countries. Along positive occurrences, such as for example a strong position of the

professional and competitive farms, there can also be noted numerous issues (including a small and decreasing livestock density, negative net international trade in swine). Within the CAP transformations after 2013, especially in connection with the planned elimination of milk quotas and greening, prof. Józwiak and prof. Ziętara ask a question about the continuation of the tendencies for adjustment and point to its possible economic effects for agricultural sectors in the analysed countries.

The new financial perspective is also a challenge for those countries being members of the EU longer than the CEE countries. One of such challenges is the process of instrument programming for the rural development policy. It is especially important in the case of countries where a support under the second pillar of the CAP plays a fairly more prominent role. This is the case of Austria. The particular stages of designing the Austrian rural development programme are described and evaluated by Klaus Wagner. Despite the intensive preparatory actions undertaken on various levels with the participation of a large group of stakeholders and experts, the representative of the Federal Institute of the Agricultural Economics points to numerous problems and areas of conflict accompanying the document's development. The most important controversies were centred on the delays of financial decisions on the part of EU institutions, the increasing expectations of potential beneficiaries (for example lands), but they also referred to the complexity of the method for creation and evaluation of specific actions. In the case of Austria the work on particular instrument involved experts. The author often considers their independence questionable, however the very idea of a professionals' participation in the development of the programme cannot be overstated.

The following chapter concerns designing strategic goals of the agri-food sector. This task was taken up by Jan Šlajs and prof. Tomáš Doucha, in relation to the economic situation of the Czech agri-food sector. In the authors' opinion, regardless of the improvement of the economic situation on farms and structural changes in the first sector, Czech agriculture is largely characterised by low efficiency and negative impact on the environment. The unfavourable situation is further aggravated by the weak condition of the increase in food industry. The diagnosis presented in the study gives way to formulate five long-term goals in the sector that pertain to protection of the environment and production of renewable sources of energy, economic situation of farms and certain instruments of they support, as well as linking the functioning of agricultural activity with development of rural areas. The expert project of a strategy prepared by the study's authors became the subject of political considerations.

The results of analyses conducted were also used to formulate the optimum shape of CAP after 2013 from the perspective of the Czech Republic.

The impact of the future EU policy is also considered on regional level. Representatives of the University of Florence, prof. Leonardo Casini, dr. Caterina Contini and dr. Gabriele Scozzafava, performed simulations of impact of the new system of payments from CAP's first pillar on the added value produced by farms and the amount of assistance allocated to individual areas in the region of Tuscany. According to the author, this type of analysis is significant since the above-mentioned region is indicated as one of the relatively most threatened by the loss of agricultural function in Europe. This could have negative repercussions in relation to production of food and of public goods for society in that area. The CAP instruments are seen as one of the ways to hinder this process. The authors' calculations prove that distribution of assistance will have a positive influence on the added value of Tuscany's farms. At the same time, however, distribution of assistance means limitation in assistance allocated to organic farming.

The next chapter considers the issue of agricultural insurances. The study's authors, prof. Jacek Kulawik, dr. Joanna Pawłowska-Tyszko and dr. Michał Soliwoda, focus on arguments which raised to involve the public government in the system of agricultural insurances, and they characterise the level of this involvement in chosen countries. The conducted analyses allows the researchers to formulate a recommendation as to the future CAP. According to them, subsidising from public funds the agricultural insurances in farming has positive, as well as negative economic consequences. According to IAFE-NRI researchers, provision of such assistance is acceptable, but under certain conditions (caution, precision and time-limit support).

In order to protect against unforeseen economic loses, market participants do not have to rely solely on government intervention. Dr. Jaroslava Dittrichova, dr. Libuše Svobodová and dr. Miloslava Černá point to the possibility to use derivative instruments in order to decrease the risk in trade exchange. On the basis of data from financial reports, the Czech authors describe a case of application of the forward contract by an enterprise that export its products.

The level of environmental sustainability of farms in Poland and its political dimension is presented by prof. Józef Stanisław Zegar. The author of the chapter formulates recommendations on agricultural policy on the basis of an analysis of correlations between economic factors (area, level of intensity and efficiency of production) and chosen indicators of environmental sustainability. The statement on the existence of significant convergence between the economic and environmental criteria in Polish individual farms is accompanied by the

assessment of their level of sustainability. Based on empirical observations, prof. Zegar defines the strategic direction of development of the domestic agricultural sector, making a statement in the discussion on the competitiveness of the sector and the desirable shape of structural changes.

The analysis of the empirical data is also used as a premise to characterise the Czech rural areas and agriculture in the time of economic crisis, which is done in the study by prof. Vera Majerova and Jiří Sálus. Representatives of the Czech University of Life Sciences in Prague describe the positive as well as negative signs of changes in the first sector and in rural areas. The former include: support for agricultural producers by means of CAP instruments and increase in the level of education among rural population. However, the recent developments were strengthened by the negative impact of economic slowdown which resulted in emergence of a significant number of problem phenomena. Researchers notice mistakes made in agricultural policy (e.g. excessive support of biofuel plants production) that pose a threat to the food security and environment, as well as increase in negative socio-demographic trends, especially in small villages of less than two hundred inhabitants (ageing, out--migration growth, deteriorating living conditions or unemployment growth). The authors consider the possibilities of support these villages. They point to the use of relevant CAP instruments, as one of the solutions, and CAP's relatively better convergence with programming of rural areas development.

Various institutions play an important part in the development of rural areas. According to the authors of the next chapter, prof. Danuta Kołodziejczyk, dr. Adam Wasilewski and dr. Marcin Gospodarowicz, the institutions' beneficial impact may take on a form of improvement in the sense of security, indication of certain ways of procedure and optimum use of resources. The text in question consists of two parts. Institutional assistance of rural entrepreneurship and its impact in Poland between 2004 and 2013 was presented in the first part. The second part pertains to the institutional integrated approach towards rural areas. The process of co-ordination and co-operation between self-government institutions on various levels (voivodeship, poviat and gmina) on the example of bodies involved in the development of the rural areas of Mazovia. Finally, the IAFE-NRI researchers assess the existing system in the scope of impact on the co-ordination and co-operation between institutions working for the development of rural areas, and present recommendation regarding the system.

The impact of the public assistance instruments on various aspects of the socio-economic life may not be straightforward. At times an intervention brings undesired or unforeseen results. Such situations were noted in many countries as an effect of subsidizing of biofuel production. In their study, prof. Szczepan

Figiel and dr. Mariusz Hamulczuk present the conditions and the scale of increase of biofuel production and broadly discuss its consequences. The authors state that recent years saw significant price convergence between the agricultural raw material markets and the energy markets. In addition, agricultural raw materials started to be characterised by high level of prices and their significant volatility, what influenced the lowering of food security, especially in developing countries. The IAFE-NRI researchers' opinion is that biofuel policies require far-reaching changes. Detailed recommendations in the scope are presented in the final sections of the chapter.

The next chapter, entitled "Innovation opportunities in Hungarian agriculture and rural development" was written by dr. Szablocs Biro. The representative of the Research Institute of Agricultural Economics points to the significant role of innovations in the economic development and characterises the condition and needs of the institutional system responsible for implementation of innovations in Hungarian agricultural sector. Regardless of the large potential, the results in the scope of innovativeness in Hungarian agriculture are described as dissatisfactory. This is correlated with the low scale of co-operation between certain actors, inappropriate management of the institutions, inadequate role of scientific research and trainings, dispersion of assistance and its insufficient scale. In regard of insufficient innovativeness of agriculture, dr. Szablocs Biro tries to establish the instruments of the innovativeness's development.

High innovativeness is one of the most important factors increasing the level of competitiveness on domestic and international agricultural markets. This view is presented by researchers from Serbia, dr. Vesna Paraušić, prof. Drago Cvijanović and Predrag Vuković. The analysis of the selected indicators has the above-mentioned authors state that the level of competitiveness of the Serbian agricultural sector as compared with developed and developing countries is low. Furthermore, the authors present the causes of the low competitiveness of agriculture with chosen means of its improvement. The instruments relate to leading adequate agricultural policy, organisational changes in the agri-food chain, increase in the public sector support, as well as limiting of the grey economy. The chance for positive transformations is connected with the process of European integration.

Currently Serbia, Montenegro, and Bosnia and Herzegovina apply for membership in the EU. Their advancement in the process of accession to the European structures is varied. The two first of the listed countries have the official status of candidate countries. Bosnia and Herzegovina is a potential candidate. Adjusting to *acquis communautaire* in the field of agricultural policy

and development of rural areas is a considerable challenge. Assessment and course of the process in relation to the aforementioned countries of the Western Balkan region can be found in the joint study by the following authors: dr. Hamid el Bilali, dr. Roberto Capone, dr. Noureddin Driouech, Sinisa Berjan, Mirjana Radovic, prof. Zorica Vasiljevic, dr. Aleksandra Despotovic.

The chapter by prof. Tetiana Mostenska pertains to the competitiveness of the Ukrainian agri-food products. The author describes the characteristics of the innovative goods and then assesses chosen national products in that respect. Regardless of the strong increase of export in recent years, according to the representative of the National University of Food Technologies in Kiev, the potential of the industry remains underused. The chapter depicts a number of causes of this state of affairs.

The article "Problems and perspectives of sustainable development in Belarusian agriculture" mostly characterises the economic situation of agricultural producers and the state and possibilities of development of individual branches of agriculture in Belarus. The authors, prof. Anatoly Sayganov and dr. Alexander Kazakevich, analysed this problem in relation to the 2005-2010 period, namely the period of implementation of the The State Program of Rural Development 2005-2010.

The state of and perspectives for the development of vegetable production in Hungary is the subject of the subsequent chapter. According to Ehretné Berczi Ildikó – the author of the study, it is an important branch of national agriculture, for social and economic reasons. The conditions of its functioning have changed after Hungary joined the EU, which, on the one hand, resulted in access to new markets and assistance funds, but also increase in competition, on the other. Competition on the part of foreign producers influenced the emergence of negative balance in vegetable trade. Other problems of the Hungarian vegetable industry discussed by the author include the crisis connected with infections with bacillus coli, structural problems on the watermelon market, significant grey economy and high VAT rates.

The volume closes with the study by dr. Teodora Stoeva of Agricultural University in Plovdiv. Similarly as in the case of Hungary, the Bulgarian vegetable sector faces significant problems. Using the data from the public statistics, the author describes the economic situation on the vegetable market and points to species most favourable for growing.

We hope that the publication we pass onto your hands will answer to some of your questions on competitiveness of the agricultural sectors of the EU Member States, candidate countries and neighbouring countries, the development of their rural areas, including issues connected to infrastructure or

social problems, as well as it will better recognise the new CAP 2013+ challenges. We are aware, however, that we did not manage to answer all the questions connected with the publication, nor exhaust the questions analysed in this volume, despite the extensiveness of the study. Therefore, we allow ourselves to take the opportunity for further discussion on the above subject. Such opportunity is created due to the Multi-Annual Programme "Competitiveness of the Polish food economy in the conditions of globalization and European integration" implemented between 2011 and 2014 by the Institute of Agricultural and Food Economics – National Research Institute. The discussion on the matter will be continued at the seminars and scientific conferences organised by the Institute, as well as in a publication series of the Multi-Annual Programme. We encourage all readers to follow the results of our research and scientific studies through the Institute's website at: www.ierigz.waw.pl

Editorial Committee

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1. Global food market – new conditions for national sectors

This conference is devoted to the current and extremely important issues of the CAP reform, evaluation its new shape after 2013 and, above all, the potential influence of the occurring changes on the national sectors. However, the Community policy does not work in a vacuum. The process of its reformation is substantially an effect of the changes, which occur on the global agricultural market and in the behaviour of its main participants. It is necessary to adjust the EU aims of the CAP as well as the set of tools for its implementation to such changes. This paper aims at providing a general background for further, detailed reflections concerning the basic topic of the conference.

The paper touches upon the following matters, which I consider to be extremely important for the better understanding of the CAP changes in a broader context.

Firstly, the impact of the crisis connected with high prices of food on world markets:

- what was before 2006,
- causes of a high price growth in 2007,
- its consequences for the global food market.

Secondly, the reaction of the national sectors to the high food prices on the world markets:

- *ad hoc* measures undertaken,
- change in the development strategies,
- consequences for the global food market.

Thirdly, the impact of the crisis on multilateral agricultural negotiations conducted within the WTO Doha Development Round:

- the cause of the agricultural negotiation deadlock,
- consequences for the global food market,
- implications for national sectors.

The 2006-2012 period, which was marked by strong fluctuation of food prices, including their sharp increase in 2007 and in the first half of 2008, shed new light on the issue of global food market, revealing unsolved problems and

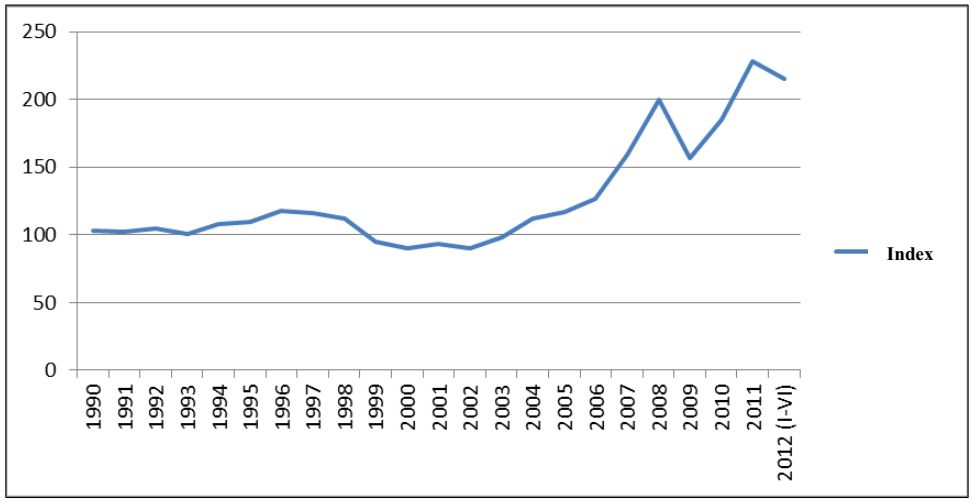
questioning the global and local food security. Against this, legitimate questions about the trends of further development of the agricultural raw materials market appeared, and about the new factors, determining the future shaping of the food prices.

Before the 2007-2008 crisis, and especially until 2002, the global index of real food prices (FAO) for several decades indicated a clear decreasing trend, despite the current fluctuations with changeable, even sometimes high amplitude. It resulted mainly from the technological and biological development, but also from the strong support of the agricultural sectors of the OECD countries, that is countries with the highest economic development level.

The supply factors mainly determinate the prices on world markets, and the possibility of satisfying the food needs by the developing countries was strongly dependant on import. This import was often implemented on preferential conditions granted for this group of countries by the rich nations. Simultaneously, the significance of highly developed countries, which exported food products to the global market, was increasing. Those countries had at their disposal a surplus in agricultural raw materials which could be used only by export.

At this background, the trends to free the world agricultural trade conditions were intensifying. They were reflected and specifically objectified in the decisions of the Final Act of Uruguay Round.

Figure 1. FAO food prices index (2002-2004=100)



The relatively low food prices were, on the one hand, beneficial for its importers, who paid less for the import of agricultural raw materials. Especially

privileged were those who covered the food import with the export of other goods, including industrial goods. On the other hand, it posed specific problems for the agricultural sectors in many countries, which could not face the competition and had to often limit the growth of their agricultural production.

Especially difficult was the situation for the developing countries, dependent on monoculture export. In such countries the low prices on the global market limited the level of farmer's income and the size of employment. The macroeconomic and social problems were increasing. The low prices of food raw materials, which continued for a long period, were paradoxically dangerous to the food security of many countries, especially those allocating most of their income from export of agriculture products to import of the lacking food. Since these incomes were decreasing.

The 2007-2008 crisis, manifested with strong price increase on the global food market in a short period of time, changed the foregoing market signals and created new conditions and stimuli for the agricultural production. Its impact was also enhanced by the growing demand for energy raw materials of agriculture, whose development increased especially after the 11 September 2001.

Asking the question about the reversal causes of development trends in shaping of the prices on the food world market, it is important to remember, that in 2001-2010 the pace of world population growth was significantly weaker (+30%) than the dynamic of food production growth (+110%). Thus the price shock in 2007-2008 was not caused by the sudden shortcoming of supply of food raw materials. Unfavourable weather phenomena – especially the long drought in the regions important for the world supply of wheat and high protein plants, can be qualified as a traditional factor in high growth of food prices. The level of the trade reserves of several strategic agricultural goods was also low.

Because of the raising prices of input the costs of food production were increasing. In certain regions, under the influence of the accelerating economic development, the structure of demand for food changed in favour of the larger share of meat and animal products. However, those phenomena were not sufficient to explain the rapid increase in agricultural prices. Aside from the traditional factors, the growth was also determinate by the new market forces, including:

- speculations at cereals futures market, which happened after the collapse on the American real estate market,
- demand gap on the traditional energy media market, leading to the record--breaking increase in their prices,
- development of the biofuels market, as a alternative renewable energy source, independent from the Arabic consortia,

- linking the fuel market with the food market, which lead to a change in creating the world food prices formula,
- competition over land between the agricultural raw materials, used for food and biomass production,
- income increase and in consequence, the increase of demand for food by the so-called emerging economies with a very fast increasing dynamic.

Figure 2. Indices of selected food products (2002-2004=100)

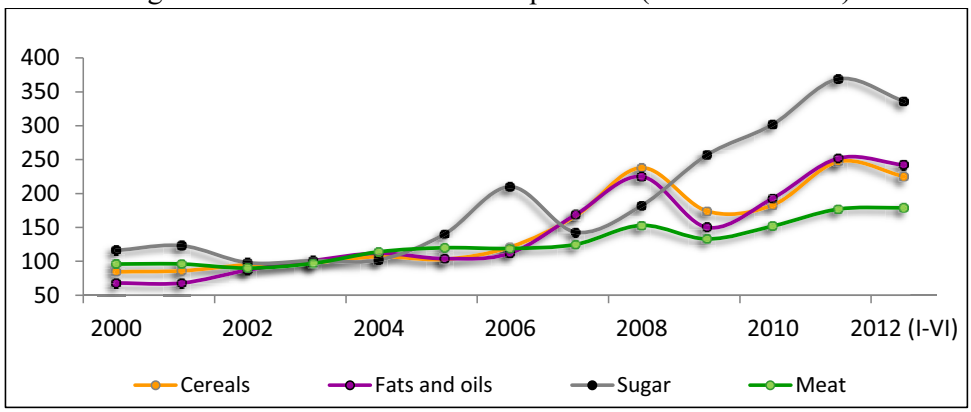
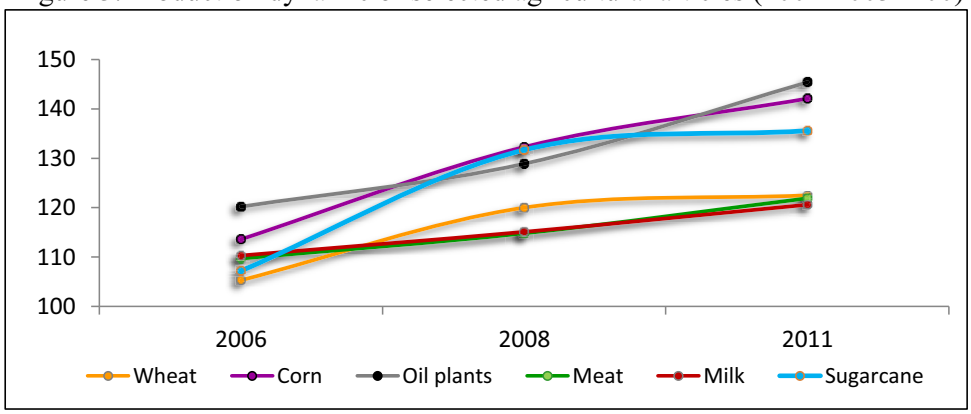


Figure 3. Production dynamic of selected agricultural articles (2001-2003=100)



All of the above-mentioned factors, the traditional as well as the new ones, caused a rapid and very strong increase in prices of many agricultural raw materials in the short time span. This triggered a shock on the global food market and lead to a crisis, which was characterised by the following traits:

- the growth dynamic of plant products prices was stronger than that of the animal products,

- the increase of agricultural production was weaker than the stimulus, that is the price increase, which caused it,
- the dynamic growth of agricultural raw materials production, used directly for consumption was lower (growth by 20-22%) than the agricultural production used also for biofuels production (growth by 36-45%).

The effects of the crisis on the global market can be summarised as follows:

- contrary to the previous period, in which the food prices were low, after 2006 the demand factors influencing the level of prices of agricultural raw materials were more pronounced, they mainly included: the increase of global income level, higher demand for the biomass and the increase in demand on futures markets,
- the import of food went up. World importers had to pay significantly more for trade transactions, and often had to decrease the purchase and the consumption level – additional 400 million people experienced hunger and malnutrition,
- agricultural producers in many developing countries could not use the increasing prices of agricultural raw materials in international trade for improving their own income, because they did not had any free production potential (especially land) and they had no access to the production input, nor appropriate financial resources. The price transmission from the global market to the national agricultural sectors was also insufficient, and the distribution of profits was strongly asymmetrical,
- the trust in the global market as a source of supply of the national demand for food deficit was lost, and in consequence the autarkical tendencies increased.

It should be noted, that before the crisis that is before 2006 world food import per capita, was increasing faster than its production. The growth dynamic amounted respectively to +153% and +110%. During 2006-2010 both these figures were increasing at a similar pace (+142%). In 1990-2010 the share of food import in its production was increasing, during the crisis – in 2006-2010 – it almost did not change, despite the strong growth dynamic of import.

Fast and rapid food price increase on the global market, pressured intervention on national agricultural markets in countries which were its net importers. In the face of the crisis, the developing countries undertook primarily *ad hoc* measures, aiming to ease its negative impact on food consumption and boosting the development of domestic agricultural production.

Table 1. Production and import of food and world population

Years	Global food production (USD bn)	per resident (USD)			World population (bn)
		Food production	Food import	% share of import in production	
1990	1,504	291	45	15.5	5.3
2000	1,408	230	48	20.9	6.1
2006	2,126	323	80	24.8	6.6
2010	3,159	458	114	24.9	6.9
2010/1990	210%	157%	253%	X	130%
2010/2006	149%	142%	142%	X	105%

Source: FAO data.

The lifesaving character of such measures, directed onto achieving short term goals, often lead to breaching of international agreements, earned earlier with difficulty. It lead to the retreat from liberalism and re-intensification of protective tendencies, as well as restrictions in the export of food raw material. The most frequently used intervention instruments of included: reduction of tariff rates in food import, lowering the taxes, subsidising production input, granting preferential credits for production start-up, administrative control of food prices, total prohibition or high taxation of export.

Table 2. Basic production trends on the world agricultural market

Years	Production in kg/per capita		Global production (million t)		% share of national market of raw materials in world food import*
	crops	meat	crops	meat	
1990	336	34	1,780	180	6.3
2000	304	38	1,861	234	7.1
2006	307	41	2,023	268	7.1
2010	325	43	2,243	296	8.2
2010/1990	97%	126%	126%	164%	X
2010/2006	106%	105%	111%	110%	X

*developing countries, net food importers.
Source: FAO data.

Independent of the *ad hoc* measures, many developing countries introduced changes to their long term development strategies. Those changes moved into the direction of increasing food self-sufficiency, which was supposed to guarantee higher food security in high and highly fluctuating conditions on the global market. In consequence of such approach, the

development of own agricultural production became again the basic aim of the national agricultural policies, and its support by market intervention instruments, became the priority measures. It was supposed to decrease the dependency on food import from global market, inherited after the previous period. In developed countries, affected by the serious economic crisis, the pressure on limiting the potential in food raw material production was also diminished, more so that they have a production potential, which can be easily activated.

The effects of high food prices for the global food market and its structure resulted mainly from the following facts:

- in 1990-2010 the production of plant raw materials per capita decreased, while the production of meat increased by over 1/5. During the crisis, the production of plant crops was increasing faster than that of meat production, despite the reversed trend in the direct development of consumption demand.
- similar trends were present as regards global size of production (not per capita),
- the participation of countries, most dependent on the import from international food trade, became stable in 2000-2006, but during the crisis it again increased, which was mainly the effect of lowering the food trade in the remaining groups of countries,
- the demand for meat and biomass increased, which resulted in plant raw material increase,
- the crisis and high food prices, revealed the need for a mechanism of rapid response in the future, similar turbulences on the food market, which, in new conditions, become increasingly probable and unpredictable. In response to this need the AMIS information system was created,
- the trust of net food importers in the global food market also needs to be restored as soon as possible.

All those phenomena and processes, and especially the new strategic approaches of the main actors on the global food market, contributed to the change in priorities in the multilateral negotiations, implemented within the framework of WTO. It caused a serious deadlock in those negotiations. The global food market has currently entered a new stage, in which the tendency to maintain the surplus supply and low prices is becoming substituted by a lasting surplus demand and increasing food prices trend. After the 2007-2008 crisis, the basic option regarding the further development of agriculture production changed. The opinion that this production should increase both in developed, as well as developing countries is propagated, to meet the increasing needs of demand and to ensure global food security. It appears that currently the main

problem is not so much the interference in the world trade by the instruments of national agricultural policy, but overcoming too low level of food supply in developing countries, which for activating their production potential need large inputs not only in agriculture itself, but also in its surrounding.

This new approach exacerbated the already present discrepancies in solving specific problems discussed during the current negotiation round of the WTO. The main problems, the Uruguay Round had to face were: excessive production in developed countries and interference in world agriculture trade caused by: domestic support of own agriculture producers, subsidising export and protectionism. Its effects lead to the development of trade in agriculture and food materials and the liquidation of excessive trade surpluses among world exporters, but also to the gradual increase of prices on food markets. The Doha Round begun in the same spirit. It moved in the direction of further liberalisation of world agricultural trade, through limiting the domestic production support, liquidation of export subsidies, improvement of the conditions of competition and expanding the access to the domestic markets. However, right from the very beginning, a far-reaching discrepancy in the positions of respective members of WTO was revealed, which relates to the scope of reforms and manner of achieving the set goals. This is further emphasised by the fact that the production and trade effects of Uruguay Round were not equally beneficial for the developed and developing countries. Although the latter group is differentiating, it currently represents a much larger negotiating force than several years back.

According to the developing countries that the balance of agricultural sectors support in both groups of countries, i.e. the developed and developing ones, is not sustainable. Similarly the influence of this support in the world trade and natural environment is uneven. The economic and financial crisis pushed the developed countries to force the reduction of agricultural support which through the years formed a basis of their economic development. They ask then why countries with a low level of economic development should abandon the same path of growth and in what other way can they level the occurring economic and social delays? On the other hand, the developed countries promote a thesis that the developing countries do not compete with them on the global world market.

They admit that the construction of a larger production potential in developing countries cannot be avoided, however, it needs to be institutionally controlled, because they are not willing to associate their own development with the care for environment, climate and depletion of natural resources. The conflict of interest is growing, and the margin for achieving a constructive compromise is narrowing. Even more that in these both groups of countries,

which are not homogenous with respect either to potentials or economic interests, net food exporters are being distinguished. Moreover, they try to make use of the high prices and the current economic crisis for the activation of an additional production and its profitable sale to world importers, by means of the trade liberalisation, which would in turn render the current structures as fixed.

At the same time, there appeared a new alternative to use some agricultural raw materials not for feeding purposes. Namely, a broader use of those raw materials for bioenergy production. This lead to the establishment of connections between energy and food product prices, as well as to the competition for the two most important agriculture raw materials, that is land and water. In the long run, the increase of prices of agriculture raw materials, connected with the rising demand for biofuels, can stimulate the economic increase also in developing countries. Alternatively, it can lead to a larger instability of food prices on the global and local markets. Thus it is important to set up security networks which prevent uncontrolled transfer of agricultural land to the fuel sector and exclude it from food production system.

New global conditions are significantly impacting the national agricultural sectors. During the period of low prices of agricultural raw materials, the supply on food increased mainly due to the increase of crops achieved because of the raise in the use of crop-enhancing means and expanding the cultivation area. However, the straightforward continuation of utilising both of those factors, carries with it essential threats. Further increase of the crops is becoming more and more costly, not only from the economic but also organic point of view. The growth of cultivation areas can lead to infringement of the ecosystems' balance.

The demand factors will have an increasingly decisive role in the further development of food prices. Because of linking the food and fuel market, the mechanism of price formation, on the global food market, changes. To put it simply, this mechanism can be depicted as follows: the higher the prices of crude oil, the more economical the biofuels' production becomes, the higher the demand for agricultural materials, the higher the food prices. This in turn increases the competition for land, which resources for agricultural aims, are currently increasing slower than the number of people in the world. Thus the increasing demand for food must be then satisfied mainly by an increase in efficiency and productivity on the global scale. It is impossible to exclude developing countries from this process.

Higher food prices on the global market cause also an erosion of relative competitive advantages of existing leaders, especially those, whose advantages were based on profitable difference in prices. They also allow for inclusion of the new exporters, who would not be competitive in conditions of lower prices.

In the meantime, world agricultural import becomes even more scattered, and this trend is further strengthened by the aspirations of importers for a greater food self-sufficiency.

The impact analysis of factors determining the long-term development trend of world food prices, leads to a conclusion that the return of the era of decreasing food prices seems unlikely. Unfavourable weather phenomena connected to the climate change are aggravating. New outbreaks of animal and plant diseases are occurring. Warfare involves significant areas, especially in Africa and the Middle East. The costs of production inputs are raising compared to the agricultural products, e.g. due to the increase of oil prices. The structure of land use is worsening and the deficit of water is increasing. As a consequence of globalisation, the recession effects in one region of the world are rapidly spreading onto others. The concentration of significant production resources in the hands of powerful translational groups is progressing.

Everything indicates that food prices in the upcoming decades will not only fail to return to the declining trend from before 2002, but they will climb to a higher and even continually growing levels. In 2050 the world will have to feed over 9 billion people in the conditions of increased average income and changes in the model of consumption, leading to greater participation of meat in the entire consumption. According to the Food and Agriculture Organization (FAO), complete sustainability of this growing demand would mean the necessity of increasing the global agricultural production by 50%. The increase of food prices then seem unavoidable.

The long term deadlock in the multilateral WTO negotiations results in the development of the local agreements such as: NAFTA, MERCOSUR, ASEAN, ANCOM, CARICOM, ECOWAS, COMESA and others. The members of those agreements are mainly developing countries from Latin America, Caribbean's, South-East Asia, and Africa. The members of local agreements introduce simplifications in mutual local trade; however, they simultaneously hinder the access to their own markets for countries outside of their group. Above all, the aim of local agreements is to decrease the transaction costs in mutual trade. On the other hand, it contributes to the fragmentation of world sale markets and endangers the already achieved liberalisation of international agricultural trade.

In recent years a significant increase in sales of agricultural and food product, not only within the framework of those agreements, but also with third countries, was observed. If in a relatively short period of time the Doha Round negotiations will not reach a happy ending, the global regulations can be successfully substituted with regional and interregional ones.

Table 3. The dynamic of sales of agri-food articles in 1995-2011 (1995=100)

Agreement	Export		Import	
	total	domestic	total	domestic
UE-27	268	284	255	269
NAFTA	247	359	335	375
MERCOSUR	523	239	183	195
ANCOM	293	450	418	475
CARICOM	131	250	312	300
ASEAN	410	441	387	467
COMESA	326	775	377	550
ECOWAS	373	600	555	750

Source: [Nosecka 2012].

One of the most dynamic local agreement is the EU. Its new legislative solutions within the framework of CAP after 2013 and their impact on the national agricultural sectors of Member States will be the subject of evaluation and discussion on subsequent conference sessions. This discussions should also include the global context of the changes occurring in the EU policy.

References

1. Nosecka B., (ed.), (2012), Czynniki konkurencyjności sektora rolno--spożywczego we współczesnym świecie, Report no 54, Multi-Annual Programme 2011-2014, IAFE-NRI, Warsaw.

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2. Flexible adaptation of farms to the requirements of the CAP in the new financial perspective after 2014

2.1. Introduction

The CAP faces a series of challenges, unique on the one hand, and unpredictable on the other, demanding to take strategic and long-term decisions about the future of EU agriculture and rural areas. To effectively address the problems, the CAP must work within the framework of sound economic policy and sustainable public finances, contributing to the achievement of the objectives of the Community. The recent reforms of the CAP, in particular the review of the CAP in 2008, have been taking place in the new situation for agricultural holdings. This situation is characterized by: volatility of agricultural markets, prices and incomes, the risks associated with weather anomalies and intensifying climate change. The priorities of the CAP are: competitiveness, growth and stability and sustainability in the long term. The Commission, when announcing the draft reform of the Common Agricultural Policy for the period 2014-2020 on 12 October 2011, highlighted the fact that its purpose will be to improve the competitiveness of European agriculture and food security in Europe, along with the simultaneous promotion of high quality of products, protection of the environment and rural development [Commission 2007]. What is more, farmers of the Community, who are active market participants, will be required in the near term to take responsibility for risk management, because the EU is planning to reduce support directed to agriculture. As a result of all these changes taking place in the agricultural environment, participation in the market is becoming increasingly risky, and that compels operators to continuously adapt to market requirements in terms of quality products and good agricultural practices (specialized technical and manufacturing expertise), to constantly search for the added value, which is associated with periodic changes in production, or strategic positioning.

In particular, the issue of financial performance of farms is a major subject of discussion in the context of the future shape of the CAP. It is commonly believed that the financial performance of farms will be affected by

a number of new factors, different from those that shape it today. Therefore, the farms will be forced to accept a much reduced range of aid directed to this sector, and thus face new challenges. It is among others about the practices and techniques contested today and promoted in the 1950s, and also meeting at the same time the requirement of proximity (short distribution channels, e.g. producer – consumer, niches, etc.) and mass production for the agricultural industry.

The purpose of this article is to search for new, flexible forms of adapting farms to changing environmental conditions and requirements of the CAP in the new financial perspective after 2014.

2.2. Scheme of the problem

Agriculture underwent several phases of development, not only of evolutionary nature, but largely of revolutionary nature. In the twentieth century, almost to the present day, agriculture developed using renewable production resources without making havoc in the environment. Technical developments introduced both new development opportunities and on the other hand the new threats to the environment (pollution, erosion, etc.). Adamowicz notes, however, that the possibilities of industrial production system in agriculture in most developed countries are almost exhausted, and the modernization risks accumulate and create barriers to the further development [Adamowicz 2005]. This means that agriculture has encountered a significant barrier to growth, the cause of which must be sought in rising production costs, reduced demand for agricultural products, reduced possibility of strong agricultural subsidies. This situation causes the need to search for a new farming system adapted to the conditions and requirements of the agriculture environment, as noted in the CAP Health Check. It should be noted that some of the issues in the context of the new challenges of the CAP remain unchanged. This is primarily a concern for preserving the environment or the immutability of the role of agriculture as an agricultural producer. Against this background, however, there is a trend toward multifunctional development of agriculture, which is one of the ways of getting out of the current problems. In this context, the uncertainty of economic conditions takes on a new dimension. For farmers, this results in the economy that is no longer governed by stable trends or cycles disturbed by accidents (exceptional income or single crisis), but a chaotic one, where growth can be quickly replaced by reduction and vice versa. Faced with such an unstable economic situation, it is difficult to predict the situation on the nearest agricultural market. Previous actions of the CAP accustomed farmers to

a passive attitude towards agricultural policy support instruments targeted at farms. The current situation forces farmers to flexible adaptation to changing environmental conditions, and above all to take responsibility for farm management and monitoring of its development.

One might ask the question, how the farm should operate in the new conditions? It seems that the solution might be to anticipate the changes taking place in the farm environment. A new category of enterprise is being established, which must be open to new market challenges in a three-year term. The key issue is to improve the competitiveness of farms which the logic of the rapid development and flexible attitude of the agricultural producer. In these new conditions, farmers must learn to use the available tools for farm management and, above all, properly read reporting documents indicating the financial situation of the farm. The key seems to be the knowledge of economic indicators which are benchmarks to improve the efficiency of farm management. In addition, the farmer has to ask the following questions:

1. Is the enterprise reactive? In this context, one should reconsider the importance of short- and medium-term measures.
2. Is the enterprise stable? Is it able to survive the next downturn?
3. Is the enterprise competitive? Is the cost of production in line with the general trend of prices of production and farm resources in the medium term?
4. How to manage the enterprise in the short term?
5. Is the price scenario established for the range of enterprise operations favourable or not?
6. Should one foresee consolidation strategy, or, on the contrary, secure its position?

The answer to these questions is to create a balance scenario N+1, which can be a tool for monitoring short-term decisions.

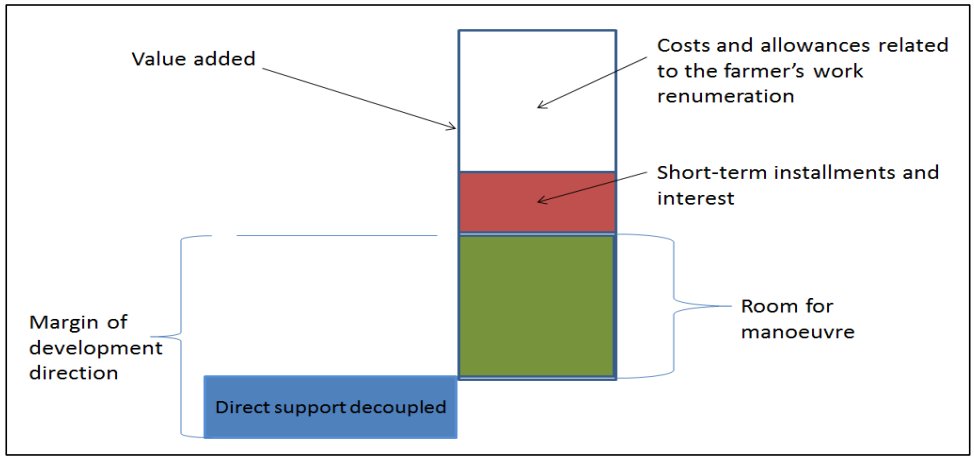
Another issue is the competence of a farmer is to answer the question: How to manage during a period of economic instability?

A key element in the flexible management of the farm is the targeting of short-term actions to creating added value, which in the long run will affect the ability to recreate the assets, take investment decisions, and continuation and development of the farm in time. In recent decades, a farmer could count on a short-term financial stability arising from the context of the CAP. As already highlighted, management conditions change in the new term and the head of the enterprise (agricultural enterprise) must develop creative strategies for production.

2.3. A new approach to added value in the context of the future perspective of the CAP

The new perspective of the CAP forces the agricultural producer to realize the new categories for operating the farm in analytical terms. Experts from CER France point to the need to analyze the added value in the new approach, which is shown in Figure 1. Until now, the added value of the farm has taken into account the State aid and was allocated to cover the remuneration of the farmer, the repayment of capital and interest and self-financing of the farm.

Figure 1. New approach to added value



According to analysts in CER France (in the context of the new perspective of CAP), there is a need for estimating added value net of direct payments in order to focus attention on the level of resources allocated to self-financing of the farm known as *Marge de manoeuvre* or margin, room for manoeuvre, and so-called *Marge d'orientation* or margin of direction of development. The "margin of direction of development" is the sum of State aid in the form of direct payments to farms (decoupled) and the so-called "room for manoeuvre", i.e. the value developed by an enterprise for self-financing.

The unstable situation changes the situation in the environment of the farmer and forces him to plan and look for opportunities to use the generated surplus to search for new directions of development of the farm and to adapt to the new environment in which it operates.

From the earned surplus (*la valeur ajoutée*) one should determine the portion allocated to the development and the portion for economic security, this

is so called sustainable finance. This approach to surplus translates into a new standards and seeking answers to the following questions:

1. What period of economic downturn can the enterprise withstand before it goes into irreversible financial difficulties? or *vice versa*
2. How much of a positive situation (above the values of return that form the top of the development of an enterprise) is required to create reserves and achieve a prudent level?

2.4. The concept of a flexible farm

The development of agriculture has evolved from the use of natural resources (land, labour) in the direction of man-made material factors (buildings, machinery, equipment, working capital and financial resources), to the use of intangible assets (knowledge and information). At the present stage of agricultural development, a key role is played by different types of intellectual capital, which is the basis for the flexible development of farms. The concept of flexible farm no longer implies an indissoluble relationship of man – land – means, but a kind of triptych: property scheme, economic scheme and technical scheme (Figure 2). The concept presented in Figure 2 is an in-depth reflection on the development strategy of a farm. Agricultural producer, having taken account of the scheme in flexible management of a farm, focuses on one or more schemes in relation to his current needs and circumstances of the farm. Each scheme is responsible for a different area of management. Moving to the position of a flexible farm means the deliberate acquisition of and compliance with certain rules of conduct. These rules should be carried out in three dimensions: property, technical and economic. Flexible farm is presented in the form of a triangle, which presents a strategy for the development of the farm.

Property scheme

The keynote of this scheme is the durability and long-term action (development). The approach connected with achieving results functions just like in any other property and financial approach, and consists of choosing between short-term profitability and long-term capitalization.

At the same time the property scheme includes the aspects related to the protection of the natural environment and multifunctionality of agriculture. These are areas such as biodiversity, protection of biotopes, landscape management, etc.

Economic scheme

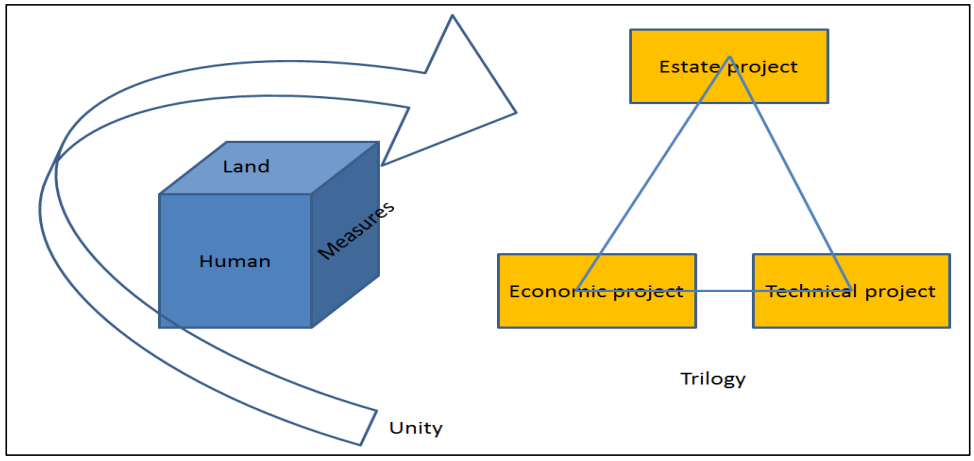
The economic scheme involves primarily creation of wealth. This translates into the creation of a set of actions, resource allocation, risk-taking

and management, management of trade relations, partnerships, increasing customer loyalty.

Technical scheme

The technical scheme is dominated by approach focused on the production of goods and services of the highest quality and least expensive.

Figure 2. Changing the attitudes of farmers to farm resources



2.5. Conclusions

A new look at the problems of a farm captures the current paradoxes of agriculture. Increasing competition in the markets requires new results, and thus also more economic competition. The quest for competitiveness leads in most cases to decisions to specialize or increase the scale of production. This in turn translates into an increase and concentration of risk.

Moreover, the withdrawal of the authorities from regulating the market, a significant reduction in the security and protection, lead more and more toward individual risk management. The head of the enterprise therefore uses a range of tools to prevent these risks.

One of the elements of management in the new conditions will be to diversify agricultural activity, i.e. to distribute competences and resources. Thus we choose two approaches, which apparently may seem contradictory. However, an analysis based on new assumptions allows to reconcile them. In the economic scheme the farmer manages risk by distributing it, because he invests in two or more different technical schemes. He can carry them out alone or with different partners. However, with each specialized in technical scheme, by pooling the resources of many farmers, he increases his competitiveness. A look at the

agricultural enterprise as a coherent combination of three scheme – property, economic and technical – allows you to simultaneously: analyse the same farm, one strategy in various dimensions, design business organization in which a farmer engages in one or two schemes at the beginning of his career, design a new structure for certain types of farms in which three schemes would not be regularly combined in a geographical, legal or organizational area, but on the contrary, they would be compiled in different configurations and organizations.

Therefore, the competitiveness of farms cannot be viewed solely from the accounting perspective. In view of the rapid changes in the context and the liberalization of agricultural policy, a simple strategy of gradual adjustment is not enough. Adaptation of farms to a new situation should not be limited only to seek savings, cuts, reducing production costs to compensate for the differences arising from the changing markets. One should plan a deeper change that affects strategy, attitude, approach, vision that guide the work of the agricultural producer.

When it comes to professional specialization, we touch upon the issues of competence and how we use them. As part of a family or neighbourly cooperation, this new look allows for planning new ways to adapt, change according to very different ways of developing farms. This process will be accomplished over time.

References

1. European Commission, (2007), Commission of the European Communities Communication from the Commission to the Council and the European Parliament Preparing for the "Health Check" of the CAP Reform Brussels.
2. Adamowicz M., (2005), Zrównoważony i wielofunkcyjny rozwój rolnictwa a agronomia, Annales UMCS, Sec. E, Vol. 40, Lublin, p. 73.
3. European Parliament, (2007), Committee on Agriculture and Rural Development, Working Document on a communication to the Council and European Parliament on Preparing for the "CAP Health Check", COM (2007)0722-2007/2195/INI).

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3. Phenomena occurring in agriculture of the EU Central and Eastern European countries after 2004 and conclusions for the future

3.1. Introduction

The purpose of this study is to present agricultural development of selected CEE countries before and after integration with the EU in 2004, as well as to indicate significant phenomena occurring in agriculture of these countries, with a reference to changes planned in the CAP 2014-2020. The analysis encompassed Poland as well as Bulgaria, Romania, Hungary, Slovakia and the Czech Republic, while the Baltic states (Estonia, Lithuania and Latvia) were omitted due to a minimal production potential of their agriculture.

3.2. Situation in agriculture before the accession

After the Second World War, the CEE countries developed a system of command economy, with an overwhelming share of state ownership in all sectors of national economy. In all those countries, except Poland, agricultural production cooperatives (equivalent of Russian *kolkhozes*) and state farms (Russian *sovkhozes*) were the legal form prevailing in the structure of agricultural holdings. Around 90% of agricultural land was used by the former or the latter. In Poland, the total share of these forms of ownership in land use did not exceed 25% and contrary to other countries state farms were the main form of land use. This was caused by the failure of collectivisation programme of Polish agriculture and, as a result, the adoption of a state-owned farm system (Polish: *pegeeryzacja*) as the Polish way of agricultural development.

The events prior to the accession gave rise to controversy [Józwiak, Kowalski and Wrzaszcz 2013]. Candidate countries had to accept a number of responsibilities in the field of agriculture on the day of accession, whereas full membership rights were to be granted only after a transitional period of ten years. What was highlighted as an advantage, however, was the financial benefits and the fact that the CAP provides stable production conditions for agricultural producers in a long-term perspective.

Financial support to agricultural producers was, however, conditional, as the EU imposed conditions on agricultural production in such a way as to approximate private aim (defined as an appropriate level of economic benefits received by agricultural producers) to social ends which take into account the interests of future generations and protect the existing ecosystems.

After the transition of the socio-economic system in 1989, all countries of the region in question underwent ownership transformation in the national economy, including agriculture. The extent of the transformation varied. In Bulgaria, Romania and Hungary, most agricultural production cooperatives were liquidated and the land was returned to the previous landowners. As a result, numerous smallholdings replaced large agricultural holdings. In the Czech Republic and Slovakia, the transformation was of a distinct character. A small number of agricultural production cooperatives were liquidated, with the remaining ones converting to limited liability companies (Polish: *spółka z o.o.*) and using the land of the former cooperative members on a lease, while state farms were privatised, mainly by lease of land and land property. As a consequence of this transformation, an overwhelming share of agricultural land in these countries was acquired by farms with an area of 100 ha or more.

Polish agriculture underwent ownership transformation to a limited extent. On the verge of transition, i.e. in 1989, state farms and agricultural production cooperatives used, respectively, 18.2% and 4% of the country's agricultural land. Basically, ownership transformation involved only state farms, which, after restructuring[1], underwent different forms of privatisation.

In the mid-1990s, a group of farms (ca. 9%) received state subsidies, which enabled them to modernise and increase their fixed assets. To a lesser extent, local governments were subsidised, too, in order to help them improve technical infrastructure.

Ownership transformation in the analysed countries also covered the food processing industry. State enterprises in this sector were privatised, usually with foreign capital share.

In Poland transformation of the food industry proceeded slightly differently compared to the other countries discussed. A relatively good condition of the food industry in the first years after the accession was partly a result of the support provided for transformation processes from the Polish

[1] Restructurisation of the state farms consisted in separation of organised parts from the existing agricultural enterprises to be managed separately, most often leased or sold. The remaining part in the form of an organisational unit of several hundred hectares, 450 ha on average, was offered for lease or sale.

state budget funds in the mid-1990s, and partly the EU funds which have been made available in the years before the Polish accession to the EU (PHARE – Poland and Hungary Action for the Restructuring of the Economy, and SAPARD – Special Accession Programme for Agriculture and Rural Development). As a result of modernisation and transformation, the food industry joined the process of globalisation preceding the implementation of control systems for main agricultural markets (similar to that in the EU) and gradual adaptation to the EU standards, especially concerning the quality of produced food [Józwiak, Kowalski and Wrzaszcz 2013].

Although the degree of vertical integration of the agricultural production and processing was still small, the requirements of the food industry led to significant changes in the production structure of agriculture at a fairly stable size structure of farms.

It should also be appreciated that the milk processing industry was dominated by dairy cooperatives, which under the Cooperatives Act of 1990 became a property of their members, mainly milk suppliers, whereas large state establishments in meat, milling as well as fruit and vegetable processing industries were privatised, mainly with foreign capital share. The employees of those establishments and the farmers-suppliers acquired a small amount of shares (15%) [Act of 30 August 1996…], but most often they sold them to the main shareholder, giving up the right to shape the policy of those establishments.

3.3. Situation in agriculture after the accession

The integration of the Central-Eastern Europe with the EU and opening the markets exposed their agriculture to direct competition with the strong agriculture of the EU Member States (EU-15). The countries in question attempted to address the challenge. As stated by A. Pouliquen "The new agricultural policy in these countries was to encourage the creation of professional farms with more intensive production and with less agricultural land than before. Like in Poland, instruments previously tested in the EU were used – investment incentives, early retirement, setting-up for young farmers, establishment of producer groups, training, etc". According to the same author, the effectiveness of such a policy, however, was "... lower than in Poland because of the absence of its roots, which suggests that the transformations will last longer [Pouliquen 2011]. This applies mainly to Bulgaria and Romania ...", and probably also to Hungary.

Number of farms in the analysed countries in 2007 was highly variable (Table 1), depending not only on the area of the country, but also on the area structure. In all these countries there were concentration processes of varying degree of intensity, which were manifested by a decrease in the number of farms in 2007 as compared to 2003. The most significant decrease in the number of farms took place in Bulgaria, i.e. by 24%, in Hungary by 19.1% in the Czech Republic and Romania by 14 and 12.4% respectively. The smallest decrease in the number of farms took place in Slovakia, namely only by 3.8%, and in Poland by 2.6%.

The average size of farms corresponds to the number of farms. The smallest one was recorded in 2007 in Romania, where it amounted to 3.5 ha of agricultural land. In Bulgaria and Hungary it was similar and ranged from within 6.2-6.8 ha, whereas in Poland it amounted to 8.9 ha. The farm area was definitely larger in Slovakia and in the Czech Republic, where it amounted to 28.1 and 89.3 ha respectively.

In all the countries except for Slovakia, the average area of farms increased. The most significant increase took place in Bulgaria and Hungary, namely by 40 and 21.4%, in the Czech Republic and Romania by 12.7 and 12.9% respectively, in Poland, however, only by 1.6%. However, it should be emphasised that phenomenon in question has not caused a significant increase in the average area of farms, and the farm area in Slovakia even decreased (by 5.8%).

Another indicator that describes the structure of agriculture is constituted by the share of land in the use of farms with area of 100 hectares of agricultural land or more. This proportion varies greatly. The largest share is in the Czech Republic and Slovakia, where it equals 88.1 and 90.2% respectively. It is also large in Bulgaria and Hungary, where it amounts to 77.3 and 65.5% respectively. It is smaller in Romania – 37.6%, and the lowest in Poland, where it amounts to 17.5% only.

The agricultural land area is not the best measure of the size of farms because it does not include the level of intensity of production. A measure that informs about the economic strength of farms in more detail is represented by the economic measure of the size of holdings expressed in ESU[2]. The research has shown so far that a capability of development and international competition is featured by the holdings with economic size of 16 ESU and higher [Józwiak 2009]. The share of farms of this size class varies greatly. The smallest is in Romania and Bulgaria, where it amounts to 0.3 and 1.2% respectively, it is

[2] ESU – European Size Unit of farms is a multiplied amount of the standard gross margin expressed in EUR and divided by 1200.

higher in Hungary, Slovakia and Poland, where it equals 2.5, 3.6 and 4.2% respectively. From this point of view, the structure of farms in Poland is more advantageous than in terms of area. The highest share of this area class can be found in the Czech Republic, where is equals 19%.

Table 1. Area structure of farms in the Central-Eastern Europe in 2007

Specification	Romania	Bulgaria	Hungary	Poland	Slovakia	Czech Republic
Number of farms (thousand)	3931,4	493,1	626,3	1807,0*	69,0	39,4*
Change in the number of farms in comparison with 2003 (2003=100)	87.6	74.0	80.9	97.6*	96.2	86.0
Average area of a farm (ha)	3.5	6.2	6.8	8.9*	28.1	89.3
Share of agricultural land in farms with area of 100 ha or more (%)	37.6	77.3	65.5	17.5	90.2	88.1
Share of farms with the size of 16 ESU and more (%)	0.3	1.2	2.5	4.2	3.6	19.0

*Agricultural holdings with area of 1 ha of agricultural land or more [Rolnictwo w 2005] and [Rolnictwo w 2007].

Source: [Statistisches Jahrbuch 2011].

It can be assumed that the processes and phenomena in question were caused by political changes that started in 1990 and by covering agriculture with CAP. It is supported by the example of Hungary.

