ИНСТИТУТ ЗА ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ НА БЪЛГАРСКАТА АКАДЕМИЯ НА НАУКИТЕ

Икономически Изследвания

ECONOMIC STUDIES

CONTENTS

Xavier Richet[1]

CHINESE PRESENCE IN THE WESTERN BALKANS: COMPETITION, COMPLEMENTARITY, COOPERATION

This contribution examines the Chinese presence in the Western Balkans region – a country in the process of joining the European Union – the motivations, the methods of entry and the achievements of the Chinese companies which are present there. The impact of this presence is analyzed both in its economic aspects – trade, investment, construction of infrastructure – and geostrategics, in particular its impact on the integration of these countries, on the alternatives that it proposes in the face of the integration process led by the European Union.
JEL: F1; F5; F6; P2; P5

Introduction

This contribution focuses on the Chinese presence in the Western Balkans. Six countries – Albania, Bosnia and Herzegovina, Kosovo, North Macedonia, Montenegro, Serbia (WB6) are in the process of joining the European Union or invited to do so. They will join it in a time horizon, which, like a mirage, moves away as they apply the recommendations set by the 27 (previously 28) to become a member. The EU is today their main partner in terms of trade and direct investment. Other countries are also present in the region, Russia, Turkey, the Gulf countries and China, which is emerging as a partner in many fields and economic sectors. The Chinese presence in these countries, with the exception of Kosovo, is manifested in increasing trade, the realization of direct investments, the provision of services in the construction of port, rail and motorway infrastructure. With one of them, Serbia, it even goes so far as cooperation in the military (supply, assembling of equipment) and security (surveillance systems).

WB6s come back from afar – isolationism from communist Albania, disintegration, inter-ethnic conflicts, independence of Kosovo, reconstruction of nation-states in the former Yugoslav Federation; they are engaged in upgrading policies, are trying to exploit the potential comparative advantages hitherto little developed. Although invited to do so, the Western Balkan countries are still far from fulfilling the conditions for joining the EU,

---

[1] *Professor Emeritus of economics, Jean Monnet Chair ad personam, University of the Sorbonne Nouvelle, visiting professor Beogradska Bankarska Akademija and LSEE-CEFTA Academic Network, xWB5@gmail.com.*

faced with several problems, both structural, economic and social: geographic opening up, declining activity, chronic underinvestment in many sectors, high unemployment rates, endemic emigration, especially of young people, skilled or unskilled, high debt.

Over the past three decades, after the fall of the local "varieties of communism"[2] in the region, these economies have restructured, they have privatized – sometimes closed – former state/self-managed firms, they have welcomed foreign direct investments, signed trade, stabilization and association agreements with the European Union which opened its markets to them, enabled them to benefit from pre-accession programs. However, progress in the accession process has been slow, for a long time the European Union has favoured stability (political, economic, by advocating the essential institutional reforms (rule of law, democratic institutions, justice), by controlling their implementation without bringing substantial financial support to ensure structural adjustment to often authoritarian and corrupts political powers.

It is in this context that Chinese firms intervene in the countries of the region, with the exception of Kosovo (which is not recognized by China[3]) as they also do in the countries of Central and Eastern Europe, under the *17+1 Format*[4] which, with the 5 countries of the Western Balkans (B05) mentioned, brings together the eleven new member states of the European Union, and, most recently, Greece.[5] The *Format*, which was launched in 2012, is a component of the ambitious *New Belt, One Road*[6] project, later renamed the *Belt and Road Initiative* (thereafter the *Initiative*) launched by the Chinese government in 2013.

Within the WB5s, China deploys its "infrastructure diplomacy" by proposing the realization of port and motorway investments, the construction of railways for which the beneficiary countries get into debt with Chinese financial institutions which lend at attractive rates without too strong conditionalities ("no string attached")and over an extended repayment period contrary to the practices of Western financial institutions, notably European, the main providers of credits and donations in the region.

In this new framework – a slow restructuring and upgrading of the economies of the region, an EU which imposes many conditions for their future membership – with the arrival of China[7] in the landscape, we are in a three-player game which questions us about the aims sought by some, the reactions of others and the strategies which result from this between competition and cooperation (WB5, Ruet, Wang 2017).

The Chinese presence in this part of Europe is developing in a more general context, that of relations between China and Europe around commercial relations, investments, pressures around the adoption of Chinese equipment in the field of communications (5G). It has a

---

[2] Autarchic communist dictatorship in Albania, Yugoslav self-managed socialism, more open, but having retained a fringe of Stalinism.

[3] neither by Russia nor by 5 other member countries of the European Union: Spain, Cyprus, Greece, Slovakia, Romania.

[4] Originally *16+1 Format* until Greece recently joined the last Dubrovnik Summit in 2019.

[5] In this contribution we do not discuss the case of Greece (cf. Fabre, 2019).

[6] *Belt* for land corridors (railway lines) through Central Asia, *Road* for 2 maritime corridors.

[7] And other countries: Russia, Turkey, Gulf countries.

political and geostrategic dimension: is China seeking to gain influence in European affairs as it has already started to do in Greece, in Hungary?

Today the presence of China at the gates of Europe and under other skies raises questions. Its simultaneous presence in different markets, in Europe, in Africa, in Latin America is often described as a surge. Is it "buying the world", acquiring a hegemonic position on a global level? If we take into account the volumes invested and the infrastructure spending incurred in the region, they remain modest (around 3%) in comparison with the sums allocated for the acquisition of assets in other regions of Europe. Has Europe taken too long to assess the risk posed by the Chinese presence at its marches when the countries concerned are about to become members soon? For the receiving countries, does the Chinese presence help to close the development gaps of the countries of the region, to open new markets towards China, is it an alternative to the procrastination of the EU and the deadlines imposed as for their future membership?

What is new is the confrontation of an economic strategy without strong conditionality vis-a-vis the normative power of the European Union which associates the project of future adhesion with the efforts carried out in the field of the respect of the rule of law, the end of the stranglehold on state property and all forms of corruption that still manifest themselves in the countries of the region. For local leaders, the Chinese presence appears to be a means of accessing alternative resources allowing them to save time, satisfy their populations, bypass the constraints of costly structural transformations economically and politically.

In section 1, we recall the linkage of the region's economies to European markets (trade), the importance of foreign direct investment from the European Union in addition to the pre-accession programs which provide non-core funding. negligible but far from what would be necessary in the eyes of the receivers.

In section 2, we present the BRI project of "new silk routes" initiated by the Chinese government by analyzing the motivations, the instruments, the objectives sought by the Chinese operators.

In section 3, we present the main achievements completed in WB5 thanks to the financing that the Chinese government allocates to its firms within the framework of the Initiative. In the final section, we analyze the impact of this presence, its contributions, its limits, its possible complementarities and compatibility with the projects of the accession of these countries to the European Union.

1. The Western Balkans: Catching up, polarized exchanges and anchoring in the European Union

*1.1 Restructuring and polarization of trade with the European Union*

Since their transformation into market economies (Albania), after the disintegration (member countries of the former Yugoslav Federation, independence of Kosovo in 2008), the countries of the region, following the European Summit in Thessaloniki in 2003, were invited to join the European Union which has defined a framework and adopted instruments

to facilitate the process. Slovenia and Croatia, two former republics of the former Federation, joined it in 2004 and 2013 respectively. The reconstruction and upgrading to new national frameworks, for the former Yugoslav republics, were carried out under difficult conditions: search for competitive advantages, under-investment, massive unemployment, emigration, heal the wounds of inter-ethnic confrontations.

To date, the convergence of the countries of the region with the 28 (before the departure of Great Britain) is slow, the WB6 still show significant differences: the GDP per capita (in PPP) is at 1/3 of the average of the 28, the population's unemployment rates range from 15% to almost 30%. Emigration hits the WB6s strongly, Albania plans to hire foreign workers; in Bosnia and Herzegovina, in Serbia, the villages are depopulating. Skilled labour migrates to the EU-15 countries, the least qualified to the New Member States (EU-11) to work in factories and subcontractors of the large European groups that have established themselves there since the transformation of these economies into market economies and their integration into the EU (WB5, 2019b).

WB6 trade quickly and massively turned towards the EU, which absorbs more than 70% of their exports and almost 60% of their imports. Comparatively for China, the figures are very modest and highly unbalanced with 1.7% for exports and 8.2% for imports respectively (Figure 1).

Figure 1

Share of WB6 exports and imports with their main partners, 2018
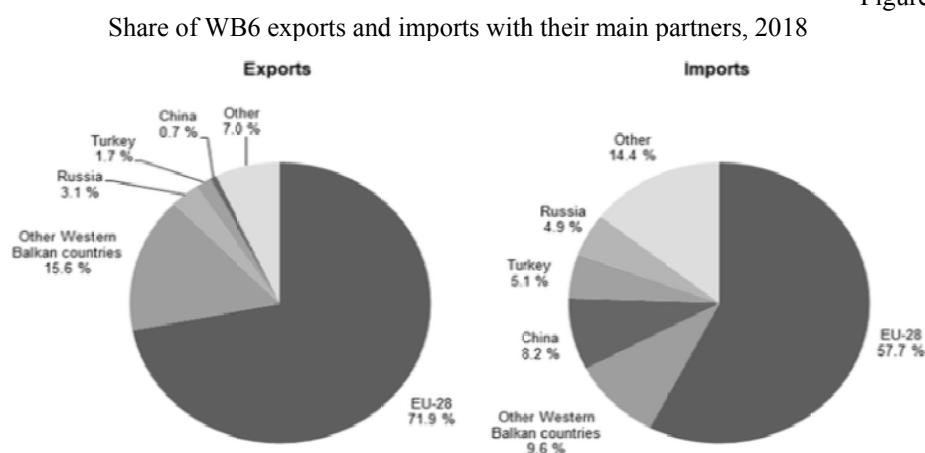
Source: Eurostat.

At the same time, they welcomed foreign direct investment coming mainly from the EU, most of them in the service sector (finance, distribution, telecommunications, real estate) which often did not create jobs (Table 1). Most of the FDI comes from the EU-27, the United Kingdom and other countries in the region (Switzerland, Turkey, Russia).[8]

---

[8] The relatively large share of the Netherlands and Cyprus can be explained for two reasons: the location of large European firms in the first country to benefit from tax advantages, the massive presence of Russian capital invested in Cyprus.

Table 1

Stock of FDI by main country of origin (in%) (2018)

	AL	BA	XK	MK	ME	RS	WB
						2015	
Austria	6.3	19.2	5.5	12.2	3.4	13.9	12.2
Belgium	0.0	.	0.5	1.3	.	0.4	0.4
Croatia	0.2	17.2	0.2	2.0	1.9	2.4	3.9
Cyprus	2.5	1.1	0.2	3.5	4.6	10.5	6.6
France	1.6	0.2	0.6	0.9	1.5	3.3	2.2
Germany	2.2	4.3	9.4	5.3	2.2	4.6	4.5
Greece	21.7	.	0.3	10.0	1.2	4.3	5.7
Hungary	0.0	0.2	0.0	4.5	.	1.6	1.2
Italy	10.6	4.3	0.7	2.3	14.6	3.8	5.2
Liechtenstein	.	0.0	.	1.0	.	0.1	0.1
Luxembourg	0.0	2.0	0.2	0.8	.	4.1	2.5
Netherlands	12.6	5.6	2.9	9.1	3.4	21.4	14.5
Russia	.	6.3	0.0	0.8	11.4	5.9	4.9
Serbia	0.3	16.3	0.4	2.0	5.7	.	2.8
Slovenia	0.3	7.3	6.4	8.0	4.1	4.3	4.7
Sweden	.	0.5	1.1	0.4	0.2	0.3	0.3
Switzerland	9.7	3.9	8.9	3.9	3.4	2.9	4.3
Turkey	9.0	3.0	12.1	5.3	0.7	0.0	2.8
United Kingdom	0.7	3.4	2.4	11.2	3.2	2.4	3.2
United States	1.4	0.6	3.3	1.7	1.7	0.9	1.2
Other countries	20.8	4.6	44.9	13.8	36.9	12.8	16.9
EU-15	55.8	39.9	23.8	53.7	32.0	61.5	52.4
EU-28	59.2	63.5	32.4	77.2	43.9	82.4	70.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total, EUR mn	5,677	6,629	3,405	4,657	4,118	26,467	50,953

Source: WIIW.

Chinese investments, which are difficult to quantify, amount to around 1% of the total FDI made in the region. The relative importance of trade and investment within the *Yougosphère* must be underlined, in particular with Croatia and Slovenia, already members of the EU.

1.2 Regional economic zone of the Western Balkans: facilitate future integration or quarantine?

Following the announcement by the former President of the European Commission Juncker in his 2017 State of the Union address, the European Commission has adopted an ambitious strategy entitled *A credible enlargement prospect and a Reinforced European Union commitment* for the Western Balkans providing for the establishment of a Regional Economic Zone in the Western Balkans, a type of common market, which is based on six initiatives with the aim of accelerating the implementation and preparing for their future membership. They revolve around six points:

- Strengthen the rule of law

- Strengthen support for socio-economic development

- Develop a digital strategy for the Western Balkans

- Strengthening ties in the area of security and migration

- Strengthen connectivity in the transport and energy sectors

- Support reconciliation and good neighbourly relations

The list emphasizes the political and economic aspects of adjustment, which until now have not been possible in the different countries (rule of law, corruption, authoritarianism, various barriers to trade). The Commission thus intends to carry out political, economic, but also structural (connectivity) and technological reforms. This project, with financial resources which remain limited, leads us to question the possibilities of really implementing these different initiatives, to articulate them, to lead them head-on with a view to making them emerge (at what time horizon?) a new economic space fulfilling the conditions for becoming members of the European Union.

If this project was received positively by the leaders of the region, however, cooled by the declarations of the French president Macron who insists on the reinforcement of the existing tools and procedures before expanding, one can point out some of the limits of these initiatives.

- Their funding. The volume of funds allocated remains limited in relation to needs, particularly in the infrastructure sectors, which will take time to realize.

- Another question concerns productive investment: how can it quickly contribute to the growth of national GDP and quickly translate into job creation.

- Lowering barriers and increasing trade risks, moreover, leading to an imbalance in trade in favour of Serbia to the detriment of its neighbours.

- In addition, the share of foreign direct investment, which has played a driving role in upgrading and specialization in the new member states, remains limited. Those from the European Union have limited impact in terms of creating regional value chains, their integrative level is currently very low.

Springboard or airlock? Finally, the difficulty in implementing these initiatives could transform this Balkan economic zone into a sort of airlock, of long-term parking in the expectation of a membership that is always delayed.

Some questions arise:

Do these limits open up space for the deployment of Chinese firms in the region? Can the Chinese presence in its various aspects (commercial, major works, investment) become an alternative or be limited only to an auxiliary option for the receiving countries (Mardell, 2020)?

2. The Western Balkans: Entry modes of Chinese firms

2.1. The Initiative: An ambitious, global project, with variable geometry

It was in 2013 that Chinese leaders announced the launch of the One Belt, One Road project, later renamed the *Belt and Road Initiative* (BRI), also known as the *New Silk Road* (NRS). This is an ambitious project in terms of its objectives, the scope covered (Figure 2), the resources mobilized, the associated partners, the conditions for carrying it out, the investments required, the level of the risks involved and the expected benefits (Li, Taube, 2019).

Figure 2

Land and sea routes to Europe

This project is part of the growing power of the Chinese economy, today one of the main engines of global growth (before the Coronavirus crisis in January 2020). The level of development reached over the past four decades, that of the accumulated financial reserves make China (a hybrid, half-administered, half-capitalist, economic system) today an actor in a position to orient and shape trade and capital movements at regional and global level mobilizing specific instruments, in particular in the area of financing, and activating state enterprises to carry out this project.

The Initiative focuses on five main objectives.

1) Establish a political communication promoting and deepening cooperation and consensus among the different governments;

2) Connect via the construction of various types of infrastructure: roads, railways, canals, ports, transport, energy networks, information and communication technology networks;

3) Facilitate investment and trade by lowering customs barriers and establishing free trade areas, encouraging Chinese firms and those of other countries to invest along the way;

4) Mobilize financial support with the creation of several supra-national financial institutions (the Asian Infrastructure Investment Bank (AIIB), the New Development Bank (NDB)) with mainly Chinese capital, the establishment of special funds dedicated to the financing of sections of the route, in Central Asia, Eastern and South-Eastern Europe. In addition, there is the mobilization of Chinese "political" banks, the Exim Bank and the China Development Bank, armed arms of the Chinese central government to support its projects at home and abroad, as well as the country's major commercial banks (Figure 3). Incidentally, the use of Chinese currency, RMB, in the issuance of bonds, the signing of credits to finance the construction of infrastructure, the realization of swap agreements (WB5, 2019c) is also the means to promote the internationalization of the Chinese currency;

5) The project finally provides for the development of cultural relations, exchanges in the field of education, promotion of tourism, cooperation in the technological field, everything that comes under *soft power*. It even extends, a first in Europe, to military cooperation.

Who graps all, looses? The BRI initiative encompassed, broadly, two or three years ago, 65 countries, much more today, around 130, and concerns more than 5 billion people; it illustrates China's ambitions, first of all, to ensure the sustainability of its supplies of raw materials, to access new markets leading to strong asymmetries going as far as certain forms of dependence for the most indebted partners.

What are the motivations behind this Initiative?

It perpetuates, in a certain sense, the growth strategy driven by exports by facilitating the access of Chinese goods to new markets.

Explanations of "Leninist type" (theory of imperialism), advance the need for China to find outlets for the use of overcapacities in several industrial sectors, in which China has recognized competitive advantages (railway industry, steel, cement, aluminium). The Chinese growth model driven by investment has led to significant overcapacity. It is estimated that an additional annual domestic demand of $ 60 billion would be required to use excess capacity in the Chinese steel sector alone.

It is also the possibility of recycling the accumulated financial reserves through specific channels. To this end, Chinese officials have a substantial financial strike force to finance projects (Figure 3).

It illustrates the "infrastructure diplomacy", practised for a long time by China. The government markets its construction companies, which then pave the way for firms in other sectors. This practice complements the other aspect of the externalization of the Chinese economy which manifests itself through the realization of direct investments (WB5, 2019a) by the acquisition of notably strategic assets in the EU-15 (Blockmans, Hu, 2019) and, to a lesser extent, making greenfield investments.

Figure 3

BRI funding sources (billion US $)
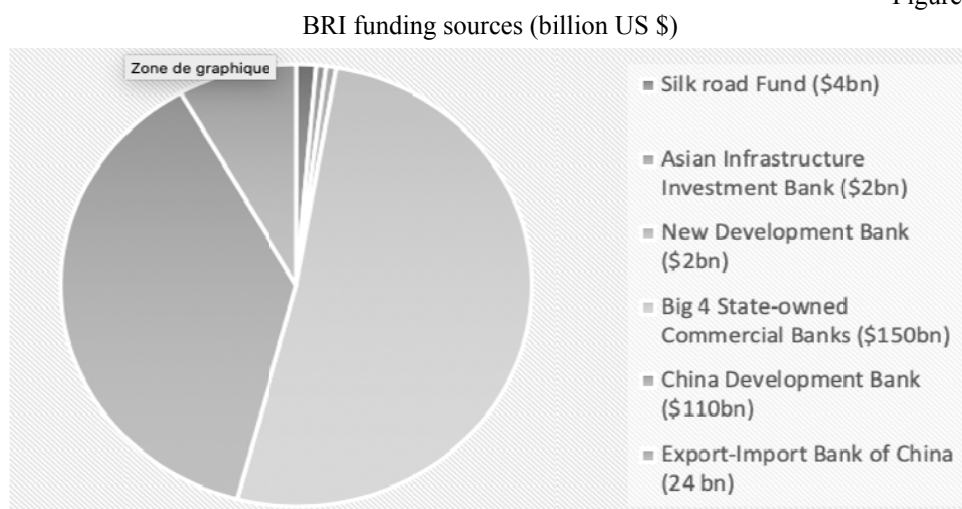
Source: Drache, Kingsmith, Qi, 2019.

The project has a domestic dimension by seeking to promote the development of the backward provinces of western China, by establishing regional growth hubs and relays from which the new rail routes set out to conquer the markets of Europe via Central Asia, thus preventing goods from passing through already congested coastal regions. The project has a strong regional dimension towards neighbouring countries: even before the announcement of this project in 2013, China had already secured and secured its supplies of raw materials by signing trade agreements with Mongolia, Kazakhstan, Laos, Myanmar and others. The implementation of this project allows it to intensify exchanges and integrate Central Asian partners by polarizing exchanges around it.

In terms of political economy, one can detect a strategy of the Chinese power which aims at strengthening the state enterprises, the main beneficiaries of financing provided by "political" banks to the detriment of the private sector. State-owned companies, many of them unprofitable, heavily indebted, and difficult to restructure, were able to exchange part of their bad debts for loans taken out on advantageous conditions on condition of engaging in projects abroad the performance of these firms remains far below that of non-Chinese firms operating in the construction sector (Figure 4).

Figure 5 illustrates the economic model underlying this project by showing the role of the various parties involved, the resulting interactions, the human, technological and financial

resources mobilized. In many respects, this model reproduces, on the outside, that which prevails at the domestic level with regard to the definition of priorities, the preparation of projects, and their financing.

Figure 4

The debt of Chinese state-owned firms participating in the BRI project: Total debt on profits
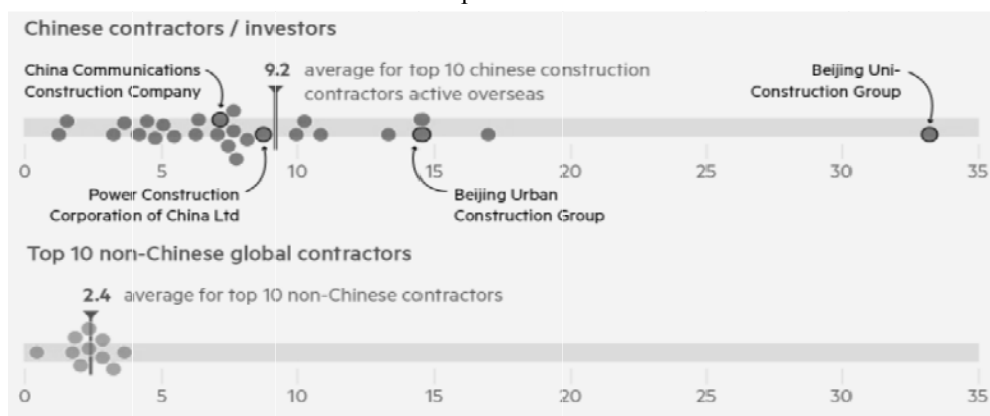
Source: Financial Times.

Figure 5

The Silk Road economic model
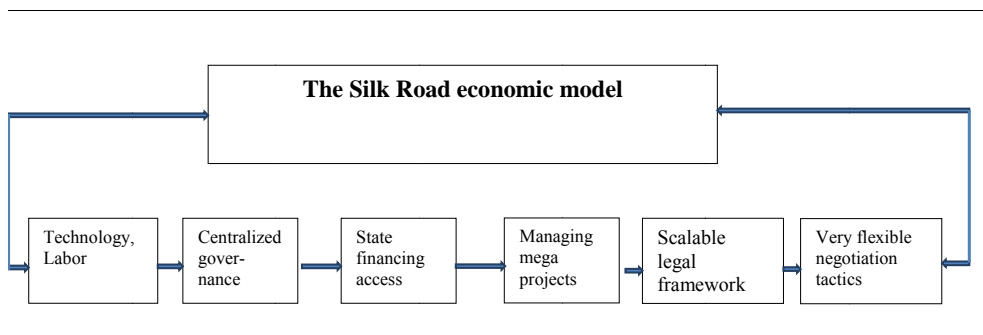
Source: Drache, Kingsmith, Qi, 2019.

2.2. A "win-win" project or the implementation of a China-centred geo-economic strategy?

What shaping of the economic spaces concerned can result from the realization of this project? What dependency relationships, what asymmetries can arise from this? Depending on the region, the nature and the scope of the projects, several types of relationships can emerge:

• A relationship of domination or even vassalization towards neighboring countries (Pakistan, Laos, Sri Lanka, even Myanmar).

- An increasing dependency relationship for the Central Asian countries close to China with an impact on the integration process within the Euro-Asian Union created around Russia.

- A cooperation/competition type relationship with Russia with a confrontation between the geo-economic dimension (China) and geopolitics (Russia). The "Asian pivot" advocated by Vladimir Putin is not certain to counterbalance both his dependence on the West and on China. Russia may be reluctant to engage in projects for which it would partially lose control of certain technologies.

- A competitive relationship with the other large countries in the region which each have infrastructure construction projects if not alternative but not necessarily complementary with Chinese projects (Iran, India, Turkey, Japan, South Korea and even Russia).

- A secondary relationship with the countries of central and south-eastern Europe (*The 17+1 Format*) with strong asymmetries to the detriment of the 17.

- A competitive relationship with the European Union for which China is now considered a "strategic rival" and which is currently rethinking its strategy with regard to China (Briant, 2019; Brattberg, Le Corre, 2020).

2.3. The Western Balkans in the 17+1 Format: Regional institutional framework, bilateral approaches

The 16-1 Format, which became 17+1 with the accession of Greece in 2019, was launched in 2012. This association integrates the New member countries of Eastern Europe which joined the European Union in several waves (2004, 2007, 2013) and WB5. In recent years, the volume of trade in goods and services has increased, Chinese firms are acquiring local businesses, making limited greenfield investments. FDI in the region accounts for only around 1% of FDI. Chinese companies mainly make investments in the form of services in the rail, port and motorway sectors.

Chinese investments in Europe seek to access technologies, markets and resources by favouring certain sectors, by concentrating in certain countries, mainly the most developed (Figure 7). The share that goes to eastern and southern Europe is more modest. In volume, FDI that goes to central and south-eastern Europe barely represents 6% of the total investment made in Europe. WB5s, not taken into account, here represent only around 1% of the total Chinese FDI carried out in Europe.

The low amount of FDI under the Format and more particularly in the WB5 component (Figure 7) can be explained for two reasons: the massive privatization of public assets was carried out during the 90s of the last century and at the very beginning of the present century when the opening and the rise of China were at its very beginning. The acquisition of these assets, their integration into the strategy of large European groups quickly contributed to shaping the new industrial landscape of the region, to accelerate their integration and contributed to the formation of "dependent capitalisms" (Richet, 2019b). The second reason is that Chinese firms favour acquisitions of firms. They have the capital but still lack technological skills in many areas (Figure 8). They do so largely in order to

repatriate their technology to China. In WB5, the Chinese offer is concentrated around the provision of various infrastructure construction services.

Figure 6

China-Western Balkans trade and FDI

Échanges commerciaux China-WB5 trade, mns USD   *Chinese investment* in WB5, 2005-2019, bns USD*

* Investments and contracts for the construction of infrastructure
Sources: 1) UN COM Trade, https://comtradre.un.org/; 2) https://www.aci.org/china-global-investment -tracker/

Figure 7

Chinese FDI in the EU-28 by group of countries *, 2010-2018, in%
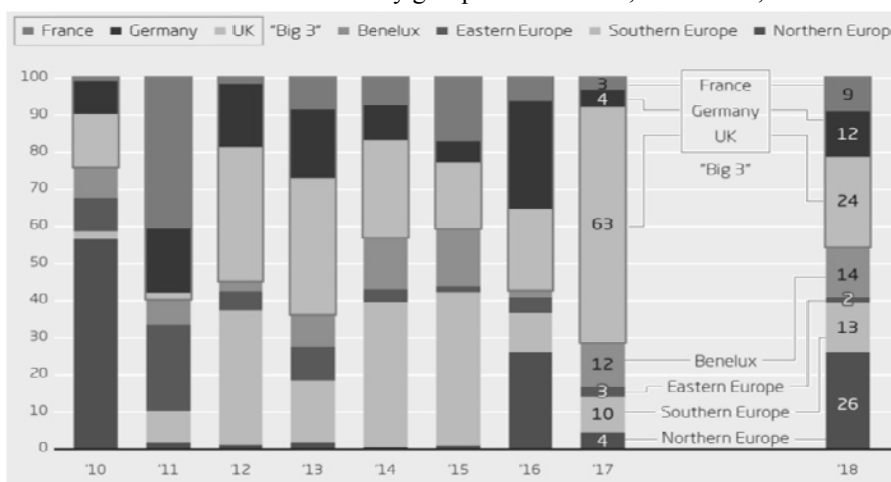
* The big 3: Germany, France and Great Britain, Benelux: Belgium, Netherlands, Luxembourg, Eastern Europe: Austria, Bulgaria, Hungary, Poland, Rep. Czech, Slovakia, Southern Europe: Croatia, Cyprus, Greece, Italy, Malta, Portugal, Slovenia, Northern Europe: Denmark, Estonia, Finland, Latvia, Lithuania, Sweden
Source: MERICS

14

The importance of the Chinese presence in the countries making up the – has shifted in recent years to WB5 (Figure 6) with the growing share of infrastructure investments made by China, to the detriment of investments in the form of acquisitions and greenfield investments the latter, moreover remaining the smallest in all Chinese acquisitions, barely 5% of the total FDI realized. This arbitrage is easy to understand: the supply of assets to be acquired is limited, almost dried up, the construction of infrastructures, by reducing transport times and by facilitating interconnections should attract greenfield investments, in particular from China (Briant, 2020; Hackaj, 2018). The limited share of greenfield investments shows both China's dependence on the acquisition of assets and the weakness of the impact of the presence of Chinese firms on the industrial sector of host countries of the region.

Figure 8

China's trade deficit in high technology

Source: Huotari, Weidenfeld, Arcesati, 2020.

Paradoxically, the largest member country of the *17+1 Format*, Poland, receives the smallest share of Chinese investments, the Czech Republic expresses its dissatisfaction with China concerning the low level of its investments (Karásková, I., Bachulska, A., Szunomár, A., Vladisavljev, S., 2020). Under pressure from the United States, Romania did not follow through on a contract to modernize and extend a nuclear power plant.

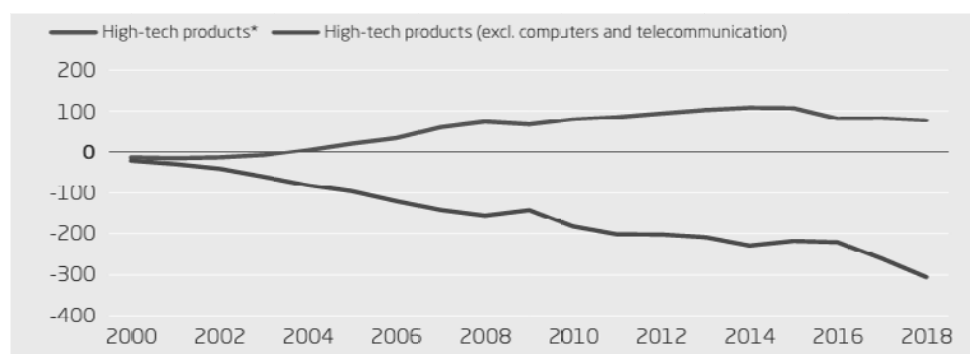**3. In the Western Balkans, a Chinese presence focused on building infrastructure**

Several factors explain the motivations of Chinese firms in the region:

- The economic and geographic area represented by the 17, and in particular the WB5 is located at the intersection of two corridors, one terrestrial, the other maritime of the *Initiative*. They end up in eastern and south-eastern Europe by two entrances: a land route, in the north, in Poland, then reaching the heart of western Europe, a sea route in the south, in Greece at the outlet of the Suez canal. Between the two, a railway line between the port of Piraeus and Budapest must make the junction between the north and the south. Around this axis, Chinese firms are engaged in the modernization of existing

facilities and are building a new port, rail and motorway infrastructure in the countries of the region (Figure 10), by contributing to the achievement of the road interconnections provided for by the 'European Union. The aim is to develop points of arrival in southern Europe for Chinese goods. Other port development projects, apart from WB5, are underway, notably in Turkey, Bulgaria, Croatia, Italy (Pairault, 2019).

Figure 9

Chinese investment in central and south-eastern Europe

Chinese investments in South-East Europe 2013-2019 in bns €

Share of infrastructure construction in central and south-eastern Europe

Serbia, main recipient of Chinese investment in central and south-eastern Europe in%, 2014-2018
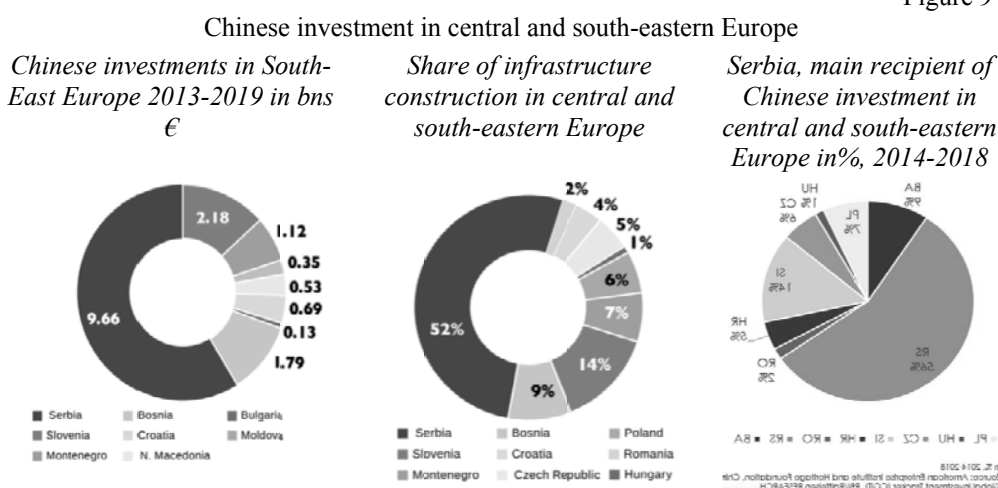
Source: RBI Raiffesein Resaerch & China Global Investor Tracker.

- Respond to infrastructure needs (Holzner, Schwarzhappel, 2018) which have only been partially taken into account in the pre-accession programs of the European Union (Figure 10). Large state-owned companies are carrying out these projects signed between China and the receiving countries. The governments of the countries of the region borrow at relatively low rates (around 2%), over relatively long repayment periods (20 years) and without many constraints regarding risk assessment, the relevance of the economic choice which contributes to greatly increasing the indebtedness of recipient countries.

- It is also a market which allows to recycle investments which are no longer – in theory – made in China because of the ecological commitment of the government, in particular the construction of thermal power stations in Serbia, in Bosnia-Herzegovina. In the latter country, new power plants, in addition to the pollution they will cause in the long term, go against European regulations. The country will also end up with energy overcapacity. This policy presents risks which were discussed during the second BRI summit which was held in Shanghai in May 2019 and where it was decided to assess more seriously the financing and evaluation of projects, to associate more foreign firms that complain of being kept away (Cabestan, 2019). This soft budgetary constraint, in some countries, has given rise to renegotiations of contracts (Malaysia). In Montenegro, many critics have been addressed to the construction of a motorway and to its future

profitability, the builders planning to manage the infrastructures themselves in order to be able to reimburse themselves through the technique or to be able to have counterparts (land) to compensate for the losses suffered.

- Create a network effect by promoting around the Road the establishment of large Chinese groups in the field of telecommunications (ZTE, Huawei), encouraging investments in the medium and high technology sectors (automotive industry), that of consumer goods (Haier), in more traditional industries. The purchase of regional firms is aimed at firms which have encountered difficulties in restructuring. This is the case of the great Serbian steelworks Smeredevo, sold for a symbolic $ 1 by its American owner and sold to a Chinese buyer, who after a major recapitalization and the promise to keep 5000 jobs, made it both profitable and the very first Serbian exporter to the European Union.

- -Initiate the creation and development of regional value chains around a few sectors such as the automotive sector (components, electric batteries, construction of a tire manufacturing plant), in particular in Serbia and Croatia, by carrying out greenfield investments.

- The establishment of Chinese banks accompanies this movement. The distribution of credits denominated in the Chinese currency, the RMB, is also an opportunity to contribute to the internationalization of the latter in parallel with the signing of swap agreements.

Figure 10

Interconnectivity of transport networks and participation of Chinese firms

Source: GIS.

In addition to the financial institutions mobilized (Figure 3), a specific fund has been dedicated to financing projects in the region within the framework of financial cooperation within the *17+1 Format*. It is a special line of credit of US $ 10 billion primarily intended to finance infrastructure construction, but also "green", technological investments. Interest

rates are low, between 1 and 3%. A Chinese operator must be associated with the project, and the receiving country must provide a sovereign guarantee. At the same time, the China-CEEC Investment Cooperation Fund was established, registered in Luxembourg (also made up of US $ 1 billion mainly from Chinese banks) and operating on a commercial basis (Ji, Liu, 2019).

Table 2

Completed, ongoing, planned projects supported and funded by China in the WB5

Country	Projects
Albania	Project to build a highway connecting Montenegro to Albania Financing an industrial park in the coastal city of Durres. Project to build a deepwater port. Management of Tirana "Mother Tereza" international airport Acquisition of the Albanian oil refinery.
Bosnia-Herzgovina	Construction and modernization of 3 coal-fired power plants (Stanari, Tuzla, Banovici), Investments in energy projects in the Serbian part of the country (Republic of Srpska). Participation project of Chinese companies for the construction of the section of a highway connecting Banja-Luka to Split. In 2018, BiH owed nearly 14% of its external debt to China
North Macedonia	Construction of highways. A construction site for two highways, carried out by the Chinese state firm Sinohydro suspended for corruption. Project to build the country's gas network. Chinese participation in the construction of the Macedonian section of the Athens Belgrade railway line. Construction of a hydroelectric plant. Sale of a fleet of buses, electric locomotives. Huawei partner of the Macedonian telecommunications company to ensure network coverage and prepare the deployment of 5G In 2018, North Macedonia owed almost 20% of its external debt to China.
Montenegro	The smallest country in the region with the largest and most ambitious infrastructure investments. Construction of a railway line connecting Bar to the border with Serbia. Construction of a highway between Montenegro and Albania Construction of a 170 km long highway. Many questions on the future profitability of the project, on corruption, lack of transparency, environmental risks. Renewal of the Montenegrin fleet with the construction of four ships Renovation of a railway line Investments in several hydroelectric and thermal projects. Montenegro owes nearly 40% of its external debt to China. The country is one of the eight countries that could fall into the 'Chinese debt trap'.
Serbia	China's largest presence in the region with various types of interventions: Construction of bridges, motorways, railway line (Serbian section of the Belgrade Budapest line, Nis-North Macedonian border), a peripheral highway around Belgrade, construction project for the Belgrade metro, realization of an industrial park near Belgrade, construction of a treatment plant in Belgrade, modernization of thermal power plants Acquisition of assets, notably from two large state-owned companies, iron and steel, copper mines Greenfield investments in the automotive sectors (battery, tire construction) Framework contract for the supply of ICT equipment and services in association with Huawai which supplied 1,000 face cameras in 3 main cities. As part of cooperation in the military and security fields, China has and will deliver more than a dozen drones to Serbia. Serbia owed nearly 12% of its debt to China in 2018

Sources: Baritisitz, Radzyner, 2018; Chrzová, Grabovac, Hála, Lalić, 2019; MERICS, Courrier des Balkans.

At this stage of the implementation, it is too early to assess the effect of the Chinese presence in the region on the economic level, the fallout in terms of increased trade, on growth. Today's projects are converging with those of the European Union, in particular with infrastructure projects.

Rivalry or complementarity? Chinese investments are helping to meet the obviously underdeveloped infrastructure needs in the region in the area of transport; they supplement those planned by the European Union already present with the supply of loans and grants which match those achieved by the China (Figure 11). The criticisms, levelled against the Chinese strategy, are of different orders:

- The support of projects whose economic justification is not necessary in terms of response to local demand and questionable feasibility with regard to operating costs, train filling rate, use of motorways, and credit repayment.

- The methods of allocating resources and distributing credits, in particular the weak conditionalities concerning the granting of credits with the risk of developing a "Malaysian syndrome" on the part of over-indebted countries which seek to reduce the volume of borrowing and wish to review downward their commitments. Some countries see their debt dangerously rise following loans contracted with Chinese financial institutions.

- Investments in sectors, causing environmental damage (thermal power plants), slowing down energy conversion.

- The low impact in terms of jobs, spin-off investment, in particular, the weakness to date of greenfield investments creating activities

Figure 11

China-European Union rivalry in building infrastructure in WB5
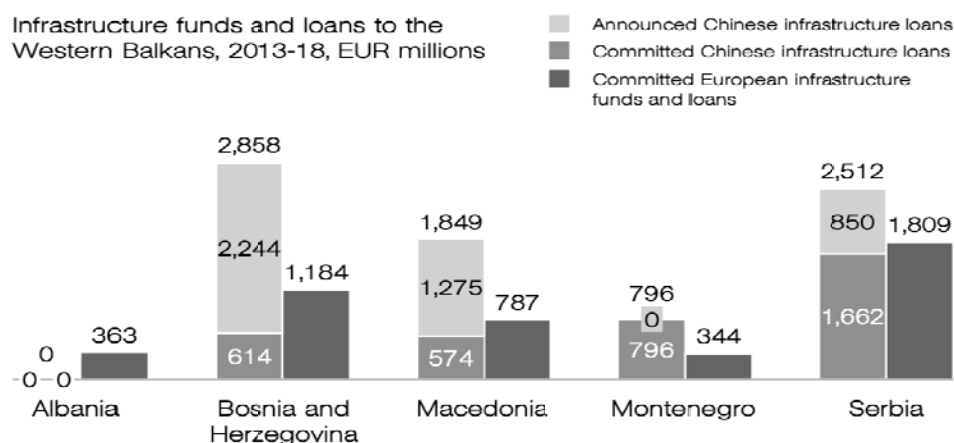
Source: Mercator Institute for China Studies (MERICS)[27]

Table 3

The implementation of infrastructure diplomacy

	Action	China		Receiving country	
		Benefits	Risks	Benefits	Risks
1	Definition of needs	Extension of the activities of Chinese firms along the Route, Support from central government, provinces (China)	Country risk analysis modelled on investment planning in China, supply-side oriented	Development of missing infrastructure Complementarity with other investments made with other funding (EU).	Asymmetric relationships in negotiation. Compatibility/ incompatibility with other funded projects (EU) Constraints of European regulations (environment) Acceptance of projects not necessarily useful
2	Credit supply	Significant availability Several funding channels Soft budget constraint. Role of political banks. Beneficiary engagement up to (80%) No environmental or social constraints to respect	Repayment capacity of beneficiaries. Meet third party (EU) requirements for investments involving EU member states (Hungary) Not all credit lines exhausted	Alternative / complementary source of funding. Easier to mobilize, soft conditionalities to obtain credits. Favourable borrowing conditions, rate (2%), duration (20 years)	Contribution the financing (25-30%) Search for collateral (Central Bank, third-country banks: EBRD, EIB) Over-indebtedness risk (Debt / GDP) Compatibility with European procedures European credits exist, also even more competitive
3	Signature of MoU	Security provided by the authorities. Opacity, imprecision, adaptability of contracts. Possible litigation before Chinese courts	Respect of commitments by partners. Revise – or even interrupt – projects due to funding difficulties (B-H) corruption (North Macedonia)	China's rapid commitment to carry out the project	Capture/corruption of local decision-makers (Macedonia) Consideration in case of difficulties: renegotiation, Chinese courts, takeover of assets.
4	Construction	Mainly made by Chinese and even foreign firms and labour. No payment of VAT, customs duties on entry on imported equipment (Montenegro)	Technical reviews on project preparation Deadlines in the start of construction	Speed of implementation when there are no administrative constraints	Criticism for a low economic impact of projects in terms of activity, jobs. Stop of construction sites (North Macedonia)
5	Implementation, operation	No operating constraints after completion	Low economic impact of the project, risk of repayment delays	Tax receipts Repayment spread over time	Increased pollution Underutilization of infrastructure, low profitability (highway)

	Action	China		Receiving country	
		Benefits	Risks	Benefits	Risks
6	Spin-off	Positive image of China, Soft power Entry in other sectors, Attraction of Chinese firms (greenfields), of Chinese products Political influence?	Low potential for the WB5 market, limit of bilateralism, no regional vision Serbia: a future regional hub? Limited leverage toward EU markets to EU-15 Arbitration China-EU agreement / non-agreement WB5 progress towards membership	Catching up, upgrading infrastructure, contributing to European connectivity projects Growing trade flows	Real convergence with European projects? A limited alternative? Limited profitability/ reimbursement charge

4. Beyond the economic presence, a political influence?

Geopolitically, does China's presence pose a threat to the EU? Is China seeking to influence governments from the periphery, to interfere in the internal affairs of the Union, to circumvent European regulations (Godement, Vasselier, 2018; Benner, 2018)? For China, the challenge, in addition to its implantation in the region, lies in its articulation with its global European strategy, which is not yet assured due to the pending questions about the absence of bilateral EU-China agreement on investment, on the non-recognition of China as a market economy within the WTO. In addition, recently, the tightening and control of equity investments by Chinese firms in sensitive high-tech sectors.

Cooperation or competition? Does China have the means or does it seek to interfere in the affairs of Europe, at its margins? How can it seek cooperation with the EU, particularly in this period of "economic war", of protest against Chinese high-tech firms (Huawei, ZTE) as operators in sensitive areas affecting security while driving a wedge into the EU meadow? It can do so marginally (neutralization of the vote of Hungary, of Greece on questions concerning human rights in UN agencies). But for many countries in the region, especially among the "illiberal" of the Visegrad Group 4 (which includes Hungary, Poland, the Czech Republic, Slovakia) the limits of the Chinese contribution is beginning to be noticeable.

Note that China is not alone in being present in the region, at the margins – and almost on "future lands"? – from the European Union or to seek influence, in one form or another: Turkish "soft power" (Kosovo, Albania, Bosnia) in cultural and religious fields (construction of places of worship), Russian political interferences sometimes muscular in the democratic game in Montenegro, in North Macedonia (against the membership to NATO) and economic via the *Turkish stream*, investments of the countries of the Gulf in Serbia. China, however, in terms of volume of trade, investment and the provision of services (infrastructure) largely dominates the others. Among the countries of the region,

Serbia is particularly distinguished both by the volume of trade, investment, military cooperation both with Russia and China, by the signing of free trade treaties with the latter two, treaties which will have to be denounced in the name of the acquis when integration into the EU becomes clearer and closer together.

For several analysts (Guichard, 2014; Godement, 2018; Miller, 2017), the deployment of the Silk Road on different continents which is accompanied by the internationalization of Chinese state and private companies contributes to the hegemony of the Middle Kingdom by combining the development of trade, foreign direct investment, major works paving the way, ultimately, to the conclusion of security and military agreements.

By observing the methods of entry and the development of the Chinese presence in several countries of Latin America and Central Europe, Horia Ciurtin (2018) offers a model describing the different stages of the penetration of firms in these countries in these economic spaces.

Box 1

A model of entry and penetration of China

Phase 1: Trade:
Chinese firms enter the market and gradually take increasing market shares. Until making China the main economic partner of the country. China controls the financial flows that enter the country. The country becomes sensitive to any change in trade and financial policy on the part of China.

Phase 2: Foreign direct investment
Trade relations open the doors, FDIs keep them open for a long time. First of all, we observe the realization of investments by state enterprises in the sectors concerned by trade (raw materials first, then other sectors.
These sectors become formally controlled by Chinese firms. Economic and political risk factors are not taken into account by investors. Host countries remain sovereign but become dependent on a single source of income and investment.

Phase 3: Infrastructure
Investments in infrastructure linked to the industries concerned and to other sectors (roads, ports, railways) are undertaken. They are financed by long-term Chinese loans provided by Chinese state banks and reimbursed by recipient countries.

Phase 4: Military and security cooperation
Signing of military and security agreements, purchase of military equipment, joint maneuvers

Does this model reflect the Chinese strategy in Eastern and Southern Europe?

It does not seem to be able to apply to the Chinese presence in central and south-eastern Europe. The level of trade remains low and even in the future could not be reversed to the detriment of the European Union, which remains the main partner of the countries of the region. The volume of FDI is also very low and cannot grow in particular in its current

22

form (acquisitions). In addition, FDI practiced by China has – up to now – very little, if any, spin-off effect. Only greenfield investments could reverse this trend.

The building of infrastructures in the countries of the region can represent a form of dependence as regards their reimbursement (high level of debt for certain receiving countries such as Montenegro, Bosnia and Herzegovina).

As for military cooperation, it is limited and does not seem to be able to develop in the future, including in Serbia. All other countries are members or future members of NATO.[9]

Conclusion

The *17+1 Format*, of which its WB5 component, is a part of the *Initiative* which is deployed in the east and south-east of the European Union. It is part of the larger project of Chinese strategy in Europe, a differentiated strategy which should allow Chinese firms to achieve several objectives: market research, asset research, resource research. WB5s, both by their endowments in natural resources and by their significant infrastructure needs, attract Chinese firms. The BRI initiative is both a gateway for Chinese firms in search of new markets, a complement, if not an alternative, for host countries which are emerging slowly from a long transition marked by their opening, the reorientation of their exchanges, institutional changes.

Investments in infrastructure, despite various criticisms of the funding methods, the opacity of the rules for awarding contracts, the way they are designed and carried out, should contribute to opening up the countries of the region. However, several questions arise: the financial burden borne by the receiving countries and the risks that could arise from this (over-indebtedness), the creation of overcapacity in certain sectors by perpetuating technologies that go against environmental regulations that China is committed to respecting (Paris Climate Agreement). Another question concerns the efficiency of these investments in terms of the level of use and therefore of the income generated to repay the loans contracted.

The question of the spin-off of these investments arises: will the construction of these infrastructures be followed by greenfield investments from China (and elsewhere)? This is the weak point of the Chinese presence within the *Format* and in the rest of Europe where the companies of the Middle Empire massively favour acquisitions.

The fact remains that the future of this presence depends on other factors: the (rapid) evolution of the decoupling of economic relations between the United States and China, the contraction and fragmentation of globalization, the decline in Chinese growth that heralds a reduction in the available resources allocated to financing the Initiative.

---

[9] In "brain dead", Paper Tiger, NATO no longer seems to be a big threat if we consider the behavior of free rider of one of its members, Turkey, in Syria, in Libya, in the Mediterranean sea.

References

Barisitz, St., Radzyner, A. (2018). The New Silk Road, part II: Implication for Europe. Oesterreichische Nationalbank, Forieign Research Division.

Bastian, J. (2019). Southeast Europe in Current Chinese Foreign Economic Policy. Südosteuropa-Gesellschaft, Reality Check Series, Part III-China.

Benner, T. and alii. (2018). Authoritarian Advance. Responding to China's Growing Political Influence in Europe, gppi.net.

Bieber, F., Tzifakis, N. (eds.). (2019). The Western Balkans in the World: Linkages and Relations With Non-Western Countries. London, Routledge.

Blockmans, S., Hu, W. (2019). Systemic rivalry and balancing interests: Chinese Investment meet EU law on the Belt and Road. – Policy Insights, CEPS, 21 March.

Brattberg, E., Le Corre, Ph. (2020). The EU and China in 2020: More Competition Ahead. Carnegie Endowment for International Peace, February 19.

Brunet, A., Guichard, J-P. (2011). La visée hégémonique de la Chine. L'impérialisme économique, Paris, L'Harmattan.

Cabestan, J.-P. (2019). Les nouvelles routes de la soie. Etudes, décembre.

Chrzová, B., Grabovac, A., Hála, M., Lalić, J. (2019). Western Balkans at the Crossroads: Assessing Influences of Non-Western External Actors. Prague Security Studies Institute, May.

Ciurtin, H. (2018). A Dragon in the Powder Keg: China's Mercantile Quest in the Balkans. Policy paper, New Strategy Center.

Delteil, V., WB5, X. (eds.) (2019). L'Europe, une fracture à retardement. Intégration asymétrique dépendances, fragmentation. Paris, L'Harmattan.

Dimitrijević, D. (2017). Chinese investments in Serbia – a Joint pledge for the future of the new Silk road. – Baltic Journal of European Studies, Vol. 7, N 1 (22).

Drache, D., Kingsmith, A. T., Qi, D. (2019). One Road, Many Dreams: China's Bold Plan to Remake the Global Economy. Bloomsbury, London.

Guichard, J.-P. (2014). L'Etat-parti chinois et les multinationales. L'inquiétante alliance, Paris, L'Harmattan.

Eder, Th., Mardell, J. (2018). Belt and Road reality check: How to assess China's investment in Eastern Europe. MERIC, 2018-07-10.

Fabre, G. (2019). La tête du dragon: la présence chinoise entre business et politque. – In: WB5, X., Vercueil, J. (2019).

Ferchen, M. (2018). Hungary-Serbia Railway Case Study and International Comparisons. – In: Ferchen, M., Pieke, F, van der Putten, F.-P., Hong, T., Jurriaan de Blécourt, J. (2018).

Godement, F., Vasselier, A. (2018). La Chine à nos portes. Une stratégie pour l'Europe. Paris, Odile Jacob.

Hackaj, A. (2018). China and Western Balkans. Policy Brief, Tirana, Cooperation & Development Institute.

Hanemann, T., Huatari, M. (2018). Chinese FDI in Europe in 2017. Rapid recovery after initial slowdown. Paper on China, Meric, 17/04/2018.

Holzner, M., Schwarzhappel, M. (2018). Infrastructure Investment in the Western Balkans: A First Analysis. European Investment Bank, Luxembourg.

Huotari, M., Weidenfeld, J., Arcesati, R. (2020). Economic Cooperation and Competition with China. Towards a More Integrated European Trade Policy Approach, MERICS Report.

Ji, Y., Liu, Z. (2019). Financial Cooperation between China and CEEC: Development and Prospective. – Global Economic Observer, Vol. 7, N 1.

Karásková, I., Bachulska, A., Szunomár, A., Vladisavljev, S. (eds.) (2020). Empty shell no more: China's growing footprint in Central and Eastern Europe. Prague, Czech Republic, Association for International Affairs (AMO).

Li, Y., Taube, M. (eds.). (2019). How China's Silk Road Initiative is Changing the Global Economic Landscape, Londres, Routledge.

Mardell, J. (2020). China's Economic Footprint in the Western Balkans. Asia Policy Brief, BertelsmannStiftung.

Miller, T. (2017). China's Asian Dream : Empire building along the New Silk Road. London, Zed Books.

Nolan, P. (2012). Is China Buying the World?. Cambridge, Polity Press.

Pairault, Th. (2019). Ports «chinois» et nouvelles routes de la soie, Présentation PPT, Séminaire BRIC, Fondation Maison des Science, Paris, www.brics.hypotheses.org, https://www.pairault.fr/sinaf/.

Ralev, R. (2019). Chinese investment in SEE – roads, coal and debt. in TOP100.Seenews.

WB5, X., Ruet, J., Wang, X. (2017). New Belts and Roads: Redrawing EU-China Relations. – In: Amighini, A. (ed.). China's Belt and Road: A Game Changer?, Milano, ISPI.

WB5, X. (2019a). Geographical and Strategic Factors in Chinese FDI in Europe. – Asia Economic Papers, 18:2.

WB5, X. (2019b). Capitalisme importé et dépendance. Le rôle des investissements directs étrangers en Europe centrale et du sud-est. – In: Violaine Delteil et Xavier WB5 (eds.) (2019).

WB5, X. (2019c). Between globalization and internal stability, the resistible internationalization of the Renminbi. – Scientific annals of Economics and Business, Vol. 66.

WB5, X., Vercueil, J. (eds.). (2019). Une mondialisation contrariée. L'Europe et la Chine face à de nouveaux enjeux. Paris, L'HarmattanStumvoll Magda.

Tobias Flessenkemper. (2018). China's Balkans Silk road: Does it pave of block the way of Western Balkans to the European Union?. CIFE, 14 February.

Tonchev, P. (2020). China's Soft Power in Southeast Europe. SOE-Dialog Südosteurope, Friedrich Ebert Stiftung, Sarajevo.

Tschinderle Franziska. (2018). A Silk Road for the Balkans. China is buying into South-Eastern Europe – with political consequences as is becoming evident in Serbia. Erstesttiftung.org-voice and ideas of civil society unit.

Margarita Atanassova[1]

QUALITY OF WORKING ENVIRONMENT – CHALLENGES TO THE ATTRACTIVENESS OF ORGANIZATIONS AS AN EMPLOYER IN BULGARIA

Attracting and retaining workforce in Bulgaria as part of the emerging integrated European labour market is characterized by a number of challenges related to both the level and dynamics of wages and the Quality of Working Environment. In the context of the multifaceted nature of the Quality of Working Environment concept in the present study, the emphasis is on the managerial capacity of the organizations to ensure both a convincing connection of the work results/achievements with the salary, as well as the compliance with the regulations of the labour and social security legislation. The survey results show that among the working-age population in Bulgaria, the negative attitudes dominate towards the offered in the organizations link between the work results/achievements and the salaries. The incorrect practices in the field of wages and social security "encourage" turnover and reduced motivation of employees with all the ensuing consequences on the attractiveness of organizations in Bulgaria as employers. Successfully overcoming these challenges should be considered as a contribution to improving the quality of the working environment and increasing the attractiveness of organizations as an employer with all the ensuing consequences on the decisions of individuals to participate in the workforce in Bulgaria.
JEL: J21; M12; M 21

Attracting and retaining workforce on the labour market in Bulgaria as part of the emerging integrated European labour market is characterized by a number of challenges both to the level and dynamics of wages and the quality of the working environment. The results of surveys show that the пon-wage employment parameters are a significant factor in job mobility and individual job choices, but relatively rarely they are the subject of scientific research (Besley, Ghatak, 2005; Angrisani, et al. 2015; Bartel, 1982). After 2007, the opportunities for free movement of Bulgarian citizens to search, find, assess and compare a growing number of potential job offers increase not only in Bulgaria but also in dozens of other EU countries. (Atoyan, et al, 2016; Todorov, 2015, p. 43). Employers in Bulgaria compete with employers in other European countries in attracting and retaining the

---

[1] *Margarita Atanassova, professor, PhD, University of National and World Economy, +359-885148710, e-mail: matanasova@unwe.bg.*

necessary labour force (Kahanec, 2012; Strulik, 2005; Vega, Elhorst, 2017; Zareva, 2010; Marikina, 2017, p. 23; Beleva, 2017).

In the conditions of a relatively low (compared to other member states) level of remuneration in Bulgaria, when attracting labour force, the organizations are oriented towards quick solutions and the attention is focused mainly on the growth of salaries. It is relatively rare to comment on the fact that the set of factors influencing individual decisions to participate in the workforce and employment choices, along with wages, includes various parameters of the quality of the work environment, among which for the purposes of the study, the strict observance of the agreements between the employer and the employee and the recognition of the work achievements stand out. In essence, these organizational characteristics of the work environment are an element of the attractiveness of the organization as an employer and their improvement requires both significant and sustained management effort (Mussie, et al., 2013) and in-depth knowledge.

From these positions the following **research thesis** is formed: attracting and retaining workforce in Bulgaria at the current stage of development of the country as an EU member (and part of the emerging integrated European labour market) requires in-depth knowledge of both the traditional role of wages and the quality of the work environment in organizations with an emphasis on compliance with labour and social security legislation (correct company practices on remuneration and social security) and recognition of work achievements through a clear link between work performance and wages, which creates challenges to the attractiveness of organizations such as employers and management of human resources.

Incorrect practices in the field of wages and social security and deficits in linking work results/achievements with wages have negative consequences on the motivation to participate in the workforce and employment choices. A number of studies have revealed that in recent years, problems have emerged in organizations in both directions. (Erhel, Guergoat, 2010). Improper pay practices account for about ¼ of employment breaches (EA-GLI, 2019, p. 15). The results of the European Working Conditions Survey show that only 32% of companies implement a performance management and feedback system that is the basis for the recognition of workers' achievements (EWCSI, 2015). In the context of the accepted thesis, the **main goal** of the present study is to explore the attitudes of the working-age population in Bulgaria to the quality of the working environment with an emphasis on key organizational characteristics – recognition of work achievements and compliance with the agreements between employer and employee in the field of wages and social security and on this basis to identify challenges to the attractiveness of organizations as an employer and to the management of human resources in companies.

In order to achieve the set research goal, two main tasks are performed: systematization and presentation of the theoretical foundations and the methodological framework of the study; analyzing the results of the empirical research and formulating challenges to the attractiveness of organizations as an employer. The main information source is data from a nationally representative survey, which was conducted in 2018 in the framework of a research project "Measures to overcome the demographic crisis in the Republic of Bulgaria."

In performing the set research tasks, a number of limitations are adopted in the following areas:

- The conceptual apparatus used in the present study (quality of the working environment, quality of jobs/ employment/ attractiveness of the organization as an employer) and indicators for observations and analyzes in these areas are the subject of long-term discussions about their nature, content and measures (Zhelyazkova, 2018). The present study takes into account the cognitive value of this debate and for the purposes of the research the concepts of Job quality and Quality of Working Environment are accepted and used (Cazes et al., 2015).

- The quality of the working environment as a component of the quality of jobs/ employment covers various components, but the focus of the present study is on part of them – organizational characteristics, which include good management practices for recognition of employees' achievements, a clear relationship between wages and workers'performance and strict compliance with agreements between employer and employees. Other organizational characteristics (such as opportunities offered in the organization for improving competencies and career development, employee participation in decision-making; balance between work and family commitments, etc.) are not analyzed, but their importance as a parameter of the quality of the working environment is recognized.

- When analyzing the content and scope of the quality of the working environment, various approaches are applied in connection with which a number of classifications for structuring the main components stand out: objective and subjective; tangible and intangible; physically and behaviorally (Sell, et al., 2011). In the context of this presentation, the terms subjective and behavioural conditions/components of the work environment are used as synonyms, given that they are the subject of specialized research in various perspectives: job quality as a factor for increasing economic activity, employment, motivation, labour productivity, attractiveness of the organization as an employer (Mironova, Kicheva, 2018, p. 63).

- Traditional policies for improving the quality of the working environment are related to programs and measures to improve working hours, the content of work tasks whereby both public and private resources of the respective employers are invested. The present study focuses on the recommendations for policies and measures to introduce good management practices to ensure the compliance with labour and social security legislation in organizations and convincing connection of the work results/achievements with the salary. The improvement of the management systems for linking the work achievements and the wages and the building of the organizational capacity to comply with the norms and standards of the labour legal relations are understood as a significant factor for increasing the attractiveness of the organizations as employers.

Theoretical foundations and methodological framework of the research

The Quality of the Working Environment is a complex and multi-layered category, which in the present study is understood and analyzed in the context of the concept of Job Quality as one of its components along with the Earnings Quality and Labour market security (Cazes et al., 2015, p. 92).

Job Quality – methodological framework
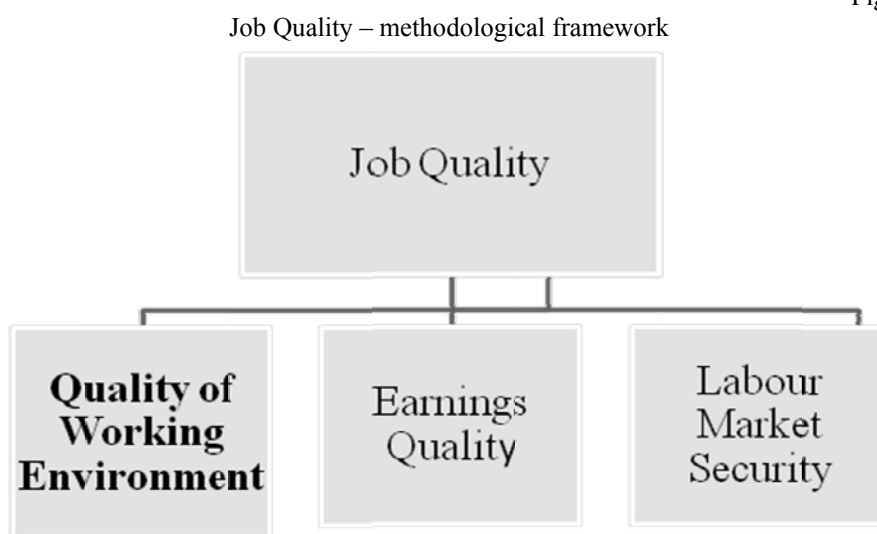
Source: Cazes et al., 2015.

The quality of the work environment (as a component of the Job Quality) covers various elements: physical and social work environment; provided opportunities for training and development; motivators related to the nature of the work; organization of working hours and good management practices for building constructive relationships and recognition of achievements (Cazes et al., 2015, p. 92). This reveals the heterogeneous content of the quality of the working environment as a construct, which is related to the traditional separation of the two main dimensions – quality of the physical work environment and quality of the social work environment, where the emphasis is on human relations – between management and executive staff colleagues, between employer and workers. In this context, the interdependence of these relationships and their importance for the productivity of work teams (Godard, 2004), for the effectiveness of corporate governance (Dimitrov, Tchipev, Keremidchiev, Bakardjieva, 2014, p. 29) and for the level of personnel performance (Boxall, Macky, 2009) is emphasized. Good management practices are aimed at building and maintaining an appropriate environment in which the employee feels valued by management and cover a variety of activities (Boxall et al., 2003, p. 99): providing effective feedback and performance appraisal; recognition of work achievements and their connection with remuneration; strict compliance with the agreements between the employee and the employer; defining and presenting the work processes and the role of the worker in them; feedback and negotiation of objectives as an element of the performance

management system; support and guidance from the line manager, etc. The analysis of good management practices as a component of the quality of the working environment is related to the main messages of the conceptual model, popularly known as "The effort-reward imbalance model" (Siegrist, et al., 2004, p. 73), which emphasizes that the imbalance between work effort and wages have implications for people's behaviour and performance. From these positions stands out the need through the relevant management systems to ensure a clear link between the dynamics of work results and wages (Sell, Cleal, 2011). Research states that the worker is interested in the results achieved and how they affect the salary (Camerer, Malmendier, 2007, p. 243). People expect recognition of their work achievements and a fair and honest relationship with the organization as an employer (Reena, Shakil, 2009). Good management practices in this direction require organizations to formulate and approve goals and action plans as a basis for identifying high-performing workers who must be recognized fairly and equitably (Mussie et al., 2013). Good management practices for the recognition of employees' work achievements and for building constructive relations in the organization are a component of the methodology of the Periodic European Working Conditions Survey (EWCS 2015) – a significant source of information internationally. The methodological framework of this study includes modules for monitoring good management practices for both feedback and evaluation of performance and constructive relationships between management and executive staff. These good management practices cover various components, among which in the context of the objectives of the present study stand out: recognition of achievements and commitment of work results to salary, strict compliance with agreements between employer and employee. The connection of the work results/achievements with the labour remuneration is the basis of the performance and pay management systems applied in the organization. People are interested both in the amount of the salary and in the way it is formed and changed. Introduced performance and pay management systems should convince employees that there is a clear link between their business results/performance and dynamics of the salary. Strict compliance with agreements between employer and employee covers a wide field in which the leading place is occupied by the correct practices of payment and social security. Violations in this area are the subject of a number of studies that reveal both the various forms of incorrect practices in the field of wages and social security and their relatively wide popularity (CITUB, 2019). The good management practices as a parameter of the quality of the working environment are a traditional component of the attractiveness of organizations as an employer, understood as "a force that attracts candidates and encourages current employees to stay in the company" and as a degree to which potential and current employees perceive the organization as a good place to work (Jiang, Iles, 2011; Berthon, et al., 2005; Bakanauskiene, et al., 2017).

The concept of "attractiveness of the organization as an employer" is a complex and constantly evolving construct, which is the subject of a number of studies focused on its nature, key components, characteristics, factors and more. Some researchers (Berthon, 2005) highlight among the key characteristics of the attractiveness of the organization as an employer the recognition of work achievements, trust and attitudes that are associated with the quality, style and effectiveness of management in the organization. In connection with this, various parameters (economic, social, functional, etc.) of the attractiveness of the organization as an employer are formulated and defined. A specialized study (Pingle, 2011)

systematizes the main elements of the attractiveness of the organization as an employer in eleven groups (economic value and wages, training and development, application of knowledge, global opportunities for realization, recognition of achievements, corporate social responsibility, location advantages, human values, inspiring work environment, relationships, personal contacts) taking into account their interdependence. It is necessary to be well acquainted with these key components of organizational attractiveness, through which the organization becomes recognizable and attractive as an employer. The attractiveness of organizations as an employer is seen as a factor influencing the decisions of individuals to participate in the workforce (Farzin, 2009; Clark, 2015; Camerer, Malmendier, 2007). The literature review shows that good management practices in recognition of achievements and building constructive relationships are a traditional component of the attractiveness of the organization as an employer (Berthon, et al., 2005; Arachchige, Robertson, 2011) because they are the basis for forming and maintaining an organizational environment in which people feel valued.

In the context of the adopted research goal and thesis in the structure of the attractiveness of the organization as an employer stand out: recognition of the achievements of employees in management, good relationships between employees and their line managers, work in a pleasant and inspiring environment. It is emphasized that it is necessary to implement appropriate initiatives in the field of corporate social responsibility, where the organization is focused on the interests of key stakeholders – shareholders, customers, workers and others (Pingle, 2011). These organizational characteristics of the working environment are part of the motivational package for attracting and retaining labour in organizations in the conditions of increasing competition between employers in the process of job search. For the purposes of this study, it is emphasized that the employer-employee relationship and the recognition of achievements encompass a variety of activities, including strict compliance the employer-employee agreements and recognition of achievements. These organizational characteristics of the working environment are part of the attractiveness of the organization as an employer. In modern conditions, employers in Bulgaria are already competing with employers in other EU countries, which offer more attractive employment conditions and people take advantage of these opportunities. The motivational packages for attracting and retaining the necessary staff in the organizations include both monetary incentives (salary and social benefits) and organizational characteristics of the work environment, among which for the purposes of this study stand out: strict compliance with agreements between employer and employee and a clear link between the achieved work results and the dynamics of the salary in the organizations. These organizational characteristics of the work environment are part of the attractiveness of the organization as an employer.

The main research question is: What are the attitudes of the working-age population (which is the main potential source of workforce and job applicants) to the quality of the working environment with an emphasis on strict compliance with employer-employee agreements and a convincing connection of the work results/achievements with the salary in the organizations in Bulgaria. The answer to this research question is formed on the basis of an empirical study, the results of which are presented in the next part of the study. In the context of the purpose of the research and the accepted research thesis, two working hypotheses/WH are formulated: a) WH 1 – The negative attitudes towards the impact of the achieved work results on the salaries offered in organizations dominate (Pragmatically, this

is expressed by a lack of conviction that the work performance affects the wage); b) WH 2 – Incorrect pay and social security practices "encourage" negative aspects of work motivation and turnover (Pragmatically, this is expressed by the belief that incorrect practices lead to negative consequences on work motivation and turnover). To test the working hypotheses in the context of the objectives of this study, we use the results of a nationally representative survey conducted in 2018, which involved 1278 people of working age (18-65 years), distributed in 28 districts of our country (Borisova-Marinova, et al., 2018).

Table 1

Distribution of respondents aged 18-65 by gender, age and educational degree

Gender, age and educational degree	Number of persons	Relative share (%)
Gender		
Man	548	42.9
Woman	730	57.1
Total	1278	100.0
Age groups		
up to 29 years	234	18.3
30-49 years	554	43.4
50-65 years	490	38.3
Total	1278	100.0
Educational degree		
Basic and lower education	149	11.7
Secondary education	575	45.0
Higher education	554	43.4
Total	1278	100.0

Analytical focus is the responses and attitudes of people from three main groups, who stand out with a relatively high level of education (and potential for contribution to human capital in the country) and a higher level of territorial mobility in the conditions of free movement of labour in the EU (job opportunities in other countries under more attractive employment conditions): people with higher education, young people with higher education and people performing managerial functions/ managers. At the same time, the third target group – the persons who perform managerial functions, is characterized by relatively higher (compared to other persons) expertise in the field of management systems in organizations and the answers of the respondents from this group reflect accumulated managerial experience in the organizational environment.

The empirical study includes a module with questions about the attitudes of the respondents to the linking of the work results/achievements with the salaries and to the incorrect practices of payment and social security in the organizations in Bulgaria. To survey the opinion of the respondents in these areas, two questions are included in the questionnaire. The first of them requires the respondent to present his/her assessment on a five-point Likert scale of the following statement: "In Bulgaria, when higher results are achieved, this affects the salary" The results obtained in this question are grouped by the percentage of respondents indicating agreement with this statement. The second question is aimed at

examining the opinion of the respondents in the field of incorrect practices of organizations regarding pay and social security: "Some companies pay part of the salary "on hand "and make lower social security contributions, which leads to the following changes in their employees: looking for another, more correct employer; reducing work motivation; search for job opportunities abroad; people are OK with this situation as well. The possible answer "I do not know about such practices" is also provided, but it is indicated by less than 5% of the respondents, which is an indicator of the popularity of these practices for violations of labour and social security legislation. Respondents can choose more than one answer, highlighting the subjective preferences and assessments of respondents about the importance of the possible consequences of incorrect practices in the field of pay and social security on people's behaviour and performance.

Analysis of the results of the empirical study and formulation of challenges to the attractiveness of organizations as an employer

The results of the answers in the survey to the first question "In Bulgaria, achieving higher results affects the salary" are systematized in Table 2 and are the basis for accepting/rejecting the first working hypothesis (The negative attitudes of the working-age population towards the commitment of work results to wages offered in the organizations dominate).

Таблица 2

In Bulgaria, when higher results are achieved, this affects the salary (% respondents indicated the respective answer)

	Total	Persons with higher education	Persons aged 25-34 with higher education	Persons performing managerial functions
In Bulgaria, achieving higher results affects the salary				
% indicated consent	30.9	30.7	37.8	33
% indicated disagreement	64	66.4	56.9	65.9

Note: the amount is less than 100% because some of the respondents indicated the answer "I do not have an opinion / I cannot judge".

The data show that only 30.9% (less than 1/3) of the respondents support the statement "In Bulgaria, achieving higher results affects the salary" – among persons with higher education the lowest result is outlined – 30.7%. A set of about 2/3 of the respondents is formed, who do not think that in Bulgaria the work results affect the salary. For persons with higher education, this percentage is 66.4% and for managers it is 65.7%. This is a signal of serious deficits in management practices for the recognition of achievements as a component of the quality of the work environment with all consequences on the attractiveness of organizations as an employer and non-monetary incentives for labour supply in Bulgaria. Lack of belief that work efforts and results affect remuneration is associated with negative changes in perceptions of work (feelings of underestimation,

disappointment, resentment, reduced capacity and desire to work in a team, apathy, unproductive attitude towards customers) and in the level and dynamics of labour performance. The data from the nationally representative survey show a low degree of agreement (less than 40% of the respondents) that in Bulgaria the achievement of higher results affects the salary, which confirms the first work hypothesis: the negative attitudes towards the impact of the achieved work results on the salaries offered in organizations dominate. The low share of those who indicated that in Bulgaria the work achievements affect the received salary should be analyzed in connection with the potential opportunities for the target groups as EU citizens to look for and find work in other EU countries, because the market of labour in Bulgaria is already being analyzed and understood as part of the integrated European labour market.

The results of the answers in the survey to the second question (Some companies pay part of the salary "on hand" and make lower insurances, which leads to the following changes in their employees: looking for another, more correct employer; reducing work motivation; search for job opportunities abroad; people are satisfied with this situation) are systematized in Table 3 – they are the basis for accepting/rejecting the second work hypothesis: incorrect practices in the field of pay and social security "encourage" negative changes in work behaviour and performance.

The results show that incorrect practices regarding pay and social security for a significant part of the surveyed young people with higher education (55.3%) and for persons with managerial positions (51.7%) provoke desires to look for another, more correct employer, incl. and abroad. Over 1/3 of the respondents with managerial positions (36.4%), persons with higher education (33.9%) and young people with higher education (34.6%) indicate the alternative for looking for a job abroad, which can be interpreted as an indicator of popularity and the availability of such potential employment opportunities abroad for these population groups in Bulgaria.

Table 3

Some companies pay part of the salary "on hand" and make lower insurances, which leads to the following changes in their employees (% respondents indicated the respective answer)

	Total	Persons performing managerial functions	Persons with higher education	Persons aged 25-34 with higher education
Looking for another, more correct employer;	**46.5**	**51.7**	**48.4**	**55.3**
Reducing work motivation;	35.1	37.5	37.4	38.8
Search for job opportunities abroad	31.2	36.4	33.9	34.6
People are satisfied with this situation	29.3	25.6	26.9	25.5

Note: the amount is over 100% because respondents can indicate more than one answer.

The results show that incorrect practices such as payment of part of the salary "on hand" and lower social security, lead to a decrease in work motivation – the highest share is indicated among young people with higher education (38.8%) who are characterized by relatively high expectations for the working environment and sensitivity to the compliance with labour law in the organization. Specialized research focuses on a number of specifics in the priorities and expectations of different groups of the population in the labour market, emphasizing that people with higher education have higher requirements and expectations to the relations offered in organizations between employer and employee (Bakanauskienė et al., 2016). The data show that incorrect practices regarding pay and social security in organizations "encourage" turnover (especially among young people with higher education), reduce work motivation and "persuade" a certain part of those who are hesitant to look for a job outside Bulgaria (with the highest levels for respondents with managerial functions), which confirms the second working hypothesis. At the same time, the results of the survey of attitudes towards incorrect practices in pay and social security are an indicator of a certain heterogeneity in the attitudes of the respondents. As already noted, almost half of the respondents confirm the negative impact of incorrect practices in pay and social security, but at the same time there is a signal of existing relative tolerance to these cases – 29.3% of respondents indicate the answer – "people are satisfied with this situation." Even for people with higher education and management staff, more than 25% of respondents indicate this answer. This feature of the attitudes of the respondents regarding the incorrect practices of payment and social security should be interpreted as an important (negative) signal for the state (and readiness) of the public environment in which the initiatives for limiting the violations of the labour legislation and increasing the institutional capacity to comply with the rules and laws in the organizations in the country are carried out.

In summary of the presented empirical results in the context of the objectives of this study can be formulated main conclusions that argue certain challenges to the attractiveness of organizations in Bulgaria as an employer and their systems for remuneration management and performance of human resources.

- About 2/3 of the respondents (among persons with higher education – 66.4%) do not think that in Bulgaria work achievements affect the salary with all the ensuing consequences on the attractiveness of the organizations as an employer and the individual decisions for participation in the labour force in the country. If a bold projection of these results is made on the processes of selection, training, development and motivation of human resources, it may mean that out of every 10 people of working age with higher education about 6-7 do not believe that the organization will provide them the expected recognition of work achievements, which has the potential to influence both the selection procedures and the behaviour of individuals in the performance of work duties. These data are a signal of the need to improve and rethink the approaches and systems used in the organizations for performance and remuneration management.

- Incorrect practices in the field of wages and social security lead to turnover (in more than 50% of the respondents with higher education and persons with managerial positions) and a decrease in work motivation, which has the potential to affect both productivity and productivity, and on the level and dynamics of economic activity and

employment in the country. If a projection is made on the work processes in the organizations, this may mean that incorrect practices in the field of salaries and social security encourage turnover in more than half of the persons in managerial positions and in the youth with higher education. The data from the empirical study should be analyzed in the context of search and successful implementation of appropriate practices to increase the capacity of organizations/companies to comply with laws and regulations in the field of pay and social security.

The formulated challenges to the attractiveness of organizations as an employer are an argument for the search for appropriate management solutions and practices both to ensure a clear link between work results and wages and to reduce incorrect pay and social security practices, to which the next part of the study is devoted. The survey includes a question that analyzes the attitudes of the target groups to a number of proposals for improving management practices aimed at ensuring the linking of the achieved work results with the salaries and compliance with laws and rules in organizations: „Based on your personal experience, please indicate what needs to be done in companies to make people work even better and achieve higher results: to have a clearer link between the salary and the work achievements of the respective employees; employees to improve their knowledge and skills for more successful performance of work duties; the managers of structural units to explain the rules and work obligations of the people in the respective teams; to punish the violators of the rules in the company; to better promote the rules of procedure and the procedures for penalties". In the structure of the systematized proposals, there are two main groups, the first of which is focused on management practices to ensure the connection of work results/achievements with remuneration, and the second group is focused on increasing organizational capacity to comply with rules and reduce violations. Table 4 systematizes the main results of the answers to this question.

Table 4

Based on your personal experience, please indicate what needs to be done in companies to make people work even better and achieve higher results (% respondents indicated the respective answer)

	Total	Persons with higher education	Persons performing managerial functions	Persons aged 25-34 with higher education
Clearer link between the achieved work results and the salary of the employees	84.6	86.7	87.4	83.3
Employees to improve their knowledge and skills for more successful performance of work duties	52.8	61.8	63.4	60.2
The line-managers must explain the rules and work obligations of the people in the respective teams	37.6	45.5	50.3	51.1
To punish the violators of the rules in the company	24.2	26.4	24.6	25.3
To better promote and explain the rules and the procedures for penalties	22.4	25.9	27.4	25.3

The data from the empirical study show the priority importance of ensuring a clear link between work results and wages – over 84% of respondents support this proposal. The highest support (87.4% of the respondents) is found in the persons with managerial functions, who have a significant role in this part of the organizational management. The results should be interpreted as a positive signal that the management staff in the organizations is aware of the need to introduce appropriate management tools for recognition of work achievements, including appropriate practices for managing the human resources performance and its connection with the remuneration system. Introduction and use of effective remuneration systems (basic and additional remuneration) as a component of human resources management (Stefanov, 2015, p. 73; Dimitrova, 2010, p. 57; Danailova, Pandurska, 2018, p. 143; Koleva-Stefanova, 2019, p. 89) poses a number of challenges to organizations, which for the purposes of this study are structured in two directions: in-depth analysis and evaluation of job positions/roles as a basis for the formation of wages; introduction and correct application of modern approaches for assessing the human resources performance, as a factor influencing the basic salaries and additional payments. Job evaluation as the basis for the formation and argumentation level and differentiation of wages requires both significant expertise and time, due to which organizations are allowed a number of compromises in this area with all the ensuing deficits in the correct differentiation of wages. The reasons for compromising organizational performance management t systems are similar. In the context of the ongoing discussion on the meaning and effectiveness of human resource performance management systems, the results of a specialized empirical study from 2017 show that this component of human resource management continues to be among the management priorities of 79% of CEOs. The results show that 90% of companies that improve their performance management systems declare an improvement in employee engagement (Deloitte, 2017: 31) Research reveals that achieving high efficiency of performance appraisal systems depends on a number of factors, among which stand out (Appelbaum, et al., 2011; Armstrong, 2009): trust, mutual respect between evaluator and evaluator, objective information, comprehensible guidelines and criteria, goal setting, individual improvement plan, transparency and discretion, integration of responsibility and development, going beyond formal processes with emphasis on educational aspects of assessment. These processes emphasize the leading role of line managers as a key factor in personnel performance assessing and ensuring a clear link between work results/achievements of people and the received salary.

The second group of proposals is related to increasing the capacity to comply with the rules and standards in the enterprise/organization. They are focused on improving the administration of human resources and the system for monitoring and controlling the rules in an organizational context. The data show that over half (50.3%) of the respondents with managerial functions support the proposal that the line-managers must explain regulary the rules and work obligations of the people in the respective teams. This proposal is supported by over 51% of young people with higher education. The results of the survey in this area can be interpreted as a positive signal for the confidence of management staff in the need to improve the administration of human resources and the introduction of effective management practices for intensive communication with work teams and systematic explanation and discussion of work rules and procedures.

Compliance with the rules and reduction of violations of labour and social security legislation depends on various factors, including the successful administration of human resource management activities in the organization. Its main goal is to ensure full compliance of HR activities and processes with the requirements of the law and internal organizational regulations (Ulrich, 2018). The effective administration of human resources management activities at the present stage requires managers and human resources management specialists not only to have a thorough knowledge of the processes in the company, but also to ensure their compliance with regulatory requirements. The emphasis on improving the quality of human resources administration should be understood as a significant component of efforts to increase the capacity of organizations to comply with labour and social security legislation and reduce unfair practices in the field of pay and social security.

Relatively restrained are the positions of the respondents on the need for penalties on violators of the rules of the organization. The results of the survey show that less than 1/4 of the respondents support the proposals "to punish violators of the rules in the company/enterprise" (24.2%) and "to better promote the rules of work and procedures for penalties" (22.4%) For the three target groups (people with higher education, young people with higher education and respondents with managerial positions), the data show a slightly higher level of support for these proposals, but do not exceed 28% of the respondents. These results can be interpreted as a signal of certain deficits in the belief that organizations have the institutional capacity to comply with the rules with all the ensuing consequences on the work behaviour and performance of the people in the respective work teams.

In the context of the presented results, the effective administration of human resources in organizations and the future significant reduction of incorrect payment and social security practices is an ambitious goal, which is associated with certain challenges in building the key characteristics of successful companies in the modern business environment (Dimitrova, 2018, p. 73) and in the management of human resources at the strategic level (Paunov, 2004, p. 57). The reduction of incorrect practices in the field of wages and social security is considered as a core of constructive relations between employer and employees (Apostolov, 2018, p. 93) and a significant component of the activities to increase the effectiveness of human resources audit (Peycheva, 2015, p. 79). In the conditions of the emerging integrated European labour market, the deficits of the management practices for linking the work results/achievements with the remunerations and compliance with labour and social security legislation should be understood as a challenge to the attractiveness of the organizations as an employer, which competes with the employers other EU countries.

Conclusion

The presented results of the survey show that the working-age population in Bulgaria is dominated by negative attitudes towards the offered in the organizations clear link between work results/achievements and remuneration. The incorrect practices on pay and social security "encourage" turnover and reduced motivation of employees with all the ensuing consequences on the attractiveness of organizations in Bulgaria as employers. Significant

challenges for the management of human resources in the organizations in the coming years are formed in two main directions: introduction of effective management systems for performance evaluation and linking work results/achievements with the level and dynamics of remuneration; Improving the of human resources administration activities as a prevention of violations of labour and social security legislation. Successful solution of these tasks should be seen as a contribution to improving the work environment and increasing the attractiveness of organizations as an employer (Baron, 2004) with all the ensuing consequences on the decisions of individuals to participate in the workforce in Bulgaria.

References

Angrisani, M., Arie, K., Meijer, E. (2015). Non-monetary Job Characteristics and Employment Transitions at Older Ages. A. Arbor, MI. University of Michigan Retirement Research Center (MRRC), WP 2015-3. http://www.mrrc.isr.umich.edu/publications/papers/pdf/wp3.pdf.

Apostolov, V. (2018). Industrial Relations. Sofia, UNWE Publishing HouseUNWE [Апостолов, В. (2018). Индустриални отношения, София, ИК УНСС] [Apostolov, V. (2018). Industrialni otnosheniya, Sofiya, IK UNSS].

Appelbaum, H., Roy, and Gilliland, T. (2011). Globalization of performance appraisals: theory and applications. – Management Decision, 49(4), pp. 570-585.

Arachchige, B. J., Robertson, A. (2011). Business student perceptions of a preferred employer: A study identifying determinants of employer branding. – The IUP Journal of Brand Management, 8(3), p. 25-46.

Armstrong, M. (2009). Armstrong's Handbook of Performance Management: An Evidence-Based Guide to Delivering High Performance. London: Kogan Page Publishers.

Атанасова, M. (2018). Employment in Bulgaria as Part of European Labour Market – Trends and Institutional Challenges. – Economic Studies (Ikonomicheski Izsledvania), 27 (6), p. 21-28.

Atanasova, M. (2017). Development of competencies through training in organizations and employed young people with higher education in Bulgaria. – Population, 2, p. 183-202 [Атанасова, M. (2017). Развитие на компетенциите чрез обучение в организациите и заети младежи с висше образование в България. – Население, 2, с. 183-202] [Atanasova, M. (2017). Razvitie na kompetentsiite chrez obuchenie v organizatsiite i zaeti mladezhi s visshe obrazovanie v Bŭlgariya. Naselenie, 2, p. 183-202].

Atoyan, R. et al. (2016). Emigration and Its Economic Impact on Eastern Europe. International Monetary Fund, SDN/16/07, July 2016. Available at: http://www.imf.org/external/pubs/cat/longres.aspx?sk=42896.0 Date of extraction: 17.07.2018.

Awan, A., Tahir, M. (2015). Impact of working environment on employee's productivity. – European Journal of Business and Management, www.iiste.org, ISSN 2222-1905 (Paper), Vol. 7, N 1, ISSN 2222-2839 (Online).

Bakanauskienė, I., Bendaravičienė, R., Bučinskaitė, I. (2016). Employer's attractiveness: generation Y employment expectations in Lithuania. – Human resources management and ergonomics, 10(1), p. 6-22.

Bakanauskiene, Ir., Bendaravičienė, R., Barkauskė, L. (2017). Organizational attractiveness: an empirical study on employees attitudes in lithuanian business sector. – Journal Problems and Perspectives in Management, Vol. 15, N 2, p. 4-18, doi:10.21511/ppm.15(2).2017.01.

Baron, J. N. (2004). Employing identities in organizational ecology. – Industrial and Corporate Change, 13(1), p. 3-32.

Bartel, A. P. (1982). Wages, Nonwage Job Characteristics and Labour Mobility. – Industrial and Labour Relations Review, 35(4), pp. 578–589.

Beleva, I. (2017). The labour market in Bulgaria: medium-term prospects and risks to its long-term development. – Economic Analysis, III of BAS, 1, p. 3-40. [Белева, И. (2017). Пазарът на труда в България: средносрочни перспективи и рискове пред дългосрочното му развитие. – Икономически анализи, ИИИ на БАН,1,с. 3-40.] [Beleva, I. (2017). Pazarat na truda v Bulgaria: srednosrochni perspective I riskove pred dalgosrochnoto mu razvitie. – Ikonomicheski analizi, III na BAN,1, pp. 3-40].

Beleva, I., Tsanov, V., Velkova, D. (2009). Working Conditions and the Quality of Employment in Bulgaria: Trends and Interactions. Sofia, Avangard Prima [Белева, И., Цанов, В., Велкова, Д. (2009). Условията на труд и качеството на заетостта в България: Тенденции и взаимодействия. С., Авангард Прима, 2009], [Beleva, I., Tsanov, V., Velkova, D. (2009). Usloviyata na trud i kachestvoto na zaetostta v Bŭlgariya: Tendentsii i vzaimodeĭstviya. Sofia: Avangard Prima, 2009].

Berthon, P., Ewing, M., Hah, L. L. (2005). Captivating company: dimensions of attractiveness in employer branding. International. – Journal of Advertising, 24(2), p. 151-172.

Besley, T., Ghatak, M. (2005). Competition and incentives with motivated agents. – American economic review, 95 (3). pp. 616-636. DOI: 10.1257/0002828054201413.

Borissova-Marinova, K. et all. (2018). Demographic Development, Labour Force and Labour Resources in Bulgaria. – In: Measures for demographic crisis overcoming in Bulgaria, b.4, Prof. "Marin Drinov" Publishing House of Bulgarain Academy of Sciences [Борисова-Маринова, К. и кол. (2018). Демографско развитие, работна сила и трудови ресурси в България. – В: ИИНЧ-БАН. Мерки за преодоляване на демографската криза в Република България, т. 4. С., Издателство на БАН „Проф. Марин Дринов“], [Borisova-Marinova, K. i kol. (2018).Demografsko razvitie, rabotna sila i trudovi resursi v Bŭlgariya. V: IINCH-BAN. Merki za preodolyavane na demografskata kriza v Republika Bŭlgariya, t. 4. S., Izdatelstvo na BAN „Prof. Marin Drinov“]

Boxall, P., Macky, K., Rasmussen, E. (2003). Labour turnover and retention in New Zealand: The causes and consequences of leaving and staying with employers. – Asia Pacific Journal of Human Resources, 41, p. 195-214.

Boxall, P., Macky, K. (2009). Research and theory on high-performance work systems: Progressing the high-involvement stream. – Human Resource Management Journal, 19, p. 3-23.

Camerer, C. F., Malmendier, U. (2007). Behavioral economics of organizations. – In: Diamond, P., Vartiainen, H. (eds.). Economic institutions and behavioral economics. Foundation, Princeton University Press. Chapter 7. https://pdfs.semanticscholar.org/cc68/87f7c72dbb8de8c9cd2bc1087668f9f86fe9.pdf

Card, D., Mas, A., Moretti, E., Saez, E. (2012). Inequality at work: The effect of peer salaries on job satisfaction. – American Economic Review 102:6, p. 2981-3003.

Chandrasekar, K. (2011). Workplace Environment and its Impact on Organizational Performance in Public Sector Organizations. – International Journal Of Enterprise Computing and Business Systems, Vol. 1, N 1.

CITUB. (2019). Confederation of Independent Trade Unions in Bulgaria 2019. Fourth annual report of CITUB on violations of rights related to the exercise of the right to work in 2018. [КНСБ. (2019). Конфедерация на независимите синдикати в България. Четвърти годишен доклад на КНСБ за нарушения на права, свързани с упражняване правото на труд през 2018 г]. [Konfederatsiya na nezavisimite sindikati v Bŭlgariya. (2019). Chetvŭrti godishen doklad na KNSB za narusheniya na prava, svŭrzani s uprazhnyavane pravoto na trud prez 2018 g.].

Clark, A. E. (2005). Your money or your life: Changing job quality in OECD countries. – British Journal ofIndustrial Relations 43:3, p. 377-400.

Clark, A. (2015). What makes a good job? Job quality and job satisfaction. IZA World of Labour 2015.

Conti, M., Sulis, G. (2016). Human capital, employment protection and growth in Europe. – Journal of Comparative Economics, Vol. 44, N 2, May 2016, p. 213-223.

Crossref; Heady, D. D., Hodge, A. (2009). The effect of population growth on economic growth: A meta-regression analysis of the macroeconomic literature. – Population and Development Review, 35, p. 221-248.

Danailova, I., Pandurska, R. (2018). The validation of knowledge, skills, competencies and professional experience – features and modern challenges. Book 2/2018 (14), Socio-economic analyzes: a series of VTU St. Cyril and Methodius, Faculty of Economics, 140-148, [Данаилова, И., Пандурска, Р. (2018). Валидирането на знания, умения, компетентности и професионален опит- особености и съвременни предизвикателства, Книга 2/2018 (14), Социално-икономически анализи:поредица на ВТУ Св.Кирил и Методий, Стопански факултет, 140-148]. [Validiraneto na znania, umenia, kompetentnosti I professional opit-osonebosti I savremenni predizvikatelstva, Kniga2/2018 (14), Socialno-ikonomicheska poredica na VTU Sv.Kiril I Metodii, Stopanski fakultat, 140-148].

Deloitte. (2017). Deloitte Human Capital Rewriting the rules for the digital age. Deloitte University Press.

Cazes, S. et al. (2015). Measuring and Assessing Job Quality: The OECD Job Quality Framework. – OECD Social, Employment and Migration Working Papers, No. 174, OECD Publishing, Paris.http://dx.doi.org/10.1787/5jrp02kjw1mr-en.

Dimitrov, M., Chipev, P., Keremidchiev, S., Bakardzhieva, R. (2014). The current state of corporate governance in Bulgaria. – Journal of BAS, N 6, pp. 27-35. [Димитров, М., Чипев, П., Керемидчиев, С., Бакърджиева, Р. (2014). Съвременното състояние на корпоративното управление в България. – Списание на БАН/ Journal of BAS, N 6, pp. 27-35]. [Dimitrov, M., Chipev, P., Keremidchiev, S., Bakŭrdzhieva, R. (2014). Sŭvremennoto sŭstoyanie na korporativnoto upravlenie v Bŭlgariya. – Spisanie na BAN/Journal of BAS, N 6, pp. 27-35.].

Dimitrova, G. (2010). Optimization of positions in the insurance company. Avangard Prima Publishing House, Sofia [Димитрова, Г. (2010). Оптимизиране на длъжностите в застрахователното дружество. Издателство "Авангард Прима", София]. [Dimitrova, G. (2010). Optimizirane na dlŭzhnostite v zastrakhovatelnoto druzhestvo. Izdatelstvo "Avangard Prima", Sofiya].

Dimitrova, Y. (2018). Characteristics of successful companies in a modern business environment. – Economic Research magazine, N 5. [Димитрова, Я. (2018). Характеристики на успешните компании в модерна бизнес среда. – Икономически изследвания, N 5], [Dimitrova, Y. (2018). Harakteristiki na uspeshnite kompanii v moderna biznes sreda. – Ikonomicheski izsledvaniya, N 5].