In the early 1990s, about 2.2 million farms of 3-4 ha of agricultural land were established in Hungary. Most agricultural producers, however, did not have sufficient expertise, they lacked the machinery, space in buildings, and first of all the capital to be able to operate a farm. Besides, small farms were ineffective. Costs of machinery labour, for example in the fields with area of 0.5 ha, depending on the crops, were 2.8-4.2 times higher than in the fields with the area of 18 ha. Traditional livestock production was also ineffective. Feed consumption per 1 kg of turkey fillet produced from turkey of traditional local breeds was about 2.4 times higher than in the case of production based on modern breeds of turkeys BUT Big 6 [Józwiak 2012].

Furthermore, modern food-processing plants require regular supply of large uniform batches of raw material. These requirements could not be met by

small underfunded farms, which replaced the disbanded production co-operatives and privatised state farms. In this situation, the enterprises from the agri-food sector imported the necessary raw materials, thus eliminating local small-scale producers from the market. This situation mainly affects countries such as Bulgaria, Romania and Hungary.

With reference to the above-mentioned reasons and again to the Hungarian experience, it can be seen that only a part of the new owners started an agricultural production using the leasing of factors of production. Others leased their land or sold it.

The Czech Republic and Slovakia, despite a favourable structure of farm area, also were not able to meet the requirements of certain industries.

Poland in this respect stands out positively. Family farms, which were a dominant form in the agriculture, started to quickly and easily adapt to the requirements of a market economy. This observation, however, concerns only a relatively small number of agricultural holdings, usually larger ones, which, however, determine the level of commercial production. As the other extreme, there are still a number of small farms that produce mainly or largely for their own needs.

Crop structure is dominated by cereals (Table 2). Their share in the arable land area amounts to 59 percent or more. In the Czech Republic, Slovakia and Romania, it is within 59-60%, and in Bulgaria and Hungary it is slightly higher and amounts to 63.8 and 65.9%. In the latter country, production in 38-39% of the vineyards was abandoned and the areas of other intensive cultivation crops was restricted.

Table 2. The share of cereals in cropped area and livestock density in agricultural countries of Central and Eastern Europe in 2007

Specification	Romania	Bulgaria	Hungary	Poland	Slovakia	Czech Republic
Share of cereals in the area arable land	59.6	63.8	65.9	71.0	59.0	60.0
Livestock density (livestock units per 100 ha of agricultural land)	43.9	40.8	57.0	71.8	38.6	58.4

Source: [Statistisches Jahrbuch 2011].

The largest share of cereals in cropped area was in Poland and it amounted to almost 71%. Here, too, there is a process of reducing the areas of

the intensive crops (vegetables, sugar beets, etc.), but the area of orchards increases.

The farms' orientation towards production is also indicated by stocking counted in the livestock units[3]. In Bulgaria, Romania and Slovakia, the stock amounts approximately to 40 such units per 100 ha of agricultural land, and it can be defined as an insignificant level. In the Czech Republic and Hungary, a similarly calculated indicator amounts to about 57 units. In Hungary, in 2008, a decrease was reported in the number of beef cattle by about 56% as compared with the situation in 1990; the population of poultry and, to a lesser extent, the population of pigs decreases.

In Poland, the livestock is the highest among the group of countries in question, and it amounts to nearly 72 livestock units per 100 hectares of agricultural land. Stocking rate is significantly increased by poultry. Yet, there is a trend that is expressed by a decrease in the number of pigs, sheep and horses, but the downward trend in the number of cows was halted, and other cattle population even began to grow.

The situation in the sector of the food economy, including agriculture, is described by the balance of foreign trade in agri-food products. The relevant figures are presented in Table 3. However, the figures concerning 2003 are incomplete. Positive balance of foreign trade was featured then by Hungary and Poland whereas the Czech Republic and Slovakia had a negative balance, but there were no figures relating to Romania and Bulgaria.

In 2011, a positive balance of foreign trade in agricultural and agri-food products was achieved by Poland, Hungary and Bulgaria whereas Poland and Hungary improved their balance. The Polish balance in 2011 compared to 2003 increased by 528.2% and 56.7% in case of Hungary. A negative balance of the Czech Republic and Slovakia increased by 54.7 and 142.7% respectively.

As far as foreign trade in cereals in quantitative terms is concerned, all the analysed countries except for Poland had a positive balance, i.e. they were net exporters. This shows that these countries were oriented to raw materials in this regard. A negative balance of trade in cereals in Poland results from higher stock, in particular poultry. A negative balance of foreign trade in fresh vegetables (in volume terms) in all analysed countries apart from Poland is also typical. This is surprising because most of those countries have good natural conditions for the production of this kind and relatively low labour costs.

[3] Livestock unit (LSU/LU) – livestock conversion unit which is based on a cow of an average weight of 500 kg.

The negative balance of foreign trade in pigs – farm animals, mainly piglets and weaners – should be considered particularly disturbing. A particularly high negative balance is present in Poland, where in 2011 net imports amounted to 2,049.7 thousand heads. The results of foreign trade in live animals reflect the competitive strength of agricultural enterprises. They indicate that "pig producers" from the countries in question are not competitive when compared to similar producers from countries in Western Europe.

Table 3. Balance of agri-food products foreign trade in 2003 and 2011 in the studied countries

Specification	Romania	Bulgaria	Hungary	Poland	Slovakia	Czech Republic
Balance of foreign trade in agri-food products in 2003 (EUR million)			1,233.0	395.0	-360.0	-888.0
Balance of foreign trade in agri-food products in 2011 (EUR million)	-320.0	983.0	1,933.0	2,481.3	-874.0	-1,374.0
Balance of foreign trade in cereals (thousand tons)	3,260.0	3,460.0	5309.0	-376.0	719.0	2,411.0
Balance of foreign trade in vegetables (thousand tons)	-171.0	-76.0	-9.0	131.0	-168.0	-381.0
Balance of foreign trade in pigs for fattening (thousand tons)	-575.6	-2.5	-142.8	-2,049.7	-11.1	-420.6

Source: [Statistisches Jahrbuch 2011].

3.4. Probable CAP consequences after 2014

A question comes to mind whether the adjustment processes that took place in the food economy of the countries in question after accession to the EU in 2004 will be continued after 2014 in the light of the planned changes to the CAP. What should be considered most essential is the elimination of milk quotas and the "greening programme", which consisted in the exclusion of 7%, or according to the last proposal of the Commission – of 5% of agricultural land from the agricultural use for the needs of "ecological agricultural land". The

existing forms of support for agriculture and rural development will be continued, yet in a slightly modified form.

There is a thesis according to which the single payment scheme slows down land concentration. The recent studies of A. Sikorska indicate that the increased inflow of funds from the EU in the Polish rural areas has increased the demand for land and also increased the prices, which was an incentive for the sale of land [Sikorska 2013]. The scale of land sale contracts was closely linked to the development of the economy. In 2004-2007 it featured an upward trend, but afterwards there was a decline, and after 2009 it started to grow again. There is no clear evidence that area payments slow down the concentration of land. The statement of the quoted author that "... general conditions of economic development are of major importance when determining the pace of agrarian transformations" is true.

On the basis of these findings it can be assumed that in the medium-term perspective concentration of land will be continued. Its range will be different depending on the in the analysed country. In Poland and Hungary, the land concentration process will occur in a group of family farms whereas in Romania and Bulgaria it will take place by increasing the share of large-scale farms, often with foreign capital, which is dominant in the agricultural processing sector. The premise for this assumption is constituted by the attempts taken by these enterprises to organise own resource base. The concentration of land in Romania and Bulgaria in the sector of family farms is unlikely due to the lack of capital and traditions. In the Czech Republic and Slovakia, significant changes in the structure of farms should not be expected.

The planned abolition of milk quotas from 2015 on and reducing the milk processing sector support (subsidies to the storage and processing of dairy products) in Poland will undoubtedly cause an increased dependence on the world market situation [Parzonko 2013]. This will worsen the profitability of milk production in farms with smaller-scale production (up to 20 dairy cows) and will increase the rate of concentration. A similar process will take place in other countries.

The previous trends in production of live pigs indicate that pig holdings in the countries in question turned out to be uncompetitive against pig producers in countries such as Denmark, the Netherlands and Germany, in particular in the production of piglets. There is reasonable concern that the countries in question will be net importers of livestock, or at least piglets and weaners for further fattening. The condition of inhibition of these trends is to implement programmes to support this sector under the CAP.

The solutions planned under the CAP (greening, nitrates directive) may cause, although not necessarily, a reduction in the level of intensity of production. Further specialisation of farms should be expected. The will be agricultural holdings focused exclusively on plant or animal production. In vegetable farms with a very high proportion of cereals, with the current trend of selling straw for energy purposes, there is a risk of a negative balance of organic matter in the soil, which leads directly to its degradation. In this situation, a revision is required to the programme of support for the use of biomass, including straw for energy purposes. Studies have shown that increasing soil organic matter reduces the emission of carbon dioxide to the atmosphere [Faber, 2011].

3.5. Summary

In agriculture of the countries of CEE, which at the beginning of the first decade of this century, applied for the membership in the EU, there clearly was a revival. However, the conditions for its development varied. In Poland, there were mostly family farms (farms operated by natural persons), which were affected by the successfully growing food industry. EU funds that were available at the time of accession in 2004 made it possible in this situation to select from three million farms, mostly small farms, and afterwards to choose a dozen percent or so of those who began to feature an ability to compete and those that could soon acquire such an ability. They possess less than half of the agricultural area, but they supply the market with nearly two-thirds of the national value of agricultural products.

Polish agriculture also uses imported feed and animals for further fattening, and the domestic food industry is the recipient of most of agricultural products. As a result, the balance of foreign trade in agri-food products has been positive since 2003 and continues to grow.

In other countries, the moment of accession was preceded by a conversion of large and very large co-operative and state farms. However, two different ways of these transformations emerged. In the Czech Republic and Slovakia, there large area farms operated by natural persons appeared, which together with very large agricultural holdings of employee-owned companies have more than 88% of national agricultural land area and define the shape of agricultural production in both countries. Such agricultural holdings are oriented towards intensive production of cereals and plants with similar production technology.

Without a developed animal production, these countries are therefore net exporters of cereals, and the demand for raw material of the food industry is satisfied by imports. Both countries are net importers of agri-food products.

There is no certainty that the Czech Republic and Slovakia will be interested in the agricultural development that will contribute to the nation-wide foreign trade balance.

Bulgaria, Romania and Hungary decided after 1990 to restructure co-operative farms and return their land to former owners, and additionally privatised state-owned farms. Only a part of the new owners of the land began production using agricultural machinery leasing. Others leased their land or sold it due to lack of relevant skills and capital.

Much of the production is conducted in private farms enlarging the ownership of land by way of lease or purchase and in those that are successors of former state farms. The latter obtain about two-thirds of the domestic animal production in farms that were built as long ago as in 1960-1979, so they face the prospect of upgrading this asset. However, professional private farms gradually are being established, which start to distinguish themselves with their ability to compete. Farming in these countries begins to supply raw materials to the domestic food industry, and the effects of this phenomenon in the form of improved balance of foreign trade in agri-food products could be seen in Hungary. Such a positive balance distinguishes also Bulgaria, but there is no information whether it has increased in relation to the pre-accession period.

The process of agriculture transformation serving the emergence of the professional farms that at the same time distinguish themselves with an ability to compete in Romania is the least advanced process.

To sum it up, it can be stated that the phenomena and processes observed in the countries in question in CEE move towards the widening and strengthening of professional farm groups that are able to compete with farms in other countries. The requirements imposed by the EU force the farms to properly treat the environment. A major problem, however, is still represented by low livestock number, which makes it difficult, and in some cases impossible, to balance organic carbon in the soil, leading to a decline in yields and their fluctuations year by year.

With the knowledge about the outline of the CAP of the EU for 2014-2020, it can be hoped that agriculture in the countries in CEE will continue to strengthen as part of the agriculture in the entire European community.

References

1. Act of 30 August 1996 on commercialisation and privatisation of enterprises, Dz.U. of 2013 item 216.

2. Faber A., (2011), Emisja gazów cieplarnianych i sekwestracja węgla przez rolnictwo. IUNG–PIB, materiały seminaryjne, 18.05.2011.
3. Józwiak W., (2009), Zdolność konkurencyjna polskich gospodarstw rolnych w zestawieniu z gospodarstwami węgierskimi i niemieckimi [in:] Józwiak W. (ed.), Sytuacja ekonomiczna, efektywność funkcjonowania i konkurencyjność polskich gospodarstw osób fizycznych, Report no 132, Multi_Annual Programme 2005-2009, IAFE-NRI, Warszawa, pp. 51-90.
4. Józwiak W., (2012), Rolnictwo węgierskie poszukuje drogi rozwoju, Zagadnienia Ekonomiki Rolnej no 4, Warszawa.
5. Józwiak W., Kowalski A., Wrzaszcz W. A., (2013), Oczekiwania, korzyści i zagrożenia członkostwa w Unii Europejskiej polskiego rolnictwa, IAFE-NRI, maszynopis, Warszawa, 18.04.2013.
6. Parzonko A., (2013), Gospodarstwa mleczne w perspektywie liberalizacji polityki rolnej UE w latach 2014-2020, Zagadnienia Ekonomiki Rolnej no 1, Warszawa.
7. Pouliquen A., (2011), Integracja krajów Europy Wschodniej z Unią Europejską (część II), Zagadnienia Ekonomiki Rolnej no 3, Warszawa.
8. Rolnictwo w 2004 r., (2005), Studia i Analizy Statystyczne, GUS, Warszawa.
9. Rolnictwo w 2007 r., (2008), Studia i Analizy Statystyczne, GUS, Warszawa.
10. Statistisches Jahrbuch über Ernährung, Landwirtschaft und Forsten, (2011), Landwirtschaftsverlag Münster.
11. Sikorska A., (2013), Obrót ziemią a przemiany agrarne w indywidualnym rolnictwie, Zagadnienia Ekonomiki Rolnej no 1, Warszawa.

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4. Programming process of rural development measures 2014-2020 in Austria

In Austria, the process of programming the CAP 2014-2020 and, in particular, the national rural development measures started very early in 2012, based on experiences from previous periods as well as evaluation reports. New requirements of the EU for the process itself and for the overall program and its structure need to be implemented. To meet the objectives, increased public participation, a higher degree of embedding in international and national general strategies and trends, improved scientific understanding and greater compliance with specific issues are all necessary. However, problems have occurred due to a lack of finalised EU rules and regulations regarding implementation, while late decisions concerning the financial framework also make concrete planning more difficult. At the same time, integrating the various sectors requires a demanding process that is able to overcome the issue-related and organisational areas of conflict. In Austria, a combination of dialogue days, expert inputs and strategic and technical working groups have been used in an effort to meet the requirements and reach a final decision regarding the next period's CAP by the end of 2013.

4.1. Austria's basic situation

Austria's very specific situation in agricultural and rural areas determines the country's agricultural policy. The total area of Austria comprises 7.35 million hectares, including an agricultural area of 2.88 million ha and a forestry area of 3.41 million ha. Of the total agricultural area, 48% is used as arable land, 50% as grassland and the remainder as vineyards and orchards. The most important products in terms of plant production are cereals, wine, fodder and fruits and vegetables. With respect to animal production, cattle and milk production are the most relevant, followed by pigs, poultry and eggs. Historical developments have resulted in over 170,000 farm enterprises today, most of them family farms with an average total area of a mere 36 ha per farm, of which only 19 ha are used as agricultural area. More than half of all farms are managed as part-time farms. Due to the difficult geographic situation nearly three-fourths of farms are located in disadvantaged regions. The breakdown of farm size in ha shows a large share of small farms (20% < 5ha) and another 65% between 5 and

50ha – all relatively balanced amongst the various classes – with only 15% of Austrian farms cultivating more than 50 ha. Accordingly, the average income per farm amounted to roughly € 30,000 in 2011 – and nearly the same figure (€ 27,000) per annual work unit.

Table 1. Austria's basic data as a background to CAP developments

Area	Million ha, 2010
Total Area	7.35
Agricultural Area	2.88
Arable Land	1.37
Grassland	1.44
Plant production	Million €, 2011
Cereals	880
Wine	600
Fodder	560
Fruits and Vegetables	560
Oil Seeds, Sugar Beets, Protein Plants	340
Animal production	Million €, 2011
Cattle	905
Pigs	770
Poultry	170
Milk	1,084
Eggs	200
Farm enterprises	Absolute number, 2010
Total	173,000
Part-time	94,000
In disadvantaged areas	129,000
Farm size	Percent (%), 2010
< 5ha	20
5ha – 50ha	65
>50 ha	15
AVG Annual income	€ per year, 2011
Per farm (agric. and forestry)	30,300
Per work unit (agric. and forestry)	27,000
Cap subsidies	Million €, 2011
Total	2,300
1st pillar	760
2nd pillar	1,150
2nd pillar – competitiveness	14%
2nd pillar – environment, landscape	70%
2nd pillar – quality of life, diversification	9%
2nd pillar – LEADER	7%

Source: [Ministry of Agriculture, Forestry, Water Management and Environment 2012].

In 2011, total subsidies from the CAP amounted to € 2.3 billion, which means that on average nearly one-half of farm income comes from subsidies, although this share is even higher in certain disadvantaged regions. In Austria, 2nd pillar payments (rural development, 2011: € 1.15 billion) are higher than 1st pillar payments (direct payments, 2011: € 0.76 billion).

Most of the rural development payments go into environmental and landscape measures for improving biodiversity, water quality, soil protection and the management of disadvantaged areas, while a minor share is used for measures to improve the competitiveness of farm enterprises, the quality of life in rural regions, diversification beyond agriculture and LEADER measures in 85 LEADER regions all over Austria (with 4.3 million inhabitants). The LEADER measures are the same as the other rural development measures but are earmarked for LEADER because they are developed using specific bottom-up approaches, in so-called Action Groups with broad regional/local participation.

New EU requirements for the period 2014-2020

4.2. The general EU strategy

Programming for the new EU funding period from 2014 to 2020 is running through a very challenging process. Based on experiences from previous periods, preparations have started very early. Basic guidelines were laid down in first drafts of regulations in October 2011 (e.g. Regulation of the European Parliament and of the Council on support for rural development by the European Agricultural Fund for Rural Development EAFRD). These have been under permanent discussion since then, which has resulted in various other drafts for regulations and guidelines, for example the outline of the Common Strategic Framework (Commission staff working document, Elements for a Common Strategic Framework 2014 to 2020, the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund).

Accordingly, the overall strategy – not only for the CAP, but for all European measures – should be the Europe 2020 Strategy, with very general objectives (smart, sustainable and inclusive growth) that are subdivided more concretely and ambitiously into five main areas: employment, innovation, climate change, education and poverty [European Commission 2013]. The EU cohesion policy should provide the necessary investment framework and delivery system for achieving these objectives.

One step below the EU 2020 Strategy is the Common Strategic Framework of the Cohesion Fund, with 11 thematic objectives. It should help to optimise the positive impacts of various EU funds and measures by putting them into one frame and formulating the need for adaptation to each other to avoid conflicts in funding and contradictory objectives [European Commission 2012]. The 11 objectives concern research and technological development, innovation, e-solutions, competitiveness of small and medium enterprises, energy efficiency, climate change, water protection, sustainable transport, labour mobility, social care infrastructure and governance.

On this basis, each EU member state should define its own national strategy and develop a national partnership agreement. In Austria, this document – called STRAT.AT – is currently in development. It is being compiled *via* the Austrian Conference on Spatial Planning (ÖROK), where all federal ministries, heads of government of the Länder and NGOs are represented. It is a long process, and it is not easy to achieve compromises that are acceptable to all members.

Ultimately, the concrete measures for implementing EU funding in the member states should only be developed in a manner that will overcome all EU and national obstacles. Furthermore, the funding system should be as logical and consistent as possible, should make use of synergies and should avoid contradictory and/or double funding.

4.3. Common Agricultural Policy

CAP programming is also very complex in and of itself. There are three general CAP objectives:

- viable food production,
- sustainable management,
- balanced territorial development

and three cross-cutting issues:

- innovation,
- environment,
- climate change.

The above should be pursued using direct payments, market measures and rural development measures [European Commission 2010]. Below this system, six priorities have been defined especially for rural development and these are subdivided into 18 focus areas [European Commission 2011]. All measures of future rural development programs should be assigned to one or more of these focus areas and priorities.

The six priorities for rural development are as follows:

- knowledge transfer and innovation,
- competitiveness,
- food chain organisation and risk management,
- ecosystems,
- resource efficiency and a low-carbon and climate-resilient economy,
- social inclusion, poverty reduction, economic development.

4.4. The programming process in Austria

The Austrian Ministry of Agriculture, Forestry, Environment and Water Management is responsible for the programming process. The overall process and its requirements are described in great detail in EU regulations. An obligatory component that is heavily emphasised for the new period is public participation, including an accompanying evaluation right from the start. The first step, undertaken at the beginning of 2012, was to define the programming project and to develop a project handbook. Only in theory do the various steps of the programming process follow sequentially for, in practice, different steps flow into each other and sometimes partly overlap. One essential basic step required in the process is to describe the situation in rural regions and determine the strengths, weaknesses, opportunities and threats using SWOT analyses. In Austria, this was done according to the six overall priorities and the outcomes will be condensed into one general SWOT analysis in the end. This will enable the needs of rural regions in Austria to be derived and defined logically, and the strategy for rural development will ultimately be based on these needs. The initial work was accomplished in 25 working groups, with broad participation by stakeholders and NGOs. The groups addressed issues such as water quality and quantity aspects, soil protection, renewables, diversification, disadvantaged regions and animal welfare. Since informing and including the public is a priority issue, the Ministry organised a large kick-off event, as well as several other events and dialogue days in different regions of Austria, to present and discuss the strategy that has been developed as a result.

A parallel process to programming is the *ex-ante* evaluation of the Rural Development Program (RDP). For the coming period, this evaluation will be coordinated by an external institute engaged by the Ministry. The evaluators are experts from various private, public or university institutes, and their evaluation will be conducted in three steps. The first step is to check the consistency and completeness of the SWOT, as well as the rural needs derived from the analysis, to ensure that a "logic intervention chain" is in place. The second step is an

analysis of the strategy and intervention logic to estimate the potential effects and impacts and to check the strategy's consistency with other programs and overall strategies. The third step is an evaluation of whether the concrete measures and financial provisions are in line with the previous elaborations and will include an attempt to estimate the measures' foreseeable impacts and efficiency. In addition, a separate Strategic Environmental Assessment must be conducted to determine the specific environmental issues, objectives and indicators; but also to assess the priorities, proposed measures, eligible actions and effects, and the evaluation criteria system [European Evaluation Network for Rural Development 2012].

The evaluation process is dependent upon the progress of the programming process. Since the evaluation must be part of the program submitted to the EU Commission, in the end there exists a strong interrelation between the two, particularly with respect to time constraints. Austria originally planned to submit the program at the end of 2013, however there is already some discussion of postponing submission due to outstanding EU decisions concerning the financial frame. Without this frame in place, the measures cannot be formulated in concrete terms.

4.5. Problems and areas of conflict

There is not always congruency between the theoretical approaches embodied in the regulations and practical implementation of the programming process. As a result, a number of problems and areas of conflicts exist on several levels.

The first and most significant problem is that the EU regulations and guidelines have not yet been finalised. Under these circumstances, national decisions are not possible. This causes greater time pressure for national programming, particularly at the end of the process, because the time allowed for preparing the program will not be extended commensurately with the delay in EU decisions. This concerns the financial aspects of the decisions all the more, because without them all national considerations remain theoretical. Even so, the member states have attempted to prepare as much as possible in advance, for they have experiences from former periods to fall back on. Based on the latest information, the financial decisions on EU level will not be taken until autumn 2013.

Due to the broadening of the RDP from period to period, as well as the integration of various different sectors within rural regions, rural stakeholders now have very high expectations towards the program. Thus, it is easy to argue

for new rural development measures in a region, but it has become politically very sensitive, and nearly impossible, to eliminate measures from former periods.

Using a scientific approach for proposing RD measures and evaluating their expected impacts has gained more weight in each subsequent period. Specific targeting is necessary initially; and subsequently strict calculations are obligatory to lay down the extent of payments for specific measures. As a result, measures have become more differentiated and complicated in their design, and therefore also more complex to implement and control.

In Austria, we must follow two strategies. On the one hand, specific issues in certain regions still require improvement and it is relatively easy to argue for measures based on the results of indicators. But, on the other, we have already achieved fairly high standards and results for other issues, or in other regions, and it is no easy task to prove that the situation without subsidies would be much worse – and, in turn, that subsidies are still necessary in future.

With respect to problems and conflicts, we might also mention strategies that aim to improve a specific situation. For example, this is evident with water protection measures during former periods. In the past, Austria has used broad measures with a low premium, as these were relatively easy for farmers to manage. They resulted in a high farmer participation rate, yet they provided only a low potential for positively impacting groundwater. Conversely, we have also used very specific and targeted measures with a high positive impact potential and high premium, but these were difficult for farmers to manage. In the end, the participation rate remained very low and in consequence so did the positive impact. This goes to show that it is no easy task to find the optimal balance between participation, impact and premium for a given measure.

More politically challenging is the effort to balance the demands of the many different stakeholders on the various – often overlapping – levels in rural regions. Broad agreement and acceptance of the program is necessary regardless of what the scientifically derived arguments and needs may be. For example, grassland farmers should not be discriminated against to the benefit of arable land farmers, nor should such discrimination occur between disadvantaged and advantaged regions. Nevertheless, in such a broad program, conflicts due to opposing objectives may be inherent. Issues such as sustainability vs. intensification and competitiveness, or organic farming vs. food security, might also lead to conflicts; and environmental and water issues should not be discriminated against to the benefit of agrarian interests. Areas of conflict may also arise among various environmental and nature protection issues. In

addition, each of the nine Austrian Länder must receive a proportionate share of the "cake" to avoid conflicts.

Another topic of discussion within the programming process is the EU's requirement for evaluations to be performed by independent experts. Absolute independence is only theoretical, as experts from publicly financed institutes may be dependent in terms of organisation and employment. But private consultants, too, are dependent on their clients – at least financially when it comes to receiving future work. In addition, the pool of experts is limited in smaller countries. Nevertheless, it is a good thing that many experts are involved in programming, as this provides the advantage of greater scientific support within the programming process. It is especially advantageous for the evaluators to know the history and background of how the measures have evolved, or at least to understand the intricacies involved in the programming process.

4.6. Concluding remarks

Given all of the circumstances described above, the focus of the new RDP in Austria will be on environmental measures, as it has been in former periods. More weight will be placed on innovation and knowledge transfer, particularly in terms of the connection, interaction and transfer between research and practice. In addition, other cross-cutting topics like climate change will be taken much more into consideration than in the previous period, while risk management and food security will also receive more attention.

On the whole, the programming process stresses the importance of broad public participation and embedding the RDP in overall programs and strategies on national and EU level. Top-down and bottom-up processes within programming should converge, and this finds expression in the full inclusion of the European Parliament into the decision-making process for the first time. Without a doubt, this will result in broad acceptance and good adaptation to the needs. Concomitant to this are the challenging discussion processes, compromises and time schedules.

References

1. European Commission, (2013), Europe 2020 in a Nutshell, http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/priorities/index_en.htm, [3.6.2013].

2. European Commission, (2012), Commission proposes one programming tool for all structural funds, European Commission Press Release, http://europa.eu/rapid/press-release_IP-12-236_en.htm [3.6.2013].
3. European Commission, (2011), Proposal for a regulation of the European Parliament and of the Council on support for rural development by the European Agricultural Fund for Rural Development (EAFRD), Brussels, 19.10.2011, COM(2011) 627 final/2.
4. European Commission, (2010), Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future, http://eur-lex.europa.eu/lexuriserv/lexuriserv.do?Uri=COM:2010:0672:FIN:en:PDF [4.6.2013]
5. European Evaluation Network for Rural Development, (2012), Guidelines for the *ex ante* evaluation of 2014-2020 rdps – draft. August, 2012. Http://enrd.ec.europa.eu/evaluation/ [3.6.2013].
6. Ministry of Agriculture, Forestry, Water Management and Environment, (2012), Grüner Bericht 2011 (Green Report 2011), Vienna.

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5. Situation in the Czech agriculture after 9 years of EU accession – a research position to strategic challenges for a future policy after 2013

5.1. Introduction

The Czech politicians, state administrations, non-government organisations, researchers and academicians have been preparing and discussing for a longer time a Czech position to the reform of the EU CAP after 2013. To have a broader and a long time framework for these activities, the Czech minister of agriculture decided to prepare the strategy for the Czech agricultural and food industry developments, overcrossing the 2020 horizon [Ministry of Agriculture 2013].

The strategy, after large discussions and assessments across all main stakeholders, shall be finished by June 2013. The document is based on detail analyses of all decisive aspects of the Czech agriculture and food industry. Based on them and on other prepositions and expectations for the future, the long term goals and main policy measures to support them are defined.

The Institute of Agricultural Economics and Information (IAEI), together with some academicians, has played in the preparation of the strategy, particularly as regards the analyses, very important role. Nevertheless, the final version of the strategy, which also reflects the Czech official positions to the CAP 2014+, has been now in the hands of politicians with their own criteria. It means that some aspects of the strategy and the positions to the CAP 2014+ can be – even only slightly – different from research conclusions, or can be interpreted in public in a different way.

The presentation consists of the three parts. Part 1 presents the state of the art - the main information and conclusions from the analyses of the present Czech agriculture. Part 2 is oriented on the main long-term goals for the sector. Part 3 reflects questions related to the realisation of the strategy and to the Czech positions to CAP after 2013, based on the research findings.

5.2. The main characteristics of the present Czech agriculture – a critical assessment from research point of view[4]

Besides market and weather conditions, a decisive factor shaping the developments of the Czech agriculture after EU accession in 2004 has been the Czech agricultural policy, the volume and the structure of its supports. The main figures on the supports from the side of taxpayers are shown in Table 1.

Table 1. Supports for agriculture and food industry

Supports	**2001-3 average**		**2004-7 average**		**2008-10 average**		**2011-12 average**		**Index**	
	CZK mil.	**%**	**CZK mil.**	**%**	**CZK mil.**	**%**	**CZK mil.**	**%**	**2011-12/2001-3**	
Total	**17 933**	**100,0**	**30 403**	**100,0**	**38 103**	**100,0**	**37 651**	**100,0**	**210,0**	**x**
Farms	12 078	67,4	25 604	84,2	33 330	87,5	34 139	90,7	282,7	134,6
- income supports (incl. LFA)	*8 654*	*71,7*	*20 354*	*79,5*	*24 688*	*74,1*	*24 869*	*72,8*	*287,4*	*101,7*
- investment supports	*2 138*	*17,7*	*2 078*	*8,1*	*3 911*	*11,7*	*4 158*	*12,2*	*194,5*	*68,8*
- agro-envi payments	*1 286*	*10,6*	*3 172*	*12,4*	*4 732*	*14,2*	*5 113*	*15,0*	*397,6*	*140,7*
Processors	2 884	16,1	1 349	4,4	972	2,6	274	0,7	9,5	4,5
Other (including general services)	2 971	16,6	3 450	11,3	3 801	10,0	3 239	8,6	109,0	51,9

Source: [Ministry of Agriculture, IAEI 2004-2012].

Regardless the sources of the supports (EU, national payments), after EU accession the total supports for farms have increased almost three times, of which mainly income supports and agro-environmental payments. To the contrary, supports for food/processing industry have significantly decreased. However, the main part of these supports especially in the pre-accession period was oriented on the direct supports for biofuel production, which have been changed into supports from consumers and reduced during the next years.

Particularly an enormous growth of income supports for farms, substantially improving their economic situation, have had on the other hand some negative impacts on the performance of the sector.

Main characteristics of the Czech agriculture after 9 years of EU accession are as follows:

The share of the sector (including forestry and fishery) in the GDP has dropped (2011) to 2,05 % from 3,37 % before accession. The similar figures relate to the share in the employment (2,62 % compared with 4,17 %). As

[4] This part, based also on [Bašek 2010], updates and broadens the analyses published e.g. in [Doucha et al. 2011].

a consequence of the higher reduction of employment and in spite of a lower production, the labour productivity in agriculture has been gradually approaching the national average (from the pre-accession 65% to nearly 70% in 2011). Nevertheless, measured by the sum of the production of private and public goods, the agriculture still belongs to the strategic sector of the national economy.

The Czech agricultural potential represents roughly 3,5 mil. ha of agricultural land (a. l., according to LPIS), with the share of arable land more than 70 %. Compared with the Czech natural and climatic conditions, this share is still extremely high. About 50 % of a. l. is located in LFA at present.

The changes in the balances for the main commodities between the actual and pre-accession periods are shown in Table 2.

Table 2. Balances by commodities

Commodity	Unit	2001-2003 average					2008-20011/12 average					Index 2008-20011/12 to 2001-3				
		P	I	C	E	%	P	I	C	E	%	P	I	C	E	%
Cereals	mil. t	6,61	0,09	6,24	0,48	106,0	7,84	0,11	5,49	2,25	142,8	118,6	122,2	88,0	468,8	134,7
Rape seeds	th. t	690,2	12,8	495,0	206,1	139,4	1066,4	54,8	757,5	357,9	140,8	154,5	428,1	153,0	173,7	101,0
Sugar	th. t	521,4	148,1	493,5	198,7	105,7	461,0	256,6	399,2	313,9	115,5	88,4	173,3	80,9	158,0	109,3
Potatoe	th. t	1026,0	183,4	1086,9	24,9	94,4	917,5	115,0	1095,8	51,5	83,7	89,4	62,7	100,8	206,8	88,7
Vegetables	th. t	349,7	354,1	696,0	7,8	50,2	256,1	553,6	718,8	90,9	35,6	73,2	156,3	103,3	1165,4	70,9
Fruits	th. t	372,4	116,3	426,5	62,2	87,3	375,0	182,6	481,5	76,2	77,9	100,7	157,0	112,9	122,5	89,2
Wine	th. hl	533,3	1042,0	1595,3	23,7	33,4	637,5	1649,3	2159,5	240,5	29,5	119,5	158,3	135,4	1014,8	88,3
Milk	bln. l	2,69	0,24	2,06	0,70	130,7	2,68	0,84	2,20	0,94	122,0	99,6	350,0	106,8	134,3	93,3
Beef	th. t lwe	109,5	2,4	97,4	13,8	112,4	95,1	20,7	79,4	35,8	119,8	86,8	862,5	81,5	259,4	106,6
Pigs	th. t lwe	453,7	25,1	461,0	35,7	98,4	295,3	204,2	447,8	52,3	66,0	65,1	813,5	97,1	146,5	67,1
Poultry	th. t lwe	232,8	23,2	242,3	17,7	96,1	208,6	87,0	238,8	57,4	87,4	89,6	375,0	98,6	324,3	90,9
Eggs	th.t	171,7	4,7	168,0	8,4	102,2	145,8	33,9	164,5	15,2	88,6	84,9	721,3	97,9	181,0	86,7
Sheep and goats	th.t lwe	1,94	0,46	2,32	0,08	83,6	2,10	0,40	2,42	0,08	86,9	108,2	87,0	104,3	100,0	103,9

P = production; I = imports; C = domestic consumption; E = exports; % = level of self-sufficiency.
Source: [Ministry of Agriculture, IAEI 2004-2012].

The background of the changes in the commodity balances resides in the changes in the land use and in livestock heads (see Table 3).

The large-scale farming as a heritage from the socialistic regime has been still prevailing. The land use concentration in hundreds large farms is accompanied by thousands small and medium size mostly family farms, forming a typical dual structure (see Table 4).

Table 3. Changes in the land use and livestock heads

Crops, livestock category	Unit	Ø 2001-3	Ø 2010-11	Index
Cereals	th. ha	1547,1	1471,0	95,1
- wheat	th. ha	808,1	848,0	104,9
- barley	th. ha	512,0	381,0	74,4
- maize	th. ha	67,6	112,0	165,6
Pulses	th. ha	34,7	26,8	77,3
Potatoe	th. ha	48,2	34,4	71,3
Sugar beet	th. ha	77,5	49,8	64,2
Feed crops on arable land	th. ha	571,3	408,2	71,5
Oil seeds	th. ha	422,5	477,4	113,0
Flax	th. ha	6,2	0,1	2,2
Vegetables	th. ha	20,4	13,8	67,8
Permanent crops	th. ha	46,9	55,0	117,2
Grassland	th. ha	895,0	924,5	103,3
Dairy cows	th. heads	497,0	373,5	75,2
Suckler cows	th. heads	102,0	177,9	174,4
Pigs	th. heads	3424,7	1664,0	48,6
Sheep and goats	th. heads	95,7	215,0	224,7
Poultry	th. heads	28561,7	20971,0	73,4

Source: [Ministry of Agriculture, IAEI 2004-2012].

The average size of Czech farms, regardless the sources and methods of its calculation, exceeds highly the EU average. Nevertheless, some structural changes are visible after EU accession: a growing share of the smaller farms in the land use and a diminishing importance of cooperatives to the benefit of companies. Particularly during the last years extremely large farms (20,000-100,000 ha) have been founded, regardless their fragmentation into property joined smaller units.

Table 4. Structure of Czech farms (with more than 3 ha)

Legal form	Share in number			Share in agricultural land		
	1995	2005	2012	1995	2005	2012
Farms as physical entities	89,7	90,3	87,2	23,2	29,0	29,8
Farms as legal entities	10,3	9,7	12,8	76,8	71,0	70,2
- companies	5,2	7,2	10,2	28,1	46,1	49,0
- coops	4,8	2,2	2,0	47,0	24,0	20,4
Total (%)	100,0	100,0	100,0	100,0	100,0	100,0
Total: farms, ha	23215	25855	25986	3544036	3543820	3503629

Source: [Agrocensus, Czech Statistical Office].

As regards the economy of the farm sector (see Table 5), two separate developments can be recognized: the economic situation of farms has been substantially improving (see changes in the operational surplus – "profit" – of the sector and in incomes from factors/AWU), to be almost three times higher compared with the pre-accession period. This corresponds with the increase of supports. On the other hand, the real efficiency of farms has been deteriorating (see e.g. the interim consumption/production indicator more than 70% compared with the EU average around 60%). The production/ha is very low (the EU average is almost double). The share of supports both in production and in incomes from factors/AWU is very high, significantly higher than EU average (the increase in the latter indicator from about 30% in the pre-accession period to more than 70% in the last years, compared with 41% as the EU average). A harmful dependence of farms on supports is visible, influencing behaviour of farms and supressing a needed further growth in effectiveness and in restructuring in the sector.

Table 5. Economic indicators of the Czech agriculture

Specification	Unit	2001-3 average	2010-12 average	Index 2010-12/ 2001-3
Total supports from public sources[1)]	mil. CZK	12078	34279	283,8
- operational supports	mil. CZK	9939	30135	303,2
- investment supports	mil. CZK	2139	4144	193,7
Production/ha	th. CZK	28,3	32,7	115,4
Operational surplus	mil. CZK	-696,2	13625,8	x
Incomes from factors/AWU[2)]	th. CZK	151,5	401,3	264,9
Interim consumption/production	%	70,2	73,1	104,1
Share of operational supports in production	%	6,3	24,4	387,3
Share of operational supports in incomes from factors	%	26,7	65,1	243,7
Number of workers (AWU)	th. AWU	158,6	106,9	67,4

[1)]Without the so-called general services (research, education, extension services, etc.).
[2)]Net Value Added plus operational supports minus production taxes.
Source: [Ministry of Agriculture, IAEI 2004-2012], Economic Accounts for Agriculture (Czech Statistical Office).

The average and global values of the indicators mask a huge dispersion across the farm categories and among individual commodities [see Table 6 and Doucha et al. 2010]. From the point of view of the economic situation, the two categories and regions are real "winners": (a) large farms in LFA with very extensive suckler cows breeding; (b) large farms in plains oriented prevailingly on a relatively simple production of cereals and rape seeds. On the contrary, there are plenty of less effective farms surviving due to high supports.

The differences in the economic situation on farms are mainly caused by the economically improper, unbalanced distribution of income supports (direct payments, LFA payments), ranging from CZK 6 000-18 000 per ha.

Table 6. Dispersion of profitability on the Czech farms by commodities and in total[1)]

Commodity	best 1/3	average 1/3	worst 1/3	CR average
Wheat	74,9	39,4	17,3	42,3
Barley	119,1	55,0	24,2	68,4
Rape seed	49,3	18,7	1,0	21,7
Sugar beet	61,0	42,1	15,4	41,2
Potatoe	33,9	-6,8	-14,1	-3,3
Apples	-23,3	-26,7	-42,2	-29,5
Milk	27,3	9,1	-8,3	14,3
Beef	-1,9	-11,6	-24,2	-13,0
Suckler cows	70,3	5,7	-24,3	20,2
Pigs	-15,6	-23,4	-32,8	-13,3
Poultry	0,6	-9,8	-22,7	-3,0
Income from factors/AWU (000 CZK)	668	354	142	383

[1)]Profitability: ((revenues + supports)/costs)-100. The survey results distributed to the one thirds.

Source: IAEI survey on costs 2008-10; FADN-CZ 2010.

However, the prevailing farming systems together with a large (even though decreasing) share of leased land on farms (about 70% in average today), orientation of supports and their conditioning have been generating serious problems in relations between agriculture and environment.

The impact of agriculture on the environment is mostly negative and it has been for a long time deteriorating [Doucha et al. 2008]:

1. One of the main problems is the degradation of the soil quality, especially due to water and wind erosion, soil compression and loss of humus (also as a consequence of the large livestock reduction). The every-year damages owing to losses of top-soil, decrease of yields, siltation of water flows, property damages, etc. are estimated to about CZK 4-10 billions.
2. Prevailing farming practices negatively influence the water regime in the landscape and water quality. A significant share of surface and underground water is still contaminated by nutrients and chemicals. Water very quickly flows off the Czech region and due to a large reduction of landscape "green elements" the agricultural area does not fill its functions in the water retention. A higher risks and damages related to more

frequent periods of droughts and floods, increased even by climate change, are "every year story".

3. Farm and land use practices on very large fields negatively influence biodiversity, especially as regards invertebrates, birds and other kinds of small animals (e.g. the number of partridges was reduced by 82% since 1982).
4. Greenhouse gas emissions are relatively high compared with other EU countries; the fixation of CO_2 has not by far reached its potentials.

On the other hand, the agricultural area especially during the last years is intensively linked with the production of renewable energies. About the one third of the rape seed production and a share of sugar beet and cereals production is used for biofuel. On farms, about 300 biogas stations are producing electricity. However, the present way of the production of renewable energies, supported by the policy, heavily contribute to negative impacts of agriculture to environment and landscape. Nevertheless, the potential of agriculture in this field is still high and should be in different ways utilised. Caused also by still low effectiveness of the Czech food industry (particularly in the primary processing), there is a permanent tendency in the increasing exports of agricultural raw materials and in the increasing imports of processed products (sometimes even though produced from the Czech exported products). These facts are documented in Table 7.

Table 7. Commodity structure of the Czech agricultural trade balance (bil. CZK)

Selected commodity aggregates	KN	2001-3 average	2010-12 average	Index
Live animals	01	1,08	3,78	350,0
Meat and fish, including processed products	02, 03, 16	-2,56	-16,61	648,8
Milk, dairy products, eggs	04	3,11	3,01	96,8
Fruits and vegetables, including processed products	07, 08, 20	-14,08	-21,34	151,6
Cereals	10	0,38	8,82	2321,1
Mill products, malt, starches	11	1,58	1,82	115,2
Oil seeds	12	2,13	2,29	107,5
Oils nad fats	15	-2,05	-0,12	5,9
Sugars and sweets	17	1,23	2,07	168,3
Feed	23	-5,06	-2,81	55,5

Source: Czech Statistical Office – Database of trade.

In summary, general characteristics of the present Czech agriculture can be express as "prevailingly costly extensive farming", oriented mainly on commodities with a lower demand on quantity and quality of labour and

management. The competitiveness of these commodities (cereals, rape seeds, sugar beet) on the EU single market is relatively high. Mainly due to high coupled direct payments, the economy of dairy and suckler cows breeding is also sufficient to produce surpluses. To the contrary, the economy of poultry and particularly pigs is poor, leading to a large reduction in their production. As a consequence of more factors, there is a rapid and stable decrease especially in livestock, vegetable and fruit production. This development has not only negative impact on rural employment and trade, but also on the land use, soil quality and water regimes.

5.3. Strategic goals for the Czech agriculture

Based on the analyses of the development of the Czech agriculture after EU accession and its functioning on the EU single market, the following long term strategic goals from the research position can be derived[5]:

- to substantially improve the quality of the agricultural soil, water regimes and other environmental aspects related to agriculture as the decisive condition to maintain long-term production potentials and in this way to contribute to the national, European and global food security and smoothing risks in agriculture as well;
- to increase effectiveness and competitiveness of the Czech farms *via* and through their reasonable modernisation and all aspects of innovations, based also on a better transfer of research and knowledge to farms;
- to eliminate the differences in the economy of farms issuing from an unbalanced allocation of income supports;
- to increase the role of agriculture in production of renewable energies and in this way to contribute to "energy self-sufficiency" of the Czech Republic;
- to improve relations between the agricultural and rural developments, particularly with new job opportunities in rural areas through orientation of farms on more labour demanding activities and their diversification.

[5] The strategic goals, based on the research findings and presented in the official document of the Czech Ministry of Agriculture, are defined slightly different, particularly as regards their priorities.

5.4. Research position to the CAP reform after 2013 respecting the strategic goals

Regardless up to now unsettled final appearance and parameters of the CAP reform after 2013 on the European level, discussions to the CAP changes and the preparations of the required documents (e.g. for the RDP) have been continuing in the Czech Republic. It must be respected that a final Czech position would be a real political decision, based also on the position of many non-governmental organisations as stakeholders.

Nevertheless, the role of the economic research is irreplaceable in this process. The following part presents the research positions to the main aspects of the CAP reform, which need not necessarily be in a full compliance with final official governmental positions, of course, but being in compliance with the presented analyses of the present situation of the Czech agriculture and the long--term strategic goals.

With regards to the individual strategic goals, the Czech positions from the research point of view should support the following measures in the future CAP and in the future Czech agricultural policy:

Improvement of relations of agriculture to environment

Application of stricter Good Agricultural and Environmental Conditions (GAEC) in the cross compliance, especially with respect to problems in the soil erosion[6].

Full application of the greening components in direct payments, but respecting the Czech farm structure and the size of farms. It means e.g. the application of the greening only on farms exceeding 20 ha. It is approved by the supposition that the main environmental damages are generated on bigger farms and the "greening barriers" for them can produce a decisive mass of the positive environmental externalities.

The implementation of all proper agro-environmental measures in the RDP with a higher level of their stimulation (payments), but with stricter and measurable conditions above the GAEC and the greening conditions for direct payments. In this way to avoid a "double-funding" of the environmental measures under the RDP. In spite of possible higher administrative requirements, the environmental measures shall be more targeted and even

[6] The Ministry of Environment suggests also the reduction of the acreage of fields to about 50 ha at maximum.

tailored to individual farm conditions. Those measures shall be applied e.g. in the watersheds areas, where the agriculture still produces many negative externalities to the detriment of the quality of drinking water (typical and very political sensitive is the water supply for the Prague region).

The reservation of about 10-12% of the direct payments for coupled payments and the largest part of these payments invest on support to all categories of ruminants. The payments should be delivered per livestock unit (LU), with preferences for breeding on grassland (and LFA), but not per unit of production. By this, a needed growth in the number of heads of ruminant can be expected, with positive effects on the soil quality, but without any state guaranty for the sale of production and farms its market prices.

The continuation of supports for land consolidation, which is very important measure to settle discrepancies between the land use and the land ownership, inherited from the socialistic era. Under this process, priorities to environmental issues should also be given.

Any supports related to risk management and even for larger natural disasters should be conditioned by the realisation of preventive measures on farms, including building up landscape "green elements" such as green zones, balks between fields, etc. On the other hand, investment supports for these purposes can be applied under the RDP.

To apply direct or indirect supports for the increase of the share of own land to the detriment of leased land on farms, to stimulate the internalisation of farm systems in a proper and sustainable care for their own land.

Increase of effectiveness and competitiveness of farms

As it was mentioned, increase in the effectiveness in the long-time horizon is principally supported by measures related to environment. It can issue in a reduction of the direct payments (Pillar I) to the benefit of supports under the RDP (Pillar II). The reduction could also stimulate a higher orientation of farms on their effectiveness and restructuring, overwhelming their present "sleeping period" under huge income supports.

However, it is generally expected, that a decisive role shall play investment supports for modernisation, restructuring, etc. under the RDP. This expectation should be treated very cautiously.

The investment supports, based also on the Czech analyses, have ambiguous effects: they really improve the economy of supported farms, but some supported farms could anyway invest even without supports. This fact indicates some deadweight losses of the supports. One of the solutions could be

to limit the supports only for small and medium size farms, together with a lower total limit of the supports per farm and the budgetary period.

The state can give some preferences for the investment supports, e.g. for livestock production, fruits and vegetable production, etc. But there are signals from more research findings on the risks of state failures, on moral hazard problems in the investment supports. From the latest experience supported farms increase production and if there are problems on markets, they ask for higher market price or operational supports.

Generally higher priorities in the investment supports should be given to all aspects of innovations (including the quality of production) and investments on animal welfare, energy savings, wastage treatment, etc.

The economic position of selected commodities with a higher labour inputs (fruits, vegetables, etc.) should not be provided by a higher (coupled) income supports, but with supports on various forms of producer organisations. These supports can be applied on other commodities, of course.

Under the climatic change and expected volatility of markets the risk management will be a serious problem in future. The strategy promotes a holistic approach in this field, more based on the own preventive activities on farms, supported by the effects of direct payments and diversification on farms, and by special (even though) limited policy measures (e.g. by supports of insurance payments).

Nevertheless, much higher stress should be given to the research and technological development, accompanied by improved channels for the transfer of research into practice. The Czech Republic should create an effective Agricultural Knowledge and Innovation System (AKIS) and do its best in the utilisation of the room under the European Innovation Partnership (EIP) and specific forms of co-operations.

Balanced approach to distribution of supports

The problem is more linked with the distribution of the direct payments and the LFA payments as the decisive parts of income supports. It should be respected, that income supports themselves shall not generate the differences in the farm economy among farm categories, like it is up to now.

First, the income and other supports for small and young farms shall be promoted, improving the age structure on farms and bringing into the sector a “new blood”, more flexible in the reaction on policy and market stimuli. It is also one of the prepositions for the increase of the effectiveness on farms.

It is true that the largest part of the income supports receive a limited number of very large farms, in majority with extensive systems, very low employment and weak links to rural communities. The ceilings and modulations of the supports according to size of farms, but respecting the employment on farms can be accepted.

For the LFA payments any reasonable degresivity of the payments should be realised. Above it, the LFA payments (for the new defined Natural Handicapped Areas – NHA) shall respect the new scheme for the payments (on all agricultural land, up to now only on grassland), the present situation in the restructuring of LFA farms and the solution in coupled direct payments for ruminants. Special degressive scheme should be prepared for the farms up to now ranged in the LFA, but excluded from the NHA by its new definition.

Agriculture and renewable energy

It is a politically sensitive goal, whose fulfilment is globally influenced by the competition between food and non-food use of agricultural production and by the care of governments on the level of consumer prices for food. In the Czech Republic it is strengthened by the care of the government on the level of energy prices, which heavily increased after the recent enormous supports for the solar energy. Nevertheless, the Czech agricultural area has huge potentials for (even sustainable) increase in the production of the biomass for food and non-food use.

Under supposed EU and domestic future general conditions in the supports on renewable energy (e.g. the reduction of the EU goals in the share of the first generation biofuel to 5%, the announced reduction or even abolition of domestic supports for bio-electricity after 2014, etc.), the development in this field can be to a large extent (even though temporarily) supressed.

However, some investment and operational supports e.g. for biogas stations on farms and for local use should be preserved, but under stricter conditions (utilisation of wastage, slurry from pig breeding, etc.; a higher utilisation of produced heat). Nevertheless, many open questions in this field remain for the future.

Agriculture and rural development

Agriculture has many links to rural areas: job opportunities, the quality of human and social capital, rural infrastructure, etc. Almost all above mentioned policy measures are related to these aspects, particularly:

- Specific supports for livestock, fruits and vegetable productions, with the aim to increase job opportunities in rural areas.
- The same apply for supports on diversification of farm activities as a part of the risk management on farms.
- Specific supports for small farms and young farmers, which could stimulate more positive externalities in development of the human and social capital in rural areas.

5.5. Conclusions

The presented approach to the strategy for the Czech agriculture, based on the objective analyses of its development after EU accession and under the present CAP, represents the research position for the discussions with the government and with non-governmental organisations. Particularly it regards the implementation of the strategic goals into policy measures for the CAP after 2013. The research approach can be utilised in the assessment of any real EU and domestic positions for the future CAP, based on political decisions and compromises.

References

1. Bašek V., et al., (2010), České zemědělství šest let po vstupu ČR do EU (Czech agriculture six years after EU accession), Research study IAEI, Prague.
2. Bašek V., Doucha T., (2010), Český potravinářský průmysl – jeho šance a rizika do budoucnosti (Czech food industry – its chances and risks for the future). Potravinářská revue (Food Industry Review), 6, 2010, pp. 7-8, 10-14.
3. Czech Statistical Office, AGROCENSUS 2010, Prague.
4. Doucha T., Bašek V., (2011), Economic position and competitiveness of the Czech agriculture and food industry under the CAP and on the EU single market, [in:] European Union Food Sector after the last enlargements – conclusions for the future CAP, Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej. Rajgród, No 6.1 Warsaw, pp. 112-130.
5. Doucha T., Foltýn I., (2006), Modelling the multifunctionality of Czech agriculture. Working Paper No 17, ENARPRI, CEPS, Belgium, May.

6. Doucha T., Foltýn I., (2008), Czech Agriculture after the accession to the European Union – Impacts on the Development of its Multifunctionality. Agricultural Economics, Vol. 54, No 4, pp. 150-157.
7. Doucha T., Foltýn I., Humpál J., (2010), Profitability of dairy and suckler cows breeding on Czech farms. Agricultural Economics, Vol. 56, No 3, pp. 98-102.
8. IAEI, (2012), Podklady ke koncepčním otázkám českého zemědělství se zaměřením na jeho hlavní komodity, Část A – Analýza dosavadního vývoje (Basis to the conceptual questions of the Czech agriculture with orientation on its main commodities, Part A – Analysis of the hitherto development), Working document IAEI for the Ministry of Agriculture. Prague.
9. Ministry of Agriculture – IAEI, (2012), Zprávy o stavu českého zemědělství (Reports on the Czech agriculture), Prague.
10. Ministry of Agriculture, (2013), Strategie pro růst (Strategy for growth). Working document, Prague.

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6. The new CAP reform: an analysis of impacts at the sub-national level. The case of Tuscany

6.1. Introduction

The Scientific and Policy Report by the Joint Research Centre of the European Commission [Terres et al. 2013] points out how the risk of farmland abandonment is a phenomenon that varyingly concerns the territory of Europe. The report results identify the region of Tuscany as one of the areas most at risk of abandonment because of the low economic performance of farms. The scenario that would take shape in the event of a significant abandonment of farming in Tuscany would be extremely alarming because the phenomenon would have a negative impact not only on the region's production system but also on a series of services that agriculture offers society, such as the protection of the landscape and of the territory in general.

The reform of the CAP for the period 2014-2020 can assume, in this context, an important role in defining the future scenario, for it can contribute to avoiding the abandonment of farming activities insofar as it will be able to help the sector get through critical moments.

This paper purposes to analyse the redistributive effects of the decoupled aids of the reform's first pillar by comparing the present situation with the situation created after modifying the procedures for making direct payments. In particular, the analysis seeks to verify the impact of the new proposal on the added value of Tuscan farms. Towards this end, the study examines the farm and territorial effects, utilising the database of Tuscan farms of the Tuscan Regional Agency for Expenditures in Agriculture (ARTEA) updated to 2012.

The approach followed will make it possible to analytically consider all of the farms that have received a CAP contribution in 2012. The overall picture of the effects of modifying the CAP therefore ensues from the summation notation of the single farm situations, and is for this reason more precise and faithful compared to analyses conducted on the sample level.

In the next paragraph follows a brief review of the modifications introduced with the proposed CAP reform and a critical analysis of the state of the art of the principal scientific contributions produced thus far. We will then illustrate the method adopted to simulate the redistributive effects and describe

the case study. In the conclusions, the effects related to the scenario introduced by the new policy will be commented, underlining the weak points.

6.2. The CAP reform and the related effects: the state of the art

There is a very strong interest for the impact the CAP reform will have on European agriculture. Within the debate on this topic, the document edited by [De Filippis 2012] represents a good point of departure to identify the principal elements that make up the reform for the next seven years. In particular, as far as the proposed regulation of direct payments is concerned, coherently with the Fischler reform and the Health Check, decoupling is confirmed as the guiding criterion for distributing aid. In this picture of continuity, however, there are several non-negligible changes towards what the Commission defines as a more targeted and equitable support. Towards this end, the Commission proposes to "unpackage" the present single payment to farms into several more selective and targeted components: standard payment, greening, disadvantaged areas, young farmers, small farmers, coupled payments for strategic productions [Frascarelli 2010].

Furthermore, the Commission proposes to limit the number of CAP beneficiaries to only the "active" farmers, in order to avoid aid going to subjects who have little to do with farming activity. In view of pursuing a more equitable support, the distribution of payments will be improved with a mechanism of progressive penalisation for those with a higher amount of aid (capping). Moreover, the "historical" criterion for calculating direct payments will be abandoned, making the "regional" model of decoupling obligatory for all, which was already adopted by various member states in applying the reform of 2003, with standard sums on the level of Country or Region [European Commission 2010].

It is not clear, however, how the regionalisation of aids will be conducted, that is to say that it is not clear on what basis the average aid per hectare will be calculated [Henke 2011]. The climate of uncertainty on how regionalisation will be applied constitutes an open question [Casini 2012, De Vivo et al. 2012, Frascarelli 2011]. Various studies conducted in this regard show how the effects of the new proposal of agricultural policy prove to be strongly influenced by the criterion chosen for regionalisation. The most likely hypothesis remains that of a calculation on a sub-national basis which, with time, will homogeneously level out and settle on a situation of aid per hectare equal for all of the territories [Pupo D'Andrea 2011].

While for the regionalised share this hypothesis seems to be plausible and sustainable also from the political viewpoint, the question becomes complicated in calculating the share in greening, which represents the proposal's true

novelty. The regulation proposal defines greening as a payment for farm practises that go to the benefit of the climate and the environment, which should remunerate the production of public goods. Greening [Westhoek 2012] is the second most important component after standard payment, for an amount corresponding to 30% of the national ceiling, equal for all of the member states. It will be paid out annually per admissible hectare of farm surface and will be calculated annually on the level of member state or region, dividing the total funds (equal to 30% of the national or regional ceiling) by the number of admissible hectares on the national or regional level. Farmers will be entitled on condition that they receive the standard payment and that on their admissible hectares they respect three farming practises considered beneficial for the climate and the environment: crop diversification, maintenance of permanent meadows; presence of 7% of areas of an ecological interest. The aforementioned farming practises are to be jointly respected except in the case of only permanent meadows. If a beneficiary did not respect the obligations of greening, the amount of the ecological payment and of the standard payment would be revoked either totally or in part.

The constraints of greening are in point of fact obligatory for those who intend to access the entire system of direct payments, as failure to respect them also affects the standard payment. In other words, it is a sort of "reinforced conditionality" [De Filippis 2012]. In this sense, a simulation carried out to apply this measure in Lombardy shows that the agricultural practises provided for by the Commission are theoretically simple, but they require considerable adjustments for many farms and carry strong consequences on production and on incomes [Pretolani 2012].

6.2. Method

With respect to the approaches examined in literature, the one this study follows takes into consideration all of the farms that have obtained a decoupled payment relative to the first pillar in 2012 and simulates, on the farm level, the redistributive impacts tied to the new CAP measures. Starting from the macroeconomic analyses conducted on the Italian level on data of the Farm Accountancy Data Network [Tudini 2011], we intend to analyse the redistributive effects of the aids and their effect on the farm's added value by means of a detailed analysis limited to Tuscany, hypothesising a specific scenario of reference to calculate the ceiling destined to the aforementioned region. Specifically speaking, it has been decided to consider a regional ceiling calculated taking into consideration the historical distribution of the payments,

as well as a component proportional to the UAA, coinciding with the aid in greening [De Vivo 2012].

The regional ceiling analysed and processed here is made up of the standard payment share (48% of the ceiling altogether attributed to Italy[7]), the green payment share (30% of the ceiling altogether attributed to Italy), and the share relative to the simplified scheme for small farms (10% of the national ceiling). Coupled measures and those for young farmers are excluded from the simulation. The year of reference (status quo) by which the redistributive effects of aid is to be evaluated is 2012 in which, compared to the ceiling destined to the region of Tuscany (about 173 million euros), the decoupled aids represent 86%.

In evaluating the impact the new system of aids will have on farms, it is necessary to take account of the fact that by applying the criterion of convergence on the EU level, once the new system of aids becomes fully effective, Italy will dispose of resources 6.9% less than the status quo. The second factor to bear in mind concerns the fact that in the simulations, regionalisation was practised only on the standard payment, the green payment and that of the simplified scheme for small farms, which represent only a few of the aids farmers will be entitled to. These aids could indeed be joined by aid for young farmers and/or the coupled aid which, depending on the case, could contribute to reducing the reform's negative impact or increase its positive impact.

The scenario refers to the situation in full force, that is 2019, without taking into account the intermediate stages of approach and is the following: the national ceiling for the standard payment and for the small farmers scheme is distributed among the Regions, using the importance held by each of these with respect to the historical aids and that considering the nature of the "green" payment tied to the management of the territory, the related ceiling is distributed among the regions on the basis of the criterion tied to the UAA. Table 1 shows the distribution among the different Italian regions according to the hypothesised scenario.

[7] This percentage derives from the hypothesis that Italy choose to set the aids in motion in the following measure: 2% for young farmers, 10% for coupled payments, 10% simplified scheme for small farms, 30% greening.

Table 1. Regional ceilings (Scenario simulation)

	Historical aid (Weight)	Basic payment (weighted on the historical aid)	Small farm scheme	UAA 2010	Greening (weighted on the historical aid)	UAA (weigh t 2010)	Greening (weighted on UAA)	Other measueres	Total Regional aid	Differences respect the current situation	Regionalized aid per hectar	Greening per hectar	Total aid per hectar
Piemonte	8,70%	160.416.864	33.320.180	1048350	99.480.540	8%	93.798.598	39.984.216	327.519.858	-5.681.941	153	89,5	242,5
Valle	0,10%	1.351.884	281.642	55384	844.927	0,40%	4.955.384	337.971	6.926.882	4.110.457	24,4	89,5	113,9
Lombardia	13,10%	241.547.232	50.222.340	984870	150.187.020	8%	88.118.889	60.266.808	440.155.269	-62.068.130	245,3	89,5	334,7
Liguria	0,20%	3.687.744	768.280	43033	2.304.840	0%	3.850.303	921.936	9.228.263	1.545.463	85,7	89,5	175,2
Trentino	0,50%	9.219.360	1.920.700	380502	5.762.100	3%	34.044.570	2.304.840	47.489.470	28.282.470	24,2	89,5	113,7
Veneto	10,00%	184.387.200	38.414.000	806319	115.242.000	6%	72.143.452	46.096.800	341.041.452	-43.098.547	228,7	89,5	318,2
Friuli	1,80%	33.189.696	6.914.520	219909	20.743.560	2%	19.675.885	8.297.424	68.077.525	-1.067.674	150,9	89,5	240,4
Emilia	8,60%	158.572.992	33.036.040	1066773	99.108.120	8%	95.446.926	39.643.248	326.699.206	-3.661.193	148,6	89,5	238,1
Toscana	**4,10%**	**75.598.752**	**15.749.740**	**755295**	**47.249.220**	**6%**	**67.578.187**	**18.899.688**	**177.826.367**	**20.328.967**	**100,1**	**89,5**	**189,6**
Umbria	2,40%	44.252.928	9.219.360	327868	27.658.080	3%	29.335.225	11.063.232	93.870.745	1.677.145	135	89,5	224,4
Marche	3,60%	66.379.392	13.829.040	473063	41.487.120	4%	42.326.233	16.594.848	139.129.513	839.113	140,3	89,5	229,8
Lazio	4,40%	81.130.368	16.902.160	648472	50.706.480	5%	58.020.496	20.282.592	176.335.616	7.314.016	125,1	89,5	214,6
Abruzzo	1,60%	29.501.952	6.146.240	449988	18.438.720	3%	40.261.636	7.375.488	83.285.316	21.822.916	65,6	89,5	155
Molise	1,20%	22.732.243	4.735.883	196527	14.207.651	2%	17.583.835	5.683.060	50.735.023	3.376.183	115,7	89,5	205,1
Campania	4,50%	82.974.240	17.286.300	547464	51.858.900	4%	48.983.053	20.743.560	169.987.153	-2.875.846	151,6	89,5	241
Puglia	13,40%	247.078.848	51.474.760	1280875	154.424.280	10%	114.603.242	61.769.712	474.926.562	-39.821.037	192,9	89,5	282,4
Basilicata	2,90%	52.666.398	10.972.166	512280	32.916.498	4%	45.835.081	13.166.599	122.640.245	12.918.582	102,8	89,5	192,3
Calabria	7,30%	134.602.656	28.042.220	551404	84.126.660	4%	49.335.611	33.650.664	245.631.151	-34.791.048	244,1	89,5	333,6
Sicilia	7,80%	143.822.016	29.962.920	1384043	89.888.760	11%	123.833.873	35.955.504	333.574.313	33.945.113	103,9	89,5	193,4
Sardegna	3,80%	70.620.297	14.981.460	1152756	46.235.090	9%	103.140.078	17.977.752	206.719.588	56.904.988	61,3	89,5	150,7
Italia	**100,00%**	**1.843.872.00**	**384.140.00**	**1288518**	**1.152.870.56**	**100%**	**1.152.870.56**	**461.015.94**	**3.841.799.52**	**399.527**	**143,1**	**89,5**	**232,6**

Source: own elaboration.

The above table points out a substantial problem for Tuscan farms and, potentially, also for those of the other regions. There is indeed a strong divergence between the official statistics that the simulations are developed on and the real data supplied by ARTEA.

In fact, compared to an official total agricultural surface (National Statistics Institute) of approximately 755,000 hectares and farms numbering approximately 75,000, ARTEA records just under 68,000 farms and 699,000 hectares of UAA. This discrepancy does not allow all of the available resources to be assigned, as they are distributed over a smaller surface area than what was utilised to calculate the ceilings per hectare, thus causing a surplus with an unclear destiny. The principal features of the database representing the universe of reference of the Tuscan farms registered with ARTEA are recorded in Table 2.

Table 2. Features of the universe of ARTEA farms and of the sample considered

	FARMS	% respect total farms	UAA	% respect total UAA	Payments (first pillar)	%
Dataset ARTEA (Total)	67764		699766		152205275	
Dataset ARTEA_UTE_Toscana	56245	83%	586727	84%	149978730	99%
Dataset ARTEA UTE_Toscana with information about farm UAA	**46194**	**68%**	**586727**	**84%**	**147261326**	**97%**
Dataset ARTEA UTE_Toscana without information about farm UAA	10051	15%	0	0%	2713978	2%

Source: own elaboration.

The processing performed in this study utilizes the group of farms located in Tuscany with a UAA greater than 0 as the sample of reference. With respect to the ARTEA universe, this sample represents 68% of the number of farms, 84% of the UAA and 97% of the total decoupled payments disbursed annually.

6.3. Current situation of the Tuscan farming system

The agriculture of Tuscany, like that of Italy, has for years witnessed a contraction of both the UAA and of the number of farms. Table 3 shows a comparison on the Italian level between the situation of 2000 and that of 2010, as reported by the Census of Agriculture conducted by the National Statistics Institute (ISTAT). As far as the UAA is concerned, Tuscany is the region that in absolute terms has lost the greatest number of hectares in the course of the past ten years, (approximately 100,000), which is equal to 11.7% on the regional level, while the average loss on the Italian level is 2.3%. As for the loss of farms, too, the situation in Tuscany (-38.4%) is worse than the Italian average (-32.2%).

Table 3. Comparison of number of farms and UAA 2000-2010

REGIONS	Farms		Absolute variations	Variations %	UAA		Absolute variations	Variations %
	2010	2000			2010	2000		
Piemonte	66.930	106.969	-40.039	-37,4	1.048.350,45	1.068.872,59	- 20.522,14	-1,9
Valle d'Aosta/Vallée d'Aoste	3.520	5.981	-2.461	-41,2	55.384,41	71.120,32	- 15.735,91	-22,1
Lombardia	54.107	71.350	-17.243	-24,2	984.870,55	1.039.592,36	- 54.721,81	-5,3
Liguria	20.121	37.340	-17.219	-46,1	43.033,35	63.834,79	- 20.801,44	-32,6
Trentino-Alto Adige	36.666	51.456	-14.790	-28,7	380.502,92	414.115,72	- 33.612,80	-8,1
Veneto	120.735	178.404	-57.669	-32,3	806.319,31	851.275,55	- 44.956,24	-5,3
Friuli-Venezia Giulia	22.327	33.302	-10.975	-33,0	219.909,72	237.969,86	- 18.060,14	-7,6
Emilia-Romagna	73.441	106.363	-32.922	-31,0	1.066.773,17	1.129.317,92	- 62.544,75	-5,5
Toscana	**75.459**	**122.409**	**-46.950**	**-38,4**	**755.295,11**	**855.805,89**	**-100.510,78**	**-11,7**
Umbria	36.201	52.035	-15.834	-30,4	327.868,41	366.452,41	- 38.584,00	-10,5
Marche	46.373	61.323	-14.950	-24,4	473.063,85	492.595,95	- 19.532,10	-4,0
Lazio	98.026	191.205	-93.179	-48,7	648.472,52	721.051,18	- 72.578,66	-10,1
Abruzzo	66.854	76.906	-10.052	-13,1	449.988,65	431.081,32	18.907,33	4,4
Molise	27.427	31.667	-4.240	-13,4	196.527,69	214.626,18	- 18.098,49	-8,4
Campania	136.867	234.721	-97.854	-41,7	547.464,53	586.059,65	- 38.595,12	-6,6
Puglia	275.633	336.697	-61.064	-18,1	1.280.875,86	1.247.577,83	33.298,03	2,7
Basilicata	51.772	76.034	-24.262	-31,9	512.280,88	537.532,79	- 25.251,91	-4,7
Calabria	137.699	174.693	-36.994	-21,2	551.404,94	554.848,84	- 3.443,90	-0,6
Sicilia	219.581	349.134	-129.553	-37,1	1.384.043,04	1.279.717,80	104.325,24	8,2
Sardegna	60.681	107.464	-46.783	-43,5	1.152.756,54	1.019.957,81	132.798,73	13,0
ITALY	**1.630.420**	**2.405.453**	**-775.033**	**-32,2**	**12.885.185,90**	**13.183.406,76**	**-298.220,86**	**-2,3**

Source: Data processed supplied by Istat.

As far as the variations of single crops in the course of the past ten years are concerned, sowable land and grazing land are the ones to suffer the greatest contraction compared to the national average, both in terms of number of farms and in UAA hectares (Table 4).

On the other hand, also woody crops, especially the grapevine, recorded a marked decline in the number of farms specialised in this type of farming, compared with a slighter decline in UAA. In this case, a redistribution of the surface areas on the territorial level has been noted with a consequent increase in the average farm size.

Table 4. Variation of number of farms and UAA of different crops 2000-2010

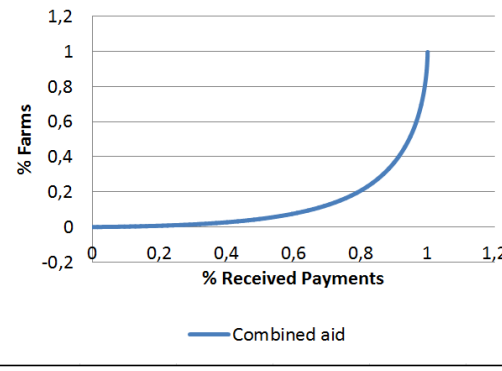
	Arable crops						Permanent crops						Vineyards						Pastures					
	Farms			UAA			Farms			UAA			Farms			UAA			Farms			UAA		
	2010	2000	2000	dif.	2000	dif.	2000	2000	dif.	2010	2000	dif.	2010	2000	dif.	2010	2000	dif.	2010	2000	dif.	2010	2000	dif.
Piemonte	40.843	63.936	-36%	542.274	575.731	-6%	33.627	59.662	-44%	93.831	96.811	-3%	20.669	40.610	-49%	46.710	52.906	-12%	29.676	49.803	-40%	410.666	393.952	4%
Valle d'Aosta	557	2.308	-76%	213	229	-7%	1.878	3.507	-46%	761	1.245	-39%	1.362	2.399	-43%	432	517	-17%	3.034	5.503	-45%	54.310	69.565	-22%
Lombardia	35.115	48.310	-27%	715.416	730.535	-2%	14.506	20.979	-31%	36.193	32.448	12%	9.042	15.898	-43%	22.293	22.070	1%	21.730	29.114	-25%	232.766	275.925	-16%
Liguria	8.399	17.716	-53%	6.433	9.231	-30%	15.101	28.153	-46%	13.958	18.133	-23%	3.940	12.544	-69%	1.328	2.391	-44%	4.058	10.697	-62%	21.878	35.238	-38%
Trentino	6.222	8.677	-28%	10.966	7.457	47%	23.147	28.383	-18%	47.549	45.986	3%	12.729	15.325	-17%	15.323	13.864	11%	17.240	30.793	-44%	325.588	360.084	-10%
Veneto	92.890	129.004	-28%	568.046	579.615	-2%	47.210	89.145	-47%	107.691	108.150	0%	37.335	77.191	-52%	73.709	73.781	0%	22.128	50.461	-56%	128.731	161.088	-20%
Friuli-Venezia Giulia	19.570	28.621	-32%	163.197	173.991	-6%	7.670	13.327	-42%	25.729	22.752	13%	6.644	12.285	-46%	19.669	17.805	10%	4.877	9.671	-50%	30.500	40.462	-25%
Emilia-Romagna	56.515	80.587	-30%	832.238	859.656	-3%	36.732	60.763	-40%	129.463	151.290	-14%	25.313	44.599	-43%	55.815	60.072	-7%	13.738	22.201	-38%	103.611	117.012	-11%
Toscana	**41.054**	**68.427**	**-40%**	**482.536**	**536.904**	**-10%**	**62.318**	**98.215**	**-37%**	**175.329**	**182.473**	**-4%**	**24.987**	**53.796**	**-54%**	**56.588**	**58.504**	**-3%**	**13.306**	**34.836**	**-62%**	**95.351**	**133.313**	**-28%**
Umbria	24.607	34.927	-30%	211.125	233.112	-9%	27.410	38.961	-30%	46.331	49.049	-6%	11.136	23.950	-54%	12.059	14.227	-15%	6.531	13.616	-52%	69.514	83.027	-16%
Marche	40.182	52.576	-24%	377.040	391.396	-4%	31.924	42.946	-26%	35.241	38.083	-7%	13.751	27.630	-50%	15.475	19.660	-21%	4.303	8.822	-51%	58.883	60.939	-3%
Lazio	41.371	80.660	-49%	320.569	343.694	-7%	77.148	149.242	-48%	130.398	146.133	-11%	20.485	69.371	-70%	16.082	29.533	-46%	18.474	60.998	-70%	195.432	227.627	-14%
Abruzzo	40.101	49.490	-19%	182.179	180.036	1%	57.593	63.554	-9%	78.669	81.990	-4%	18.675	34.063	-45%	30.583	34.904	-12%	6.535	8.151	-20%	186.715	166.369	12%
Molise	19.720	24.942	-21%	143.265	154.553	-7%	21.719	24.728	-12%	21.146	21.177	0%	5.960	12.417	-52%	4.173	5.883	-29%	3.916	7.167	-45%	31.179	37.870	-18%
Campania	68.481	136.640	-50%	268.003	291.283	-8%	110.484	181.823	-39%	155.249	176.513	-12%	41.624	86.085	-52%	21.002	29.264	-28%	14.786	24.758	-40%	120.690	113.335	6%
Puglia	91.264	115.175	-21%	651.518	650.206	0%	247.563	296.803	-17%	521.465	505.035	3%	47.901	83.518	-43%	96.750	111.290	-13%	7.448	9.520	-22%	104.890	90.066	16%
Basilicata	35.137	51.420	-32%	315.138	332.224	-5%	37.316	53.258	-30%	51.593	55.529	-7%	9.775	23.795	-59%	5.508	8.737	-37%	12.421	24.571	-49%	144.512	148.275	-3%
Calabria	46.091	73.528	-37%	155.761	177.720	-12%	124.610	149.791	-17%	252.678	233.319	8%	13.390	34.291	-61%	9.076	13.826	-34%	17.431	25.210	-31%	141.384	140.617	1%
Sicilia	99.142	156.584	-37%	680.700	644.994	6%	178.663	276.966	-35%	380.880	396.648	-4%	40.611	79.603	-49%	110.699	121.796	-9%	31.381	48.406	-35%	320.284	235.578	36%
Sardegna	29.626	50.039	-41%	392.279	411.842	-5%	40.457	79.852	-49%	66.403	81.513	-19%	18.316	41.721	-56%	18.866	26.301	-28%	22.744	32.338	-30%	692.781	524.870	32%
ITALIA	834.650	1.273.567	-34%	7.014.892	7.284.408	-4%	1.197.076	1.760.058	-32%	2.370.560	2.444.277	-3%	383.645	791.091	-52%	632.140	717.334	-12%	275.757	506.636	-46%	3.469.663	3.415.213	2%

Source: Data processed supplied by Istat.

Reading these data sheds light on the contraction of the national and Tuscan farming system. These dynamics imply an inadequacy in the system of public intervention adopted to date which has not been able to check such a large number of farms from leaving the market, with the consequent loss of farming surface area. The criticalities concerning the financial distribution of current public aid of the first pillar, for the most part caused by the calculation procedure adopted (historical aid), are evident and many. In Tuscany, for example, only 20% of the aid is distributed among about 90% of farms, and almost half of the farms receives less than 1000 euros in aid per year (Table 5) [Casini 2012].

Table 5. Current distribution of payments

Id Class	*Class*	*Baseline*	*% Farms*
1	0	263	0,60%
2	>1<500	27	0,10%
3	>501<1000	17628	42%
4	>1001<5000	6186	15%
5	>5001<10000	11265	27%
6	> 10.000<20000	3097	7%
7	>20001<30000	1863	4%
8	>30000<50000	677	2%
9	>50001<100.000	483	1%
10	>100001<200000	313	1%
11	>200001	117	0,3%



Source: our processing of ARTEA data.

The approximately 45,000 farms that received aid under the I Pillar in 2012 are joined by 17,000 others (with about 33,000 hectares of UAA) which though included in the ARTEA database, did not receive any payment. The reform, however, will entitle these farms to obtain the regionalised single payment.

6.4. Simulation of financial aid redistribution following the proposed CAP reform

In light of the data processed, it is possible to outline an overall picture of the effects of the reform of community agricultural policies in Tuscany. Table 6 points out the comparison between the situation of current aid distribution with what the situation would be when the reform entered full force.

Table 6. Effect of the reform

Type of farming	Farms	UAA	First pillar payments status quo (A)	Added Value (A.V.) status quo + payments (A)	I Pillar with reform (B)	A.V. + payments of reform (B)	Variation A.V. + payments (B-A)	% Variation A.V. + payments (B-A)	Variation I Pillar respect to the status quo	% Variation I Pillar respect to the status quo	% Variation of farm A.V.	Variation I pillar payments per farm	% of farms that increase payments after the reform
Arable crops	15.974	331.762	91.778.827	276.264.701	69.437.885	233.297.717	-42.966.984	-3,55%	-21.940.942	-17,40%	-2.768	-1.413	57%
Horticulture	115	424	113.541	16.228.141	105.976	16.201.108	-27.033	0,00%	-7.564	0,00%	-235	-66	40%
Permanent crops	19.859	74.534	15.147.829	724.031.642	19.253.807	724.431.861	400.219	0,03%	4.215.978	3,30%	21	221	19%
Livestocks	1.624	25.753	6.143.415	42.736.314	5.412.632	40.371.638	-2.364.675	-0,20%	-730.783	-0,60%	-2.309	-714	56%
Farms specialized in granivores	100	3.605	911.057	20.036.339	749.275	19.642.800	-393.540	-0,03%	-161.782	-0,10%	-3.935	-1.618	60%
Mixed cropping	5.913	55.987	11.896.740	90.948.022	12.054.242	87.732.275	-3.215.747	-0,27%	157.503	0,10%	-553	27	36%
Crops and livestock	2.609	92.779	21.274.946	95.355.230	19.288.996	87.404.050	-7.951.180	-0,66%	-1.985.950	-1,60%	-3.052	-762	59%
Total	**46.194**	**584.845**	**147.266.355**	**1.265.600.389**	**126.302.814**	**1.209.081.449**	**-56.518.940**	**-4,67%**	**-20.453.540**	**-16%**	**-1.277**	**-462**	**38%**

Source: own data processed.

The overall reading of the reform effects sheds light on a contraction of aid under the first pillar of about 16% with respect to the current situation. The main motivation for the reduction of the budget destined to farms can be attributed to the gap between the datum utilized to calculate the regional ceiling and the effective surface area managed by those which receive financing. In fact, the UAA effectively owned by farms that obtain the measures is lower than what was utilised to calculate the regionalised aid and, consequently, there is a surplus of financial resources with an unclear destiny. If these resources were not redistributed in Tuscany, the region's agriculture would be heavily penalised, even though the available ceiling were increased with respect to the status quo. The modalities whereby the Region will manage the undistributed budget share are therefore decisive for the Tuscan farms.

A first element to point out is how the loss of aid is mainly concentrated among the type of farms with arable crops for which we note a clear shift of monetary flows, as faced with the high loss of aids destined to this type of farming, 57% of farms record an increase in their own level of aid. This means that the loss of aid concerns less than half of the arable crop farms. On the other hand, aid increases for farms specialised in permanent crops.

Table 7 highlights the frequency of Tuscan farms in relation to the variation of the sum of added value and aid to the status quo compared to the situation brought on by the proposed reform.

Table 7. Frequency of farms in relation to the variation of added value including aid between the status quo situation and the simulation of the situation implementing the proposed reform

% Variation A.V. + payments respect to the status quo	Frequency	% Farms
-50%	1993	4%
-40%	1332	3%
-30%	2108	5%
-20%	2723	6%
-10%	3654	8%
0%	9105	20%
10%	16948	38%
20%	3594	8%
30%	1028	2%
40%	545	1%
50%	363	1%
Other	1045	2%

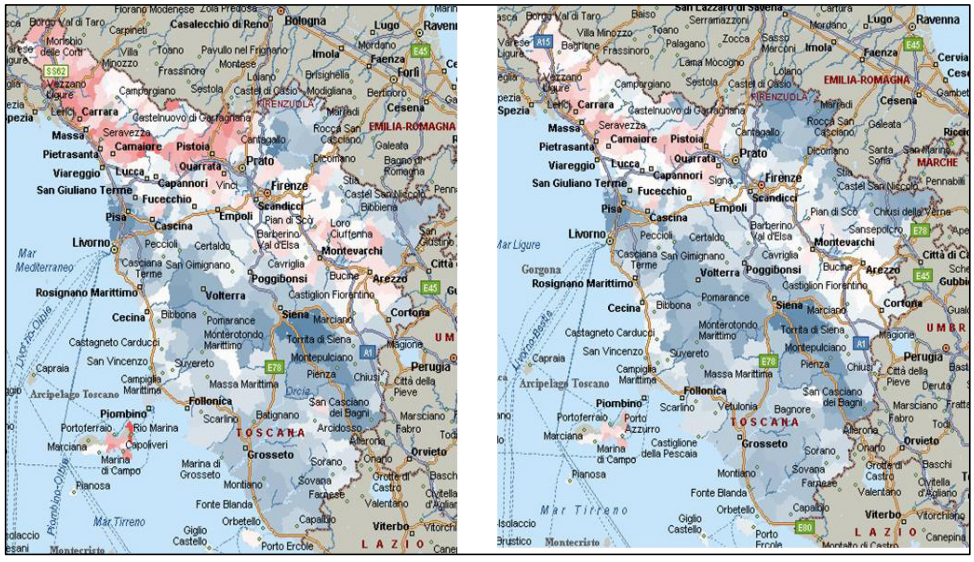
Source: own data processed.

The fact that emerges is that 54% of farms would improve their economic situation, while 26% would worsen it. The remaining 20% of farms would not be affected by the change. From the UAA viewpoint, the results point out a critical situation: 53% of the UAA would receive a lower public contribution with the reform, 22% of the UAA would suffer no significant change compared to the current situation, and only about 25% of the UAA would see an increase of aid of at least 10% compared to the current situation.

The analysis on the territorial level (Figure 1) shows how the distribution of aid that would be created with the reform varies in favour of the marginal areas, characterised by a more extensive agriculture. We note, in particular, an increase in aid to the entire Apennine area, with a greater effect in the Northeast, where the main productions are animal farming and large surface areas are devoted to pasture land. On the other hand, the reform would also favour several areas with greater economic performances, such as the Chianti area, for example. With the regionalisation of aid, the farms of this area would indeed see their aid ceiling increase. The declines in financial flows would instead weigh on the plains areas of Central-Western Tuscany.

Figure 1. Distribution of the current and simulated first pillar aids (payments in euro)

A) current situation B) simulated situation



Source: own elaboration.

6.5. Discussion

Simulating the impacts of the CAP reform on the farming system of Tuscany points out a possible reduction of the overall budget under the first pillar. This loss would essentially be concentrated among the type of farms with arable crops, while there would be an increase in budget for farms specialised in permanent crops and more extensive crops.

As far as the objective of the CAP promoting a more sustainable agriculture, a necessary reflection concerns the efficiency of the greening measure, conceived precisely to promote the production of public goods. To support this measure, the farmer must destine a non-negligible part of his UAA to areas with an "ecological interest", following criteria that take no account of specific national and regional realities. In Tuscany, for example, greening could involve a reduction of aid which would penalise several forms of agriculture with significant environmental value. Getting round this rigidity by defining criteria that take account of the differentiated costs tied to the production of public goods would be of fundamental importance in view of promoting the agricultural practises whose value depends on a different territorial context.

Overall, the picture that emerges from this study proves to be potentially critical, presenting an effective risk of abandonment of agriculture in Tuscany. On the other hand, the added value assessed in the analysis exclusively concerns farm production and does not include those activities of farm diversification such as, for example, rural tourism, "educational" farms and equestrian tourism, which permit the market promotion of the social and environmental functions that agriculture performs for society. In the past years, these activities have particularly developed in Tuscany and are today becoming an important reality on the territory, as well as a new potential source of income for farmers.

In this sense, a development of our analysis could be represented by including this type of activity in the assessment of economic performance, so as to provide a picture that takes into account this new capability of farms to internalise the multifunctionality of agriculture on the market.

References

1. Casini L., Scozzafava G., (2012), Analisi degli effetti a livello aziendale e territoriale della nuova politica agricola comunitaria: il caso della Toscana. Rivista di economia agro-alimentare, No 1, Franco Angeli.

2. Commissione Europea, (2010), The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future, http://eur-lex.europa.eu.
3. Commissione Europea, (2010a), Commission outlines blueprint for forward-looking Common Agricultural Policy after 2013 http://europa.eu.
4. Commissione Europea, (2010b), EUROPA 2020 Una strategia per una crescita intelligente, sostenibile e inclusiva, http://ec.europa.eu/eu2020.
5. De Filippis F., Henke P., (2009), La Pac verso il futuro, Working Paper 13, Gruppo 2013, Coldiretti.
6. De Filippis F., (ed,), (2012), La nuova Pac 2014-2020: Un'analisi delle proposte della Commissione, Gruppo 2013, Ed. Tellus.
7. De Filippis F., Frascarelli A., (2012), Il nuovo regime dei pagamenti diretti in De Filippis F. (a cura di) La nuova Pac 2014-2020, Un'analisi delle proposte della Commissione, Gruppo 2013, Ed. Tellus.
8. De Vivo C., Henke R., Pupo D'Andrea M. R., (2012), Prime valutazioni dell'impatto della regionalizzazione dei pagamenti diretti della Pac 2014-2020, Agriregionieuropa Anno 8 numero 29 Giugno.
9. Deß A., (2011), The CAP towards 2020: meeting the food, natural resources and territorial challenges of the future. Draft Report Parlamento europeo.
10. Frascarelli A., (2011), Nuova Pac, effetto redistribuzione sui pagamenti diretti per regione, Terra e Vita n.11/2011.
11. Frascarelli A. (2010), Riforma CAP. Dopo il 2013: le prime proposte. Terra e Vita no 26.
12. Henke R., Vanni F., (2010), Dopo il 2013: attori e temi del dibattito sul futuro della CAP, Rivista di Economia e Diritto Agroalimentare no 3, Firenze University Press.
13. Henke R., Coronas M.G. (2011), The Financial and Distributive Aspects of Direct Payments in the New Cap, Pagri/Iap Politica Agricola Internazionale, Vol. 1.
14. Henke R., Monteleone A., Pierangeli F., (2012), The CAP after 2013: what criteria for resources allocation? European Association of Agricultural Economists, 126th Seminar, June 27-29, 2012, Capri, Italy.
15. Terres J.M., Nisini L. , Anguiano E., (2013), Asssessing the risk of farmland abandonment in EU, JRC Scientific and policy reports, European Union, http://mars.jrc.ec.europa.eu/
16. Mahé L.P., (2012), Do the proposals for the CAP after 2013 herald a 'major' reform?, Policy paper no 53, Notre Europe, Paris.

17. Pupo D'Andrea M. R., (2012), Finestra sulla CAP n.27: le proposte dei regolamenti 2014-2020, Agriregionieuropa anno 8 numero 31.
18. Pupo D'Andrea M. R., (2011), Finestra sulla CAP n.23: le proposte dei regolamenti 2014-2020. Agriregionieuropa anno 7 numero 27.
19. Sorrentino A., Henke R., Severini S., (eds.), (2011), The Common Agricultural Policy after the Fischler Reform. Ashgate, United Kingdom.
20. Tudini L., (2011), La redistribuzione degli aiuti diretti in Toscana, La CAP dopo il 2013: effetti redistributivi a livello nazionale e regionale, Seminario INEA, Roma 30.
21. Vanni F., (2011), Agricoltura e beni pubblici: una proposta di ri-orientamento della CAP. Agriregionieuropa anno 7 numero 26.
22. Westhoek H., van Zeijts H., Witmer M., van den Berg M., Overmars K., van der Esch S., van der Bilt W., (2012), Greening the CAP; An analysis of the effects of the European Commission's proposal for the CAP, PBL NOTE, Netherlands Environmental Assessment Agency, The Hague.

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7. The state and insurance in agriculture – implications for the CAP 2013+

7.1. Introduction

The risks associated with market volatility are a prominent problem in the EU's agricultural production. There is a noticeable increase in risk in the form of the emergence of new animal and plant diseases. There is also occurrence of extreme weather. On the other hand, there is a "slack" in the development of risk management tools for agricultural activities, supported by the CAP.

The aim of the study was to: (1) identify the reasons used to engage the public authorities in the agricultural business insurance (AI) and (2) review the development of insurance in agriculture of selected countries with implications for the future shape of the CAP 2013+. We adopted the following thesis: actors of the CAP should be cautious about the proposal to widen and deepen the subsidies to agricultural insurance.

7.2. Agricultural insurance – causes and forms of involvement of public authorities

We can distinguish three types of insurance in the agricultural activity: insurance based on the current loss, depending on the level of insured individuals – including "packages" (multi-peril), indexed insurance, insurance of crop revenue.

The public authorities are involved in AI for two reasons:

1. general economic, such as: incompleteness and imperfection of markets related to agriculture; the relatively low level of productivity and income per one employee;
2. specific for AI, such as: asymmetry of information between insurer--farmer, also negative selection and moral hazard; the geographical spread of agricultural production; systematic risk in agriculture; the biological nature of agricultural production and variable weather and climate conditions (low price elasticity of demand, inelastic demand for agricultural commodities, price volatility of agricultural products).

The recommendation of the World Bank [Kay et al. 2012] shows that the most desirable model in the AI market is a public-private partnership that reduces the vulnerability of the intervention system and the market mechanism. The share of public sector in promoting agricultural insurance is a guarantee of the stability of the system and is the key to growth of agricultural insurance programmes, while the share of the private sector brings know-how.

Forms of involvement of public authorities in AI include:

1. indirect action, e.g. creation of the legal infrastructure or capital support for the development of the market of insurance instruments;
2. direct action, including, e.g. subsidies to AI (in most EU countries), public reassurance (Southern Europe), public AI (Greece, Cyprus), disaster funds and *ad-hoc* aid.

7.3. The effectiveness of government intervention in business insurance in agriculture

The relation of administrative expenses (AE) to net premiums (premiums net of subsidies) plays an important role in assessing the effectiveness of intervention in AI. In 1990-2011, the volume of net premiums for crop insurance in the U.S. increased more than seven times and totalled more than USD 4.5 billion in 2011. What is more, the ratio of AE/net premiums for AI stood at 30-110%. On average, the ratio stood at 75%, and its fluctuations were related, first of all to changes in expenditures in agricultural policy, and the occurrence of mass catastrophic phenomena.

From the point of view of assessing the effectiveness of government intervention in the insurance, two indicators play an important role: the producer loss ratio[8] and transfer efficiency[9], which take into account the administrative costs. The first ratio for the period 1990-2011 stood at 0,9-3,5% and the second at 0,3-0,9%.

In 1998-2008 there was an increase in the net premium in Spain: from EUR 230 million in 1998 to EUR 680 million in 2008. At the same time, there was a trend of increasing the effectiveness of insurance system. The ratio of AE/ premium stood at 5.5%, in 2008 – it was 3.4%. This indicates that action was taken to reduce administrative costs associated with the agricultural business insurance.

[8] Producer Loss Ratio = total compensation/(insurance premiums – subsidy for premiums).

[9] Transfer efficiency = (total compensation – producer premium)/(total compensation + administrative costs).

7.4. CAP and risk management in agriculture

More and more major changes taking place in the area of EU agriculture, among others, the announcement of the reduction of subsidies and reduction of market interventions, will require well-developed risk management tools in the near future. The EU has been supporting farmers in reducing the risks for years through the instruments of the CAP.

Overview of the evolution of the CAP indicates that it follows and adapts to the changes taking place in the economy and in the natural environment surrounding agriculture. Since the introduction of the CAP in the 1960s, it was modified several times. In the first period of its operation, emphasis was placed on ensuring food security through increased productivity, and its main purpose was to protect the income of the farming population through a series of measures to stabilize the market and prices. Major support for agriculture resulted in overproduction of food products that had to be exported. Then the changes went in the direction of reducing agricultural production. There was a reduction in prices of agricultural products, while ensuring an adequate level of income for farmers. Thus, the CAP gradually went from support to market and price management to direct payments (related and unrelated to production).

From the point of view of risk management in agriculture, the most important changes have taken place after 2000. The European Commission reviewed the risk management tools and encouraged Member States to develop their own subsidized insurance schemes. As part of the review of the CAP in 2008, the European Commission proposed the introduction of a special set of risk management tools in agriculture, which would wholly or partly replace the *ad hoc* emergency measures of the Community and the Member States. Further liberalization of the market, the tendency to reduce the support by measures of the CAP and the increasing scale of climate and epidemiological risks will required strengthening of risk management tools in agriculture.

Overview of instruments (Table 1) to protect EU farmers from the effects of the risk indicates that by 2001 the CAP had used mainly indirect risk mitigation instruments, such as: direct payments intended as a stabilizer of revenue and market-based instruments that affect the level and reduction of price volatility of agricultural products. In subsequent years, the EU made available direct insurance instruments that reduce production and price risk in agriculture, namely subsidized insurance and mutual insurance funds. In the new perspective of the CAP 2013+, in order to increase the efficiency of dealing with instability and uncertainty of income in the agricultural markets, the European

Commission is planning to introduce tools to complement the existing system of payments and market management instruments, as presented in Table 1.

Table 1. Overview of risk management instruments in agriculture supported by the CAP

Item	Risk management instruments supported by CAP
2001-2006	**Indirect instruments of risk mitigation in agriculture** Direct payments (income security), preventive measures for rural development, market-based instruments (intervention) **Direct instruments of risk management in agriculture** Subsidized crop and livestock insurance – support instrument recommended by the European Community – Commission Regulation (EC) No 1857/2006 on the application of Articles 87 and 88 of the Treaty to State aid to small and medium-sized enterprises active in the production of agricultural products
2007-2013	**Indirect instruments of risk mitigation in agriculture** Direct payments (income security), preventive measures for rural development, market-based instruments (intervention) **Direct instruments of risk management in agriculture** Subsidized insurance and mutual investment funds (introduced in the framework of the CAP review – a solution operating on the basis of funds from modulation – Council Regulation (EC) No 73/2009 of 19 January 2009 establishing common rules for direct support schemes for farmers under the common agricultural policy and establishing certain support schemes for farmers)
2014-2020	**Indirect instruments of risk mitigation in agriculture** Direct payments (income security), preventive measures for rural development, market-based instruments (intervention) **Direct instruments of risk management in agriculture** (tools complementing the existing system of payments and market management instruments) Insurance against natural disasters, Mutual investment funds, Providing basic insurance of income (agricultural income stabilization tool – ITS), Subsidized crop and livestock insurance.

Source: own elaboration.

Still, the agricultural insurance is a fundamental instrument in the Community for the protection of farms against catastrophic changes. The nature of this insurance and the scope of insured factors vary widely between countries, as presented in Table 2. Previous analyses of the system of business insurance in the EU show that the most common are insurance against a single risk factor (mainly hail), including both subsidized and unsubsidised insurance. In many countries, there are also mixed insurance (covering several risk factors, and their growth is stronger in countries where insurance is supported by the government. Only five states of the EU-27 make available crop insurance with public support. It should be noted that, despite the existing public support, the implementation of insurance instruments in many countries is at very low levels. Only in Greece and Cyprus, where business insurance is mandatory (and subsidized) and managed by government authorities, the prevalence of insurance

reaches 100%. In countries that lie in areas exposed to greater production risk (southern Europe and eastern parts of the EU), most insurance is subsidized by the government.

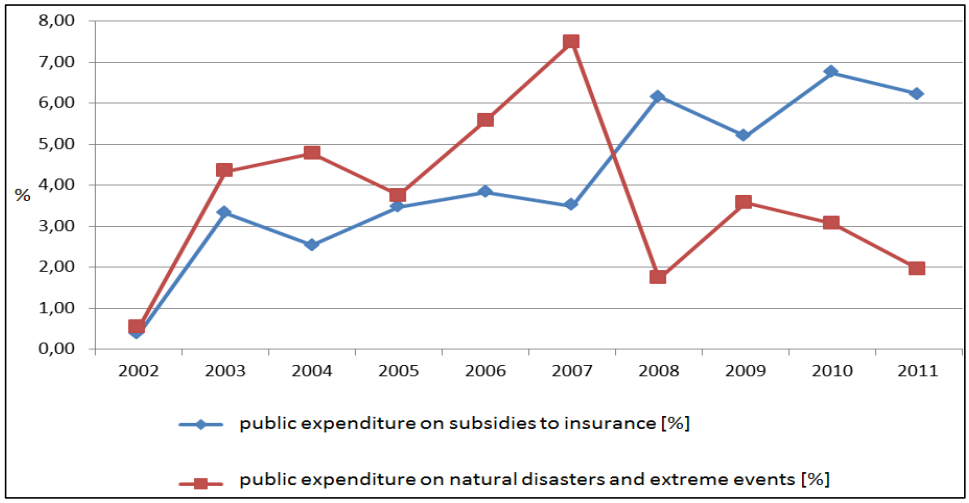
Table 2. Types of business insurance in the EU, the scope of insured risks and the degree of commercialization

State	Single risk insurance	Combined insurance	Crop insurance	Market penetration / market share [%]
Austria	PS	PS	PS	78
Belgium	P	-	-	no data
Bulgaria	P	P	-	52
Cyprus	GC	GC	-	100
Czech Rep.	PS	PS	-	35
Denmark	P	-	-	no data
Estonia	P	-	-	<1
Finland	P	P	-	<1
France	P	P	PS	no data
Germany	P	-	-	43
Greece	P	GC+GS+G	-	100
Hungary	P	P	-	52
Ireland	P	-	-	no data
Italy	PS	PS	PS	8
Latvia	PS	-	-	<1
Lithuania	PS	-	-	1
Luxembourg	PS	PS	PS	45
Netherlands	P	-	-	no data
Poland	P(S)#	-	-	7
Portugal	PS	PS	-	22
Romania	Ps	Ps	-	12
Slovakia	Ps	PS	-	no data
Slovenia	Ps	P	-	17
Spain	PS	PS	PS	26
Sweden	P	P	-	60
UK	P	-	-	7

Explanation: # – pilot survey, PS – delivered by the private sector, but partially subsidized, G – delivered by the public sector, but unsubsidised; S – subsidized; GS – delivered by the public sector and partially subsidized; P – delivered by the private sector, but unsubsidised, GC – delivered under law by the public sector and partially subsidized.
Source: [Bielza Diaz-Caneja et al. 2009].

Scale of public spending on insurance subsidized by the state increases from year to year (Figure 1).

Figure 1. Scale of public spending on business insurance subsidized by the state



Source: own compilation based on [European Commission 2013].

In 2002, only a few Member States (France, Italy, Netherlands, Luxembourg) supported farmers through subsidized insurance. The share of expenditure on this insurance in the total State aid amounted to about 0.5%. In subsequent years, the share of government expenditure allocated for these activities amounted to just over 6%, which represented a small share of State aid targeted for this type of action. The level of support in each state varies. The most supported insurance are in countries such as Spain, Italy and Austria, where State aid in 2011 for insurance was approximately 86% of total State aid directed to the insurance in all states of the Community. If we superimpose public spending directed at the liquidation of consequences of natural disasters and exceptional occurrences on these results, it can be seen that until 2007, State aid in this area was much higher than the aid directed to the insurance, but since 2008 the trend has been reversed. It can be assumed that all forms of support for business insurance, and in particular public-private partnerships, can reduce *ad-hoc* aid in the area of systemic risk.

7.5. Conclusions

Subsidizing AI has positive and negative effects. On the one hand, it improves the financial position and the income of agricultural producers, on the

other hand there are deformities in the area of production, investment, innovation and insurance. Subsidies to AI leads to a different allocation of factors of production, and changes in production practices. Before the CAP will transform ABI to protection of income and agricultural income, one should first sort out the status quo and seriously consider whether such a radical change of course will be effective and possible to fund in the long-term.

Inelasticity of demand for insurance services means that high participation of farmers in subsidized systems is achievable only under conditions of high rates of subsidization. Ensuring an adequate level of income in agriculture in conditions of high market volatility and increased risk leads to an abrupt increase in "agricultural budget" if other subsidies are not reduced.

The issue of catastrophe risk will become increasingly important, which may cause that the existing insurance instruments may be insufficient. Therefore we opt for a very prudent budget support, accurately addressed and temporary activities, initiatives and projects related to the management of these risks.

In the area of agricultural insurance, there is an area for the development of market-based solutions, both at the global level (risk sharing mechanisms, reinsurance), regional and national levels (e.g. weather derivatives, mutual insurance association) and individual (e.g. diversification of production, self--insurance). Market-based instruments, however, need deeper financial integration and a more healthy, sustainable financial development in the EU.

References

1. Bielza Diaz-Caneja et al., (2009), Risk Management and Agricultural Insurance Schemes in Europe. JRC Reference Reports, European Commission.
2. European Central Bank, (2012), Financial Stability Review, May 2013.
3. Iturrioz R., (2009), Agricultural Insurance, World Bank.
4. Kay R.D., Edwards W.E., Duffy P.A., (2012), Farm Management, Mc Graw Hill.
5. Mayer J., (2002), Expected utility as a paradigm [in:] A Comprehensive Assessment of the Role of Risk in U.S. Agriculture, R. E. Just, R. D. Pope (eds.), Kluwer Academic Publishers, Boston/Dordrecht/London.
6. OECD, (2011), Analysis of the 2003 CAP Reform.
7. Schmitz A., Moss Ch.B., (2010), Agricultural Policy Agribusiness and Rent Seeking Behaviour, University of Toronto Press, Toronto, p. 233.

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8. Foreign exchange hedge

The contribution which is called Foreign Exchange Hedge deals with the use of financial derivatives by export companies to hedge foreign exchange risk. One case study that monitors ways of financial derivative use in a company was created, gained results and findings are evaluated. The paper uses real data from the years 2011 to 2013 and works with the Company's financial statements.

The objective of the work is an analysis of the use of financial derivatives to hedge exchange rate risk of an export company. Worked out data are real data which were provided by the company from its financial statements from the years 2011 to 2013. Analyses are carried out taking into account the actual spot rate of the given periods, mostly obtained from the Czech National Bank sites or from other institutions. To analyse the current use of derivatives in the company one conducted contract was discussed. Analyses include data processing and proposals for consideration of macroeconomic factors that make the company's business environment. Qualitative research is concluded with a discussion on proposed approaches and instruments.

8.1. Forward

One type of forward is an agreement on the exchange of pre-agreed amount of money in one currency for an agreed amount in another currency at a future date. So founders bet on the future spot rate between the two currencies [Jílek 2010].

The exchange rate is the ratio of the mutual exchange of two currencies. It is given mostly in direct quotations, which means that the fraction is the ratio of base currency (i.e. the one which the trader sells or buys) and the contractual currency. In value terms, the ratio is reversed.

For example, a euro-crown couple expressed in direct quotations makes 25,630 CZK/EUR [Kurzy devizového trhu 2013]. Euro in this case is the base currency and Czech crown is the contractual one. In the case of indirect quotation ratio would be reversed, i.e. 0.039 EUR/CZK [Dittrichová et al. 2010].

Qualitative research will be used for the examination. Case study that characterizes company conditions is worked out [Hendl 2012].

The company exclusively uses financial derivatives such as forwards for hedging of future cash flows. An important finding is the fact that these foreign exchange forward contracts are not concluded strictly for specific contracts with purchasers of products, but are gradually fluently concluded with the partner bank. This way the company ensures a steady cash flow of foreign currency needed for production. When the contract is concluded, the company has at any moment financial reserves and is ready to produce immediately. Income from paid deliveries is also used to offset amounts of money back to the bank. Such procedure is typical for a manufacturing company, as stated in one of the interviews [Interview 2013].

Conclusion of forward agreements is in the company quite often performed on intuitive base; and according to the company's management a system or guidance for decision-making should be applied in the future.

Company trades with international partners mainly in euros. They have accounts in euros, U.S. dollars and Czech crowns in the financing bank; recalculation rate is used for accounting purposes.

Individual case study will be elaborated with its business partners.

8.2. Case study

A contract with the British company to manufacture goods on value 2,646,950 crowns was negotiated in June of 2011. Production order was filed after confirmation 24th June which is mandatory for commencement of production. Submitted tender is clearly shown in the following table.

Table 1. General overview of calculation of the offer

Recapitulation (for EPASS)	(CZK)	(CZK/USD)
Material consumption limit (CZK)	1 130 000,0	
Other direct costs (CZK)	505 000,0	
Direct personnel costs (CZK)	435 600,0	
Total direct costs (CZK)	2 070 600,0	
The offer price (CZK)	2 646 950,0	
Total contribution margin (CZK)	576 350,0	21,8%
Contribution Margin per man-hour (CZK)	309,9	
Contribution Margin (CZK)	1 011 950,0	40,4%
Total amount of man-hours – manufacturing	1 860,0	KP
Total amount of man-hours – constructional	0,0	PN total
Total weight (kg)	26 500,0	
The total number of units (pieces)	1	

Source: accounting statements of the analyzed company 2011-2013.

The current spot rate of 17.2 crowns per U.S. dollar was used when creating the quotation. Hedging was not made in this case, but following forwards were agreed to the same date as can be seen in the table below.

Table 2. Forwards of the analyzed company payable before 30 June 2011

Number of trade GID	Trade date	Due-date	The first currency	The volume of trade	The other currency	Exchange rate
49750018	5.1.2011	19.7.2011	EUR	200000	CZK	24,70
50256647	24.5.2011	29.7.2011	EUR	376000	CZK	24,44
50380119	24.6.2011	29.7.2011	USD	47000	CZK	17,03
49750020	5.1.2011	17.8.2011	EUR	650000	CZK	24,70
50256661	24.5.2011	31.8.2011	EUR	176000	CZK	24,44
49750022	5.1.2011	19.9.2011	EUR	200000	CZK	24,70
49750032	5.1.2011	19.10.2011	EUR	200000	CZK	24,70
49750036	5.1.2011	18.11.2011	EUR	200000	CZK	24,70
50227993	17.5.2011	30.11.2011	EUR	170000	CZK	24,24
49750040	5.1.2011	19.12.2011	EUR	650000	CZK	24,70
50237799	19.5.2011	2.1.2012	EUR	170000	CZK	24,30
50237828	19.5.2011	31.1.2012	EUR	170000	CZK	24,30
50380051	24.6.2011	31.1.3012	USD	150000	CZK	17,03
50105452	30.6.2011	18.7.2011	EUR	176000	CZK	24,29

Source: accounting statements of the analyzed company 2011-2013.