Dulevski, L. (2010). Labour Market. Ciela, Sofia. [Дулевски, Л. (2010). Пазар на труда. Сиела, София]. [Dulevski, L. (2010). Pazar na truda. Siela, Sofiya].

EA-GLI. (2019). Executive Agency General Labour Inspectorate. Report on the activities of the GIT Executive Agency in 2018 [ИА-ГИТ. (2019). Изпълнителна Агенция – Главна Инспекция по труда. *Доклад* за дейността на ИА ГИТ през 2018] [Doklad za deĭnostta na IA GIT prez 2018].

Erhel, C., Guergoat, M. (2010). Job quality and labour market Performance. – CEPS, N 330/June 2010.

EWCS. (2015). EuropeanWorking Conditions Survey (EWCS) – Methodology Sixth European Working Conditions Survey: 2015.

Farzin, Y. H. (2009). The effect of non-pecuniary motivation on labour supply. p. 1237-1254.

Godard, J. (2004). A Critical Assessment of the High-Performance Paradigm. – British Journal of Industrial Relations 42(2), p. 349-378.

Jiang, T., Iles, P. (2011). Employer-brand equity, organizational attractiveness and talent management in the Zhejiang private sector, China. – Journal of Technology Management in China, 6(1), p. 97-110.

Harley, B., Allen, B. C., Sargent, L. D. (2007). High performance work systems and employee experience of work in the service sector: The case of aged care. – British Journal of Industrial Relations, 45, p. 607-633.

Huber, P. (2007). Regional Labour Market Developments in Transition: A Survey of the Empirical Literature. – The European Journal of Comparative Economics, Vol. 4, N 2pp. 263-298 ISSN 1824-2979.

Kahanec, M. (2012). Labour mobility in an enlarged European Union. IZA DP No. 6485 April 2012.

Koleva-Stefanova, D. (2019). Human capital and its significance for our time. – Dialog magazine, N 1, p. 85-93. [Колева-Стефанова, Д. (2019). Човешкият капитал и значението му за нашето съвремие. – Диалог, N 1, 85-93]. [Koleva-Stefanova, D. (2019).Choveshkiat capital I znachenieto mu za nashetp savremie. – Dialog, N 1].

Marikina, M. (2017). National Competitiveness – Attractiveness and/or Aggression. – Economic and Social Alternatives Magazine, Vol. 3, p. 20-27. [Марикина, М. (2017). Националната конкурентоспособност – атрактивност или/и агресивност. – Икономически и социални алтернативи, N 3, 20-27]. [Marikina, M. (2017). Natsionalnata konkurentosposobnost – atraktivnost ili/i agresivnost. – Ikonomicheski i sotsialni alternativi, N 3, 20-27].

Mironova, N., Kicheva, T. (2018). Social networks as a means of imposing the employer's brand of the organization. – Scientific works of UNWE, N 2. [Миронова, Н., Кичева, Т. (2018). Социалните мрежи като средство за налагане на работодателската марка на организацията. – Научни трудове на УНСС, N.2] [Mironova, N., Kicheva, T. (2018). Socialnite mreji kato sredstvo za nalagane na rabotodatelkata marka. – Nauchni trudove na UNSS, N 2].

Mussie, T., Kathryn J., Ready1, Abel, B. (2013). The Effects of Employee Recognition, Pay, and Benefits on Job Satisfaction: Cross Country Evidence. – Journal of Business and Economics, Vol. 4, N 1, pp. 1-12, ISSN 2155-7950.

OECD. (2017). OECD Guidelines on Measuring the Quality of the Working Environment. OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264278240-enOECD.

Paunov, M. (2004). Strategic Management of Human Resources. UNWE. [Паунов, М. (2004). Стратегическо управление на човешките ресурси. ИК на УНСС] [Paunov, M. (2004). Strategichesko upravlenie na choveshkite resursi. IK UNSS].

Peycheva, M. (2015). Social audit and human resources audit. Publisher: ATL-50, Sofia [Пейчева, М. (2015). Социален одит и одит на човешките ресурси. Издателство: АТЛ-50, София] [Peicheva, M. (2015). Sotsialen odit i odit na choveshkite resursi. Izdatelstvo: ATL-50, Sofiya].

Petersen, A., Puliga, M. (2017). High-skilled labour mobility in Europe before and after the 2004 enlargement. J. R. Soc. Interface14: 20170030.http://dx.doi.org/10.1098/rsif.2017.0030.

Pingle, S., Sodhi, H. (2011). What Makes an Attractive Employer?: Significant Factors from Employee Perspective. – Anvesha – A Journal of IES College and Research Centre, IV (2), p. 18-25.

Raines, P. (2001). The impact of European integration on the development of national labour markets. European Policies Research Centre, University of Strathclyde, Glasgow, International Labour Office Geneva, 92-2-111997-1 ISBN.

Reena, A., Shakil, M. A. (2009). The Impact of Reward and Recognition Programs on Employee"s Motivation and Satisfaction: An Empirical Study. – International Review of Business Research Papers, Vol. 5, N 4, p. 270-279.

Sell, L., Cleal, B. (2011). Job Satisfaction, Work Environment, and Rewards: Motivational Theory Revisited. – Labour 25(1), p. 1-23.

Siegrist, J., Starke, D., Chandola, T., Godin, I. (2004). The measurement of effort-reward imbalance at work: European comparisons. – Social Science & Medicine, Vol. 58, N 8, p. 1483-1499.

Stefanov, L. (2015). Remuneration Systems (theory, practice, design). Trakia-M, Sofia. [Стефанов, Л. (2015). Системи за възнаграждения (теория, практика, дизайн). изд. Тракия-М, София] [Stefanov, L. (2015). Sistemi za vaznagrajdenia. Trakia-M, Sofia].

Strulik, H. (2005). The role of human capital and population growth in R&D-based models of economic growth. – Review of International Economics, 13, p. 129-145.

Sullivan, P. (2011). Search and Non-Wage Job Characteristic. U.S. Bureau of Labour Statistics, Working Paper 449 September.

Todorov, T. (2015). External migration in the context of socio-economic processes and its expected impact on the demographic development of Bulgaria. – Magazine "Population", N 2, p. 43-55. [Тодоров, Т. (2015). Външната миграция в контекста на социално-икономическите процеси и нейното очаквано влияние върху демографското развитие на България. – Население, N 2, с. 43-55, Българска академия на науките, София], [Todorov, T. (2015). Vanshnata migracia v konteksta na socialno-ikonomicheskite procesi I neinoto vlianie varhu demografskoto razvitie na Bulgaria. – Naselenie, N 2, с. 43-55].

Ulrich, D. (2018). Audit the effectiveness of your HR department, https://www.hrmonline.com.au/section/strategic-hr/audit-effectiveness-hr/.

Vega, S. H., Elhorst, J. P. (2017). Regional labour force participation across the European Union: a timespace recursive modelling approach with endogenous regressors. – Spatial Economic Analysis, 12(2-3), p. 138-160. https://doi.org/10.1080/17421772.2016.1224374.

Zareva, I. (2010). Human capital in Bulgaria. Formation, condition, use, guidelines for development. Sofia: AI "Marin Drinov". [Зарева, И. (2010). Човешкият капитал в България. Формиране, състояние, използване, насоки за развитие. С., АИ „Марин Дринов"] [Zareva, I. (2010). Choveshkiyat kapital v Bŭlgariya.Formirane, sŭstoyanie, izpolzvane, nasoki za razvitie. S., AI „Marin Drinov"].

Zhelyazkova, M. (2018). Proposals for measures to improve the quality of jobs and its compliance with the qualities of the workforce. – In: Borisova-Marinova, K. et al. (2018). Demographic development, labour force and labour resources in Bulgaria. In: INCH-BAN. Measures to overcome the demographic crisis in the Republic. [Желязкова, М. (2018). Предложения за мерки за подобряване на качеството на работните места и съответствието му с качествата на работната сила. – В: Борисова-Маринова, К. и кол. (2018). Демографско развитие, работна сила и трудови ресурси в България. В: ИИНЧ- БАН. Мерки за преодоляване на демографската криза в Република България, т. 4. С., Издателство на БАН „Проф. Марин Дринов"]. [Zhelyazkova, M. (2018). Predlozheniya za merki za podobryavane na kachestvoto na rabotnite mesta i sŭotvet·stvieto mu s kachestvata na rabotnata sila. – V: Borisova-Marinova, K. i kol. (2018).Demografsko razvitie, rabotna sila i trudovi resursi v Bulgariya].

Baki Hyuseinov[1]

REGIONAL DIFFERENCES IN THE EDUCATIONAL INFRASTRUCTURE – CHANGES AND CHALLENGES

The current study is dedicated to the research of the differences in regional aspect in the development of educational infrastructure (by region and districts), which give a chance to evaluate the access to education at different levels. For this purpose, choice of indicators that reflect the coverage of the population on a different level of education have been made. As a result of the comparative assessment of the differences in the educational infrastructure between Bulgaria and the EU countries, it is found that at all levels of education there are positive changes, as on some indicators Bulgaria achieves/exceed the corresponding values of countries with closer or higher social-economic development. Detailed analyzes were conducted to identify regional differences in the access of children/students to pre-school and school education. An adequate place is given to the problem of drop-outs as a factor for reducing student coverage.
JEL: H75; R58; I21; I25

Introduction

The development of the education system, and mainly all of its institutional infrastructure, largely determines the changes in the indicators of the level and quality of life of the population. Between these two spheres, there are direct and feedback links that reveal the real interactions that guide the identification of the priorities and policies to refine them. Of specific scientific-practical importance is the research of the impact of education on the standard of living in territorial aspect – by regions and districts of the country. This approach opens up opportunities for efficient distribution of the investment, resulting in the multiplication of effects both in education and in the field of the living level of the population.

In view of these statements, the **main purpose** of the study is formulated: to determine the educational indicators that most strongly affect the level and quality of life of the population in Bulgaria; to identify territorial differences and inequalities, especially in terms of population coverage in the education system.

---

[1] *Baki Hyuseinov, Assc.Prof., Phd in the Economic Research Institute at BAS, Department "Macroeconomics".*

The **subject** of this study is the analysis and assessment of regional differences, ranked at different levels of education – pre-school, school and higher education.

The specific **research tasks** are derived from the main purpose and the subject of the study:

- Selection of indicators for measuring the impact of educational institutional infrastructure on the level and quality of life of the population;

- Detecting of the territorial differences by region and district at different levels of education;

The development of the education system and, above all, its institutional infrastructure largely predetermines changes in indicators of the level and quality of life of the population. There are also links between these two areas, which reveal the real synergies that define priorities and policies for their improvement. With particular scientific and applied importance is the study of access to education in a territorial aspect – by regions and areas of the country. This approach reveals opportunities for efficient distribution of investments, as a result of which aggregate effects multiply both in education and in the area of living level of the population.

From the point of view of these productions the **main purpose** of the survey is formulated: to define the indicators of education that most reflect on the level and quality of life of the population in Bulgaria; To reveal territorial disparities and inequalities, particularly as regards the extent of the population in the education system; **Selection of indicators for educational infrastructure and population coverage by the degree of education.**

Indicators in the sphere of pre-school education

Pre-school education is increasingly being formed as a significant basis for achieving a smooth transition to the actual school education. The education of children from an early age determines the quality of the construction of the "first seven years" – an important prerequisite for the level of education in higher education levels.

The adopted Pre-school and School Education Act (in force since 01.08.2016) provides for relevant tasks, measures and modules for the achievement of effective and modern education, which would create the conditions for raising and improving the structure of the employment and income of the Bulgarian families. Only through a qualitative and complete educational process from its pre-school stage, it is possible to provide individual development for each child/pupil in view of the set parameters of a flexible and adequate system of pre-school education. It must be based on the new expectations and requirements for its improvement, in line with societal changes and needs for a higher and quality standard of living.

In the context of these productions, there is a need for a justified choice of pre-school indicators, through which to the highest degree to determine the educational infrastructure in the territorial aspect per regions and per districts of the country, as well as the extent of the population in the pre-school form of education.

The National Statistical Institute conducts annually comprehensive statistical surveys characterizing the activities of educational institutions in Bulgaria, the information being systematized in two sections: "Overview" and "Regional review". In the case of pre-school institutions, the study concentrates on problems, respectively indicators related to kindergartens (educational level MSKO-O). These institutions are the sources of information for children behaved and educated in them. The main statistical characteristics of the number of kindergartens are divided into two groups: in the form of ownership (public and private) and by type – all-day, a half of day, seasonal and kindergartens/groups for children with special educational needs.

As statistical units are determined the number of children in kindergartens, as well as the number of kindergartens. These so-called "statistical units" possess statistical significance, but from the point of view of the purpose and objectives of the present study, they do not provide information on the degree of sufficiency of the educational infrastructure in relation to kindergartens, i.e. they do not contain information about the scope of pre-school children in the kindergarten system. Similar is the nature and the derived from them indicator "average number of children in a kindergarten". Although it refers to the "average number of children", a number of questions immediately arise such as: "what kind of kindergarten", "with what number of places", "with what area and architecture", etc.

It is clear that such indicators are not suitable for use for comparative analyses and evaluations, as the purpose of this study is. Moreover, where the primary objective concerns the study of links and interactions between education and the level/quality of life.

Obviously, in this case, the indicators that can measure the scope or access of children to pre-school education are the most appropriate. For this purpose, the NSI calculates the internationally agreed general indicator "degree of participation of the population in the education system". Its essence consists in the calculation of the relative share of the enrolled children/students of a certain age group to the number of the permanent population of the country of the same age group. This means that the number of enrolled children/students should be established annually, not the number of entries. For pre-school education, the group net enrolment rate of children in kindergartens is calculated as a percentage as regards the number of children in kindergartens in the age group 3-6 years to the number of population in the same age group. This statistical indicator reflects the scope of children in the age group 3-6 years in educational institutions of pre-primary education. Analyses of its territorial values show the respective differences between territorial units in terms of the scope/access of children in pre-school education.

In addition to this indicator, important information is obtained from the use of the indicator "places in kindergartens of 100 children", which reveals the degree of assurance with services of childcare facilities. With a value of this indicator above 100, a certain excess assurance is found, while the values below 100 signal a shortage of places in kindergartens.

As a result of the substantiated choice of indicators for analysis and evaluation of pre-school education in terms of its impact on family living and quality of life, the following indicators are proposed:

"Net enrolment rate of registration in the kindergartens of children of the age group 3-6 years by region and district";

"Places in kindergartens of 100 children of the age group 3-6 years by region and districts".

Indicators in the sphere of school education

The school education as defined by the NSI includes the following degrees of education and their respective educational institutions:

• Primary and high schools education;

• Secondary education in all types of schools;

• Vocational training after secondary education in vocational colleges.

The main statistical units (indicators) are the number of enrolled pupils/students in the different grades of education in the age groups between 7 – 19 years of age. Accordingly, schools are covered by the following statistical units:

• Elementary (I-IV grade);

• Primary (I-VIII class);

• Junior high schools (V-VIII class);

• Gymnasiums (IX-XII or VIII-XII class);

• Secondary general education (I-XII grade);

• Vocational gymnasiums (VIII-XII class).

Similarly to the approach taken in pre-school education, it is appropriate to use the internationally accepted indicator "the level of participation of the population in the education system". It is calculated as the relative share of enrolled students of a certain age group to the number of permanent population of the country of the same age group. It is obviously possible to calculate such indicators for the six levels of school education indicated. However, this disaggregated structure would make it difficult both to calculate and to carry out appropriate analyzes and evaluations, especially in the territorial aspect by regions and districts.

These indicators de facto measure the coverage of students in the school system through the net enrollment rate. For the purposes of this study, it is most appropriate to use the relative proportions of students enrolled in schools in the aggregate age group of 7-19 years to the population of the same age group.

Of great importance is the issue of reducing the scope of students as a result of dropping out of school. It is appropriate to profile the relevant indicators by levels of education, reasons for leaving and in regional aspect.

In a conclusion of the assessments made for the expediency of the possible indicators as the most acceptable are the following:

"Net enrollment rates of students in all schools incl. Professionals from 7-19 age group, per region and districts."

"Students leavers per groups of classes, reasons for leaving and per region and district."

Indicators in the sphere of higher education

The main statistical units (indicators) for higher education are the number of students enrolled in total, as well as by type of higher education in the 20-24 age group. Similar to the fields of pre-school and school education, and in the field of higher education, the most significant are the relative proportions of enrolled students in the age group of 20-24 years to the population of the country of the same age group. According to the purpose of this study, they are calculated, analyzed and evaluated in territorial aspect by region and region. In this way, the relevant net enrollment rates are determined, based on which specific analyzes and estimates are made:

"Net enrollment rates for university students in the age group of 20-24 years by regions and districts."

In a conclusion, it could be summarized that the selection of indicators by education and age groups of children/pupils/students based on the purpose and objectives of this study is an important prerequisite for profiled analyzes and assessments enabling identify territorial differences in time that reflect changes in living standards.

1. **Comparative assessment of the differences in the educational infrastructure and the levels of education between Bulgaria and the countries of the European Union**

In the overall and comprehensive strategy for the development of the European Union, "Europe 2020" was defined as an important place for education as a subject of socio-economic policies. This fact is reflected in the formulation of two main goals of the development of the education system:

- At the end of the forecast period – 2020 is provided average for EU, at least 40% of the population in the 30-34 age group is estimated to have completed higher education;

- The reduce of the proportion of early school leavers/education to continuing by reaching the national targets by 2020 (in percentage).

Except for the showed, the main objectives in the frameworks of the common strategy in the sphere of education are defined as other major goals, such as making lifelong learning and educational mobility a reality. As universal for all elements of the educational system have been provided policies to improve the quality and effectiveness of education.

Statistically, education is a complex and multilateral system whose indicators are not always measurable. This is suggested by the chosen approach to characterize education, namely in the context of quality of life.[2]

The publication provides a detailed overview of the various dimensions that form the basis for a deeper analysis of quality of life. However, the focus is on the "fourth dimension – education", which is defined as the process by which society (schools, universities and other institutions) consciously imparts its cultural heritage and accumulated knowledge, values and skills to each generation.

Given these assumptions, education could be defined as an important component of quality of life, respectively of a standard of living that measures the primarily quantitative quality of life profiles.

From the point of view of the present study, as well as for the purpose of the comparative analysis between Bulgaria and the countries of the European Union, the available information[3] on the coverage of children in **early childhood education** is of interest. First of all, it is noted that early childhood is a stage in which education effectively influences children's development. Early childhood education "introduces children to organized learning outside the context of the family." This stage is divided into two periods: first for children up to 2 years of age and a second for children from 3 years of age up to the compulsory primary education age, i.e. the so-called pre-school education.

The comparative assessments were made on the basis of the calculated so-called early childhood enrollment rates – percentage of children 3 years of age up to the primary age of compulsory education in the same age group.[4]

Undoubtedly too positive is the fact that for the EU-28, the average enrollment rate for 2016 is 95.3% with a target value of 95%, i.e. the 2020 target has already been achieved. The high value of enrollment rates confirms the modern nature of the EU Member States' value system, which places education at the forefront of the socio-economic system of European societies based on knowledge, technological innovation and economic prosperity.

EU member states could be grouped into three main sets according to the magnitude of their individual enrollment rates by 2016 (Table 1).

---

[2] Education in the context of quality of life, online publication of Eurostat.
[3] https/ec.europa.eu/Eurostat/statistika – explainet/index.php$title= Qnolitu of life,15.03.2019.
[4] Ibid.

Table 1

Ranking of EU countries by enrollment rates (ER) by 2016 (%)

№	Countries	Above average ER	Countries	About the average ER	Countries	Under 90% of the average ER
1.	France	100.0	Hungary	95.7	Cyprus	89.7
2.	United Kingdom	100.0	Swiss	95.6	Romania	88.2
3.	Irland	98.8	Austria	94.9	Finland	87.4
4.	Belgium	98.3	Luxemburg	94.2	Bulgaria	86.5
5.	Denmark	98.1	Poland	93.1	Switzerland	82.2
6.	Malta	98.0	Estonia	92.6	Greece	79.8
7.	Netherland	97.6	Lithuania	91.4	Slovakia	76.5
8.	Island	97.4	Slovenia	90.9	Croatia	75.1
9.	Spain	97.3	Czech	90.7	-	-
10.	Germany	96.6	-	-	-	-
11.	Italy	96.1	-	-	-	-

Source: Compiled by NSI information, under the request of the author, 2019; Enrollment rates represent the proportion of children enrolled in pre-primary education.

More than 1/3 of the EU member states are approaching the maximum value of the enrollment rates of 100%, with this maximum already reached in France and the UK. Moreover, the maximum for France was registered as early as 2010, which means that there is a full coverage of children in the indicated early childhood in pre-school education. For the other countries in the "Above average ER" group, enrollment rates are in the range of 96% to 99%, which also means a high level of enrollment of the children. Enrollment rates for countries in the "around the EU average" range between 91% and 96%, which indicates a relatively high coverage of pre-school education.

The third group includes eight EU Member States, as Bulgaria is at fourth place with an 86.5% ER. The enrollment rates are in a range from 75 to 89.7%. Switzerland, Greece, Slovakia and Croatia (75.1%) have lower ER in comparison with Bulgaria, i.e. 11.4 p.p lower coverage of children in pre-school education. The comparative assessments should take into account that they are based on information for 2016. It is natural that development in a positive direction could be foreseen for the mentioned countries, but certainly for Bulgaria this share has increased to 90%, taking into account the annual increase in the number of kindergartens in the last three years.

There are some difficulties in determining the comparative assessment for Bulgaria, since the answer to the question whether it is better for children in the age range of 3 to 6 to be fully covered by the respective educational institutions is conditional. The answer is individual and depends mainly on the value orientation of families with young children. However, it is clear that the incomplete coverage is not due to a lack of places in kindergartens, as evidenced by the relevant analyzes and assessments by regions and districts of the country. In some of them, they exceed needs.

With regard to **school education**, early school leaving is an important issue for EU countries, as has been found in Bulgaria by relevant analyzes and assessments. In formulating the 2020 flagship target, the EU has identified early school leaving/education as a factor with a negative impact on economic growth and employment. From this point of

view, in addition to the overall target of reducing school leavers to below 10%, EU Member States have also set national targets, taking into account individual country-specific characteristics.[5]

It should be noted that the term "early leaving" in the EU refers to persons between the ages of 18 and 24 who have completed primary education and have not taken part in further education/training.[6] The magnitude of this phenomenon is defined as the proportion of those who left earlier from the population on age between 18 to 24 years. The average percentage of early school leavers in the EU-28 as of 2017 is 10.6%, i.e. the basic overall goal is almost achieved. However, this does not diminish the situation in some EU Member States, where achieving national targets for reducing the rate of early school leavers remains a challenge and a difficult problem to solve: Malta – the real percentage of early school leavers in 2017 is 18.6%, i.e. 8.6 p.p is higher than the EU average target of 10%, which is the same as the national target; Spain – the real percentage is 18.3%, i.e. 8.3 p.p higher than the EU target and 3.3 p.p. higher than the national rate of 15%; Romania – a real percentage of 18.1%, which is 7.1 p.p. higher than the national rate of 11%. As a specific case, Italy can be defined as a real percentage of 14% and a national one of 16%, i.e. the national target has been reached, but Italy still has 4 p.p. a higher rate of early school leaving than the EU-wide target. Obviously, the question can be raised as to the justification of the value of the national target in percentages and to qualify estimates on this basis. As the percentage of national targets for drop-outs varies from 16% for Italy to 3% for Croatia, it is appropriate to carry out benchmarks and assessments on the basis of an EU average of 10% for early school leavers.

Bulgaria is in a relatively favourable situation – the real percentage of early leaving is 12.7% and is only 1.7 p.p. above the national target of 11%. Compared to the EU average of the 10% overall target, it could be argued that Bulgaria is following a steady decline in early school leaving – from 13.8% in 2016, to 12.7% in 2017 and to 12.4% in 2018. Have in mind the reported results of the measures for significant reduction of the number of school leavers conducted by the Ministry of Education and Science, it is quite possible that by the end of 2020 not only the national but also the pan-European target will be reached. It is noteworthy that for 50% of EU Member States, the values of national targets are in line with the pan-European target, which again proves the necessity of their harmonization.

Comparative analyzes and evaluations between the EU Member States in relation to **the higher education** and its significant impact on the quality of life of the whole population provide important information on the level of its development and the need for specific measures to achieve European standards in this area.

For a period of 10 years (2007-2017), a relatively high proportion of higher education graduates between 25 and 64 years of age have reached the EU Member States – in 2017, one third (31.4%) of the EU population – 28. In comparison, the proportion of graduates from secondary or non-tertiary education is almost half of the EU population – 46.1%. From here, there are clear positive outlooks for high school graduates – professional

---

[5] There also.

[6] Eurostat's methodology identifies early school leavers aged 8 to 24 who have not completed higher education than the primary.

achievement, better opportunities for suitable employment and higher income respectively. Taken together, they affect the quality of life of the EU population. In this context, the unemployment rate in the EU-28, depending on educational levels, is of great importance. Persons aged 15-74 with a low level of education in 2017 are more than three times more likely to be unemployed (15%) than those with a high level of education (4.5%). The above-mentioned ratios between education levels and unemployment are particularly high in the Czech Republic, Lithuania, Slovakia, Hungary and Bulgaria, while Cyprus, Greece and Portugal are lower.

Of interest is the comparative analysis of the distribution of the population aged 25-64 by educational levels – low, medium, high. For 2017, according to Eurostat (edat-ifs-9903), this percentage distribution across the EU-28 is correspondingly in the following ratio: 23:46:31. For Bulgaria, the stated ratio is 17:55:28, which shows a very good positioning of the country towards the EU-28. With regard to the low educational level, Bulgaria has 6 p.p. a lower value than the EU average of 28, which is at the expense of the higher value of high school graduates – 55% against 46%. The difference of 9 p.p can be seen as a positive thing, as it is mainly due to the lower proportion of primary school graduates. Moreover, the difference between the percentages of the graduates of higher education amounts to only 3 p.p, which proves the positive achievements of higher education in Bulgaria. It is important to note that countries such as Hungary, Portugal, the Czech Republic, Croatia, Slovakia, Malta, Italy and Romania register lower values of higher education graduates than Bulgaria. The share of the population with tertiary education in Romania is 10 p.p. lower than Bulgaria's. The fact that the share of higher education graduates in Germany is only 1 p.p is indicative of the good positioning of Bulgaria, higher for Austria – 3 p.p. In the same direction is the information on the dynamics of the increase in the share of higher education graduates for the period 2007-2017.[7] For the EU-28 the percentage increase is 7% and for Bulgaria – 6%.

Summarizing the comparative analyzes and evaluations of the changes and the condition of the educational infrastructure and the level of education in the EU-28 and determining the place of Bulgaria, it can be safely stated that, with respect to all three levels of education, there are positive changes, by a number of indicators, Bulgaria approaches/exceeds the respective values of countries with closer or higher socio-economic development.

3. Territorial differences in the coverage of children/students by level of education

3.1. Differences by regions and districts in the coverage of children in pre-school education

The well-founded choice of indicators for comparative territorial analyzes and evaluations of pre-primary education has determined the appropriate ones in view of the objectives of this study. These are the so-called net enrollment rates of children in kindergartens, which are calculated as relative proportions of the number of children attending kindergartens in the age group of 3-6 years by the number of the population in the same age group. The

---

[7] The starting year of the study period is 2007, as Eurostat information refers to this year.

selected statistical indicator reflects the degree of coverage of children in the specified kindergartens. In this way, the relevant comparative analyzes reveal the differences between the territorial units of coverage/access of children in pre-school education.

The received values of the net coefficients (Table 2) refer to each year of the study period 2010-2017. The analysis of their changes by years shows that the average for the period changes for all regions is in the positive direction.

Table 2

Ranked net coefficients for pre-school education (3-6 years) by regions for 2010/2013 and 2017 (%)

№	Regions	2010	Regions	2013	Regions	2017
1.	Northcentral	78.5	Northcentral	87.0	Southwestern	82.9
2.	Northwestern	76.8	Northwestern	86.5	Northwestern	80.0
3.	Southwestern	75.9	**Bulgaria**	83.6	**Bulgaria**	79.4
5.	**Bulgaria**	74.9	Southwestern	83.3	Northcentral	79.1
6.	Northeastern	74.4	Southcentral	83.1	Southcentral	77.6
7.	Southcentral	74.2	Northeastern	82.9	Northeastern	77.2
8.	Southeastern	70.7	Southeastern	81.3	Southeastern	76.8
	Scope of variations	**7.8**	**Scope of variations**	**5.7**	**Scope of variations**	**6.1**
	Coefficient of variation	**3.6**	**Coefficient of variation**	**2.7**	**Coefficient of variation**	**3.6**

Source: Compiled by NSI information under a request of the author.

The analysis and assessment of territorial differences by regions in the coverage of children in pre-primary education can be done in vertical (by region) and horizontal (in time) plan. The more important conclusions regarding the changes in the coverage of children by regions of the country are summarized as follows:

- The highest number of children in the Southwestern region by 2017 is 7 p.p higher than in 2010 and almost equal to the net coefficients compared to 2013. This area "displaces" first place in the North Central Region, which ranks third with a child coverage of 79.1%. It is noteworthy that the "accused" Northwestern region retains the prestigious second place for the seven-year period with 80% coverage in 2017 at 3.2 p.p. advance;

- The other three regions – SCR, NER and SER keep their positions with net coefficients below the average for Bulgaria of 74.9% for 2010, 83.6% for 2013 and 79.4% for 2017.

- The stated findings are also confirmed by the low values of the defined "Score" indicator, which decreased by another 2.1 percentage points over the period 2010-2013, and increased slightly for the period 2013-2017 with 0.4 p.p The coefficients of variation prove the stated finding for low values, for the whole surveyed period 2010-2017 they move in the interval 2.7-3.6%, which again shows slight differences in territorial profile in the framework of the eight-years period;

- The summary conclusion for the changes in the coverage of children in pre-school education by districts is that the territorial differences are insignificant and did not cause significant changes in the coverage of children by regions.

The analysis and assessment of territorial differences by districts in the coverage of children in pre-primary education reveal much more specificity of the changes over the years of the eight-years study period.

The ranking of the 28 districts by the values of the net coefficients is presented in Table 3.

Table 3

Ranked coefficients for pre-school education by districts for 2010, 2013 and 2017 (%)

№	Districts	2010	Districts	2013	Districts	2017
1	Razgrad	84.4	Razgrad	92.8	Smolyan	92.5
2	Smolyan	84.2	Smolyan	91.7	Blagoevgrad	88.8
3	Vratza	83.8	Vratza	91.6	Vratza	86.4
4	Pernik	80.1	Gabrovo	88.8	Pernik	86.0
5	Blagoevgrad	79.6	Blagoevgrad	87.8	Gabrovo	85.5
6	Ruse	79.5	Kyustendil	87.1	Kyustendil	83.7
7	Vidin	79.2	Ruse	86.6	Razgrad	82.1
8	Montana	77.4	Veliko Tarnovo	86.4	Sofia (capital)	81.6
9	Veliko Tarnovo	77.4	Vidin	85.5	Burgas	81.5
10	Dobrich	77.1	Pleven	85.5	Sofia	81.0
11	Silistra	77.0	Montana	85.2	Vidin	80.8
12	Burgas	76.8	Dobrich	85.0	Varna	79.8
13	Plovdiv	76.6	Burgas	85.0	**Bulgaria**	**79.4**
14	Shumen	75.2	Plovdiv	85.0	Ruse	79.1
15	Sofia (capital)	74.9	Pernik	84.6	Plovdiv	79.1
16	Pleven	74.9	Lovech	84.1	Stara Zagora	79.0
17	**Bulgaria**	**74.9**	Shumen	84.0	Lovech	78.4
18	Sofia	74.8	Stara Zagora	83.9	Montana	78.2
19	Kyustendil	74.6	**Bulgaria**	**83.6**	Pleven	77.4
20	Kardzhali	74.0	Kardzhali	83.6	Shumen	77.1
21	Targovishte	73.4	Varna	82.7	Silistra	76.4
22	Varna	73.3	Sofia (capital)	82.2	Veliko Tarnovo	76.4
23	Gabrovo	73.3	Sofia	81.3	Dobrich	75.6
24	Haskovo	72.6	Silistra	81.3	Yambol	75.4
25	Stara Zagora	72.6	Haskovo	81.3	Kardzhali	74.6
26	Lovech	69.7	Yambol	80.6	Haskovo	74.6
27	Yambol	68.0	Targovishte	79.3	Pazardzhik	73.8
28	Pazardzhik	66.8	Pazardzhik	76.8	Targovishte	68.4
29	Sliven	58.7	Sliven	70.6	Sliven	65.8
	Scope	**25.8**	**Scope**	**22.2**	**Scope**	**26.7**
	Coefficient of variation	**7.2**	**Coefficient of variation**	**5.4**	**Coefficient of variation**	**7.9**

Source: Compiled from information from a NSI report under a request of the author, 2018.

The main conclusions from the analysis of the changes in the coverage of children in pre-school education by districts of the country are synthesized as follows:

- The horizontal analysis of the level of coverage of children shows a consistent annual increase in the values of the respective net coefficients in nearly 90% of the districts by 2017 compared to 2010. Only in three districts is a slight decrease in the net coefficients:

a) In Razgrad district from 84.4% in 2010 to 82.1% in 2017, it should be immediately noted that in 2010 the district of Razgrad occupies a leading position in the scope of children, and in terms of the average for Bulgaria the difference is almost 10 p.p. in favour of Razgrad district; the decrease in the net coefficients is minimal – by 2.3 p.p, which places Razgrad district in seventh place in the ranking for 2017. It is very important to emphasize that the decrease in the net coefficients of the coverage of children is not due to a deficit of kindergartens, and above all of reducing the number of children attending kindergartens, which for the period 2010-2016 is lower by 906. This, in turn, leads to the need of decrease/reduce the number of kindergartens. Other is the question why the number of children has decreased – due in part to a slight decrease in birthrates in the district, but more likely is the impact of other causes, such as moving to another district, going abroad, take care for the children in a family environment, etc.

b) The second district is Dobrich with a further slight decrease in the net coefficients – 1.5 p.p, which could be described as a decrease within the statistical error;

c) In the third district – (Targovishte), a decrease of the net coefficients by 5 p.p. was registered, which ranked it in fourth place below the average net coefficient for Bulgaria in 2010 and in 15th place in 2017; in this area, the birthrate decreased slowly over the period 2010-2017 with very small values. Obviously, the mains causes are rooted in the other mentioned factors.

- The vertical analysis outlining the changes in the positioning of the districts puts Smolyan district in the leading position – in 2010 on second position with a net coefficient of 84.2% and in 2017 on first place with 92.5%, i.e. 8.1 p.p. increasing the reach of children in pre-school education. This positive fact is mainly explained by the development of a wider kindergarten network. It is confirmed by the number of available places in them, which exceeds the respective demand/needs – for 2010 there are 121 places for 100 children, and for 2017 they are increased to 129. Evidently, efforts are being made in the Smolyan district to expand and improve pre-school infrastructure with innovative and multifunctional kindergartens, which can be used more effectively to promote modern methods of education;

- It gives the impression that the "lagging" districts (below 70% of the coverage of children) for 2010 are only Lovech, Yambol, Pazardzhik and Sliven, as for all of them there is an increase of the scope for 2017. As a result, under "the critical level" remains only the district of Sliven (with a coverage of 58.6% in 2010 and 65.8% in 2017). As already noted in the district of Targovishte, a decrease in the net coefficient for 2017 is registered, which puts this district in the pre-last place in the overall ranking with 68.4% coverage of children;

- The last place for the both final years of the study period is firmly occupied by the district of Sliven, despite the increase of the net coefficient by 7.2 p.p. This increase is due to a slight increase in the number of children enrolled in kindergartens. There is clearly no deficit of places in kindergartens, as to 100 children are offered 106 places in 2010 and 110 places in 2017. It could be assumed that the ethnic structure of the population, respectively of the children in the district of Sliven, has some influence;

- Concerning the values of the "Scope" indicator, it can be noted that they are determined by the extreme maximum and minimum values of the reach of children in the indicated areas. Proof of this is the retention of the main core of 12 districts that occupy positions above the average net coefficient of the country.

- The coefficients of variation, which examine the degree of dispersion of the values of the net coefficients for the individual districts around the average, are with too low values – respectively, for the beginning of the study period – 7.2% and for the final 7.9%;

- With regard to the situation in 2013, there is a slight increase in the values of net coefficients, which applies to all areas; this fact could be commented on as a result of demographic factors – a cyclical increase in the number of children in the age group of 3 to 6 years filling the spare capacity in kindergartens and pre-school classes;

- The coefficient of variation for 2013 is lower than the values of these coefficients for the first and the last years of the study period reach to 5.4%, which reveals an even lower degree of differences in the coverage of children between the different districts;

The study of changes in the coverage of children in pre-school education, by analyzing and evaluating the values of the indicator "Places per 100 children in kindergartens" by years of the study period, reveals very clearly its influence on the degree of child insurance (Table 4).

Table 4

Places of 100 children in kindergartens per districts (3-6 years) – number for 2010, 2013 and 2017 (number)

№	Regions	2010	Regions	2013	Regions	2017
1	Northcentral	128	Northcentral	125	Northcentral	123
2	Northwestern	111	Northwestern	110	Northwestern	114
3	Northeastern	105	**Bulgaria**	**102**	Northeastern	111
4	**Bulgaria**	**104**	Northeastern	110	**Bulgaria**	**106**
5	Southcentral	101	Southeastern	99	Southcentral	106
6	Southeastern	100	Southcentral	98	Southeastern	105
7	Southwestern	94	Southwestern	94	Southwestern	97
	Scope	**34**	**Scope**	**31**	**Scope**	**26**
	Coefficient of variation	**11.1**	**Coefficient of variation**	**10.8**	**Coefficient of variation**	**7.0**

Source: Compiled from information from a NSI report under the request of the author, 2018.

The horizontal analysis shows that in 2013 in all districts there was a minimal decrease in the number of places, but at the end of the study period, an increase in their number per 100 children was observed again. Even more striking is the fact that, with the exception of the SWR for all other regions, in 2017, the places exceed the "standard" number of 100 children. For the SWR the explanation is clear – it includes Sofia (Capital) and the district of Sofia, where some slight deficit of places in kindergartens is registered, and for 2017 it is only 3 places.

Regarding the changes in "Scope" indicator, the rating is positive, i.e. "constriction" is noticeable – with 8 seats per 100 children. The coefficients of variation also recorded a decrease process of 0.3 p.p. in 2013 and by 4.1p.p. in 2017, which is an indicator of low scattering around the average level.

Obviously, a more detailed analysis and evaluation of changes in this indicator is needed, which is why it is appropriate to specify the study at the district level as well (Table 5).

Table 5

Places per 100 children in kindergartens by districts for 2010, 2013 and 2017 (number)

№	Districts	2010	Districts	2013	Districts	2017
1	Razgrad	151	Razgrad	154	Shumen	140
2	Veliko Tarnovo	127	Shumen	127	Razgrad	134
3	Shumen	127	Ruse	125	Veliko Tarnovo	133
4	Yambol	127	Veliko Tarnovo	123	Kardzhali	132
5	Ruse	126	Smolyan	212	Dobrich	130
6	Kardzhali	123	Yambol	118	Smolyan	129
7	Smolyan	121	Kardzhali	117	Silistra	120
8	Montana	119	Dobrich	116	Yambol	118
9	Silistra	119	Montana	113	Vratza	117
10	Targovishte	116	Vratza	112	Montana	116
11	Dobrich	115	Targovishte	112	Ruse	115
12	Pleven	112	Vidin	110	Targovishte	113
13	Vratza	110	Pleven	110	Blagoevgrad	113
14	Kyustendil	110	Silistra	109	Pleven	112
15	Gabrovo	109	Kyustendil	108	Vidin	111
16	Lovech	106	Sofia	108	Lovech	111
17	Sliven	106	Gabrovo	108	Gabrovo	111
18	Blagoevgrad	106	Blagoevgrad	105	Kyustendil	111
19	Pazardzhik	106	**Bulgaria**	**102**	Sliven	110
20	Vidin	105	Sliven	102	Sofia	107
21	**Bulgaria**	**104**	Lovech	101	Pazardzhik	107
22	Haskovo	102	Stara Zagora	100	**Bulgaria**	**106**
23	Pernik	101	Pazardzhik	100	Burgas	105
24	Sofia	100	Haskovo	99	Haskovo	105
25	Stara Zagora	96	Pernik	99	Stara Zagora	102
26	Burgas	93	Burgas	91	Pernik	99
27	Plovdiv	91	Plovdiv	89	Varna	94
28	Varna	90	Sofia (capital)	87	Plovdiv	94
29	Sofia (capital)	87	Varna	87	Sofia (capital)	90
	Scope	**64**	**Scope**	**67**	**Scope**	**50**
	Coefficient of variation	**12.8**	**Coefficient of variation**	**13.0**	**Coefficient of variation**	**12.0**

Source: Compiled from information from a NSI report under the request of the author, 2018.

As a result of the ranking of the districts for 2010, according to the indicator "Places per 100 children in kindergartens", 20 districts are identified, in which the number of available places exceeds the needs. These areas have higher values of the indicated indicator than their average for the country. Below the standard number are ranked five districts – Stara Zagora, Burgas, Plovdiv, Varna and Sofia (Capital), with the lowest value being the indicator for Sofia (Capital) – 87 places per 100 children. It is quite logical for districts with

a larger population, respectively with more children, to find a relatively minimal deficit of places in kindergartens. For the period after 2010, there has been a gradual increase in values in the indicated areas.

The comparative analysis between 2010, 2013 and 2017 shows that in the "lagging" districts there is an increase in the number of places per 100 children, and for the districts of Burgas and Stara Zagora it exceeds the critical threshold of 100 places. As a result, the "package" of districts with a too minimal deficit of places in kindergartens is shaped by the districts of Sofia (Capital), Plovdiv and Varna. As already emphasized, this fact is due to the continuous influx of settlers from small towns and villages in the country. However, in the near future, if Bulgarian citizenship is granted, it is possible, but at the same time, too worrying and, from a socio-economic point of view, to increase the population, respectively of the children, especially in the big cities. This will inevitably lead to a shortage of places in kindergartens, create new ones and exacerbate the problems already mentioned.

The territorial comparative analyzes and estimates of the coverage of children in pre-school education make it possible to systematize the following important conclusions:

- The differences found per regions of the country are insignificant and have not led to structural changes;

- A positive trend of the annual increase in the values of the net coefficients for the coverage of children in kindergartens was registered in almost 90% of the districts;

- Characteristic for the whole studied period is the increase of the values of the indicator for the number of places per 100 children, which in the predominant territorial units exceed the "standard" number of 100 children. However, this fact does not always have a positive effect as the cost of maintaining kindergartens increases;

- The ranking of the districts by 2017 per the values of the indicator "Places per 100 children" reveals the totality of three main districts (Plovdiv, Varna and Sofia/Capital), at which they are below the standard threshold but with insignificant differences;

- The values of this indicator are increasing by years of the surveyed period, but there is a danger of "reversing" of this positive trend as a result of the continuous influx of settlers from smaller towns and villages, but also settlers from other countries receiving Bulgarian citizenship.

3.2. Differences by regions and districts in the coverage of students in the school education

Similarly to the pre-primary education survey approach, and with regard to school education, the "net enrollment ratio" is the most appropriate for the purposes of the study. It is calculated as the relative proportion of the number of students actually enrolled in school education in the age group 7-19 years to the number of the population of the same age group. In this way, the extent of pupil enrollment in school education is measured. On the basis of the values of the net coefficients, comparative analyzes and estimates are made for the respective territorial units. What do the changes in the net coefficients determined by the regions of the country for the period 2010-2017 show (Table 6).

Table 6

Ranked net student enrollment rates (7-19 years) by region (%)

№	Regions	2010	Regions	2013	Regions	2017
1.	Southwestern	87.3	Northwestern	87.2	Southwestern	85.5
2.	**Bulgaria**	**83.5**	Southwestern	87.0	Northwestern	84.4
3.	Southcentral	83.4	**Bulgaria**	**85.6**	**Bulgaria**	**82.4**
4.	Northeastern	83.1	Northcentral	85.2	Southeastern	81.8
5.	Southeastern	81.5	South central	85.0	North central	81.4
6.	Northwestern	81.0	Southeastern	84.7	**Southcentral**	**81.0**
7.	North central	80.8	Northeastern	84.1	Northeastern	78.2
	Scope	**6.5**	**Scope**	**3.1**	**Scope**	**7.3**
	Coefficient of variation	**2.9**	**Coefficient of variation**	**1.5**	**Coefficient of variation**	**3.2**

Source: Compiled under an information from a NSI report after a request of the author, 2018.

The comparative analysis and evaluation by regions reveal the following trends:

- The Southwestern region is firmly in leading position, both in the initial year and throughout the study period, with relatively high values of net coefficients tending to the reference maximum. It is noteworthy that the values of the net SWR coefficients exceed the national average – by 3.8 p.p. in 2010, up 1.4 p. p. , in 2013 and by 3.1 p.p. in 2017;

- Changes in their ordering are observed in the other regions, but this does not lead to noticeable territorial differences. This fact is explained by the slight differences in the values of the net coefficients. This is also evidenced by the low values of the respective coefficients of magnitude – 6.5% and 7.3%;

- Only in the Northeast region, there is a more noticeable decrease in the net odds, which places it from the comparatively prestigious third place to the last one. In fact, the difference is not big – the enrollment rate for students for the period 2010-2017 has decreased by almost 5 p.p. The analysis of the absolute values of both students and the population in the age group of 7-19 years shows a gradual decrease in their number. However, the difference is due to the accelerated decrease in the number of students compared to the population in the specified age group. In all probability, the reasons for these differences are rooted in the ethnic structure of the population in this region.

The indicated territorial differences in the range of the students could be explored in greater detail by disaggregating the regions by districts and ranking them according to the values of the net coefficients (Table 7).

The analysis and evaluation of the ranked areas by the magnitude of the net coefficients show that their values are at a range, as well as with coefficients of variation, showing a low degree of scattering over the whole study period. These indicators identify the differences between the areas of coverage of pupils in school education that are insignificant. At the same time, there is an increase in the values of the net coefficients, which means that the range of students is increasing, including in the last of the mentioned districts – Sliven and Silistra.

Table 7

Ranked net enrollment rates of students (7-19 years) by districts (%)

№	Districts	2010	Districts	2013	Districts	2017
1	Sofia (capital)	89.7	Lovech	89.0	Blagoevgrad	88.4
2	Pernik	88.6	Stara Zagora	88.1	Lovech	87.5
3	Varna	87.5	Blagoevgrad	88.1	Gabrovo	87.5
4	Plovdiv	85.6	Sofia (capital)	87.7	Smolyan	87.0
5	Blagoevgrad	85.3	Pleven	87.4	Pernik	85.6
6	Smolyan	84.7	Veliko Tarnovo	87.3	Stara Zagora	85.5
7	Veliko Tarnovo	84.4	Gabrovo	87.2	Vratza	85,1
8	Burgas	83.8	Vidin	87.2	Sofia (capital)	85,1
9	**Bulgaria**	**83.5**	Yambol	87.1	Kyustendil	85.0
10	Montana	83.4	Smolyan	87.1	Pleven	84.2
11	Stara Zagora	83.3	Pernik	87.0	Yambol	84.1
12	Haskovo	83.3	Montana	86.6	Sofia	83.7
13	Kardzhali	83.0	Varna	86.5	Kardzhali	83.7
14	Yambol	82.3	Plovdiv	85.9	Vidin	83.6
15	Sofia	82.1	Kyustendil	85.9	**Bulgaria**	**82.4**
16	Kyustendil	82.0	Vratza	85.9	Burgas	82.3
17	Ruse	82.0	Burgas	85.7	Montana	82.1
18	Gabrovo	81.9	**Bulgaria**	**85.6**	Veliko Tarnovo	81.8
19	Vidin	80.8	Haskovo	85.4	Haskovo	81.6
20	Vratza	80.8	Razgrad	84.9	Ruse	81.3
21	Dobrich	80.7	Ruse	84.6	Varna	81.2
22	Pleven	80.4	Shumen	84.4	Plovdiv	81.1
23	Shumen	80.4	Kardzhali	83.5	Shumen	80.4
24	Lovech	80.3	Sofia	83.0	Razgrad	80.2
25	Pazardzhik	78.7	Pazardzhik	82.6	Silistra	77.1
26	Razgrad	77.9	Dobrich	81.0	Pazardzhik	76.9
27	Targovishte	76.1	Silistra	80.6	Sliven	74.5
28	Sliven	74.5	Targovishte	79.3	Targovishte	73.5
29	Silistra	74.4	Sliven	76.9	Dobrich	71.2
	Scope	**15.3**	**Scope**	**12.1**	**Scope**	**17.2**
	Coefficient of variation	**4.5**	**Coefficient of variation**	**3.4**	**Coefficient of variation**	**5.2**

Source: Compiled under an information from a NSI report after a request of the author, 2018.