The table shows the part hitherto unsettled forward contracts entered into with the Bank no later than 30 June 2011. The first case which we are going to monitor is to ensure the sum of $ 47,000 due on the 29th July 2011 and then a further amount of $ 150,000 payable on the 31st January 2012. Forward rate was at 17.03 crowns per U.S. dollar.

Profile case got complicated by bankruptcy of the customer. The liability was taken over by another company. Payment was divided into several parts.

The first invoice was issued 1 July 2011; it was due on the 8th August 2011. Payment was held on 24 August 2011, after agreement. 30% of total costs were paid. The course was at that time 16.968 Czech crowns per U.S. dollar. Due to the agreed forward course, the hedging paid off at that time so the company profited: 57060 * (17.03 to 16.968) = 3538 crowns.

The second invoice for the additional $ 57,060 was issued on the 28th November 2011; it was due on the 23rd January 2012. The customer made the payment on the 8th March 2012, when the current rate was 18.706 crowns to the

dollar after a sharp increase, which then continued. Losses arising from hedging against were: 57060 * (17.03 to 18.706) = - 95633 crowns.

The customer paid off the remaining amount of $ 76,080 in his last invoice. The invoice was issued on the 16th April 2012, the maturity determined for 21 May 2012. The course at that time was even 19.784 crowns per U.S. dollar. If the company did not provide hedging, the income would be more than 2 crowns per dollar higher than in this case, when the company provided hedging. The potential loss resulting from this was: 76080 * (17.03 to 19.784) = - 209,524 crowns. Recap of the case is shown in the following table.

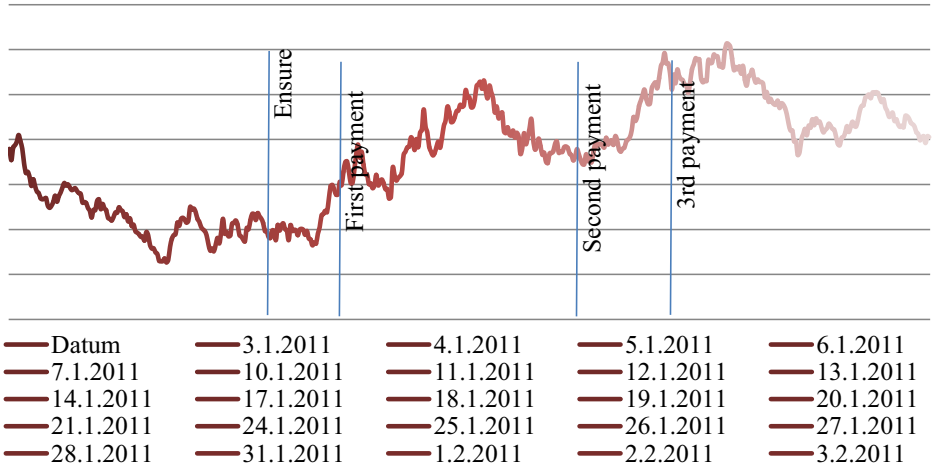
Table 3. Detailed calculation using forward in the case study

Date	**Income** (USD)	**Forward (hedged)**	**Spot rate**	**Balance** (CZK)
24.8.2011	57060	17,03	16,968	+ 3 538
8.3.2012	57060	17,03	18,706	- 95 633
21.5.2012	76080	17,03	19,784	- 209 524
Total -301 619				

Source: own processing.

The exchange rate CZK/USD by Czech National Bank with the terms of individual operations is shown in the following chart.

Figure 1. Spot rate CZK/USD by CNB with marked dates in the case study



Source: Exchange rates Czech national bank (online), own processing.

If there is no hedging the company would in this case benefit 301,619 crowns more if it always sold at the spot rate.

8.3. Conclusions

The case study presents rather negative results for the application of the current model for hedge of the exchange rate risk of an export company. In the case, the company profited less than if derivatives such as forward had not been used at all or if it had applied other hedge tools.

Development of indicators in that period greatly contributed to it, because for two years the trend of the development of exchange rate of the crown against the euro and the dollar was rising.

The study describe contract of about 2,650,000 crowns. If there had been no hedge the company would have profited by 301,690 crowns more than actually occurred. This view is distorted, however, because we evaluate the situation now when we know how the market developed.

The assumption that the central bank is able to predict the future course development and forward rates it determines in accordance with this development was not confirmed.

Return on derivatives depends mostly on macroeconomic development of the entire market. Monitoring Czech national bank financial reports which analyze development and bring predictions on the economic environment might be recommended as a useful strategy.

References

1. Dittrichová J., Ptatscheková J., JindraV., (2010), Základy financí, Vyd. 1, Hradec Králové: Gaudeamus, p.187.
2. Hendl J., (2012), Kvalitativní výzkum: základní teorie, metody a aplikace, Vyd 3, Praha, Portál, p. 407.
3. Interview with the management of the analysed company, done 11th of April 2013.
4. Jílek J., (2010), Finanční a komoditní deriváty v praxi: deriváty finančního trhu. vyd. 2. Praha: Grada, p. 632.
5. Kurzy devizového trhu, (2013), Česká národní banka [online].

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9. Sustainable development of family farming in Poland. The political aspect

9.1. Introduction

The idea of sustainable development becomes more and more popular, by assuming the shape of a more or less developed concept. It does not equally apply to all the components of that concept, where some of them are more tangible whereas the other ones are less. The sustainability areas: environmental, economic order and social order are commonly recognised as such components. The first one – environmental order – can be considered as primary and elementary. It is because it gave rise to everything connected with the concept of sustainable development. And no wonder, as the environment is given – external to the economy and the society.

Let us point out – in order to avoid confusion – the need to distinguish between the concepts of sustainability of agriculture (or farms) and the sustainable development of agriculture. The former involves the compliance of a farm (agriculture) with certain requirements concerning the areas of sustainability – what is concerned here is a certain state, and therefore a static view. In the latter case, it is all about the changes towards desired (more sustainable) state – hence, it is about progress, dynamism. Sustainable development means a change of states from less to more sustainable. But here the emerging new limitations, new challenges and new opportunities arising from the technological progress and accumulated knowledge should be taken into account.

In the case of Poland, the importance of agriculture in the overall sustainable socio-economic development is determined by the use of almost half (49.6%) of the physical area of the country (the production of biomass – a real value added), emissions of about 9% of greenhouse gases, including 33% of methane emissions, 83% nitrous oxide and 97% of ammonia emissions, protection of biodiversity, contribution to food security and viability of rural areas [CSO 2013].

The article deliberately is limited to private farms. And this is for three reasons. First of all, individual farms are the dominant form of agriculture in Poland. A lion's share of the production potential falls for them, not to mention

the number of farms[10]. Second, non-private farms, i.e. the farms of legal persons and other organisational units without legal personality significantly differ from (private) family farms both in terms of production potential and management. Third, it is believed that family farms better serve the sustainable development of agriculture [Woś, Zegar 2002].

The analysis of the Agricultural Census 2010 data (PSR) allows for the calculation of selected agricultural sustainability indicators and their brief characteristic. Unfortunately, not all the indicators needed to assess sustainability can be determined on the basis of the PSR data. Nonetheless, the already calculated indicators show a more or less sustainability of certain groups of farms.

The market mechanism allocates the production factors and the production itself between economic entities and the consumers in relation to commercial (market) goods, assuming that there are perfect market conditions (perfect competition). Two major weaknesses of this mechanism can be indicated. First of all, the danger that social objectives will fail to meet the aggregate market participants' objective, which, in the axiological level, is limited to only one category – the economic benefits (utility), disregarding a whole set of values [Arrow 1993]. Secondly, the fact that external effects are ignored by the market mechanism, which results in the production of negative effects in excess in the economic process and positive effects in an insufficient amount.

Market failures justify the need for, and even the necessity of a political intervention or correction of the effects of the market mechanism or directly of an intervention on the market by setting boundary conditions for the market mechanism. The aim of the article is precisely to sketch the dependencies on the basis of the triad: farm – sustainability – politics.

9.2. Environmental sustainability of private farms according to area groups

The description of the environmental sustainability of agriculture will include the most identified environmental sustainability indicators, namely a set of eight indicators for the share of cereals in the structure of arable land under crop (no more than 66%), vegetation cover on arable land in a winter period (at

[10] The share of individual farms in the total agriculture amounts to (%): number of farms – 99.8, farmland area – 89.0, labour input (PMU) – 97.7, livestock population (LSU) – 91.9, standard production – 90.3 and standard gross margin – 90.5 (calculated on the basis of agricultural census PSR 2010 [CSO 2013]).

least 33% of of vegetation cover), the number of plant groups (at least 3 groups), density of livestock on agricultural land (no more than 2 LSUs per one hectare of arable land), the balance of soil organic matter (positive balance on arable land), the balance of fertilisers: nitrogen, phosphorus, potassium[11]. The assessment includes the proportion of farms that meet the selected environmental sustainability criteria.

The basic data for this group of farms are given in Table 1, taking into account the area groups.

Table 1. Synthetic picture of private farms conducting agricultural activity according to area groups

Specification	Total	Up to 1 ha	1-5 ha	5-15 ha	15-25 ha	25-50 ha	50-100 ha	≥100 ha
Number of farms (thousand)	1,886.9	393.3	803.3	497.5	110.2	58.4	16.7	7.6
Agricultural land (thousand ha)	13,385.8	171.9	2,054.0	4,304.1	2,088.9	1,964.9	1,134.3	1,667.6
Labour input (AWU thousand)	1,851.4	822.1	301.6	288.8	228.0	153.2	39.3	18.5
Livestock (LSU/LU)	6,567.8	187.0	621.5	2,107.0	1,461.2	1,311.1	498.6	381.5
Standard output (EUR million)	16,851.0	725.6	2,588.4	5,448.7	2,664.9	2,416.7	1,355.6	1651.3
SGM (ESU thousand)	6,287.4	137.1	779.8	2,106.7	1,127.0	1,040.5	529.6	566.8
Subsistence farms (%)	38.3	54.6	45.6	26.6	8.7	2.0	0.1	0.0
Commercial farms (%)	61.7	45.4	54.4	73.4	91.3	98.0	99.9	100.0
Local market farms (%)	11.9	4.6	13.5	15.1	11.2	10.2	11.8	14.6
Farms with livestock (%)	56.1	37.0	49.5	72.8	83.3	81.3	66.1	45.8

Source: based on the Agricultural Census PSR 2010 data calculated by the Statistical Office in Olsztyn for this study [CSO 2013].

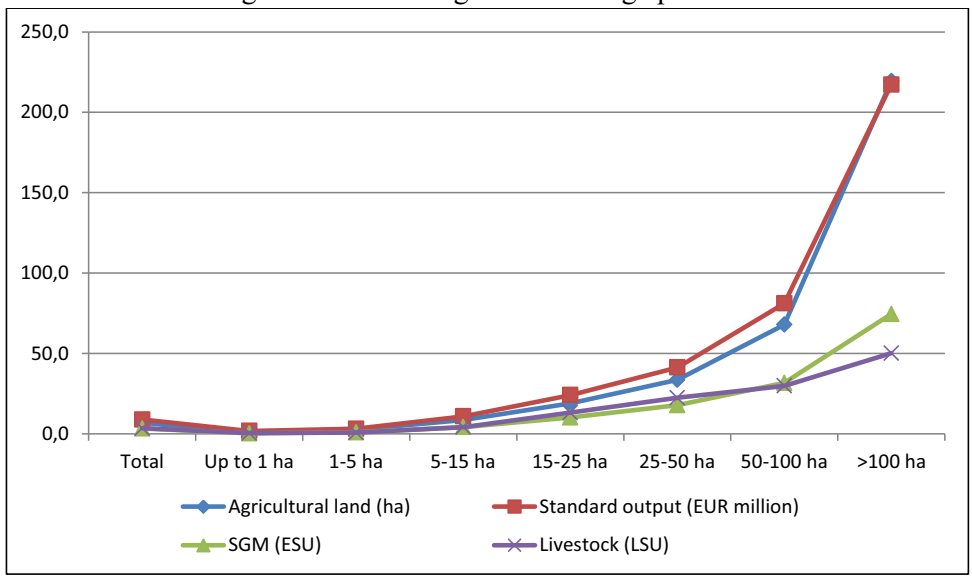
The mentioned data confirm the known facts about the fragmented agrarian structure of the Polish agriculture, which features a high proportion of farms with agricultural land area that does not guarantee – statistically speaking – the parity of income and with a relatively small proportion of farms with a larger area amounting to at least 50 ha of agricultural land, which in the current context can be considered farm homesteads. It can be easily noticed that the share of higher area groups in the area of agricultural land, livestock, standard output and standard gross margin is significantly higher than the share in the number of farms. This does not apply in principle to labour inputs, which are highly correlated with the number of farms, which is understandable under

[11] The criteria are described in: [Zegar (ed.) 2009; Wrzaszcz 2012; GUS 2013].

the conditions of the small size labour. Therefore, we have to do with huge differences in the basic categories of agricultural holdings of different area groups (Figure 1).

Small farms tend to be weakly linked to the market, poorly responsive to market signals. It cannot be otherwise since almost two-fifths of farms are subsistence farms – meaning that they do not sell agricultural products, or their share of sold agricultural products does not exceed 50% in value terms. It affects mainly the agricultural holdings to 5 ha of agricultural land, although the share of such households is substantial also in the area group of 5-15 ha (about 27%).

Figure 1. Basic categories – average per farm



Source: as in Table 1.

With the increase of the farm's area of agricultural land, on average the percentage of households that meet the criteria of environmental sustainability increases, in particular with simultaneous compliance with the four criteria (cereal crop share, plant groups number, plant cover and density of livestock). This is demonstrated by the data in Table 2. This forms the basis for the view that justifies the usefulness of concentration in the Polish agriculture also in terms of implementation of the sustainability concept. However, what draws attention is the deterioration of the selected sustainability indicator in the farms of the area group of agricultural land at 100 ha and more. In this group, the percentage of farms without livestock exceeds 50%, just like in farms with area

up to 5 ha, however the former have better conditions to maintain fertility of the soil without organic fertilizers of animal origin.

Table 2. Private farms that meet the environmental criteria

Criteria	Total	Up to 1 ha	1-5 ha	5-15 ha	15-25 ha	25-50 ha	50/100 a)	≥100 ha
Cereals crop share	22.2	22.1	21.2	20.3	27.2	33.9	39.1	44.8
Plant cover	45.4	16.6	45.0	61.0	63.8	66.0	68.6	70.1
Plant groups number	15.4	1.9	9.6	25.6	39.2	44.4	42.3	39.2
Density of livestock	96.5	92.7	98.0	97.4	95.3	96.3	97.5	98.3
Organic substance	34.2	14.4	32.9	46.7	47.6	47.3	48.3	49.9
Nitrogen	3.7	1.0	3.7	5.3	5.6	5.2	4.1	3.5
Phosphorus	12.2	13.8	9.8	14.2	14.2	14.2	11.9	11.9
Potassium	2.8	0.9	2.4	4.1	4.8	5.0	3.8	3.3
4 criteria	2.8	0.4	1.6	4.0	7.8	11.2	12.2	9.9

Source: as in Table 1.

9.3. The sustainability of private agricultural holdings according to economic size (SGM)

In the analysis of sustainability, grouping of farms according to the standard gross margin is of major importance, which results from the fact that the influence of the area, the intensity and the efficiency of farming are combined into a single entity. The higher the standard gross margin of a farm, the greater the farm's chances for satisfactory labour imput remuneration and coping with market competition. Absolute values for the size of the analysed farms – in this case with an area of at least 1 ha of agricultural land – are given in Table 3. It shows various features of farms depending on the economic size of unit that may justify a higher farming intensity and a higher efficiency. We point out higher fertilisation per 1 ha (NPK fertilisers with pure elemental components) and – which, in case of soil acidification in Poland, is of particular importance – a growing proportion of farms that use lime fertilisers, however the level of soil liming is far from necessary. What is intriguing on the other hand is the percentage of agricultural holdings of farmers[12] in the two highest economic classes.

[12] In the CSO studies, such farms are considered to be the ones in which the agricultural income represents the main source of livelihood.

Table 3. Synthetic picture of private farms conducting agricultural activity

Specification	Total	up to 2 ESU	2-4 ESU	4-8 ESU	8-16 ESU	16-40 ESU	40-100 ESU	100 and more ESU
Number of farms (thousand)	1,493.6	931.2	199.6	164.1	114.1	68.0	13.7	2.8
Agricultural land (thousand ha)	13,213.9	3,555.7	1,635.9	1,989.3	2,160.3	2,269.2	977.7	625.8
Labour input (AWU thousand)	1,851.4	822.1	301.6	288.8	228.0	153.2	39.3	18.5
Livestock (thousand LSU)	6,380.9	428.2	522.3	907.2	1,412.3	1,837.8	743.9	529.1
Standard output (EUR million)	16,605.3	2,245.4	1,566.3	2,305.8	3,037.6	3,765.4	2005.3	1679.5
SGM (ESU thousand)	6,337.5	563.0	570.9	928.9	1,282.0	1,601.9	789.5	601.3
Subsistence farms (%)	34.1	43.9	33.8	18.0	2.5	0.0	0.0	0.0
Local market farms (%)	13.8	14.0	14.9	13.9	11.4	10.3	14.0	17.9
Commercial farms (%)	65.9	56.1	66.2	82.0	97.5	100.0	100.0	100.0
Farms with livestock (%)	61.2	48.1	80.4	83.6	85.5	86.5	74.9	68.9
Soil liming farms (%)	11.6	5.9	15.2	20.3	24.2	30.7	37.2	39.5
Fertilisation (NPK/1 ha of agricultural land)	172.9	71.4	129.9	164.6	209.8	257.5	262.5	284.5
Farmers with higher education (%)	9.9	11.3	7.8	7.2	6.7	7.7	15.4	30.0
Agricultural households of farmers (%)	33.8	24.6	44.7	66.1	83.7	93.2	90.2	84.3

Source: as in Table 1.

The dominance of farms of higher economic classes is expressed in the value of the basic production and economic categories of an average farm of each category (Table 4).

Table 4. Synthetic picture of an average private farm

Specification	Total	Standard Gross Margin (ESU)						
		Under 2	2-4	4-8	8-16	16-40	40-100	100 and more
Utilized agricultural area (ha)	8.8	3.8	8.2	12.1	18.9	33.4	71.2	219.7
Labour input (FTE)	1.2	0.9	1.5	1.8	2.0	2.3	2.9	6.5
Livestock (LSU/LU)	4.3	0.5	2.6	5.5	12.4	27.0	54.1	185.7
Standard output (EUR thousand)	11.1	2.4	7.8	14.1	26.6	55.4	145.9	589.5
Standard Gross Margin (ESU)	4.2	0.6	2.9	5.7	11.2	23.6	57.5	211.0

Source: as in Table 1.

Determination of environmental sustainability in groups of agricultural households by economic class is therefore important.

Table 5. Farms that meet the environmental criteria according to standard gross margin groups (%)

Specification	up to 2 ESU	2-4 ESU	4-8 ESU	8-16 ESU	16-40 ESU	40-100 ESU	100 and more ESU
Total number of farms (thousand) .	931.2	199.6	164.1	114.1	68.0	13.7	2.8
– Cereals crop share	19.2	21.8	24.7	30.2	39.6	44.0	43.7
– Plant cover	47.3	63.0	62.3	61.1	61.6	62.6	64.2
– Plant groups number	9.2	27.8	35.2	42.1	46.0	35.6	29.4
– Density of livestock	99.0	98.3	97.4	94.2	86.2	77.5	69.5
– Organic substancer	35.7	45.8	45.5	44.4	45.8	47.8	48.3
– Nitrogen	3.6	6.0	6.6	5.8	4.6	3.6	2.6
– Phosphorus	9.3	15.5	17.9	16.7	13.1	10.1	10.1
– Potassium	2.2	4.8	5.4	5.4	4.5	2.8	2.2
– 4 criteria[a]	1.4	4.4	6.1	8.3	10.8	9.7	9.7

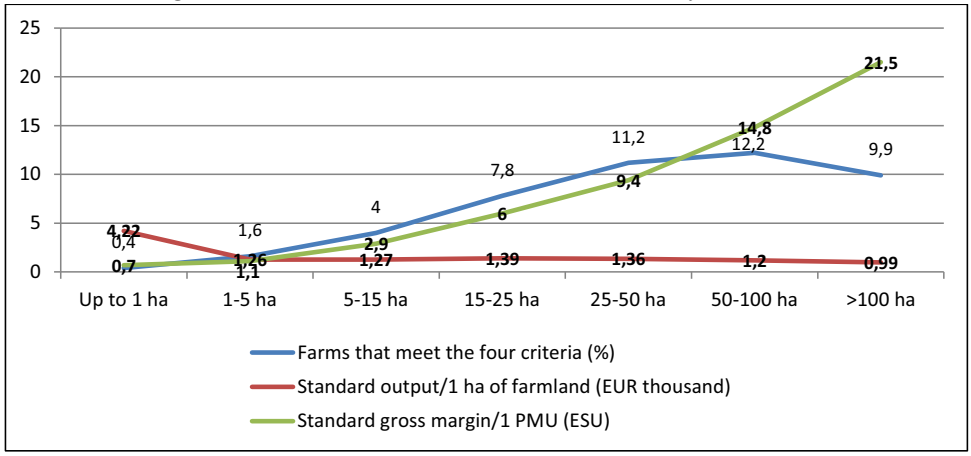
[a] Criteria: cereal crop share, plant groups number, plant cover and density of livestock.
Source: as in Table 1.

The analysis of the environmental sustainability of farms by economic class measured on the basis of the standard gross margin leads to similar conclusions as in the case of area groups, with the proviso that in this case, however, the relationships are less clear – some of them assume the shape of a parabola.

9.4. Collision or convergence of sustainability elements: environmental, economic and social order

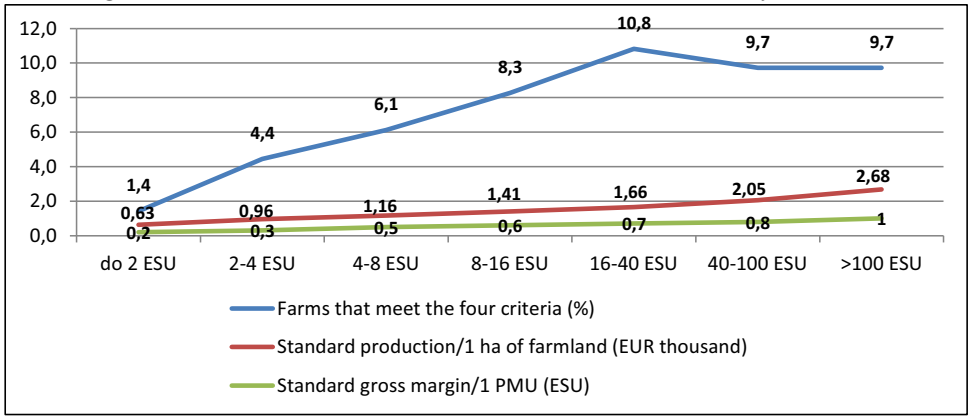
It is difficult for small farms to meet the environmental criteria. In such farms, it is difficult to assure a proper crop rotation. Probably, the cases of inappropriate agricultural practices or improper use of crop protection products might occur more often. Agricultural holdings with greater area, economically stronger, yet not the largest ones are predestined to use good agricultural practices are in a better position [Wrzaszcz 2012; Sadowski 2013]. Positive correlation of environmental sustainability with the farm's area and, to a lesser degree, with the farm's economic strength is strengthened by economic sustainability. In this case, the higher correlation takes place in relation to the economic classes, which is logical and obvious. These situations are illustrated in Figure 2 and Figure 3 respectively. In this case, it is limited to three indicators, namely the percentage of farms that simultaneously meet the four criteria of environmental sustainability, land productivity and potential labour remuneration.

Figure 2. Farm area and selected sustainability indicators



Source: as in Figure 1.

Figure 3. Economic size of unit and selected sustainability indicators



Source: as in Figure 1.

The area of a farm and all the more the economic size (SGM) are positively correlated with the income of farming families, what shows the structure of farms according to predominant source of income (Table 6).

In the case of area groups, the trends are sharply defined: the larger the farm, the higher the percentage of families living on agricultural income (from the work in their own farm) whereas the smaller for the people living on waged employment and social benefits (retirement and disability pensions).

Table 6. Structure of agricultural holdings according to sources of income in area groups (%)

Sources of income	Up to 1 ha	1-5 ha	5/15 a)	15/25 a)	25/50 a)	50/100 a)	≥100 ha
Agricultural activity	3.8	13.6	48.5	77.7	85.6	84.3	81.5
Paid employment	39.4	38.5	22.1	7.5	3.9	3.6	3.3
Double profession	1.4	3.1	3.4	1.8	1.0	0.9	0.8
Non-agricultural business	10.1	11.7	7.6	4.1	3.7	5.1	7.2
Retirement and disability pensions	36.8	23.2	7.7	1.7	0.8	0.7	0.6
Other	8.4	9.9	10.7	7.2	5.1	5.5	6.6

Source: as in Table 1.

What should be pointed out is the group of 25-50 ha farms, in which the share of households making their living by agricultural activity is the highest and by non-agricultural self-employment (non-agricultural business) it is the lowest. The relationships by groups of economic size look similar – with a more distinct decline in the percentage of families living on agricultural activity in the groups of farms with more SGM (Table 7).

Table 7. Structure of farms according to sources of income

Livelihood	up to 2 ESU	2-4 ESU	4-8 ESU	8-16 ESU	16-40 ESU	40-100 ESU	100 and more ESU
Agricultural activity	14.6	44.7	66.1	83.7	91.8	90.2	84.3
Paid employment	38.2	23.4	13.0	5.0	1.9	1.7	2.3
Double profession	3.1	4.2	3.0	1.6	0.7	0.4	0.7
Non-agricultural business	12.2	7.1	4.3	2.4	1.8	3.4	5.5
Retirement and disability pensions	21.8	8.5	3.4	1.3	0.5	0.5	0.1
Other	10.1	12.1	10.2	6.0	3.3	3.8	7.1

Source: as in Table 1.

9.5. Policy

The results of conducted analysis of the sustainability of farms seem to clearly indicate the need to continue the transformations of the agrarian structure of the Polish agriculture towards land concentration. Farms that are larger in terms of area meet the selected environmental criteria relatively more frequently and generate more income. However, it should be pointed out that the presented picture of sustainability is incomplete. Important aspects of environmental sustainability were disregarded (biodiversity, greenhouse gas emissions and carbon sequestration, the use of non-renewable resources, landscape), as well as the viability of rural areas (viability, heritage of culture and tradition), and the

economic sustainability indicators are not sufficient for a complete picture of the sustainability of farms in the area of economy. Nonetheless, generally speaking, a moderate concentration of land in agriculture promotes sustainable development of agriculture and rural areas. Apart from this argument, there are more in favour of concentration in agriculture, namely increase in competitiveness, increase of incomes of farming population and contribution to the overall socio-economic development of the country [Zegar 2009].

A non-transferable and at the same time extremely important duty of the policy is to outline the vision of the future shape of agriculture, which of course also results in strategic objectives. The latter ones come down to answer the questions: What do we want to achieve? What are the values we consider to be most important? Which ones are important and which ones are secondary? If we consider this correct, then we reject the inevitability of having to subject ourselves to a blind fate, a chance – which would not be a good solution [Ruttan 1995] – and opt for a conscious choice of the future state, and perhaps only the direction, for which political measures will be taken. Numerous objective premises indicate the validity and even the inevitability of choosing the course towards sustainable development as a strategic direction, which includes agriculture as well [Zegar 2012]. In this context, we will make a reference to three issues.

In the discussions and political statements, the **issue of competitiveness** becomes the leading one. According to the proponents of neoliberal doctrine, raising the level of competitiveness becomes a necessity in the conditions that were created by the Poland's accession to the EU, and in particular the inclusion of agri-food sector in the Single European Market, which is under increasing pressure from globalisation. This is the essential argument in favour of concentration, specialisation and intensification in agriculture as this way conditions are created for increasing the market share. A dominance of the theme of economic benefits (profits) corresponds to it, which motivates agricultural producers and other market participants – in a given case of agri--food market.

Conventional competition – at the microeconomic level – is guided by the economic substantiation – the economic benefit: in general, the revenue or profit, disregarding the external effects and assuming that the market will provide optimal prosperity according to the Pareto principle. The forced competitiveness raises the temptation to take advantage of all opportunities, including resorting to unfair practices and obtaining benefits at the expense of others. Economic entities (farms) can obtain short-term or medium-term competitive advantages at the expense of the future, at the expense of the natural

environment or other entities – the participants in the social and economic life. In fact, it is all about getting a competitive advantage by avoiding the negative external effects, whose costs are charged to other economic entities or "mute" market participants, i.e. nature (ecosystems) and future generations. The temptation and the opportunities to avoid the consequences (costs) of negative external effects *ergo* to impose them on the others and this way to increase the competitive advantage is higher with the increasing openness of economies and the rise in dominance of supra-(trans-)national corporations. Today, it assumes new, sharper, and even sinister forms, and this is primarily due to exceeding the capacity of the biosphere, "shallowing" of the system of values and the globalisation processes. This give rise to challenges for market participants and actors in the economic and social life.

At the macroeconomic level (at the level of states), it is assumed that political institutions will protect competition and external effects will be taken into account (internalised into the economic calculation of competing entities). This intervention by the political factor is to ensure fairness of competition, the concerns of "mute" market participants and to ensure that the allocation of resources serves to raise prosperity of the citizens. The inclusion of the external effects in the competition process gives it a social character. While competition in the first case leads to the maximisation of microeconomic effects, in the latter case it leads to the maximisation of social well-being.

The second issue addresses **the structural change in agriculture**. Competition, by accelerating structural changes, undoubtedly generates economic benefits: first of all, lower costs of agricultural production. The problem is that these benefits are largely seized by the other segments (links, elements) of the food economy, however a group of farmers also derives benefits. Yet, these changes, especially if they are associated with industrial production technologies, are accompanied by external effects, both environmental and social ones.

Sharing the need for changes in the agrarian structure, one must take into account not only the targeted size of the desired farm because the establishment of such size would be a complex process, but rather the allocation of natural resources among different groups of farms. The diversity of farms is a value in itself. This diversity means that there is room for a farms of different areas or production potential, various technologies of production – both conventional and organic (green) ones, different scales of production – both large and small one. You have to look for sustainability level specific to a given place and time, for the balance between the technical, economic and social performance criteria. The optimal level should be sought after in the relationships rather than in

absolute values. Relationships vary with demographic changes and changes in value of individual factors of production.

Over the years, macroeconomic factors have been the main driving force behind the transformation of the agrarian structure: the demand for labour, and economic relations between agriculture and other sectors of the economy. These factors are still important. However, market competition and cultural changes are gaining importance, in particular the satisfaction of being a farmer. The policy may, however, initiate certain instruments such as legal regulations on the agricultural system, the solutions in the tax system, social insurance system, the system of spatial planning within rural areas (rural agricultural equipment) and the size and allocation of public funds to agriculture. New opportunities were created by the Poland's accession to the EU and coverage of the Polish agriculture with the CAP mechanisms. The mechanism of "the carrot and the stick" has been launched. The role of the stick is played by the coercion of competitiveness on the European and global market. The role of the carrot can be performed by the transfers of public funds (taxpayers) to the farms, which are an important instrument of the CAP. These transfers can be used to slow down or speed up structural changes.

The transfers in the form of direct payments are most controversial. Strong support is oriented towards the need to concentrate the payments on the larger farms, commercial holdings, which have development opportunities. This is mainly justified by the need for competition on the EU and global agricultural market. The arguments arising from the protection of natural environment and animal welfare through subsidies conditional on the fulfilment of cross--compliance requirements and animal welfare rules are more acceptable. In general, however, the case is not clear [Judzińska, Łopaciuk 2012].

It seems more reasonable to support family farms rather than agricultural enterprises due to a variety of reasons (economic, environmental, social, sentimental, cultural ones). The former are also better compatible with the rural development – preservation viability of those areas. Therefore, payments to support agriculture in the first place should apply to family farms. But which ones? After all, not all of them? Well, they should be primarily oriented to support for the development of farms that a capable of entering the competition on the market of mass products, support for the development of farms that produce niche products, support for local agri-food economy, support to non-agricultural enterprises, support for the protection of environmental and cultural values, support for the education of children and youth, the fight against poverty and pathologies.

The proposal to transfer public funds to intensive farms and large farms is justified neither in social terms, nor does it comply with the principle of competition, although these groups decide on the situation in the agricultural market. Targeted support should also cover small farms – ancillary support or for subsistence agriculture. The main thrust of policy towards these farms should consist in creating incentives and conditions to make better use of agricultural land resources – also through consolidation – and in the integration of these households in the wider rural areas activation programmes. Arrangement of rural areas, introduction of governance within rural areas, and solutions in the agricultural tax and social insurance system can stimulate the release of agricultural land that is not used at all or is under-utilised. What is more important here, however, is the spatial order and preservation of good condition of the natural environment even rather than the agricultural production.

The third issue concerns **the external effects** accompanying the agricultural production. Disregarding the external effects results in a significant discrepancy between the micro-economic and the social optimum. The former corresponds to the microeconomic account, this latter to the macroeconomic (social) account. Microeconomic account serves the private rationality – within the meaning of the benefits of the given entity that manages a farm (or a consumer). On the other hand, the social account should lead to social (macroeconomic) rationality, i.e. it should at least express social preferences, but also take into account the interests of the "mute" market participants, i.e. the future generations and the ecosystems [Zegar 2010]. The presence of external effects can lead to inefficient allocation of resources – ineffective under the superior system (in this case the social system) ergo to reduced well-being. The market spontaneously leads to the formation negative effects in an excess and positive effects in an insufficient amount. The policy at the regional level performs similar functions (e.g. the EU).

With regard to external effects, three main issues appear, namely: (1) identification of the effects, (2) the valuation, (3) internalisation method. The first problem: there is still no complete diagnosis of the environmental services; it concerns in particular the regulatory services in the scope of geochemical processes, but it is not limited to them (knowledge in this field builds up more quickly, but make up for several ages of research focus on the basis of the reductionist approach requires time, just like the reorientation of funding in the area of R&D). The second problem relates to the valuation (determination of the value) of external effects, which is in its infancy in the academic research. The most advanced work is conducted in the field of environmental effects, which, unfortunately, for many reasons pose particular difficulties. Many of the effects

are of a qualitative nature. With regard to the value of environmental services, one should also include its intrinsic, existential value) resulting from the existence of natural resources, in other words from the satisfaction from the mere existence and availability of environmental goods [Winpenny 1995; ten Brink 2011].

With reference to the external effects internalisation method, the problem is that it should not contravene the operation of the market mechanism, while having a social character. Classical instruments include property rights (Ronald Coaes theorem, Pigou tax and administrative and legal instruments – prescriptive ones). In the recognition of external effects, there are significant differences between agriculture and other sectors of the economy. With regard to the negative external (environmental) effects outside the agriculture, there is a major internalisation thereof through the implementation of the "polluter pays principle" (PPP), yet in the agriculture, the rule has been practically not applied, meaning that agriculture bore no effects of environmental pollution or excessive use of its resources (e.g. groundwater). It was only recently that it has been introduced to the legislation on agriculture, either directly or through a code of good agricultural practices, which limits the rights of farmers to use agricultural land in order for the farmers to bear the costs of avoiding environmental damage (in accordance with the PPP). Imposition of requirements beyond those practices entails costs for farmers to be compensated for by the public. The problem of determining the level of negative external effects for which the responsibility should be borne by farmers through the implementation of the PPP (the reference level) is highly complex. This complexity also results from the fact that it depends on many factors, including the richness and complexity of the ecosystem, and even cultural factors. The reference level is the line that delimits the responsibility and the costs of farmers and the costs of taxpayers in the form of pay for farmers for positive external effects delivered above the reference level [Scheele 1999].

The internalisation of external effects requires the imposition of boundary conditions on the decisions of farmers (agricultural producers) using certain instruments that would modify the conventional economic account. In the case of the EU Member States, these instruments include the norms and standards for the use of the environment, cross-compliance requirements, the requirements of animal welfare – which cause the direct internalisation of external costs, full payment for the use of natural resources (i.e. abolition of subsidies) as well as remuneration for the generated public goods, e.g. by an agri-environmental programme. The support for the production of public goods by the agriculture is direct and indirect. Determining the level of desired public goods in the future

will allow for more precise (goal-oriented) economic instruments to be used, such as transferable permits, taxes and fees, the purchase of land, quotas, etc.

9.6. Summary

The PSR 2010 agricultural census data were used to calculate important indicators of sustainability of individual farms, in particular the environmental data. On this basis, however, one cannot determine the number of indicators needed to carry out a reasonably complete assessment of the sustainability of farms. Therefore, an assessment made out of necessity is imperfect.

The analysis of applied sustainability indicators entitles to draw the conclusion that the sustainability level of farms is positively correlated with the agricultural area and the economic size – the standard gross margin of a farm. This relationship has the shape of a parabola, i.e. after reaching a certain size, whether area-based or economic, for some sustainability indicators it declines. It does not apply to economic efficiency and the income from agricultural activities, for which indicators increase.

The level of sustainability of farms – generally speaking – cannot be satisfactory. Economic failure in the case of small farms is understandable. Low remuneration of labour does not always prove that there is imbalance in the economic field. The assessment depends on the nature of labour inputs. If they are marginal expenses and/or expenditure that does not have alternative uses, even the low remuneration of labour can be assessed positively. Undoubtedly, the negative balance of soil organic substance (humus) should be disturbing as it is an important indicator of the reproduction or soil fertility, i.e. the future crops.

There is a major convergence of the environmental and economic sustainability criteria. Farms that are larger and economically stronger have more opportunities to equip the farms with the resources used for the protection of the environment or to use appropriate technologies, including the ones involving production extensification. The important role in the efforts aimed at balancing the farms falls for the agricultural policy, which, through economic, but also administrative instruments can create boundary conditions for the decisions of farmers and encourage or discourage them to take measures with significant implications for sustainability. This requires first of all the definition of the desired path of development of agricultural holdings and establishment of the value of external effects. The latter is a highly complex matter.

References

1. Arrow K.J., (1993), Invaluable Goods. Journal of Economic Literature, Vol. XXXV, No. 2, pp. 757-765.
2. Brink ten P., (ed.), (2011), The Economics of Ecosystems and Biodiversity in National and International Policy Making. Earthscan, London-Washington, DC.
3. GUS, (2013), Zrównoważenie polskiego rolnictwa, Główny Urząd Statystyczny, Warszawa.
4. Judzińska A., Łopaciuk W., (2012), Wpływ Wspólnej Polityki Rolnej na zmiany w rolnictwie, Report no 38, Multi-Annual Programme 2011-2014, IAFE-NRI, Warszawa.
5. Ruttan V., (1995), Sustainable Agricultural Growth, (in:) Agriculture, Environment and Health: Sustainable Development in the 21st Century. Ed. V. Ruttan, University of Minnesota Press, Minnesota, pp. 2-22.
6. Sadowski A., (2013), Zrównoważony rozwój gospodarstw rolnych z uwzględnieniem wpływu Wspólnej Polityki Rolnej Unii Europejskiej. Rozprawy Naukowe nr 447, Wyd. UP w Poznaniu. Poznań.
7. Scheele M.,(1999), Environmental Services Provided by Agriculture: The Setting of Environmental Targets and Reference Levels. Conference Paper, Gran, Norway.
8. Winpenny J.T., (1995), Wartość środowiska. Metody wyceny ekonomicznej. PWE, Warszawa.
9. Woś A., Zegar J. St., (2002), Rolnictwo społecznie zrównoważone. IAFE, Warszawa.
10. Wrzaszcz W., (2012), Poziom zrównoważenia indywidualnych gospodarstw rolnych w Polsce (na podstawie danych FADN). Studia i Monografie no 155. IAFE-NRI, Warszawa.
11. Zegar J. St., (2009), Struktura polskiego rolnictwa rodzinnego pod koniec pierwszej dekady XXI wieku. IAFE-NRI, Warszawa.
12. Zegar J. St., (ed.), (2009), Z badań nad rolnictwem społecznie zrównoważonym (8), Report no 161, Multi-Annual Programme 2005-2009, IAFE-NRI, Warszawa.
13. Zegar J. St., (2010), Kategoria optymalności w rozwoju rolnictwa. Współczesne wyzwania. Roczniki Nauk Rolniczych. Series G, T. 97, Vol. 3, pp. 301-312.
14. Zegar J. St., (2012), Współczesne wyzwania rolnictwa. WN PWN, Warszawa.

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10. Socio-economic view of the contemporary situation in the Czech agriculture and countryside

Contemporary rural areas are affected by the crisis phenomena at present, which are demonstrated by the relatively high unemployment rate of rural inhabitants, worse conditions of new job seeking, being stagnated or diminished life standard and insufficient infrastructure of rural municipalities. These crisis phenomena differ in regional comparison as well as in each locality and community. There are also affected the particular social groups of rural inhabitants. After join CR (the Czech Republic) to EU, the development of the Czech agriculture was influenced by the utilization of structural funds. European agricultural policy is framed to consolidate the inequality in development of member's states and to prevent the deterioration of economic and social situation, because it, as logical consequence, would be able to lead to the political and economic instability. The CR with its economic results (GDP, unemployment rate etc.) doesn't belong to the countries afflicted by recession in the worst level. Anyway, we cannot consider the contemporary situation as the positive development too.

Contribution is based on statistical data and analyses the benefits and shortcomings of current progress in agricultural and rural areas.

10.1. Introduction

Since 1989 the rural regions of the CEE have been come through many turbulent changes, which were connected with the events of the transforming societies. The CR (up to 1993 the part of Czechoslovakia) had to deal with the conversion from totalitarian society and centrally planned economic to the democratic society with the economic based on the market principles. Transformation has afflicted whole society in the all conceivable levels – social, cultural, economic etc. [Machonin, Tuček 1999]. Czech rural areas have never been economically entirely dependent only on agricultural production. Nevertheless, agriculture has been creating significant number of work places. The agricultural firms don't represent only economic pillar but also social pillar in some municipalities, because village existence and its function depended on their activities.

First steps of transformation were represented by the property restitution, privatization and subsequent transition of all economic subjects, including the agricultural enterprises.

Preparation of EU join and CAP integration belonged to the follow-up of transition. Processes were focused on diminishing number of labour force in the agricultural basic industry. Agricultural policy reforms tended to the stress of rural development in its complexity, emphasising the food security and preservation of living environment.

All of aforementioned changes did not mean only the movements in economic and social structures and ongoing vertical as well as horizontal mobility of labour forces. Success of transition depended also on the investment extent, quality, speed and acceleration of the strategic development realization.

World economic crisis has retarded some steps and has created the character of contemporary rural areas and agriculture in the Czech Republic. Start is going to the half 2007, it means the term of beginning the first programming period (2007-2013) in the CR. Within this period there is adaptation on Single Payment Scheme (SPS) in agriculture.

In time of crisis was also increased the support of solar energetic, which, owing to legislative errors, means the decrease of share in arable land. Farmland has been using for building of solar power stations. Support of renewable energy resources and EU subsidy policy has affected character of contemporary Czech rural areas. CR left the food self-sufficiency policy and the structure of grown plants was changed in accordance with the goals of CAP EU (i.e. increasing areas of oilseed rape or maize).

Especially smaller municipalities (up to 200 inhabitants) are influenced negatively by contemporary crisis. Those villages have traditionally worse facilities, unsatisfactory offer of services (medical, cultural, social etc.) and dispose by smaller offer of work.

Within the crisis many problems grows up, because some possibilities (before crisis also limited) are totally vanishing. On the other hand, there could be appeared new alternative sources and occasions, i.e. subsidies from structural funds and revival of tourist trade by growing interest concerning inland holidays. Urban population namely chooses the cheaper recreation alternative in time of the crisis.

This crisis also relates to the criticized conversion of world economics to financial system (financialization). Krugman [2009], Woods [2010] or Foster and Magdoff [2008] consider this phenomenon as contributing cause of crisis origin. But it should not be directly connected with the rural community. And

furthermore it can also lead urban population to the certain change of their value scale facing the values which offer just countryside.

Therefore authors presume that the long term worse socio-economic indicators neither crisis mean for Czech rural population the impulse to mass leaving of rural regions.

Further authors suppose that also other European countries have the similar problems, which come up with the crisis. Also there, however, the rural population prefer other values than only material ones.

10.2. Methodology

Contribution is based on document study and secondary data analysis. As procedure were used statistic-mathematical methods. Data are obtained from Czech Statistic Office (CSO), Eurostat and statistic data of Ministry of Agriculture CR.

10.3. Results and discussion

Socio-economic characteristic of the Czech rural areas

Rural population was growing from 1991 to 2011 about 10% [CSO Census 2011]. Share of category 0-15 years decreased from 20.7 to 15.0%. Similar progress turned out to be at category 65+ years. Worse situation is in the villages up to 200 inhabitants – the share of inhabitants up to 15 years creates 14.3% and inhabitants over 65 years 17.7% [CSO Census 1991, 2011].

Numerous studies [Svatošová 2008, Pospěch et. al. 2009] indicate that the population ageing has proceeded much more quickly in the villages up to 200 inhabitants than in bigger villages since the beginning of nineties of the last century. Similar development was registered in the small municipalities of other European countries.

Especially the leaving of young inhabitants for work to bigger towns is chief problem concerning small villages. The young belong to the most threatened group on the labour market. It means that the contemporary crises will this phenomenon more and more strengthen [Mikeszová et. al. 2010].

Anyway, the young people can permanently embed in the small villages on condition that they have in the available distance job and offer of new job in case of its loss. In other case it is not easy to solve their employment. If they daily commute on the long distance or return home only on weekend, it means a big stress for their family life and their lack of engagement in the village life.

As it is shown in Table 1, Czech countryside is consisted of the municipalities in size up to 500 inhabitants (in average 67%). Nevertheless, majority of rural population lives in the municipalities over 500 inhabitants. The share of small villages up to 199 inhabitants represents constant tendency towards decline, whilst the share of villages in size 1000-1999 inhabitants is being grown permanently. The reason of this trend is linked to processes of joining up smaller villages, as well as to economic and social phenomena (already above mentioned – better facilities of bigger villages and then also the better life quality of inhabitants).

Table 1. Development of rural population according to community size

Size / year	1991		1997		2000		2005		2011	
	Com.	Inhab.	Com.	Inhab.	Com.	Inhab.	Com.	Inhab.	Com.	Inhab.
up to 199	25.8%	6.6%	31.0%	6.0%	30.9%	7.9%	29.2%	7.6%	27.3%	6.8%
200-499	37.9%	25.0%	35.7%	24.8%	35.3%	24.5%	35.9%	24.3%	35.4%	23.5%
500-999	23.7%	33.5%	21.8%	32.7%	22.2%	33.1%	23.0%	33.5%	24.3%	33.7%
1000 - 2000	12.6%	34.9%	11.5%	34.2%	11.7%	34.6%	12.0%	34.7%	13.0%	36.0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: CSO Census and authors.

There is also higher share of believers in the small Czech villages. According to the last census there are 14% believers (of different churches). Urban population represents in average 13% and rural population 17% (in the villages up to 199 inhabitants even 19%) [CSO 2011]. Of course, this type of villages has the higher age structure.

Educational structure and size of rural villages are in relation traditionally. The smallest communes in the past as well as today, they always show the worst educational structure in comparison with the bigger communes and towns (see Table 2). There are many reasons – age structure (higher share of inhabitants over 65 years); in smaller villages is accessibility of services rather limited and it concern also the educational possibilities; economic development is restricted and it brings the lower demand on the highly qualificated of labour force. Anyway, the educational situation has been improving more quickly in rural areas than in towns within the past twenty years. In the small villages is the share of university educated people tripled, while in the towns have not reached either twice the amount since 1994.

Table 2. Educational structure of the Czech rural communes

Size	GS*		SS without**.		SS with***		UE****	
	1991	2011	1991	2011	1991	2011	1991	2011
up to 199	48.1%	22.7%	36.7%	41.3%	13.3%	25.4%	1.9%	6.2%
200-499	45.1%	21.5%	38.5%	40.8%	14.2%	26.4%	2.2%	6.6%
500-999	42.7%	20.5%	38.8%	39.7%	15.8%	27.6%	2.7%	7.7%
1000-1999	40.8%	20.0%	38.4%	38.1%	17.5%	28.5%	3.4%	8.7%
Countryside	43.0%	20.7%	38.4%	39.5%	15.8%	27.5%	2.8%	7.7%
Town	30.8%	16.4%	34.9%	30.7%	25.6%	32.5%	8.7%	14.2%
CR	33.8%	17.6%	35.8%	33.0%	23.2%	31.2%	7.2%	12.5%

*Basic education finished as well as unfinished; **Secondary school without graduation; ***Full secondary school with graduation; ****University education finished with title Bc, Ing., Mgr.

Source: CSO and authors.

By the analysis of economic situation in the Czech countryside, there is again visible the worse position of smaller municipalities compared with bigger ones. Municipalities up to 200 inhabitants have the lowest share of economic active persons (47.6% in 2011), while the average of countryside as well as towns are 49.0% [CSO 2001 2011]. The share of non-active inhabitants is higher in rural areas (46.2% in 2011) than in urban areas (44.1% in 2011). Lack of jobs in rural areas in comparison with urban areas is obvious not only from unemployment rate (9.0% rural areas, 8.4% urban areas) [CSO 2011], but also according to the number of vacancies. There are 487,000 of registered unemployed people and 27.2% come from countryside, while there are 37,000 vacancies and the share in rural areas represent only 16.2% [CSO 2011].

Analogous disparity is pursued during the whole post-socialistic period. The creation of new jobs in rural areas is not able to cover the number of vanished work places. Also the income inequality appears in rural and urban municipalities. Rural inhabitants reach about 84.7% of urban population gross incomes.

Agriculture

Agriculture has been influenced namely by its transformation in the 90s after the Velvet revolution. Especially there were changes in ownership relations and processes of unification with CAP.

These events incurred changes in way of farming and in size of cultivated areas. 65% of farmers cultivated areas with average size up to 10 ha in 2011. But they share on all farmland represents 2%. On the contrary, there are 4% of

farmers with farmland over 500 ha but their share on all farmland is 70% in the CR [CSO 2011].

All post socialistic countries in the middle-east Europe got through transformation processes. The highest productivity in agriculture, in comparison with countries of Visegrad 4, was maintained in the CR [Střeleček et. al. 2009].

Nevertheless the development of agriculture production is not proceeding without troubles. Within period 1990-2006 declined the weight of livestock from 1.289 to 0.620 billion ton and in case of milk production from 4.893 to 2.694 billion of litres [Vintrová 2009]. This decline with followed decline of crop production was observed just in transformation period. Decline of subvences caused massive grow of oilseed rape and maize [Fábri et. al. 1996]. Nowadays, 73% of all crops are consisted of maize, oilseed rape, wheat and barley. Whereas area of farmland is getting smaller, the whole area of aforementioned crops is increasing. In case of oilseed rape it accrues the fastest [CSO 2012]. It is appreciable that it is going to lower biodiversity and also to coming down of arable land quality.

Nevertheless assessment of subventional policy in agriculture does not belong to easy process. Apart from well known neo-classical approach, there is possible to find also studies encouraging positive effects of subsidies, e.g. study of Štolbová [Štolbová 2008], who states that payments for LFA influence development of rural areas in positive way [Buchta and Buchta 2009]. They tried to compare Czech rural firms encouraged with subsidies and firms without subsidies. We can find in their conclusions that by the firms with subsidies there are lower decline of employment, higher production of innovations, higher decline of manual labour, and decline of costs in generally, increase of competitiveness and better equipment offering more convenient conditions for environment and animal breeding than in the firms without subsidies.

Subsidies per ha were 190 € before start of contemporary crisis and 26% of farms were focused on field crops, livestock (and other animals fed with bulk feed) breeding (19%) and permanent cultures (13%) [Eurostat 2006].

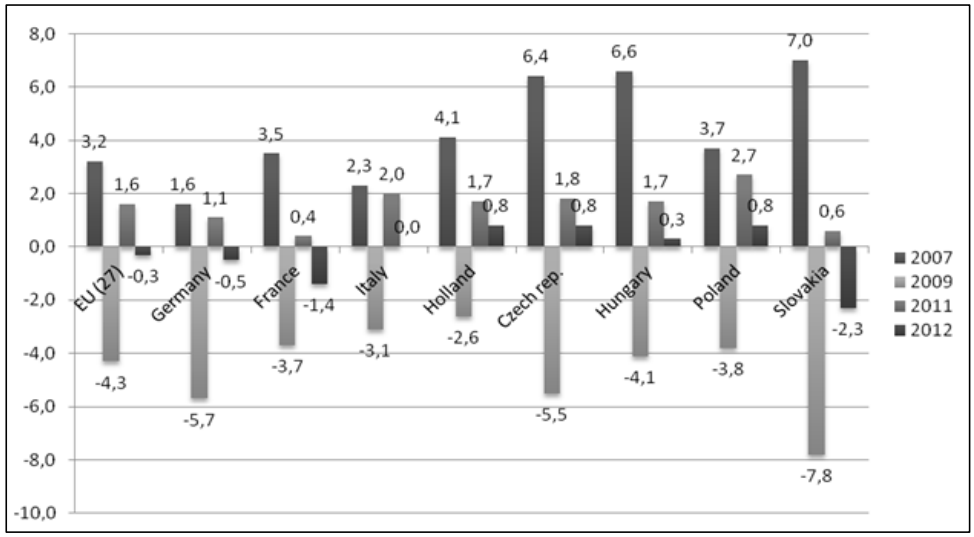
Although there are subsidies 400 €/ha now, the contemporary crisis brought decrease of overall state expenditure on agriculture. Decrease is observed in all sectors in Czech economy but in comparison with agriculture (minus 10%) it was only about minus 0,1% in other sectors [Report of MA 2011].

Contemporary economic crisis

In Figure 1 is obvious beginning of crisis in the CR since 2008 as well as in other European countries. An impact on each country does not seem to be the

same, e.g. the CR does not suffer from such high unemployment like in case of countries "Visegrad 4" – Figure 2.

Figure 1. Real GDP during crisis (2007-2012)

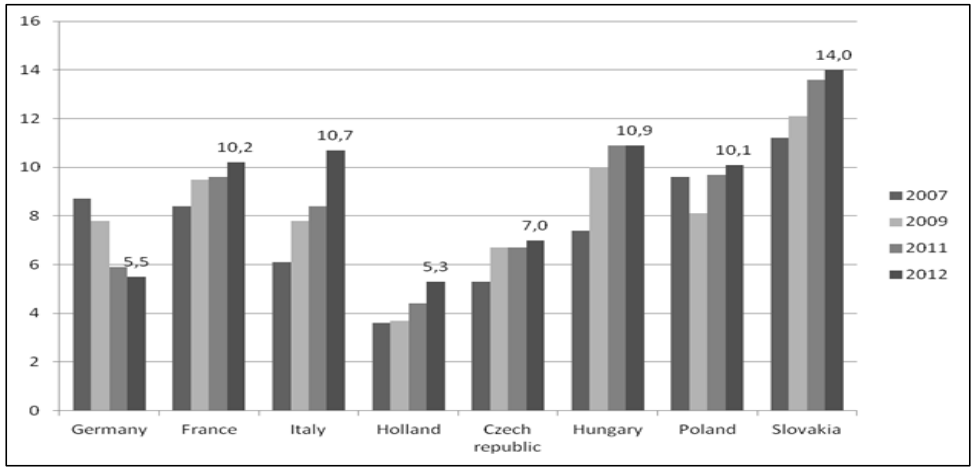


Source: Eurostat and authors.

Nevertheless we consider the decline of employment as significant. With regard to uniqueness of labour market in rural areas, such growth of unemployment causes increase of commuting for work or lengthening of its distance. According to Pospěch [Pospěch et. al. 2009] phenomenon of commuting can mean in social sphere also weakening of social capital with subsequent decline of quality of life and in economic sphere weakening of rural development in such area. Relation between commuting for work or for study and development capacity of small rural villages is possible to verify empirically through so called „Hudeček´s model". This model is based on time accessible of key centres (regional metropolis, municipalities with extended sphere of influence, municipalities with determinate number of work places etc. [Hudeček 2008; Bernard 2011].

Beginning of crisis has started to affect expenditures of rural population in the CR. Rural families expended financial sources more on food, housing, energy, transportation in comparison with previews years and less on consumer goods and using of other services – Figure 3.

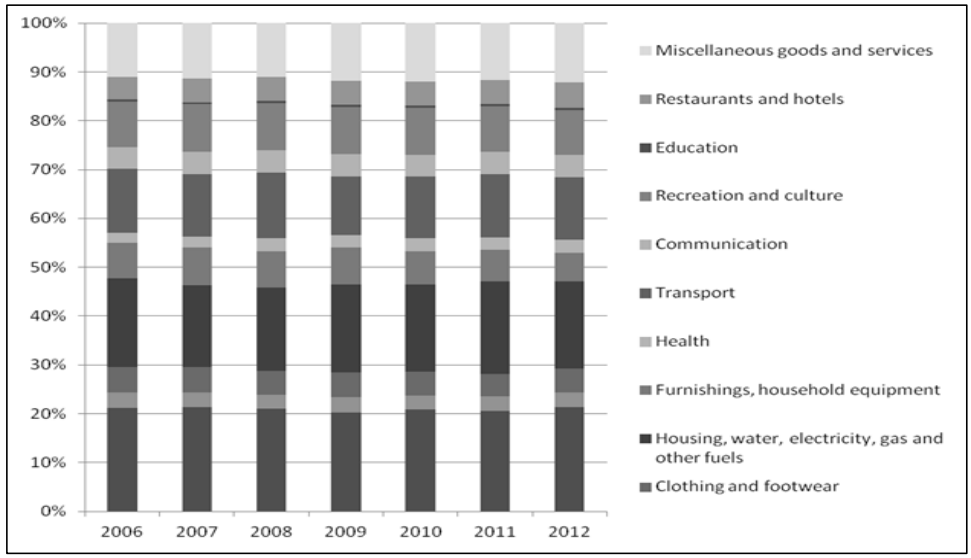
Figure 2. Unemployment rate (%) during crisis (2007-2012)



Source: Eurostat and authors.

The reason could be found in psychological dimension (the world economic crisis has been broken out in other countries one year earlier) as well as in economic dimension because real gross and net incomes have been started to decline faster in countryside than in cities since 2009 [CSO 2009, 2010, 2011].

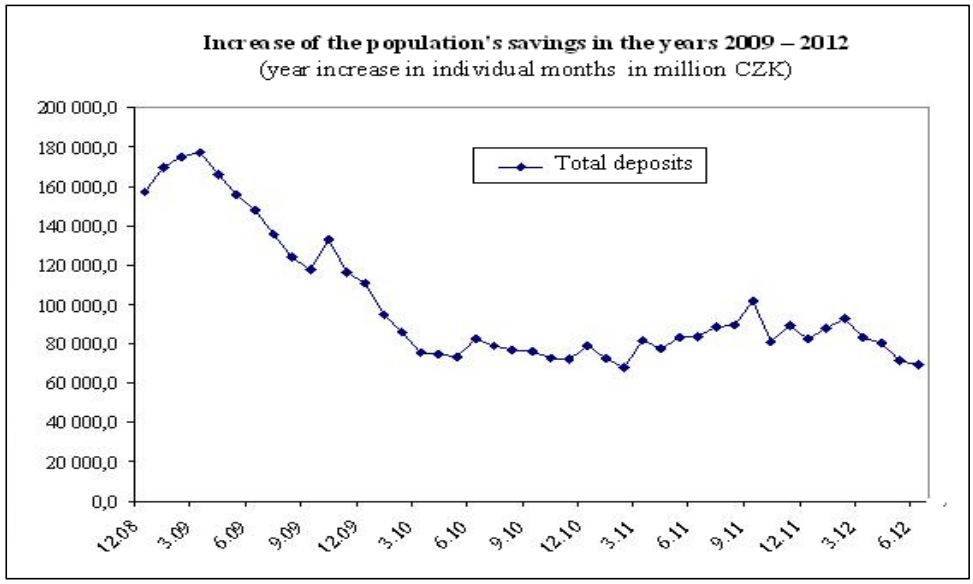
Figure 3. Structure of consumer expenditures in rural areas of the Czech Republic (1999-2010)



Source: CSO and authors.

Aforementioned negative phenomena, related to the contemporary crisis, led to decline of savings in rural families. Their average has been declined on quarter within crisis period – Figure 4. It is deepening socio-economic troubles in rural areas.

Figure 4. Savings of rural inhabitants and its development in the Czech Republic (2009-2012)



Source: CSO and authors.

10.7. Conclusions

Analysis revealed that only some indicators and their values, measured in rural areas (economic activity, employment rate), have been made up for measurement in the cities. But there are some indicators and their values with differences which shows worsening situation in the rural areas. There is observed higher unemployment rate in the rural areas, possibilities of applicant employment are lower in comparison with the cities or incomes of rural families do not achieve level of families in the cities.

Unfavourable situation remains namely in the smallest villages. It can lead to threatening whole region and its development. L. Svatošová states that the more small villages in the region the more difficult possibilities of successful regional development [Svatošová 2008].

There is apparent occurrence of negative phenomena like bad demographical situation, bad educational structure and high unemployment rate

in the Czech countryside not only within contemporary crisis but also in previous periods. In terms of aforementioned, Gajdoš and Pašiak pointed out on relation between bad demographical development and weakening of cultural capital in rural areas. It can lead to decline of education and professional expertise of rural population because cultural capital is not sufficient for labour market today. And it brings higher unemployment [Gajdoš, Pašiak 2009]. Therefore contemporary crisis is rather being worsened social and economical situation of small rural villages.

It is possible to ask – what could be the right way of help to the smallest villages in the period of crisis? Bernad consider main function of the small rural villages as residential. The development of such municipalities should be rather focused on increasing of quality in sphere like housing fond, environment, basic and recreational services. But emphasis on economic functions should be rather marginal in case of such villages [Bernard 2011]. Nowadays it is hardly to imagine separation of economic sphere in rural life and social or cultural sphere. Wokoun and Malinovský suggest implementing support of economic active inhabitants more deeply into instruments of CAP EU. Only by integration of agricultural policy and policy of rural development it is possible to achieve stabilisation of rural population [Wokoun, Malinovsky 2008].

References

1. Bernard J., (2011), Endogenní rozvojové potenciály malých venkovských obcí - obtížné hledání a měření jejich vlivu, Sociologický ústav AV ČR, v.v.i., Praha, Sociologický časopis, Czech sociological review, Vol. 47, No. 4, p. 745-775
2. Buchta S., Buchta T., (2009), Impact of the investment grants from the European funds on the development of agriculture and rural areas, Agric. Econ. – Czech, 55, 2009/2, pp. 59-66.
3. Czech Statistical Office (CSO), (2013), Regional statistics in period 1991-2011, http://www.czso.cz/csu/redakce.nsf/i/regiony_mesta_obce_souhrn, access 22.05.2013.
4. Czech Statistical Office (CSO), (2013), Sčítání lidu in period 1991-2011, http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Urban-rural_typology, access 22.05.2013.
5. Eurostat, Urban and rural statistics in perion 2000-2012, http://www.czso.cz/, access 22.05.2013.
6. Foster J.B., Magdoff F., (2008), Velká finanční krize příčiny, Následky, nakladatelství Grimmus, ISBN 978-80-902831-1-4.

7.Gajdoš P, Pašiak J., (2008), Sociálne zdroje lokálneho a regionálneho rozvoja, Bratislava, Sociologický ústav SAV, 2008. p. 217, ISBN: 978-80-85544-53-4.
8.Hudeček T., (2008), Akcesibilita a dopady její změny v Česku v transformačním období: vztah k systému osídlení, Disertačni práce, Praha, Univerzita Karlova v Praze, Přírodovědecká fakulta, Katedra sociálni geografie a regionálního rozvoje.
9.Krugman P., (2009), Návrat ekonomické krize, Vyd. 1, Praha, Vyšehrad, 168 s., ISBN 978-80-7021-984-3.
10.Machonin P., Tuček M., (1999), Česká společnost v transformaci – k proměnám sociální struktury, p. 364, Vyd. 1., ISBN 8085850176.
11.Mikeszová M., et. al., (2010), Dopady hospodářské krize na finanční dostupnost bydlení - analýza a možné nástroje státu, vyd. 1, Praha, Sociologický ústav AV ČR, v.v.i., 66 s. il. ISBN: 978-80-7330-182-8.
12.Ministry of Agriculture, (2011), Zpráva o stavu zemědělství ČR za rok 2011, http://eagri.cz/public, 22.05.2013.
13.Pospěch P., Deli, M., Spěšná D., (2009), Quality of life in Czech rural areas, Agric. Econ. – Czech, 55, 2009/6, pp 284–295.
14.Střeleček F., Lososová R., (2009), Comparison of subsidies in the Visegrad group after the EU accession, Agric. Econ. Czech, 55, 2009/ 9, p. 415-423.
15.Svatošová L., (2008), Analysis of the demographic evolution in regions of CR (in Czech). PEF ČZU, Praha, ISBN 978-80-213-1813-7, pp. 703–707.
16.Štolbová M., (2008), Eligibility criteria for less-favoured areas payments in the EU countries and the position of the Czech Republic, Agricultural Economics – Czech, 54 (4), pp. 166-175.
17.Vintrová R., (2009), Lessons from the Czech and Slovak economies split, Prague Economic Papers, 1/2009
18.Wokoun R., Malinovský J. a kol., (2008), Regionální rozvoj 1, vyd, Praha, Linde Praha, 475 s. ISBN 979-80-7201-699-0.
19.Woods, T. E., (2010), Krach příčiny krize a nápravná opatření, která ji jen zhoršují, 1 vyd. v českém jazyce Praha Dokořán 222 s., ISBN: 978-80-7363-273-1 (váz.).
20.Zemědělský zpravodaj, Pohled na produkci řepky v ČR a její konkurenční schopnost, http://www.agris.cz, 22.05.2013.

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11. Institutions acting for rural development – future challenges

11.1. Introduction

A significant role in rural development is played by an efficient institutional system, which can be considered within the aspect of institutions supporting the community and economic entities operating in a given area, and within the aspect of institutionalisation, which conditions the actions of those institutions through establishing principles of operation. Presented system reduces the uncertainty and enforces on the units a defined way of conduct within the management process. However such institutions' operation shows many ambiguities, resulting from constant social and economic changes in rural areas and changes in policy for rural development. It means that creating optimal institutional structures is and will be, in the nearest future, an important task for the rural development organisers.

As proven by numerous research, increasing the competitiveness of rural areas is still very much dependent on the abilities of local citizens and local entities to use the existing resources in the best way possible. The activities of these institutions may however be helpful in stimulating creativity, entrepreneurship and innovativeness of people, leading to a rational use of local resources.

In this context, the aim of the following study is to present the institutional instruments of shaping rural development and to define to what extent rural areas are determined by policies on various domestic administrative levels.

According to the study's aim, the following basic research problems were established:

- presenting the institutional conditions for entrepreneurship development as an important determinant of rural development. It is assumed that the development of entrepreneurship is to a large extent conditioned by the policy introduced on behalf of its development;
- presenting integral institutional conditions for the rural development process. It is assumed that the effectiveness of the undertaken actions

depends largely on the integrated approach of institutions acting for the rural development.

The study's reference purpose pertains to the presentation of operations and instruments, which should be offered by the institutions on behalf of rural development, in order to accelerate it.

11.2. The policy of supporting entrepreneurship development in rural areas

Presently, the policy implemented at various administrative state levels should also be counted among the institutions having a strong influence on rural development. This policy is still to a large extent subordinate to the objective of convergence implemented by the EU. The EU implementing the convergence objective, quite actively participates in the economic development of individual countries and regions. This participation is expressed in the formulation of guidelines for regional and structural policies and the Cohesion Policy, which offer a relatively wide range of instruments to support development of economic activity. The official justification for these actions is to equalize the conditions of competition. However, the actions taken are criticized by the representatives of some economic schools. They believe that these activities interfere with competition and that the market should be the only regulator. In the EU policy, however, it was adopted that the transfers of public funds and the associated multiplier effects should have a positive impact on the economic development.

The EU policy evolve towards the development of business, particularly small and medium-sized enterprises. The solutions adopted aim at extending the period of impact of public funds. Direct financial support instruments are diversified to reduce the funds allocated to grants for enterprises, which in turn can increase the involvement of financial engineering instruments. In addition, considerable resources are allocated to the indirect support instruments associated with the creation of the business environment. One of them is broadly understood technical and social infrastructure, including the infrastructure of local importance, whose development is still very important for the competitiveness of companies located in rural areas in Poland. The disparities in infrastructure provision between rural and urban areas are still emerging, and even increasing. As a result of the improvement in labour productivity in agriculture, there is a need for management of surplus labour by the non-agricultural sectors of the economy. Untapped labour resources in rural areas and their low mobility make it necessary to stimulate business development. Instruments used in structural policy, Cohesion Policy and regional policy may play the role of stimuli in the development of this activity.

Given the complexity of the problems associated with the development of economic activities and their scale, the EU uses a multidimensional approach to solving them. Economic processes are, in fact, the object of the impact of Cohesion Policy, regional policy and structural policy. Activities under the Cohesion Policy focus on eliminating gaps in economic and social development and achieving convergence between countries and regions [Murzyn 2010]. It follows from the definition of the regional policy that this is, in a somewhat simplified terms, a component of Cohesion Policy, since its goal is to reduce the disparities between the economies of different regions of a country. Its objective is the reduction of disparities between the economies of particular regions in a given country. A slight different approach is applied in the case of structural policy. Its purpose is to change the structure of the country's economy, e.g. resulting from the interaction between the different branches of the economy, which leads to improvements in the efficiency of resource allocation. However, it is open to question, whether the above-mentioned types of policy can lead to improvements in the efficiency of resource allocation, if the instrument to achieve this goal is transfer of public funds. However, each of them can have a significant impact on the development of economic activity and, consequently, the distribution of national income. It is difficult to determine the sustainability of the results achieved by the transfer of public funds under individual policies.

Hence supporting the development of economic activity can be implemented in various policy areas defined according to the approach to the problem, areas of support and the type of instruments used to intervene. In any case, this is an influence of public sector on the production of private goods and services. Actions taken entail specific expenditure of the public finance sector, which generally results in a reduction of consumption of public goods. There is therefore a matter of efficient use of public funds, which is closely related to the type of support instrument used. The type of support instrument determines the scale of actions taken for the development of economic activities, as well as the scale of reduction in consumption of other public goods. The use of specific support instruments can be substitutable or complementary to the production of public goods. The first instance creates a situation in which the increase of public expenditure on enterprises will cause a proportionate decrease of expenditure on the production of other public goods. In the next instance, the production of public goods can serve as a rural development factor.

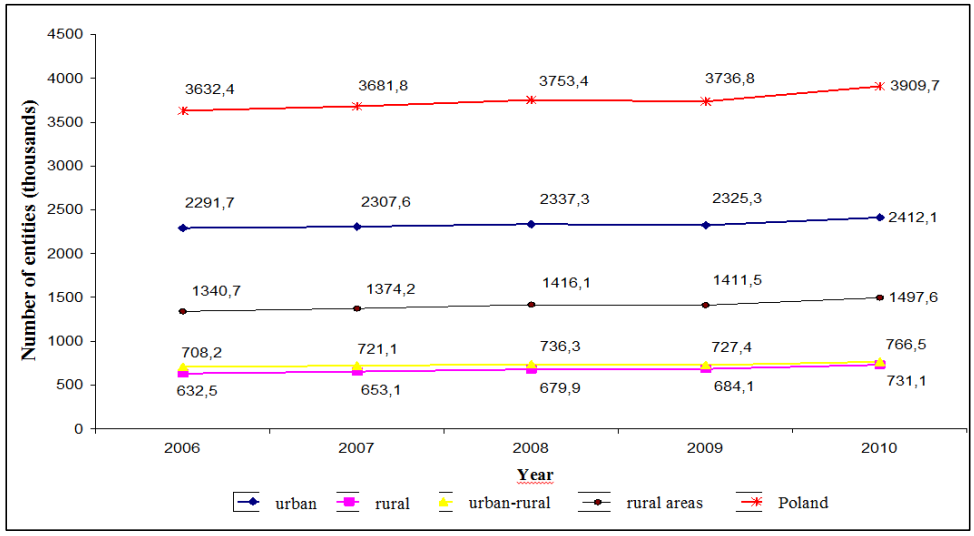
Development of economic activity under the carried out policy

According to the CSO Local Data Bank information gathered in 2010, there were 3.9 million registered entities in Poland (Figure 1). Most of them (over 2.4 million) were established in urban gminas, rural gminas and less than 1.5 million enterprises were registered in rural-urban gminas.

In the period 2006-2010 the average cumulative annual growth rate (CAGR) of the number of entities in Poland amounted to 1.86%[13], which means absolute growth rate of over 277 thousand units. The data presented in Figure 1 indicate a significantly uneven rate of growth of the number of operators in different types of gminas. The highest growth was reported in gminas of the rural type (3.69%), which significantly exceeded the analogous indicator in urban-rural gminas (2%)[14]. The CAGR growth rate for urban gminas developed clearly below the country average and amounted only to 1.29%. The result presented in Figure 1 also indicates that the analysed period was not a uniform period of growth in saturation with enterprises on an annual basis. We can differentiate between three time periods: (1) 2006-2008 with a continuous increase in the number of entities in all types of analysed gminas, (2) 2009, when there were signs of a slowdown in form of the decline in the number of entities in relation to the previous year, due to the bankruptcies of companies, de-registering enterprises and not taking up new business due to uncertainty about economic developments, and (3) 2010, when the number of entities has increased in absolute terms as compared to the previous year. It should be noted that the deterioration of the general economic situation was not reflected in the same way at the level of entrepreneurship in different types of gminas. In 2008--2009, Poland lost a total of over 16.5 thousand economic entities. The decrease in saturation with entities for rural gminas totalled almost 12 thousand, while in rural gminas the number of entities increased by 4.2 thousand. This result points to the different structure of entrepreneurship in rural areas, which seems to be less susceptible to the general deterioration of economic conditions. It means that rural areas may create competitive conditions for establishing economic activities. Within the urban-rural system there is a certain convergence in that respect – however it is not a sense strict convergence, that is measured by – for example – labour efficiency.

[13] That is, each year the aggregate number of entities in Poland increased by about 1.86%.
[14] Cumulative average growth rate for rural areas was 2.81%.

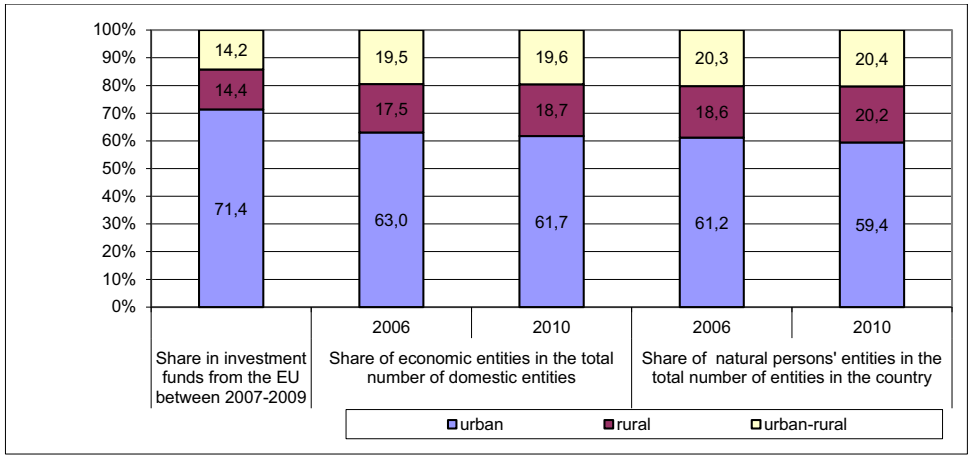
Figure 1. Number of enterprises registered in Poland in 2006-2010



Source: authors' own compilation based on the CSO Local Data Bank.

Therefore, the implementation of the concept of economic and social development of rural areas requires additional transfer of public funds for infrastructure development. The transfer was made by the operational programmes for the period 2004-2006, public financial support for infrastructure investments was also included in the Rural Development Programme 2007--2013. However, in the case of infrastructure development, the key role is played by Regional Operational Programmes 2007-2013 and the Eastern Poland Development Operational Programme, in which the vast majority of funds are allocated for this purpose. The study shows that in 2007-2009 the gminas received more than PLN 8.7 billion for infrastructure investments from the EU, through the operational programmes for the 2004-2006 and 2007-2013 periods. Most of these funds (over 71%) went to urbanised areas (Figure 2), where over 63% of enterprises is located (Figure 2). However, relatively more and more entities become active in rural areas. This is due to the increasing share of companies registered in these areas in the total number of enterprises in the country (Figure 2). It should be noted that this increase is mainly due to relatively dynamic economic development of natural persons' entities, organised in the form of micro and small enterprises. Thus the infrastructure investments are not the only rural development factor. A significant influence on the development of entrepreneurship in rural areas comes from the EU funds transferred using the direct support instruments.

Figure 2. Structure of investment EU funds of gminas and business entities registered in the REGON system according to the types of gminas.



Source: own calculation based on CSO data.

11.3. Summary and conclusions

There are many barriers to economic activity stemming from both the factors determining the so-called market failure, as well as the functioning of the public administration determining the conditions and functioning of the entrepreneurship. Therefore, it is important that public interventions are limited to those areas of the economy and groups of entities, where the scope of market failure is particularly high and permanently prevents the growth of competition, leading to lower economic growth. In this context, structural and regional policy defining the scope and value of the programmed support is very important for the promotion of entrepreneurship in the EU Member States, especially in Poland. Important elements of this concept are the use of selective and *ad minimum* support of instruments used with avoiding adverse effects on the structure and size of supply and demand.

11.4. Integrated approach applied by institutions acting for rural development

Rural development is implemented through a set of various actions. The effectiveness of the undertaken actions depends largely on the integrated approach of institutions acting for the rural development. *Via* the integrated institutional approach mirroring of actions is avoided, as well as breaches in supporting certain areas of activity, essential for rural development. That is why

the rural development process requires cooperation and coordination between various institutions supporting rural development. According to the Polish dictionary "coordination" means "agreeing on a joint action, harmonising, a unification of joint plans", whereas "cooperation" is "a work performed with another party, joint action, participating in collective work" [Słownik języka polskiego 1978, 1981]. Thus both concepts are not always perfect expressions of interpersonal agreements. Establishing such agreements is based on formal or informal regulations. That is why the effect of particular action groups is dependent on the degree of consequences in following the operating principles and the existing capital. Undoubtedly within the strategy for managing rural areas coordination plays the bigger part, as it is connected with the principles of establishing relationships, communication and improvements, which also means cooperation and distribution of power between the elements of this structure.

Research[15] show that coordination of actions between institutions is undertaken to a lesser extent. The institutions are afraid to transfer competence and related funds to other bodies. Perhaps the coordination mechanisms on individual administrative levels, allowing for establishing relationships between institutions, are not convincing within the scope of objectives and means.

Research proves that about 80% of actions on behalf of rural development is undertaken by the territorial government (gmina, poviat, voivodeship). The goal is to create a coherent rural development support system, using proper cooperation mechanisms.

11.5. Coordination and cooperation between voivodeship and local self-government acting for rural development

Territorial governments (mainly voivodeship) and their bodies are supposed not only to inspire restructuring and modernisation in rural areas, but mostly to coordinate them. Institutions of all levels of territorial governments cooperate in implementing those measures, because the public actions of the voivodeship government are implemented in the poviat and gminas areas, and the local community – under the law – forms a regional self-governing community. In order to improve efficiency and effectiveness of public resources, it is important to establish proper cooperation mechanisms for local partners, as

[15] Research was conducted in the Mazowieckie Voivodeship in 2012, under the Multi-Annual Programme 2011-2014 within the task of „The evaluation of the effectiveness of coordination between particulate institutions acting on behalf of rural development on subsequent levels of administration".

well as proper instruments. One of such instruments that are supposed to stimulate the areas of low development in mazowieckie voivodeship is the Local Government Support Facility for Development of Mazovia (Samorządowy Instrument Wsparcia Rozwoju Mazowsza – SIWRM)[16], issued in 2005, using funds from the voivodeship's budget. It is the only such instrument in the country, operated by the Department of Agriculture and Rural Modernisation at the Marshall Office. Through the SIWRM the Mazowieckie Voivodeship Government supports local self-governments financially (gminas, poviats), which in view of their difficult financial situation have smaller chances of acquiring means from other programmes. These units can initiate various actions adjusted to local needs, mainly concerning the infrastructure. SIWRM was divided into components, each of them being a separate task. In 2005--2009 the number of components changed depending on postulates made by the local authorities and the financial possibilities of the Voivodeship Government.

In those years the local governments used the most of the resources for road development (component A and C), and the least on information infrastructure (component I). It was noted that the funds received under one component were complemented by funds from another component with similar significance (complementarity of actions). Due to the coordination of tasks between institutions there was a considerable concentration of financial funds for investments in the field of technical infrastructure in rural areas.

It is also worth mentioning that the Voivodeship Government is obviously focused on the region's development through precisely directed actions, which also constitute the framework for the local authorities. Thus the key problem becomes the appropriate coordination between the voivodeship government and the local self-government.

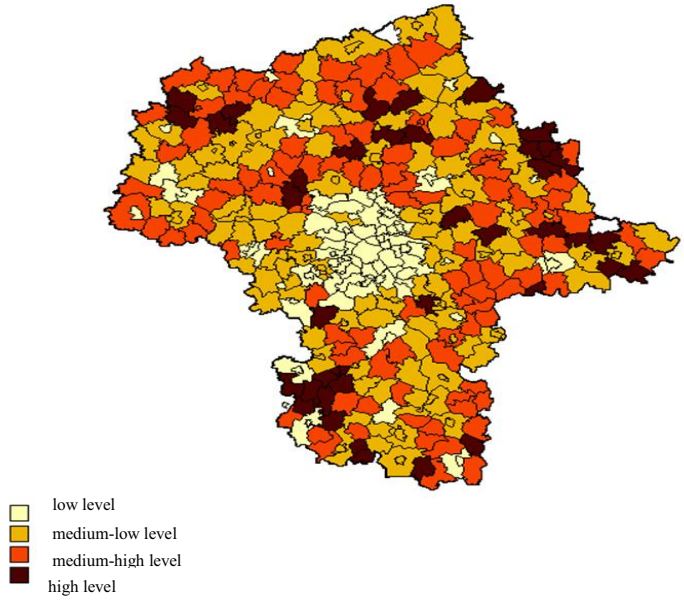
In the years 2005-2009 the Mazowieckie Voivodeship Government, under SIWRM, awarded grants for 4233 tasks for a total amount of ca. PLN 662 million, which allowed for investments of over PLN 1.314 million. The capacity for acquiring and optimal use of SIWRM funds for local undertakings developed mainly due to the ability to coordinate the cooperation between voivodeship and local self-governments, that is through an effective and efficient management of

[16] Legal basis for SIWRM – Act of 5 June 1998 on voivodeship government (Dz.U. of 2001, No. 142, item 1590, as amended); Act No. 233/05 of the Mazowieckie Voivodeship Assembly of 19 December 2005 on the Mazowsze Development Programme, with components; Act of 30 June 2005 on public finance (Dz.U. of 2005, No. 249, item 2104, as amended), Act of the Mazowieckie Voivodeship Assembly of 29 May 2006 on adopting the Strategy for the Development of the Mazowieckie Voivodeship.

public projects. There was also a strengthening of partnership in the public sector on behalf of rural development.

The analysis of the use of funds from SIWRM in 2005-2009 indicates disproportions (Figure 3). It is worth mentioning that the funds are supposed to level the degree of development of particular gminas. It is thus important to point out their relation to the degree of social and economic development of gminas (Figure 4).

Figure 3. Spatial differentiation of values acquired from the funds of the Mazowieckie Voivodeship budget per one citizen in particular gminas in 2005-2009.



Considering the value of funds acquired, gminas were classified into four groups:

1. low level $x_i < \bar{x} - \delta_x$
2. medium-low level $\bar{x} > x_i \geq \bar{x} - \delta_x$
3. medium-high level $\bar{x} + \delta_x > x_i \geq \bar{x}$
4. high level $x_i \geq \bar{x} + \delta_x$.

40 gminas were included in the group of high level funds from the voivodeship's budget (above PLN 406.3 per citizen), 98% of which are urban gminas. The aforementioned rural gminas constitute only 18% of all rural gminas in voivodeship.

The majority of gminas – 112 (that is 36.2%) made up a group of medium-low level funds acquired. They were mainly rural gminas, comprising about 66% and 29% of total of the rural gminas. This group includes nine urban gminas. A similar number of gminas (104) was established on the medium-high level, with the dominance of rural gminas.

In the low level group of funds acquired (below PLN 47 per citizen) there were 53 gminas. Most of them were urban gminas.

Analysis of the value of the acquired funds confirms that it was inversely proportional to the level of social and economic development in gminas[17]. It can be considered very beneficial in the context of SIWRM's objective (Figure 3 and 4).

Figure 4. Measure of gminas' social and economic development in 2011

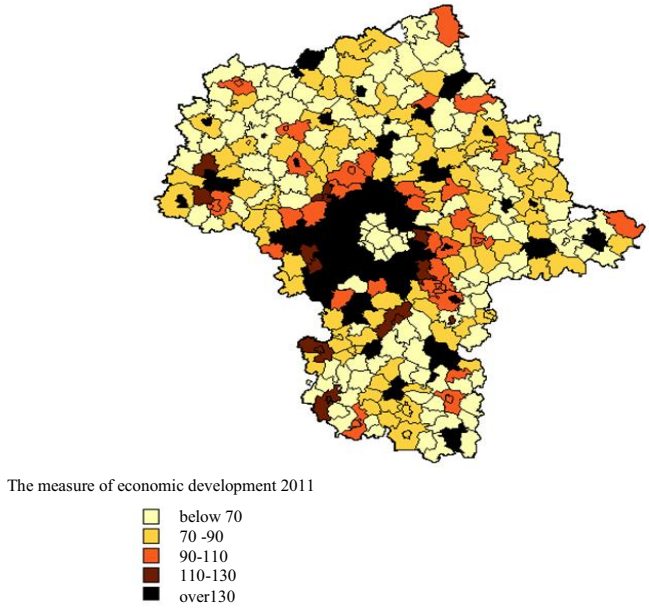


Figure 4 shows that there is a large differentiation between gminas in the scope of social and economic development, which is also confirmed by the coefficient of variation (about 44%). However, considerably more funds was granted to gminas with low level of social and economic development than gminas with a higher level of development. It means that actions coordinated by

[17] The level of socio-economic development has been assessed on the basis of three features: number of business entities per 10 thousand working age inhabitants, number of people working in the national economy per 10 thousand working age inhabitants and own income of gminas per capita – using the development measure of Z.Hellwig [Hellwig 1968].

territorial governments (voivodeship and local) can be seen as coherent with gminas' needs and there is hope for a high multiplier effect of these operations.

11.6. Coordination and cooperation between local institutions acting for rural development

The structures of a local self-government or other local institutions are certainly the parties most interested in solving basic socio-economic problems in a given area and in connecting actions of a given community with local needs and possibilities. The importance of a gmina and poviat self-government as a basic institution for rural development puts them in a role of a coordinator, which through an information flow and control contributes to reducing transaction costs, and thus to increasing the level of competitiveness of rural areas. For such an institution to play an active role in raising competitiveness of these regions, its management must be improved, taking into account all bodies operating in the area, as well as their needs, and it also has to cooperate with others.

Cooperation between local governments stems from willingness to solve important social, economic and environmental issues. It is expressed through acknowledging development opportunities, especially in acquiring additional human, financial and physical resources. Research shows that local self-governments (gminas, poviats) most often enter into cooperation with neighbouring self-governments and institutions, as most of the problems are not limited to an individual administrative unit. That is why cooperation – rarely coordination – takes an important place in local governance.

Research shows that the cooperation of local self-governments with other units is based mainly in the areas of culture (organising various events) and infrastructure (roads, municipal facilities). This may mean that the local authority thinks it is worth engaging in operations visible in the local community. Perhaps that is why relatively few joint ventures are undertaken in the environmental sector.

Implementation of actions on behalf of rural development is not possible without public-social partnership. The participation of local community, organisations and associations, culture and education institutions operating in a given gmina, as well as local business is especially important. Competences of local authorities include initiating the cooperation and creating appropriate conditions for activities by local community and for developing the right implementation methods.

An example of such operation based on cooperation leading to coordination is, among others, the Przasnysz Poviat, Sierpc Poviat and Przysucha Poviat in the Mazowieckie Voivodeship. The Przasnysz Poviat's activity centres on: improving infrastructure and public utilities, and creating new jobs. The effects of cooperation and coordination of local governments so far are: establishing the Przasnysz Economic Zone (Przasnyska Strefa Gospodarcza – PSG) in 2005, the comprehensive equipping of PSG with community, road, electrical and information facilities, bringing investors – nearly 250 new jobs were created and there was an increase in activity of other institutions and organisations working in the poviat's area. Long-term effects – diffusion of development impulses occurring in the Warsaw agglomeration and the beneficial influence on the development of economy, with a predominance of innovative enterprises and a strong position of market services.

The sum of local authorities activities in the Sierpc Poviat was the establishment of the Local Action Group "Sierpeckie Partnerstwo" ("the Sierpc Partnership"), on the basis of LEADER, which includes all rural gminas of the poviat, as well as partners from the social and the economic sectors. The association plays the role of a local rural development agency, its objective being the activity for economic and social growth. Relying on local natural and cultural resources, the Association formed and accepted the Local Development Strategy, entitled "The strategy for developing tourism and tourist products for the Association's area of operation for 2011-2016". It states that (similarly to the voivodeship strategy) in particular gminas there are great disparities between resources used for tourist purposes. Only the cooperation between gminas under the Association's operation can give measurable benefits for the development of tourism.

Current effects of implementing the strategy are: a number of investments in infrastructure, renovations of community centres, new service products, additional funds for organising cultural, sport and recreational events and the professional activation of citizens.

In the Przysucha Poviat there are socio-economic issues: high unemployment, social exclusion and low level of education within the community, as well as low level of entrepreneurship became a challenge for the cooperation between municipal self-governments, social organisations and local community. On their initiative a Local Action Group "Wszyscy Razem" ("All Together") was established in 2007. The Association developed a Local Development Strategy centred on:

- the development of tourism in gminas within the Przysucha Poviat,

- improvement of rural areas' image and maintaining of cultural heritage,
- rural entrepreneurship as a chance for improving the quality of life for local inhabitants.

Current LGD activity resulted in three approved projects supporting tourism activities in the poviat area and in the increase of citizen participation in local problem solving.

Research conducted in aforementioned poviats show that the cooperation principle is understood primarily as the cooperation of local authorities with all bodies operating within a given poviat. Among the implemented initiatives most are dedicated to common good, introducing certain values, as well as to supporting local economic development and the local community.

11.7. Does the existing institutional system favour cooperation and coordination processes?

The current system does not favour those processes in full, because:

- there are no procedures describing the functioning of coordination process, that is indication of institutions, their function and means of cooperation with other bodies,
- there are no coordination mechanisms on the regional level, allowing for establishing voivodeship government-voivode relationship; presently there is a duality of power and some competences of the marshal and the voivode are overlapping (especially concerning the UE funds),
- There are no mechanisms allowing for establishing a relationship between central government and self-governments; the actions of central government regarding self-governments most commonly boil down to shifting difficult tasks without providing appropriate measure of their implementation,
- the instruments for developing public-private and public-social partnership ideas are not the best.

11.8. Recommendation for the institutional system operating for rural development

1. raising the capacity of institutional rural development policy by a one legal act – the Act on shaping rural development,
2. establishing of institutions, such as: Agency for Rural Development, which would coordinate operation and maximise complementarity of MARD and MRD – on the stage of programming and implementation,

3. strengthening the voivodeship government as coordinator – especially due to the implementation of new strategic rural development programmes for 2014-2020,
4. creating new instruments (especially on a local level), which would favour coordination and cooperation,
5. providing the institutions operating on behalf of rural areas with financial stability.

References

1. Gancarczyk M., (2010), Wsparcie publiczne dla MSP. Podstawy teoretyczne a praktyka gospodarcze, Wydawnictwo CH Beck, Warszawa, p. 139.
2. IBnGR, (2011), Mechanizmy inżynierii finansowej w podnoszeniu efektywności absorpcji środków UE i ich znaczenie w polityce spójności po 2013 roku, IBnGR Report, Gdańsk.
3. Lokalna strategia rozwoju obszaru objętego działaniem Stowarzyszenia Lokalna Grupa Działania „Sierpeckie Partnerstwo", (2009), opracowanie LGD „Sierpeckie Partnerstwo", .U."Consulting M. projects", Machowo.
4. Lokalna strategia rozwoju, (2008), Stowarzyszenie Lokalna Grupa Działania „Wszyscy Razem", Wyd. LGD, „Wszyscy Razem", Rusinów, www.lgdwr.pl.
5. Murzyn D., (2010). Polityka spójności Unii Europejskiej a proces zmniejszania dysproporcji w rozwoju gospodarczym Polski. C.H. Beck. Warszawa.
6. Strategia rozwoju powiatu przasnyskiego na lata 2008-2020, (2008), Wydział Rozwoju gospodarczego, Promocji i Ochrony Środowiska, Przasnysz, www.powiat-przasnysz.pl.
7. Strategia rozwoju powiatu przysuskiego 2005-2015, www.przysucha24pl.
8. Strategia rozwoju Województwa Mazowieckiego do 2030, Inteligentne Mazowsze, Projekt, Mazowieckie Biuro Planowania Regionalnego w Warszawie, www.mbpr.pl.
9. Wilkin J., Nurzyńska I., (eds.), (2012), Raport o stanie wsi, Polska wieś 2012, Wydawnictwo Naukowe Scholar, Warszawa.
10. Williamson O. E., (1981), The Economics of Organization: The Transaction Cost Approach, The American Journal of Sociology 87(3).
11. Zalewski J., (2005), Wzorowy urząd, Wzorowy urząd czyli jak usprawnić administrację samorządową, jak mierzyć jej zadania I wyniki, [in:] Misiąg W., (ed.), Instytut Badań nad Gospodarką Rynkową, Warszawa.

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12. Biofuels production and food security – Implications for economic policy

12.1. Problem statement

Biofuel production, which started as early as in the 1970s, is usually perceived as a welcomed and beneficial phenomenon, fitting well in the scheme of activities aiming at creating alternative renewable energy sources, and at the same time often perceived as beneficial for the environment and contributing to environmental protection. This point of view has become the basis for the introduction of policies aimed at active support of biofuel production in many countries. As a result, within the last dozen years or so, a very dynamic growth of this kind of production has been observed all over the world, in particular in the US, the EU, Brazil and some other countries. In 2010, global production of ethanol reached the level of ca. 70 billion litres, while for biodiesel – ca. 15 billion litres [Spiess 2013]. This very strong tendency is accompanied by some worrying signals of significant changes in land use and formation of agricultural prices, and thus also food prices. In the first case we are dealing with a rapid interest in obtaining new arable land (land-grabbing), while in the second case – with significantly higher levels of agricultural and food prices and their volatility. This leads to the situation, where concerns about concerning food security are more and more often expressed, and the rationality of policies addressing the stimulation of biofuel production is questioned, along with the mandatory blending levels [Prakash 2011, Roache 2010, UNCTAD 2008].

In order to shed more light on this complex problem, this paper discusses several key inter-related issues, in particular:

- reasons, along with the scale and effects of the increase in global biofuel production;
- growing dependence of agricultural and energy raw materials' markets;
- nature and main determinants of food security and its status in the world, in the EU and in Poland in the context of agricultural and food prices in recent years;
- impact of the increase in biofuel production on food security;

- the price-related aspects of food security, analysed in the context of the implications of current biofuel policies and potential recommendations in this regard.

The paper uses materials and data published by various authors, international expert teams and results of own analyses concerning price volatility and selected parameters of the assessment of food security in Poland, the EU and in the world.

12.2. Causes and effects of biofuel production development

Agriculture is generally seen as one of the largest reservoirs of renewable energy. The level of the use of production potential of renewable energy sources (RES) depends on many factors, e.g. market situation, economic support, costs of production of renewable energy and conventional energy or the level of technical development. It seems, however, that the active government policies plays an especially important role here, as without that intervention, development of biofuel production would not be as dynamic. The most important reasons for the policy contributing to that development include:

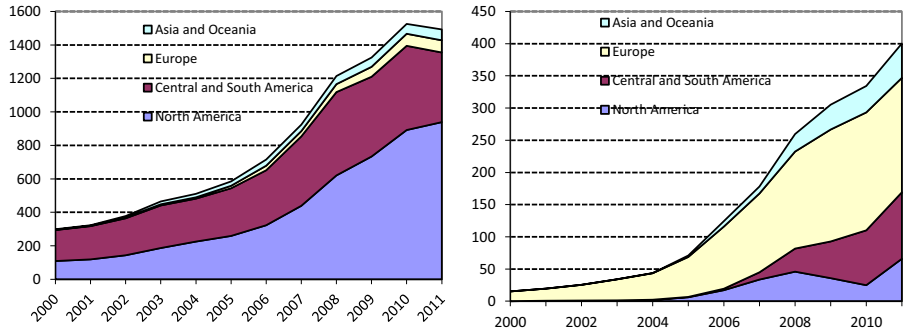
- growing demand for energy following from social and economic growth;
- increase in energy prices leading to the stronger pressure to import crude oil, diversification of energy sources and energy self-sufficiency (energy security);
- environmental aspects and pressure to make use of renewable energy sources;
- low prices of agricultural raw materials and surpluses in agricultural production in most developed countries, which at the initial stage contribute to general acceptance of the policy;
- perceving the production of renewable energy as the potential source of the growth of agricultural producers' income.

The main incentives introduced by biofuel policies include investment subsidies, tax reductions and obligatory, minimum share of organic components in liquid fuels (mandatory blending). State aid aimed at contributing to the growth of agricultural production oriented at biofuel production is also accompanied by the support for research and new applications in this regard. A review of strategic documents for the EU and for Poland concerning RES is presented in the work of Floriańczyk et al. [2012].

Biofuel policies in individual countries and regions may differ in terms of combinations and scale of the applied instrument, but their effect is similar – artificial increase in the world demand for agricultural raw materials. Such active policies have been introduced e.g. in the US, the EU, Brazil and some

other countries. This led to the situation, where more and more agricultural raw materials are used for biofuel production, namely bioethanol and biodiesel, whose production has grown quite dynamically especially in the recent decade. These tendencies are illustrated in Figure 1.

Figure 1. World production of bioethanol and biodiesel [thousand barrels/day]
a) production of bioethanol b) production of biodiesel



Source: own elaboration based on the U.S. Energy Information Administration (EIA).

Many plants may be used for biofuel production, but at the moment there are three major crops used for that purpose: sugar cane, maize and rape. This is because only the first generation fuels are considered – due to technological constraints, it is difficult to consider the economic viability of the production of second and third generation biofuels [Banse et al. 2008]. Ca. 80% of ethanol produced in the world is used as an additive to transportation fuels. 61% thereof comes from sugar cane (Brazil) and 39% from maize (USA). As regards the global production of biodiesel (almost 3.5 times lower than bioethanol production), and the most important player on the global market is Germany with the share exceeding 50% [Spiess 2013].

The pressure to produce biofuels leads also to the situation, that the number of programmes aimed at supporting agricultural production oriented at biofuel production is growing rapidly. Also the number of plant species used for this kind of production is growing (usually plants that are grown locally, e.g. cassava). This must lead to consequence in the form of increase in food prices – if not directly than indirectly, through mechanisms of substitution. Simply, the area used for food production is shrinking. Negative effects of such policies are more and more visible, thus signs of the tendency to make it more flexible are already observed, e.g. in the US.

12.3. Price interconnectedness between agricultural and energy markets

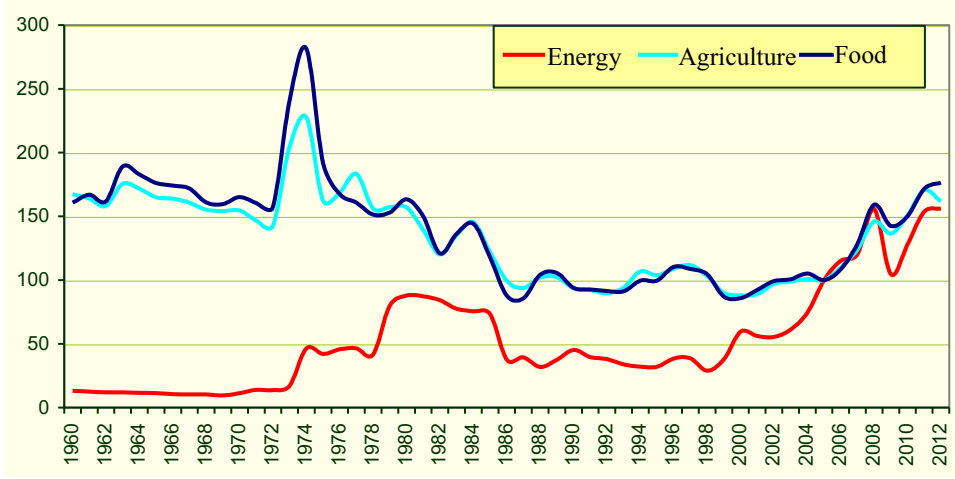
A rather unexpected, additional effect of the increase in the production of biofuels includes the growing interdependencies between the prices of agricultural raw materials and crude oil [Abbott et al 2011, Saghaian 2010]. Traditionally, prices of agricultural products and energy, perceived as costs, have been seen as poorly or even negatively correlated. However, use of a part of agricultural production for energy purposes has led to a positive correlation between prices of agricultural products and crude oil. Thus, the increase in oil prices leads to higher demand for agricultural raw materials for the production of biofuels. This effect on the plant products' market seems stronger than the cost-related effects of the increase in energy prices. It needs to be pointed out also, that the negative correlation of oil prices and US dollar leads to a situation that in some countries, e.g. in Poland, no significant relation is seen between oil prices and prices of cereals [Hamulczuk, Klimkowski 2012].

In the opinion of some authors, it is exactly the price of oil and energy that is becoming the most probable main driving force shaping the dynamics of food prices [Msangi et al. 2012, Rosiak et al. 2011, Troester 2012]. It is related to the occurrence of market mechanism of transmission which contributes to the fact that the development of biofuel production influences agricultural prices. This mechanism is of cyclical nature and consists of a series of subsequent interactions between prices, demand and income, which may be described as follows:

- increase in the prices of crude oil and energy leads to the growth of energy-intensive goods and of the demand for biofuels;
- higher demand for biofuels translates into higher prices of agricultural raw materials and food products;
- both the increase in the prices of energy-intensive goods and the growth of agricultural and food prices leads to the weakening of economic growth and a drop in the income of households;
- drop in the economic growth and income of households leads to lower demand for food and non-food products, as well as demand for energy;
- lower demand for energy leads to lower energy prices, which is followed by the decrease in the prices of energy-intensive goods;
- lower prices of energy-intensive goods contribute to economic growth and increase in the income of households, which in consequence leads to the increase in the demand for energy which is a sort of end to the cycle, as it leads to the increase in energy prices.

The above mechanism constitutes a theoretical framework of analysis used for the identification how the increase in the production of biofuels may change the fundamental relations on agricultural markets, and thus also on food markets. From the point of view of the analysis, the most important element of this mechanism is the occurrence of a more direct interdependence between energy prices and agricultural and food prices. The empirical evidence confirming this theoretical assumption includes the formation of the indices of agricultural raw materials' prices and food prices and energy prices in 1960--2012, as presented in Figure 2.

Figure 2. Convergence of agricultural raw materials' and food prices with energy prices



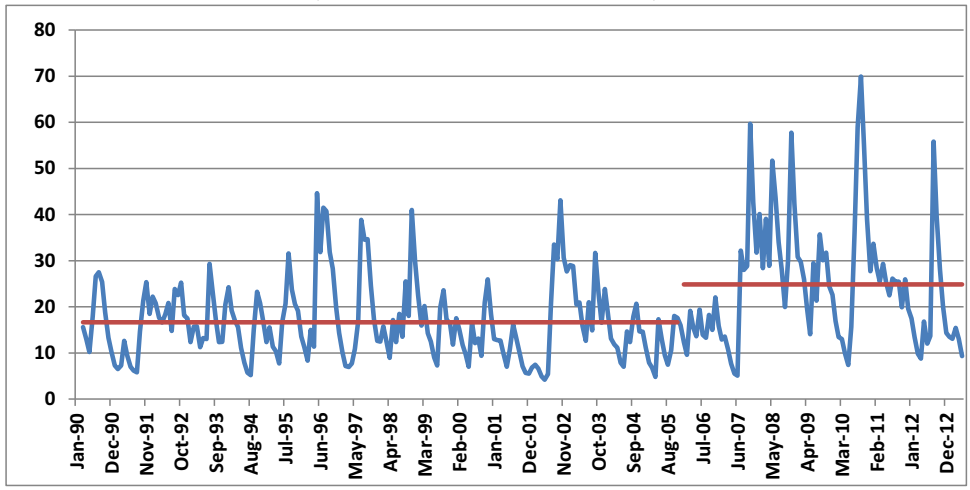
Source: own elaboration based on the data from the World Bank.

As it can be seen, the movements of food and agricultural raw materials' prices were very similar within the whole period in question. Energy prices were quite independent up until 2005. Then they started to rapidly grow and their convergence with agricultural and food prices became more and more visible. Since 2008 prices of agricultural products and food products reached levels not seen since 1970s. Thus, we may conclude that a growing price integration at global markets in agricultural and energy raw materials has developed, with all consequences for food prices following therefrom.

As the production of biofuels increased, also the volatility of agricultural raw materials' prices grew. The volatility of agricultural prices has also become more correlated with the volatility of crude oil prices [Figiel, Hamulczuk 2013; Serra, Zilberman 2011]. Development of biofuel production, stimulated by various instruments, led to a considerable drop in the level of agricultural raw

materials' stocks. As a result, market participants are dealing with a less elastic demand for agricultural raw materials, which means that even relatively low changes in supply, e.g. as a result of unfavourable weather conditions (draught, floods etc.) lead to rapid and dramatic price changes. An increase in the volatility of the US wheat prices, presented on Figure 3, is a good example thereof.

Figure 3. Annualised volatility of the monthly US hard red wheat prices (EWMA model, lambda=0.5)



Source: own elaboration based on the data from the World Bank.

Since 2006, the unconditional absolute volatility of those prices fluctuated within the much wider range and on average (horizontal line at on the chart) was considerably higher than in the previous 16-year period. In general, the situation of low stocks and uncertainty of supply leads to conditions contributing to higher price volatility. This attracts speculators to agricultural raw materials' markets, who – when finding an opportunity to gain profits – conclude transactions which may additionally de-stabilise these markets. Also, the fact which cannot be overlooked that increase in price volatility leads to the need to apply different agricultural policy instruments aimed at reducing the negative income impacts for farmers [Figiel, Hamulczuk 2013]. In other words, some policy instruments lead to problems which need to be solved with other policy instruments to mitigate the adverse effects thereof.

It needs to be noted here, however, that the opinions concerning higher prices of agricultural raw materials determined by energy prices are not only negative. The arguments for this state of affairs include mainly the fact that the

production of biofuels considerably contributes to the increase of the incomes of agricultural producers. This is of importance mainly in developed countries, where higher income resulting from higher prices of agricultural raw materials following from the increase in production of biofuels reduces the pressure to apply other instruments of supporting agricultural incomes. It is also believed that higher prices of agricultural raw materials contribute to production investments and production of larger quantities of agricultural raw materials. On the other hand, lower supply of food and limitation of the area of crops used for food production, as well as limitation of water available for satisfying food needs are listed among the counterarguments in this regard.

12.4. Food security in the context of price volatility

The notion of food security may be understood and defined in many different ways. Due to the complexity of the problem, there is no one, generally accepted definition, and thus one, universal method of measuring food security. Definition proposed by FAO seems most general. According to that definition, food security exists when the aggregated supply of food is sufficient to meet the population's dietary needs and food preferences for an active and healthy life. Food security may be analysed from different points of view, e.g.: from regional or global perspective, over short periods taking into account short-term supply and price fluctuations or over longer periods taking into account long--term trends in the change of population numbers, area of agricultural land, agricultural production technologies and alternative uses of agricultural raw materials, which influence food availability.