The main changes and differences between the areas of pupil coverage are as follows:

- The net enrollment ratio of students in school education in Sofia (capital) decreased by 4.6 percentage points over the eight-year study period. However, the main reason for this "relocation" of Sofia (capital) should be pointed out immediately from first place in 2010 to fourth place in 2013 and eighth place in 2017. The analysis of the components of the net coefficients by which their values are calculated shows that the number of students has increased from 117900 in 2010 to 127635 in 2017, i.e. with nearly 10 000 students. A similar increase is registered in the number of the school-age population – from 131486 to 149933, i.e. by over 18 thousand. The tide to Sofia is evidently increasing annually;

- The disaggregation of the increase in the number of students in Sofia (capital) by degrees of education reveals that the largest increase is in the elementary education (I-IV class) – from 39280 for 2010 to 48035 for 2017, i.e. nearly 9000 students. This situation undoubtedly complicates primary education in Sofia city and requires appropriate action towards improving and developing the school base, as well as with regard to policies for reducing through the economic levers the inflow of young families (with students from first to fourth grade) in the capital. Increasing the number of students from lower secondary education is not problematic (by about 3 thousand), as well as from secondary education, with a decrease in the number of students with more than 3 thousand;

- In horizontal plan, it is noted that the values of the net coefficients for a number of districts (Lovech, Gabrovo, Vratsa, Kyustendil, Pleven, Vidin) have increased in the three surveyed years, and they already occupy positions above the average for Bulgaria; this is evidence of the sustainable development of these areas, which is reflected in positive changes in the field of school education;

- However, in parallel with this process, in other areas that have occupied the leading positions in the ranking (Varna, Plovdiv, Veliko Turnovo, Burgas) in 2010, after an eight-year period in 2017, they move to its lower floors; it should be noted that in these big cities there is an increase in the number of students mainly in primary education, which is similar to the situation in the city of Sofia, changes the order of the districts;

- It gives an impression that the "package" of districts, characterized by relatively low values of net coefficients – below 80% (Silistra, Pazardzhik, Sliven, Targovishte) is maintained throughout the study period; the main reason is the decrease in the number of students in all three levels of education.

What are the main reasons for the decrease in the number of students or respectively their inclusion in school education?

Common reasons that affect almost all areas are: declining birth rates; population restructuring by districts with a view to providing employment for parents and appropriate education of children; leaving the education for various specific reasons.

It is of interest to investigate **the reasons for leaving education by levels of education** on average for the country, as well as over the years of the study period (Table 8). The statistics on graduates leaving the national average directs the management bodies to the areas in which they should concentrate their efforts, ranked according to the scale of the manifestation of the various reasons. The main reasons included in this study are consistent with the relevant classification.

In terms of primary education (grade I – IV), the drop-out rate is gradually increasing over the years of the study period. The relative share of drop-outs compared to the total number of pupils in primary education varies from 2.2% in 2010 to 2.6% in 2017. This increase seems small at first glance, but its absolute value is 1,450 pupils. Ranking the main reasons for leaving school puts first the number of students who have gone abroad from primary education. The school leaving because of family reasons ranks second place and has a positive downward trend. Obviously, the implemented programs and strategies achieved the

desired results mainly through measures to increase the economic and social stability of families at risk their children to drop-out of school education.

<div align="right">Table 8</div>

Leavers by the level of education and reasons for leaving for the period 2010-2017 total for the country

№	Reasons of leaving	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
	Total							
1	Leavers (number)	18766	18450	17571	17704	21146	21170	20092
2	Relative share of leavers (%)	2.4	2.4	2.3	2.4	2.8	2.9	2.8
3	**I – IV grade**							
4	Leavers – number incl.	5596	5678	5268	5418	6230	6568	7052
5	Because of lack of wish	371	324	231	173	278	251	347
6	Because of family reasons	2658	2630	2491	2289	2098	2251	2547
7	Departure abroad	2237	2662	2206	2598	3386	3504	3643
8	Relative share of leavers (%)	2.2	2.2	2.1	2.1	2.4	2.5	2.6
9	**V -VIII grade**							
0	Leavers – number incl.	6873	6749	6530	6679	8132	8139	7295
11	Because of lack of wish	1141	1018	839	889	1003	1089	944
12	Because of family reasons	3360	3169	3188	2840	3008	2944	2621
13	Departure abroad	1926	2093	2050	2343	3264	3328	3238
14	Relative share of leavers (%)	3.2	3.1	2.9	3.0	3.7	3.8	3.5
15	**IX – XII grade**							
16	Leavers – number incl.	6297	5978	5708	5587	6632	6351	5745
17	Because of lack of wish	1977	1641	1495	1424	1672	1757	1379
18	Because of family reasons	3122	3162	3040	2750	3148	2659	2482
19	Departure abroad	896	910	965	1152	1335	1498	1526
20	Relative share of leavers (%)	2.2	2.1	2	2.1	2.5	2.4	2.1

Source: Compiled by Information from "Education in Bulgaria", 2017 page 104 and by NSI at the request of the author, 2018.

The next level of education (V-VIII grade) also shows an increase in the number of school drop-outs, but it is lower with 420 students. Their relative share had changed from 3.2% in 2010 to 3.5% in 2017. The number of people who have gone abroad is gradually increasing, and for the period 2013-2017 it is emerging as a primary reason.

The drop-outs students who left, because of family reasons decreased by 740, but showed higher values than drop-outs. This fact predetermines the need to extend the measures included in the respective programs to stimulate the economic activity of parents.

The analysis and evaluation of changes in the number and proportion of students who have left gymnasium (secondary) education show that they have the lowest values compared to the previous levels of education. The total number of drop-outs has been increasing at a low rate, with 550 students for the period under study. It is worth noting that the number of students abroad has increased by over 600 students, which is probably due to the desire of these young people to start work abroad instead of completing their high school education in Bulgaria.

It is noticeable, however, that the number of those who left for family reasons has decreased markedly from 3122 in 2010 to 2482 in 2017. This finding demonstrates an

increase in the standard of living and the capacity of families with children in this age group. For them, obviously, the influence of family factors is not decisive.

Much more specific and with direct practical application is the information about those who have left the training by groups of classes, causes and by region (Table 9). For the purposes of the study – by analyzing and evaluating the changes in the differences between the regions, it is necessary to analyze the changes in the scope of the drop-outs by groups of classes, reasons for leaving and regions for the whole studied period. This determines the need to systematize the relevant information and present it in tabular form for the academic years 2010/2011 and 2016/2017.

Table 9

Drop-outs students by grade`s groups, reasons for leaving and districts for 2010/2017 (number)

| Regions/reasons | Grade groups | | | | | | | |
| | I – IV grade | | V – VIII grade | | IX – XII grade | | Total I – XII grade | |
	2010/11	2016/17	2010/11	2016/17	2010/11	2016/17	2010/11	2016/17
Bulgaria								
Leavers	5596	7052	6783	7295	6297	5745	18766	20092
Lack of wish	371	347	1141	944	1977	1339	3489	2670
Family reasons	2658	2547	3360	2621	3122	2482	9140	7650
Departure abroad	2237	3643	1926	3238	896	1526	5059	8407
Northwestern regions								
Leavers	950	880	968	944	953	862	2871	2686
Lack of wish	79	60	157	126	247	266	483	452
Family reasons	573	365	575	410	568	417	1716	1192
Departure abroad	231	402	201	331	106	147	538	880
Northeastern region								
Leavers	985	1112	1264	1103	995	884	3234	3099
Lack of wish	53	33	155	115	229	152	437	300
Family reasons	414	344	651	319	542	398	1607	1061
Departure abroad	454	649	408	597	181	312	1043	1558
Southeastern region								
Leavers	922	1523	1183	1583	1048	1011	3153	4117
Lack of wish	77	96	241	245	339	254	657	595
Family reasons	395	621	532	622	521	474	1448	1717
Departure abroad	377	674	351	625	127	195	855	1494
Southwestern region								
Leavers	715	900	946	961	844	866	2505	2727
Lack of wish	58	82	185	163	342	255	585	500
Family reasons	319	299	422	323	296	296	1037	918
Departure abroad	278	446	226	381	152	221	656	1048
Southcentral region								
Leavers	1234	1793	1540	1830	1516	1328	4290	4951
Lack of wish	75	42	312	140	648	305	1035	487
Family reasons	621	629	786	653	663	527	2070	1809
Departure abroad	491	1040	348	937	142	409	981	2386
Northcentral region								
Leavers	800	844	972	874	941	794	2713	2512
Lack of wish	29	34	91	155	172	147	292	336
Family reasons	336	289	394	294	532	370	1262	953
Departure abroad	406	432	392	367	188	242	986	1041

Source: Compiled by NSI information, at the request of the author, 2018.

The multidisciplinary information of high social and economic importance presented in the regions of the country allows us to analyze the trends in the scale of the too negative phenomenon – leaving school. For the 2010-2017 period, school leavers increased by about 1,300 students, the highest being for the South Central District for the two final years – 4290 and 4951 respectively. It is noteworthy that the increase in the drop-out rate in the South-East region is also relatively significant – by 960. Some reduction in their numbers was achieved in the North-West, North-Central and North-East regions.

Undoubtedly, important information about managerial decision-making is also obtained by differentiating drop-out students for reasons of drop-out. With regard to the reason for "reluctance" to attend school, their number is noticeable, with more than double the reduction in the South Central Region. Apparently, the implementation of appropriate programs aimed at overcoming the reluctance to attend school has increased their motivation and value orientation.

The first in terms of importance at the beginning of the study period was the "Family Reasons" group – in all districts, drop-outs for family reasons have the highest relative share, accounting for nearly 50% for the South Central Region. An analysis of this situation shows that, to a large extent, leaving school was predetermined by family financial and material circumstances. However, in the period 2010-2017, in some of the regions, a process of reducing the scale of manifestation of this cause at the expense of drop-outs due to "departure abroad" is gradually starting.

Regarding the increase in the relative share of drop-outs due to departure abroad, which is only observed in two regions – Northwest and South Central region, it could be argued that this is not a trend for other areas as well as for the country. The increase in drop-out rates due to leaving abroad in the two mentioned districts is mainly due to the elementary school students (grades I-IV), which show a higher growth rate than drop-outs from upper secondary and upper secondary education.

The mentioned above facts could be explained by the logical assumption that the parents of children leaving primary school belong to the younger age groups who are educated, but with insufficient experience and skills, and therefore prefer to acquire them in more advanced ones mainly European countries. From this point of view, it could be argued that the impact of the cause of the "departed abroad" will gradually self-regulate depending on the future development of the country.

Information on school leavers in the territorial profile of the districts is presented in much greater detail (Table 10). The analysis reveals that leaving for family reasons is of the highest severity in all areas except Sofia (capital), where their absolute number at the beginning of the study period is twice lower than that of those leaving due to departure abroad. This trend is also evident in other regions during the period 2010-2017, with more sensitive changes in the districts of Varna, Sofia (capital), Plovdiv, Pazardzhik.

Table 10

Leaving students by reason of leaving and by district for the 2010/2011 and 2016/2017
school years (Number)

№	Districts	Reasons for leaving							
		Total		A lack ot wish		Family reasons		Departure abroad	
		2010/11	2016/17	2010/11	2016/17	2010/11	2016/17	2010/11	2016/17
1	2	3	4	5	6	7	8	9	10
1	Vidin	279	384	32	11	157	151	67	175
2	Vratza	675	602	100	207	473	257	86	104
3	Lovech	532	435	109	67	271	187	118	142
4	Montana	533	539	99	84	299	230	75	206
5	Pleven	852	726	143	83	369	367	153	253
6	Veliko Tarnovo	867	687	65	67	422	290	302	299
7	Gabrovo	197	162	36	7	126	86	87	63
8	Razgrad	506	559	57	97	203	209	231	199
9	Ruse	743	702	103	108	357	254	218	294
10	Silistra	343	557	31	57	154	114	148	186
11	Varna	1350	1448	194	141	675	512	418	709
12	Dobrich	758	761	128	78	384	194	205	437
13	Tragovishte	604	356	54	16	312	141	222	170
14	Shumen	522	534	61	65	236	214	198	242
15	Burgas	758	1363	161	241	343	579	214	434
16	Sliven	1179	1171	246	168	517	487	349	439
17	Stara Zagora	805	1262	168	138	331	501	238	508
18	Yambol	411	321	82	48	257	150	54	113
19	Blagoevgrad	486	744	115	108	220	345	105	251
20	Kyustendil	260	195	11	43	169	47	67	78
21	Pernik	199	183	22	30	137	73	29	76
22	Sofia	546	533	112	159	322	278	61	59
23	Sofia (capital)	1014	1072	325	160	189	175	394	584
24	Kardzhali	320	380	65	39	158	155	80	175
25	Pazardzhik	1009	1239	146	105	477	377	329	688
26	Plovdiv	2069	2427	662	207	921	966	402	1166
27	Smolyan	34	63	13	16	4	1	15	35
28	Haskovo	858	842	149	120	510	310	155	322

Source: Compiled by NSI information, at the request of the author, 2018.

It is of interest to determine the strength of the impact of the "school drop-out"
phenomenon for the period studied by measuring the relative proportions of drop-outs
relative to students by region and district. This gives a clearer picture of its scale, and it can
be argued that this process changes over the years 2010-2017 with few exceptions within
the same framework. This, on the one hand, means that the reasons given do not appear to a
greater extent or that no new ones have emerged that change the direction of development
on the other (see table 11).

Table 11

Relative share of drop-out students by students in I-VIII grades in general and special schools by region (%)

№	Regions	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
	Bulgaria	4.89	5.64	4.63	5.45	5.80	6.59	5.49
1	Northwestern	6.35	7.08	6.38	6.64	6.43	7.71	6.18
2	Northcentral	6.30	6.80	5.09	6.14	5.53	5.82	6.27
3	Northeastern	6.31	6.75	6.01	7.18	8.27	7.53	6.18
4	Southeastern	5.04	5.82	4.66	6.22	6.17	8.47	7.00
5	Southwestern	2.46	2.89	2.35	2.64	2.73	3.31	2.60
6	Southcentral	5.34	6.65	5.42	6.09	6.73	8.31	6.89
	Scope	**3.89**	**4.19**	**4.04**	**4.63**	**5.55**	**5.16**	**4.40**
	Coefficient of variations	**28,3**	**26.4**	**28.8**	**27.7**	**30.7**	**28.8**	**27.9**

Source: Compiled by NSI information at the request of the author, 2018. The information covers students in I-VIII grades, since after VIII grade education is not compulsory.

These facts relate mainly to the North-West Region, North-Central Region, North-East Region and South-West Region. A certain increase in the relative share of students dropping out of students is found in the South-East region, where it increased by two percentage points, as well as in the South Central region – by 1.5 percentage points places in the corresponding ranking for 2017 with corresponding values – 7% and 6,8%. The lowest share is the relative share of those leaving the Southwest region – 2.46% in 2010 and 2.60% in 2017. As is known, Sofia (district) and Sofia (capital) are included in this area, which predetermines their low values.

Obviously, it is necessary to implement, as far as practicable, relevant regional programs in other regions of the country.

Particularly rich is the information on the relative share of drop-out students to students, which covers all areas by years 2010-2017 (see Table 12).

The highest relative shares stand out for the districts of Vidin, Razgrad, Dobrich, Sliven, Pazardzhik and Plovdiv, which range from 8% to 10%.

The districts with drop-out rates between 6 and 8% for 2017 are also not small – Vratsa, Montana, Rousse, Silistra, Varna, Targovishte, Burgas, Stara Zagora, Haskovo. It is noteworthy that the aggregate of these two groups of districts with relatively high relative proportions of drop-outs represents 50% of all districts. Obviously, this is a serious signal of the need for effective measures in these areas to significantly reduce the number of drop-outs students. It is important to note, however, that in a number of districts their number decreased in just one academic year 2015/2016 – 2016/2017 – in Vratsa and Burgas by 3 pp, in Dobrich – 2.5 pp., in Sliven, Pazardzhik and Plovdiv with 2 p.p. The analysis of the changes in these districts reveals that the decrease in the relative share of drop-outs is

mainly due to a decrease in their number for family reasons. But in parallel with this fact, there is a slight increase in the number of drop-outs due to leaving abroad.

Table 12

Relative share of drop-out students to these who are in a process of education I-VIII grade in general and special schools by district (%)

№	Districts	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
1	Vidin	5.03	6.51	6.79	6.10	7.64	9.19	8.92
2	Vratza	7.09	10.30	5.74	5.53	7.32	9.21	6.07
3	Lovech	6.21	6.44	6.66	6.87	5.55	5.65	5.01
4	Montana	6.49	6.23	6.16	7.48	6.53	8.43	7.63
5	Pleven	6.27	5.56	6.68	7.10	5.81	6.77	5.21
6	Veliko Tarnovo	6.99	7.97	5.64	7.17	6.07	6.95	5.38
7	Gabrovo	4.05	5.79	4.53	4.86	3.78	5.08	3.07
8	Razgrad	6.79	6.58	5.92	6.32	7.98	5.46	8.66
9	Ruse	6.74	6.00	4.49	5.23	4.21	6.02	6.90
10	Silistra	5.57	7.06	4.60	6.57	5.62	4.29	7.12
11	Varna	6.02	5.65	5.65	6.96	8.60	7.65	6.04
12	Dobrich	7.70	7.30	6.33	8.21	10.67	10.58	8.02
13	Targovishte	8.12	9.34	8.16	8.48	8.94	7.27	6.11
14	Shumen	4.37	6.77	5.14	5.69	4.48	4.23	4.46
15	Burgas	2.89	3.95	3.34	4.67	5.49	8.90	6.11
16	Sliven	10.07	10.22	8.31	10.44	9.57	12.49	10.41
17	Stara Zagora	4.24	5.90	3.95	6.25	5.33	7.16	6.71
18	Yambol	4.82	3.77	3.90	3.65	4.34	3.65	4.38
19	Blagoevgrad	2.78	3.38	2.74	3.42	3.14	3.32	4.37
20	Kyustendil	4.92	4.77	3.49	4.89	4.55	4.54	3.59
21	Pernik	3.28	3.80	4.03	3.04	4.15	3.85	3.36
22	Sofia	4.53	5.23	4.70	4.47	4.85	4.90	4.40
23	Sofia(capital)	1.56	1.79	1.44	1.63	1.85	2.72	1.57
24	Kardzhali	3.47	4.18	3.40	3.42	3.48	4.12	4.29
25	Pazardzhik	6.76	7.75	6.86	7.60	8.87	10.86	8.80
26	Plovdiv	5.71	8.30	6.15	6.86	7.79	9.72	7.77
27	Smolyan	0.61	0.66	0.99	0.69	1.19	1.59	0.97
28	Haskovo	5.76	5.40	4.77	6.30	5.53	7.10	6.19
	Scope	**9.47**	**9.65**	**7.32**	**9.75**	**9.48**	**10.90**	**9.44**
	Coefficient of variations	**38.52**	**37.88**	**35.42**	**37.11**	**39.80**	**41.80**	**38.89**

Source: Compiled by NSI information at the request of the author, 2018. The information covers students in grades I-VIII, since after grade VIII education is not compulsory.

In a sense, as an exception can be interpreted as the relative proportions of drop-outs in the Smolyan district, where they are comparatively much lower values and at the same time show an annual decrease throughout the study period: an initial increase of 0.61% in the 2010/2011 academic year to 1.59% in 2015/2016 academic year and again a decrease of 0.97% in 2016/2017 academic year. Based on the assessment of the impact of the various reasons for leaving, it is found that the "family reasons" in Smolyan district do not have a real impact on leaving school, and the impact of the reason "gone abroad" is very insignificant – from 15 persons in 2010/2011 up to 35 in 2016/2017. These analyzes and evaluations lead to the conclusion that appropriate measures have been taken in the district

of Smolyan to prevent and limit the phenomenon of "leaving school", which have led to noticeable positive results.

Sofia (capital) also has a low relative share – 1.57% in 2017, the value of which shows slight variations over the different years of the period. This fact proves the stability of the capital's educational infrastructure.

The importance of relative share information is expressed in the ability to use it for specific conclusions about the magnitude of the school drop-out phenomenon and accordingly take urgent measures and actions to achieve minimum relative share values.

The detailed analyzes and evaluations of the phenomenon of "leaving school" by degrees of education and for specific reasons for all regions and districts of the country provide versatile information on its territorial scope and the ranking of the impact of the analyzed reasons. Of particular practical importance are indicators that measure the relative proportions of students who have dropped out compared to students in regions and districts. This creates an opportunity for the development of regional programs and action measures aimed at limiting and gradually reducing to a minimum/zero values the drop-out rates, except for those which are justified by subjective reasons. Leaving school, although within reasonably acceptable limits, should not exist in the modern educational infrastructure. In this context, one of the main priorities for its development policies is the need to highlight the maximization of its manifestation.

3.3. Features of differences by regions and districts in the range of students in higher education

In the higher education system, the main indicators are the number of students enrolled in general, as well as by type of higher education in the age group of 20-24 years. The calculation of the net enrollment coefficients of students as relative proportions of enrolled students to the population in the same age group is somewhat conditional. It is generated by the specific features of student admission and education:

- The higher education is not compulsory, so it is not entirely correct to speak about student enrollment, i.e. to match their numbers to the population in the same age group. The difference between these quantities should not be interpreted as a mismatch/discrepancy between the actual number of students and the number of potential students;

- The differences between these indicators cannot be described as a deficiency in the educational infrastructure, and in particular as an inability to reach a higher population in the higher education age group 20-24;

- The concept of "Scope of students" has a conditional character and does not include the same content as in pre-school and school education. Rather, it is more appropriate to use the concept of "population coverage in the age group of 20-24 in the higher education system";

- The calculation of the net coefficients in this way essentially provides information on the proportion of the population concerned that is covered in higher education;

- In the analysis and assessment of the values of net coefficients by regions and districts of the country, there are possible cases, such as the number of students in a given region or area being higher than the population in them of the same age group. It is clear that this is possible when this region or district is a university centre and a large number of students from other territorial units are concentrated there. Another possible case is the presence of too few students or zero, but that does not mean that there are no students enrolled in this area – they are assigned to students in the area where they study and reside.

The specificities of the net coefficients in higher education mentioned above do not limit the opportunities to use them for specific analyzes and assessments by regions and districts.

The net coefficients for the higher education by regions and districts are ranked for 2010, 2013 and 2017 (see Tables 13 and 14).

Table 13

Ranked net coefficients for the higher education by regions (%)

Regions	2010	Regions	2013	Regions	2017
Southwestern	84.4	Southwestern	87.2	Northcentral	111.7
Northeastern	64.8	Northcentral	82.2	Southwestern	104.3
Northcentral	63.3	Northeastern	66.3	Northeastern	73.1
Bulgaria	**50.0**	**Bulgaria**	60.5	**Bulgaria**	**72.0**
Southcentral	30.2	Southcentral	45.4	Southcentral	60.0
Southeastern	21.9	Southeastern	24.6	Southeastern	27.0
Northwestern	3.0	Northwestern	5.9	Northwestern	9.8
Scope of variations	**62.5**	**Scope of variations**	**62.6**	**Scope of variations**	**84.7**

Source: Compiled under an information by "Education in the Republic of Bulgaria, 2010-2017", NSI, Regional Review; "Population-Demography, Migration and Forecasts", NSI, Infostat

The values for the Southwestern region are expected to increase for all three years, with the corresponding value exceeding the reference value in 2017 and amounting to 104.3%. This means that in this area with a strong university presence, the number of students is higher than the population in the age group 20-24. A similar situation is observed in the North central district, in which the value of the net coefficient is 111.7 %.

Regarding the regions whose net coefficients are below the average level for the country, it could be noted that they also register development, the most sensitive being the changes in the coverage in the South central region, where it doubles – from 30.2% in 2010 to 45.4% in 2013 and 60% in 2017.

In order to obtain real information about the values of the "Scope" Indicator, the North-west region is excluded from its calculation, as the net coefficients for all three years are too low. This is predetermined by the fact that the net coefficients for its constituent areas, such as Vidin, Lovech, Montana, have zero values. However, the scale is relatively high – in 2010 it amounted to 62.5%, in 2013 to 62.6% and in 2017 its value increased to 84.7%.

Table 14

Net coefficients for higher education by districts

№	Districts	2010	Districts	2013	Districts	2017
1	Vidin	-	Vidin	-	Vidin	-
2	Vratza	1.7	Vratza	7.5	Vratza	14.8
3	Lovech	-	Lovech	-	Lovech	-
4	Montana	-	Montana	-	Монтана	-
5	Pleven	7.9	Pleven	12.7	Pleven	19.3
6	Veliko Tarnovo	109.3	Veliko Tarnovo	132.3	Veliko Tarnovo	186.5
7	Gabrovo	80.7	Gabrovo	105.7	Gabrovo	167.5
8	Razgrad	3.6	Razgrad	4.6	Razgrad	5.2
9	Ruse	50.9	Ruse	68.9	Ruse	69.5
10	Silistra	9.6	Silistra	7.4	Silistra	8.1
11	Varna	114.5	Varna	103.9	Varna	115.7
12	Dobrich	-	Dobrich	-	Dobrich	-
13	Targovishte	-	Targovishte	-	Targovishte	-
14	Shumen	55.2	Shumen	66.0	Shumen	74.5
15	Burgas	36.4	Burgas	34.6	Burgas	32.7
16	Sliven	3.5	Sliven	5.3	Sliven	7.7
17	Stara Zagora	22.8	Stara Zagora	27.6	Stara Zagora	36.0
18	Yambol	-	Yambol	13.4	Yambol	16.7
19	Kardzhali	8.9	Kardzhali	11.8	Kardzhali	14.2
20	Pazardzhik	-	Pazardzhik	-	Pazardzhik	-
21	Plovdiv	60.2	Plovdiv	82.8	Plovdiv	109.3
22	Smolyan	11.1	Smolyan	34.7	Smolyan	40.8
23	Haskovo	-	Haskovo	1.8	Haskovo	2.7
24	Blagoevgrad	49.8	Blagoevgrad	60.4	Blagoevgrad	79.0
25	Kyustendil	-	Kyustendil	-	Kyustendil	-
26	Pernik	1.0	Pernik	7.0	Pernik	1.0
27	Sofia district	34.4	Sofia district	49.3	Sofia district	34.5
28	Sofia (capital)	118.7	Sofia (capital)	105.2	Sofia (capital)	128.1

Source: Compiled under an information by "Education in the Republic of Bulgaria, 2010-2017", NSI, Regional Review; "Population-Demography, Migration and Forecasts", NSI, Infostat.

The indicated territorial differences by region are more clearly manifested by the breakdown of information by districts of the country (see table 13). Districts that are shaped as university centres are clearly outlined. Their net odds, i.e. student enrollment exceeds 100%, being significantly higher in 2017 compared to 2010 and 2013. This trend is most pronounced in the districts of Veliko Turnovo and Gabrovo – respectively by 109.3% and 132.3% increased to 186.5% and from 80.7% and 105.7% to 167.5%. A similar trend is observed for large regional centres such as Varna, Plovdiv and Sofia (the capital), as for the capital the value of the net coefficient was changed from 118.7% in 2010 to 105.2% in 2013 and 128.1% in 2017. Obviously, in the highlighted districts with a net student enrollment/enrollment ratio above the 100% benchmark, more students are enrolled and educated compared to the local population aged 20-24. That in these districts, it is necessary to redirect budgetary resources to provide innovative educational infrastructure, as well as the relevant social living environment of students.

In conclusion, it is important to note that in the last decade the number of students in Bulgaria and in other European countries has increased significantly. A number of measures have been implemented within the higher education system, in line with European requirements for an "increase" of the competitiveness and building a knowledge-based society and economy.

It is also necessary to point out that the network of universities and specialized higher education institutions in Bulgaria significantly exceeds the average indicators of a number of countries and territories comparable in terms of territory and population – Greece, Slovakia, Finland, Croatia, Czech Republic. In this context, it could be argued that the higher education system creates prerequisites and conditions for achieving a higher standard of living and quality of life. To this end, it is important that the process of expanding the educational infrastructure of higher education institutions be accompanied by the reconstruction of the existing facilities. Businesses and all spheres of society need highly educated individuals who carry high-tech innovative knowledge and professions.

4. Summarized assessment of the educational infrastructure

Of interest are the results of the summary assessment of the appropriate indicators chosen for the educational infrastructure with regard to the scope/access to education.

The specific summary assessment in the field of educational infrastructure is determined by measuring the aggregate impact of the following indicators:

- Proportion of children attending kindergartens in the population aged 3-6;

- Places for 100 children in kindergartens;

- Proportion of students in primary and secondary schools in the population aged 7-19;

- Proportion of drop-out students in I-VIII grades;

- Proportion of students in the population aged 20-24.

The choice of these indicators to determine the overall assessment of the educational infrastructure correspond in the necessary level, to the basic parameters of education as an element of the standard of living. Summarized estimates are the arithmetic mean values of these indicators, expressed as percentages (see Chapter One). They measure the degree of distance of a given territorial unit from the reference value, which for educational infrastructure indicators represents their maximum value.

What are the territorial differences in the regions of the country according to the respective summarized estimates for education for 2010, 2013 and 2017 (Table 15).

Table 15

Summary assessment of educational infrastructure by region (%)

№	Regions	2010	Regions	2013	Regions	2017
1.	Southwestern	94.0	Southwestern	94.2	Southwestern	96.3
2.	**Bulgaria**	**74.2**	Northcentral	80.9	Northcentral	76.3
3.	Northcentral	73.7	**Bulgaria**	**75.1**	**Bulgaria**	**75.1**
4.	Northeastern	69.9	Southcentral	68.4	Northeastern	71.9
5.	Southcentral	68.9	Northeastern	68.4	Southcentral	65.6
6.	Southeastern	64.6	Southeastern	63.0	Northwestern	63.5
7.	Northwestern	56.3	Northwestern	60.9	Southeastern	59.7
	Coefficient of variation	17.7	**Coefficient of variation**	17.4	**Coefficient of variation**	18.3

Source: Own calculations under NSI data.

The ranking of the regions by the value of the summary assessment was carried out in descending order, as for the educational infrastructure the highest value reflects the most favourable overall assessment of the aggregate impact of the selected indicators of access to education.

The analysis of the values of the summaries of education assessments in a vertical plan by region and in a horizontal plan by year highlights the following important conclusions:

- The Southwestern region has the first place, both for the years 2010,2013 and 2017, and throughout the entire surveyed period 2010-2017. The values of the summary estimates range from 94 to 96.3%, which shows, however, that there is a leading position in all indicators. The SWR has been a leader throughout the period, mainly in terms of higher education, as this area is a well-established university centre. In the period after 2013 there is an increase in the overall score (by 2.1 p.p), which is due to an improvement in its positioning in the most indicators. In 2017, the Southwestern region led by all indicators except the indicator evaluating places in kindergartens. It should be noted that the overall assessment of the SWR is with 20% higher than the average for the country, and with respect to other regions the differences range between 20 and 40%;

- There is a slight change in the positioning of the regions: the values of the NCR summaries in 2013 and 2017 exceed the summative estimates for Bulgaria, in a result of it this region took second place;

- With regard to SER, minimal changes in the values of the summary estimates by years of the study period are observed in the direction of their decrease – from 64.6% in 2010 to 63% in 2013 and to 59.7% in 2017. This fact places the SER at penult / last place in the ranking of regions. It is noteworthy that for the SORs, the values of the horizontal summary estimates increase from 56.3% in 2010 to 60.9% in 2013 and to 63.5% in 2017. Despite this positive trend, the SRA continues to have the lowest level of access to educational infrastructure.

- The low level of territorial differences between the regions by the values of their aggregate estimates also determines the low value of the coefficients of variation as indicators of territorial differences.

As a result of the above findings for the changes in the horizontal and vertical estimates, it can be concluded that they did not cause significant changes in the positioning of the regions.

Undoubtedly more interested and with a higher level of details are the summarized assessments by districts (Table 16).

Table 16

Summary assessment of educational infrastructure by districts (%)

№	Districts	2010	Districts	2013	Districts	2017
1.	Sofia (capital)	85.6	Sofia (capital)	82.8	Sofia (capital)	87.9
2.	Veliko Tarnovo	80.5	Veliko Tarnovo	81.0	Veliko Tarnovo	84.7
3.	Smolyan	76.7	Smolyan	78.6	Smolyan	82.7
4.	Blagoevgrad	76.1	Blagoevgrad	74.8	Gabrovo	82.2
5.	Varna	74.0	Gabrovo	73.6	Shumen	77.1
6.	Shumen	73.2	Ruse	72.6	Blagoevgrad	73.5
7.	Gabrovo	72.2	Shumen	71.1	Varna	72.0
8.	Plovdiv	71.6	Varna	68.2	**Bulgaria**	**69.8**
9.	Burgas	70.5	Razgrad	68.0	Plovdiv	68.4
10.	Ruse	68.5	**Bulgaria**	**67.8**	Sofia	68.0
11.	**Bulgaria**	**68.4**	Kardzhali	67.6	Pernik	67.7
12.	Kardzhali	67.6	Yambol	67.4	Kardzhali	67.4
13.	Pernik	66.6	Plovdiv	67.3	Kyustendil	67.4
14.	Sofia	65.6	Sofia	66.8	Ruse	66.0
15.	Razgrad	64.8	Pernik	66.4	Pleven	65.9
16.	Stara Zagora	64.0	Burgas	65.6	Vratza	65.3
17.	Yambol	63.2	Vratza	64.4	Yambol	65.2
18.	Kyustendil	61.4	Kyustendil	63.5	Lovech	64.6
19.	Vidin	61.3	Stara Zagora	62.3	Burgas	64.1
20.	Silistra	60.7	Vidin	61.3	Stara Zagora	63.2
21.	Montana	60.3	Pleven	60.7	Haskovo	58.9
22.	Pleven	59.8	Lovech	58.9	Razgrad	58.9
23.	Vratza	59.1	Montana	58.6	Silistra	58.7
24.	Haskovo	58.4	Silistra	58.5	**Targovishte**	**57.6**
25.	Dobrich	57.9	Haskovo	58.2	**Montana**	**57.3**
26.	Lovech	57.0	Dobrich	57.3	**Dobrich**	**56.0**
27.	**Pazardzhik**	**54.4**	**Pazardzhik**	**53.9**	Vidin	55.8
28.	**Targovishte**	**53.8**	**Targovishte**	**53.5**	**Pazardzhik**	**51.8**
29.	**Sliven**	**45.3**	**Sliven**	**46.6**	**Sliven**	**47.5**
	Coefficient of variation	**13.6**	**Coefficient of variation**	**12.9**	**Coefficient of variation**	**15.0**

Source: Own calculations under NSI data.

The analysis of the generalized grades for education by districts of the country reveals interesting facts about their rankings, as well as their grouping according to the magnitude of their generalized grades compared to those on average in Bulgaria:

- It is significant that the first three districts – Sofia (Capital), Veliko Tarnovo and Smolyan, in the order of the districts that have the highest values of the summary estimates, retain their positions in the three surveyed years. At the same time, their aggregate marks are gradually increasing throughout the surveyed period, and in 2017

the district of Sofia (Capital) reaches a value of the aggregate assessment of nearly 90%, thus making it the most important area for the stable development of the educational infrastructure;

- The second set of districts with aggregate values above the national average retain their core over the three surveyed years, as well as throughout the period 2010 -2017. These are mainly districts with relatively high levels of socio-economic development, as well as university education (Blagoevgrad, Varna, Gabrovo);

- The largest group (15) is the group of districts with generalized scores below the average for the country. Their values are in the range of about 68% – 58%. In fact, these are the areas whose aggregate estimates are between the national average and the so-called a critical threshold for the values of these estimates. The descending areas provide indicative information to local governing bodies on the need to create appropriate infrastructure to increase the scope and quality of education;

- Regarding the distribution of the regions with values of their specific aggregate estimates below the critical threshold, which ranges from 56.8 to 58.7% for the studied period, it is found that in their totality a solid core of the Pazardzhik, Targovishte and Sliven regions is observed. Obviously, this fact signals the need to direct the efforts of the competent local/state authorities to improve their educational infrastructure and also to enhance their overall socio-economic development. During the study period, the number of districts with values of aggregate estimates below the critical threshold increased, with the Montana, Vidin, and Dobrich districts joining them in individual years.

- Particular attention should be paid to the district of Sliven, whose values of generalized estimates are too low – between 46% and 48%. These values put Sliven region on the last place in the ranking of districts. Maintaining such low values of the summative assessments throughout the study period makes it very clear that the education system in the district of Sliven is subject to "emergency intervention", which will ensure an increase in the scope and quality of training. Given the ethnic structure of its population, other specific and specific policies and measures to overcome the high degree of differentiation are clearly required;

- It is noted that the differentiation between the areas for the study period decreased, as evidenced by the values of the coefficients of variation, which range from 13 to 15%.

The specific conclusions drawn about the changes in the summary estimates by region and region allow us to draw the following main conclusion:

The territorial differences in a vertical and horizontal plan, between the values of specific summaries clearly rank their importance as targets for targeting relevant socio-economic policies and reforms in the education system and in particular in the educational infrastructure.

Summary conclusions

The comparative analyzes and evaluations carried out in the territorial profile revealed the extent of regional differences in the coverage of children/students in the educational infrastructure across the three levels of education.

Preschool education

- The analysis of the changes by years of the surveyed period (2010-2017) shows that the average for the period changes for all regions are in a positive direction; the highest incidence of children is in the Southwestern region (83%), followed by the Northwestern region with the prestigious 80% range, which is impressive in view of the overall comparatively less developed development of this region;

- It is concluded that the territorial differences in the regions of the country are insignificant and have not caused any significant changes in time;

- The analysis of the coverage of children by districts registers a consistent annual increase in the values of the respective net coefficients in nearly 90% of the districts;

- The ranking of districts by 2017 by the values of the "Place for 100 children" indicator reveals the totality of three main districts (Plovdiv, Varna and Sofia-Capital), in which they are below the "reference threshold", but with insignificant differences.

School education

- The ranking by region of the country ranked the Southwestern region in the first place during the whole surveyed period;

- With regard to other areas, changes in student reach do not lead to noticeable territorial differences;

- The ranking of the regions by the magnitude of the net coefficients finds that their values are at a range of 15%, which is predetermined by the occupied first place by Sofia-Capital with a high net coefficient – nearly 90%;

- This fact is due to the increasing influx of students in the capital, noting that they are mainly from primary education; it is obviously necessary to ensure the improvement and development of its educational base;

- The relatively low values of the net coefficients below 80% for the districts of Silistra, Pazardzhik, Sliven, Targovishte are conditioned by the decrease in the number of students in all three levels of education;

- The main reason for reducing the number of students is leaving out/dropping out of school. The analysis of the impact of this factor reveals the three main reasons for leaving: unwillingness, family reasons, and going abroad. The highest is the number of students enrolled abroad from primary education;

- At the beginning of the study period, the "Family reasons" group emerged as the first in importance. During the period 2010-2017, a process of reducing the impact of these causes is gradually being started at the expense of increasing the impact of the reason "Departed abroad".

Higher education

- The analysis and evaluations of the higher education's educational infrastructure are to some extent conditional on its specific characteristics, namely that higher education is optional;

- It is more correct for the higher education system to use not the notion of "student scope" but rather to introduce a new concept of "coverage of population in the age group 20-24 in the higher education system";

- As a result of the evaluations, it was found appropriate to reduce the expansion of already established university centres by redirecting funds to more backward areas and areas, such as the Northwestern region; this process will give impetus to the development of the area not only in educational aspect but also in economic, social and spiritual terms.

To summarize the specific development **policies** proposed in the study and the specific changes in the different levels of education related to the respective educational infrastructure, the following major policy directions could be systematized:

Preschool education

- Policies to make fuller use of the available educational infrastructure in order to increase net odds values, i.e. the reach of children in kindergartens. These policies should be of a differentiated nature and aim at limiting/eliminating the impact of regional causes that have led to lower attendance at kindergartens;

- Policies to reinforce the fundamental nature of the objectives of pre-school education, namely to ensure that children move smoothly into the next educational stage – primary education. The main factor for achieving this goal is the removal of the language barrier, respectively the command of the official Bulgarian language, which implies a fuller coverage of children from ethnic communities, as well as the implementation of appropriate forms for its learning;

- Policies to cover all children, and especially Roma children from early childhood, in the system of childcare facilities for upbringing, behaviour and education. In doing so, it is necessary to ensure regular attendance at childcare facilities by children whose parents do not have or have a low educational level, i.e. these parents are unable to educate and provide a quality environment for their children's education.

School education

- implementation of regional policies to limit the reasons for the incomplete reach of students in the age group of 7-19 years;

- policies to regulate the flow of students to the larger district centres, and in particular to Sofia (Capital). Implementing student retention policies in areas where there is a high tide, creating an appropriate educational infrastructure to suit their educational preferences;

- specific policies for young families with primary school children who register the highest inflow to larger district centres;

- a system of appropriate policies to limit/eliminate the "drop out" phenomenon. They should aim at eliminating the reasons behind his "placement" in the school education;

- a package of policies targeting the families of children who have left school for family reasons, which have the greatest weight in all districts except Sofia (Capital). When conducting them, it is important to take into account not only the reasons of socio-economic nature, but also such as family motivation and value orientation.

Higher education

- policies for changes in the structure and quality of the higher education infrastructure in the regional aspect;

- policies to ensure a dynamic link between the educational profiles of training and the demand on the labour market for highly educated professionals at European level;

- policies for the creation and development of higher education infrastructure, tailored to the specific characteristics of relatively less deprived areas (Northwestern region), directly linked to current and future local business profiles in order to achieve noticeable changes in the standard and quality of life of the population in this region.

Obviously, in all three levels of education, there are important problems related to the development of their educational infrastructure, which requires the development and implementation of effective policies for its improvement, modernization and expansion in accordance with the contemporary requirements for achieving innovative education and, respectively, high-tech economic development and the society.

References

Law on Pre-school and School Education, promulgated, SG, 79 from 13.10.2015, (entered into force 01.08.2016).

The Eurostat methodology identifies the early lefted from the group of 8 to 24 years of age who have not completed higher education than primary.

Press release from the Ministry of Education and Science, February 2019.

Education in the context of quality of life, Eurostat publication, 2018.

Hyuseinov, B. (2020). Regional Differences in the Educational Infrastructure – Changes and Challenges.

NSI information based on author's request, 2018.

Strategy for the educational integration of children and students from the ethnic minorities (2015 – 2020).

Strategy for the development of higher education in the Republic of Bulgaria 2014-2020 and an action plan, promulgated in the State Gazette No. 18 of March 10, 2015.

The strategy for the development of vocational education and training in the Republic of Bulgaria for the period 2015-2020.

Strategy for reducing the share of early school leavers (2013-2020), adopted by the Council of Ministers on 30 October 2013, Minutes No. 44.

Shopov, G., Tsanov, V. Territorial differences in the standard of living of the population in Bulgaria – status and changes (2007-2012).

https/ec.europa.eu/Eurostat/statistika-explainet/index.php$title=Qnolitu of life,15.03.2019.

Yanko Hristozov[1]
Petar Chobanov[2]

INNOVATION ENVIRONMENT TOWARDS SMART SPECIALISATION AND CIRCULAR ECONOMY[3]

The present study is devoted to the opportunities provided by the circular economy for the implementation of the integrated strategy for smart specialisation. At the end of the period of validity of the current strategy, it is imperative to monitor the extent to which the identified thematic areas in the strategy have fulfilled their purpose, as well as whether a change in them is necessary.
JEL: Q53; Q55; Q58; L59

Introduction

The increasing consumption of resources and the environmental consequences that result from it require a change in the economic model. The concept of a circular economy is part of this change (Ivanova, 2019). The main thesis is that changes in the model of indexing the innovation activity of business units should be aimed not only at existing capacity and assets, but also at the competitive advantages of the circular economy. Object of the study is the circular economy and the subject is the natural environment for innovation and intelligent specialisation.

The following research tasks are set:

- Clarification of the concept of circular economy and basic principles on which it is based – Presentation of the circular economy model of the European Commission and the most applicable industries.

- Critical analysis of the methodology used to select priority sectors for support through the integrated strategy for smart specialisation and outlining its strengths and weaknesses.

[1] *Finance Department, UNWE, Sofia, yankohristozov@unwe.bg.*

[2] *Finance Department, UNWE, Sofia, p.chobanov@unwe.bg.*

- Clarification of the connection between the thematic areas in integrated strategy for smart specialisation and the innovation activity of the companies.

- Analysis of the approaches for interconnection of integrated strategy for smart specialisation and the circular economy.

The first part of the present study focuses on revealing the essence of the circular economy, the typical models for its manifestation, as well as the most applicable industries. The second part analyses the existing model for indexing the innovation activity of companies in the sectors of the economy, with an emphasis on its strengths and weaknesses. The third part presents the thematic areas in the Integrated Strategy for Smart Specialization, their dynamics and connection with the innovation activity of companies. Based on the existing thematic areas, in the fourth part criteria for compliance of the areas with the specifics of the circular economy are presented and proposals for changes are made. This outlines the prospect of developing the idea (Beev, 2019).

1. Circular economy – definition, model of the European Commission, most applicable industries

In this part of the presentation, we present the definitions of the circular economy, which give an in-depth idea of its essence. The model of the European Commission for circular economy and its main characteristics are presented. Emphasis is placed on the applicable industries as part of the circular economy.

1.1. *Definition and models*

According to a report by the Ellen Macarthur Foundation (EMF, 2013) Europe is the world's largest net importer of production resources, seriously jeopardising its potential for future economic growth in the absence of changes in production and consumption patterns. This is also valid with the special force for our country. According to estimates of the report, the input materials form between 40 and 60% of the value of production in Europe. At the same time, there is a tendency to increase their value due to increasingly limited stocks worldwide, as well as increasing fluctuations in their prices, which threatens the competitiveness and ability to hold the market of enterprises. The current model of economic growth in developed economies based on low raw material costs is no longer relevant. At present, a huge share of raw materials is lost in the process from their extraction to the end of use of the final product. Despite the increased share of waste recycling, these efforts are still extremely insufficient. In addition, industrial activity leads to the erosion of services from different ecosystems, and at present man consumes much more than he allows ecosystems to recover. These, as well as other problems related to human impact on the environment, raise the issue of moving to a new model of the economy that is independent of limited production resources, uses waste-free technologies and at the same time is environmentally friendly. This economy must also be based on responsible consumerism in the form of a shared economy and long-term use of products. According to estimates summarised by the report, the overall effect of the transition to a

circular economy is expected to be very positive in the long run, contributing to employment and innovation growth and a significant reduction in raw material costs as well as price fluctuations.

There are many definitions related to the concept of "circular economy", but in general they can be summarised and reduced to several basic elements, including the creation of preconditions for unlimited use of resources in production, production and consumption, the most environmentally friendly and minimising waste generated at all levels.

Among the simplest definitions is that of the 2015 EU Circular Economy Action Plan. A circular housekeeper, according to him, is an economy "in which the value of goods, materials and resources is preserved for as long as possible in the economy, and waste generation is minimised". In general, the model of the circular economy can be reduced to the scheme presented on Figure 1.