The most basic determinants of food security according to FAO include: sufficient production, physical and economic availability, utilisation possibilities measured with the availability of water and sanitary infrastructure, as well as stability of production, supply and prices. On the other hand, the Global Food Security Index created by the economists from the Economist Intelligence Unit lists the most important variables describing food security as: affordability, availability and quality and safety.

Food security of Poland, the EU and the whole world, measured with different indices applied by FAO has changed considerably over the last two decades. In the light of these indices, Polish and the EU consumers may feel relatively secure as compared to the rest of the world. Statistically speaking, food deficit, expressed in kilocalories/day/person is almost ten times higher in the world than in Poland and the EU. In particular in developing countries, the

economic availability of food is low, and food prices index systematically grows.

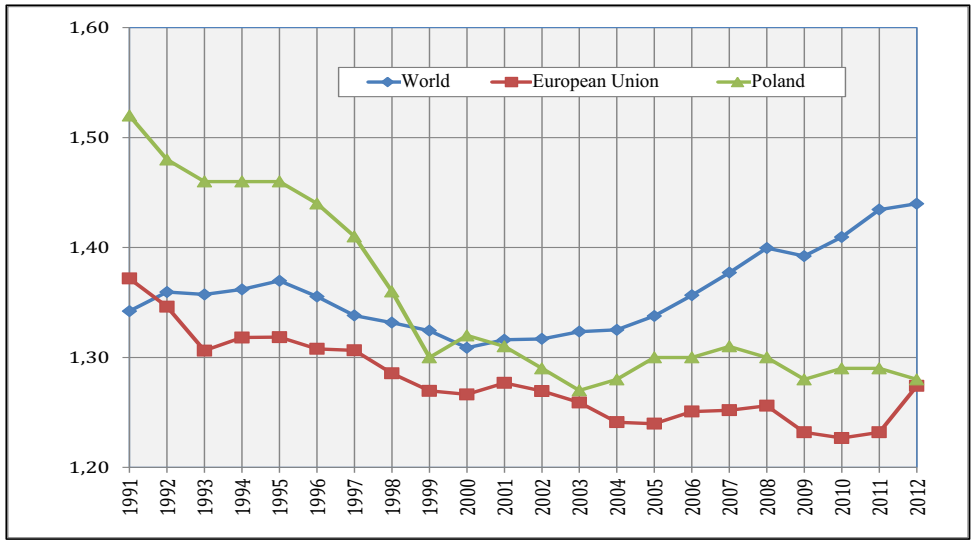
The importance of this problem on a global scale is well illustrated by the comparison of the share of food expenditure in the expenses of households in different groups of countries and regions of the world. According to the Economist Intelligence Unit, in the poorest regions (Africa, South Asia) these exceed the level of 50%, while in the OECD countries they are slightly above 20%. Thus, increase in prices contributes to the reduction of financial ability to buy food mainly in poorest countries, while in highly developed countries the problem is visible only slightly. This does not change the fact, however, that volatility of production and supply of food in the EU and in Poland is higher than in the rest of the world. According to the GFSI ranking for 2012, the US was the most food-secure country in the world. The first ten includes also Canada, Norway and seven EU states. Poland is ranked 24th. Still, the increase in the level of agricultural raw materials' prices and their growing volatility over recent years cannot be totally ignored, as it translates into price risks for agricultural producers and income-related consequence for food consumers.

Due to the derived nature of the demand for agricultural raw materials, the volatility of their prices translates directly into changes of food prices, whose level and volatility are of key importance for the level of food needs' fulfilment, especially in poor and less prosperous countries. Therefore, in accordance with the methodology adopted by FAO, level of food prices and their volatility are the key parameters for the measurement and evaluation of food security.

Figures 4 and 5 present the development of indices of the level and national volatility of food prices in the world, the EU and in Poland. Since 2006 a very clear and systematic growth of the index of food prices for the whole world could be observed (Figure 4). This trend could not be observed in the EU and in Poland, which may result from the fact that in the analysed period, after the reforms of CAP and EU enlargement in 2004, the competitiveness of EU agri-food markets has been gradually improving, which inhibited growth of food prices. It should also be indicated here, that the index pertains to relative food prices, and it is greatly influenced by the changes in the purchasing power of the population in the given country or region. This explains the dramatic drop of the value of that index in Poland in the 1990s.

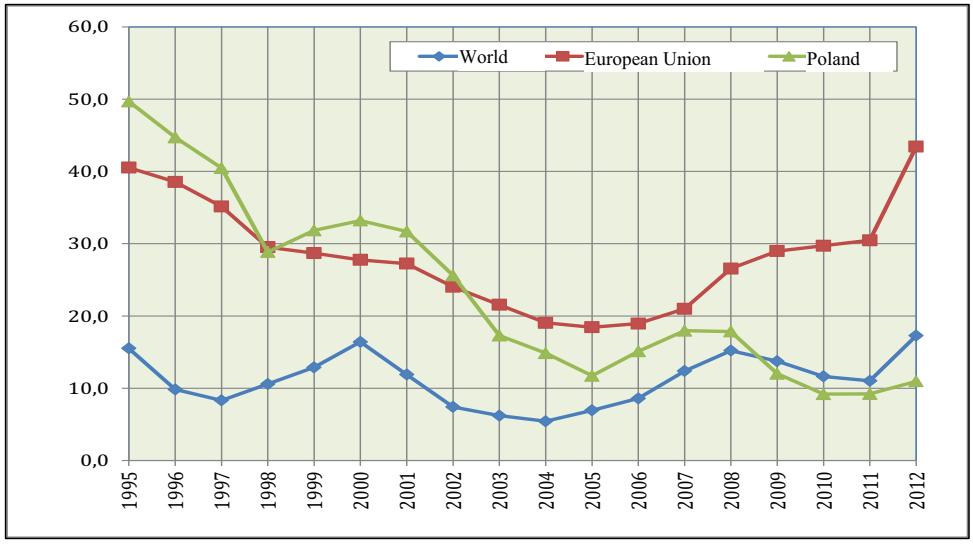
Quite a different picture develops for the index of national volatility of food prices. Since 2007, the index grew quite strongly in the EU, but its value in the world – after a considerable increase in 2005-2008 – has been dropping until 2011 and rapidly grew in 2012. What is interesting, this index developed in Poland in 2005-2012 quite similarly to its development in the world.

Figure 4. Index of the level of food prices according to FAO for the world, the EU and Poland in 1991-2012



Source: own compilation based on the FAO data.

Figure 5. Index of the national food prices volatility according to FAO for the world, the EU and Poland in 1991-2012



Source: own compilation based on the FAO data.

12.5. Impact of the development of biofuels production on food security

When analysing the determinants of food security and consequences of the introduction of biofuels, it is clear that the impact of the promotion of biofuel production on food security is manifold. It may also be expected that we are dealing with various degrees of this impact depending on the regions and countries, social and professional groups or specific aspects of food security. Taking into account the issues of physical availability of food, it needs to be stated that it deteriorated. Provision of growing amounts of production to non--food markets had to result in the decrease of supply of these products for food purposes. In the cereals, oil plants and sugar markets a decrease of the stock to use ratio has been observed in recent years, which means that there are less physically available plant raw materials which could be used for food production on the market. Simulations indicate that the production of plants for biofuels, in 10% of cases translates into a drop in the production for food purposes [OFID 2009].

The rate at which biofuel limits were introduced in some countries exceeded the production efficiency growth rate, which is conditioned by yield growth possibilities. This led to the above-mentioned reduction of stock levels. Obviously, if the stocks levels are low, prices are extremely sensitive to the changes in supply-demand relations [Abbott et al. 2011]. An important aspect of fuel demand is its low elasticity. In the conditions of high yield variability caused by climatic and weather factors, prices became extremely volatile [FAO et al. 2011]. For example, on the basis of simulations, Tyner et al. [2012] observed that severe drought accompanied by inflexible levels of blending biofuels with liquid conventional fuels may contribute even to a 60% growth of maize prices. Price reactions become less strong as the losses resulting from drought conditions are limited and as the flexibility of indicative objectives concerning mandatory blending levels increases.

The most important consequence of the artificial promotion of biofuel production involved the increase in the prices of agricultural raw materials. As food prices are strongly interlinked with the prices of agricultural raw materials, it translates directly into the basic parameter of food security, namely affordability. Clear identification of the level to which the development of biofuel production contributed to the recent increase in food prices is not particularly easy. Simulation results and estimated in this regard vary considerably falling within the range from a few to 75% [Charles 2012]. Mitchell [2008] estimates that up to 70-75% of agricultural raw materials' price growth results from biofuel production and consequences thereof consisting in

the low stock levels, changes in the agrarian structure, higher speculative activity or changes in foreign trade.

Growth of agricultural raw materials' prices as a result of biofuel policy varies in different sectors. It is highest in the case of plants which are used for biofuel production. It is slightly lower for plants, which directly compete with energy plants in terms of land use. Substitution aspects (in terms of consumption) have contributed to the situation, however, that in some regions prices of even those plants which do not compete for land (e.g. rice) have increased considerably in recent years. Also meat prices and prices of dairy products have been impacted by the development of biofuel production growth as a result of the increase in the prices of fodder. It needs to be remembered, however, that the production of some biofuels brings about residues which may be used for feedstuff purposes (protein feed).

The impact of agricultural prices' growth on food prices depends on the level of socio-economic development of a given country or region and resultant differences in the level of processing of agricultural raw materials used for food production. In developed countries, the share of agricultural raw material in retail prices is considerably lower than in developing countries. Therefore, price signals from commercial agricultural markets are transmitted to retail food markets in different ways. As a result, retail food prices in developing countries are characterised by higher sensitivity to the changes in the prices of agricultural raw materials.

12.6. Summary

Prices of agricultural raw materials and food products have remained quite high over recent years. They are also quite volatile. It translates directly into the possibilities to fulfil food needs of the population and is reflected in the level of food security. Dynamic growth of biofuel production resulting from the policies supporting the development of this kind of production contributed to the growth of agricultural raw materials' and food prices and to the increased volatility of these prices. This has also limited the food security, mainly in the poorest countries. Despite the fact that this policy is to some extent beneficial for farmers, mainly in developed countries, where their incomes have grown, the net balance of costs and benefits in this regard is not so obvious. Uncertainty and price risks on agricultural markets increased, and food consumers not only in less affluent countries may experience the negative impact of the increase and volatility of agricultural raw materials' prices on their income. Therefore, the rigorous EU policy concerning minimum share of biocomponents in fuels

should be made more flexible. It should also be borne in mind, that the energy potential of biomass use is very limited. Some analyses indicate that use of the whole biomass produced by agriculture in the world would satisfy only 10% of global energy needs.

Biofuel policies were designed and implemented at the conditions of incomplete knowledge and high uncertainty of the results thereof. They have proven short-sighted, especially in relation to their adverse side effects which were not sufficiently taken into account. Increase in the level of global agricultural prices and their volatility, together with the consequences for global food security seems to be the most underestimated of those effects. In developed countries, increase in the production of biofuels resulting in the increase of agricultural and food prices contributed to a certain improvement of agricultural producers' incomes, while remaining relatively less burdensome for consumers. In less developed and developing countries, the results are rather the opposite. Most agricultural holdings, especially those which produce mainly for their own needs, cannot make use of the new market opportunities, while many new consumers fall into poverty. This leads to the deterioration of the global food security.

Assumptions which have been underlying biofuel policies, in particular some of their instruments require revision if the aspect of food security should be deemed as important. Further promotion of those policies may bring about more damage than benefits for the overall well-being of producers and consumers. Among other things, compliance with the EU Directive no 2009/28/EU may lead to the situation, where the EU – including Poland – will start to experience the adverse impact of the higher price volatility, and the threat for the global food security becomes even greater. In order to avoid the adverse effects of biofuel policies, it is necessary to adopt more flexible approach to mandatory blending levels, or even eliminate them in the future. Tax reductions and subsidies should also be eliminated, as biofuel production should eventually compete for the necessary resources, especially land, as being economically viable activity.

References

1. Abbott P.C., Hurt C., Tyner W.E., (2011), What's driving food prices in 2011? Oak Brook, IL, Farm Foundation.
2. Banse M., van Meijl H. & Woltjer G., (2008), The impact of first and second generation biofuels on global agricultural production, trade and

land use. 11th Annual GTAP Conference, Helsinki, Finland, Agricultural Economics Research Institute (LEI).
3. Charles Ch., (2012), Should We be Concerned about Competition between Food and Fuel? Analysis of biofuel consumption mandates in the European Union and the United States. Policy Brief April 2012, GSI-iisd.
4. FAO et al., (2011), Price volatility in food and agricultural markets: Policy responses. FAO, IFAD, IMF,OECD, UNCTAD, WFP, the World Bank, the WTO, IFPRI and the UN HLTF (2011). http://www.unctad.org/en/docs/ 2011_G20_FoodPriceVolatility_en.pdf.
5. Figiel S., Hamulczuk M., (2013), Zmienność cen i ryzyko cenowe na rynkach rolno-żywnościowych a przyszły kształt Wspólnej Polityki Rolnej [in:] Kowalski A., Wigier M., Dudek M., Propozycje rozwiązań WPR 2013+a konkurencyjność gospodarki żywnościowej i obszarów wiejskich, Report no 61, Multi-Annual Programme, IAFE-NRI, Warzawa, pp. 55-68.
6. Floriańczyk Z., Buks J., Kunikowski G., (2012), Z badań nad rolnictwem społecznie zrównoważonym. Produktywność rolnictwa z perspektywy produkcji żywności i surowców dla energii odnawialnej, Report no 5, Multi-Annual Programme, IAFE-NRI, Warszawa.
7. Hamulczuk M., Klimkowski C., (2012), Response of the Polish wheat prices to the World's crude oil prices, Acta Oeconomica et Informatica, Vol. 15, No 2, pp. 50-56.
8. Mitchell D., (2008) A note on rising food prices. Policy Research Working Paper 4682. Washington, DC: World Bank, Development Prospects Group.
9. Msangi S., Tokgoz S., Zhang W., (2012), Biofuels, Agriculture and Food Security: Key Connections & Challenges. (Environment & Production Technology Division, IFPRI) + Others.
10. OFID, (2009) Biofuels and food security. Implications of an accelerated biofuels production. Summary of the OFID study prepared by IIASA, IASA.
11. Prakash A., (2011) Safeguarding food security in volatile global markets. Organizacja Narodów Zjednoczonych ds. Wyżywienia i Rolnic-twa, Rzym, pp. 3-23.
12. Roache S. K., (2010), What Explains the Rise in Food Price Volatility, IMF, WP/10/129.
13. Rosiak E., Łopaciuk W., Krzemiński M., (2011), Produkcja biopaliw i jej wpływ na światowy rynek zbóż oraz roślin oleistych i tłuszczów roślinnych. Report no 29, Multi-Annual Programme, IAFE-NRI, Warsaw.

14. Saghaian S.H., (2010) The Impact of the Oil Sector on Commodity Prices: Correlation or Causation? Journal of Agricultural and Applied Economics. Vol. 42, No 3, pp. 477-485.
15. Serra T., Zilberman D., (2011), Price volatility in ethanol markets. European Review of Agricultural Economics, Vol. 38(2), pp. 259-280.
16. Spiess W.E.L., (2013), Does Biofuel Production Threaten Food Security. IUFoST Food Security Task Force, http://worldfoodscience.com/content/does-biofuel-production-threaten-food-security.
17. Troester B., (2012), The determinants of the recent food price surges – A basic supply and demand model. Berlin Working Papers on Money, Finance, Trade and Development, Working Paper No 06/2012.
18. Tyner W.E., Taheripour F., Hurt Ch., 2012: Potential Impacts of a Partial Waiver of the Ethanol Blending Rules. Oak Brook, IL: Farm Foundation.
19. UNCTAD, (2008), Addressing the Global Food Crisis: Key Trade, investment and commodity policies in ensuring sustainable food security and alleviating poverty. United Nations, New York and Geneva.

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13. Innovation opportunities in Hungarian agriculture and rural development

13.1. Introduction

Innovation is a strategic field in the economic development of Hungary. In rural development the establishment of an innovation – and knowledge-based, competitive and successful rural economy is crucial. In order to improve the living conditions in rural areas, both exploitation of agricultural potentials and diversification of rural activities are needed. The innovation measures of the next rural development programme (2014-2020) are of the utmost importance for developing Hungarian rural areas and making them more viable. The paper is aimed at identifying and analysing the innovation opportunities and potentials in Hungarian agriculture and rural development.

The establishment of the innovation system requires the coordinated and harmonised operation of the business based, technology oriented agricultural innovation model and the multifunctional rural development model built upon bottom-up initiatives and local partnerships. The foundations of a complex innovation system are provided by a transfer of knowledge that meets the needs of the innovation chain actors and the creation of an innovation strategy that has wide social acceptance, manages risks deriving from the introduction of novelties and considers the creation of social benefits [World Bank 2006].

13.2. Role of innovation

Theoretically, innovation is an important factor of economic development, and in some cases even of economic survival [Jarjabka and Lórándt 2010]. Acquiring new knowledge and competences is crucial in the success of individuals, enterprises, regions and countries, since knowledge may become obsolete very quickly. Besides technological development, innovation can be characterised by well organised, risk reducing systems and networks. Beyond the direct economic benefits of innovation, long term effects resulting in societal change and transformation are especially important. Owing to the strong competition and the low willingness to cooperate, innovation systems in Hungarian agriculture are undeveloped, little priority is attached to the research and training needs of farmers [Fieldsend and Székely 2013].

International experience shows that the demonstration of good innovation practices constitutes one of the main tools of raising awareness and enhancing dissemination [World Bank 2012]. Inclusivity might be intensified by increasing the number of participants in the innovation chain, new groups of society might be involved in developments, and unused capacities might be identified. International organisations that are well known in shaping innovation policy also focus their interest on introducing and evaluating applicable solutions which can be recommended as good innovation practice for the rural population. These organisations see significant potential in linking research and practical application, enhancing innovation capacity and cooperation, applying communication systems that provide better information flow and creating an innovation-friendly regulatory environment.

The EU fulfils a catalysing role in the innovation processes. It has a multilevel intervention system ranging from strategy formulation, supporting innovation investment and operating community level initiatives to acknowledging projects with outstanding innovation performance [European Commission 2010]. EU agriculture and rural development policy stimulating innovation also requires the expansion of innovation capacities, such as the modernisation of the Agricultural Knowledge and Information System (AKIS) originally developed to improve the acquisition of information by farmers. Greater inclusion of farmers (by meeting their practical needs) and improved processes of innovation and dissemination activities of AKIS are necessary [ENRD 2013]. Strengthening of the horizontal links between agricultural and rural innovation will be supported by the establishment of the European Innovation Partnership.

13.3. Situation in Hungarian agriculture

The overall innovation performance of Hungary is modest [Polereczki 2012]. While the proportion of corporate innovation expenditure (apart from R&D) decreased significantly (by 14 per cent), there were dynamic increases both in the sales of new products and services (6.8 per cent) and in the number of community trade marks (12.2 per cent). Besides its fragmentation, innovation institutions in Hungary can be characterised by a dominance of the public sector. At the national level innovation processes are coordinated by the ministries and their background institutions. At the regional level regional innovation agencies financed partly by the government and partly by their own business services play the coordinating role. Agricultural innovation is coordinated by the Ministry of Rural Development. The institutional background of R&D consists

of government sponsored and commercial research institutions and university and college research centres. Regarding further participants of the innovation chain, the AKIS system, including training institutions, the network of village agronomists, the agricultural advisory network, and the Farm Information Service, undertakes knowledge transfer and implements R&D results.

In spite of the organised institutional system Hungary significantly lags behind the EU in R&D, in entrepreneurial innovation and application, in the innovation performance of firms, and in relationship building between the innovation actors. While in the EU-27 R&D expenditure accounts for 1.9 per cent of the GDP, in Hungary this proportion is 1.2 per cent (although increasing), and nearly half of it is concentrated in the Central Hungary (NUTS2) Region. In terms of innovation the only relative advantage is the quality of human resource available while theory-oriented research, occasional cooperation among the participants of the innovation chain, the lack of relationships between the enterprises and an unstable financial background are among the weaknesses.

Besides innovative projects that boost the competitiveness and value added of farms and food processing enterprises, the utilisation of renewable resources and ICT development create development innovation opportunities in agricultural production. In rural development the partnerships aiming at innovation dissemination play a key role. As with the EU, to return to economic growth Hungary requires a consistently implemented innovation policy. While the activities of agro-input producer, distributor and integrator companies remain dominant concerning the most important innovation related investments, in Hungarian agriculture and rural development there is a significant innovation development potential in R&D, corporate innovation, education and training as well as in cooperation.

13.4. Performance of young farmers

OECD study [2013] states that innovation activity enhances the performance of agriculture could be improved with younger and educated farmers entering the sector, development of the education and training system, and the allocation of support for investment with preference to innovation and good practice dissemination. In addition to increasing the productivity of the advanced farmers the least profitable farms need to close up. Younger and educated farmers are more innovative, their economic performance is higher, and their resource utilization is more efficient. The economies of scale also apply, which could be associated to better management skills. The share of

young and educated farmers in Hungary is low, 3.3%. Their potential for innovation is proven by their higher performance. On average farm leaders under 40 years with higher education use a quarter more cultivated land, keep 20% more animals, and produce nearly 50 percent more gross value added with 40% more labour input, as farmers older then 40 years without higher education in agriculture (Table 1). The benefits are higher at the larger corporate farms.

Table 1. Main characteristics of farms by age and education of farm leader

Farms	Economic Size group	Average							
		Land (UAA)		Livestock		Labour		GWA/AWU	
	SO*	hectare		LU		AWU		(thousand HUF)	
		YE**	O***	YE	O	YE	O	YE	O
Private farms	2-5	3.9	10.9	0.1	2.5	0.7	0.6	6133	3741
	5-8	4.0	17.9	3.3	4.3	1.1	0.7	1529	3709
	8<	65.4	51.4	8.0	12.1	2.1	1.5	9429	6912
	Total	18.0	25.5	2.2	6.0	1.1	0.9	7125	5367
Economic organization	<8	-	16.1	-	9.5	-	0.8	-	4394
	8<	341.0	141.1	115.7	34.7	8.2	4.5	10511	7085
	Total	341.0	111.9	115.7	28.8	8.2	3.7	10511	6942
Total farms		34,8	27.9	8.1	6.6	1.4	1.0	8135	5521

*Standard Output category (1 STE: under 2000 EUR, 2 STE: 2000-4000 EUR, etc); **Young and educated farm leaders; ***Other farm leaders.
Source: [FADN 2011].

13.5. Interviews with the actors of the innovation chain

In Hungary the market based innovation system in agriculture and rural development is not operating. The innovation chain is narrow and underdeveloped, and the benefits of innovation are not recognised by the farmers themselves. To determine the potential development tools for innovation in agriculture and rural development, innovation chain actors (15 pieces) were interviewed [Biro et al. 2013]. Summarizing the expert interviews, it can be stated that for successful adaptation to the changing economic conditions the stimulation of public R&D activity considered the first step. Organizations taking part in knowledge transfer of innovations is not properly managing their activity, the majority of farmers are often not aware even of their existence.

In the R&D funding a distinction should be made between scientific breakthroughs and on the minor adaptive innovations. Private investors, banks only invest in matured innovations with prominent growth perspectives, avoiding the high-risk based experimental type research activities. In the agricultural sector virtually no exploration of ideas, innovation management brokers exists, business risks of innovations at an early development stage not managed by seed capital funds or business angels. EU funds although have

created opportunities for improvement, but the projects are still insufficient and poorly structured. The competitive advantage encourages innovations. Key actors in the agricultural innovation are the businesses, which is predominantly based on new product or technology. Strong relationships exist in terms of innovation and the provision of concentrated sales of products. Agricultural businesses connections with international trade have preference to apply high--level technologies.

More effective dissemination of innovation is also needed since in spite of the favourable performance of agriculture, its productivity is only half of the average of the "old" Member States. In Hungary agriculture has a 1% share in R&D expenditure and its innovation performance is low. Knowledge transfer institutions without local links play a minor role in innovation knowledge transfer. Within the agricultural sector agro-input producers and distributors with foreign parent companies and which market their own products benefit almost exclusively from innovation dissemination.

13.6. Conclusions

In agriculture and rural development enhancing R&D provides a basis for a successful adjustment to the rapidly changing economic conditions. Increasing the performance of innovators may stimulate growth even under more difficult economic circumstances. Strengthening the innovation approach and knowledge in education and training will bear its fruit since entrepreneurship and job creation are interdependent with knowledge and innovation and they stimulate each other. Extending knowledge transfer by developing the dissemination process can further increase innovation.

Regarding the enhancement of innovation in agriculture and rural development the government has a primary role to intervene in those strategic and public areas where innovation does not proceed by itself at a satisfactory rate. R&D institutions should be encouraged to narrow the gap between science and practice, by the practical application of their research results. They should build a relationship and establish mutual trust with the farmers. In order to provide results that demonstrate the economic, environmental and social benefits of the practical application of innovation, research should be conducted within research networks. Innovation should be emphasised in education, training and extension. In order to create professionals open to innovation it is necessary to have up-to-date curricula, teachers with links to Hungarian and international research institutes and enterprises, technologically well-equipped training sites as well as demonstrations by professional experts. Synthesis and nurturing of

good practices together with rural development partnerships contribute to the promotion of innovation. Innovators can also benefit since their methods and technologies can spread in an unprecedented scale.

Agricultural knowledge transfer can be stimulated through the AKIS and through producer co-operations by disseminating the novelties among the members. The innovative activities of industrial clusters cover the process from sharing information to generating a joint new innovation. Besides good governance, innovation capacity of agricultural and rural areas can be increased by accession to social networks; in this way innovation can become part of society's culture.

References

1. Biró Sz., (ed), (2013), Innováció az agrár és vidékfejlesztésben, AKI, Budapest, (manuscript).
2. ENRD, (2013), Focus Group on Knowledge Transfer and Innovation. Phase 1 Report, Coordination Committee Draft for comments.
3. European Commission, (2010), Europe 2020 – A strategy for smart, sustainable and inclusive growth. Communication from the Commission, COM(2010) 2020 final.
4. Fieldsend A.F., Székely E., (2013), An assessment of the Agricultural Knowledge and Innovation System in Hungary, Rural Areas and Development Series 10, Knowledge as a factor of rural areas development, in press.
5. Jarjabka A., Lóránd B., (2010), Az innováció alapjai és megjelenési területei, Jegyzet, Pécs.
6. OECD, (2013), Cross country analysis of farm performance. Working Party on Agricultural Policies and Markets. OECD Conference Centre, Paris, France, 19-21 March 2013 (manuscript).
7. Polereczki Zs., (2012), A piacorientáció és az innováció kapcsolata a magyar élelmiszeripari KKV-k esetében. Előadás. Agrár-élelmiszeripari innováció és hálózatos együttműködések Pécs, Kaposvári Egyetem GTK, Marketing és Kereskedelem Tanszék.
8. World Bank, (2006), Enhancing Agricultural Innovation: How to Go Beyond the Strengthening of Research Systems, Washington, DC, The World Bank. http://siteresources.worldbank.org.
9. World Bank, (2012), Agricultural Innovation Systems. An investment Sourcebook, Washington DC, http://siteresources.worldbank.org.

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14. Analysis of the actual indicators of competitiveness in the Serbian agricultural sector[18]

The majority of emerging market and developing economies consider the agricultural sector as a strategic branch of national economy, which employs a high percentage of active labour force and contributes considerably to the GDP of a country. However, the development of agrarian sector in these countries relies mostly on the exploitation of highly valuable and available natural resources, as well as on the exploitation of cheap labour force, the import of technology and inputs for production from the developed countries, the export of primary agricultural products or low-processed products. Global competitiveness in agriculture is based on factor advantages and implies competitions based on low costs (labour force, soil) and cheap agricultural and food products.

Indicators of competitiveness of Serbian agrarian sector are analyzed in the work and they are compared to the same ones in the selected developed countries, as well as to the ones in the chosen less developed countries. Also, in their work, the authors point out the need to change the current pattern of competiveness of Serbian agricultural sectors in the direction of making new basis of competition, which are based on high role of knowledge, innovations, developed institutions, scientific-technological infrastructure, developed clusters and stimulating business environment for the working of agricultural companies, entrepreneurs and family households in general.

14.1. Introduction

The Republic of Serbia has extremely favourable factor resources for the development of agricultural production and food industry. However, the results achieved in the agricultural and food sector (the scope of production, the value of export, the quality of products, the continuity of market supply) are by far more lower than the real possibilities, and this sector shows extremely low

[18]This paper work is part of the project No. III 46006 "Sustainable agriculture and rural development in function of achievement strategic goals of the Republic of Serbia in Danube region", financing by the Ministry of education, science and technological development of the Republic of Serbia in period 2011-2014.

competitiveness on the global market (considered through the indicators such as: value of export per hectare of agricultural land, structure of export and so on). The lack of competitiveness in the agricultural and food sector reflects in a negative way on the total economy and regional development of a country.

The development of agrarian sector of the Republic of Serbia must rely on the well-formulated and successfully-implemented agrarian policy, which aim is to create favourable business environment for the working of agrarian subjects and investments, as well as to harmonise regulations and standards in the agricultural sector, with the demand prescribed by the EU. Also, in the next period, harmonisation of the measures of agrarian policy with the ones prescribed by the EU will be necessary, guided mostly by the principles pointed out in the CAP of EU.

14.2. Place of agricultural production in the Serbian economy

Agricultural production is an important economic factor of the Serbian economy, primarily because of its participation in: (1) Gross Domestic Product/GDP; (2) Employment; and (3) Current account deficit.

The participation of the agriculture in GDP (see Table 1). According to the data of the Statistical Office of the Republic of Serbia, the participation of agriculture, forestry and fishing of the Republic of Serbia in gross domestic product (at constant prices) in the year 2011 (preliminary data) amounts to 8.4%, and together with the production of food, drinks and tobacco, agricultural and food sector makes 12.8% of GDP of the Republic of Serbia. According to the data of The World Bank, in 2011 agriculture participates with 9% in the creation of the GDP of Serbia (Table 1). Compared to the more developed countries, the Republic of Serbia has considerably higher participation of agriculture in the creation of GDP, and, again, compared to the selected emerging market and developing economies, only Armenia, Albania, Belarus, Ukraine and Georgia have less favourable agricultural structure than Serbia (Table 1).

It is important to point out that the agricultural structure of rural areas of Serbia is highly dependent of primary sector (agriculture, mining, energetic). According to the data of the "National rural development programme of the Republic of Serbia", from 2011 to 2013 the participation of agricultural sector, hunting, forestry and water management in the gross national product of rural areas (data for the year 2004) amounts to 30%. This is the only available data, due to the fact that the Statistical Office of the Republic of Serbia does not provide data of the economic structure of rural areas.

Table 1. Share of agriculture in GDP and employment in selected countries in 2011

Countries	Agriculture, value added, % of GDP*	Employment in agriculture, % of total employment**
Advanced economies***		
Austria	1.5	5.3
Belgium	0.7	1.3
Czech Republic	2.3	3.0
Denmark	1.2	2.4
France	1.8	2.9
Germany	0.9	1.6
Italy	1.9	3.7
Netherlands	2.0	2.5
Norway	1.6	2.5
Portugal	2.4	10.9
Slovak Republic	3.9	3.2
Slovenia	2.5	8.8
Spain	2.7	4.2
Sweden	1.8	2.1
United Kingdom	0.7	1.2
Emerging market and developing economies (Central and Eastern Europe)***		
Albania	18.6	44.1
Bosnia and Herzegovina	8.7	19.6
Bulgaria	5.6	6.8
Croatia	5.1	15.4
Hungary	3.5	4.8
Poland	3.5	12.8
Romania	7.4	30.1
Serbia	9.0	21.9
Emerging market and developing economies (Commonwealth of Independent States)***		
Armenia	20.7	44.2
Azerbaijan	5.8	37.9
Belarus	9.9	-
Georgia	9.3	53.4
Russian Federation	4.3	9.7
Ukraine	9.6	15.8

*Agriculture includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. For advanced economies, Poland and Hungary data refer on 2010, and for France data is for 2009.

**Data for employment: Albania and Russia (2009), Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Sweden, Norway, Bulgaria (2010), Armenia and Ukraine (2008), Georgia (2007).

***Categories of countries according to IMF, World Economic Outlook Database.

Source: [The World Bank].

Employment in the agricultural sector (is shown in Table 1). The Serbian sector of agriculture, forestry and fishing is characterized by high employment, especially compared to the developed countries of the EU. According to the data of the Labour force survey of the Statistical Office of the Republic of Serbia 2012, in the structure of employees of the Republic of Serbia older than 15 years, 18.3% of people work in the sector of Agriculture, forestry and fishing, and 37.5% work in this sector in rural areas. According to the same source, informal employment in the sector of agriculture, forestry and fishing in the rural areas of the Republic of Serbia amounts to 62.1%. According to the World Bank data, 21.9% of employees work in agricultural sector (Table 1), which is considerably higher comparing to the selected advanced countries. Compared to the emerging market and developing economies, higher employment in agricultural sector has following countries: Albania, Romania, Armenia, Azerbaijan and Georgia.

Participation of agriculture in the current account balance of payments of Serbia. Analyzing the past years, agricultural and food sector of the Republic of Serbia is the only sector in the national economy with the surplus in foreign trade. In the economy in which the deficit in the foreign trade for the past three years (2010-2012) goes from 6.9 to 8.1 billion USD, it is only the agricultural and food sector which makes surplus which amounts to 1.2 billion USD in the analyzed period of three years (see Table 2).

Table 2. The balance of foreign trade Republic Serbia: total trade of goods and food (in mil. USD)

Specification	2010	2011	2012
Total exchange of goods	-6,939.9	-8,082.4	-7,659.7
Food and live animals	994.0	1,036.4	1,032.0
Beverages and tobacco	115.3	76.0	94.9
Hides and skins, raw	12.5	13.6	3.4
Oil seeds and oleaginous fruits	-9.7	20.7	-18.4
Raw animal and vegetable matter, nn	-12.8	-10.6	-12.4
Animal and vegetable oils, fats and waxes	105.3	155.9	147.1
Total trade of food	1,217.4	1,292.0	1,246.6

Source: The corresponding statement of the Statistical Office of Serbia.

At the same time, Serbia has extremely favorable factor conditions for the development of diverse and intensive agricultural production and promotion concept of multifunctional agriculture and integral rural development. Basic

factor conditions which are at the disposal of the sector of primary agricultural production of Serbia are the following:

- Geographically, Serbia is located on the most favorable area of the north latitude and has highly favorable climate.
- Agricultural land represents the most important condition for the development of agriculture. According to the statistical data for the year 2011, the used agricultural land makes approximately 5 million hectares, within which 65% make arable lands and gardens. Serbia has at its disposal 0.7 hectares of agricultural land per capita, which is higher comparing to the almost all EU countries, except Ireland and Lithuania.
- Water resources are highly favourable, and mineral and thermo mineral waters represent also a considerable fortune.
- A great number of scientific institutes, schools and faculties in the agricultural field and reputable scientists in this area.
- Tradition of agricultural production.
- Wealth in the diversity of rural areas.
- Numerous national parks and natural reserves, preserved rural ambient areas, preserved environment etc.

14.3. Competitiveness indicators of the Serbian agricultural sector: reasons and consequences for non-competitiveness on the international market

In spite of all preconditions for successful development of agriculture, competitiveness of agricultural and food sector of the Republic of Serbia in the domestic and international market is extremely low and is based on the exploitation of natural resources and non-specialized, uneducated and cheap labour force. According to the opinion of the European Economic and Social Committee about rural development and employment in the countries of the western Balkans [Brussels 2011], only competitive advantages of rural areas and agricultural and food sector in the Republic of Serbia and the countries of the west Balkans are: (1) low labour force costs, (2) low land price, (3) natural resources of high quality.

The following indicators, which shall be dealt with in the next part of the paper, point to the lack of competitiveness in the agricultural and food sector of the Republic of Serbia:

1. Rural poverty/low standard of living of rural population;
2. Low agricultural productivity;
3. Low cattle breeding participation in the value of total agricultural production;
4. Low value of agricultural products export by the hectare of arable land.

Table 3. Gross domestic product (PPP) per capita 2011
(current international dollar)

Countries	GDP per capita
Advanced economies	
Austria	41,556
Belgium	37,611
Czech Republic	27,111
Denmark	37,340
France	35,089
Germany	38,077
Italy	30,422
Netherlands	41,976
Norway	53,157
Portugal	23,657
Slovak Republic	23,365
Slovenia	28,435
Spain	30,477
Sweden	40,228
United Kingdom	36,525
Emerging market and developing economies (Central and eastern Europe)	
Albania	7,848
Bosnia and Herzegovina	8,115
Bulgaria	13,812
Croatia	17,849
Hungary	19,570
Poland	20,013
Romania	12,520
Serbia	10,405
Emerging market and developing economies (Commonwealth of Independent States)	
Armenia	5,405
Azerbaijan	10,213
Belarus	15,056
Georgia	5,502
Russian Federation	16,768
Ukraine	7,210

Source: [IMF 2013].

1. Rural poverty and low living standard of rural population. GDP per capita in Serbia, according to the IMF data for the year 2011 is 10.405 dollars and it is several times lower comparing to the selected advanced economies. Compared to the selected countries of CEE, lower GDP per capita has only Bosnia and Herzegovina and Albania, and compared to the selected countries of Commonwealth of Independent States, lower GDP per capita has Armenia, Georgia, Ukraine and Azerbaijan (is shown in Table 3).

Table 4. Productivity in agriculture and participation livestock breeding in the value of total agricultural production in 2011.

Countries	Agriculture value added per worker, constant 2000 US$*	The share of livestock in the value of total agricultural production in%**
Advanced economies***		
Austria	25,771	58.4
Belgium	-	55.8
Czech Republic	6,423	53.4
Denmark	53,407	71.8
France	57,973	44.9
Germany	32,866	62.6
Italy	31,254	35.2
Netherlands	47,805	66.6
Norway	46,480	76.5
Portugal	7,019	43.9
Slovak Republic	9,924	45.2
Slovenia	76,633	62.2
Spain	22,035	35.6
Sweden	51,585	67.4
United Kingdom	-	59.8
Emerging market and developing economies (Central and eastern Europe)***		
Albania	2,044	51.7
Bosnia and Herzegovina	15,028	38.1
Bulgaria	9,132	36.2
Croatia	15,315	37.5
Hungary	8,522	43.1
Poland	2,994	57.2
Romania	5,785	33.9
Serbia	2,057	34.2
Emerging market and developing economies (Commonwealth of Independent States)***		
Armenia	4,723	41.5
Azerbaijan	1,241	42.7
Belarus	5,700	49.8
Georgia	1,888	45.4
Russian Federation	2,765	50.0
Ukraine	2,500	31.4

*Value added in agriculture measures the output of the agricultural sector (ISIC divisions 1-5) less the value of intermediate inputs. Agriculture comprises value added from forestry, hunting, and fishing as well as cultivation of crops and livestock production. For France and Serbia data refer on 2009.

**Gross Production Value, constant 2004-2006 million US$ (USD).

***Categories of countries according to IMF, World Economic Outlook Database.

Source: [The World Bank, FAO statistics].

It is important here to take into consideration that the GDP per capita in the rural areas of Serbia is considerably lower. According to the data of the National Programme for Rural Development of the Republic of Serbia 2011--2013, in the rural areas of Serbia, where the participation of agriculture in the creation of GDP dominates, achieved GDP per capita (2004) is lower for one quarter than the national average of the Republic. The survey of the standard of living in Serbia 2002-2007 and the research of the group of authors [Cvejic, Babovic, Petrovic, Bogdanov, Vukovic 2010] also point to the low standard of living of rural population. These studies show that the agricultural employees make almost one half (precisely 47%) of employees below the line of poverty and that the differences in the standard of living of rural population are determined by the possibility of employment outside of the agricultural holdings.

2. Low productivity in agriculture (see Table 4). Extensive agricultural production which is highly dependent upon climate conditions is still present in the Republic of Serbia. According to the data about productivity for the selected countries, which are presented by the indicators "Agriculture value added per worker" (this indicator is a measure of agricultural productivity), it is clear that the agricultural productivity in Serbia is considerably lower compared to the selected advanced economies (Table 4). Compared to the selected developing economies, lower productivity from the productivity of the Republic of Serbia has only Albania, Azerbaijan and Georgia.

3. The participation of cattle breeding in the total value of agricultural production in Serbia is 34.2% for 2011 (data from FAO) and this is considerably lower compared to the selected advanced economies (see Table 4). Compared to the selected emerging market and developing economies, lower participation of cattle breeding in the value of total agricultural production have only Romania and Ukraine. Cattle breeding production of Serbia is characterized by numerous organizational-market problems and production drop [Arsic, Kljajic, Vukovic 2012], as well as the lack of efficient market links on the direction from the primary agricultural producers, buyers, exporters and meat processors [Parausic, Cvijanovic, Hamovic 2010].

4. Exports of agricultural products per agricultural area (see Table 5). Beside small internal support to agriculture and high extensiveness of agricultural production, Serbia gives market surpluses of many agricultural products, which can be redirected to export. However, according to the FAO data, the export of agricultural and food products per ha of agricultural area in the Republic of Serbia is 443.7 dollars in 2010 and it's several times lower comparing to the selected advanced economies. The results of Serbian export in

the agricultural sector are considerably lower regarding to factor conditions (land, labour force) and scientific potential.

Table 5. The value of exports of agricultural products per hectare of agricultural area in 2010

Countries	The value of exports of agricultural products* per ha of agricultural area, 2010.
Advanced economies**	
Austria	3,500.9
Belgium	27,021.8
Czech Republic	1,282.4
Denmark	6,437.2
France	2,115.8
Germany	3,994.3
Italy	2,515.0
Netherlands	40,517.7
Norway	732.7
Portugal	1,308.6
Slovak Republic	1,483.0
Slovenia	3,523.2
Spain	1,277.6
Sweden	1,598.4
United Kingdom	1,410.0
Emerging market and developing economies (Central and eastern Europe)**	
Albania	50.7
Bosnia and Herzegovina	184.8
Bulgaria	696.6
Croatia	928.0
Hungary	1,377.3
Poland	1,119.9
Romania	286.5
Serbia	443.7
Emerging market and developing economies (Commonwealth of Independent States)**	
Armenia	86.0
Azerbaijan	126.3
Belarus	353.4
Georgia	123.2
Russian Federation	27.3
Ukraine	181.5

*Agricult. Products, Total +.

**Categories of countries according to IMF, World Economic Outlook Database.

Source: [FAO statistics].

These exports results are consequences of:

- Unfavourable export structure (dominated by the export of raw materials, among which frozen fruit, corn) and low unit value of exports;
- Inability to achieve price competitiveness on the foreign markets;
- Inability to provide sufficient quantity of goods for export and necessary standards of quality (still, relatively small number of manufacturers has implemented and certified system of security and food quality);
- Inability to meet demands from the foreign buyers from the aspects of providing continuity of supplies, uniformed quality of the products, satisfactory package etc.

The basis for competition of the Republic of Serbia on the international food market is mostly conditioned by the price of the products. There are no additional values in the production processes, manufacturing, logistics, marketing due to the bigger roles of knowledge, innovations, new technologies etc. At the same time, there is a small number of products in the exchange of which surplus is made. These are, mostly, cereals (especially corn), berries (dominated by frozen raspberries and cherries), refined sugar and drinks.

The reasons for the low competitiveness of Serbian agricultural and food sector are numerous, and we will mention only some of them:

- Insufficient resources in the agrarian budget of Serbia and inability to withdraw them from the EU pre-accession funds for rural development (IPARD instrument). Besides, agrarian policy (internal agricultural support) is highly unstable both by its volume and the way of its distribution;
- Small sizes and fragmentation of properties as well as disunity of farmers;
- Low marketability and specialization in agricultural households due to the discouraging and/or oscillatory purchase prices and high market risks;
- Vertical market links, based on proprietary connections or on long-term contracts among suppliers of input, primary manufacturers, buyers/processors and merchants are interrupted through the transitional process (the process of privatization of enterprises). A considerable part of food industry has been privatized since the beginning of transition and has been separated, both by organization and ownership, from being a part of agrokombinats;
- Undeveloped competition on the food markets and agricultural inputs (presence of market structure of oligopsony in the purchase of some primary products, as well as in retail of agricultural food products) and disrupted/disloyal competition (the presence of “grey economy”, which

leads to legal insecurity of agricultural manufacturers, to the oscillation of demands and supply);

- Small knowledge and skills of agricultural producers for the use of innovations in agricultural production and low degree of entrepreneurship;
- Insufficiently effective agricultural advisory services and small possibilities for transfer knowledge, innovations and science to the agricultural producers;
- Undeveloped public institutions (legislative and judicial branches) which are supposed to cherish contract compliance, protection of property rights and the implementation of the adopted laws in the sector of agriculture, trade, food control and its safety, the protection of competition etc.;
- Undeveloped financial markets for the investments in agriculture;
- Undeveloped physical infrastructure (especially roads, cargo airlines, railways) and logistics (the system of storage, distribution and transport);
- Undeveloped administrative infrastructure (too complicated and expensive procedure of issuance of permits for construction of new facilities, for the legalization of new objects, then high costs of local fees and reimbursements, especially in the field of ecology, etc.);
- The lack of competitiveness in the agricultural and food sector has a wide range of negative implications on the economic and regional development of the Republic of Serbia:
- Stagnation or drop in the agricultural production.
- Migrations and further endangerment of demographic structure of rural areas (migrations of the young people towards bigger urban centers are particularly noticeable).
- Small domestic consumption of agricultural products and low value of exports of agricultural products due to the high retail prices or insufficient domestic offers.
- Reduced possibilities for modernization, innovations and investment into the agricultural production.

14.4. Development paths of competitiveness of Serbian agricultural sector

The competitiveness of the agricultural and food sector of the Republic of Serbia in the following period must be regarded through the context of tariff liberalization with the EU (Interim Agreement on trade and trade-related matters between European Union and Serbia), with the neighboring countries (CEFTS agreement) and other countries (concluded a bilateral free trade agreement with The Russian Federation, Belarus, Turkey).

Having in mind that the process of liberalization of the food market in Serbia does not follow the growth of budget support and the withdrawal of funds from the pre-accession EU funds for the rural development (IPARD), as well as that the international agricultural competition is extremely strong, and that the domestic productivity is extremely low, the state, as well as the farmers/businessmen, have to start, as soon as possible, intensive common work on the building of competitiveness: on the domestic (facing the imported goods) as well as on the foreign markets.

What should be done in the future to improve the competitiveness of the agricultural and food sector? The best way to build the competitiveness of domestic producers and processors of agricultural products is to strengthen their productivity, through the intensive policy of the competitiveness on the domestic markets. This implies the following:

- Insurance of efficient work of The Commission for Protection of Competition of the Republic of Serbia;
- Providing the work of public warehouses for the agricultural products and introduction of warehouse receipts in the agricultural products trade;
- Founding the Agency for market intervention (reformation of the Directorate for Commodity Reserves upon the model of the Agency for intervention buying of EU), which would make interventions in case of error existence in the functioning of market, according to strict rules and in a transparent way.
- Building of the vertical market links based on the owners connections or on the long-term contracts among the input suppliers, primary producers and buyers, that is to say, processors;
- Strengthening of agricultural cooperatives (which are not in the "service" of the farmers and have no possibility to ensure efficient placement to the producers) and farmers' associations;
- Building of modern purchase and distribution centers, where from agricultural products of standardized and proven quality would be distributed on the domestic and foreign markets, are within the range of common work and initiative of state and private sector;
- Translation of grey economy into legal one.

Of course, for the development of agriculture and improvement of its competitiveness it is necessary to provide a favourable macro and micro economic environment for the working of agricultural companies, family agricultural households, agricultural cooperatives etc. Stimulating microeconomic environment implies, among other:

- Effective institutions of legislative and judicial branches (adoption and application of the laws in the field of agricultural production, trade, control and food safety, as well as the protection of competition);
- Predictable and stimulating agrarian policy, with evenly distributed funds in the agrarian budget;
- Tax policy adjusted to the working of the sector of small and medium enterprises and cooperatives in the agricultural sector;
- Favourable system of money lending into the agricultural production, which is adjusted to the specific agricultural production (the system of interest rates, adjusted to the period of repayment etc.);
- Developed information, scientific, administrative infrastructure;
- Developed physical infrastructure (built roads, especially in the hilly-mountainous areas) and logistics (improved system of storage, distribution and transport);
- Developed agricultural advisory service which is efficient in transferring knowledge and scientific findings to the agricultural producers.

14.5. Conclusions

Although the Republic of Serbia has very favourable factor conditions for the development of agriculture, it makes low competitiveness on the international market in the segment on agricultural and food production. The authors point out the need for changing the current patterns of competitiveness of Serbian agrarian sector in the direction of making new basis for competitiveness, which are based on high roles of knowledge, innovations, developed institutions, scientific-technological infrastructure, developed clusters and stimulating business environment for agricultural companies, entrepreneurs and family households.

The making of new basis of the sustainable competitiveness of agricultural and food sector of the Republic of Serbia must imply the adjustment (harmonization) of the agrarian policy of Serbia to the CAP of EU. The experiences of the new members of EU may serve to Serbia as possible alternative solutions in the forthcoming integration processes of agricultural sector and formation of agricultural policy.

However, the biggest problem stays in the sector of finances (lack of budget funds), as well as in the lack of funds from IPA, for making competitiveness and export-oriented agrarian sector and for adjustment Serbian agricultural policy to the CAP of EU.

References

1. Arsić S., Kljajić N., Vuković P., (2012), Cattle stock and the analysis of total meat production in the Republic of Serbia, Economics of Agriculture 1/2012.
2. Cvejić S., Babović M., Petrović M., Bogdanov N., Vuković O., (2010), Social Exclusion in Rural Areas in Serbia", UNDP.
3. FAO statistics, http://faostat.fao.org.
4. IMF, World Economic Outlook Database, April 2013, http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/index.aspx.
5. Parausić V., Cvijanović D., Hamović V., (2010),: Klasterski pristup unapređenju konkurentnosti stočarske proizvodnje u Republici Srbij", Zbornik Matice srpske za društvene nauke, broj 130.
6. http://www.maticasrpska.org.rs/casopisi/drustvene_nauke_130.pdf.
7. Mišljenje Evropskog ekonomskog i socijalnog komiteta o ruralnom razvoju i zapošljavanju u zemljama Zapadnog Balkana, (2011), Brisel, 21.09.2011, REX/322.
8. Rural Development National Program of the Republic of Serbia 2011-2013, (2011), Offical gazette, No. 15/2011.
9. Study about living standard measurement in the Republic of Serbia 2002--2007, (2008), Statistical Office of the Republic of Serbia, The World Bank, DFID (Department for International Development).
10. Statistical Yearbook of the Republic of Serbia 2012, (2013), Statistical Office of the Republic of Serbia.
11. The Labour Force Survey 2012, (2013), Bilten 564, Statistical Office of the Republic of Serbia.
12. The World Bank, http://data.worldbank.org.

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15. Alignment of agricultural and rural development policy in the Western Balkans with the European acquis: cases of Bosnia, Montenegro and Serbia

The Western Balkans' countries are engaged in the European integration process with the ultimate objective of joining the EU. Montenegro and Serbia are official candidates while Bosnia and Herzegovina (BiH) is a potential candidate country. The review paper aims at analysing the alignment of the legal and political framework in the field of agricultural and rural development (ARD) with the acquis communautaire in the Western Balkans with a particular focus on BiH, Montenegro and Serbia. The paper provides also an overview of ARD policies, laws, strategies and plans in the three Balkan countries. A special attention was paid to the Pre-accession Assistance Instrument for Rural Development (IPARD). Harmonization in ARD area is particularly demanding as it implies policy alignment with the acquis, the introduction and implementation of the instruments of the CAP (e.g. support programs, subsidies), and competent structures establishment or strengthening.

15.1. Introduction

The Western Balkan region is now in a phase of consolidation and overall economic growth. Overall economic development went hand-in-hand with rising agricultural productivity [Volk 2010]. Although at different stages of development, the countries of the Western Balkans face similar challenges in transforming and modernizing their agri-food sectors. Their rural sectors have lagged behind the rest of the economy in growth and poverty reduction, their agri-food sectors are undercapitalized and highly fragmented, and their agro-processing capacities limited. Added to this scenario are the challenges and opportunities of adopting the EU acquis relating to agriculture [Lampietti et al.

2009]. The factors hindering the development of agriculture are small-scale farms, a low share of market production, poorly-developed market structures, the lack of meeting food safety standards, and limited capacity for exports. The national policy responses to these challenges have been diverse and have not always followed a clear strategy [Volk 2010].

Bosnia and Herzegovina (BiH) consists of two governing entities, namely the Federation of Bosnia and Herzegovina (FBiH) and Republika Srpska (RS), and one self-governing administrative unit i.e. Brčko District (BD) under State sovereignty. Agriculture share in GDP was 8.1% in 2011 [EC 2012b]. According to the Labour Force Survey for 2012, the agricultural sector employs 167,000 persons i.e. 20.6% of the total labour force [ASBiH 2012]. Around 61% of the total population can be classified as rural. The agri-food processing industry is recovering following a decade of under-investment and its share in GDP is increasing [Kurbanova et al. 2011].

Agriculture plays an important socio-economic role in Montenegro [Bulatović 2009; Arcotrass et al. 2006]. Agriculture accounts for 5% of the country's exports [World Bank 2011]. Agriculture and agro-food industry share in Montenegrin gross domestic product (GDP) is about 20% [EC 2011a,b; World Bank 2011]. Agricultural employment stood at 8.3% in 2007 [EC 2011b]. Montenegro is a typical rural country. Less than 1% of the country area can be determined as urban according to OECD's rurality criteria. The share of population living in the countryside accounts for 38% of the total population [Arcotrass et al. 2006]. Agriculture is by far the largest activity of the rural population – more than 60,000 households get income partly or entirely from agriculture [Bulatović 2009; EC 2011a,b].

Agriculture still ranks among the most important sectors of Serbia's economy, with significant contributions to overall economic development and social stability [EC 2011c; Volk 2010; Bogdanov and Bozić, 2010]. Primary production from agriculture, hunting, forestry and fisheries accounted for over 10% of GDP in 2009 [EC 2011c]. The share of the food, beverage and tobacco industry in GDP is 5.5% on average [Bogdanov and Bozić 2010]. Agricultural exports contributed about 24% of total Serbian exports in 2009 [EC 2011c]. About 43% of the total population lives in rural areas [RDNS 2010]. Around a third of the active population depends at least partly on agriculture for their livelihood [EC 2011c]. In rural areas more than 45% of the active population is employed in agriculture, forestry, hunting and fishing [Stevanović et al. 2005].

Countries of the Western Balkans decided to strengthen the European integration process with the ultimate objective of joining the EU. The experiences of the integration processes in other countries show that agriculture

is one of the most demanding, and is certainly the sector with the most extensive obligations in the process of accession to the EU. Harmonization is quite demanding, since the CAP undergoes permanent reforms and is a moving target for the candidate countries [Arcotrass et al. 2006, 2006b]. Montenegro and Serbia are official candidate countries for the EU membership. Montenegro already started negotiation for membership. Meanwhile Bosnia and Herzegovina is a potential candidate country.

The EC replaced since 2007 the earlier pre-accession funds (PHARE, ISPA and SAPARD) with the Instrument for Pre-Accession Assistance (IPA). The scope of assistance to candidate countries includes the following components: transition assistance and institution building; cross-border cooperation; regional development; human resource development; rural development.

BiH is a potential candidate country for EU accession following the Thessaloniki European Council of June 2003. In June 2008 the EU and BiH signed the Stabilization and Association Agreement (SAA). BiH and the EC signed the Financing Agreement for the Instrument for Pre-accession Assistance (IPA) 2007 National Program in July 2008, which was a major milestone on BiH's road to Europe. The total financial allocations within the IPA are EUR 11.47 billion (current prices) for the 2007-2013 period. As a potential candidate country, BiH cannot yet take full advantage of IPA support [FAO-ROECA 2012]. In order to access IPA rural development component (IPARD) funds the Framework Agreement was signed, but its implementation has not begun until the end of 2010 due to complex institutional and political situation, especially the failure to agree on a model of payment systems in BiH [MoFTER 2011a]. The purpose of the IPARD is to strengthen rural development programming capacities by promoting the participatory bottom-up approach in rural development [EC 2010].

To become a candidate country and benefit from the pre-accession assistance under the IPARD, BiH must [FAO-ROECA 2012]: have an IPARD Program adopted by the European Commission; conclude the Framework and Sectoral Agreements; establish IPARD operational structure and receive national accreditation; receive accreditation and conferral of management decisions from the Commission; and conclude a Multi-annual Financing Agreement.

Montenegro signed an SAA with the EU in October 2007 that entered into force in May 2010. The European Partnership (EP), adopted in January 2007, stipulates the strengthening of the administrative capacity and structures needed to formulate and implement ARD policies as the main priorities for the

country's agricultural sector. The Montenegrin Government adopted an Action Plan for its Implementation in May 2007 [EC 2011a]. The National Programme for Integration, 2008-2012, defines specific short- and medium-term activities for strengthening the capacity of relevant institutions in the normative and institutional sense, compatibility of national legislation with the EU acquis [EC 2011b].

Montenegro submitted an application for EU membership on 15 December 2008 and in December 2010 the Council granted candidate status to Montenegro [EC 2011a]. The Commission Opinion on Montenegro's application for membership of the EU indicates that Montenegro will have to make considerable and sustained efforts to align with the EU acquis and to implement it effectively in the medium-term in the field of agriculture and rural development [EC 2011b]. The EU provides financial assistance to Montenegro under the IPA [EC 2011a]. The IPA programme is currently managed by the EU Delegation in Podgorica opened in 2007. According to the 2011-2013 Multiannual Indicative Planning Document (MIPD) for Montenegro, the main sectors for EU support during this period includes also agriculture and rural development [EC 2011e].

Serbia became a potential candidate for EU membership following the Thessaloniki European Council of June 2003. Serbia signed an SAA and the Interim Trade Agreement with the EU on 29 April 2008 [EC 2011c]. The SAA includes provisions on cooperation in the area of agriculture [EC 2011d]. Serbia participates in the Stabilisation and Association Process (SAP) and is currently committed to engage in necessary political, economic and social reforms leading to progressively closer relationship with EU. In December 2009 Serbia applied for membership of the EU [EC 2011c] and in March 2012 Serbia was granted EU candidate status. The European Partnership (EP) is an instrument of the SAP which lays down the principles and the medium and short term priorities the country should address on its way towards EU integration. The EP, adopted in February 2008, stipulates the strengthening of the administrative capacity and structures needed to formulate and implement agricultural and rural development policies as the main priorities for the country agricultural sector [EC 2011c].

Serbia received about €596 million in the period 2009-2011 under IPA [EC 2011c]. In the four annual programmes 2007-2010, IPA Component I financed projects in the agriculture and rural development sector worth a total of around €20 million. Technical assistance has also been provided for institutional capacity-building and support to agriculture and rural development in Serbia, and in anticipation of IPA Component V as well as putting in place the

LEADER approach for rural development [European Integration Office-Serbia 2011; Ministry of Finance-Serbia 2009].

The paper aims at analysing the alignment of the legal and political framework in the field of agricultural and rural development (ARD) with the acquis communautaire in the Western Balkans with a particular focus on Bosnia, Montenegro and Serbia. The paper provides also an overview of ARD policies, laws, strategies and plans in the three Balkan countries. A special attention has been devoted to the Instrument for Pre-accession Assistance for Rural Development (IPARD).

15.2. Material and methods

The work is based on an extensive literature review. A considerable number of highly reliable secondary data from available reports, research papers and statistical databases have been consulted.

Data sources include, but are not limited to: Agency of Statistics of Bosnia and Herzegovina; Agricultural Policy Forum for South-Eastern European Countries; Austrian Development Agency; European Integration Office-Serbia; FAO-Regional Office for Europe and Central Asia; International Bank for Reconstruction and Development; Leibniz Institute of Agricultural Development in Central and Eastern Europe; Ministry of Agriculture and Rural Development-Montenegro; Ministry of Finance and Treasury of BiH; Ministry of Finance-Serbia; Ministry of Foreign Trade and External Relations of BiH; Rural Development Network of Serbia; Serbian European Integration Office; SIDA; University of Belgrade; USAID; World Bank. Nevertheless, the most important sources were the progress reports of the European Commission.

15.3. Results and discussion

Agricultural and rural development policy-making in the Western Balkan region has often been dictated by *ad-hoc* considerations and has often lacked a clear orientation towards the EU's CAP. Overcoming these weaknesses and setting the conditions for an increasingly harmonized policy approach will be crucial for the countries to move closer to EU accession [Volk 2010].

One characteristic specific to BiH is the complexity of its state administration, which complicates the implementation of its agricultural policy. BiH is one of the rare countries in the world without a unique state ministry for agriculture. Agricultural policy is implemented on entity levels (Federation of

BiH and the Republika Srpska) [Bajramović et al. 2010]. The state plays a coordinating role [FAO-ROECA 2012].

The state policy in the agriculture, food and rural development (AFRD) sector in last years has been developed in accordance with the goals and needs for accession to the EU. However, establishment of main structures for receiving and managing the pre-accession funds is still a challenge. Systematic and structural harmonization of agricultural policies at the state level began with entry into force of the Law on Agriculture, Food and Rural Development of BiH, adopted in May 2008. The measures of the Law are basically classified into policy measures to support agricultural markets and measures for rural development [PABiH 2008].

The Ministry of Foreign Trade and External Relations of BiH (MoFTER), supported by the European Commission (EC), prepared the Strategic Plan for the Harmonization of BiH AFRD 2008-2011 and Operational Programme for the Harmonization of BiH AFRD 2008-2011. The key objective of the Strategic Plan is to provide a framework for the gradual harmonization of policies, programmes, institutions, laws, regulations, systems and services both within BiH and with the EU while the operational programme defines six priority areas that are similar to the EU RD policy 2007-13 objectives. However, there are still some gaps between the current EU acquis for RD and existing laws and institutional capabilities for RD in BiH.

The Strategic Plan is the leading policy document at the state level. It was adopted in January 2009. Its overall objectives are: (i) to gradually harmonize sector policies and mechanisms at state, entity and canton levels within BiH, as well as to harmonize with the EU (and specifically the gradual alignment with the IPA – Rural Development); and (ii) to progressively establish appropriate institutional structures, capacities, systems and procedures at state level to coordinate and guide the management of pre-accession harmonization preparations and to gradually adopt the agricultural acquis communautaire. It was intended to provide a framework for the introduction of pre-IPARD actions, starting in 2008 and allowing the foundations to be in place for the receipt of EU rural development funds by 2011 [FAO-ROECA 2012].

The Strategic Plan and Operational Program are implemented at Entity level. Both entities have developed agricultural strategies. The FBiH approved the extension of existing Agriculture Development Strategy (2006-2010) for two years [EC 2011f] and the RS has a Strategy for Agricultural Development 2009--2015, which are compatible but not yet harmonized with the Strategic Plan for the Harmonization of BiH AFRD 2008-2011. The Development Strategy of

AFRD in the Brcko District of BiH was prepared in 2008 for the period 2008--2013 [MoFT 2010].

The RS Strategic Plan for Rural Development 2009-2015 adopted in November 2009 – contains three strategic goals, 16 specific goals, 54 measures and 161 sub-measures. The three strategic goals are [FAO-ROECA 2012]: improving competitiveness in agriculture and forestry; preserving nature and sustainable management of natural resources and improving living conditions and introducing income diversification in the rural economy.

The Federation of Bosnia and Herzegovina (FBiH) is implementing the Middle Term Strategy for Agricultural Sector Development (2006-2010), which was adopted in 2007 together with the related Action plan. This plan is still in effect. The FBiH Operational Programme for Agriculture, Food and Rural Development is being drafted. It is expected to include activities related to the establishment of the Payment Agency and IPARD [FAO-ROECA 2012].

Harmonization of the national legislative framework with the EU acquis is an on-going process in BiH across all sectors. The political institutional structure (state level, entities, cantons and municipalities) makes the process complex thus slowing down adaptation [USAID and SIDA 2010].

Although BiH made some important steps towards EU integration, it is still at an early stage of approximation with the EU acquis in agriculture and rural development, food safety, veterinary and phytosanitary policy. Preparations are proceeding slowly. Both formal and essential implementation of the accession process to the agricultural policy in BiH are still at initial levels [Bajramović et al. 2010].

There was little progress in the fields of agriculture and rural development. A comprehensive State-level agricultural and rural development strategy remains to be implemented throughout the whole country, the State--level capacity for coordination and harmonisation strengthened, the implementation mechanisms reinforced and legislation further aligned with the acquis [EC 2012b].

Bosnia and Herzegovina has not yet adopted a country-wide rural development strategy. The State-level Strategic Plan and the Harmonisation Programme for agriculture, food and rural development are not being implemented. Republika Srpska's Rural Development Strategy and action plan and the Federation's Harmonisation Programme for agriculture, food and rural development remain to be harmonised with the State-level framework [EC 2012b].

Agricultural policies greatly differ, both by level of funds and structure of measures. Therefore, their implementation is far away from the model in EU. Legal harmonization is at the initial stage, and the institutional capacities of

a modern state are still being built. The core problem lays in the fact that some institutions, such as the state-level Ministry of Agriculture, which is the only institution capable of managing the process of approximation in an efficient and coordinated manner, are still nonexistent. Deficits in institutional structure, as well as in human resources management, are the result of poor motivation and turbulent politics over the past twenty years. BiH agricultural policy actually does not exist; it is an aggregate of policies at the entity and cantonal levels, which practically have no coordination whatsoever. Such a policy is unstable and very much dependent on political orientation [Bajramović et al. 2010].

Little progress was made with the preparations for the Instrument for Pre-Accession Assistance for Rural Development (IPARD). A sectoral analysis was prepared for five sectors. No agreement was reached on the institutional structures for decentralised management. Subsidies to farmers are mainly product-based and not aligned with the acquis. Agricultural statistics and the agricultural information system have yet to be improved, including harmonisation of the existing systems. Little progress was made regarding food safety. There was very little progress in the veterinary sector. This lack of progress has a negative impact on trade in agricultural products, in particular with the EU [EC 2012b].

It is clear that BiH needs to adopt the agriculture and food standards on its path towards the EU. Also, if BiH companies and agricultural producers wish to trade on the global market, they need to build their knowledge and capabilities to increase supply capacity, quality, competitiveness and compliance with standards [FAO-ROECA 2012]. National, regional or international standards are considered a significant constraint to achieving growth and a key limiting constraint to EU market access [USAID and SIDA 2010].

Strengthening agricultural policy is an important, though not the sole, element of successful preparation for EU accession. The success of such a process first and foremost depends on restructuring and modernizing agriculture to include agribusiness. The prospect of EU membership provides a basis for political and economic stabilization and development. The agro-economy in BiH has realistic market chances thanks to its potential. Therefore, it is necessary to engage all local intellectual and political capacities, as well as donors' programs and projects, in harmonizing the system of values, legal system, politics and institutions [Bajramović et al. 2010].

The transition process that Montenegro's economy passed through in the last two decades also affected the agricultural sector. Rural development policy plays a very important role in the new Montenegrin agricultural policy. This is

primarily because of the specificities of the agricultural sector and rural areas [Marković and Marković 2010].

The National Programme for European Integration and the National Strategy for Sustainable Development are the key documents for the overall country development [ADA 2010].

Agricultural and rural development policy framework in Montenegro is defined by the strategic document "Montenegro's Agriculture and the European Union – Agriculture and Rural Development Strategy" [Ministry of Agriculture-Montenegro 2006].

In spite of significant efforts and steps that had been made, there was no consistent agricultural policy until the new strategy was adopted in 2006. The new strategic document "Montenegro's Agriculture and the European Union" was a turning point in the agricultural reforms [MARD 2012]. The Strategy defines the following developmental objectives: (a) sustainable resource management; (b) stable and acceptable supply of safe food; (c) ensuring an adequate standard of living for the rural population; and (d) increasing in competitiveness of food producers [Arcotrass et al. 2006; MARD 2012].

The Strategy outlines that key element in reform of agricultural policy is the gradual building of a system of integrated rural development policy that shall be harmonized with the EU principles. The policy is based on the three key areas of rural development: a) increasing competitiveness of agriculture and processing industry; b) better management of land and environmental resources; and c) support for diversification of activities and better living for rural population [EC 2011b]. The Strategy strongly pointed out necessity of reforms in three main directions: (a) agricultural policy – gradual implementation of the new instruments of the CAP; (b) legislation reforms – harmonization of regulations with the Acquis communautaire; and (c) institutional reforms – building up institutional capacities capable of implementing the new policy and regulations [Ministry of Agriculture-Montenegro 2006].

The Food Production and Rural Development Strategy sets as an overall objective the preparation of the agricultural sector for the EU accession by developing sustainable agriculture and rural areas. The Strategy provides a platform for harmonization of agricultural policy, legislation and institutional support to agriculture with the principles and requirements of the EU association process [MARD 2012].

The framework of current Montenegro's agricultural and rural development policy is provided by the Law on Agriculture and Rural Development adopted in 2009 (Official Gazette of Montenegro no. 56/09 of 14 August 2009) [EC 2011b]. The Law on Agriculture and Rural Development is the main legal document for the

agricultural policy [MARD 2012]. The Law sets the objectives of agriculture policy and provides the general framework for the development of and support to agriculture and rural areas [EC 2011b; MARD 2012].

The most important concrete outcome of what strategy foresaw is the National Programme for Food Production and Rural Development (NPFPRD), adopted in November 2008 [MARD 2012]. It regulates the development of the instruments and measures within the agricultural and rural development [Wehinger et al. 2011]. The National Programme focuses on the central role of agriculture, provides the basis for further major reforms and the legislative work required for modernising agriculture [EC 2011b]. The NPFPRD comprises five groups of measures: market policy measures, rural development policy measures, support to general services in agriculture, social transfer to rural population and technical assistance for programme implementation [Wehinger et al. 2011].

The National Programme outlines objectives, its strategic and legal frame and the conceptual starting points for domestic agricultural policy as well as its harmonisation with the requirements for the CAP and the EU model for support in agriculture. In its essence, the NPFPRD is the operational document of the Strategy for harmonisation of Montenegrin agricultural policy with the CAP. It defines and designs the agricultural policy measures. It is the multi-annual budgetary plan and is also a frame for donor support [MARD 2012].

National schemes to support agriculture i.e. agro-budget includes measures for market price policy; RD policy (strengthening competitiveness; sustainable resource management; improving the quality of life in rural areas); general services; social transfers; and fishery [EC 2011b]. Overview of the budgets per years shows change in amount and structure of the budget. Before, most of funds used to be spent for milk premiums, reimbursements for plant and livestock production, etc. Following the adoption of the Strategy (2006), the agrobudget has been defined in line with the main pillars of the agricultural policy (market-price policy measures, rural development policy, technical and other services in agriculture) [MARD 2012].

A very important place in agricultural policy has the rural development policy, which is executed through four basic groups of measures. The first group (axis) is directed to strengthening the competitiveness of food producers through supporting investments in primary production and processing industries, introduction of international standards, and organizations of the producers. The second group (axis) refers to the sustainable management of resources. In the third group (axis) there are measures for supporting the quality of life and diversifying economic activities in rural areas. The fourth group (axis) of measures for rural development aims at stimulating and supporting local

communities and local groups in creating and implementing their strategies and development projects [MARD 2012].

A stronger harmonization with the objectives and instruments of the CAP is required to strengthen the European integration process [MARD 2012]. For a better harmonization of Montenegrin legislation with the Acquis communautaire many laws were adopted or are in the parliamentary procedure [Bulatović 2009; EC 2011e].

Montenegro has already undergone significant changes in the process of reforming agricultural policy at the level of creating a legal framework and formulating strategic guidelines. The agricultural policy of Montenegro, including its aims, measures, structure, and its share of rural development policy, are positively assessed from abroad. That approach was recognized and positively evaluated by the EC authorities, as well. However, two main challenges remain: to build up the implementation structure; and to provide appropriate budgetary allocation to support the agricultural sector [Marković and Marković 2010].

To ensure competitiveness and comply with EU requirements, the Government of Montenegro has prioritized upgrading agricultural practices and standards, as well as strengthening the capacity of the Ministry of Agriculture and Rural Development (MARD) to allow access to financial assistance under the EU's IPARD [World Bank 2011]. The first draft of IPARD Programme has been submitted to the Commission for comments in 2011 [EC 2011b].

In line with on the overall objective of the National Rural Development Strategy and in accordance with the IPA priorities and identified needs, the IPARD Programme in Montenegro will support the alignment with the Community standards, and restructuring and modernisation of the agriculture and food processing industry. The IPARD Programme will contribute to the sustainable rural development by supporting diversification of economic activities. The IPARD priorities are linked with and based on strategic priorities of the National Strategy for Agriculture and Rural Development [MARD 2012]. The eligible interventions under IPA Rural Development Component are grouped into 3 priority axes [MARD 2012]: (a) improving market efficiency and implementation of Community standards; (b) preparatory actions for the implementation of the agri-environmental measures and local rural development strategies; and (c) development of the rural economy.

The European Commission [EC 2011e] highlighted that little progress has been made on horizontal issues, in particular as regards establishment of the structures necessary for management of the CAP. There has been as well little progress in the field of rural development. Overall, in the area of agriculture and rural development, alignment with the acquis remains at an early stage.

According to EC [2012c], some progress has been made in the area of agriculture and rural development in Montenegro. However, efforts are needed to develop an appropriate legal framework. In the area of horizontal issues there has been little progress. The bulk of the agricultural budget for 2012 remains targeted at direct support measures linked to production. While some efforts are being made to de-link from production, support measures will gradually need to be brought more into line with EU rules, decoupling them from production. Support for rural development measures is increasing due mainly to grant support under a World Bank project. Some progress has been made in the field of rural development. The rural development programme under the IPARD was submitted; however it still needs to be further amended before adoption. Establishment of the management and control system under IPARD is slow. The administrative capacity and the legal framework are not yet sufficiently prepared to meet the objectives of the national action plan towards IPARD accreditation. There has been progress in the field of quality policy. Preparations in the area of organic farming are moderately advanced [EC 2012c].

In Serbia, from 2000-2008, the institutional framework of agricultural policy was not transparent, lacked continuity and often resulted in conflicting solutions. In 2005, the government adopted the Agriculture Development Strategy. The reformed agricultural policy was intended to increase the competitiveness of commercial family farms. In terms of implementation mechanisms, agricultural policy focused on encouraging investments. From 2007, the implementation of agricultural policy has been permanently changing. Programs and regulations were changed and/or abolished several times during the year, and payments to the users were delayed [Bogdanov and Bozić 2010].

The Law on Agriculture and Rural Development (LARD) (Official Gazette of the RS No. 41/09) was adopted in May 2009. The LARD regulates the objectives and implementation of agricultural policies, forms of incentives in agriculture and rural areas, the conditions for eligibility for incentives, and incentive beneficiaries. It established the Department of Agricultural Payments as a body within the ministry responsible for agriculture. Major parts of the LARD in terms of rural development policy are related to the adoption of the Rural Development Program and establishment of a new structure of the sector for rural development [RDNS 2010]. As regards rural development, the LARD put in place a strategic framework that largely resembles the one established under the current EU legislation [EC 2011d].

Implementation of the policy is based on the Strategy of Agriculture and Rural Development, the National Programme for Agriculture and the National Programme

of Rural Development [RDNS 2010]. The Agricultural and Rural Development Strategy for the period 2011-2020 has not yet been adopted [EC 2012].

A clear policy direction for agriculture is provided in the Agricultural Strategy for Serbia (2005) and re-iterated in the National Agricultural Programme of the Republic of Serbia 2010-2013 (2010), which aims at production, ownership and institutions restructuring; market and market mechanisms development; and improving rural development and environmental protection [European Integration Office-Serbia 2011].

The EU has funded a technical assistance project titled Support to Rural Development Programming and Payments System (2006-2008), managed by the European Agency for Reconstruction. This project introduced the Ministry of Agriculture staff to the preparation, implementation, monitoring and evaluation of rural development programs, as well as planned procedures and tools to support these actions. Some of these skills have been developed, and National Rural Development Strategy Plan 2008-2013 and National Rural Development Program for 2008-2013 were prepared [Bogdanov and Bozić 2010].

The Serbian National Rural Development Programme 2011-13 identifies different strategic objectives: encouraging the improvement in food safety, veterinary and phyto-sanitary activities; and, encouraging sustainable development of the rural economy and rural areas by encouraging diversification [European Integration Office-Serbia 2011].

In addition to the Law on Agriculture and Rural Development, a whole set of laws regulating specific issues related to agriculture and rural development was adopted [RDNS 2010]. In fact, thirty new primary laws have been adopted in 2009-2010 to harmonise with the acquis communautaire, and 94 regulations were passed in 2010 alone, addressing implementation requirements for agriculture, food safety and phyto-sanitary issues, water, forestry and rural development sectors [European Integration Office-Serbia 2011].

Other key national strategies affecting the agricultural and rural development sector include: Energy Development Strategy of the Republic of Serbia; the Biomass Action Plan for the Republic of Serbia 2010-2012; the National Sustainable Development Strategy (2008); the Strategy for Regional Development (2007-2012); the National Employment Strategy 2005-2010; the Strategy for the Development of Tourism of Serbia (2005 – 2010); the National Programme for Environmental Protection (2010); and the Poverty Reduction Strategy of the Government of the Republic of Serbia (2003) [European Integration Office-Serbia 2011].

The agricultural policy in Serbia is only partly designed on a strategic basis and in recent years it has been characterized by the increasing

estrangement from the EU model of support. The current strategy has not been supported by the accompanying program documents, so the measures for its implementation inconsistently followed the goals. Frequent changes in administrative structures brought radical changes in the system of support [Bogdanov and Bozić 2010].

Agricultural policy is still implemented mostly based on annual programs of budget allocation, which are not stable in terms of funds, support measures and eligibility criteria [Volk 2010]. Implementation of agricultural policy is done through the following types of subsidies [RDNS 2010]: direct subsidies (bonuses, subsidies for production, recourse and support to non-commercial farms), market incentives (export subsidies, storage costs and credit support) and structural incentives (measures of rural development, improvement and protection of agricultural land quality and institutional support).

In relation to State aid, apart from market-related subsidies and rural development measures, Serbia applies a number of additional measures. Direct aid payments are currently granted for Serbia's key production sectors: dairy, meat and crops. In every case, a yearly budgetary ceiling is set which limits individual payments [EC 2011d].

In addition to a substantial drop in total support, dramatic change in the structure of direct producer support can be seen in recent years – a switch from direct payments to input subsidies. The prevailing direct producer support form is input subsidies. The Serbian case clearly indicates the problem of agricultural policy stability [Volk 2010].

In the 2012 agricultural budget direct aid payments account for more than 90% of the support measures. There was an increase in the allocation for rural development measures in the budget. The livestock sector continues to benefit from headage payments and milk subsidies. Direct payments will gradually need to be brought into line with EU rules, decoupling direct aid payments from production. Support measures continue to be reviewed and revised on an annual and *ad-hoc* basis. This does not provide security and predictability for producers and processors to engage in the required investments [EC 2012].

The biggest challenge for Serbia will be the institutional changes and the capacity building that will be necessary for creating a system comparable to the EU countries [Arcotrass et al. 2006b]. Harmonization in the area of agriculture is particularly demanding, especially for countries whose agricultural policy usually has a different role than in the EU [Erjaveć 2008].

Integration of the agriculture sector with the EU is evolving slowly at all levels – from establishing the institutional and legislative framework, implementing agricultural policy, to inspection controls [Bogdanov and Bozić

2010]. The European Commission [EC 2011c] highlighted that little progress has been made on horizontal issues. Serbia needs to pay extra attention to establishing the administrative structures required for the CAP. Serbia will need as well to bring all its State aid measures into line with EU rules and guidelines adopted in this area. Direct payments in Serbia gradually need to be brought into line with EU rules, decoupling direct aid payments from production. Considerable attention has to be paid to strengthening the administrative capacity in order to manage common market organisation [EC 2011d].

Slow institutional transformation may be ascribed to frequent changes. The lack of continuous and consistent policy causes both efficiency and the overall results of the policy to be below the expected and objectively possible level [Bogdanov and Bozić 2010].

Regarding the preparations for decentralised management of the IPARD, several positive actions have been undertaken, including efforts to establish IPARD structures. A Directorate for Agrarian Payments, which is planned to serve as a future IPARD agency, has been set up. However, progress needs to continue. The readiness of the National Fund for IPARD must be ensured [EC 2011d].

Regarding rural development, progress can be reported in 2012 concerning the preparations for the management and control system under the IPARD. The Directorate for Agrarian Payments needs to strengthen its capacity in order to implement the pre-accession assistance [EC 2012]. The Law on Agriculture and Rural Development need to be further elaborated in terms of measures and scope of implementation with a view to full alignment with the EU acquis. The agri-environmental orientation of Serbia's rural development policy remains weak [EC 2011d].

Generally speaking, in the last decade, there have been quite substantial changes to agricultural policy in most Western Balkans (WBs) countries. A wide range of support instruments and measures are applied across the WBs. However, market support measures have lost importance related to price and trade liberalization during transition. In recent years, direct producer support has been the main element of agricultural budgetary transfers and also the major factor of growth in budgetary funds. In nearly all countries, crop and livestock production are supported through price aids, area and/or headage payments and input subsidies, which are all forms of support that are not in agreement with the reformed CAP [Volk 2010].

Rural development policy is generally subordinate to production support. Funds aimed at supporting rural development are much lower, although show an increasing tendency. These funds are mainly intended for restructuring agriculture through investment support, which have been gaining importance as

preparations for the approaching accession continue. All countries have been preparing to implement rural development policy according to EU rules. However, progress has been relatively slow, since rural development is a demanding policy, and also because these countries have different priorities. In this context, only a small proportion of funds is related to environment and countryside measures. Even less funds are intended for improving the rural population's quality of life [Volk 2010].

15.4. Conclusions

The agricultural situation has improved in Bosnia, Montenegro and Serbia but many steps on the way to the EU accession remain. Progress has been achieved in the development of agriculture in recent years, but a great deal of work remains to be done to prepare agriculture sectors for EU accession. In practice, all the three countries are aiming to join the EU in the near future. Harmonization in the area of agriculture and rural development is particularly demanding. Policy in the ARD sector is undergoing a rigorous process of adaptation towards being in line with the CAP. That implies legislation being harmonized with the EU acquis, the introduction and implementation of the instruments of CAP (e.g. support programs, steering subsidies) and the establishment and/or strengthening of the competent institutions in order to allow them to implement these instruments (e.g. paying agencies).

The legal and strategic framework put in place in the three countries in the field of ARD largely resembles the one established under the current EU legislation. However, the main problem of the existing legal frameworks is that they are not fully developed and do not have adequate action plans and strategies for enforcement. The lack of stability in policy planning and implementation is another problem.

Although there have been improvements over the last few years, integration of the agriculture sector with the EU is evolving rather slowly at all levels – from establishing the institutional and legislative framework, implementing agricultural policy, to inspection controls. This is especially the case of Bosnia and to some extent also Serbia. Despite improvements over the last years, the current capacity of the ministries of agriculture needs to be strengthened in order to adapt their structures and systems to EU requirements.

The low efficiency of the ARD policy is due among others to a slow institutional transformation and the lack of continuous and consistent policy and implementation mechanisms. Direct payments gradually need to be brought into line with EU rules i.e. decoupling direct aid payments from production. As

regards rural development, the scope and provisions of the current legal frameworks need to be further elaborated. The agri-environmental orientation of rural development policy needs to be strengthened. Rural development policy is still subordinate to production support. Among the necessary steps are the modernization of agricultural policy administration and the implementation of appropriate policy monitoring and evaluation systems. A systematic implementation of the strategies and the modernization of public services regarding agriculture are also necessary elements.

In general, there is a lack of a stable agricultural policy and a true strategy of reforms and adjustment to EU requirements. Regardless of the differences among the countries, the pragmatic *ad-hoc* approach for defining measures prevails. In the area of direct payments, there has been a rather common practice of introducing the CAP non-harmonized measures and supporting sectors which are not supported in the EU. The ARD policy frameworks need further adjustments to be aligned with the EU acquis, including moving towards decoupled support measures.

Regarding the management of the IPARD, several actions need to be undertaken, including efforts to establish IPARD structures.

The three Balkan countries will have to speed up the harmonisation process for adopting the objectives and instruments of the CAP. That is particularly true especially in the case of BiH. In Bosnian case, coordination between the State and the Entities in aligning with the EU acquis in the field of ARD is required. The biggest challenge will be the institutional changes and the capacity building that will be necessary for creating a system comparable to the EU countries. More attention should be given to alignment regarding horizontal issues as well as in common market organisation, rural development, quality policy, organic farming areas.

A clear long-term strategy for ARD policy reform, incorporating the expected EU accession agreements and impacts, is a precondition for the efficient adjustment of agriculture and rural economy.

References

1. ADA, (2010), Montenegro country strategy 2010–2012, Austrian Development Agency (ADA); Vienna.
2. Arcotrass et al., (2006), Study on the state of agriculture in five applicant countries: Montenegro country report. Study undertaken by Arcotrass GmbH (Germany), in association with Vakakis International SA (Greece), EuroCare GmbH (Germany) and AKI (Hungary).

3. Arcotrass et al., (2006b), Study on the state of agriculture in five applicant countries: Serbia country report, Study undertaken by Arcotrass GmbH (Germany), in association with Vakakis International SA (Greece), EuroCare GmbH (Germany) and AKI (Hungary).
4. ASBiH, (2012), Anketa o radnoj snazi 2012 (Labour Force Survey 2012). Agency of Statistics of Bosnia and Herzegovina (ASBiH), Sarajevo. Available at: http://www.bhas.ba/tematskibilteni/lfs_bh.pdf.
5. Bajramović S., Ognjenović D., Nikolić A., (2010), Review of agriculture and agricultural policy in Bosnia and Herzegovina, [in:] Volk T., (ed.), "Agriculture in the Western Balkan Countries". Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO), Halle.
6. Bogdanov N. and Bozić D., (2010), Review of agriculture and agricultural policy in Serbia. [in:], Volk T. (ed.). "Agriculture in the Western Balkan Countries". Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO), Halle.
7. Bulatović B., (2009), Agriculture and rural development policy in Montenegro: state of the play and challenges ahead. FAO – COMENIUS – Agricultural Policy Forum for South-Eastern European Countries "Rural Development in EU-Accession Countries'', Prague.
8. EC, (2010). Bosnia and Herzegovina 2010 progress report, Brussels.
9. EC, (2011a), Montenegro, Agriculture and Enlargement, Agriculture and Rural Development,http://ec.europa.eu/agriculture/enlargement.
10. EC, (2011b), Standard Summary Project Fiche – IPA centralised programme. Project Fiche 9: Strengthening rural development Programme under IPARD, http://ec.europa.eu/enlargement/pdf/montenegro/ipa.
11. EC, (2011c), Serbia Agriculture and Enlargement, EC, Brussels,http://ec.europa.eu/agriculture/enlargement/countries/serbia.
12. EC, (2011d), Analytical report accompanying the document "Communication from the Commission to the European Parliament and the Council: Commission Opinion on Serbia's Application for Membership of the European Union", EC, Brussels.
13. EC, (2011e), Montenegro 2011 Progress Report, Brussels.
14. EC, (2011f), Bosnia and Herzegovina 2011 progress report, Brussels.
15. EC, (2012), Serbia: 2012 progress report. SWD(2012) 333 final, Brussels.
16. EC, (2012b), Bosnia and Herzegovina: 2012 Progress Report, SWD(2012), Brussels.
17. EC, (2012c), Montenegro: 2012 progress report, EC, Brussels.
18. Erjaveć E., (2008), The EU Common Agricultural Policy and Western Balkans integration process and tasks. [in:], Tomić D., Ševarlić M. (eds.)

100th Seminar of the EAAE: Development of agriculture and rural areas in Central and Eastern Europe, Thematic proceedings; Regional Chamber of Commerce, Novi Sad; pp. 51-62.
19. European Integration Office-Serbia, (2011), Needs of the Republic of Serbia for International Assistance in the Period 2011-2013, EIO, Government of the Republic of Serbia, Belgrade. http://www.evropa.gov.rs.
20. FAO-ROECA, (2012), Analysis of economic diversification in Bosnia and Herzegovina. Preparation of IPARD Sector Analyses in Bosnia and Herzegovina. Food and Agriculture Organization of the United Nations (FAO), Regional Office for Europe and Central Asia (ROECA). http://www.fao.org/europe/publications/documents-and-reports/IPARD-BiH.
21. Kurbanova J., Lonc T., Szentpali G., (2011), Overview on vulnerability to food security in Bosnia and Herzegovina. Food and Agriculture Organisation of the United Nations (FAO), Rome.
22. Lampietti A.J., Lugg D.G., Van der Celen Ph., & Branczik A., (2009), The changing face of rural space: agriculture and rural development in the Western Balkans. Directions in Development (DID), Agriculture and Rural Development; the International Bank for Reconstruction and Development; Washington D.C.
23. MARD, (2012), Program for Agriculture and Rural Development of Montenegro under IPARD 2007-2013. Ministry of Agriculture and Rural Development (MARD); Podgorica.
24. Marković B., Marković M., (2010), Review of agriculture and agricultural policy in Montenegro. In, Volk T. (ed.), Agriculture in the Western Balkan Countries, Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO), Halle.
25. Ministry of Agriculture-Montenegro, (2006), Montenegro's Agriculture and European Union: Agriculture and Rural Development Strategy. Final report of the EU funded project: Agriculture and Rural Development Strategy of Montenegro. Ministry of Agriculture, Forestry and Water Management; Podgorica.
26. Ministry of Agriculture-Montenegro, (2009), Questionnaire: Information requested by the European Commission to the Government of Montenegro for the preparation of the opinion on the application of Montenegro for membership of the European Union. Government of Montenegro; Ministry of Agriculture, Forestry and Water Management; Podgorica.

27. Ministry of Finance-Serbia, (2009), Report on International Assistance to the Republic of Serbia in 2008. Ministry of Finance, Belgrade.
28. MoFT, (2010), Donor mapping report 2009-2010. Ministry of Finance and Treasury (MoFT) of BiH, Sarajevo, http://www.donormapping.ba.
29. MoFTER, (2011a), Izvještaj o medjunaradnoj pomoći za sektor poljoprivrede, prehrane i ruralnog razvoja 2010. u Bosni i Hercegovini (Report on the International Assistance for Department of Agriculture, Food and Rural Development in 2010 for Bosnia and Herzegovina), The Ministry of Foreign Trade and External Relations of BiH (MoFTER), Sarajevo.
30. PABiH, (2008), Zakon o Poljoprivredi, Prehrani i Ruralnom Razvoju Bosne i Hercegovine (The Law on Agriculture, Food and Rural Development of Bosnia and Herzegovina), Parliamentary Assembly of BiH (PABiH). Official Gazette of BiH, No 50, http://www.mvteo.gov.ba/zakoni/zakoni/?id=1133.
31. RDNS, (2010), Action Plan 2011-2015. Rural Development Network of Serbia (RDNS), http://www.ruralinfoserbia.rs/dokumenta/action plan 2011-2015 –- rural development network of serbia.pdf.
32. Serbian European Integration Office, (2012), Report on international assistance to the republic of Serbia in 2011. Belgrade, http://www.evropa.gov.rs/Documents/Home/DACU/12/83/84/ReportonInternationalAssistancetoSerbiain2011.pdf.
33. Stevanović D., Jelić S., Jovanović T, (2005), Socio-demographical structure of population in Serbia. Faculty of Agriculture, University of Belgrade.
34. USAID and SIDA, (2010), EU markets access constraints for agricultural and food products from Bosnia and Herzegovina. Fostering Agricultural Markets Activity (FARMA) project; Sarajevo.
35. Volk T. (ed.)., (2010), Agriculture in the Western Balkan Countries. Studies on the Agricultural and Food Sector in Central and Eastern Europe; volume 57; Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO), Halle. ISBN 978-3-938584-51-4.
36. Wehinger Th., Schäfer B., Markovic M., Batakovic R., Mehmeti I., Zhllima E., Simonovic I., Popa H., (2011), Potential for diversification of the rural sectors in Albania and Montenegro. Naccon GbR, Tübingen.
37. World Bank, (2011), Montenegro Institutional Development and Agriculture Strengthening – MIDAS, http://siteresources.worldbank.org.

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16. Competitiveness of Ukrainian foodstuff

The competitiveness of the products offered by a country to the world market is becoming increasingly important in a globalized economy.

The competitiveness of foodstuffs remains relevant even under the conditions of limited natural resources, the need to solve the food supply security problem and under the growing demand for foodstuffs.

Despite the further increase in demand for foodstuffs, the escalating competition on world food markets is still the main feature of the global market economy.

Competitive products should be easily adapted to customers' needs and meet the approved national and international standards.

Furthermore, the provision of home-produced goods for Ukrainian food market and the promotion of domestic products in international markets are of strategic importance for the development of agriculture in Ukraine.

The largest share of domestic agricultural products produced small peasant households. However, it should be noted that purposeful work to implement science-based technologies cattle, balanced nutrition, veterinary care, breeding in small farms is not conducted. This leads to the fact that their products do not meet quality and safety requirements under the WTO agreements and EU requirements and are uncompetitive.

Humanity is increasingly concerned about issues such as population growth on the planet, limited natural resources, preservation of the environment, development of science and technology. Improving the competitiveness of agricultural sector should be considering these issues and, in particular, special attention should be paid to environmental factors to ensure it.

Food industry plays one of the leading role in the economic development of Ukraine. Foreign direct investment (stock capital) in the production of food, beverages and tobacco in Ukraine as of December, 31, 2011 was 2,065.7 million US dollars, or 4.2% of total investments.

Food, beverages and tobacco production in Ukraine in 2012 amounted to 182,488.0 million hryvnias, corresponding to 16.3% of industrial products sales. Therefore, the product competitiveness issues for food industry are of crucial importance.

Foodstuffs competitiveness concept is multifaceted and has such features as: quality, consumer characteristics, price, cost of goods manufactured and

sold. However, as stated before, this concept is a relative notion, thus the competitiveness defined by the given parameters will characterize the quality of the product as to the competing products which operate on the same market segment. The level of competitiveness will be different for different market segments and different periods of time, which characterize the development of the particular product.

The set of individual characteristics creates value and quality indicators that determine the product's ability to withstand competition in the market under certain conditions at a certain time with other competing products, or analogs of substitutes. These characteristics determine the compliance of the proposed product market requirements of customers and provide the appropriate level of competitiveness.

The products competition can be provided by:

- product innovativeness which determines its competitiveness from the point of market fullness, technological features, the possibility of product line diversification, etc.;
- technological differences of goods (technological differences of goods mostly provide a competitive advantage until the production of imitative or substitute goods);
- quality characteristics of goods (for foodstuffs they can be defined as consumer and functional properties and safety);
- cost savings in scale of production (an opportunity of selling goods at a lower price);
- uniqueness of goods for consumers (impossibility to replace the goods without losing their basic characteristics).

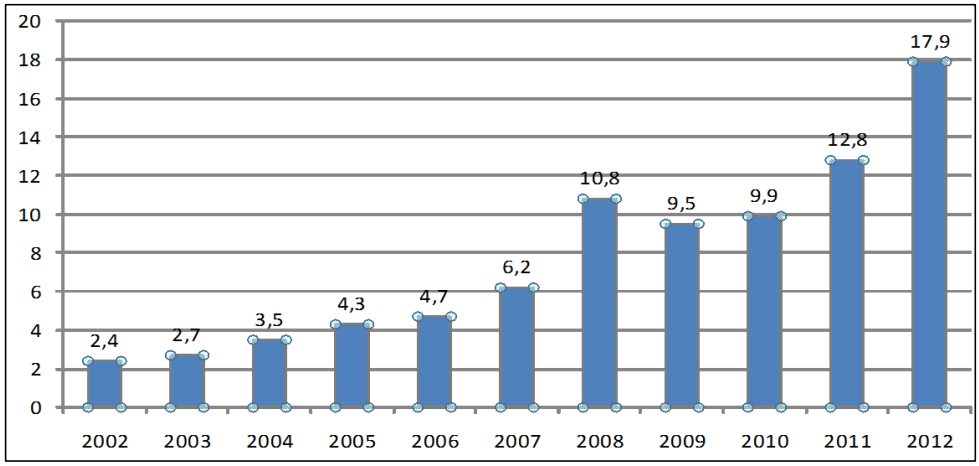
In order to determine the competitiveness of Ukrainian agro-industrial complex production, we will try to describe it in defined parameters.

One of the main indicators which characterizes competitiveness of the goods is dynamics of its exports.

Over the last 10 years the volume of exports of agricultural products from Ukraine increased by 7.5 times – from $ 2.4 billion in 2002 to $ 17.9 billion in 2012 (Figure 1).

Agricultural products are the most competitive in the field of agro-Ukraine. According to statistics about 25% of all foreign exchange export is generated by agricultural enterprises in Ukraine.

Figure 1. Dynamics of export of agricultural products in Ukraine, $ bln.



Source: own elaboration.

Key indicators, comparing the volume of agricultural production in Ukraine and in the world, are given in Table 1.

Table 1. Indicators of agricultural production

Key indicators of agricultural production	Ukraine		The share of Ukraine in world terms, %	Total world in 2010
	1990	2010		
Agricultural land, million hectares	33,6	32,5	2,5	1381,5
Cereal production, mln t	51,0	39,3	1,6	2499,9,2
Production of sugar beet, mln t	44,3	13,7	6,0	228,5
The number of cattle, million heads	24,6	4,8	0,3	1622,8
The number of pigs, million heads	19,4	7,6	7,9	965,9
The number of poultry, million heads	246,1	191,4	0,9	21488,6
The production of meat, mln t	4,4	2,1	0,8	292,8
The production of milk, mln t	24,5	11,2	1,6	720,9

Source own elaboration.

Using the potential of the national agriculture at present does not meet its abilities. Agricultural output was significantly higher in the pre-reform period. Statistical data are given in this article. Ukraine in 1990 produced: grain – 51 million tons, meat – 4.4 million tones, milk – 24.5 million tons, sugar beet – 44.3 million tons, in 2010 production was as follows: grain – 39.3 million tons, meat – 2.1 million tons, milk – 11.2 million tons, sugar beet – 6.0 million tons. Parameters decreased in some positions more than 7.5 times.

Grain, vegetable oil, soybean, rapeseed and waste oil industry are the Ukrainian agro-industrial production of goods that are bought in foreign markets in the greatest volume.

The EU has bought Ukrainian grain worth $ 1.9 billion in 2012 and has become the largest buyer of Ukrainian grain in recent years appears. Egypt and Saudi Arabia are the second and third place in the ranking of the importing countries with the volume of purchase of $ 1.4 billion and $ 509 million, respectively. Sunflower oil is still one of the most purchased goods in Ukraine agri-food sector. Ukraine has become the leader in sales of sunflower oil in the world market. Export of Ukrainian agro-industrial goods sector shows strong growth. This can be attributed to the following factors:

- growth of the market of agricultural products both in volume and value terms. The global growth in demand for food stimulates the growth of prices in the food market. World demand for cereals increased by more than 20% over the last ten years – from 1.9 billion tons in 2002 to 2.3 billion tons in 2012, according to FAO. The price index for the group of cereals was 255% for this period;
- high agricultural potential in agricultural production in Ukraine may significantly increase;
- entry into the big business. Vertically integrated structures are created to provide raw processing enterprises. These structures help to improve the profitability of agricultural production. The increase in profitability to ensure a flow of domestic and foreign capital in the agricultural sector;
- favorable geographical position. The favorable geographical position allows to reduce the cost of transporting goods;
- diversification of exports. Range of products with agricultural and industrial production expanded. This makes the foreign trade enterprises more sustainable and help to reduce risks;
- geographic expansion of exports. Export operations are becoming less dependent on the political and economic decisions of a country. Geographical expansion of exports diversifies the risks of foreign operations;
- prevailing market situation. Production of agricultural products has declined producers of of individual countries. This was the result of bad weather conditions and the current political situation.

The situation in the agricultural sector will improve if to solve some problems. Solution of these problems will improve the efficiency of use of the existing potential of agriculture sector. These problems are:

- lack of a clearly defined public policy. State policy priorities and instruments of state regulation frequent selection changes. This creates problems of effective business;
- high lending rates. High lending rates to limit funding for the agricultural sector. This increases the risks and reduces production efficiency;
- the lack of guarantees for the right to property. The absence of legislation creates a situation of instability of the environment for the activities of agricultural enterprises;
- a high level of corruption. The existing level of corruption provokes intense development of the informal sector of production of the agricultural sector and reduces the profitability of doing legal business;
- lack of long-term investment limits opportunities for business development based on innovation and limits the ability of expanded reproduction of agricultural products;
- delay in the development of logistics systems. Inadequate logistics limits the development of agribusiness and increases the cost of production to the final consumer;
- predominance of exports of raw materials. Exports of raw materials caused by low levels-quality processed products and finished products. Finished products are certified according to international standards of quality, produced in small quantities in Ukraine;
- low level of efficiency of agricultural production. Agricultural production is developed through extensive in Ukraine;
- low share of exports of finished food products.

International trade is a means by which countries can raise the productivity of existing resources. Specialization in international trade increases the volume of sales and increase its competitiveness.

Geographic areas Ukrainian exports of agricultural products is constantly expanding. This forms a competitive advantage producers. Now Ukraine's agricultural products are exported to 155 countries.

Egypt, Russia, Spain, India, Iran, Turkey, Italy, Poland, Saudi Arabia, Netherlands are the main importers of Ukrainian agricultural products. These countries are among the top ten in international trade in goods of agricultural sector of Ukraine.

Export of finished goods Ukrainian food producers will strengthen Ukraine's position in the global market and sustainable economic development. Export of finished goods Ukrainian food producers limited their level of competitiveness. The competitiveness of prepared foods lower in foreign markets than the level of competitiveness of the agricultural raw materials.

Table 2. The main importing countries of agricultural products

Rating	Importing countries	The volume of exports of agricultural products, million US dollars	The main export goods, million US dollars
1.	Egypt	2080,2	1441,5 – crops;
			512,8 – other products of plant origin;
			110,9 – seeds and oleaginous fruits
2.	Russia	2002,4	441,7 – cocoa and its products
			356,0 – milk and dairy products, eggs, honey
			227,3 – meat and meat products
3.	Spain	1384,1	1056,6 – crops;
			180,1 – fats and oils of animal or vegetable origin
			79,7 – seeds and oleaginous fruits
4.	India	1244,8	1224,0 – fats and oils of animal or vegetable origin
			17,5 – vegetables, edible roots
			3,0 – seeds and oleaginous fruits
5.	Iran	744,8	423,1 – crops
			310,6 – fats and oils of animal or vegetable origin
			6,6 – edible fruit and nuts
6.	Turkey	743,1	306,2 – fats and oils of animal or vegetable origin
			243,8 – seeds and oleaginous fruits
			92,7 – residues and waste from the food industries
7.	Italy	703,9	318,1 – seeds and oleaginous fruits
			221,9 – crops
			107,1 – fats and oils of animal or vegetable origin
8.	Poland	623,4	213,6 – seeds and oleaginous fruits
			192,8 – residues and waste from the food industries
			105,2 – fats and oils of animal or vegetable origin
9.	Saudi Arabia	581,5	508,6 – crops
			69,9 – fats and oils of animal or vegetable origin
			1,6 – milk and dairy products, eggs, honey
10.	Netherlands	516,8	167,7 – crops
			159,9 – seeds and oleaginous fruits
			140,1 – fats and oils of animal or vegetable origin

Low competitiveness of finished food products due to the following characteristics of the food sector in Ukraine: the limitations of the innovative development and production of innovative products, a low level of certification in accordance with international and European standards of quality, poor understanding of commodity markets; excretion greater mass gains by foreign companies outside Ukraine.

Limited capabilities of innovative enterprise development and production of innovative products also form a low level of competitiveness.

As to the product innovativeness, its level for the food market is rather low. According to statistics, from 2009 till 2011 only 12.5% of the food industry enterprises in Ukraine produced innovative goods.

The mechanism of investment support innovation implemented in three main areas at the level of individual businesses: mobilizing their own sources of financing innovation, government support for innovative initiatives, the creation of attractive conditions for joining the industry of private investors.

Providing innovative development companies in Ukraine is mainly due to the first direction – to mobilize their own sources of financing innovation. That is what is the cause of limited innovation processes in the food industry.

Over the same period of time, innovative processes were implemented by 11.3% of the food industry enterprises, organizational innovations were introduced by 3.3% of them and 4.8% of enterprises developed marketing innovations.

However, the technological innovations account only for a small proportion of the total number of innovations which is the evidence of minor technical differences in food production. In the production of food and drinks in 2011 only 268 companies implemented innovative products, where upon the goods that are new to the market were produced by 44 companies and products that are new only to the company, by 242 ones. Only a small proportion of the total number of companies, namely 59 ones, exports innovative products from Ukraine. These figures illustrate the lack of technologically new products in the food market of Ukraine. At the same time, technological imitation is one of the main ways of assortment policy improvement of most Ukrainian companies.

Under these conditions, technological leadership in the production of food is kept for a short–term.

A limited number of companies manufactures products certified by international quality standards. Qualitative characteristics of food products are one of the most important competitive advantages. Foodstuff must be wholesome, safe for human health and also perform some functionality, such as exhibiting some characteristics which can prevent or reduce the incidence of a disease or having some properties necessary for health of certain groups of the population: children, elderly people (gerontological properties), groups of people with specific diseases and more.

Furthermore, another problem in Ukraine is an insufficient amount of companies certified according to international standards, without which it is impossible to realize any export marketing activities.

However, the existing regulatory and legislative framework of Ukraine allows using unfair competitive weapons aimed at the reduction of the

production cost along with a corresponding deterioration of its quality characteristics. In addition to the quality of the resulting material, not least in this case is the absence of restrictions on the use of substitutes, emulsifiers, flavor enhancers, etc.

Recently, the food industry in Ukraine is characterized by an increase of globalization of these processes. There is a consolidation in some branches of the food industry. However, the level of consolidation in the markets is different. The highest level of consolidation is in the brewing and fat and oil industry.

The presence of major producers in the market intensifies price competition by allowing them to reduce transaction costs and economies of scale.

The specific feature of food market in Ukraine is that the product lines of the competitors include a list of similar products that are unessentially different in certain consumer characteristics.

One of the indicators of the products competitiveness is the country's foreign trade figures of these products. The share of processed food products exports in total exports is 4.3% – 2939.1 million US dollars (Table 3).

Table 3. The share of foodstuff in the foreign trade structure in 2011, million US dollars

Foreign trade goods	Export		Import	
	Total	Share in total, %	Total	Share in total, %
Total	68394,2	100	82608,2	100
Live animals, products of animal origin	936,6	1,4	1035,4	1,3
Products of plant origin	5532,0	8,1	1815,9	2,2
Fats and oils of animal or plant origin	3396,4	5,0	468,7	0,6
Processed food products	2939,1	4,3	3026,7	3,7

Source: [State Statistics Committee of Ukraine].

Foodstuff production in Ukraine would be competitive only provided that the resources` provision would also be competitive, especially the production of raw materials for the food and processing industries.

Taking this into account, one of the most urgent problems is the increasing of agricultural production competitiveness.

Despite the significant competitive advantages in the geographical division of labor, A.I.C. of Ukraine has low efficiency. Inefficient land use

structure (Table 4), absence of a balanced agricultural sector development, limited production of high quality and competitive agricultural products and the slow formation of the environmentally friendly products market are most often mentioned as its main reasons.

Table 4. Land area of Ukraine

Total land area	603,5 thsd. km^2
Agricultural land	70,9%
Forest	17,6%
Water	4,0%
Land under buildings	4,2%
Other land	3,3%

Source [Institute of Agrarian Economics].

For a long time the development of agriculture in Ukraine was aimed at agricultural production intensification without notice of doing harm to natural resources, and, as a result, without regard to potential negative consequences of such use of land resources. This has led to increase in food production; however, its quality and consumer properties have deteriorated.

Moreover, due to irrational use of natural resources, inefficient land tenure system that depletes soil, irrational structure of crops and the lack of science–based crop rotation and unbalanced use of organic and mineral fertilizers environmental problems have emerged, posed by the depletion and pollution of land resources, soils fertility decreasing, the development of water and wind erosion and by the disturbance of agricultural land ecological balance, which greatly reduces the potential of agro–ecological land and reduces the possibility of high–quality agricultural goods production [Yeroshyna 2012].