Figure 1

EMF's Circular Economy Model Outline
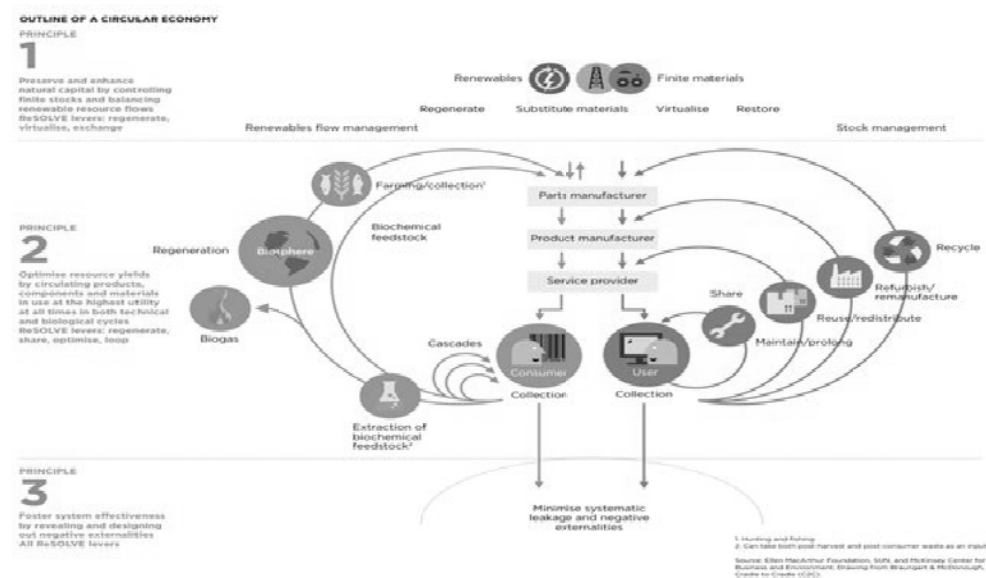
Source: EMF, 2015.

It is characterised by the fact that all its constituent elements are interconnected in different types of cycles that allow efficient use of resources and a two-way link between production and consumption in the full utilisation of waste or its decomposition into biologically useful substances. The main goal of the circular economy is through appropriate product design methods to ensure maximum circulation of resources after use back into production or creating conditions for secondary cascade production and high-quality recycling. This system is characterised by ensuring the durability of products, the possibility of reuse and

modernisation and repair, preventing the use of hazardous chemicals in production and increasing their energy and resource efficiency and increasing the content of recycled materials in them. The circular housekeeper also seeks to reduce carbon dioxide emissions and the environmental footprint and limit single-use products. Models aimed at purchasing services instead of products, or other models in which manufacturers retain ownership of the product or responsibility for its effectiveness throughout its life cycle, are encouraged. Building a circular economy is also supported by innovative forms of consumption, such as the sharing of products or infrastructures, the consumption of services rather than products, and the widespread use of information and communication technologies.

In a report by the Ellen Macarthur Foundation (EMF, 2013), (the foundation was established in 2010 with the specific purpose of outlining and disseminating knowledge about the path to the circular economy) can always find a definition of the circular economy that emphasises its connection with environmental protection – "The circular economy is an industrial system that allows endless use and regeneration of resources invested in production. It replaces the concept of "end-of-life cycle" with regeneration using approaches such as renewable energy, elimination of toxic materials in production that reduce reusability and waste elimination through appropriate design of materials used, products, relevant materials, production systems and business models used".

One of the most comprehensive definitions of the term "circular economy" is given by the following report of the Ellen Macarthur Foundation (EMF, 2015) – "The circular economy is a continuous cycle of positive development that preserves and improves natural capital, optimises revenue from resource use and minimises system-wide risks by managing limited stocks of resources and using renewable flows from them. Such an economy is efficient on any scale. The circular economy creates multivariate mechanisms of production that are not limited by the availability of resources. In the realisation of the concept of the circular economy, consumption is realised only in the presence of efficient biocycles related to the production and reuse of products. Resources are regenerated in the process of going through a biocycle or are restored along the technical cycle. In the biocycle, the natural processes of life regenerate materials without human intervention. In the technical cycle, using energy with human intervention, the value of materials is restored". In this regard, there are two types of resources: technical – such as minerals, metals, polymers, alloys and hydrocarbons; and biological – such as food and wood, which are non-toxic and can easily return to the biosphere and nourish it. According to the above definition of a circular economy, it is based on three main principles:

- Preservation and improvement of natural capital, while controlling the availability of limited natural resources and balancing the flow of recycled raw materials; regeneration; virtualisation; exchange.

- Optimising the use of resources through the circular use of products, components, and materials to the highest degree in both the technical and biological cycle; regeneration; optimisation; sharing; connectivity.

- Stimulating the efficiency of the system by detecting and removing bottlenecks.

According to the proposed model for categorisation of the circular economy of the European Commission (EC, 2020), the circular economy should include 4 main elements presented in the scheme below – creating models for the design of resources and products that allow their longest possible use; the existence of intermediaries to facilitate the use and maintenance of the products; the use of models to recover the value of the products used; an element that fully supports the system through the development of new strategies, tools, services and applications. These elements are described in detail in a total of 14 categories.

Figure 2

Categorisation system for the circular economy.
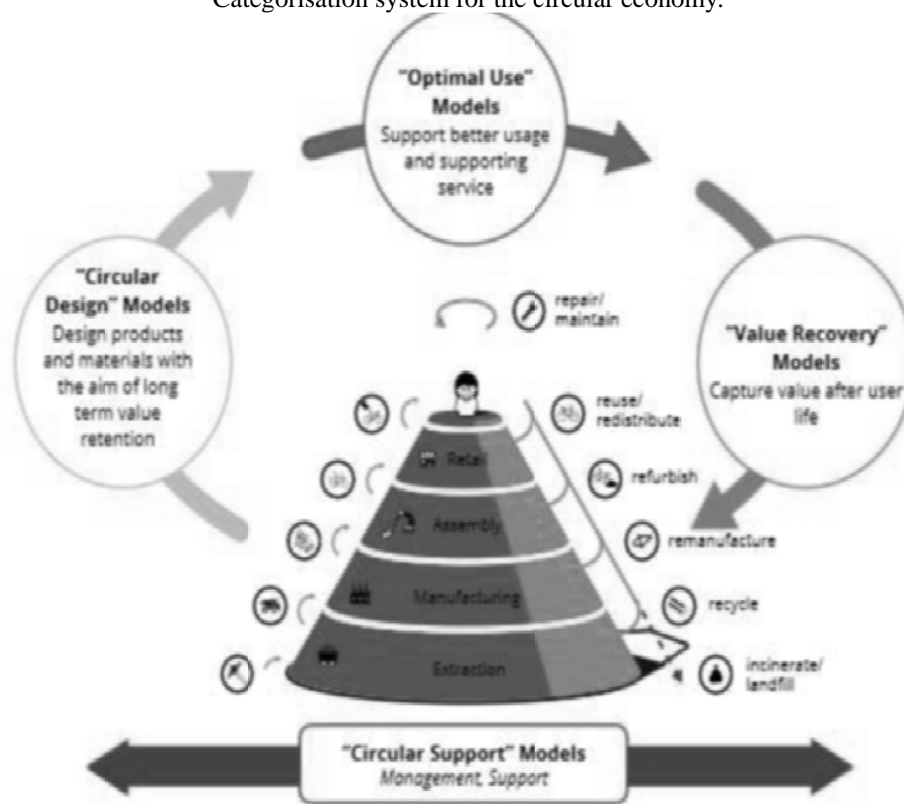
Source: European Commission.

1.2. The most priority sectors for the transition to a circular economy

Numerous studies are available on the question of which sectors should be prioritised for the transition to a circular economy. A study commissioned by the EC attempts to summarise much of the available information and come up with a proposal for priority raw

materials and sectors of the economy, which should be prioritised. On this basis, the possibilities for improving their application have been studied (Nenkov, Miteva, 2018).

The first step of the methodology for prioritising specific areas in relation to the transition to a circular economy involves identifying the key raw materials used in the economy where there are opportunities to significantly improve resource efficiency and/or include them in an endless production cycle, and recycling. Among the main raw materials and materials presented in various studies and summarised in the above study are:

The first step of the methodology for prioritising specific areas in relation to the transition to a circular economy involves identifying the key raw materials used in the economy where there are opportunities to significantly improve resource efficiency and/or include them in an endless production cycle, and recycling. Among the main raw materials and materials presented in various studies and summarised in the above study are: Food and waste thereof; Wood and paper; Plastics; Metals; Phosphorus.

The most frequently prioritised raw materials are metals, due to their high potential for resource efficiency in production and recycling, and raw materials for the food industry and food waste, due to huge food losses in the chain from production to consumption and the expected high potential of food wastes for composting and energy production. Chemicals are not listed as a priority raw material, but they are presented as components in the production process together with other raw materials and are important in terms of purity of production and recyclability of other raw materials. The diagram below presents the methodology for reporting priorities. The study derives on the basis of the identified raw materials critical for the development of the circular economy the following priority product groups for interventions: packaging; food and waste thereof; electronics and electrical equipment; vehicles; furniture; buildings and public infrastructure.

The criteria used are the presence of a deficit of the specific raw material, the impact on the environment when using it in production, the amount of possible savings of energy and resources, the need for changes in the way it is used. In general, areas of research could include – waste recovery; better product design to allow repair or modernisation of products, the possibility of using their components in a new product, improving their durability or efficient recycling, improving energy and resource efficiency in production and consumption; reducing or eliminating the toxicity of the resources used in the products; recovery of waste in production and consumption; production and consumption neutral to the climate and the environment, etc.

Considering the lasting strategic importance of raw materials for industry in the EU, the EC launched in 2008 the so-called Raw Materials Initiative. A key element of this initiative is the list of critical raw materials for the EU (European Commission, 2017), whose strategic stocks have been declining critically in recent decades. It was last renewed in 2017 and includes 27 raw materials, the majority of which are produced outside the EU, and most of their reserves are concentrated in one country – China. This makes the research area more environmentally friendly, replacing them with other materials and finding more efficient recycling methods of paramount importance. The sectors that are seriously threatened by shortages of these raw materials are electronics, battery production, the automotive

industry, the production of photovoltaics and wind generators, the aeronautics and defense industry, part of the chemical and pharmaceutical industries.

In 2015, the first EU Action Plan in the field of the circular economy was adopted (European Commission, 2015). The document identifies the following areas as priorities for interventions: plastics; food waste; the main raw materials from the Raw Materials Initiative; construction and demolition waste; biomass and biologically based products. At the beginning of 2020, the document was updated, focusing on the following areas: electronics; rechargeable batteries and vehicles; packaging; plastics; textiles; construction and buildings; food, water, and nutrients.

From what has been said so far, it can be concluded that the following areas could be identified as priorities for the development of the circular economy, in addition to the updated New Action Plan on the EU Circular Economy of 2020: Biomass and bio-based products; Manufactures involving the use of the main raw materials from the Raw Materials Initiative – see above: in addition to those listed so far, the production of photovoltaics and wind turbines, the aeronautics and defence industry, part of the chemical and pharmaceutical industries.

2. Model for indexing the innovation activity of companies, used in the Innovation Strategy for Smart Specialization (ISSS) of the Republic of Bulgaria 2014-2020 for analysis and identification of priority sectors for support – analysis of strengths and weaknesses

This section attempts to critically analyse the methodology used to select priority sectors for support through ISIS and to identify its strengths and weaknesses. It is made based on the information available in the strategy itself and in this regard does not claim to have a complete knowledge of the methodology, which would allow a very precise analysis. The strategy uses a top-down planning approach by initially setting national goals, which are then further specified at the regional level. In this case, regional planning takes place at the last possible stage. On the one hand, this allows for a unified national policy in the field of innovation, given the relatively small size of our economy, and to better apply the approach of grouping the individual priority industries into larger groups to cooperate and complement each other. On the other hand, given the strong regional concentration of production and innovation capacity in the country, it is possible to get different results with an approach starting with the selection of priorities by region. However, such a possible shortcoming is most likely offset by the wide range of priority sectors involved in shaping the thematic areas.

The methodology for selection of priority areas of ISSS begins with a general economic analysis of 82 sectors of the economy at Classifier of economic activities, 2008 (second level of aggregation), identifying the most important for the functioning of the economy at the time considered industries. The first step in identifying economic activities involves the selection of all medium-high and high-tech industries and science-intensive high-tech services and the inclusion in the analysis of only three leading industries of low-knowledge-intensive services. This approach has as a strength the selection of industries

with the potential to restructure the economy to more knowledge-intensive activities, which in general would contribute to increasing productivity and gross value added in the country. Also included are three of the less knowledge-intensive industries, which helps to consider the need for technological innovation in them as an important factor forming a large part of employment and gross value added in the economy.

The industries are selected on the basis of two types of factors – internal – through the indicators share in gross value added, level of investments in fixed assets, contribution to employment and external, related to the competitive advantages on the international markets. It is noteworthy that the external factor receives insignificant points in most cases and in most cases, is not able to influence the final assessment. On the other hand, usually mainly exporting companies are predominantly carriers of innovation activity since they face greater competition in international markets. It would be good to add an element describing the level of foreign direct investment, as in many cases they are realised by more efficient and innovative enterprises. It is noteworthy that both at this and the next stage of evaluation, no attention is paid to the state of the labour market in the country, the available human resources by sector, the lack of staff in some industries and whether in the industries we are prioritised, in fact, companies will be able to find the right specialists to ensure their development. The problem of the lack of balance between labour supply and demand for the selected prioritised sectors is very little addressed in the analysis. Overall, at this stage of the evaluation, the use of a human resource indicator would also be positive. In addition to the above, in general, when developing and implementing strategies of this type, it is good to assess what employment growth is expected after supporting projects in the selected priority sectors. In many cases, the implementation of high-tech projects has a positive impact on gross value added and efficiency, but this is often at the expense of a relatively small and even negative increase in employment. This, in turn, could exacerbate social inequality.

The second element of the ISIS methodology includes a qualitative assessment of the potential for innovation in individual sectors through an assessment of state support for offices and technology transfer centres, projects funded by the National Innovation Fund (1-6 sessions), support for projects under the Operational Program Competitiveness (2007-2013), number of companies holding patents, number of companies holding trademarks. It is not clear why the assessment is called qualitative, as the listed indicators most likely have specific quantitative values in practice. The development of the methodology in this area is most likely based on the presumption that the activity in applying for European and national funding of companies correctly reflects the potential for innovation development in the country. However, this also implies that we agree with the assumption that the current policy to stimulate innovation, as well as its design, have managed to attract participants from economic sectors with the highest potential for development. It is possible that a large share of the implemented innovations is self-financed or in the form of loans. We can also assume that there are sectors where branch organisations are not active enough in informing their members about opportunities to participate in government projects and in supporting them to apply for such a line, but at the same time, there is a serious need to finance innovation activity.

The weak point of the methodology could be its focus on the implementation of projects in the country, while there are no criteria for participation in international programs, for example at EU level, which in practice are a real guarantee of quality and development potential in a particular area for the development of innovation and research. Data could also be used to show the country's potential in various fields of scientific knowledge based on leading publications. It is also noteworthy that the methodology does not use an analysis of the investments made by enterprises in research and development in individual sectors, and such data are available and could give a good picture of the readiness of enterprises to finance innovations and trends in individual sectors industries. Information on innovations financed through different credit schemes would also be interesting, as they may be more motivated. In addition, the third step of the analysis does not take into account the human factor, such as statistics on the distribution of research and development staff in the private sector, possibly the potential of staff available in the public sector. It is positive that such a qualitative analysis is made at the level of areas further in the methodology after the identification of the leading priority areas of the strategy, to specify the priorities for each planning region.

Although the availability of research infrastructure is described in detail and commented on in the analysis, they are again not included as a selection criterion in the quantitative analysis. On the positive side, they have been considered in defining thematic areas. Based on the combination of the results of the quantitative and qualitative analysis, an additional selection of potential priority areas for innovation development is made. It is noteworthy that the contribution to the total number of points obtained from the qualitative analysis (innovation activity-oriented) is generally significantly smaller than that received by the sectors based on the quantitative analysis. This implies a greater weight in the methodology of the importance of the industries predominant in the structure of the economy than of those aimed at the development of innovation. This would be an advantage if our goal is to develop innovations in traditional industries for our economy, but it may manifest itself as a disadvantage if we want structural changes in the economy. In addition, as far as it is possible to extract information from the strategy, it is noteworthy that the methodology uses static indicators, which does not allow to highlight the trends that are important in a highly dynamic global economy. The use of dynamic indicators would make it possible to highlight fast-growing industries that are beginning to stand out with their comparative competitive advantages. At the next stage of selection of the priority areas, thematic areas of the industry have been identified, which highlight links between the 21 areas selected so far. This approach is a major strength of the strategy, as it examines the cross-sectoral links in the economy and what unites the individual actors in economic life. Possibly, this would help to monitor how the implementation of a project could affect the whole ecosystem covering the specific area, as well as to identify missing or insufficient intermediaries in the area to be stimulated.

Figure 3

Model for indexing the innovation activity in ISSS
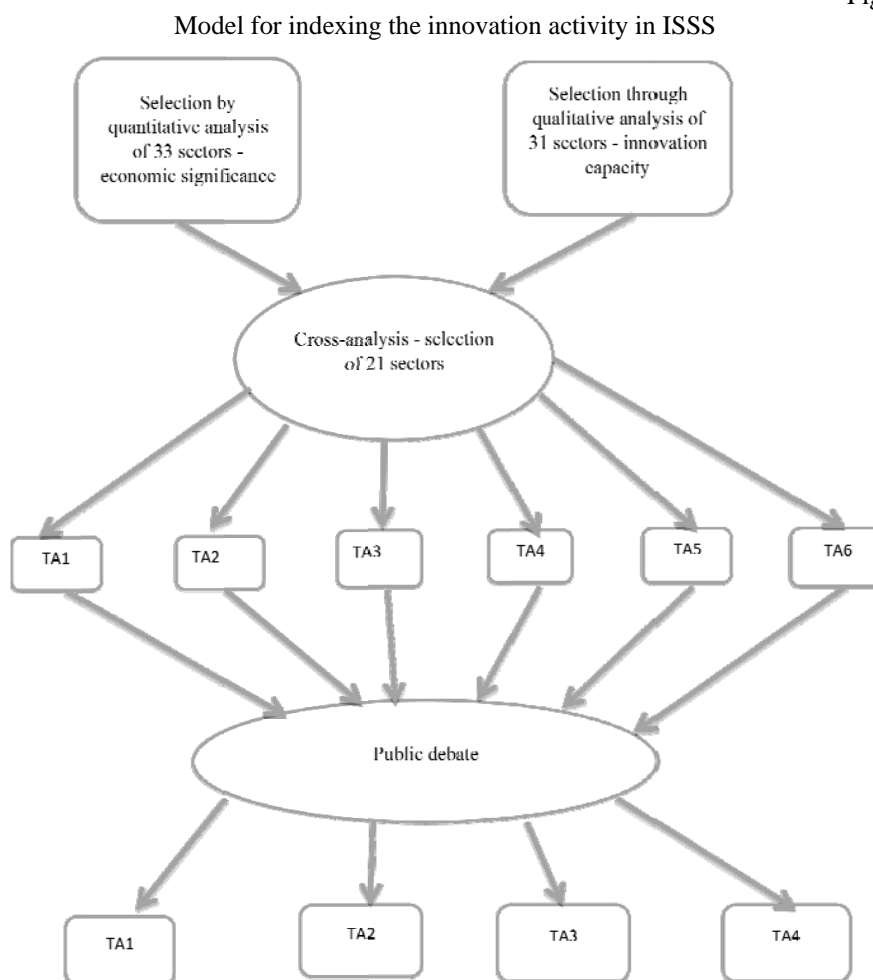
After highlighting the thematic areas for development, based on a broad public debate by highlighting the specific strengths and challenges in the selected thematic areas, they are further specified and regrouped, as well as very detailed specific sectors for support. Identifying priority areas for support based on this approach is a particularly strong point of the strategy. It is clear from her reading that the developers of the document have managed to attract different types of participants in each of the thematic areas and with their help to get an objective picture of their condition. This step seems very well planned and implemented, given the detailed analysis and information presented in the strategy. As a general remark, it is noteworthy that the strategy does not pay special attention to the state's experience in supporting innovation activity until the development of the document, the challenges encountered, positive experience and possible mistakes. This could be corrected

in the development of the next strategic document. In addition, a significant part of the information in the analysis also does not fall into some form in the methodology used. No less important than selecting the appropriate priorities is to provide an opportunity to easily track the results of the implementation of intentions. In this case, organising the information in such a way that it can be grouped across the selected thematic areas and allow an analysis of the functioning of the whole system would be extremely useful in order to be able to track the effectiveness of the methods chosen for its implementation. Taking into account the result of the implementation of the methodology for deriving priority sectors in ISIS, it can be said that in general, this is a successful methodology, despite the presence of some bottlenecks in its individual steps of implementation. Considering previous attempts to prioritise the sectors in need of support for innovation activity in the country, the result of the current strategy manages to provide a good basis for future policy in the field.

3. Thematic areas in the Innovation Strategy for intelligent specialisation and innovation activity of companies

For the period 2013-2017, there are serious changes in the innovation activity of Bulgarian enterprises. The role of industry is growing significantly, with its share in total investment increasing from 14.1% in 2013 to 35.5% at the end of 2017. This is happening against the background of sustained overall growth in research and development expenditure (R&D) of enterprises, which compared to the end of 2013 amounted to 67.6%.

Figure 4

Research and development expenditure in millions of Euro
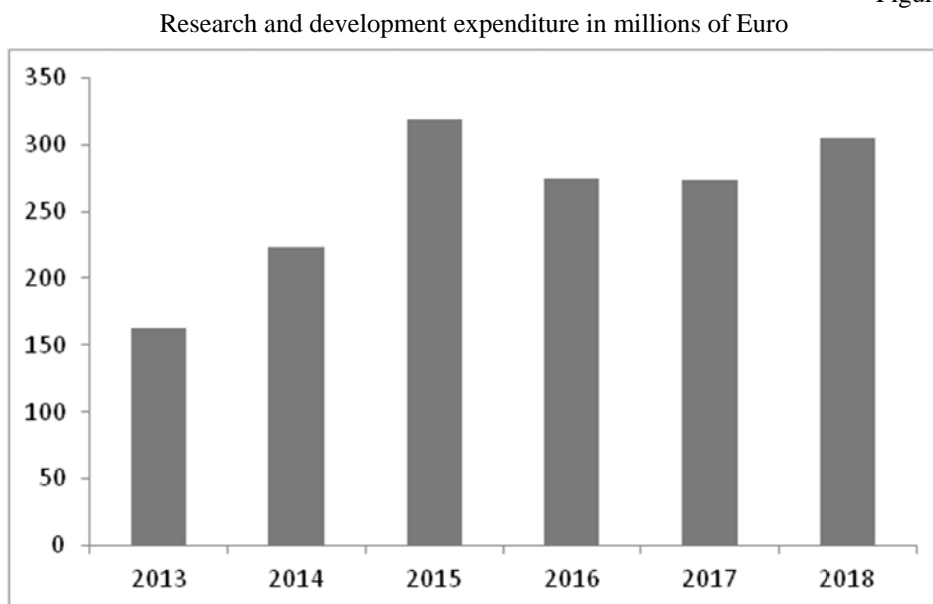
Source: Eurostat.

It is interesting to note that although at different rates during the period there is a significant increase in innovation activity in fast-growing sectors such as information and communication technologies and in traditional sectors of the Bulgarian economy such as machinery and electronics, chemical industry and the production of rubber and plastics. Many industries considered to be low-knowledge-intensive, such as the textile industry, the manufacture of metals and metal products, the paper and furniture industry and construction, also have different attitudes towards the need for R&D investment. Unfortunately, there are also such industries as the food industry, which occupy an important place in the Bulgarian economy, but still lag significantly behind in investment in R&D.

Figure 5

Research and development expenditure individual sectors of the economy in millions of Euro
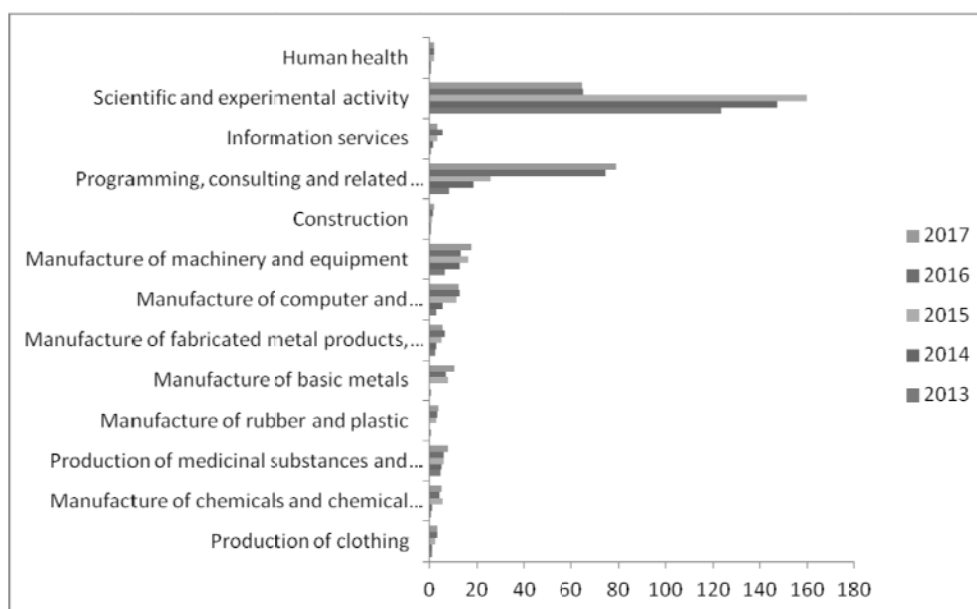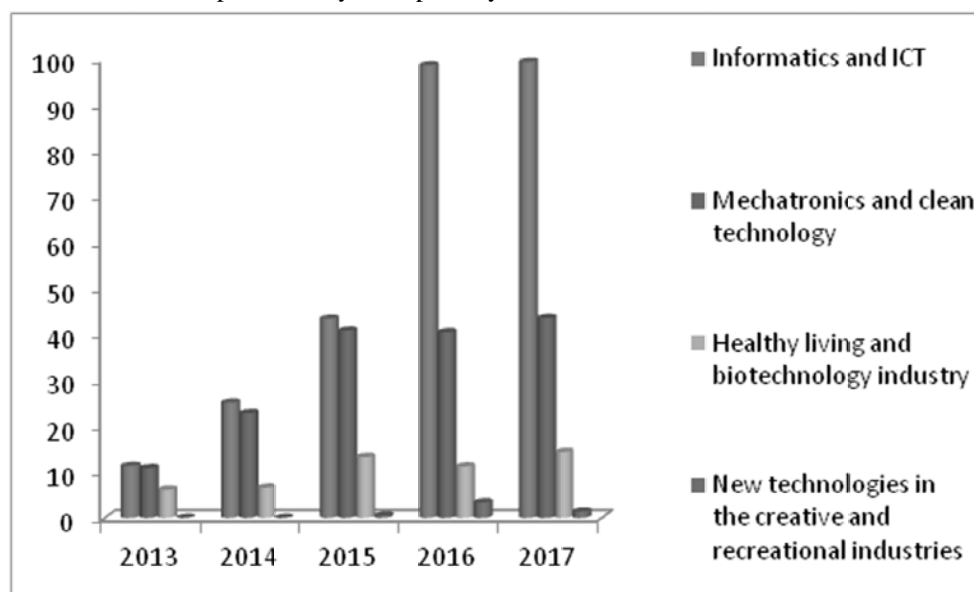

Source: Eurostat.

As can be seen from the chart below, the fastest-growing thematic area (TO) is that of the Informatics and Information and Communication Technologies sector (IT and ICT TO). It is followed by Mechatronics and Clean Technologies, which has also been gaining momentum in recent years in terms of investment in research. Positive developments have also been observed in various sectors of the other two thematic areas, especially given the low baseline in 2013, but at a slower pace.

Figure 6
R&D Expenditure by Enterprise by thematic Area in millions of Euro

Source: Eurostat.

3.1. Thematic area "Informatics and information and communication technologies"

The ICT[4] sector has undergone extremely dynamic changes in recent years. According to an analysis of the report "Innovation.bg 2019" (Applied Research and Communications Foundation, 2019) in recent years the sector is gradually reorienting from mainly software outsourcing and production as a subcontractor to products and integrated services with high added value. There is a tendency to establish R&D centres of international companies, very often based on the acquisition of Bulgarian companies that have worked with them in the form of subcontractors or suppliers. Expansion of the activity of Bulgarian companies begins, which in most cases are mainly export-oriented and specialise in specific market niches. New companies have emerged in areas such as data analysis, financial services, and the Internet of Things. It is characteristic of the ICT sector that it is still highly concentrated

---

[4] In the current analysis for the thematic area "Informatics and ICT" will be considered all sub-areas selected according to the methodology described in "ISIS", namely code 26, 61, 62, 63, without code 72 of NACE.BG 2008. of the characteristics of this activity, which in its predominant part – 97.2% includes experimental research in the field of natural and engineering sciences. For this reason and because it represents a large part of the R&D of Bulgarian enterprises, it will be considered separately from the other thematic areas. It should also be borne in mind that the sectors selected in the strategy do not fully coincide with the EU definition of ICT and therefore some deviations in data related to other ICT analyzes are possible.

in Sofia, but some other cities – major university centres in the country – are beginning to gain momentum in this area.

According to a report by BASCOM (Bascom Barometer, 2019) the main and most dynamic representative of the ICT sector – the software industry, is extremely export-oriented, and it also generates high revenue growth. The Bulgarian software industry is extremely attractive to foreign investors, as more than 50 representative offices of global software companies already operate in the country. Revenues from the export of intellectual product in 2018 reach BGN 2.5 billion. Unfortunately, the opportunities for growth in the local market and thus bringing the Bulgarian business to a qualitatively different level, remain untapped due to lack of interest from many local businesses.

During the period under review, the structure of the sector changed significantly, with the two leading sectors, Telecommunications and Programming, Consulting and Related Activities (Programming), changing their positions sharply in terms of their contribution to gross value added (GVA). While at the end of 2013 the two sectors share the main contribution of the ICT sector in GVA[5] at the end of 2018 2/3 of GVA in maintenance is produced by the "Programming" sector. However, the most knowledge-intensive sector is "Manufacture of computer and communication equipment, electronic and optical products". Although at the end of 2017 it was responsible for only 5.9% of GVA (7% in 2018), the sector has invested as much as 8.3% of it as expenditures for research and development. The most knowledge-intensive and dynamic in this respect are the sub-sectors "Manufacture of electronic components and boards" and "Manufacture of communication equipment". The production of computers and peripherals is relatively underrepresented. In second place is the Programming Sector, which at the end of 2017 invested 5.3% of its GVA. While in the production of computer and communication equipment, electronic and optical products such high levels of R&D are typical for the beginning of the period under review, the "Programming" sector has undergone a revolutionary change in this respect – from 0.9% R&D expenditure in GVA by the end of 2013. year, to 5.9% in 2017.

The dynamics in terms of the researchers appointed over the years is also extremely interesting. In the thematic area "Informatics and ICT" there is a widespread increase in the number of hired researchers. The Programming sector is, of course, the largest contributor to the increase, with a strong position in this regard at the beginning of the period under review. It is also expected to increase, albeit at a slower pace, in the production of computer and communication equipment, electronic and optical products, as this sector also has a good position in this regard in 2013. The situation is most dynamic in the other two sectors, which start from a much lower base of hired scientists in 2013 and reach much higher growth than the faster-developing sectors. With only 4 scientists employed in 2013 in the Telecommunications sector in 2017, they reached 238. This is most likely a promise of serious potential for R&D development in this area. Another interesting trend that is observed is the sharp increase in the number of hired scientists in the Information Services sector, which represents a relatively small share of the thematic area. With 50 employees

---

[5] The shares in the analysis are calculated based on current GVA prices for the respective year according to Eurostat data.

hired in 2013, their number reached 457 – an increase of 5 times, comparable to that of the field of "Programming".

Figure 7

TA "Informatics and ICT" – R&D of Enterprises in millions of Euro
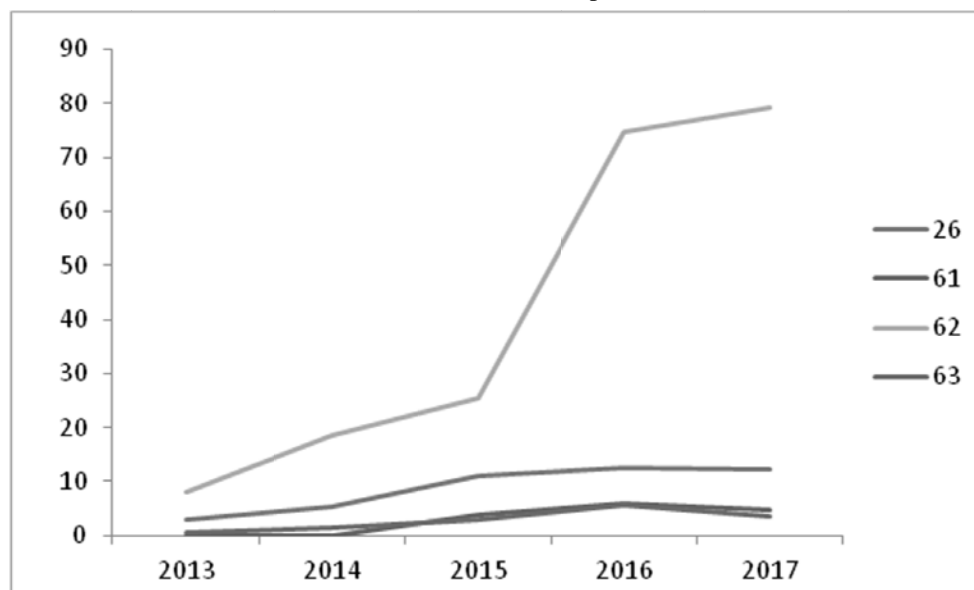
Source: Eurostat.

3.2. Thematic area "Industry for healthy living and biotechnology"

Thematic area "Industry for healthy living and biotechnology" has a serious potential for development, given the advantages of our country as a centre for development in the field of medicine and natural sciences. In recent years, there has been an attempt to consolidate the efforts of individual actors in this area. In 2018, a biotechnology and health cluster were established, and its goals include stimulating innovation, cooperation, exchange of experience between companies operating in the sector, support for their internationalisation and better communication with the public sector. Among the strengths of the sector continue to be the presence of leading specialists, as well as appropriate infrastructure. Unlike the ICT sector in the field of biotechnology, risk financing is generally absent, as the sector is not known to investors and, in general, investments in it are associated with higher risk. Another distinctive feature is the significantly higher degree of regulation, which also hinders its development. The specialists still point to the still missing strategic vision for its development by the state as a problem in the sector. According to the National Action Plan for the Development of Organic Production, the applied research in this field in Bulgaria is small, and those that are being developed are not well popularised. At the same time, none of the universities and research institutes in the country works in the field of organic production and processing. An additional problem for the existing scientific units is

the difficult maintenance of the biological certification. This situation is partly due to the lack of demand for such services, as the market is dominated by smaller producers with small financial resources, and larger ones directly turn to foreign experience for advice. The establishment of a national integrated consultation system in this area could improve the situation. The sector also suffers from general problems such as a lack of a link between business science and education. No official information is collected on important indicators regarding the dynamics of development in the sector, such as sales turnover, as well as on the realised exports, which greatly complicates the analysis of its development. Unfortunately, in the period 2013-2017, there is a very negative trend in business costs in the field of biotechnology. Although they are the second largest group of investments after those of technical sciences, in the last two years the expenditures for science in this field have fallen sharply from 110.4 million euros in 2013 to 78.4 million euros in 2018. This is due to medical sciences, which are a major part of them.

Table 1

R&D of Enterprises by Fields of Science in Millions of Euro

|	2013	2014	2015	2016	2017	2018
Total	162.9	223.4	319.0	275.0	273.1	304.8
Natural sciences		7.0	9.6	7.2	7.9	8.6
Medical sciences	110.4	114.4	131.1	67.7	61.6	67.6
Agricultural sciences			2.1	2.0	1.8	2.2
General Biotechnologies	110.4	121.4	142.8	77.0	71.3	78.4

Source: NSI.

In the present analysis in connection with biotechnologies, the innovation activity in the following industries will be considered – food industry, pharmaceutical industry, chemical industry, and human health. A significant part of the costs incurred in this line are contained in the "Scientific and Experimental Activity" activity, but as the exact share of the thematic area under consideration in it is not known, it is analysed separately. In the considered group the largest share in GVA is occupied by the healthcare sector, as it remains relatively stable over time for the considered period (about 50% of the total GVA). Next is the sector of the food industry, as its share decreased over the years from nearly 40% to nearly 30% in the period 2013-2018. It is followed by the chemical industry, with a steady upward trend in the share in the group – with a 7.7% share in 2013 it reached 10.3% in 2018. The smallest contribution has the smallest industry – the pharmaceutical industry, which retains a share of about 6-7% for the entire period. For the period, the share of the whole group in GVA decreased – from 8.2% in 2013 it reached 7.8% in 2018. The most intensive in R&D is the smallest branch of the thematic area – the pharmaceutical industry, which is traditionally typical with its higher innovation activity. Over the years, we have also seen another positive trend – a clear direction to increase R&D investment in production (from 2.4% of GVA in 2013 to 3.2% in 2017). The next position in terms of R&D expenditures is occupied by the chemical industry, with a gradual and lasting increase in R&D expenditures in production, which reached from 0.3% in 2013 to 1.1% in 2017. In 2017, 4.6% of R&D expenditures in the country were incurred in the thematic area. The human health sector, although the largest in terms of value produced in the thematic area,

still devotes a negligible part of its revenue to research and development. However, it should be noted that there is a serious upward trend in R&D expenditure, which more than doubled over the period under review to EUR 14.4 million at the end of 2017. Thus, its share in total innovation expenditure in the country increased from 0 to 0.7% for the period. As of 2016, the food industry, which is also a sector with a significant share in the thematic area, invests only symbolic funds for R&D – only 1.1 million euros. However, it should be noted that it has almost doubled its spending in this area since 2013.

Figure 7

TA "Industry for healthy Living and Biotechnology" – R&D of Enterprises in Millions of Euro
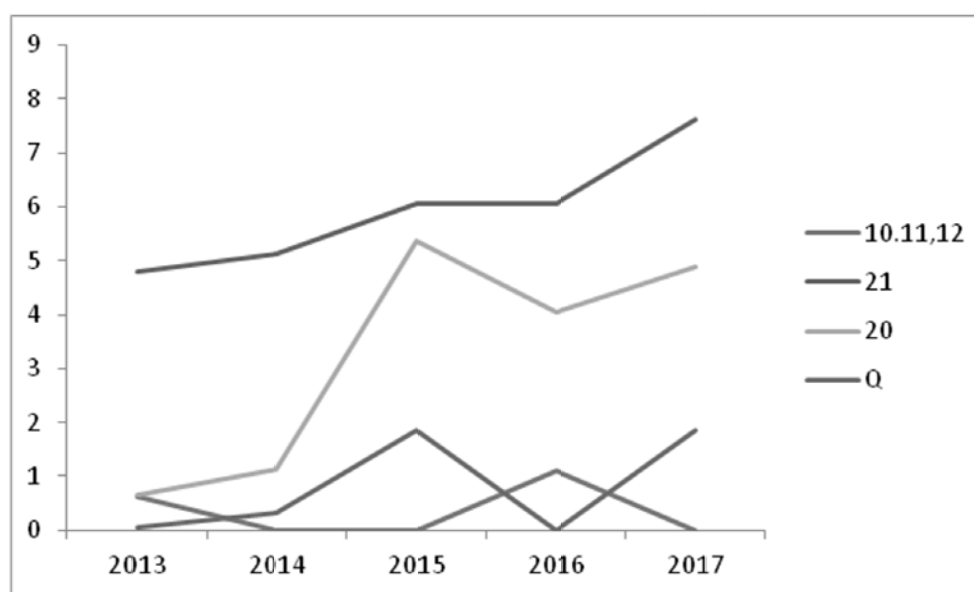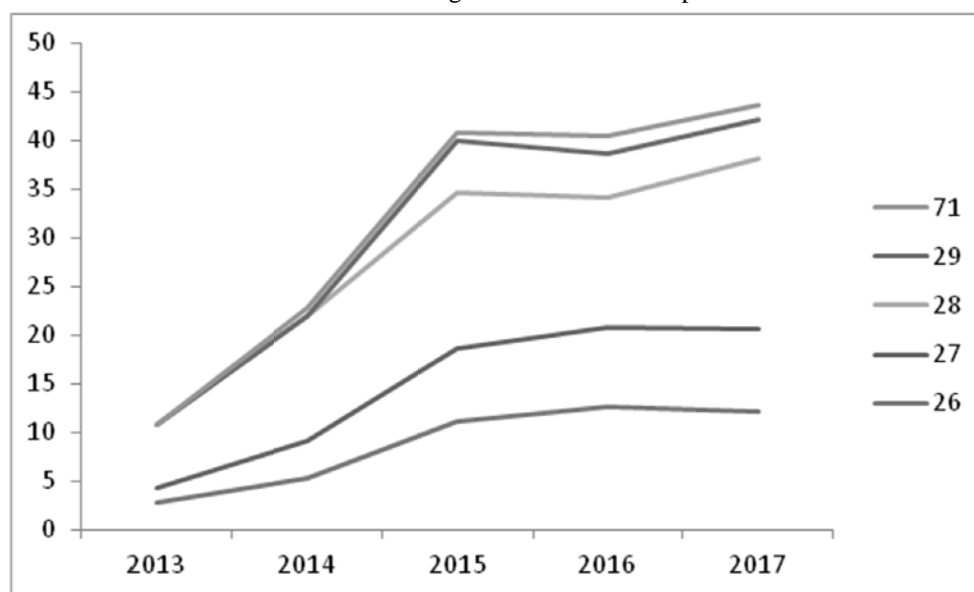

Source: Eurostat.

The dynamics of the hired scientists from the business shows interesting tendencies in this sector as well. The Human Healthcare sector stands out most clearly here, which, despite investing a relatively small part of its GVA in R&D, has significantly increased the number of hired scientists – from 13 in 2013 to 349 in 2017. We observe similar dynamics in the chemical industry, where there is also a significant increase – from 80 in 2013 to 483 in 2017, which corresponds to the trend of increasing its share in GVA. Although the pharmaceutical industry was the leader in 2013, it significantly lost ground at the end of the period, although it maintained a constant number of scientists employed.

3.3. Thematic area "Mechatronics and clean technologies"

Mechatronics and Clean Technologies retains its leading and stable position in the economy of our country for the period under review, as from 3.1% share in GVA at the end of 2013, it increased to 3.7% in 2018. The country produces both lower-tech products and those that contribute with a larger share in the country's GDP, gradually increasing the share of higher-tech industries. During the period 2013-2018, the positions of the electronics, machine-building and automotive sectors in the total GVA remained relatively stable over the years with some fluctuations. The most dynamic sector is "Manufacture of computer and communication equipment, electronic and optical products", which almost tripled its share for the period. A negative trend that is observed is the permanent decrease in the share of GVA in the provision of services in the field of "Architectural and engineering activities, technical testing and analysis" from 24.6% in 2013 to 18.1% in 2018. Thematic area "Mechatronics and clean technologies" is among the most knowledge-intensive industries in our economy, and in 2017 it accounted for 16% of all business expenditures on R&D. The machine-building sector is at the forefront of investments in innovations with 6.4% of the total R&D expenditures in the country. The largest percentage of the value-added produced is invested in the R&D sector "Manufacture of computer and communication equipment, electronic and optical products" (8.5% in 2017), followed by the mechanical engineering sector – 3.4%, and the production of electrical equipment – 2.1%. R&D expenditures in the production of electrical equipment increased almost four times compared to 2013, and those in the mechanical engineering sector – twice.

Figure 8

TA "Mechatronics and clean Technologies" – R&D of Enterprises in Millions of Euro

Source: Eurostat.

In the thematic area "Mechatronics and clean technologies" we observe the preservation of the positions of the sector in the total share of employed scientists in production. The group of sectors manages to increase the share of scientists working on R&D projects at a similar pace as production grows. Thus, its share in this area increased from 15.4% in 2013 to 16.4% in 2017. The main contribution to the number of employed scientists is the mechanical engineering sector with 6.7% of the total employed in enterprises, followed by the sectors "Computer and computer manufacturing" communication equipment, electronic and optical products "and the manufacture of electrical equipment.

3.4. Thematic area "New technologies in the creative and recreational industries"[6]

The share of the thematic area "New technologies in the creative and recreational industries" in BDS increased in the period 2013-2018 from 0.7% in 2013 to 1% in 2018. As well as in the thematic area "Informatics and ICT" and here we observe strong geographical concentration in the capital, which is one of the problems in the creative industries. During the period under review, book publishing increased significantly, as with about 6,000 books published in 2018, they already number 8.6 thousand. There is also a serious increase in cinemas, which from 40 in 2013 became 69. However, this is not significantly reflected in an increase in the number of visits. The number of television operators is also growing, as in 2013 it was 103 compared to 116 in 2018. Over the years, the number of functioning theatres has remained constant. The number of performances increased by nearly 5% and the attendance of spectators by about 10%. The number of films produced fell sharply in 2018 to 77 from 106 in 2013.

Table 2

Activities of creative industries (number)

|	2013	2014	2015	2016	2017	2018
Book publishing	5939	6443	8221	7416	8640	8650
Cinema	40	49	55	59	68	69
Cinema screenings	248486	282202	305989	321842	356385	348959
Produced films	106	114	116	106	106	77
Television operators	103	112	116	121	117	116
Theatrical performances	14463	14694	14168	15162	15333	15155
Theatrical visits	2178249	2302217	2168625	2295323	2221693	2388823

Source: NSI.

The first investments in R&D in the thematic area were registered in 2015. According to the information provided by Eurostat, more than EUR 5.8 million was invested in research and development in the thematic area for the period 2015-2017. The most represented is the publishing activity with 4.3 million euros of investments for the period. The thematic area

---

[6] Areas with codes 58, 59 and 60 according to the Classifier from 2008 are considered. The economic activities with codes 26, 62, 72 and 63 are not considered here, as they predominantly belong to the thematic area "Informatics and ICT" and their inclusion in the analysis of this group would distort it strongly in their favor

engages on average about 1% of researchers in the country, and its share decreased to 0.7% in 2017. Publishing is in first place in the group, as the number of scientists working in these sectors of the economy fluctuates around 100 for the period 2015-2017.

Figure 9

TA "New Technologies in the creative and recreational Industries" – R&D of Enterprises in Millions of Euro
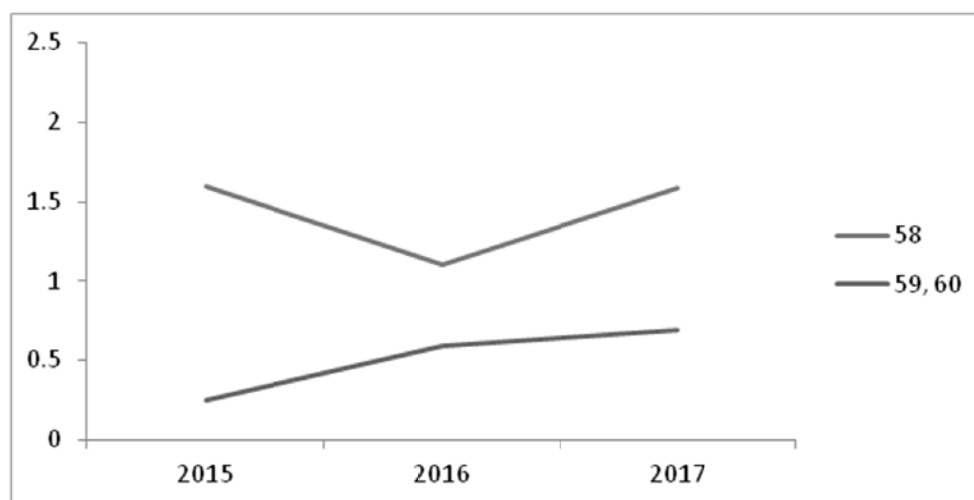
Source: Eurostat.

3.5. Scientific and experimental activity

This activity is collective for each of the thematic areas, as its predominant part (97.2%) falls in biotechnology, natural, medical, agricultural, and technical sciences. Unfortunately, its dynamics show a very negative trend. For the period 2013-2017, the purely scientific activity of the business, most likely oriented towards larger and strategic projects, was halved. Over the years, this economic activity has seriously lost its position, as its share in the total R&D expenditures of businesses decreased from 75.9% in 2013 to 23.7% in 2017. All this is mainly at the expense of greater investment in information and communication technologies, which are gaining more and more popularity, as well as getting better funding opportunities. During the period under review, there has been a positive development in terms of innovation in all thematic areas. The most dynamic development is in the field of Informatics and ICT, followed by the field of Mechatronics and Clean Technologies. The lack of state policy in the individual areas remains a serious problem for the development of the individual sectors. This is especially true for the Healthy Living and Biotechnology Industry and New Technologies in the Creative and Recreational Industries. In general, it is noteworthy that up-to-date analyses are not available for most of the thematic areas, which raises the need for more systematic work in this direction in order to monitor the results of the implementation of the innovation strategy.

4. Need for change in the thematic areas of the Innovation Strategy for Smart Specialization

As described in the first part, the circular economy is a concept that considers in the first place the relationship of human economic activity to the environment. This includes the use of less natural resources, providing opportunities for their natural regeneration and preventing pollution of nature. With the New Action Plan on the EU Circular Economy (EC, 2020), the gradual transition to a similar way of functioning of the economy is increasingly becoming a luxury and a prerequisite for competitiveness in the medium and long term. The document contains several legislative and other initiatives aimed at the gradual introduction of the principles of the circular economy in the European Union. There are various methods for embedding these principles in ISSS.

4.1. Horizontal presentation of the principles of the circular economy in the Innovation Strategy

The first approach could include their derivation as horizontal principles of the strategy, valid for all thematic areas and mandatory for compliance as criteria in the approval of projects under various programs to subsidise innovation by the state or through European funds. This would ensure that the thematic areas are in line with the principles of the circular economy. As mentioned in part one of the analysis, among the most important of them are:

- Better product design to allow repair or modernisation of products, the ability to use their components in a new product, improve their durability or efficient recycling.

- Improving energy and resource efficiency in production and consumption.

- Optimising the use of resources through the circular use of products, components, and materials to the highest degree through the technical and biological cycle.

- Reducing or eliminating the toxicity of the resources used in the products.

- Recovery of waste in production and consumption.

- Climate and environment neutral production and consumption.

- Preservation and improvement of natural capital, simultaneously controlling the availability of limited natural resources and balancing the flows of recycled raw materials, regeneration, virtualisation, exchange.

In a comprehensive and comprehensive innovation strategy aimed at the development of a circular economy, these principles should be embedded in any activity implemented through the strategy.

4.2. The establishment of a separate thematic area dedicated to the technologies for transition to a circular economy

On the other hand, if only the horizontal introduction of the principles of the circular economy is used, the prioritisation of important areas identified in both this year's updated EU strategy and those identified as important in other documents in this area would remain outside the scope of the strategy (see section 1 of the analysis). Many studies on the subject mention that the raw materials used by enterprises have a huge potential (in many cases up to 30-40% of the costs of enterprises) to reduce costs and improve their competitiveness, as well as their resilience in modern conditions of sharp fluctuations in resource prices on international markets. In addition, given that our economy is highly dependent on imports, the widespread introduction of innovative technologies in enterprises to reduce their resource intensity would be crucial for the economic development of our country. Another important problem of the economy is the generation of a significant amount of industrial waste, which in other conditions could be reduced or recycled in a more efficient way. In this context, it is necessary to stimulate innovative solutions that lead to technologies that generate less waste, as well as those that help to recycle end-of-life products more efficiently. In this regard, an additional priority related to resource efficiency in all (or strategically selected industries) and to optimising the use of resources through the circular use of products, components and materials to the highest degree in both the technical and biological cycle, would be significantly valuable.

4.3. Expanding, reformulating, and supplementing the existing thematic areas regarding activities related to the circular economy

In addition, in the individual thematic areas, innovative activities could be formulated, aimed at the specific development of a circle in the individual industries, and to direct the enterprises directly to such activities.

4.3.1. Thematic area "Informatics and ICT"

The thematic area "Informatics and ICT" is a key opportunity for transition to a circular economy. ICTs have a huge potential to optimise many production processes of enterprises, including those that are associated with reducing the resource intensity of production. This thematic area, in good cooperation with other areas, could significantly improve the results of the implementation of specific innovation projects, as it can be a complementary element to other technologies. However, it is necessary to stimulate the interest of Bulgarian entrepreneurs, as well as their knowledge of the possible benefits of including ICT solutions in the implementation of innovative projects.

Point 1 "Manufactures, especially Fabless and new approaches to design and/or assembly" could focus on eco-design of products, which would allow to extend their life, repair or upgrade their modernisation in order to use the same components, developing methods to extend their life, improve their durability or efficient recycling. Point 2 "ICT approaches in mechanical engineering, medicine and creative industries (in relation to the other three

thematic areas), incl. digitisation of cultural and historical heritage, entertainment and educational games, embedded software" could be extended to other priority sectors of the circular economy described in section 1 of the analysis – electronics; rechargeable batteries and vehicles. Point 3 of the activities of the current strategy – "3D digitisation, visualisation and prototyping": The development of modern methods for digitisation, visualisation and prototyping in different sectors of the economy would significantly help reduce the resource intensity of different industries. It has the potential to support and accelerate the introduction of new technologies by facilitating research. It is possible that these methods have, for example, significant potential in the creation of, for example, buildings that are neutral to their impact on the environment, using methods such as Building Information Modeling. In its new action plan on the circular economy, the European Commission identifies the construction sector as an important priority sector for the development of the circular economy. It is estimated that globally more than a third of resource consumption falls on the construction sector (EMF, 2019).

4.3.2. <u>Thematic area "Mechatronics and clean technologies"</u>

In general, most of the activities provided for in this ISIS in the section "Mechatronics and clean technologies" fall into the category of clean technologies and can be classified as contributing to the development of a circular economy. Among them are the opportunities for implementation of clean technologies in energy and transport, reengineering and extension of the life cycle of industrial machines, appliances and systems, creation of modern information complexes for autonomous energy systems, incorporation of RES in robotic systems with artificial intelligence, promotion of activities related to the construction of smart cities. Implicitly, many of the activities envisaged as priorities may also contribute to the protection and restoration of the environment. Such activities could be, for example, the stimulation of robotics and process automation, incl. 3-D modeling of robotic automated systems. However, almost half of the envisaged opportunities to stimulate innovation in this thematic area are not explicitly aimed at improving the impact of production on the environment. Such are, for example, "Manufacture of basic elements, parts, assemblies and equipment, incorporated as part of a mechatronic unit or independently constituting such a unit", "Mechanical engineering and instrument making, incl. parts, components and systems with a focus on transport and energy", "Automated and software-assisted management systems with production application". To these activities could be added better product design to allow products to be repaired or upgraded, to develop methods to extend their life, to use their components in a new product, to improve their durability or to recycle efficiently.

4.3.3. <u>Thematic area "Industry for healthy living and biotechnology"</u>

In the thematic area "Industry for Healthy Living and Biotechnology" a very small part includes the area of "green/bio-based" economy. The green economy, according to the definition chosen in the strategy, is defined as an economy that aims at sustainable development by reducing environmental risks. This concept is very broad and in practice

could include a large part of the necessary activities for the development of a circular economy. On the other hand, thus so broadly defined, it has no strategic focus on anything specific. The latest activity in the thematic area – "green/bio-based" economy has a serious potential to be expanded and specified in the spirit of the circular economy. As described in the first part of the analysis, in the circular economy there are two cycles of materials – technical and biocycle. In the biocycle, the natural processes of life regenerate materials without human intervention. In the technical cycle, using energy with human intervention, the value of materials is restored. In this sense, the stimulation of innovations in biotechnology to regenerate materials and the environment in a natural way is a key moment in the development of a circular, waste-free economy and could be added as a strategic focus in updating the Innovation Strategy. The development of an industry towards bio-based products (i.e. those that are wholly or partly derived from materials of biological origin) is also crucial, as bio-based resources and materials do not in themselves contain hazards for humans and the environment chemicals. Their decomposition also preserves the natural renewable processes in nature.

Preventing the use of hazardous chemicals in production is a fundamental principle of the circular economy and, in this connection, expanding innovation in this area would contribute significantly to developments in this direction. Another major area in the thematic area under consideration could be the development of innovative technologies to reduce waste in the production of biomass-based and bio-based products. Biomass and bio-based products have been a key priority of the 2015 EU Circular Economy Action Plan (EC, 2015). In the New Action Plan on the EU Circular Economy of 2020 (EC, 2020), this area is specified to "food, water and nutrients", but the wider area remains relevant today. According to a study, nearly 35% of the turnover of food industry enterprises are raw materials, most of which are waste products that are not recovered. In this sense, the development of innovative technologies and their use has a serious potential to improve the competitiveness of enterprises in the industry, and most likely could lead to a useful symbiosis between different industries.

4.3.4. Thematic area "New technologies in the creative and recreational industries"

Since the concept of a circular economy is oriented mainly to the impact of the economy on the environment, and this thematic area falls rather than the social development of man, it has less to do with the circular economy. In this sense, the concept of a circular economy has a narrower definition than the concept of a "sustainable economy", which includes the social aspect of development. To some extent, this may include the development of methods for using fewer resources in the creative and recreational industries. Digitisation of cultural heritage is a similar method in this direction, as well as the development of various methods for online sharing of cultural resources. Point 3 "Alternative (rural, eco-, cultural and festival) and extreme tourism and sport (to stimulate off-season, non-mass and permanent niche tourism)" also has the potential to contribute to the development of a circular economy, as this type of tourism is usually is associated with a more gentle attitude towards the environment. In summary, the best approach would be to use a combination of the three approaches, which would ensure horizontal, vertical, and in-depth integration of the principles of the circular economy in an updated version of the Innovation Strategy.

Conclusion

This study examines the possibilities for interconnection between the integrated strategy for smart specialisation and the new formulations related to the circular economy. Consistently, the presentation proves the main thesis that the indexation of the innovative activity of business units should not only consider the existing capacities, but also cover the competitive advantages of the circular economy.

The analysis of the definitions and main characteristics of the circular economy, as well as of EU documents, allows to highlight the main areas of intervention, to which can be added biomass and bio-based products, as well as photovoltaics and wind generators, aeronautics and defence industry, parts of the chemical and pharmaceutical industries.

Planning in ISSS is done from top to bottom by setting national goals, which are specified at the regional level. This allows the formulation and implementation of a single national innovation policy, but some typically regional advantages may be missed. In general, the methodology for listing priority sectors in ISIS can be defined as successful, but there are some bottlenecks. Among them we can highlight: underestimation of foreign direct investment as a factor for selecting industries; insufficient attention to the imbalance between labour supply and demand for priority sectors; concentrating the methodology on specific projects in the country, without taking into account the participation in international programs; the lack of analysis of the investments made by enterprises in research and development; the use of only static indicators, which does not allow the distinction of fast-growing industries. There is a positive development in terms of innovation in the main thematic areas.

The most dynamic development is in the field of Informatics and ICT, followed by the field of Mechatronics and Clean Technologies. A weakness is the lack of up to date analyses for most of the thematic areas, which raises the need for more systematic work in this direction to monitor the results of the implementation of the innovation strategy. It is necessary to combine the different approaches for combining the thematic areas in ISSS with the specifics of the circular economy. This allows integration in the horizontal, vertical direction, as well as in depth, which will allow the principles of the circular economy to effectively underlie an updated version of the strategy.

The problems facing economic development due to the COVID-19 crisis are also related to changes in the behavioural pattern of consumption, which will be reflected in a decrease in demand and will slow down the recovery. Production needs to respond by offering new products that are more durable, truly long-lasting, and environmentally friendly. This gives a real chance to realise the advantages of the circular economy and to become a leading model of development, which will again attract lasting consumer interest, but also provide a basis for real reduction of supply and supply chains, improving the sustainability of the European economy shock economy. Bulgaria must not lag these processes and it is necessary to timely adapt its strategic documents to this new reality. The transition will also be qualitative in nature, and for this reason, innovation and smart specialisation are the natural environment for building a new circular economy.

References

Angelova, M. (2019). Performance of Social Entrepreneurs and Social Entrepreneurship in Bulgaria. – Economic Studies, N 6.

Applied Research and Communications Foundation. (2019). "Innovations.bg": Innovations and Economic Growth". The Representation of the European Commission in Bulgaria

Baltov, M. (2008). Challenges in front of the Financing of the Innovation Active SMEs – Regional Prospects. – Economic Research Journal, Vol. 3, pp. 109-131 (in Bulgarian).

Baltov, M. (2016). Women-Run Companies' Growth and Finance, Chapter in Women and Sustainability in Business (eds. Caliyurt, Kiymet). Gower, Farnham.

Baltov, M. (2019). Methods for Indexing the Innovation Activities. – In: Proceedings of the Jubilee Conference "Economic Development and Policies: Realities and Prospects", Institute of Economic Research at BAS, Sofia.

Baltov, M. (2020). Circular Economy Features to the Blue Growth Domains. – In: Proceedings of the "Economic Science, Education and the Real Economy: Development and interactions in the digital age", University of Economics – Varna (in Bulgarian).

Baltova, S., Baltov, M. (2017). Value Creation and Value Co-Creation in Professional Business Services: A Challenge in Digital Environment. – Bulgarian Journal of Business Research, 3, p. 31-44.

Baltova, S. (2015). Policies to Support the Innovative Development of Knowledge-Intensive Services. – In: Proceeding of the International Scientific Conference "Post-crisis management in the business", UCTM Sofia, ed. Academic Publications, pp. 651-657.

BASSCOM. (2019). BASCOM Barometer 2019: Annual Report on the State of the Software Sector in Bulgaria. Bulgarian Association of Software Companies, December 2019.

Beev, I. (2019). The Economic Constitution: From Idea to Doctrine. – Nauchni trudove, University of National and World Economy, Sofia, Bulgaria, N 3, p. 33-43, November.

Belas, J., Dvorsky, J., et al. (2019). Important Factors of Smes Entrepreneurial Orientation. – Economic Studies, N 3.

Britchenko, I., et al. (2019). Potential of Sustainable Regional Development in View of Smart Specialisation. – Economic Studies, N 6.

Ellen Macarthur Foundation. (2013). Towards the Circular Economy. Economic and business rationale for an accelerated transition. Vol. I.

Ellen Macarthur Foundation. (2015). Growth Within: A Circular Economy Vision for a Competitive Europe. McKinsey Center for Business and Environment, Report, June 1, 2015.

Ellen Macarthur Foundation. (2019). Buildings All. March 2019.

European Commission. (2015). Closing the loop – An EU action plan for the Circular Economy. Communication from the Commission, COM/2015/0614.

European Commission. (2017). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the 2017 list of Critical Raw Materials for the EU", COM/2017/0490.

European Commission. (2020). Categorisation System for the Circular Economy. Directorate-General for Research and Innovation, Publications Office of the European Union, March 2020.

European Commission. (2020). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A new Circular Economy Action Plan For a cleaner and more competitive Europe", COM/2020/98.

Ivanova, V. (2018). The model of the circle economy – new opportunities for firm development. – Ikonomiceski i Socialni Alternativi, N 4, p. 141-152.

Joint Research Centre. (2017). Critical raw materials and the circular economy – Background report. Publications Office of the European Union.

Keremidchiev, S. (2013). Genesis and Initial Development of the Market of Consulting Services in Bulgaria. – Economic Thought, N 1, p. 26-61.

Mishyna, S., Mishyn, O., Parkhomenko, N. (2019). Innovative Methods and Tools for Personnel International Marketing Development. – Economic Studies, N 1.

Mochurova, M., Dimitrov, M., et al. (2019). Innovation Activity of the Business Sectors in the Border Regions of the Republic of Bulgaria and the Republic of Macedonia. – Economic Studies, N 1.

McKinsey Global Institute. (2011). Resource Revolution: Meeting the world's energy, materials, food, and water needs. Report, November.

Nenkov, D., Miteva, D. (2018). Comparative Analysis of the Methods for Determining the Price of Personal Funds. – Ikonomiceski i Socialni Alternativi, University of National and World Economy, Sofia, Bulgaria, N 3, p. 5-18, October.

Policy Studies Institute at the University of Westminster. (2014). Scoping study to identify potential circular economy actions, priority sectors, material flows & value chains. Publications Office of the European Union.

Zhecheva, V., Baltov, M., et al. (2019). Enhancing Innovation Capacity of SMEs in Balkan-Mediterranean Area through Regional Based Centers of Excellence as Technology Drivers. – In: Proceedings of "International Conference of Education, Research and Innovation", Seville.

Zhelyazkova, V. (2018). The Road to Circular Economy: What Can Europe Learn from the Experience of Germany and Japan?. – Economic Studies, N 6.

Hrabrin Bachev[1]
Bojidar Ivanov[2]
Angel Sarov[3]

UNPACKING GOVERNANCE SUSTAINABILITY OF BULGARIAN AGRICULTURE[4]

Inclusion "fourth" Governance pillar in concept for understanding and assessment system of agrarian sustainability is increasingly justified in academic, government, international, and private organisations documents. In Bulgaria, practically there are no comprehensive assessments of governance sustainability of agriculture. This study tries to fill the gap and suggests a holistic framework for understanding and assessing the governance sustainability of Bulgarian agriculture. Newly elaborated approach is "tested" in a large-scale study for assessing governance sustainability of the country's agriculture at national, sectoral, regional, eco-system and farm levels. It has been proved that it is important to include "missing" Governance Pillar in the assessment of integral and particular sustainability of agriculture and agro-systems of various type. Multiple Principles, Criteria and Indicators assessment of Governance sustainability of Bulgarian agriculture indicate that the Overall Governance Sustainability is at Good but close to Satisfactory level. There is a considerable differentiation in the level of Integral Governance sustainability of different agro-systems. Individual indicators with the highest and lowest values determine the critical factors enhancing or deterring particular and integral Governance sustainability of evaluated agro-system. Results on integral sustainability assessment based on micro and macro data show some discrepancies which are to be taken into consideration in analysis while assessment indicators, methods and data sources improved.
JEL: Q12; Q18; Q56

Introduction

A common feature of all suggested and practically used modern systems for assessing the sustainability of agro-systems is the incorporation of three "dimensions" or "pillars" of sustainability – economic, social and environmental (Bachev et al., 2017; Cruz et al., 2018; EC, 2001; FAO, 2013; Hayati et al., 2010; Kamalia et al., 2017; Lopez-Ridauira et al., 2002; Lowrance et al., 2015; OECD, 2001; Sauvenier et al., 2005; Singh et al., 2009; Terziev et al. 2018; VanLoon et al., 2005). In the last years, a special attention has been

---

[1] *Institute of Agricultural Economics, Sofia, e-mail: hbachev@yahoo.com.*

[2] *Institute of Agricultural Economics, Sofia.*

[3] *Institute of Agricultural Economics, Sofia.*

increasing put on the (good) "governance" as a key for achieving multiple goals of sustainable development at corporate, sectoral, national and international levels (Bachev, 2010; Bosselmann et al., 2008; Gibson, 2006; EU, 2019; Simberova et al., 2012; Kayizari, 2018; UN. 2015). What is more, the list of sustainability objectives has been constantly enlarged, encompassing numerous governance, cultural, ethical etc. standards and goals (Bachev, 2010; Scobie, Young 2018). Simultaneously "new" (cultural, human, governance, etc.) pillars has been widely added to the modern definition of sustainability and the systems of its evaluation and management (Altinay, 2012; ASA, 2019; Bachev, 2018; Nurse, 2006; RMIT University, 2017; UCLG, 2014).

The need to include "the fourth" governance pillar in the concept for understanding and the system of measurement of sustainability is increasingly justified in academic literature (Bachev, 2010, 2018; Baeker, 2014; Burford, 2017; Fraser et al., 2006; Monkelbaan, 2017) as well as finds place in the official documents of different (government, international, private, etc.) organisations (City of Brooks, 2019; EU, 2019; IFAD, 1999). The "good governance" is considered to be both a goal of sustainable development and a means to successfully realised diverse socio-economic, ecological etc. aspects of sustainability. Accordingly, numerous indicators are proposed to evaluate the governance aspect of sustainability mostly at national and international level including the state of the formal institutional framework, implementing policies and strategies, human resources development, established capacity, management of public authorities, stakeholder involvement in public decision-making and control, etc. (Bell, Morse 2008; Bhuta, Umbach, 2014; CoastalWiki, 2019; Ganev et al.,2018; Monkelbaan, 2017; Spangenberg et al., 2002).

Nevertheless, the building of the system for understating and assessing the "new" governance aspect (pillar) of agrarian sustainability is a "work in progress". Still, there is no general consensus on: whether and how to include the governance as a new pillar of agrarian sustainability; how to define the governance (and the overall) agrarian sustainability; what are the relations between the governance sustainability of a farming enterprise and that of agriculture; what are the critical factors of governance (and overall) sustainability; how to formulate, select, measure and integrate diverse sustainability indicators; and how to properly evaluate the level of governance (and overall) sustainability in a dynamic world where hardly anything is actually "sustainable".

Most of the suggested approaches for "assessing" governance sustainability are at conceptual and/or qualitative level. The few existing systems for governance sustainability measurement focus entirely of national and international level (comparison) without taking into consideration the specificity of the agricultural sector and the multiple agri-(sub)systems of various types. In some cases, the governance aspect of agrarian (sectoral) and farm (enterprise) sustainability are wrongly treated as identical. What is more, all available systems for governance sustainability assessment contain a list of "universal" indicators equally applicable (appropriate) for the unique (socio-economic, market, institutional, political, natural etc.) conditions of an individual country, and quite specific state and factors of agricultural development in each country and community, and the great variety of agricultural systems within a country, region, subsector, eco-system, type of farming organisation, etc.

Often the governance sustainability is evaluated on the base of qualitative analysis and experts estimates without applying any consistent methodology, reliable (representative, first-hand, micro) information, and quantitative methods. Commonly a holistic approach for sustainability assessment is not applied, and the "purely" governance, and "purely" economic, and "purely" ecological, and "purely" social aspects of agrarian development are studied (evaluated) independently from one another. Studying and assessing the governance sustainability is usually restricted to formal institutional environment and/or public modes without taking into account the important market, private, collective, and hybrid forms, and critical (and often dominating) "informal" governance.

Rarely a hierarchical structure or systematic organisation for sustainability indicators selection is applied and the individual components of governance (and the overall) agrarian sustainability are (pre)determined by direct "arbitrary" selection of different indicators. Generally, there is no any system (approaches, weights, interpretation modes, etc.) for the integration of the governance sustainability indicators in different areas into integral governance and sustainability level. The later prevents the proper understanding and assessment the specific role of various aspects of governance sustainability in the overall governance and agrarian sustainability as well as an effective improvement ("management") of the governance and overall sustainability. Finally, most of the proposed systems of sustainability assessment cannot be practically used by the managerial bodies at different decision-making levels since they are difficult to understand, calculate, monitor, correctly interpret and used in the everyday activity of individual agents, organisations and agencies.

In Bulgaria, like in many other countries, there are a very few studies on governance issues related to agrarian sustainability (Bachev, 2010, 2018; Bachev et al., 2016; Bachev, Treziev, 2018; Georgiev, 2013; Marinov, 2019; Zvyatkova, Sarov, 2018) and the governance aspect (pillar) of agrarian sustainability (Bachev, 2016, 2017, 2018; Bachev et al. 2018; Bachev, Treziev, 2017, 2019). Moreover, practically there are no comprehensive assessments of the governance sustainability in the sector and its importance for the overall agrarian sustainability at the present stage of development.

This paper tries to fill the gap and suggests a holistic framework for understanding and assessing the governance sustainability of Bulgarian agriculture. The newly elaborated approach is applied (tested) in a first in a kind large-scale study for assessing the governance sustainability of country's agriculture at national, sectoral, regional, eco-system and farm levels, and its contribution to the overall agrarian sustainability in Bulgaria.

Framework for Assessing Governance Sustainability of Bulgarian Agriculture

Sustainability of agriculture is a "system characteristic"[5] and has to be perceived as "ability to continue over time" (Bachev, 2005; Hansen, 1996). It characterises the ability (internal

---

[5] In academic literature, and managerial and assessment practices still there is no consensus about "what is" (how to define) agrarian sustainability which is commonly defined as "alternative ideology" (Edwards et al., 1990.; VanLoon et al., 2005); "new strategy" (Mirovitskaya and Ascher,

capability and adaptability) of agriculture to maintain its managerial, economic, social and environmental functions in a long period of time. Agrarian sustainability has four major aspects ("pillars") which are equally important and have to be always accounted for – governance sustainability, economic sustainability, social sustainability, and environmental sustainability.

The "governance sustainability" characterises the efficiency of the specific system of governance in an evaluated agro-system (national, subsector, ecosystem, regional, farming enterprise, etc.). Accordingly, a "good governance" means a superior governance sustainability, while a "bad" (inefficient) governance corresponds to inferior governance sustainability. Governance sustainability is simultaneously a major system feature as well as a means to achieve other multiple goals of the system and the "states" of economic, social and environmental sustainability. Having in mind its important role for achieving, maintain and improving the overall agrarian sustainability, it could be underlined, that the governance sustainability is the "first" (pillar) among (four) "equals".

Maintaining multiple functions (sustainability) of agriculture requires an effective social order – a system of diverse (governing) mechanisms and forms regulating, coordinating, stimulating, and controlling the behaviour, actions and relations of individual agents at various levels – farm, local, regional, national, transnational, global (Bachev, 2010). The system of governance includes a number of district components all of which have to be included in the sustainability assessment – *institutional environment* ("rule of the game'), *market* modes and mechanisms ("market order'), *private* modes and mechanisms ("private order'), and *public* modes and mechanisms ("public order') (Figure 1).

Agriculture consists of many agro-systems – from individual "farming plot", a "farm enterprise", an "agri-ecosystem", an "agro-region", up to a "national", "European" and "global". In this study we focus on the assessment of the (governance) sustainability of Bulgarian agriculture at the national level as well and for the principle agricultural systems in the country – main type of farming organisations, major subsectors of agriculture, general kinds of agro-ecosystems, and all administrative (agro)regions (Figure 1). The farm is the lowest level, where the management and organisation of agricultural activity (and sustainability) is carried out, and where all aspects of agrarian sustainability are "realised" and could be feasibly assessed (Bachev, 2005). That is why the farm (agro-system) rather than the smaller agro-systems within a farm boundary is the first level of agrarian (economic, governance, integral, etc.) sustainability assessment.[6]

2001); "characteristic of agrarian system like „ability for achieving multiple goals" (Brklacich et al., 1991; Hansen, 1996) or "capability (potential) for maintain and improve its functions" (Lopez-Ridaura et al., 2002; Lewandowski et al., 1999); "process of understanding and adapting to changes" (Raman, 2006), etc.

[6] Many holistic sustainability assessment frameworks put a smaller ecosystem ("individual farming plot", "a pond", etc.) as the lowest (first) level of sustainability assessment in agriculture (Sauvenier et al., 2005).

Figure 1

Components and Levels of Assessment of Governance Sustainability in Agriculture
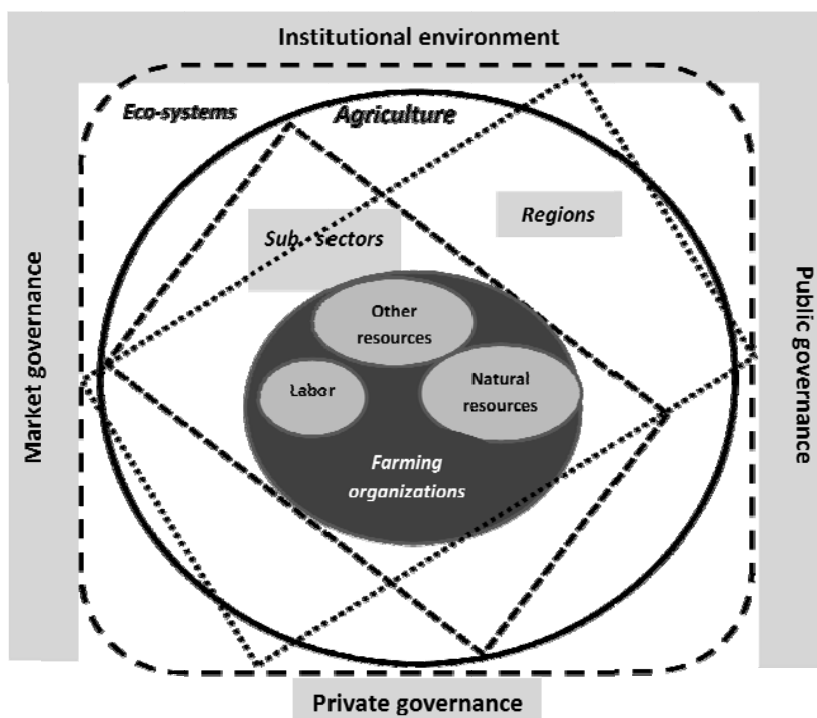
Source: authors

Furthermore, a special distinction is made between the governance sustainability of agriculture and the sustainability of management ("governance") structures in agriculture.[7] While the sustainability of certain type of farms (e.g. "family holding") is included as major criteria for assessing the "social" (pillar) of agrarian sustainability, the specific level of sustainability of the individual governing structures (different type of farms, producers organisations, administrative bodies, etc.) is not a part of or related to the agrarian sustainability evaluation. It is well known that sustainable development is commonly associated with the adaptation of farms and other governance structures to constantly evolving socio-economic, market, institutional and natural environment which process is associated with diminishing importance ("sustainability") and/or liquidation of a certain type of farms (public, cooperative, small-scale), restructuring and modernisation of farming enterprises and agrarian administration, and the emergence of diverse complex, vertically integrated and hybrid forms of governance, etc.

---

[7] A comprehensive framework for assessing sustainability of farming enterprises is suggested by Bachev (Bachev, 2017, 2018).

On the other hand, the Governance sustainability of agriculture expresses the ("working") state and contribution (toward sustainability goals) of the principle governing mechanisms and forms in the evaluated agro-system. Most of these mechanisms and modes of governance concern (affect) the specific governing structures used by individual agents (including farms, farming organisations, contractual and vertically integrated forms) and their sustainability but many are related to (farms' relations with and) other agrarian agents (resource owners, labour, inputs suppliers, processors, retailers, final consumers, agrarian administration, etc.), while other are associated with intra-entity/farm elements (e.g. enforcement of work, food safety, animal welfare, and environment standards, etc.).

In order to identify the individual indicators for assessing the (governance) sustainability of Bulgarian agriculture a hierarchical system of well-determined Principles, Criteria, Indicators, and Reference Values for each Aspect (Pillar) of sustainability is elaborated. Detailed justification of that *new* approach and the ways and criteria for selection of sustainability Principles, Criteria, Indicators and Reference Values are presented in other publications by Bachev (2017, 2018), and Bachev et al. (2017, 2018).

The *Governance Sustainability Principles* are "universal" and relate to the multiple functions of agriculture representing the states of sustainability, which is to be achieved (Figure 2). For the "specific" contemporary conditions of Bulgarian (and European Union) agriculture following five (governance sustainability) principles related to the generic (five) mechanisms and modes of governance[8] are identified: Good legislative system, Democratic management, Working agrarian administration, Working market environment, and Good private practice.

The *Governance Sustainability Criteria* are precise standards ("measurement approaches") for each of the Principles representing a resulting state of the evaluated system when the relevant sustainability Principle is realised. For the contemporary conditions of Bulgarian agriculture 20 Criteria for assessing diverse aspects of the governance sustainability are specified. For instance, for the principle Good legislative system four Criteria are selected: Harmonisation with the European Union policies, Extent of the European Union policies implementation, Beneficiaries' satisfaction of the European Union policies, and Policies effects.

The *Governance Sustainability Indicators* are quantitative and qualitative variables of different types which can be assessed in the specific conditions of evaluated agri-system, allowing measurement of compliance with a particular Criterion. The set of Indicators provides a representative picture for the agrarian sustainability in all its aspects. For assessing the Governance sustainability of Bulgarian agriculture at a micro (farm) and macro (sectoral, regional, eco-system, etc.) levels a system of respectively 22 and 26 Indicators are specified[9]. For instance, for the Criteria Policies effects an Indicator Level of

---

[8] Components of the governance system of agriculture is comprehensively presented by Bachev (2010).
[9] For selection of the Sustainability Indicators a number of criteria, broadly applied in sustainability assessment literature and practices, were used: Relevance to reflecting aspects of sustainability, Discriminatory power in time and space, Analytical soundness, Intelligibility and synonymity, Measurability, Governance and policy relevance, and Practical applicability (Sauvenier et al., 2005).

subsidies comparing to the average for the sector is selected for farm level, as well as two Indicators for the aggregate (sectoral) level – Coefficient of subsidies distribution from Pillar 1, and Coefficient of distribution of investment support comparing to share in Net Value Added.

Figure 2

Framework for Assessing Sustainability of Bulgarian Agriculture
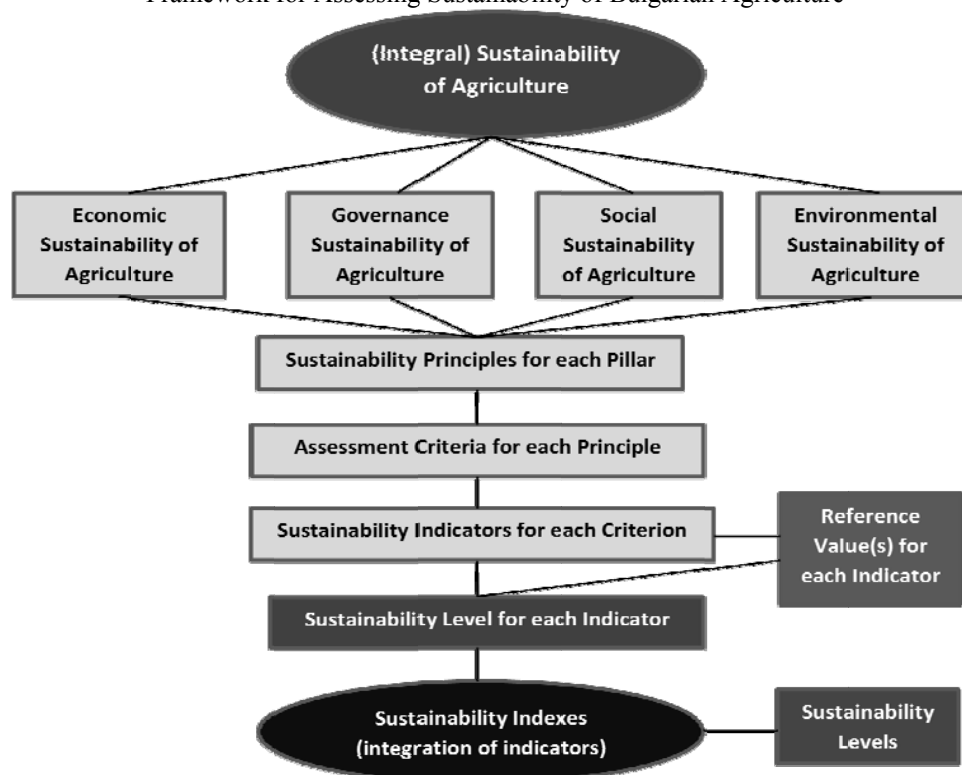
Source: authors

For assessing the particular sustainability level, a system of specific Reference Values (sustainability norms, range, and standards) for each Indicator is needed. The *Governance Sustainability Reference Values* are the desirable levels for each Indicator according to the specific conditions of evaluated agro-system. They assist the assessment of sustainability levels giving guidance for achieving (maintaining, improving) particular aspect and the overall agrarian sustainability. Most of the Reference Values show the level(s), at which the long-term sustainability of agrarian Governance sustainability is "guaranteed" and improved. Depending on the extent of the Reference value achievement, the evaluated agro-system may be with a "high", "good", or "low" sustainability, or to be "unsustainable". For instance, the agrarian system with a higher than the sectoral public

support (level of subsidies) is more sustainable than others as far as Policy effects are concerned, and vice versa.

Very often, individual Indicators for each Criterion and/or different Criteria, and Principles of sustainability are with unequal, and frequently with controversial levels. That significantly hardens the overall assessment requiring a transformation into "unitless" Sustainability Index and integration of estimates (Figure 2). Diverse quantitative and qualitative levels for each indicator are transformed into an Index of sustainability (ISi) applying appropriate scale for each Indicator (Bachev et al., 2018).

The Integral Sustainability Index for a particular Criterion (SI(c)), Principle (SI(p)), and Aspect of sustainability (SI(a)), and the Integral Sustainability Index (SI(o)) for evaluated agro-system is calculated applying "equal weight" for each Indicator in a particular Criterion, of each Criterion in a particular Principle, and each Principle in every Aspect of sustainability. Using "equal" rather than differentiated weight is determined by the fact that individual Sustainability Aspects, and indeed Sustainability Principles, are "by definition" equally important for the Integral Agrarian Sustainability. At the same time, differentiation of the weights of individual Criteria within each principle and the individual Indicators within each Criterion is difficult to justify as well as to a great extent unnecessary (practically unimportant for the Integral assessment) having in mind the big number and small relative contribution of each Indicator[10].

The Integral Index for a particular Criterion (SI(c)), Principle (SI(p)), and Aspect of sustainability (SI(a)), and the Integral Sustainability Index (SI(o)) are arithmetic averages of the Indices of composite Indicators, Criteria and Principles, calculated by the following formulas:

$SI(c) = \sum SI(i)/n$ n – number of Indicators in a particular Criterion;

$SI(p) = \sum SI(c)/n$ n – number of Criteria in a particular Principle;

$SI(a) = \sum SI(p)/n$ n – number of Principles in a particular Aspect;

$SI(o) = \sum SI(a)/4$

For assessing the level of Governance and Integral sustainability of agro-systems in Bulgaria the following scale, defined by the leading experts in the area (Bachev et al. 2018) are used:

Index range 0.81-1 for a "High" level of sustainability;

Index range 0.50-0.8 for a "Good" level of sustainability;

Index range 0.26-0.49 for a "Satisfactory" level of sustainability;

Index range 0.06-0.25 for an "Unsatisfactory" level of sustainability;

Index range 0-0.05 for "Non-sustainable" state.

---

[10] Calculations with and without differentiated weights do not find any significant variations in the sustainability levels (Bachev et.al, 2019).

The integration of Indicators does not diminish the analytical power of suggested assessment system, since it makes it possible to compare (specific and integral) sustainability of diverse aspects of an agro-system and of agro-systems of different types, as well as identify "critical" factors for maintaining and improving sustainability. Besides, since the assessment of sustainability levels for the individual Indicators is a (pre)condition for of the integration itself, the primary information always is available and could be analysed in details if that is necessary. Depending on the objectives of final users and analysis, the extent of integration of Indicators could be differentiated. While farm managers, investors, researchers etc. may prefer detailed information for each Indicator, for decision-making at a higher level (government, policy-makers, international) more aggregated assessment are needed (sufficient).

An elaborated holistic framework for assessing the Governance sustainability of Bulgarian agriculture is tested using experts and stakeholders assessments, and 2018 survey data[11] from the managers of 104 "typical farms" of different size and juridical type, production specialisation, and ecological and geographical locations. Structure of surveyed farms approximately corresponds to the real structure of farms of different categories in Bulgaria. Classification of surveyed farms into juridical type, size, production specialisation, ecological and geographical location is done according to the official definitions used in Bulgaria (and European Union).

In Bulgaria, like in many other countries, there are no official data for calculating most of the governance, socio-economic and environmental sustainability indicators at lower (farm, eco-system, subsector, regional) level (Bachev et al., 2018). Therefore, micro and middle-level assessment of socio-economic, environmental and governance sustainability is entirely based on the "original" first-hand information collected from the farm managers. The composite (Aspect and Integral) Sustainability Index of each evaluated agri-system (farming organisation, agricultural subsector, agri-ecosystem, geographical region, etc.) is calculated as an arithmetic average of the Indices of relevant farms belonging to that system.
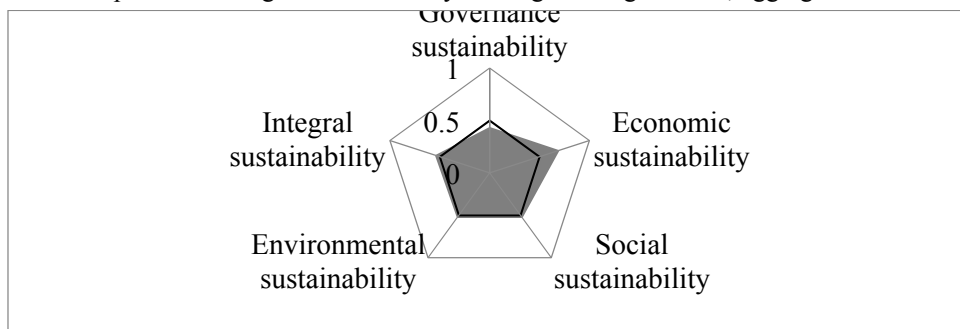

Governance and Integral Sustainability of Bulgarian Agriculture

Comprehensive assessment of Governance sustainability of Bulgarian agriculture by using aggregate (sectoral) and farming (survey) data shows unlike results – Satisfactory level in the former case, and close to Satisfactory" but Good level in later (Figures 3, 4). Overall and Principles sustainability estimates based on farm managers assessments are higher than those calculated on the base of the official (statistical, FADN, etc.) information and experts estimates (Figure 5). Discrepancies in Principles Democratic management, Working market environment, and Good legislative system are crucial, putting Governance sustainability in different levels. Thus Governance sustainability assessments have to be based on complementary macro and microdata in order to increase accuracy.
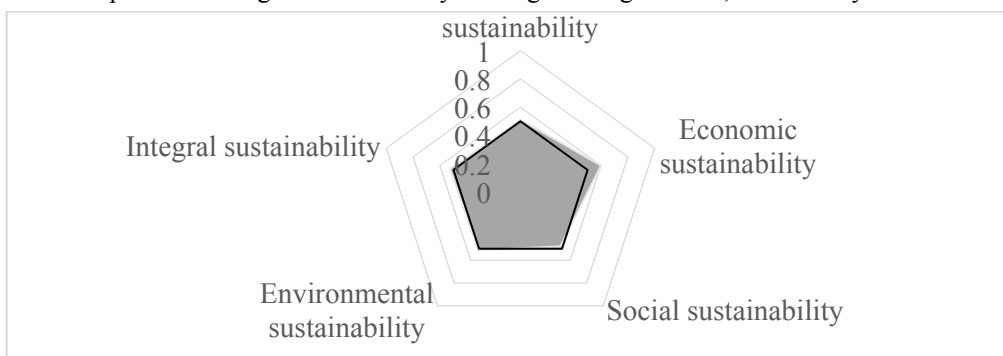

Figure 3

Aspects and Integral Sustainability of Bulgarian Agriculture, aggregate data

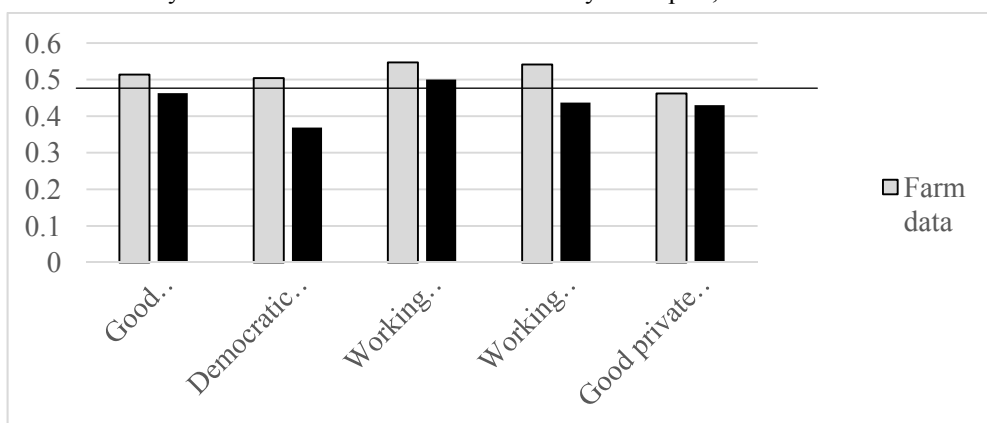*Source: Agro-statistics, experts' assessments*

Figure 4

Aspects and Integral Sustainability of Bulgarian Agriculture, farm survey data

Source: survey with farm managers

Figure 5

Sustainability Indexes for Governance Sustainability Principles, sectoral and farm data

Source: authors

Inclusion of Governance Aspect changes Integral Sustainability Index of Bulgarian agriculture using sectoral (with 0,03), and to a smaller extent farm (with 0,005) based estimates (Figure 6). Taking into account that aspect does not modify Overall (Good) sustainability level using both types of information. There are also differences in Sustainability Indexes for other aspects based on sectoral and farm data (Figure 3, 4) particularly for Economic and Social sustainability (0,1 and 0,05). Estimates based on official sectoral data for Economic, Social and Environmental aspects are higher than corresponding levels based on micro-farm data. Consequently, they do not affect Integral sustainability compensating contribution to Overall sustainability of Governance pillar.

Figure 6

Integral Sustainability of Bulgarian Agriculture with and without Governance Aspect
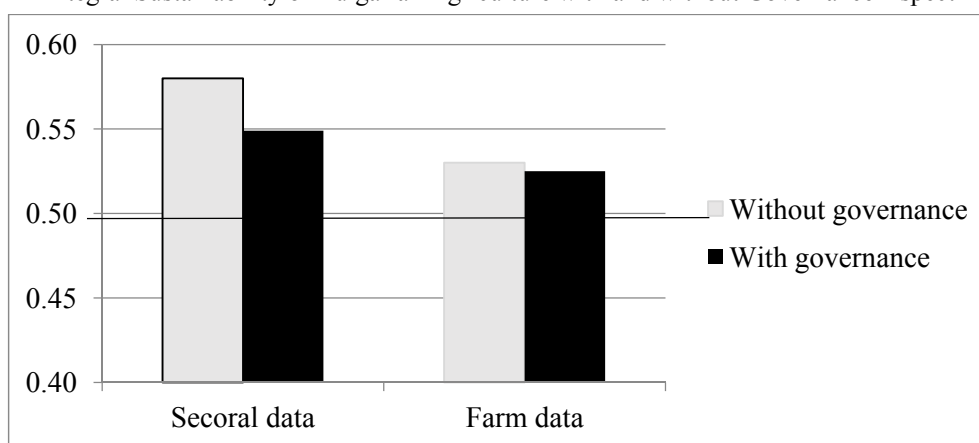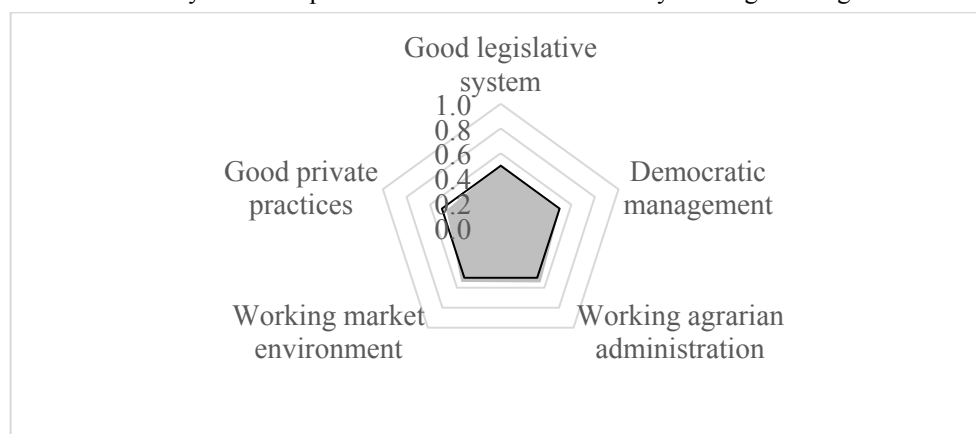

Source: authors calculations

Inclusion of missing new Governance aspect is crucial since it ameliorates the precision of sustainability assessment. However, all dynamics in estimates between sustainability pillars based of different type of data are to be taken into consideration in analysis while assessment indicators, methods and data sources improved.

Overall Level of Governance Sustainability

Multi-indicators assessment of Governance sustainability of Bulgarian agriculture indicates that Index of Overall Sustainability is 0,51 – this represents a close to Satisfactory but Good level (Figure 4). Analysis of Indexes for Principles, Criteria, and Indicators allows identifying components contributing to Governance sustainability. For instance, Governance sustainability of agriculture is relatively low because Index for Principle Good Private Practices is at Satisfactory level (0,46) compromising Integral sustainability. Indices for Good Legislative System and Democratic management are at border with Satisfactory level – 0,5 and 0,51. Indices for Principles Working agrarian administration (0,55) and Working market environment (0,54) are the highest contributing most for elevating Governance Sustainability.