All this affects the quality of agricultural products and, thus, the country's export capabilities and product quality, which is produced by the food industry. Production of Ukrainian agricultural sector has the capacity of competitive advantage. This will increase export capacity and increase revenues to the state budget. Possible ways to improve the competitiveness of Ukrainian farms are:

- compliance with national standards for agricultural products requirements of the EU, which Ukraine aspires to join today;
- establishment of modern agricultural market infrastructure;
- improving relationships of Ukrainian agricultural enterprises;
- cooperation of agricultural enterprises with scientific research institutions;
- improvement of Ukraine's reputation in the international market as a manufacturer of environmentally friendly and safe products;

- organization of international exhibitions, fairs, conferences in our country and facilitate the participation of local entities in such events abroad, etc.;
- implementation of these measures will improve the competitiveness of the agricultural sector of Ukraine.

The level of competitiveness can be evaluated on the basis of the following provisions:

1. Product competitiveness is a relative index, therefore, for its assessment it is necessary to solve the problem of comparative base.
2. Product competitiveness can be defined in a specific market segment at a given period of time; consequently, a market should be differentiated and segmented.
3. Combination of qualitative and quantitative indicators allows forming a product characteristic which makes this product competitive, i.e., such that can withstand competition with similar products or goods–analogues in a particular market at a particular time period.
4. Low competitiveness of agricultural products is determined by the lack of sufficient investment, low levels of innovation and by the lack of effective logistics solutions.
5. Combination of economic, technical, technological, organizational, legal and environmental parameters of products which determine its compliance with regulatory, market and consumer demands shape the competitiveness of products.

References

1. Environmental management – an essential condition noosphere of Ukraine, (2011), Materials of V–th Plenum of the Union of Economists of Ukraine and Ukrainian scientific–practical conference, p. 276.
2. Kirichok O., The competitiveness of crop production: ecological and economic support, http://www.khntusg.com.ua.
3. Pogrischuk B.V., Formation and utilization of productive capacities in agriculture, http://www.pdaa.edu.ua/sites/default/files/nppdaa/4.2/218.pdf.
4. Yeroshyna T.V., Environmentally friendly goods production – an important direction of Agrarian Policy of Ukraine, Electronic resources, http://archive.nbuv.gov.ua/portal/natural/vkhnu/Gge/2012_997/Eroshina.pdf.
5. http: //www.iaa.kiev.ua – Institute of Agrarian Economics.
6. http: //www.ukrstat. gov.ua.

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17. Problems and perspectives of sustainable development in Belarusian agriculture

At present, the Belarusian agriculture has entered a new, in terms of quality, level of its development, which is characterised by further intensification of production, modernisation, comprehensive restoration of the entire production and social infrastructure. This was possible due to the finishing the implementation of one of the most important stages of agricultural sector development of the country in 2010, namely The State Program of Rural Development 2005-2010 [The State Programme 2005]. In the very 2010, RUB 9.1 trillion of investment in basic capital has been used for the implementation of this extensive project, which is 2.6 times higher than in 2005.

As regards the social issues a network of 1,481 agro–cities has been created in the programming period. These are housing estates of new type evenly distributed across the country. They allow to ensure social structures not only to people living therein, but also to the residents of the neighbouring areas. 8,016 residential properties (flats) were constructed in the agro–cities with the total area of 714.5 thousand square meters. The residential area per one rural resident has increased by 1.7 meter and it reached the level of 30.1 square meters.

Moreover, the rural areas are now much better equipped with installations, the following were launched on these areas: 2.2 thousand kilometres of water supply networks, 5.6 thousand kilometres of gas grids, 4.8 thousand kilometres of power networks, 141 kilometres of heat distribution systems and 353 kilometres of sewage systems.

It should be also noted that further concentration of agricultural production has been ensured in the production area. Thus, within 6 months, the average area of agricultural land per one farm has increased by 40% and reached over 5 thousand hectares. Moreover, funds were allocated and used for the organisational, technical and technological strengthening of the Agro–Industrial Complex (AIC).

The State aid plays a significant role in strengthening the material and technical base of agriculture. The aid amount has increased over the 2005–2011 period from RUB 2.4 trillion to RUB 8 trillion (Table 1).

Table 1. Dynamics of agricultural budget financing in 2005–2011, RUB billion

Name of the financing source	Year					
	2005	2007	2008	2009	2010	2011
Total	2,415.6	4,277.4	4,677.7	5,680.2	4,978.6	8,032.0
Including:						
State budget	366.7	548.3	733.6	848.8	793.4	4315.0
national development fund	–	–	–	333.2	41.8	–
local budget	571.8	1,599.1	1,498.4	1,879.9	1,467.8	3,716.0
State budget to support the agricultural food producers and agricultural sciences	1,477.1	2,130.0	2,445.7	2,618.3	2.675.6	–
subsidies per 1 hectare of agricultural land, USD	125	220	247	232	191	195

Source: own elaboration.

The analysis showed that the total agriculture support funds amount to the equivalent of ca. USD 220 per 1 hectare of agricultural land. The basic amount of support is allocated to financing the supply of resources to agricultural production, drainage, liming, reduction of the costs of fertilisation as well as plant and animal protection products, reduction of the costs of credits provided under the government's guarantee and repayment thereof.

Table 2 presents the amounts of financial resources provided in 2011 according to oblasts.

Table 2. The amount of budget resources provided in 2011 according to oblasts, RUB thousand

Oblast	Subsidy per 1 hectare of agricultural land	Subsidy per 1 equivalent hectare of agricultural land
Brest	610.0	20.6
Vitebsk	390.0	15.9
Gomel	700.0	25.1
Grodno	650.0	20.
Minsk	470.0	22.2
Mogilev	410.0	14.0
Total	530.0	18.3

The data given show that the greatest amount of support per 1 ha and per 1 equivalent hectare of agricultural land fell to the Gomel Oblast and it amounted to RUB 700.0 and 25.1 thousand, respectively, and the lowest was noted in the Vitebsk Oblast.

The study showed that, in practice, as per RUB 1 of commodity production the agricultural organisations conducting more intensive and effective production obtain lower compensation payments from the budget as compared to the farms of lower development level (Table 3).

Table 3. Interdependence between compensation payments from the budget and the level of commodity production for 2011, RUB thousand/ha

Group of farms as per the level of production	Average level of production	Amount of compensation payment	Ratio of compensation payment to the level of commodity production	Profitability of production execution, %
Under 300	247.40	284	1.15	–16.42
300.1–500	412.94	305	0.74	–21.95
500.1–700	608.82	384	0.63	–12.39
700.1–900	794.76	400	0.50	–10.85
900.1–1,100	995.02	406	0.41	–7.52
1,100.1–1,300	1,209.18	438	0.36	–5.74
1,300.1–1,500	1,400.31	415	0.30	–2.65
1,500.1–1,700	1,591.37	465	0.29	–2.37
1,700.1–1,900	1,794.30	434	0.24	2.62
1,900.1–2,100	1,988.33	487	0.24	0.23
Above 2,100	5,104.47	665	0.13	9.77

This is explained by the fact that in 2006–2010 the division of resources from the basic centralised source of financing of AIC – the State fund to support agricultural producers of raw materials and food, as well as agricultural science – in line with the methodology of the Ministry of Agriculture and Food was shaped as follows: 50% of funds was allocated proportionally to the area of agricultural land considering the cadastral evaluation, and 50% – was allocated proportionally to the volume of global production, also considering the cadastral evaluation, which may be basically considered as justified. Further division of support funds took place at the level of oblasts (including also resources from local budgets), but according to the analysis in many cases it failed to consider the approaches adopted at the national level.

The support and resources obtained from budget funds were often provided to enterprises failing to ensure high indicators of crop yields, animal productivity, and thereby profitability of budget outlays. Here the logic boiled down to the fact that a farm having better results will survive on its own, the weaker is the one which needs help. This, eventually, resulted in providing lower budget payments per production unit to economic entities generating the main volume of the agricultural commodity production of the State (responsible for the global production), than the enterprises producing little and having lower profitability of activity.

Thus State support significantly contributes to the increase in agro–industrial production volume and agriculture, in particular. However, despite clear progress in the Agro–Industrial Complex the issues related to efficiency of its development are far from being absolutely settled. Therefore, as of 1 January 2011 over 30% of agricultural organisations was insolvent, their financial liabilities amounted to almost RUB 26.9 trillion and increased over 2010 by 34%.

At that time, the overdue liabilities of agricultural enterprises reached RUB 492.4 billion. Past–due liabilities were 4.9 times higher than past–due receivables. As one can see, there is a continuous tendency to decrease the financial stability of agricultural producers.

Table 4. Change in prices of individual industrial production types for agriculture

Production	Average price per day		Growth rate, %
	1 January 2005	1 April 2011	
Granular potassium chloride, Class 1, RUB thousand/ton	107.38	126.00	117.34
Liquid nitrogen fertilisers (KAS[19]–30), RUB thousand/ton	113.97	528.00	463.28
Gas, RUB thousand/thousand m^3	123.21	840.00	681.76
Electricity, RUB thousand/thousand kWh	57.57	375.00	651.38
Gasoline A–76, RUB thousand/ton	1,140.06	2,899.00	254.28
Diesel oil, RUB thousand/ton	980.72	2,998.00	305.69

One of the aforementioned problems needs special attention as its existence negatively affects the efficiency of the entire agricultural production for many years now. This refers to the lack of price parity to industrial and

[19] [KAS] Urea and ammonium mixture.

agricultural production. Moreover, it should be noted that the last years were characterised by continuous increase in the prices of material and energy assets imported to the country, and this inevitably decided on the increase in the prices of technical assets, fuel, fertilisers and other material assets used in agricultural production. In the next 6 years the prices of mineral fertilisers increased by over 2.5 times, that of fuel – 2 times, gas and electricity – 4 times (Table 4). This means that as a result of non–equivalent inter–branch exchange over the 1991––2011 period, agriculture suffered losses amounting to USD 67.7 billion, including in the last six years (2006–2011) – USD 34.4 billion (Table 5).

Table 5. Losses in agriculture following from lack of price parity in 1991–2011

Year	Loss in total, USD million
1991	848.7
1992	1,173.8
1993	1,560.8
1994	1,531.2
1995	2,769.4
1996	3,394.8
1997	3,364.3
1998	3,035.2
1999	1,751.8
2000	1,805.8
2001	1,581.6
2002	1,830.2
2003	2,233.7
2004	2,991.2
2005	3,422.5
2006	4,866.3
2007	6,243.3
2008	8,079.3
2009	7,524.4
2011	7,637.2
Total	67,645.4

Note: The total loss following from lack of price parity has been calculated as compared to prices of 1990.

Apart from that, important reasons hindering development of agro–industrial production may cover also slow structural transformations in the AIC and insufficient appeal to foreign direct investments. All this requires further improvement of the agricultural policy which would decide on the perspectives and priorities of sustainable development of agro–industrial production in the country not only in the coming years, but also in a more distant future.

In the light of the above and given the current trends forming on the world food markets, the tasks that the Belarusian AIC has set for itself for now and the nearest future cover further increase in the supply of high quality special food products to the population of the country and increase in export volume, which at the end of 2015, should be estimated at the level of no less than USD 7 billion. Given the above the current emphasis in the AIC area has been corrected. Thus priority in agriculture has been given to the increase in the animal production which ensures inflow of over 90% of strong currency from agricultural export. Moreover, taking into account the potential of forage resources, further increase in the volume of animal production should be achieved mainly by beef and dairy cattle farming, since currently there is a greater demand for it on the world markets than there is for pork or poultry meat. In the long–term perspective this factor will have an even greater significance if we consider growth rate of pig and poultry farming in Russia and other regions of Belarusian export.

On the basis of the above, National programme for dairy industry development for 2010–2015 was drawn up and approved. It aims at enhancing the effectiveness of the dairy industry on the basis of competitive production, stable provision of high quality dairy products to the population, increased export of dairy products, greater economic viability of dairy cattle farming. In relation to the above, the national dairy industry has to increase milk production in agricultural organisations and other entities to 10 million tons and cattle population to 1 million 600 thousand units by the end of 2015. Moreover, 9 million tons of raw milk should be delivered to processing plants.

The following works will be carried out in the 2011–2015 period to renew the dairy industry infrastructure: construction of 875 new dairy farms, reconstruction and modernisation of 1,358 existing ones, 2,846 rooms for breeding young bovine animals.

It is expected that in 2015, 59% of dairy products will be sold for export, thereby enabling to make USD 2.5 million, i.e. 2.5 times more than in 2010.

It should be stressed that, recently, the projected level of animal productivity in industrial meat production of bovine animals has been practically achieved. However, organisational problems remain. In a number of Belarusian regions, despite low efficiency of beef production on farms having small herds of cattle and using faulty technologies the right measures, aimed at concentration of cattle farming in animal production complexes and large specialist agricultural organisations, are not being taken. Although it is possible to produce large quantities of cheep beef through concentration of cattle

intended for fattening in the most efficient agricultural organisations, there are still small and inefficient companies that require high outlays.

Calculations show that if all the cattle population intended for fattening in 2011 had been reared in specialist complexes and on large farms using advanced technologies, than even at average daily weight increase at the level of 700 grams, more than 100 thousand tons of additional beef would have been obtained at low own cost. But it needs to be observed that in specialist complexes fattening gives up to 1,200 grams of weight increase per day. This means that with the right organisation of animal breeding and feeding the beef production in the country could be doubled.

As regards pork production, a number of sectoral measures aimed at reconstruction and modernisation of the existing pig farming complexes were implemented. Modern high–efficiency technologies have been applied together with economical resource efficient equipment that allows for significant reduction in the consumption of heat and power, fodder and workforce. Today there are 109 pig farming complexes in the country, which keep 2.3 million pigs, i.e. 79% of the total amount of pigs in agricultural organisations, and the national pork production amounts to ca. 350 thousand tons in live weight, which represents 85% of the total production value.

The creation of large pig production plants using advanced production technologies and equipped in modern and economical devices enabled to: increase pork production by 69.9% over 5 years, increase daily productivity by 75 grams, decrease fodder consumption per 1 decitonne of weight increase by 18% – from 5.1 to 4.2 decitonne of fodder unit.

In order to further increase competitive production of beef in 2011–2015, it is planned to:

- set up 72 new advanced pig farming complexes and 38 reproduction divisions in the existing complexes, and to implement the resource efficient technologies and apply the automated systems for control of production processes;
- import to Belarus new prospective and specialised meat–type breeds of pigs enabling to use their high–yield and meat values at low fodder consumption level;
- set up 5 breeding plants, establish a network of grandparent breeding farms for rearing of meat–type breeds of pigs and equip selection and farming stations and breeding farms;
- in 2015 organise production covering full quantity of concentrated fodder in concentrated fodder production plants that fully meets the demand.

The implementation of the aforementioned measures will allow to increase the pig population in 2015 to the level of 3.5 million units, pork production to 620 thousand tons (98% of the general volume), i.e. 177% as compared to the level noted in 2010, and to increase export of pork from 30 to 80 thousand tons per year.

As regards poultry farming, it needs to be emphasised that it is the most dynamic branch in the Belarusian AIC, where it has been modernised. New buildings for poultry production were built, and the existing buildings were reconstructed and modernised and high–efficiency technological equipment has been installed therein. A hatchery has been put into operation to breed high––yield crossbred chickens for meat, the capacity of secondary level poultry for breeding purposes has been expanded to rear parent stocks of meat–type poultry and laying hens.Poultry farming in the country is divided into production of meat and eggs.

Implementation of tasks in poultry farming for meat enabled to produce ca. 350 thousand tons of poultry meat in 2010. Average daily increase in broiler weight has grown from 48.4 grams in 2005 to 58.0 grams in 2010, fodder input for production of 1 kg of meat from broilers has dropped from 1.87 to 1.75 fodder units. On this basis, poultry farms have reached the viability of meat production from broilers at the level of 46%.

As a result of modernisations in the laying hens framing and the use of high–yield crossbred chickens, 2.4 billion eggs were produced in 2010, i.e. by 7% more than the assumed level. Production volume has increased 1.2 times as compared to 2005. The fodder input per 1,000 eggs has decreased by 16 kg of fodder units. In 2010 the viability of egg production plants has grown to 24%.
Development of poultry farming today and in the 2011–2015 time horizon is based on the respective programme approved by the Council of Ministers of the Republic of Belarus. It provides for stable supply of high–quality poultry products to the population, which enables to fully meet the demand for eggs and poultry meat, as well as increase the export of these products.

The programme projects that in 2015 it will be possible to produce 569 thousand tons of poultry in live weight (2 times more than in 2010), increase the average daily increase in broiler weight to 60 grams, decrease the fodder input needed to give one decitonne of broiler weight increase to 1.7 decitonnes, produce – taking into account private auxiliary farms – 3.8 billion eggs, decrease fodder input needed to produce one thousand eggs to 1.3 decitonne.

Over the 2011–2015 period, in order to achieve the planned production volume, it is planned to reconstruct and change the technical equipment of 407 buildings for keeping poultry, construct 534 and change the profile of 107

buildings, reconstruct and change the technical equipment in 24 poultry meat processing divisions and construct 22 new ones.

It needs to be emphasised that a lot of work is required in the land cultivation sector. Traditionally, this sector is predominated by cereals and fodder, the problem–solving strategy for their production is being developed and implemented to a satisfactorily successful level. The task for 2015 is global harvest of cereals at the level of ca. 12 million tons, i.e. enough to fully meet the food and fodder needs of the country, another task concerns cattle farming and consists in creating grass fodder stock in the amount satisfying the demand for half a year.

It needs to be stressed that as regards land cultivation the role of potato production has grown dynamically. This sector has a considerable economic potential given the prices at the domestic and foreign markets. In 2011 their average viability in the country exceeded 70%.

Today, Belarus has the necessary facilities to pursue efficient potato production. The newly created varieties have comprehensive field resistance to injurious factors and are characterised by potential performance up to 700 decitonnes per 1 hectare and high quality indicators measured according to the national plant variety study. A complete scheme of potato seed has been also organised. The breeding technology has a significant technical support.

Potato breeding will be concentrated in specialist farms, where crops amount to more than 150 hectares. It is planned to concentrate the main commodity production centres in 15 integrated clusters established in Belarus that cover production and processing plants, as well as plants conducting production of potato and potato products. In general, if the planned measures are implemented and taking into account the private sector, it is quite possible to achieve, in the long–run, potato export at the level of 1 million ton per year, which is a level noted in the country in the past mainly in 1985–1990.

The study shows that demand for sugar on the world markets in on the increase. It needs to be emphasised that Belarus has at its disposal significant possibilities of its production. Sugar beet has high production potential and thus in the nearest future Belarus plans to achieve crops at the average level of 500-600 dt/ha. This is a rather feasible level since model farms have already managed to reach it. Apart from that, there are high–yield varieties ensuring crops of root plants above 1,000 dt/ha with sugar content above 18% according to the national plant variety study. Moreover, practically all issues related to breeding technologies and technical support have been solved. Additionally, organisational connections are being established between sugar plants and farms

cultivating sugar beets. The production prices, assuming achievement of the planned efficiency level, allow to conduct high yield production.

The most important task of agro–industrial production covers increase in the efficiency of operation of processing industry, which shapes commodity production, its competiveness and the very nature of agricultural economy. A clear differentiation of enterprises according to economic performance indicators has been identified in the sector. The calculations show that if in 2011 the profitability of processing reaches the average national indicator, additional RUB 240 billion of profit will be generated. This amounts to almost the same as the profit of all meat plants in Belarus altogether.

Significant losses are incurred by the processing sector due to individual approaches applied in respective regions. Despite significant differences in the processing of raw meat and dairy products in the national processing plants, each region tries to process its production only in local plants no matter how bad they are.

Thus efforts are made to eliminate interregional barriers. Oblasts, being the public owners of processing plants, have been tasked with immediate and thorough modernisation of large processing plants to renew, as regards technical and technological aspects, their production capacities, concentrate therein the processing of the basic volume of national resources of raw materials, regardless of the administrative borders of their production.

It has also been planned to continue implementation of technologies concerning new types of food products of high value added (no less than 50 types each year). This primarily refers to the functional as well as curative and prophylactic products (low–calorie foods, healthy foods and baby food). It is also planned to extend the production of semi–finished products which are almost ready for consumption and wrapped in aseptic packaging, etc. These measures will enable to increase commodity production per one ton of agricultural raw materials by 10-15%.

Moreover, it is necessary to accelerate the pace of works on the adjustment of the organisational structure of agriculture to the advanced global practices, basing on horizontal and vertical entities of the AIC. This will, in turn, allow for better use of the agricultural production potential, establishment of a business partnership between agricultural producers, processors and the trade, fair division of profit at all stages of the integrated food chain and on that basis – rational use of financial flows in the industry. At the same time, it will be possible to generally reduce the expenditure in the production–processing – implementation chain, extend the nomenclature and improve competitiveness

of agricultural production and achieve general improvement of the economy of agricultural industry.

At the present stage, it was considered expedient to use integration of business entities as grounds for organisational improvement of AIC structure, where large processing plants will act as coordination centres. Such plants should integrate commodity areas of agricultural production, plants producing concentrated fodder, animal farming complexes, processing plants and trade.

In 2011 there were already 42 cooperative and integration structures active in the country which conducted production and economic activity. Apart from the integrating organisations, they were formed with the help of 133 participating organisations .

In 2011, 15.2% of agricultural global production has been produced in the aforementioned structures covering 5% of agricultural land and employing 9% of the total number of workers carrying out agricultural activity. According to labour results for 2011, the profit generated by them amounted to RUB 383 billion, and viability to 9.4%.

To sum up, it should be highlighted that foreign trade policy will be targeted at rational use of the export potential, increasing its efficiency and ensuring positive foreign trade balance [On the State programme 2011]. Apart from export development, import will be continually optimised by reducing additional import to of fodder, fruit, vegetable and their products, fats and plant oils, tobacco products and other products to Belarus.

Thus the implementation of a modern strategy for further sustainable development of AIC in Belarus creates the necessary conditions for increasing the competitiveness of the national agricultural production enabling its export to global markets.

References

1. The State Program of Rural Development 2005-2010, (2005), Minsk, Belarus, 96 p.
2. On the State programme for sustainable rural development for 2011-2015 2011–2015, (2011), Decree of the President of the Republic of Belarus of 01 August 2011, No. 342//Etalon – Belarus [e–sources]/National register of legal information. Republic of Belarus, Minsk.

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18. The Hungarian horticulture sector: analysis of outdoor and greenhouse farms

18.1. Introduction

Agriculture is a traditionally important sector in Hungary, although its share in the GDP and in the employment is continuously declining since 1989 (20,3% GDP share in 1989 versus 4,6%, in 2011).

In 2004, Hungary became an EU member, and thus faced new challenges and possibilities: the free trade agreement between the member states opened access to new markets, but also brought new competitors from more developed member states. On the other hand, the membership also opened access to new funds, which would eventually help the sector to face these new challenges.

Vegetable and fruit production is the ensures the living or additional earnings for thousands of families in Hungary. It plays an important role in the rural employment, but Hungarian producers are facing hard challenges after the accesion to the EU due to the new markets and the rise of import coming from the member states or other countries.

Hungary possesses very good ecological qualities compared to other central European countries. There is the possibility of producing bio products, specialties the so–called "Hungaricums", as well as providing for the niche markets [Udovecz et al. 2008].

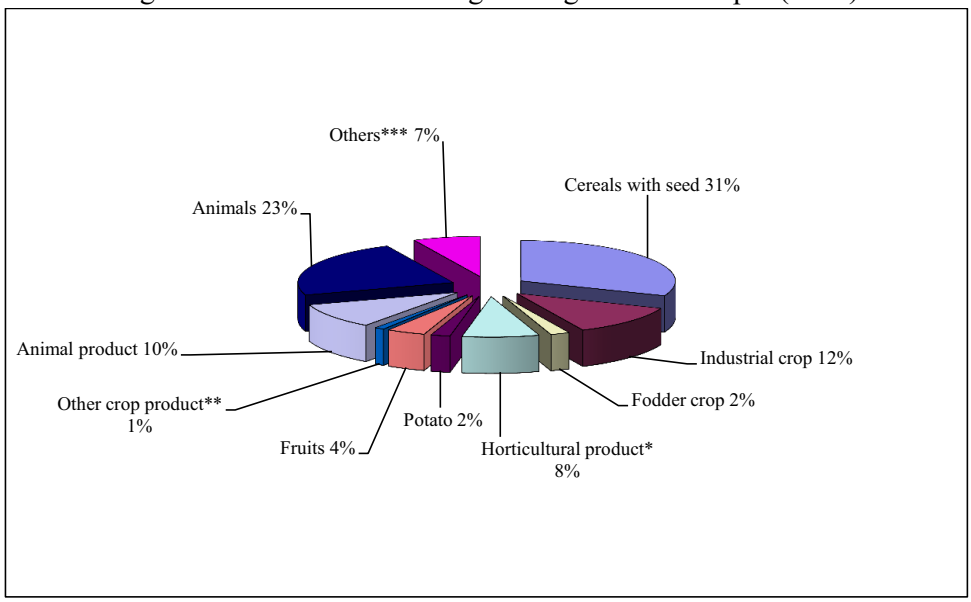
The quickly changing market needs which make harder the producer's decision making and planning is a key problem for Hungarian horticulturists, therefore a flexible adaptation to the market changes is inevitable [Popp et al., 2008].

18.2. The Hungarian agriculture's place in the EU

The average agricultural output of the EU in the 2001 and 2011 period was of 347.489 million Euros. Before joining the EU (2001–2004), Hungary's production had a share of 1,6%, while this share rose to 1,9% after accessing to the member status. This slowly rising tendency is clearly visible, and shows that Hungary manages to face the different challenges.

The agriculture in Hungary is mainly focused on livestock (animals and animal products: 33%) and cereals (31%), and the horticulture sector is the third biggest part of the Hungarian agriculture (Figure 1).

Figure 1. Division of the Hungarian agricultural output (2011)



*Fresh vegetable, Plantation and Flowers.
**Seeds, Basket and spinner stocks, Others.
***Agricultural services, Non–agricultural secondary activities (inseparable).
Source: [Hungarian Central Statistical Office 2013].

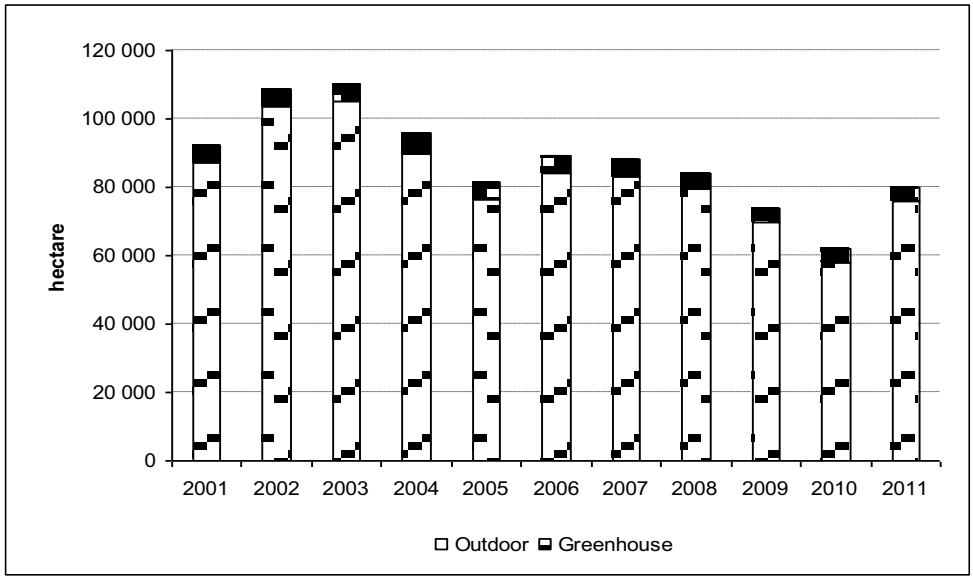
The horticultural products represents 8% of the agricultural output in Hungary, and its share in the EU (1,7%) is consistent with the share of the overall agricultural output [Eurostat].

18.3. Territory of vegetable indoor and outdoor (2001–2011)

In accordance with the overall decline of the sector, the cultivated surface in Hungary is steadily decreasing (Figure 2). The production surface of the products relevant to the processing industry (sweet corn, pea) has not changed significantly. Hungary's sweet corn production has remained the leader in Europe, and is still one of the world's most important one. According to statistics, the most important outdoor productions are water melon, cabbage, onions, pepper, carrots, and pea. In 2011, half of the greenhouse production

came from tomatoes and pepper, while the other half was accounted for by cucumber, salads, lettuce and other vegetables.

Figure 2. Territory of vegetable both outdoor and indoor (2001–2011)



Source: [FruitVeb 2012].

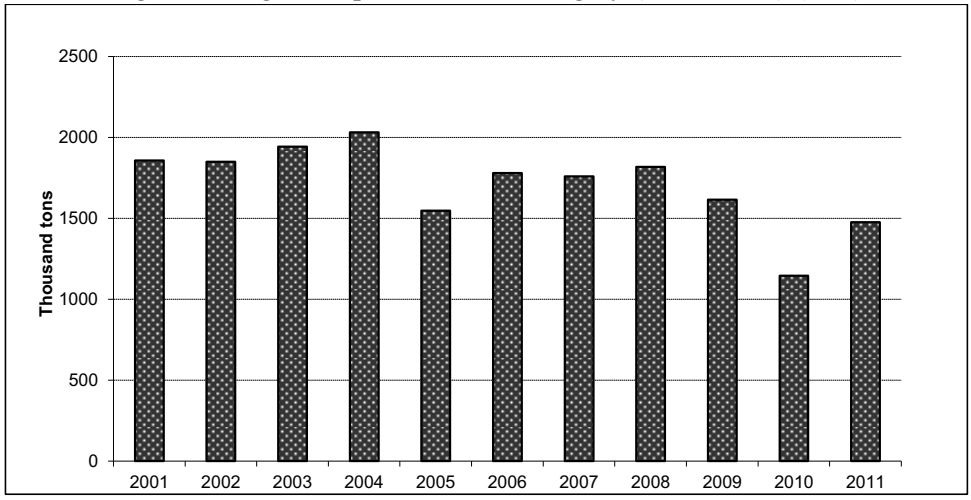
As for the outdoor surfaces, the decrease is mainly explicable with the import pressure from better prepared member states, the naturals disasters (floods, inland inundations) against which Hungary has not yet developed a modern and efficient prevention system (both in term of technology and financial compensation for the losses) and the loss of sales possibilities, which result in lower profitability and higher risks.

On the greenhouse side, the lack of capital and the rise of energy costs cause the surface to decrease by 24%, although the use of renewable energy (geothermic energy) could eventually reverse this process, as Hungary has very good circumstances in this regard.

18.4. Vegetable production

The loss of production surface also reflects in a lower production level, with exceptional peaks and drops influenced by several factors, like for example the year 2010, marked by very inimical weather: record floods, inland inundation, heavy storms, hail (Figure 3).

Figure 3. Vegetable production in Hungary (2001–2011) (tons)



Source: [Hungarian Central Statistical Office 2012].

The Hungarian agricultural sector is also characterized by a weak organization, obsolete technology, dispersed land structure, which neither allow an efficient production nor a flexible environment that could respond efficiently to the influencing factors.

Production in outdoor

The maize production is very dominant in the Hungarian outdoor production (45% of the total fresh vegetable production), and Hungary's maize production is the 4th biggest in the world.

Other important produces species are water melon, and peas, the field tomato production as declined in the last 4 years.

The negative effect of the external factors in the year 2010 are clearly visible, the overall output dropped by 35%, the pea production by 50%, and the field tomato production by 68%.

In 2011, the pea and field tomato didn't reach the production level from before 2010, but other species managed to increase the output.

Production in greenhouses

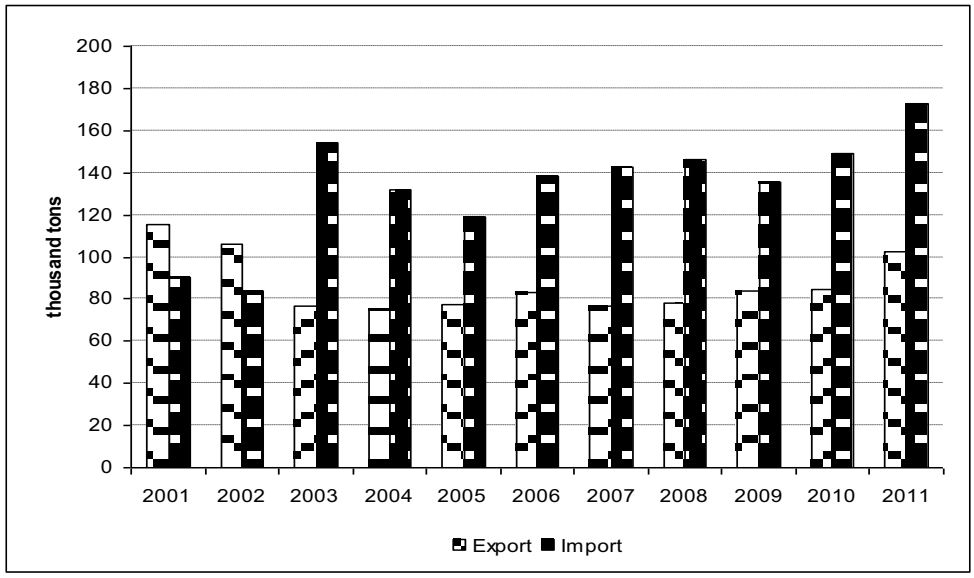
Although the territory surface of the greenhouses is relatively small compared to the outdoor surfaces (5–6%), the contribution to the total output is very significant (~27%).

The most important species produced in greenhouses are pepper and tomato, although the shrinking is also visible in this segment. The results of the year 2010 show that the greenhouse production is also influenced by the weather conditions, but that the main reason for this decreasing is the regression of the territory.

18.5. Export–import

Although the membership to the EU brought a lot of new possibilities and opportunities, Hungary's agriculture was not well prepared to the challenges of the free trade between the member states and the elimination of custom charges: Hungary's export–import balance was just positive in the years preceding the accesion, but this changed dramatically from 2003, and today the import is nearly the double of the export quantity (Figure 4).

Figure 4. Quantity of export–import in Hungary (2001–2011)



Source: [Hungarian Central Statistical Office 2012].

The export value of fresh vegetables has risen by 26% in the 2001–2011 period (altough the growth, compared to the previous year fell back in 2003, 2005 and 2009). Hungary's export value was of 104,9 thousand euro. At the same time, while the export rose by 26% between 2001 and 2011, the import value rose five times. The weakening position of the sector is clearly showing in its lower share in Hungary's agricultural and food industry related export:

vegetables accounted for 2,4–2,9% of Hungary's export before the accesion to the EU, while the same ratio has decreased to 1,5% in 2011(Table 1).

Table 1. Fresh vegetable value and share of the agricultural and food industry international trade in Hungary (2001–2011)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Import (thousand €)	19 248	26 262	44 072	50 637	63 804	74 029	83 028	81 187	70 197	91 181	93 400
Total agricultural and food industry import (thousand €)	1 264 459	1 387 589	1 493 484	1 999 321	2 407 429	2 680 062	3 188 083	3 860 138	3 370 648	3 710 518	4 445 658
Share of the import of agricultural and food industry (%)	1,5	1,9	2,9	2,5	2,6	2,8	2,6	2,1	2,1	2,5	2,1
Export (thousand €)	83 009	74 594	68 745	79 698	62 296	68 001	79 507	83 346	80 141	93 224	104 996
Total agricultural and food industry export (thousand €)	2 827 455	2 813 431	2 848 947	3 091 437	3 319 110	3 669 003	4 857 948	5 776 862	5 082 747	5 839 580	7 190 534
Share of the export of agricultural and food industry (%)	2,9	2,6	2,40	2,6	1,90	1,9	1,60	1,4	1,60	1,6	1,50

Source: [Hungarian Central Statistical Office 2012].

"The home of the pepper" – this is still today an image foreigners think and feel regarding Hungary, but this image is getting untrue, as more and more pepper is being imported nowadays: the export–import ratio used to be of 6 to 1 before the accesion, and is today 2:1, and still dropping. After 2010, Hungary is a net importer of onion, potato, tomato, cauliflower, cucumber and lettuce, that is more is being brought in the country than exported abroad [FruitVeb 2012].

18.6. Sales possibilities

The sales possibilities of producers in Hungary are mostly consistent with the possibilities in other European countries: wholesale market, production organization and retail chains.

The origin of the products can be either individual growers or production organizations, and of course the import. According to the Hungarian Central Statistical Office's (KSH) producer balance, the available domestic vegetable stock in 2011 was of 1,480 tons, and 89% of these has been marketed.

The producer associations bring their member's fresh vegetables to the retail shops and foreign markets. The wholesaler markets have an important role in the distribution and retail of the products, as well as in the information exchange. They give a general image about the actual offer, the new products on the market and the primer products. The Budapest Wholesaler Market (BNP)

has an important role in assuring the proper quality by personal inspection and product selection. The wholesaler markets are however a fertile terrain for black market operations, illegal import can also be found.

The final customers meet the products at consumer markets, traditional shops and retails chains, where the later puts great pressure on the producers regarding both quantity and price, resulting in lower profitability and quality. The presence of retail chains is the strongest in the last phase.

Past challenges

Hungary faced several challenges since joining to the EU, beginning with the challenge of the foreign competition (mostly from countries with more experience in free trade). Hungary has several weaknesses in the agricultural sector, like the obsolete technology and bad organization, as well as the black market. Hungary had to face two major problems in the last years:

- the EHEC crisis
- the structural problems in the water melon market

The EHEC crisis

In May 2011, there were a cluster of EHEC (Entero–Haemorrhagic Escherichia Coli) cases in northern Germany. Authorities warned against consuming fresh tomatoes, cucumbers and lettuce.

Although the warning only related to these species, a decline was perceptible in the overall vegetable sales, and several products had to be removed from the stores (cucumber, tomato, salad crops, pepper), 4511 tons. The loss of the sector was around 10 milliard forints, and the consumer trust also declined and set back the market demand [Czerván 2012].

Structural problems in the water melon market

In the past, Hungary was one of the biggest water melon producer, its production used to be the 4th biggest in the world. Today, Hungary's position is strongly declining [FriutVeb 2012].

The reasons are obviously the same as the ones in the entire agriculture:

- lack of modern technology,
- shrinking supply due to the decrease of the profitability,
- decreasing territory,
- increasing import.

In order to increase the domestic consumption and reduce the loss of the producers, the Hungarian government asked the big retail chains to accept a fixed price (higher than the probable market price), begun a TV and radio campaign for the water melon consumption, and even organized free tastings in the biggest retail chains.

The action was successful, since the domestic consumption increased and retail chains managed to make a bigger profit (since all those involved in the agreement held the fixed price), but there is no data whether the producers received their share of this extra profit [Czerván 2011].

18.7. Challenges in the vegetable sector

The structural problems in today's Hungarian agriculture are clearly visible: obsolete technology, shrinking and badly organized territory, foreign competition. The solutions to resolve these problems are also present, sometimes in Hungary, sometimes in the system of our competitors, since these issues are the ones that they also faced once.

The implementation of the different solutions all need capital, where the return of the investment can sometimes be calculated in decades, not seasons. The general economical situation in Hungary and in the whole word is currently not favorable to such long–term investments, and the few possibilities are high priced, which again affects on the return of the investment.

Although Hungary used to be a strong agricultural country, today's national legislation is not in favor of this industry: the taxes and contributions payable by the producers are high and complicated.

Some regulations are also restraining the producers to make development. For example, Hungary has very good conditions in regard to the renewable energy, mainly the geothermic energies, which could be used to heat greenhouses and thereby increasing their profitability.

The black market is very strongly present (~30–40%) in the fresh vegetable sector and generally speaking in the agriculture, which has a very bad influence on the sector.

Producers selling on the black market can offer much lower prices, since they can avoid several taxes and contributions. These products lower the average price, and therefore lower the profitability of the law–abiding producers, which again has a strong influence on the quantity and quality of the produced goods.

The Hungarian value added tax (VAT) has been uniformly raised to 27% in 2012, and is today the highest in the world. Although the VAT can be redeemed after selling the final product, producers have cash–flow problems because of this

high amount that has to be advanced, because of the long time span between the different purchases (seeds, machinery, fertilizer, chemicals…) and the sales.

The average VAT in the EU states is well below 20%, which helps foreign competitors to have better liquidity all over the production period. Although Hungary is traditionally strong in the agriculture sector, the advisory system is not well developed and used nowadays. Many producers are still using outdated methods and methodology, since they do not receive professional advice and do not develop themselves.

Many of the newly formed professionals can not find jobs in the agricultural field and leave for other industries, eventually reeducating themselves. The result is that most of the fresh information and knowledge gets lost and does not reach the working producers.

Weather is one of the most unpredictable factor and has maybe the most influence on a give year's production. The expansion of greenhouse production may mitigate this factor in the fresh vegetable sector.

Retail chains put a lot of pressure on producers regarding the prices, which affects directly the quality of the produced goods, and is an ideal opening for foreign products.

Hungarian policies try today to lower this pressure by setting a minimal share on Hungarian product in the stores and by giving special designation and notation to domestic products.

An intervention like in the water melon sector in 2012 is highly improbable, since it's borderline to a cartel agreement, and can only be implemented and supervised for individual products.

Due to higher buying prices and taxes, the Hungarian manufacturing industry has been relocated to other countries, which again results in a decrease of the demand on the market, measurable for several products.

As seen before, profitability is the key indicator in the agricultural sector: a good year can easily be seen in next year's production, and vice–versa.

Many factors lower the profitability (taxes, foreign competition, black market), but the actual economic environment is unstable and the national legislation quickly changing, which is even more unsettling for producers or professionals thinking about starting a business in this sector.

18.8. Conclusion

The vegetable sector has faced many new challenges in the last two decades, but mostly failed to adapt to these. The reasons for this are not only economical but more complex and affect all players of the industry. With the

adhesion to the EU and the ceasing of the custom protection came a very strong competition, the value of import products in Hungary is relatively high.

Fulfilling the market demands is hard most of the times, the key to successfully obtain long term markets is the usage of new technologies, market prospecting, and eventually the development of marketing strategies, which can be achieved by marketing campaigns.

Most of the producers are already applying the rules of integrated plant protection in their production technology, but are unable to gain price advantage from this because of the small layer able and willing to pay its price.

The number of croppers ready to use the legal frames to sell their products through illegal channels is high in the vegetable sector, which is of course disadvantageous for the producers working the regular way.

Beside the cropper system, the black market is also boosted by the high VAT. To fight against the black market, the decrease of the VAT should be necessary, even if limited to certain products or product groups.

The growing potential of greenhouse farming can be found in the usage of geothermic energy. Hungary possesses remarkable geothermic conditions in Europe. The usage of thermal energy for heating would lead to a big decrease of production costs in greenhouses, which would even boost the competitiveness of Hungarian greenhouses on the international market.

References

1. Czerván Gy., (2012), A kertészeti ágazat helyzete, lehetőségei "Situation and possibilities of the horticulture sector", Ministry of Rural Development.
2. Hungarian Interprofessional Organisation for Fruit and Vegetables (FruitVeb), (2012), Annual Report of Hungarian Fruit and Vegetable Sector.
3. Erdész F., Jankuné Kürthy Gy., Kozak, A., Radóczné Kocsis, T., (2009), A zöldség– és gyümölcságazat helyzete "Situation of the Fruit and Vegetable Sector", Research Institute of Agricultural Economics, Budapest.
4. Popp J. Potori N., (2008), A versenyesélyek javításának lehetőségei a magyar élelmiszer–gazdaságban, Szaktudás Kiadó Ház, Budapest.
5. Udovecz G., Popp J., Potor, N., (2008), Alkalmazkodási kényszerben a Magyar mezőgazdaság "Hungarian Agriculture Under Pressure for Adjustment", Research Institute of Agricultural Economics, Budapest.

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19. Review of some agrostatistical indicators that characterize Bulgarian vegetable production in the context of Common Agricultural Policy

The status, development and trends in field vegetable production as well as the preconditions and factors that determine it are topical issues due to their topical importance to the development of Bulgarian agricultural sector. During recent years vegetable production has been passing through a crisis.

The aim of this publication is to show the influence of some basic agrostatistical indicators over the status and dynamics of vegetable production as well as to reveal the basic trends in this important agricultural subsector and to determine those vegetable crops that have good perspective, competitiveness and potential for growing.

19.1. Introduction

The status, development and trends in field vegetable production as well as the preconditions and factors that determine it, are topical issues due to their importance to the development of Bulgarian agricultural sector. Before 1989, the milestone year for the whole Bulgarian economy, government regulation in all spheres of Bulgarian economy significantly exceeded the level of state intervention even in such highly regulated sectors such as agriculture in the EU.

After the crucial 1989, price liberalization, foreign trade and private initiative have put Bulgarian agriculture in a fundamentally different business environment. In comparison to European agricultural policy of the EU, the mechanisms of Bulgarian agricultural policy are not sufficiently well developed. The basic advantages for development of Bulgarian vegetable production are: favourable soil and climatic conditions, rich experience and traditions in vegetable growing and producing propagating material, high scientific potential and availability of a specific genotype of local crops and varieties, good opportunities for creating jobs in underdeveloped rural areas, creation of good conditions for organic vegetable production [National strategy 2009–2013].

19.2. Materials and methods

During recent years vegetable production has been passing through a crisis. For the period 2002–2011 its share in plant–growing and in agricultural sector as a whole, decreased by 76%. For the same period the areas harvested with vegetables decreased by 61%. Bulgaria's domestic production has not been able to satisfy the needs of the market and now Bulgaria, which once used to be a vegetable exporter now has become a net importer of fruit and vegetables. The import of certain crops at relatively low prices from neighboring countries such as Turkey and Greece where the weather is more favorable almost throughout the whole year, adds additional pressure on Bulgarian production.

The aim of this publication is to show the influence of some basic agrostatistical indicators over the status and dynamics of vegetable production as well as to reveal the basic trends in this important agricultural subsector and to determine those vegetable crops that have good perspective, competitiveness and potential for growing.

In recent years the development of vegetable production has been limited by a number of adverse factors and the most obvious are: lack of sustainable financial resources for improving and modernising production, poor condition of the irrigation equipment and infrastructure, low–skilled workers, constant competition of imported products which suppress domestic production.

Besides the adverse weather conditions, there are a number of other factors responsible for the economic conditions in the industry that have a negative impact on agricultural production:

- the prevailing unfavourable trend for reduction of agricultural lands – from 2000 to 2007 the usable agricultural area (UAA) decreased with 465.8 thousand hectares, including arable land which decreased with 219.6 thousand hectares. Strong fragmentation of arable land is very characteristic;
- the predominant number of small farms (more than 70% of the farms are under 1 hectare) and insufficient resource security put serious limits to the possibilities for the efficient use of production factors;
- shortage of financial resources – due to the fact that agricultural production is deemed to be high risk, commercial banks refrain from lending. The shortage of funds has delayed the process of restructuring and modernisation of the industry and has put it at a disadvantage [National strategy 2009–2013].

In 2011 the value of vegetable production marked a growth of 18.1% in comparison to the previous year.

In marketing year 2011 vegetable crops grown in the open were 45.62 thousand hectares. Harvested areas marked an increase with 9.2% in comparison to the previous year. The harvested areas of potatoes (38.4%), pepper (11%), tomatoes (9.1%) and watermelons (9%/) had the largest relative share. However, the total production of vegetables in 2011 marked a decrease of 9.1% in comparison to the previous 2010 and dropped to 692 thousand tons.

According to data of Agricultural Statistics Department to the Ministry of agriculture and food, in 2011 the production of vegetables from open areas amounted to 368.0 thousand tons (without potatoes and grain – legumes). Watermelons had the largest share of the total vegetable production – 18.5%, followed by tomatoes – 18.4%, pepper – 17.2% and cabbage – 12.1%.

The unfavourable trend regarding the development of vegetable production continued in 2011 – the value of vegetable production dropped by 35% over the previous year and reached 234.5 million BGN.

This reduction is influenced both by the lowering volume of production output and the descending price movement in the majority of vegetables and fruits in 2011 in comparison to 2010.

19.3. Results and discussion

Now, the production of vegetables is far below the level of the years till 2008, when it reached the value of and above 1 billion BGN.

In 2011 a total of 103.1 thousand tons of tomatoes were produced, which was 10% less than in 2010. Watermelon production dropped by 10% in comparison to the previous year and reached 68 thousand tons and bell pepper production dropped by 4% and reached 66 thousand tons. The reduction of cabbage production was 43.4% in comparison to 2010. There was a serious reduction in egg–plant production – with about 37%. The decline was more moderate in production of onion and potatoes – respectively 12.5 and 7.5%. Among major vegetables there was an increase in production of melons (with nearly 72%) and strawberries (with about 23%) in comparison to 2010 [State Commission on Commodity Exchanges].

The lower average yield per hectare in 2011 for all major vegetable crops grown in open areas was due to non–observance of the technologies for their cultivation by farmers, many of whom use their own seeds for production because of the high prices of certified commercial vegetable seeds. Adverse weather conditions during the months for vegetable growing in the open in 2011 in some areas also had a negative impact on the average yield and production.

Of the vegetables produced in 2011, 81.1% were realized and 72.2% of them were intended for the market. About 97.4% of watermelon production was realized on the market as well as 95.4% of the carrots, 90.05% of the cabbage and 81.7% of the spring onion. Vegetables delivered to processing factories were 9.7% of the total production for the year as carrots, pepper and tomatoes having the largest share.

In 2011 a Fruit and Vegetable Index was made. 15 goods from the group of Bulgarian fruits and vegetables and of those imported were included in it. The choice of these particular goods was based on the results from a survey held in 2010 and the goods chosen were goods traded annually. The vegetables included in this index were: Bulgarian potatoes and imported potatoes, onion, garlic, greenhouse tomatoes and imported tomatoes, greenhouse cucumbers and imported cucumbers, green pepper, cabbage, etc. [State Commission on Commodity Exchanges]. The analysis of wholesale prices of vegetables in 2011 shows:

- The prices preserve their characteristic feature to decrease during spring and summer and to increase in autumn and winter;
- Comparative analysis of prices in recent years has illustrated the strong influence of climatic factor, which leads to frequent fluctuations in both directions depending on the specific weather conditions;
- The prices of fruits and vegetables remain higher throughout the whole year in comparison to the prices of imported goods. Imported goods are cheaper due to the high subsidies that farmers receive from other European countries. On the other hand, Bulgarian vegetables are uncompetitive due to the high VAT imposed on agricultural production in Bulgaria – 20%. For comparison, agricultural production in European countries is taxed with 7–9% VAT.

19.4. Conclusion

In the years of transition Bulgaria has lost its place as a leading manufacturer and exporter of vegetables to other European countries and vegetable industry has suffered a sharp decline. With the accession of our country to the EU in 2007, agricultural sector and vegetable industry in Bulgaria in particular faced a number of challenges. Traditional Bulgarian production of vegetables has become a lagging production with a negative balance.

Current production and marketing system of vegetable products is highly fragmented and leads to chaotic marketing and pricing structure. Strong competition of imported products which are cheaper as well as illegal imports from neighboring countries further presses Bulgarian production. Vegetable

growing is a specific agricultural activity and its improvement should be a priority in the strategy of Bulgarian agriculture.

References

1. National strategy for sustainable operational programmes of organizations and producers of fruit and vegetables in the Republic of Bulgaria for the period 2009-2013, p. 50, 8.
2. Ministry of agriculture and food, Annual report on status and development of agriculture, Agricultural report 2012, p. 31
3. State Commission on Commodity Exchanges and Wholesale Markets, Analysis of wholesale prices of vegetables for 2011, p.34

Annex

Table 1. Amount and dynamics of harvested areas – hectares planted with some vegetable crops in all categories of farms in Bulgaria in 2007-2011 (ha)

Crops	Years					Dynamics (in %)				
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
tomatoes	4828	3474	3007	2924	3860	100	71,9	62,2	60,5	79,9
cucumbers	496	125	369	749	550	100	25,2	74,3	151	110,0
pepper	5497	3751	5013	4703	4620	100	68,2	91,1	85,5	84,0
onion	1262	1281	1179	1666	1498	100	101,5	93,4	132	118,7
cabbage	2246	2093	1596	2616	2554	100	93,2	71,1	116	113,7
potatoes	22427	21711	14002	13805	16218	100	96,8	62,4	61,5	72,3
watermelons	3383	3507	3859	3302	3793	100	103,6	114	97,6	112,0
melons	1189	1242	1734	991	1504	100	104,5	145,8	83,3	126,5

Source: Bulgarian Statistical Yearbook.

Table 2. Average yields of main vegetable crops in all categories of farms in the country in 2007-2011 (average yields, kg/dca)

Crops	Years					Dynamics (in %)				
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
tomatoes	1970,9	2834,5	2418,2	2854,5	1757,6	100	143,8	122,7	144,8	89,2
cucumbers	1148,8	1528,1	1433,5	2520,9	2073,4	100	133	124,8	219,4	180,5
pepper	1439,5	1512,4	1364,8	1401,4	1371,7	100	105,1	94,8	97,4	95,3
onion	839,6	1248,5	697,3	1148,9	1117,5	100	148,7	83,1	136,8	133,1
cabbage	2205,5	3095,7	2463,6	3012,4	1746,4	100	140,4	111,7	136,6	79,2
potatoes	1331,7	1625,8	1653,9	1819,3	1432	100	122,1	124,2	136,6	107,5
watermelons	2273,5	2271,9	2302	1876,3	1792,6	100	99,9	101,3	82,5	78,8
melons	1564,8	1095,5	1249,6	889,3	1007,4	100	70,0	79,9	56,8	64,4

Source: Bulgarian Statistical Yearbook.

Table 3. Vegetable production in all categories of farms in the country in 2007-2011 (production – tons)

Crops	Years					Dynamics (in %)				
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
tomatoes	133188	134131	104234	114605	103145	100	100,7	78,3	86,0	77,4
cucumbers	57183	62618	61694	63648	52171	100	109,5	107,9	111,3	91,2
pepper	81744	59524	71469	69080	66298	100	72,8	87,4	84,5	81,1
onion	10598	16013	8223	19146	16750	100	151,1	77,6	180,7	158,0
cabbage	50000	64884	39389	78939	44643	100	129,8	78,8	157,9	89,3
potatoes	298722	353060	231745	251205	232314	100	118,2	77,6	84,1	77,8
watermelons	76914	79681	88895	61967	68002	100	103,6	115,6	80,1	88,4
melons	18753	13667	21760	8841	15160	100	72,9	116,0	47,1	80,8

Source: Bulgarian Statistical Yearbook.

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Printing and binding: EXPOL Włocławek