Figure 7

Sustainability for Principles of Governance Sustainability of Bulgarian Agriculture


Source: authors calculation.

Analysis of levels of individual Criteria and Indicators further specifies elements that enhance or reduce sustainability. For instance, insufficient Good Private Practices is determined by low External control (0,38), weak Contracts enforcement (0,49) and inferior Informal system efficiency (0,43) (Figure 8). Despite that Integral Index for Democratic management Principle is at Good level, Indices for two criteria (Impact and Stakeholder participation in decision-making) are at satisfactory territory. Working agrarian administration seems Good, but Access to administrative services is very low (0,34) at Satisfactory level. The same is for Working market environment, which is Good while Index for Criteria Resource concentration reviles low sustainability (0,43).

Individual sustainability Indicators give information about specific factors determining one or another value of particular Criteria – e.g. ineffective Access to administrative services is determined by insufficient Agrarian administration efficiency (0,31) and undeveloped Administrative services digitalisation (0,37) (Figure 9); Satisfactory sustainability for Resource concentration is a consequence of low Possibility for lands extension (0,37), etc.

Low Indicators values help identify areas that require improvement through adequate changes in the institutional environment, public policy, agrarian administration, collective actions and management strategies. Most critical for increasing the Governance sustainability of country's agriculture at the current stage are progressive improvements in Farmer's participation in decision-making, Agrarian administration efficiency, Administrative services digitalisation, Possibility for lands extension, Management Board external control, Level of informal system efficiency, Subsidies in Income, Extent of contract enforcement, Acceptability of legal payments, and Lands concentration.

Figure 8

Sustainability for Criteria* of Governance Sustainability of Bulgarian Agriculture
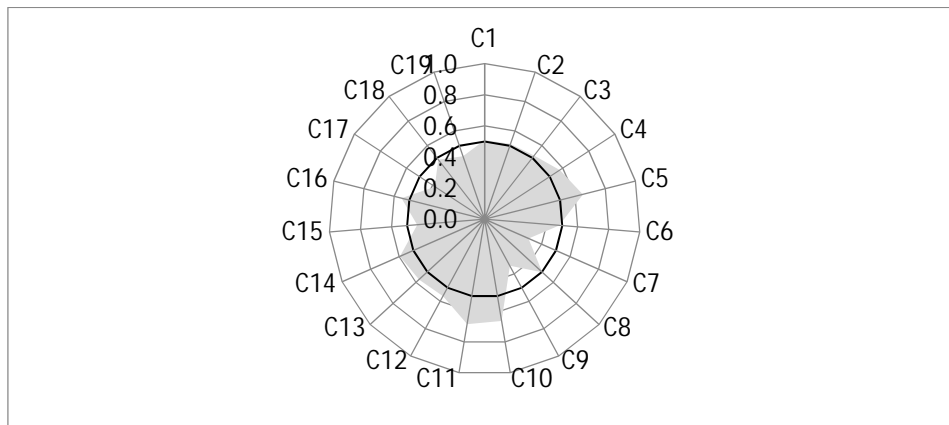
* C1-Extent of policies implementation; C2-Extent of beneficiary satisfaction of EU policies; C3-Policies effects; C4-Representation; C5-Transparency; C6-Impact; C7-Stakeholder participation in decision-making; C8-Minimum costs of using; C9-Access to administrative services; C10-Information availability; C11-Quality of services; C12-Market access; C13-Free competition; C14-Competitive allocation of public resources; C15-Resource concentration; C16-Regulation implementation; C17-External control; C18-Contracts enforcement; C19-Informal system efficiency

Source: authors calculation

Figure 9

Indicators* for Assessing Governance Sustainability of Bulgarian Agriculture
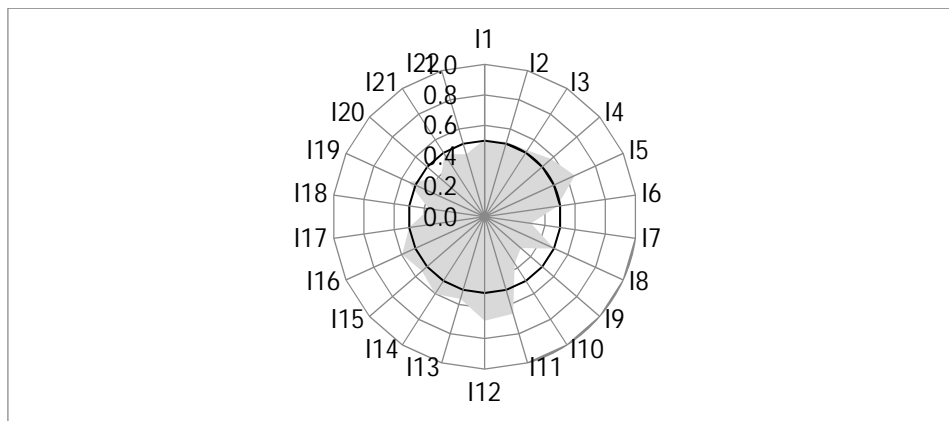
* I1-Extent of CAP implementation; I2-Extent of beneficiary satisfaction of EU policies; I3-Subsidies distribution; I4-Representativeness of state and local authorities; I5-Access to information; I6-Subsidies in Income; I7-Farmer's participation in decision-making; I8-Acceptability of legal payments; I9-Agrarian administration efficiency; I10-Administrative services digitalisation; I11-Extent of awareness; I12-Administration service costs; I13-Market access difficulties; I14-Market competition; I15-Prices negotiation possibilities; I16-Extent of competitive allocation of public resources; I17-Lands concentration; I18-Possibility for lands extension; I19-Extent of regulations implementation; I20-Management Board external control; I21-Extent of contract enforcement; I22-Level of informal system efficiency.
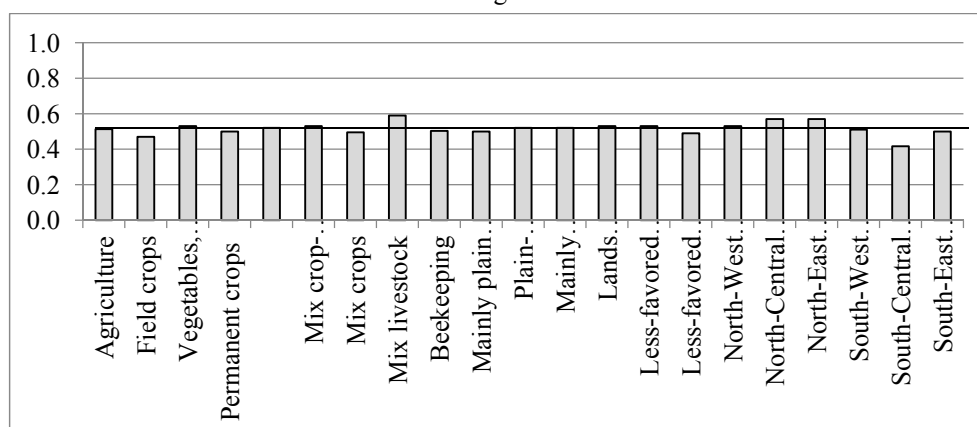
Source: farm survey

Higher levels of Indicators show absolute and comparative advantages of Bulgarian agriculture in terms of good governance, most prominent of which presently are Representativeness of state and local authorities, Market competition, Extent of competitive allocation of public resources, Access to information, Extent of awareness, and Administration service costs. Top value(s) of Governance sustainability is relatively low indicating a great potential for improvement of governance efficiency.

Governance Sustainability in Agricultural Sub-sectors

Highest (Good) level of Governance sustainability is demonstrated in Mix livestock production, followed by Vegetables, flowers, mushrooms and Mix crop-livestock sectors (Figure 10). Thus, these subsectors contribute to the greatest extent for improving overall sustainability. On the other hand, in Field crops and Mix crops level of Governance sustainability is Satisfactory specifying subsectors decreasing in a biggest degree Integral sustainability of agriculture.

Figure 10

Governance Sustainability in Agricultural Sub-sectors, Agri-ecosystems and Regions of Bulgaria

Source: farm survey

Different sub-sectors are characterised by the significant variation of Governance sustainability levels for main Principles (Figure 11). For instance, Principle Good legislative system is best realised in Vegetables, flowers, mushrooms and Mix-livestock productions, and worst in Field crops and Grazing livestock sub-sectors. Democratic management is best applied in Mix livestock production, while it is not Satisfactory in Beekeeping, Mix crops and Mix crop-livestock sub-sectors. Principle Working agrarian administration is effectively applied in Beekeeping, Grazing livestock and Mix crop-livestock, while the administration does not work well for Field crops. Sustainability for principle Working market environment is highest in Mix livestock, Beekeeping and Mix

crop-livestock, while market mechanisms are not working well for Field crops producers. Good private practices are best implemented in subsector Mix livestock and Mix crop-livestock, while in all other they are applied Satisfactorily, particularly inferior in Beekeeping and Field crops.

Analysis of that type identifying inferior (critical) levels for sustainability Principles has a high practical value showing specific directions (public, collective and private action areas) for improving Particular and Integral Governance sustainability in the evaluated subsector.

Further analysis of the sustainability level for individual Indicators allows complete unpacking critical factors enhancing or decreasing Governance sustainability. Different agricultural sub-sectors in Bulgaria are characterised by significant variation in levels of individual Governance Sustainability Indicators.

Field crops subsector has very Good sustainability for Market competition and Representativeness of state and local authorities, and marginal for Prices negotiation possibilities (Figure 12). For most Indicators Governance sustainability is Satisfactory, being particularly low in Administrative services digitalisation and Extent of competitive allocation of public resources.

Figure 11

Indices of Principles of Governance Sustainability in Sub-sectors of Bulgarian agriculture
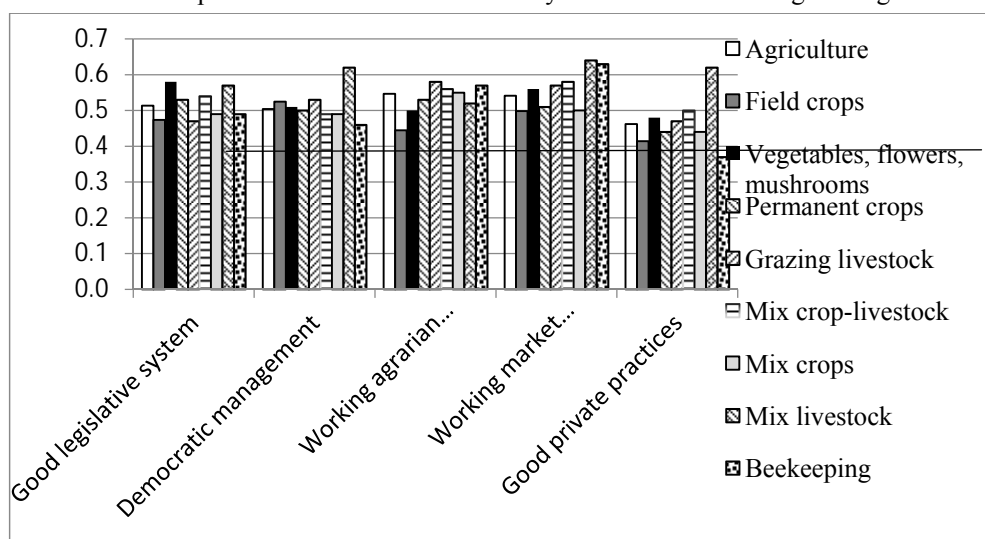
Source: farm survey

Governance sustainability of Vegetables, flowers and mushrooms subsector is Good for a number of Indicators and highest for Extent of regulations implementation, Representativeness of state and local authorities, Market access difficulties, Administration service costs, Extent of CAP implementation, and Market competition (Figure 12). It is at Satisfactory level for numerous Indicators being quite low for Agrarian administration

efficiency and Administrative services digitalisation. Moreover, for Management Board external control, it is Unsatisfactory affecting adversely sector's overall sustainability.

Figure 12

Governance Sustainability Indicators in Crop Sub-sectors in Bulgaria

Field crops   *Vegetables, flowers, mushrooms*

Source: farm survey

Governance sustainability of subsector of Permanent crops is Good for many Indicators, superior of which are Administration service costs, Access to information, Extent of awareness, Market competition (Figure 12). Governance sustainability is Satisfactory for many indicators and particular low for Agrarian administration efficiency and close to the Unsatisfactory level for Farmer's participation in decision-making.

Governance sustainability of Mix crops productions is Good for several Indicators but particularly high for Market competition and Administration service costs (Figure 12). This subsector demonstrates Satisfactory sustainability for numerous areas being particularly

low for Possibility for lands extension and Agrarian administration efficiency, and in Unsatisfactory level for Farmer's participation in decision-making.

Governance sustainability in Grazing livestock sub-sector is particularly Good for Extent of awareness (Figure 13). This production experiences Satisfactory level of governance efficiency in multiple directions being particularly low for Agrarian administration efficiency.

Governance sustainability in Beekeeping is High for Extent of awareness and very Good for Extent of competitive allocation of public resources (Figure 13). At the same time, numerous Indicators are quite low at Satisfactory level and Unsatisfactory for Agrarian administration efficiency and Management Board external control.

Figure 13

Governance Sustainability Indicators in Livestock Sub-sectors in Bulgaria
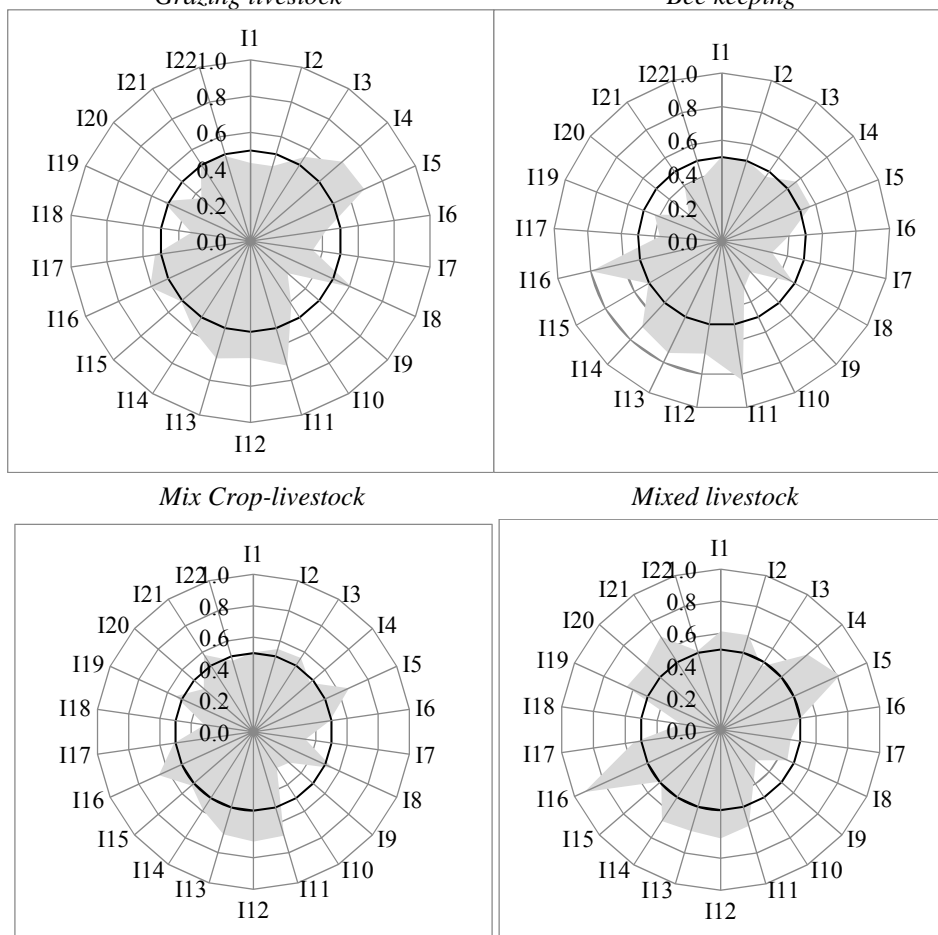
Source: farm survey

Governance sustainability of Mix crop-livestock productions is Good for numerous Indicators being superior for Administration service costs (Figure 13). It is Satisfactory in multiple directions and quite low for Administrative services digitalisation.

Governance sustainability of Mix livestock productions is High for Extent of competitive allocation of public resources and Access to information (Figure 13). This industry demonstrates a very Good level for many indicators such as Representativeness of state and local authorities, etc. For several key areas sustainability is at Satisfactory level particularly low for Agrarian administration efficiency while for Possibility for lands extension is Unsatisfactory.

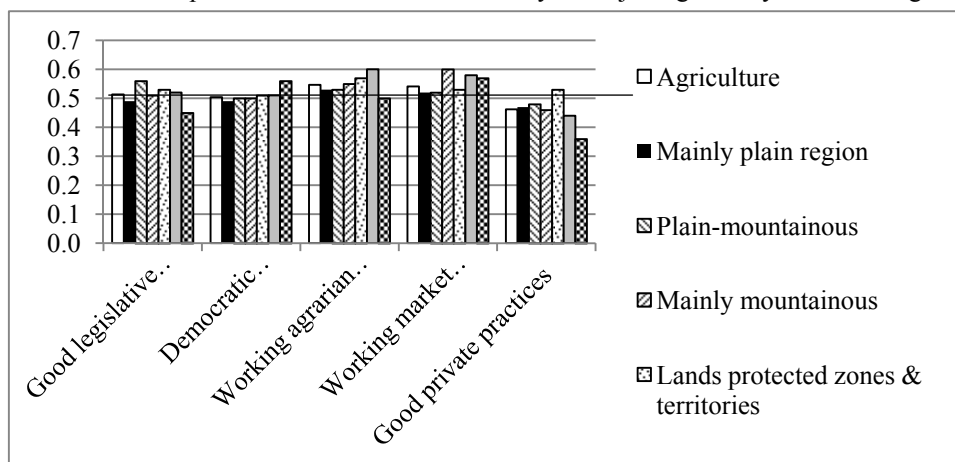**Governance Sustainability in Major Agro-ecosystems in Bulgaria**

Governance sustainability of major agro-ecosystems also demonstrates a great variation as highest (Good) ones are registered for agro-ecosystems with Lands in protected zones and territories and in Less-favored mountainous regions (Figure 10). At the same time, Governance sustainability of two agro-ecosystems Mainly plain and Less-favored non-mountainous (0,49) are below the sectoral average, the second one being at inferior (Satisfactory) level. Thus, the later agro-ecosystems decrease to the biggest extent Integral Governance sustainability of Bulgarian agriculture.

Different agro-ecosystems of the country are characterised by significant differentiations in levels of Indices of Principles of Governance sustainability (Figure 14). Principle Good legislative system is best implemented at Good level in Plain-mountainous agro-ecosystems, while in Less-favored non-mountainous and Mainly plain regions it is at Satisfactory level. Principle Democratic management is best realised in Less-favored non-mountainous agro-ecosystems, in most other types it is same or close to sectoral average, and in Mainly plain regions it is at Satisfactory level. Principle Working agrarian administration is better applied in agro-ecosystems in Less-favored mountainous regions, those with Lands in protected zones and territories, and in Mainly mountainous regions, while in all other types it is below the national level. Principle Working market environment is with the highest value in agro-ecosystems in Mainly mountainous regions, Less-favored mountainous regions, and Less-favored non-mountainous regions, while in other agro-ecosystems it is worse than the national one. Governance sustainability for principle Good private practices is best implemented in Lands protected zones and territories, while in all other agro-ecosystems it is at Satisfactory level, being far worse than the sectoral average in Less-favored non-mountainous regions.

Individual Indicators for Governance sustainability of specific agro-ecosystems of the country have quite different values. Sustainability of agro-ecosystems in Mainly plain regions is with highest governance Indicators for Access to information, Extent of awareness, and Administration service costs (Figure 15). Multiple factors associated with imperfections in the governance system are Satisfactory decreasing (Governance) sustainability of these agro-ecosystems, being particularly low for Farmer's participation in decision-making and Agrarian administration efficiency.

Figure 14

Indices of Principles of Governance Sustainability in Major Agri-ecosystems in Bulgaria

Source: farm survey.

Greatest Governance sustainability Indicators for agro-ecosystems in Plain-Mountainous Regions of the country are Administration service costs, Access to information, Extent of awareness, and Representativeness of state and local authorities (Figure 15). For a number of key Indicators level of Governance sustainability is Satisfactory, being particularly inferior for Farmer's participation in decision-making.

Figure 15

Governance Sustainability Indicators in Different Agri-ecosystems in Bulgaria

Mountainous Regions

Lands Protected Zones and Territories

Less-favored Mountainous

Less-favored Non-mountainous
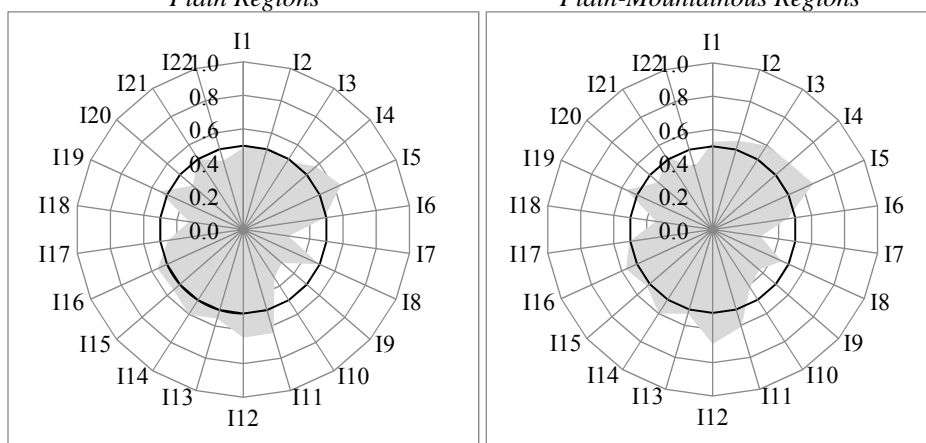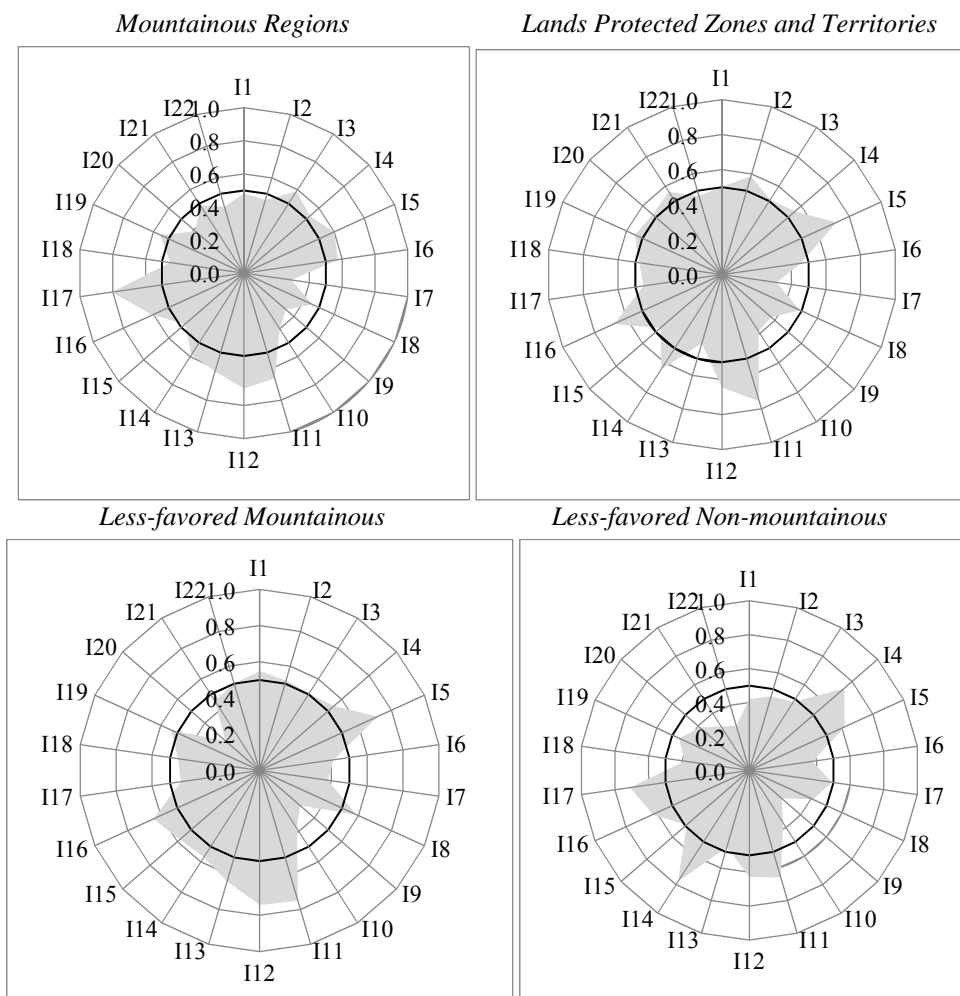
Source: farm survey.

Governance sustainability of agro-ecosystems in Mountainous Regions is enhanced mostly by Quality of services and Information availability (Figure 15). Governance sustainability of these agro-ecosystems is at Satisfactory level for a number of indicators and particularly compromised for Stakeholder participation in decision-making.

Agro-ecosystems with Lands in Protected Zones and Territories are with very Good Governance sustainability for Information availability and Transparency (Figure 15). Governance sustainability of these agro-ecosystems is inferior in a number of areas such as Stakeholder participation in decision-making, Access to administrative services, etc.

Less-favored Mountainous agro-ecosystems are with quite Good Governance sustainability for Information availability, Quality of services, and Transparency (Figure 15). Governance sustainability of such agro-ecosystems is Satisfactory in terms of numerous indicators. Besides, these agro-ecosystems are with Unsatisfactory sustainability as far as Management Board external control is concerned.

Agro-ecosystems in Less-favored Non-mountainous regions are with very Good sustainability for Market competition, Representativeness of state and local authorities, Lands concentration, Extent of awareness, Administration service costs, Extent of competitive allocation of public resources, and Access to information (Figure 15). For all other Indicators Governance sustainability of this specific agro-ecosystem is Satisfactory, and for Agrarian administration efficiency even Unsatisfactory.

Governance Sustainability in Agro-regions of Bulgaria

There is a significant variation in different aspects of Governance efficiency among administrative (and agricultural) regions of the country. Principle of Governance sustainability Good legislative system dominates in North-West and North-Central regions, while in South-Central and South-West regions, it is only applied Satisfactorily (Figure 14). Principle of Democratic management is best realised in North-East and South-West regions, and insufficiently in South-Central and North-West regions. Principle Working agrarian administration is effectively applied in North-East region and North-East regions. Simultaneously, that Principle is Satisfactory applied in South-Central region. Principle Working market environment is highly regarded in North-East region, while in South-Central and South-East regions is inferior. Good private practices are best carried out in North-Central region and North-East regions while in the three southern regions, they are enforced Satisfactorily.

Figure 16

Indices of Principles of Governance Sustainability in Agro-regions in Bulgaria
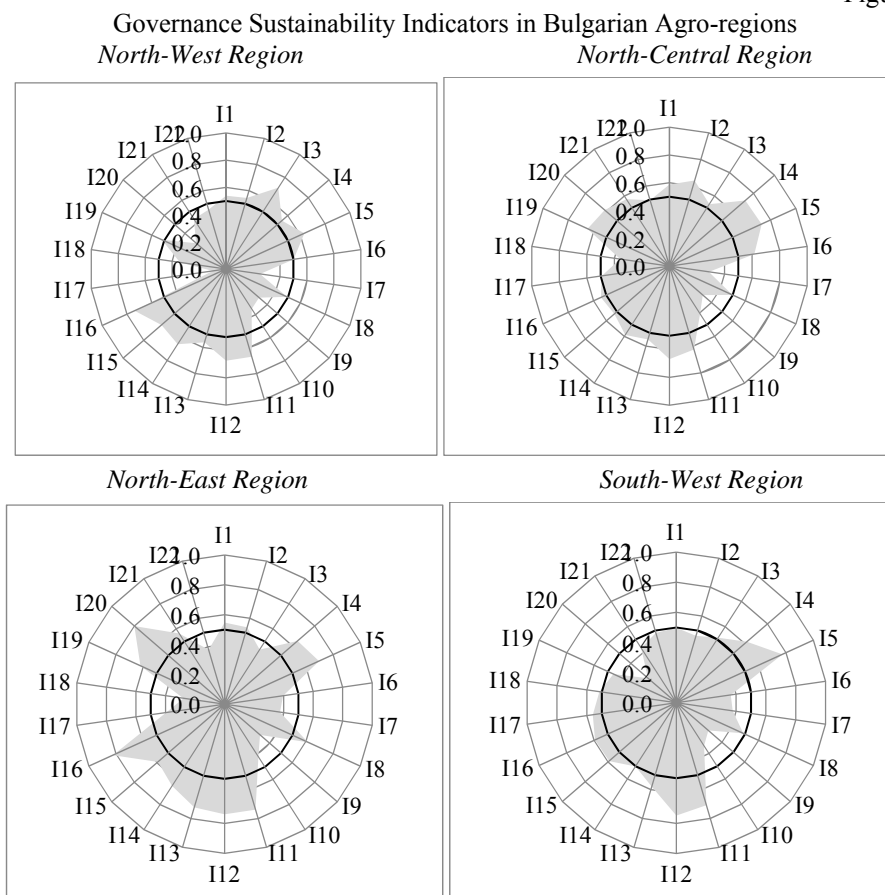

Source: farm survey

126
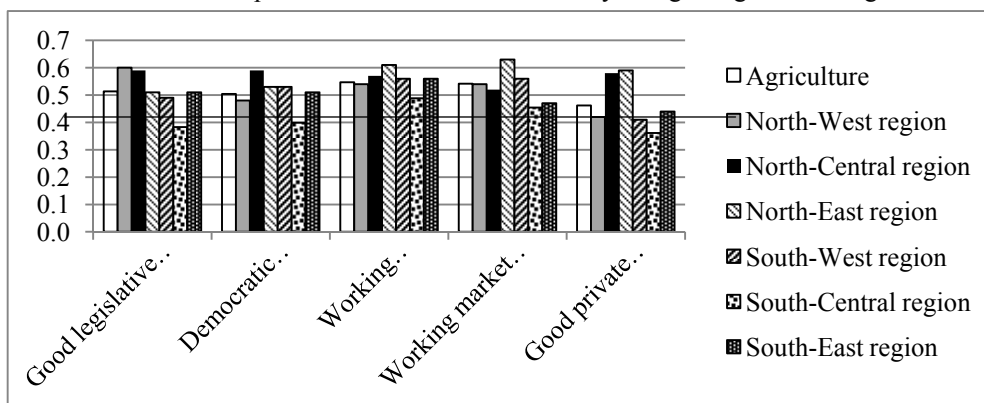
There is a big variation in the levels of Governance sustainability indicators across the territory of the country. In North-West Region the highest value of sustainability is for Indicators Extent of competitive allocation of public resources and Subsidies distribution (Figure 17). In this agro-region Governance sustainability is Satisfactory for a number of Indicators, being quite low for Management Board external control, and Unsatisfactory for Farmer's participation in decision-making.

Governance sustainability of agriculture in North-Central Region is very Good in respect to Access to information and Representativeness of state and local authorities (Figure 17). Simultaneously, the governance system in this agro-region works only Satisfactory in regards to Farmer's participation in decision-making, Agrarian administration efficiency, Possibility for lands extension, Administrative services digitalisation, and Lands concentration.

Figure 17

Governance Sustainability Indicators in Bulgarian Agro-regions

South-Central Region	South-East Region
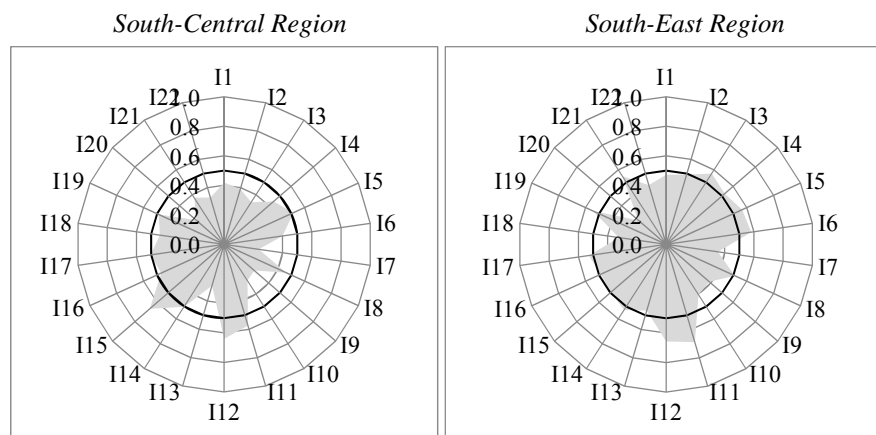
Source: farm survey

Agrarian Governance sustainability in North-East Region demonstrates a superior (High) level for Extent of competitive allocation of public resources and is on the border with highest level for Management Board external control (Figure 17). Governance efficiency is also quite Good in several other directions: Extent of awareness, Administration service costs, Market access difficulties, and Access to information. Nevertheless, Governance sustainability of agriculture in that region is at Satisfactory level for several key areas and especially low for Possibility for lands extension.

Agriculture in South-West Region is with very Good Governance sustainability for Indicators such as Access to information, Administration service costs, and Extent of awareness (Figure 17). On the other hand, for many indicators Governance sustainability of this agrarian region is at Satisfactory level, efficiency of governance system in that region's agriculture being close to Unsatisfactory level for Agrarian administration efficiency, and Unsatisfactory for Management Board external control.

South-Central Region" agriculture is only in solid Good territories for two Indicators – Administration service costs and Prices negotiation possibilities (Figure 17). At the same time, Governance sustainability of the sector is at Satisfactory level for numerous Indicators being close to Unsatisfactory level for Agrarian administration efficiency, Administrative services digitalisation and Market access difficulties. On top of that, Governance sustainability of region's agriculture is Unsatisfactory in terms of Farmer's participation in decision-making and Management Board external control.

Governance sustainability of South-East Region agriculture is with relatively Good Indicators only with respect to Administration service costs and Extent of awareness (Figure 17). In many other areas Governance sustainability of this agrarian region is at Satisfactory level. What is more, for Management Board external control the Governance sustainability is at Unsatisfactory territory.

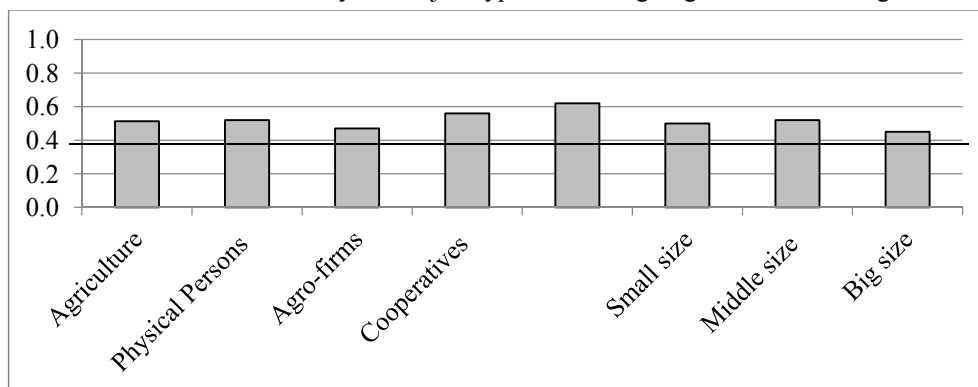**Governance Sustainability for Major Types of Bulgarian Farms**

Suggested approach let assess what is Governance sustainability for the various farming structures in the country, and how dominating institutional environment and modes of governance affect (contribute toward) sustainable development of major type of Bulgarian farms.

The system of governance of Bulgarian agriculture does not impact equally farms with different juridical type and size of operations. Governance sustainability of agriculture is the highest for Semi-market (Mainly subsistence farms) and cooperative (Cooperatives) sectors – Integral Governance Sustainability Index for these type of farming organisations is much higher than sectoral average (Figure 18). Other main juridical type of farms like Physical Persons and Middle size farming enterprises also have higher than average Governance Sustainability Index. Thus, all these four types of farming organisations contribute to the greatest extent to increasing (maintaining) the Good Governance sustainability of Bulgarian agriculture.

At the same time, for Small size farms Governance sustainability is below national one and at the border with Satisfactory level. Furthermore, for Agro-firms and Big size farming enterprises Governance sustainability is at Satisfactory level. Consequently, these major type of farming enterprises diminish to the greatest extent the overall Governance sustainability of country's agriculture.

Figure 18

Governance Sustainability for Major Type of Farming Organisations in Bulgaria

Source: farm survey.

Principles of Governance sustainability are applied ("work") differently in relations to various type of Bulgarian farms. Governance Sustainability Principles Good legislative system, Democratic management and Good private practices the most favourably affect Cooperatives and Mainly subsistence farms (Figure 19). Governance Sustainability Principle Working agrarian administration is most effectively implemented in regards to Mainly subsistence holdings, Physical Persons and Middle size farms. Governance

Sustainability Principle Working market environment is more favourable for Middle size and Small size farms.

On the other hand, individual Principles for Governance sustainability of agriculture are worse applied in and adversely impact the different type of farms. Sustainability for the Good legislative system Principle is at Satisfactory level for Agro-firms and Small size farms. Sustainability principle Democratic management is at Satisfactory level only for Big size farming enterprises. Implementation of principle Working agrarian administration is inferior (Satisfactory) for Big size farms and Cooperatives; sustainability principle Working market environment does not work well for Big size farms and Agro-firms; and Good private practices are not applied sufficiently and badly affect Agro-firms, Middle size farms, Physical Persons, and Small size holdings.

Governance sustainability of agriculture carried out in the farms of Physical Persons is very Good in terms of Administration service costs, Extent of awareness, Access to information, Market competition, and Extent of competitive allocation of public resources (Figure 20). At the same time, governance system for this farms work only Satisfactory in respect to Farmer's participation in decision-making, Agrarian administration efficiency, Administrative services digitalisation, Possibility for lands extension, Management Board external control, Level of informal system efficiency, Subsidies in Income, and Extent of contract enforcement.
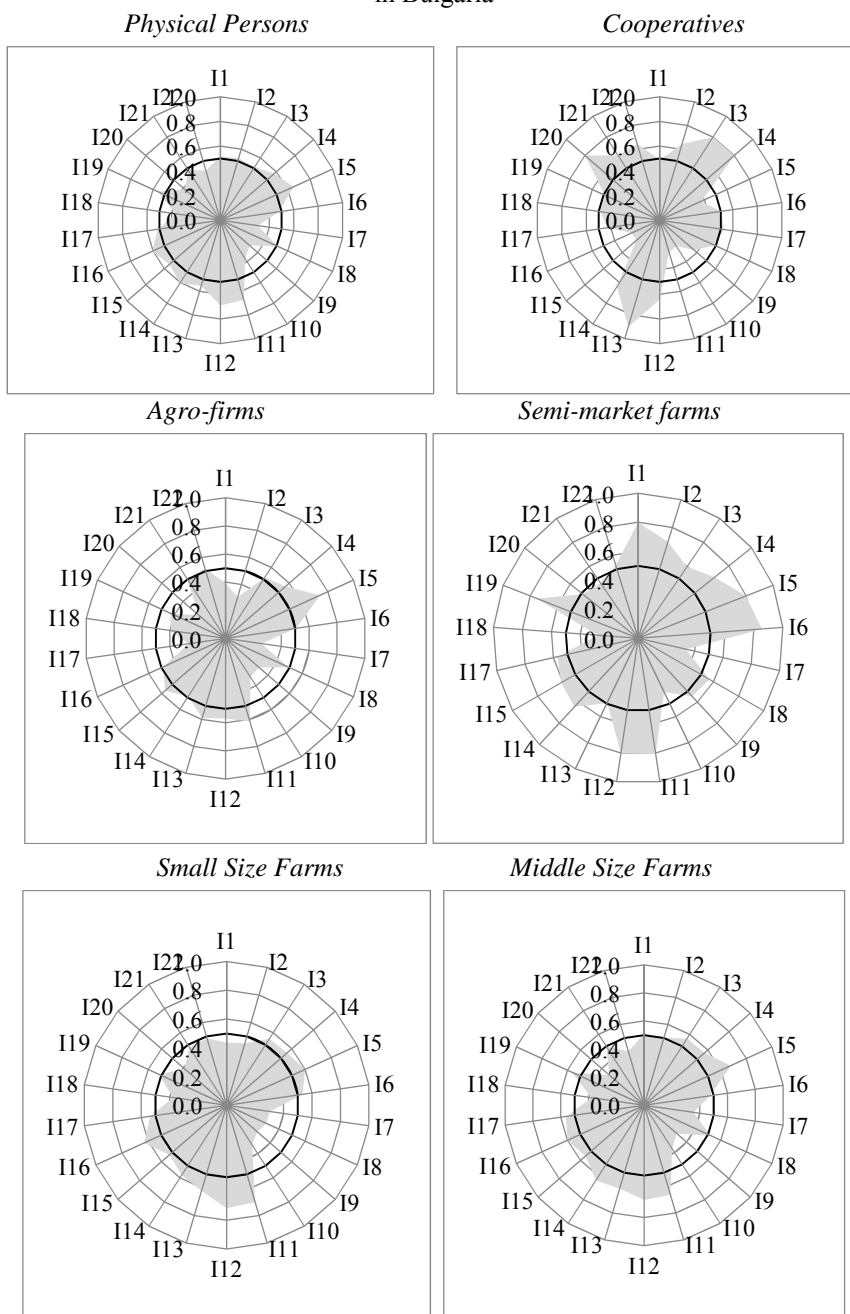
Figure 19

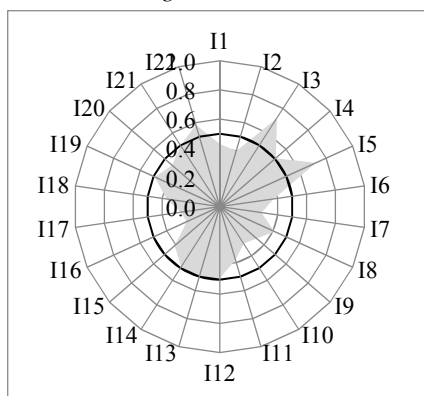Indices of Governance Sustainability Principles for Major Type of Bulgarian Farms
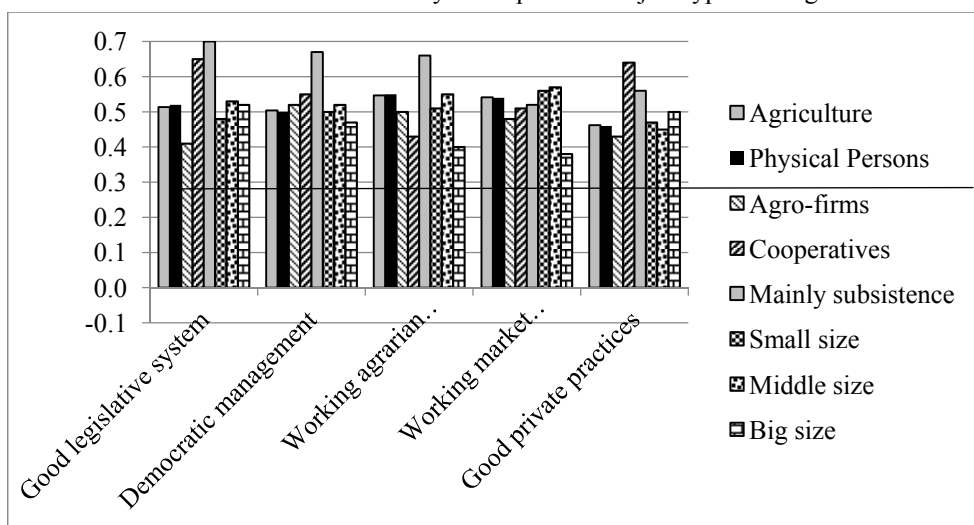
Source: farm survey.

Figure 20
Impact of (Contribution to) Governance Sustainability Indicators of Major Type of Farms
in Bulgaria

Big Size Farms

Source: farm survey.

Governance sustainability of agriculture in the cooperative sector (Cooperatives) is quite High for Market access difficulties (Figure 20). Cooperative farms also are in very favourable (Good but at border with High level) situation for three Indicators: Subsidies distribution, Management Board external control, and Representativeness of state and local authorities, as well with a very Good level for several other areas. Simultaneously, Governance sustainability for cooperatives agriculture is Satisfactory for Access to information, Agrarian administration efficiency, Lands concentration, Extent of CAP implementation, Acceptability of legal payments, Possibility for lands extension, and Extent of regulations implementation. What is more, Governance sustainability in the area of Extent of awareness is very close to Unsatisfactory level while for three Indicators it is Unsatisfactory – Administrative services digitalisation, Prices negotiation possibilities, and Extent of competitive allocation of public resources.

Governance sustainability in Agro-firms is only relatively Good for Access to information and Extent of awareness (Figure 20). On the other hand, for numerous Indicators the level of agrarian Governance sustainability in the corporate sector is Satisfactory, namely Extent of beneficiary satisfaction of EU policies, Agrarian administration efficiency, Administrative services digitalisation, Extent of CAP implementation, Possibility for lands extension, Extent of regulations implementation, Acceptability of legal payments, Market competition, and Extent of competitive allocation of public resources. Furthermore, the level of governance efficiency is very close to Unsatisfactory level for Farmer's participation in decision-making and Lands concentration, and it is Unsatisfactory for Management Board external control.

Diverse aspects of Governance sustainability of agriculture carried out in farming organisations of different size is also characterised with a great variation. In Semi-market sector (Mainly Subsistence farms) it is High for Subsidies in Income and Extent of awareness, and at the border with superior level for Extent of CAP implementation, Access to information, and Administration service costs (Figure 20). Governance sustainability for this major type of farming organisations is also very Good in terms of Extent of regulations

implementation, and Extent of beneficiary satisfaction of EU policies. At the same type, Governance sustainability in the huge "semi" market sector of Bulgarian agriculture is at Satisfactory level for Farmer's participation in decision-making, Administrative services digitalisation, Extent of contract enforcement, Market access difficulties, and Management Board external control, and quite low for Possibility for lands extension.

Governance sustainability in Bulgarian small scale agriculture (Small Size Farms) is very Good in regards to Administration service costs and Extent of awareness (Figure 20). On the other hand, Governance sustainability in that dominant sector of agriculture is at Satisfactory level in multiple directions – Farmer's participation in decision-making, Acceptability of legal payments, Administrative services digitalisation, Possibility for lands extension, Management Board external control, Extent of CAP implementation, Extent of beneficiary satisfaction of EU policies, Extent of contract enforcement, Level of informal system efficiency, being particularly low for Agrarian administration efficiency.

Governance sustainability of agriculture in Middle Size Farms is quite Good for Access to information, Administration service costs, Extent of awareness, Market competition, Market access difficulties and Extent of competitive allocation of public resources (Figure 20). Simultaneously, sustainability is Satisfactory in several key areas – Agrarian administration efficiency, Management Board external control, Farmer's participation in decision-making, Administrative services digitalisation, Possibility for lands extension, Level of informal system efficiency and Subsidies in Income.

Governance sustainability of agriculture in the large scale enterprises (Big Size Farms) is favourably Good in respect to two areas – Subsidies distribution and Access to information. However, for many indicators, Governance sustainability for this type of farming organisations are at Satisfactory level. Moreover, Governance efficiency for this large "subsector" of Bulgarian agriculture is close to or at Unsatisfactory level for Extent of competitive allocation of public resources, Lands concentration, and Farmer's participation in decision-making.

Conclusions

This study has proved that it is important to include "missing" Governance Pillar in the assessment of Integral sustainability of agriculture and sustainability of agro-systems of various type. Furthermore, it has demonstrated that (and how) Governance sustainability level can be quantitatively "measured" and "integrated" in the system of overall sustainability assessment. Finally, the elaborated holistic framework has been successfully tested in Bulgarian conditions and showed promising results for proper understanding and fully "unpacking" the Governance sustainability of the country's agriculture.

This first in a kind comprehensive assessment of the Governance sustainability of Bulgarian agriculture lets make some important specific conclusions about the state of (Governance) sustainability of diverse agro-systems, and recommendations for improvement of the managerial and assessment practices. Elaborated and experimented holistic approach gives a possibility to improve the overall and governance sustainability

assessment. Therefore, it has to be further discussed, experimented, improved and adapted to the specific conditions of evaluated agricultural systems and needs of decision-makers at different levels.

Multiple Principles, Criteria and Indicators assessment of the Governance sustainability of Bulgarian agriculture indicates that the Overall Sustainability is at a Good but very close to Satisfactory level. Besides, there is a considerable differentiation in the level of Integral Governance sustainability of different agro-systems in the country – agricultural sub-sectors, agro-ecosystems, agro-regions, and type of farming organisations. What is more, individual indicators with the highest and lowest sustainability values determine the "critical" factors enhancing or deterring the particular and integral Governance sustainability of evaluated agro-system. Last but not least important, results on the integral agrarian sustainability assessment of this study based on micro (farm) and macro (statistical, etc.) data show some discrepancies which have to be taken into consideration in the analysis and interpretation, while assessment indicators, methods and data sources further improved.

This study reviled that much of the needed information for calculating the Governance sustainability is not readily available and have to be collected through experts' assessments, farm managers and professional associations surveys, etc. Nevertheless, a big challenge is the (level of) competency and willingness for "honest" estimates of interviewed agents. For instance, for some highly "sensitive" questions in the conducted ("anonymous") survey, many farm managers did not respond due to lack of opinion, experience, capability and/or reluctance for assessment, etc.

Having in mind the importance of holistic assessments of this kind for improving agrarian sustainability in general, and Governance sustainability of agriculture in particular, they are to be expended and their precision and representation increased. The later requires improvement of precision through enlargement of surveyed farms and stakeholders and incorporating more "objective" data from surveys, statistics, expertise of professionals in the area, etc.

References

Altinay H. (2012). Global Governance Audit, Global Economy & Development. – Working Paper 49, Brookings Institution, Washington, DC.

ASA. (2019). More than Green, ASA, http://www.morethangreen.es/en/ideology/four-sustainabilities-cultural-economic-social-environmental-sustainability/#sthash.IjtNJlyH.dpbs.

Bachev, H. (2005). Assessment of Sustainability of Bulgarian Farms. Proceedings, XIth Congress of the European Association of Agricultural Economists, Copenhagen.

Bachev, H. (2010). Governance of Agrarian Sustainability. New York: Nova Science Publishers.

Bachev, H. (2016). A Framework for Assessing Sustainability of Farming Enterprises. – Journal of Applied Economic Sciences, Spring Issue, Vol XI, 1(39), p. 24-43.

Bachev, H. (2016). Defining and Assessing the Governance of Agrarian Sustainability. – Journal of Advanced Research in Law and Economics, Vol. VII, N 4(18), p. 797-816.

Bachev, H. (2017). Socio-economic and environmental sustainability of Bulgarian farms. – Agricultural and Resource Economics: International Scientific E- Journal, Vol. 3 (2), p. 5-21.

Bachev, H. (2017). Sustainability Level of Bulgarian Farms. – Bulgarian Journal of Agricultural Science, 23 (1), p. 1-13.

Bachev, H. (2017). Sustainability of Bulgarian Farming Enterprises during EU CAP Implementation. – Journal of Applied Economic Sciences, 2(48), p. 422-451.

Bachev, H. (2018). The Sustainability of Farming Enterprises in Bulgaria. Cambridge Scholars Publishing.

Bachev, H. (2018). Institutional Environment and Climate Change Impacts on Sustainability of Bulgarian Agriculture. – Bulgarian Journal of Agricultural Science, 24 (4), p. 523-536.

Bachev, H., Ivanov, B., Toteva, D., Sokolova, E. (2016). Agrarian Sustainability and its Governance – Understanding, Evaluation, Improvement. – Journal of Environmental Management and Tourism, Vol. 7, N 4 (16), p. 639-663.

Bachev, H., Ivanov, B., Toteva, D., Sokolova, E. (2017). Agrarian sustainability in Bulgaria – economic, social and ecological aspects. – Bulgarian Journal of Agricultural Science, 23 (4), p. 519-525.

Bachev, H., Terziev, D. (2017). Environmental Sustainability of Agricultural Farms in Bulgaria. – Journal of Environmental Management and Tourism, Vol 8, N 5(21), p. 968-994.

Bachev, H., Terziev, D. (2018). A Study on Institutional, Market and Natural Environment Impact on Agrarian Sustainability in Bulgaria. – Journal of Environmental Management and Tourism, Vol. IX, N 3 (27), p. 452-478.

Bachev, H., Terziev, D. (2019). Sustainability of Agricultural Industries in Bulgaria. – Journal of Applied Economic Sciences, Vol. XIV, N 1(63), p. 118-129.

Bachev, H., Koteva, N., Kaneva, K., Yovchevska, P., Mitova, D., Ivanov, B., Alexandrova, S., Toteva, D., Sarov, A., Sokolova, E. (2018). A System for Assessing Sustainability of Bulgarian Agriculture. IAE, Sofia.

Bachev, H., Koteva, N., Mitova, D., Ivanov, B., Anastasova-Chopeva, M., Toteva, D., Sarov, A., Sokolova, E., Todorova, K., Mitov, A. (2019). Assessment of Sustainability of Bulgarian Agriculture. IAE, Sofia.

Baeker, G. (2014). Fourth Pillar of Sustainability. Economicdevelopment.org, February 18, 2014, http://economicdevelopment.org/2014/02/fourth-pillar-of-sustainability-2/.

Bhuta, N. and G.Umbach (2014): Global Governance by Indicators, European University Institute, http://globalgovernanceprogramme.eui.eu/global-governance-by-indicators/

Bell, S., Morse, S. (2008). Sustainability Indicators: Measuring the Immeasurable?. Earthscan: London.

Brklacich, M., Bryant C., Smith, B. (1991). Review and appraisal of concept of sustainable food production systems. – Environmental Management, 15(1), p. 1-14.

Bosselmann, K., Engel, R., Taylor, P. (2008). Governance for Sustainability – Issues, Challenges, Successes. IUCN, Gland, Switzerland.

Burford, G., Hoover, E., Velasco, I., Janoušková, S., Jimenez, A., Piggot, G., Podger, D., Harder, M. (2013). Bringing the "Missing Pillar" into Sustainable Development Goals: Towards Intersubjective Values-Based Indicators. – Sustainability 2013, 5, p. 3035-3059; doi:10.3390/su5073035.

City of Brooks. (2019). Municipal Sustainability Plan, Five Pillars. City of Brooks https://www.brooks.ca/211/Sustainability.

Cruz, F., Mena, Y., Rodríguez-Estévez, V. (2018). Methodologies for Assessing Sustainability in Farming Systems. – In: Gokten, S., Gokten, P. O. Sustainability Assessment and Reporting. IntechOpen, DOI: 10.5772/intechopen.79220.

CoastalWiki. (2019). Measuring sustainability: The self-assessment of sustainability using indicators and a means of scoring them. Coastal Wiki, http://www.coastalwiki.org/wiki/Measuring_sustainability.

EC. (2001). A Framework for Indicators for the Economic and Social Dimensions of Sustainable Agriculture and Rural Development.

Edwards, C., Lal, R., Madden, P., Miller, R., House, G. (eds.). (1990). Sustainable Agricultural Systems. Soil and Water Conservation Society, Iowa.

EU. (2019). European Governance. EU, https://eur-lex.europa.eu/summary/glossary/governance.html.

FAO. (2013). SAFA. Sustainability Assessment of Food and Agriculture systems indicators, FAO.

Fraser, E., Dougill, A., Mabee, W., Reed, M., McAlpine, P. (2006). Bottom up and top down: Analysis of participatory processes for sustainability indicator identification as a pathway to community

empowerment and sustainable environmental management. – Journal Environment Management, 78, p. 114-127.

IFAD. (1999). Good Governance: An Overview, IFAD, Executive Board – Sixty-Seventh Session, Rome, 8-9 September 1999, EB 99/67/INF.4.

Ganev, G., Popova, M., Bönke, F. (2018). Bulgaria Report, Sustainable Governance Indicators 2018, SGI 2018, 2, Bertelsmann Stiftung.

Georgiev, M. (2013). Impact of the Administration Structure and Transaction Costs on the Agricultural Land Market. – Trakia Journal of Sciences, 11(11), p. 527-534.

Gibson, R. (2006). Beyond the Pillars: Sustaibaility Assessment as a Framework for Effective Integration of Social, Economic and Ecological Considerations in Significant Decision-Making. – Journal of Environmental Assessment Policy and Management, Vol. 8, N 3, p. 259-280.

Hansen, J. (1996). Is Agricultural Sustainability a Useful Concept. – Agricultural Systems 50, p. 117-143.

Hayati, D., Ranjbar, Z., Karami, E. (2010). Measuring Agricultural Sustainability. – In: Lichtfouse, E. (ed.). Biodiversity, Biofuels, Agroforestry and Conservation Agriculture. – Sustainable Agriculture Reviews 5, Springer Science, p. 73-100.

Kayizari, C. (2018). Good governance as a pillar of Sustainable Development in Africa, PPP https://www.aydin.edu.tr/tr-tr/arastirma/arastirmamerkezleri/afrikam/Documents/Oturum%203%20-%20Good-Governance-as-a-pillar-for-sustainable-Development-in-Africa_CaesarKayizari.pdf.

Marinov, P. (2019). Index of localisation of agricultural holdings and employees in the rural areas of the South Central Region for Bulgaria. – Bulgarian Journal of Agricultural, Vol. 25, N 3, pp. 464-467.

Mirovitskaya, N., Ascher, W. (eds.). (2001). Guide to Sustainable Development and Environmental Policy. Duke University Press, London.

Kamalia, F., Borges, J., Meuwissen, M., Boer, I., Lansink, A. (2017). Sustainability assessment of agricultural systems: The validity of expert opinion and robustness of a multi-criteria analysis. – Agricultural Systems, Vol. 157, p. 118-128.

Lewandowski, I., Härdtlein, M., Kaltschmitt, M. (1999). Sustainable crop production: definition and methodological approach for assessing and implementing sustainability. – Crop science 39, p. 184-193.

Lopez-Ridauira, S., Masera, O., Astier, M. (2002). Evaluating the sustainability of complex socio-environmental systems. The MESMIS framework. Ecological indicators 2, p. 135-148.

Lowrance, R., Hendrix, P., Odum, E. (2015). A hierarchical approach to sustainable agriculture. – American Journal of Alternative Agriculture.

Monkelbaan, J. (2017). Achieving the Sustainable Development Goals: Theoretical insights and case studies for making sustainability governance more integrative. – V. R. F. Series, N 499, Institute of Developing Economies, Japan External Trade Organization.

Monkelbaan, J. (2018). Governance for the Sustainable Development Goals Exploring an Integrative Framework of Theories, Tools, and Competencies. Springer.

Nurse, K. (2006). Culture as the Fourth Pillar of Sustainable Development. Commonwealth Secretariat: London, UK.

OECD. (2001). Environmental indicators for agriculture. Vol. 3: Methods and Results. OECD, Paris.

Raman, S. (2006). Agricultural Sustainability. Principles, Processes and Prospect. New York: The Haworth Press Inc.

RMIT University. (2017). The four pillars of sustainability. RMIT University https://www.futurelearn.com/courses/sustainable-business/1/steps/157438.

Simberova, I., Kocmanova, A., Nemecek, P. (2012). Corporate Governance Performance Measurement – Key Performance Indicators. – Economics and Management, Vol. 17, N 4, http://158.129.0.15/index.php/Ekv/article/view/3033/0.

Scobie, S., Young, O. (2018). Integrating Governance into the Sustainable Development Goals, Post2015, UNU-IAS, Policy Brief 3.

Sauvenier, X., Valekx, J., Van Cauwenbergh, N., Wauters, E., Bachev, H., Biala, K., Bielders, C., Brouckaert, V., Garcia-Cidad, V., Goyens, S., Hermy, M., Mathijs, E., Muys, B., Vanclooster, M., Peeters, A. (2005). Framework for Assessing Sustainability Levels in Belgium Agricultural Systems – SAFE, Belgium Science Policy, Brussels.

Singh, R., Murty, H., Gupta, S., Dikshit, A. (2009). An overview of sustainability assessment methodologies. – Ecological indicators, 9, p. 189-212.

Spangenberg, J., Pfahl, S., Deller, K. (2002). Towards indicators for institutional sustainability: Lessons from an analysis of Agenda 21. – Ecological Indicators, 2, p. 61-77.

Terziev, D., Radeva, D., Kazakova, Y. (2018). A new look on agricultural sustainability and food safety: Economic viability. – In: Bachev, H., Che, S., Yancheva, S. (eds.). Agrarian and Rural Revitalisation Issues in China and Bulgaria. KSP Books, p. 231-242.

UCLG. (2014). Culture: Fourth Pillar of Sustainable Development. United Cities and Local Governments, Barcelona.

VanLoon, G., Patil, S., Hugar, L. (2005). Agricultural Sustainability: Strategies for Assessment. London: SAGE Publications.

UN. (2015). The Sustainable Development Goals (SDGs). United Nation.

Zvyatkova, D., Sarov, A. (2018). Process of Transfer of Family Farms for Sustainability of Agricultural Cooperatives. – In: Role of Family Business for Sustainable Rural Development. – Agrarian University, 61 (2), p. 125-134.

Zornitsa Stoyanova[1]
Galina Koleva[2]

ECONOMIC ASPECTS OF URBAN AGRICULTURE

External and internal factors influence the potential of urban agriculture development. They lead to numerous effects and some of them stressed on the economic aspect. The benefits and effects of urban agricultural practices have an impact on people, society and the quality of life in the cities. The purpose of the article is based on the evaluation of the economic aspects of urban agriculture to propose conclusions about its economic benefits for people and society in Bulgaria. The study provides a literary review of various perceptions and authoritative views on the effect of urban agriculture from an economic point of view. The data is collected by qualitative methods of research connected to the economic aspects of urban agriculture and assessment is used for generalized conclusions about the economic benefits for people and society. The results are part of scientific project DN 05/18 Urban agriculture as a strategy for improving the quality of life of urban communities, funded by the Bulgarian Science Fund.
JEL: Q1; Q01

Introduction

Various factors influence the opportunities for the development of urban agriculture. Some of these factors result from the external environment as policy, markets, financing, etc. Other factors are related to the specifics and features of urban agriculture – climate factor, distance from the city, production volume, need for land and water resources. The third group of factors are related to the inclusion of the concept for sustainable development in the implementation of this type of activity – consuming local products, striving to produce environmentally friendly products, increasing land productivity etc. The appearance of the factors that influence the potential for the development of urban agriculture create prerequisites for the occurrence of the effects of this type of activity in environmental, social, economic, educational and other aspects. These factors affect people and their living environment, society and quality of life in the cities.

---

[1] *Assoc. prof. dr., Sofia 1700, Student town "Hristo Botev", UNWE, Natural Resources Economics Department, office 1066, mobile +359 28195460, e-mail: zstoyanova@unwe.bg.*
[2] *Chief. Assist. Dr., Institute for the study of societies and knowledge at BAS, mobile +359 889352814, e-mail: galyak@gmail.com.*

Literature review of topics and perceptions of the economic aspects of urban agriculture

In the literature, the economic aspects of urban agriculture are evaluated according to the level of influence. Nugent (2003) defines two main directions of literature related to the economic impacts of urban agriculture. The first one is connected with the city case studies with quantitative information and the second direction is related to studies of the theoretical economic impacts of urban agriculture with descriptive accounts.

FAO (2007) defines three levels of definition of the economic effects of urban agriculture. On the household level, effects are related to direct economic benefits and the expenditures of urban households obtained in agricultural production. They are described as self-employment, processing income, sales of surplus products, saving on food and health care costs, exchanging of agricultural products for other goods, etc. On the city level, the direct costs of the support given to urban farmers (training, quality control, etc.) that are not carried out by farmers, as well the total indirect costs and benefits from urban agriculture for the city are taken into account. The effects have positive and negative impacts on the social, health and environmental status of the population. The third level is the macro level. The benefits are determined on the basis of the contribution of urban agriculture to gross domestic product (GDP) and its impact on the effectiveness of the national food system.

Fleury and Ba (2005) identify two socio-economic levels of consideration for urban agriculture: the level of the agricultural holding, and its interaction with the surroundings (neighbourhood), and the characteristics of the landscape and the area under cultivation. They also define the positive and negative effects of urban agriculture such as: waste recycling, greening the cities, less health problems, including those resulting from better nutrition for the poorest people in the cities, landscape conservation, water pollution caused by agrochemicals and erosion. All of this can be economically assessed. The positive effects add value to the city (increased income or reduced costs) and negative effects require additional investment or tax payments (Fleury, Ba, 2005). Hallet's et al. (2017) opinion is similar. It addresses two issues related to the urban economy: economic viability and the economic impact on neighbouring areas and the city. Urban farming creates very specific and diverse business challenges and opportunities for farms. According to the authors, urban agriculture also makes an economic contribution to the community. Urban farms can occupy unused territories and abandoned and desolate land, which reduces the municipality's costs of maintaining the territory.

Kinkese and Pride (2017) outline three types of economic benefits from urban agriculture. The first major benefit can be economic savings on food. Urban agriculture reduces food expenditures of farmers. Farm-produced food is consumed in their households and this reduces the overall budget for food. Another economic benefit is that urban agriculture is a source of income from the sale of agricultural products. The last economic impact, according to the authors, is that urban agriculture creates jobs and is a source of employment. Landowners hire either seasonal or full-time employees, depending on the working force requirements.

Authors such as Jamal and Mortez (2014) consider that the importance of urban agriculture and the sale of produced goods should not be underestimated either in volume or in economic value. They argue that the products are sold at the place of production, at local stores and at local farmers' markets. In contrast, other authors (Hunold, et al., 2017) consider that the contribution of urban agriculture to the achievement of economic development goals such as increasing capital assets, generating income or creating jobs is limited. The survey, conducted among the farmers, indicates that the respondents considered that with regard to the economic aspects of urban agriculture it is not economically viable. Opinions on the potential of urban agriculture to create economic benefits vary from shared views that urban agriculture will not continue to be cost-effective in the future to views that economic benefits from urban agriculture may increase in a more favourable financial and political environment (Hunold et al., 2017). Urban farmers and the organizations that support them are sceptical of the economic sustainability of urban farms. There are known cases where there is a great economic impact on small areas, but the reality for many urban farmers is the struggle to achieve results in the first few years and a business that, in many cases, can be rewarding but financially marginal. Hoornweg, Munro-Faure (2008) present different views on the economic sustainability of urban agriculture considering that it does not differ significantly from the economic sustainability of agriculture in general, as it depends on the value of some of the basic resources such as land, water and labour competing to be used for other urban uses. In this regard, the economic sustainability of urban agriculture depends on the application of specialized and improved technologies that allow the optimal use of resources. In regard to the economic benefit of urban agriculture as a source of income, authors as Simatele et al. (2008) argue that the benefits of urban agriculture for generating income are most significant among poor people in the cities because most of them have limited income and assets. Sources of income can also be renting the land and sharing the harvest. Other researchers share the view that urban agriculture can lead to a loss of household income and an increase in household food costs when there is a risk of poor harvests due to climatic conditions such as floods, droughts, natural disasters, etc. (Simatele et al., 2012).

Some authors define the level of the country's development impact on the economic aspect of urban agriculture. Urban agriculture has the potential to stimulate the development of local economies in developing countries, providing better food security and significant job opportunities (Agbonlahor et al., 2007). Nugent (2000) shares the view that the main macroeconomic effects of urban agriculture are related to the provision of food for relatively poor citizens and lower food prices and increased food security. In this respect, urban agriculture has the potential to diversify the economic possibilities and urban access to food resources.

Studies related to the evaluation of the economic aspects of urban agriculture take into account the economic benefits of this activity as a result of waste management. Smit and Nasr (1992) consider that the challenges concerning waste management could be overcome through the use of waste from urban agriculture. The economic effects are for the households that compost and return bio-waste to the soil. The effects are directed to the attitudes of farmers and consumers to rationalize the consumption of the food produced, regardless of its external outlook, in order to optimally utilize the food. Cofie et al. (2006) share the view that urban agriculture can contribute by transforming urban waste into

productive resources. This could be compost production, vermiculture and irrigation with wastewater. On the other hand, urban farms produce bio-waste that can be stored in a landfill and to be sold or exchanged. Drechsel and Kunze (1999) consider that urban agriculture could avoid the costs of waste disposal by implementing the nutrient recycling of organic wastes.

Krikser et al. (2019) determine some of the economic benefits of business-oriented urban agriculture. They are linked to increasing competitiveness through the use of new market opportunities, direct marketing, innovation and customer interaction that enable farmers to respond to changing requirements and market conditions for the achievement of greater economic stability. This business perspective differs from the public perspective, which focuses primarily on secondary or indirect public economic benefits, such as the potential of urban landscapes for improving the economic performance of the cities.

The topic of research interest in the project Urban agriculture in Europe[3], focuses on the economic dimension of urban agriculture as a socio-economic phenomenon. The participants in the working group Entrepreneurial Models of Urban Agriculture (coordinated by Wolf Lohrberg and Pedro Mendes Moreira) analyze and compare urban farms and projects in the context of their innovativeness and adaptability to the urban environment, their involvement in the economic system and its effects on the urban environment and society. Researchers consider that urban farms have the potential to be the "hidden champions" of an urban green development strategy. Various studies present that the adaptation and exploitation of urban and suburban farms from the urban conditions could be successful by implementing activity-oriented strategies and high value-added products; niche products based on organic production as well as through diversification of activities, including a wide range of non-agricultural activities related to primary agricultural production and focused on leisure, hobby, health, education, cultural and nature-related activities (Brayant et al., 2013; Zasada, 2011).

Another research focus on the economic aspects of urban agriculture is directed to the business models of urban agriculture and their role as an instrument for organizing value-adding processes (Henriksen et al., 2012; Van der Schans, 2010). One of the business models is CANVAS and is described as an instrument for analyzing structures and activities with economic and social benefits. The model is implemented after the adjustment and aims to describe and analyze agricultural holdings in different European cities within the European Commission's COST Research Network. As a complex system of interdependences between individual elements (customers/users; added value/products, services; communication channels; income/profits; assets/resources; costs; etc), the implementation of the CANVAS business model is the framework through which is prepared a review and comparative analysis of key success factors, obstacles and barriers, such as the potential for generating business ideas and the innovation of urban agriculture in Europe (Lohrberg et al.,2016; Pölling et al., 2017).

---

[3] COST action Urban Agriculture in Europe (2012-2016 is a networking project funded by the European Cooperation for Science and Technology (COST). Participants from Bulgaria are chief assist. prof. Dona Pickard (ISSK-BAS) and chief assist. prof Galina Koleva (ISSK-BAS).

Figure 1 summarizes the economic benefits of urban agriculture according to some of the opinions found in the literature.

Figure 1

Economic benefits of urban agriculture according to literature review
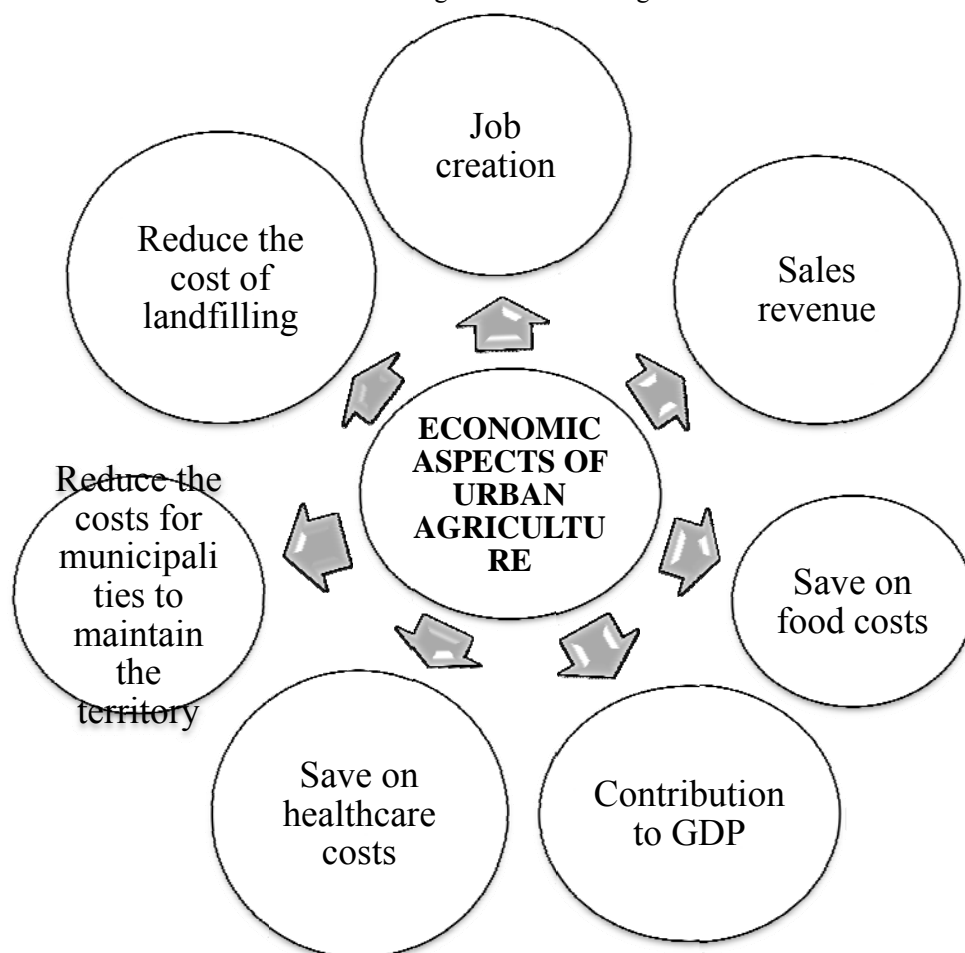
Source: own findings.

Methodological framework

The purpose of the study is based on the evaluation of the economic aspects of urban agriculture to propose conclusions about its economic benefits for people and society in Bulgaria.

The methodological framework of the study includes: 1) Literature review of the economic aspects of urban agriculture; 2) Assessment of the economic aspects of urban agriculture based on a qualitative study; 3) Conclusions on the economic benefits of urban agriculture for the people and society (Figure 2).

Figure 2

Methodological framework
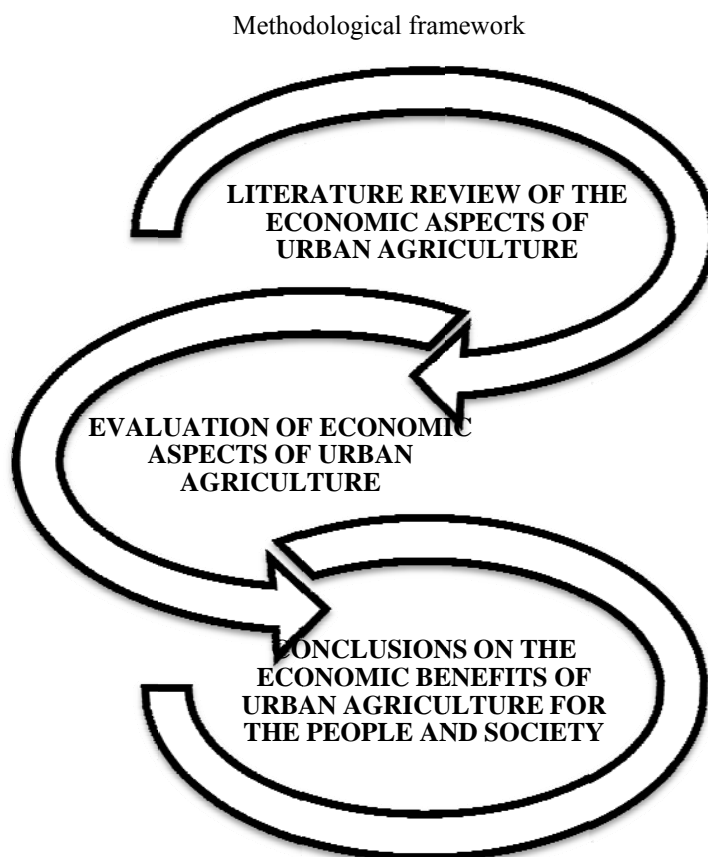
The qualitative research, which serves as an empirical basis for the analysis and conclusions of the article, was conducted under the research project Urban agriculture as a strategy for improving the quality of life of urban communities. The conducted survey includes:

- 25 in-depth interviews with practitioners of urban agriculture in various categories: hobby gardeners, market-oriented farmers in the city, civic activists and representatives of the non-governmental sector, representatives of educational institutions (at all educational levels), municipal officials and representatives of different elements of the food chain (markets, distributors, restaurants);

- 5 focus group discussions with stakeholders on key issues affecting urban agriculture and its potential for improving the quality of life of urban communities;

- 5 expert opinions, providing specific and specialized data on issues regarding available resources for urban agriculture, the role of local authorities and mechanisms for interaction between different actors, participation of civil and private sectors in the creation of sustainable urban farming practices, etc. (Pickard et al., 2018).

The survey was held in 2018. The respondents involved in the survey were experts and stakeholders engaged in urban agricultural practices. The survey provides information on the social, economic and ecological aspects of urban farming practices in the Sofia municipality. Some of the questions are specifically addressed to the economic benefits and effects of urban agriculture. The opinion of the respondents about the unused resources of the Sofia municipality, their attitude to the consumption of healthy food and reduction of health care expenditures were also taken into consideration. The potential of urban agriculture for job creation and for increasing income was also assessed. Respondents who practice urban agriculture received questions related to the volume of production and the way they sell it, the availability of natural resources, in particular land and water, the motives for their activity as urban farmers, including the perception of the activity as a business or hobby, etc.

The results are part of the scientific project DN 05/18 Urban agriculture as a strategy for improving the quality of life of urban communities, funded by the Bulgarian science fund.

Analysis and evaluation of the economic aspects of urban agriculture

The results from the structured interviews and focus groups show that the benefits and effects of practising urban farming are diverse. They describe social, environmental, economic, educational and information effects. The weight of each of the aspects could be different.

The economic impact of urban agriculture is not defined as significant either in the long term or in the short term. In the long term, social and environmental effects are dominant. Respondents consider that the economic benefits of urban agriculture are negligible due to the small scale of production. According to them, no significant economic dimension can be taken into account as a result of the application of the urban agriculture since the products are used mainly for the producer's own consumption. An exception is observed of the surveyed market-oriented farmers who sold products on the market but on a small scale. The benefits of the products from urban farming have mainly of a social (educational effects, communication, community building and networking) and environmental character (creating a cleaner urban environment, enriching the land, restoration and maintenance of biodiversity, production of environmentally friendly, local vegetables and fruits). In this regard, the main aim of urban agriculture is not related to meeting the economic needs. The respondents consider that the non-economic interest stimulates this type of activity, emphasizing that the production does not use fertilizers, preparations and the products are

produced in an environmentally friendly manner. This leads to a limitation of the volume and the income.

According to some respondents, urban agriculture does not have an economic dimension, and the goal is that people are informed in which way the food is produced and where the food comes from. Some respondents do not associate the purpose of practising urban agriculture with economic profit, because the production volume is rather small and is too limited to provide the livelihood of urban residents. According to other urban farmers, people create, communicate and have fun.

"I don't think the economic impact of urban agriculture is that great. In the long term, the social effect, not the economic one, dominates." Z. T., man

"There are no economic effects at this moment, but there could be - when urban agriculture gets larger. Otherwise, it is desirable that the food we buy be produced in the city or as close to the city as possible." K. K., man

Although respondents evaluate the economic benefits with the least importance, they consider that there is still an economic impact from urban farming. Despite the widespread view that the economic benefits of urban agriculture are negligible, some respondents consider that the economic benefits may increase, because vegetables are not treated with fertilizers and this will reflect in increasing demand.

Other interviewers connect the economic benefits of urban agriculture with the consumption of healthy food, which will result in less healthcare expenditure. Practitioners in communal shared gardens expect that the economic benefits will increase in the future.

Respondents divide the economic benefits into two groups: benefits for the individual and benefits for society. They consider that the economic benefits are rather for economic actors who practice urban agriculture, and they have a possibility for subsistence and cost savings for the products consumed by the household. Individual economic benefits are linked to the food production and the saving of financial resources. Respondents share the view that the economic impact may be very large for the individuals, but may be small for the scale of the city. Others associate the economic benefits with saving food costs and the profit they generate when they sell their production. Some respondents believe that their economic performance is very good, especially when it is the season of production and the economic dimension is expressed in financial income and employment.

"The economic effects are for the family. Not so economic as healthy because they know what they consume." Tz. T, woman

"You will not pay money for things that are in the store. If you have a garden of your own, which is already a rarity, you will not pay money for certain vegetables that you can grow yourself." V. D., man

"The results are very good. From a financial point of view, when it's a season and we have production. We receive money from what we offer in the markets, we cultivate three acres. It is really justified, it makes sense from a financial point of view, yes, economic benefits, employment. It would be also harder without the rent we get." V. D., man

Respondents agree that the economic impact of urban agriculture on society and the city is not big, since the share of urban agricultural production from the total production of the city is relatively insignificant and in this connection, urban agriculture cannot solve the economic problems of the municipality such as food security, employment, poverty due to the size of Sofia. Some of the respondents indicated potential economic benefits with a public significance. They are associated with composting in terms of landfill. The overall economic effect is "*savings from the disposal of plant residues, garden and park waste that save the municipality additional financial means for transportation to the landfills of the municipal waste collection system.*" According to the respondent, a household waste tax may be linked to whether the household composts and accordingly saves the municipality the transportation of waste. They also share the view that there is an economic impact on society from the fuel economy due to the elimination of the need for long-distance transportation of the products and the preservation of road infrastructure.

"For me, the economic effect is a very small percentage of the overall economy of the city. It is difficult for me to predict the extent to which urban agriculture can grow, but as a share of the city's overall economy, it has not on a large scale., Z. T., woman

"I save at least 30-40% of compostable landfills, i.e. almost 50% is saved on landfill – this is a big amount saved from transport and greenhouse gas emissions." I. S., woman

Some of the respondents considered the benefits of urban agriculture from an economic viewpoint and linked them to the production of better quality products at a lower cost. From a societal perspective, the economic benefit of better quality products is created because the product life cycle traceability is facilitated and there is a control of the production process. The price is relatively lower because the production is bought directly from the producer, which means short supply and communication chains. The respondents stated that there is a direct producer-consumer connection, which leads to a lack of surcharges and a lower cost of production. In addition, small-scale urban farmers produce smaller quantities of production and this provides products of a higher quality. The consumer receives high quality at a lower price. Respondents also identified the economic benefits associated with consuming healthy food. Clean food improves and maintains better health, which can save on costs for healthcare and medicines.

"It can be said that the economic benefits are related to the creation of a quality product name. The biggest benefit of urban agriculture is that it produces fresh production. With all the requirements of technology and control, this is a high quality, safe and delicious production at a good price. In addition, a direct producer-consumer link is created." N.G., man

The effects of an economic nature that influence people and society are the benefits shared by respondents related to job creation, job opportunities and income. Respondents consider that the main economic aspect related to improving the quality of life is the creation of employment. Opinions differ in accordance to the group of practitioners for whom the urban agriculture has the greatest benefits. Some of the respondents consider that these practices would encourage retirees and the unemployed to provide food and social communication. Other respondents point out minority groups as a target group.

"... from an individual producer's point of view, the economic benefit is that it creates job opportunities, generates employment and also income from the sale of production." A.G., man

"In other countries, urban agriculture is often linked to the employment of minority groups, for example in areas where there is a severely disadvantaged social group (in a gypsy ghetto), if we bring it to Bulgaria – if there is an initiative to launch urban agriculture and these people engage in work, it would have a profound effect on them." S. N., woman

"For the unemployed, it can also be a bit of a livelihood." A.G., man

The respondents shared their views in relation to the provision of natural resources, in particular, land and water as necessary resources for producing and operating their activities. The ways to obtain these resources are diverse. Some of them provide the land they need for their own production and water for irrigation. This is especially observed by market-oriented urban farmers who develop their farms on their own land and water sources. Other urban farmers use municipal land that they rent and water resources close to the place of production. A third group of farmers cultivate urban agriculture on land with an unknown statute, such as practitioners in the communal garden "For Druzhba". Some of the respondents consider that they were not informed whether the municipality provides resources for the urban agricultural practices in Sofia and they were not informed if the municipality had a policy of supporting urban agriculture. However, they note that under the TOURAS project Sofia municipality has expressed its readiness to take over the maintenance of irrigation facilities, to provide a market for the production and to organize farmers' markets in Sofia.

The shared views on land and water provision indicate that in most cases, the water used for production activities is drilling or rainwater and the land statute in terms of ownership is diverse.

Respondents' views on their provision of land and water resources are presented in Table 1.

Table 1

Main views related to the provision of water and land

Water Supply Sources	Provision of Land
❖ Draw well/ drilling water	❖ Own land – purchased or inherited
❖ River water	❖ Municipal land
❖ Rainwater	❖ Land with unknown statute
❖ Drinking water	❖ State land

Source: own findings

"I don't know if the municipality is doing it, but our project (TURAS) was aimed at getting it started. And the municipality expressed its readiness to support for irrigation, to provide a market for the sale of the production. But I still do not know at the moment that we have such a support policy." S.M., man

With regard to the issue of the unused resources of the Sofia municipality, the respondents are of the opinion that the Municipality has huge unused potential for the development of

urban agriculture. They identify as unused resources, mainly land and water resources. These are undeveloped park spaces, neglected parks, public gardens, inter-block spaces, demolished terrains of former factories, places that can be landscaped and restored by urban farming practices. Some respondents consider that the Sofia municipality had many unused territories that could be used for urban agricultural development and these areas defined as: large pre-block areas that are currently covered in weeds and grass; the free municipal plots of land that are not currently being used rationally and have been turned into landfills. Some of the suggestions in this regard are: to keep a register of vacant land and the information to be accessible and transparent; to initiate territorial management practices and anyone who is interested to organize a group and to make a contract with the municipality.

There are also opinions connected with the proposal that unused areas such as meadows, roofs of blocks should be used for urban agriculture. An example is given by an urban farming practitioner who grows zucchini, blackberries, raspberries on the roof of a dwelling block, which is of interest to people, but the mayor of the municipality declared the practice illegal. On the other hand, some of the respondents identify parks and inter-block spaces as an opportunity to organize communal gardens on the areas and spaces that are not used. These areas can be used for children to play. In relation to urban farming practitioners, respondents share a view that the municipality can support these activities by providing space and also soil composition tests.

"Parks are an option for communal gardens, especially in those parts that are currently unusable. Inter-block spaces too. Kids could observe a lot of things in practice, in the yard when they play there. …. It is good if the Municipality provide such areas and also support soil composition tests, because people rely on organic farming, but if you use very unburned manure, there is plenty of nitrogen in it and then you will consume production with nitrates." V. D., man

"There are a lot of unused resources, there is so much abandoned land. Even if they are not abandoned, there are some parts of the park that are neglected and can also be used for urban agriculture. There are many willing people, but they need to have the possibility to practice this activity. I don't know if the municipality could not help. Whether they are rented for a small rent or just on a voluntary basis." E. L., woman

The shared views on specific support and funding show that there is a need for funding for ideas related to urban agriculture and that funding is needed for this type of activity, but that support should be targeted after analysis of regulatory legislation. Purposeful support will not stimulate the development of urban agriculture, but stakeholders who have initiatives and need financial assistance to realize their specific ideas have to be encouraged. Some of them consider that their initiatives are realized through voluntary participation and funding through donations, but that is not enough to develop sustainable urban agriculture. Other respondents share the need for project-based financial support. They want to have more projects for this type of activity, more opportunities for application and this will help to sustain their activity in the future. They propose options for financial support that can be implemented through tax breaks, preferential credits, financial support programs at national and European levels.

"Yes, in principle there should be, but in my opinion artificially generated support will not help. It will help if some groups of people need financial help to realize their specific ideas. It will be useful to have an analysis of the regulatory environment in which specific initiatives are implemented." S. M., man

"Mostly from the municipality. What I told you was building the right infrastructure. Other help – financial support is always needed. For example, some programs to help people who practice urban agriculture." A.G., man

The economic effects of urban agriculture are most widespread in the case of urban farmers with a market orientation. Market-oriented producers are one of the stakeholders who are defined as subjects of urban agriculture; they were the focus of the qualitative research carried out.[4]

The urban market-oriented producers interviewed describe the economic benefits of agricultural activity, assessing some of the following factors: their perceptions for the activity they develop, availability of natural resources that are a source for their production, financing, etc. They all see their activity as a business – for example, they produce, they have production costs, sell their production, have regular customers and earn income. They share the view that farming provides them food and it is a job they love to do. They consider that they search for a profit maximization.

"Yes, it's a business because we want to maximize our profit. We are not able to cover all the expenses, but we always wanted to have our own revenue and profit." N.G., man

"Absolutely. That's what we live on." A.G., man

The qualitative data support the thesis that at this moment, urban agriculture practiced in the Sofia municipality has less importance for providing food and economic benefits, which are much more closely related to market-oriented farms. The most significant benefits from urban agriculture are to be found in the educational, social-communicative, value-oriented, consumption-oriented, environmentally and sustainable aspects. On the other hand, the data support the hypothesis that urban agriculture as a market realization is in the process of gradually entering, and strengthening the emerging market niche for environmentally friendly, fresh and local food. There are sustainable needs and growing expectations for

---

[4] Five interviews were conducted with farmers focused on the marketing of seasonal vegetables, spices (herbs?), fruits and dairy products, produced mainly in the suburban areas of Sofia Municipality. Three of them (Versa Natura, Chile Hills, baby vegetable grower) successfully grow organic vegetables, create their own product and business model, rely on their own network of people and business associates; one respondent (goat and sheep breeder in Lozen) produces dairy products (yoghurt and yoghurt, cheese and meat), which sells primarily to regular customers seeking pure, natural foods with which he has trust and respect on an informal basis; director of a training field (EEH of the University of Forestry, Vrazhdebvna), licensed as a farmer, where, in addition to carrying out agricultural activities for educational and research purposes, he organizes direct sales of milk to consumers from Sofia (less frequently directly from live animals) as well as selling milk to a processing plant on a contractual basis.

healthy food and a healthy lifestyle. In this regard the thesis for the role and contribution of small producers of local food in a broader, social perspective – not only in terms of employment, income, entrepreneurship and business, but also in the socio-cultural aspect as contributing to the maintenance of traditions and identity, upholding prestige and uniqueness, trust building, recognition and embeddedness in the environment and community. Some urban farmers operating in the local market practice as small-scale enterprises and structures and they have the characteristics and advantages of their "small" size. These advantages make them important and necessary for the local market and society – relying on family work, greater flexibility and adaptability to the environment and changes; good local knowledge, supporting local culture and traditions, including varieties and biodiversity, contributing to the diversity of products and the diversity of local cuisine.

An important conclusion about the economic aspects of urban agriculture is related to the thesis about the role of urban agriculture and urban local food producers. They spread an alternative consumer model for food in comparison with mass and conventional consumption. This model is based on a different type of values and on a responsible and supportive attitude towards the local environment. Small-scale urban farmers are an important segment of the short-lived food chains. Farmers use these chains and as well they are a factor in their development as an example sustainable supply and consumer channels. This is related to the farmers' markets, the festivals of traditional and natural foods, the online networks for the supply of bio and organic products, the specialized health food stores. These relatively new food consumer models reinforce environmental attitudes and values, responsible attitudes and behaviour towards nature and the urban environment, value attitudes to food and its origin, nature-friendly, and a more responsible attitude to waste management, composting and recycling.
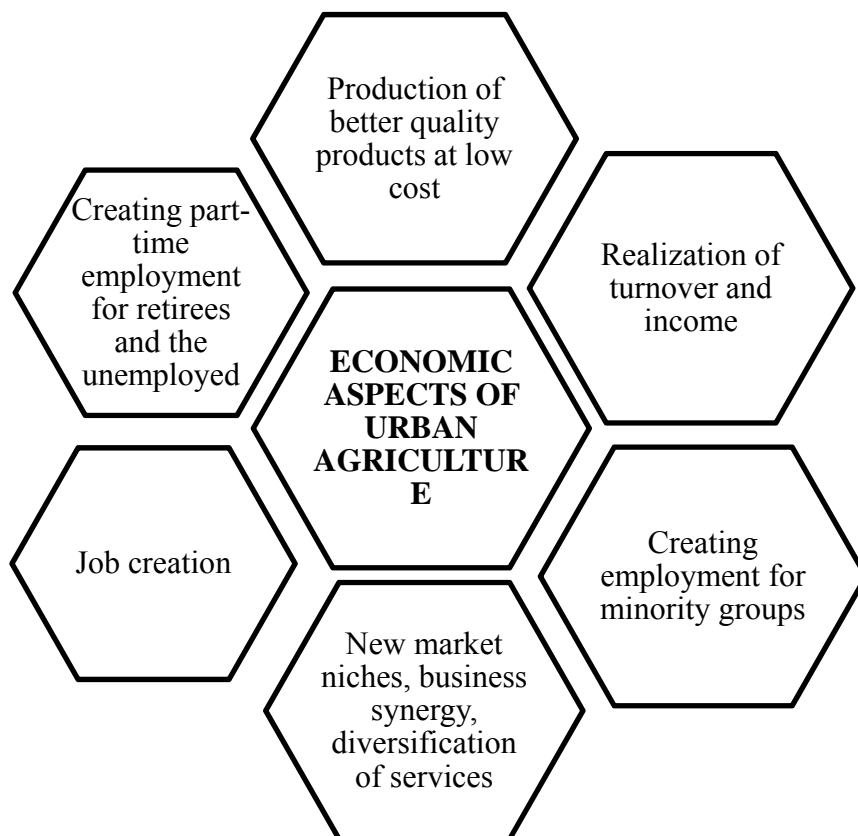
The data show that the farms surveyed are successfully integrated and well-recognized in the market. Each producer finds his/her own way to connect with consumers – through the farmers' markets organized by Hrancoop with the assistance of the district administrations (Versa Natura, Chile Hills); through "direct access to 3-5 clients" (producer of micro salads and baby vegetables from Boyana); through marketing strategy and distribution network (Chile Hills business model); through direct sales in the home for regular customers who connect with the producer through social networks or through acquaintances and friends (dairy producer – Lozen).

It is logical that people who produce fresh crops for the market and define this activity as a business that provides them with employment and income, emphasizing the economic benefits and importance of urban agriculture. These practices provide employment, a field for personal realization and they are a source of income for them and their families as well as for the people they hire. In addition, the wide variety of products offered by some farmers, as well as their "uniqueness" and specificity (Baby Vegetables, Chile Hills, Versa Nature), creates a specific niche for production, as well as contributes to the formation of consumer tastes and consumer models focusing on fresh and clean food, which also catalyzes the economic impact of urban agriculture.

Figure three presents the summarized economic benefits of urban agriculture for people and society.

Figure 3

Economic benefits of urban agriculture for people and society

Production of better quality products at low cost

Creating part-time employment for retirees and the unemployed

ECONOMIC ASPECTS OF URBAN AGRICULTUR E

Realization of turnover and income

Job creation

New market niches, business synergy, diversification of services

Creating employment for minority groups

Source: own findings.

Conclusions and recommendations

Based on the respondents' opinions related to the economic dimensions of urban agriculture as benefits, effects, employment, turnover and income, etc. the following conclusions could be drawn that support the thesis connected with the possibilities of urban agriculture to improve the quality of life of urban communities:

• Urban agriculture creates employment and provides job opportunities. It has the potential to create employment, if agriculture is organized and structured as a business model that creates jobs. In most of the cases, these jobs can be defined as green jobs.

- Urban farming generates income from the sale of production. On the one hand, it is an opportunity for additional income and for freelancers and retired people to produce for their own consumption; on the other, it could be temporary employment for the unemployed.

- The local communities that would benefit most from being involved in urban farming activities are: students, retired people, unemployed and businesses. In many cases, small producers are family farms and the family relies entirely on agricultural activity.

- Urban agriculture provides employment opportunities for minority groups and launching this type of initiative and engaging these people would have a profound effect on them and the community. This help to overcome problems of poverty and social exclusion.

- Urban agriculture contributes to the development of new consumer and market models, new market niches, synergy and diversification of production and services.

- Based on the analysis of the qualitative survey and information related to market-oriented farmers, the economic effects of their activities could be summarized as follows:

- Market oriented urban farmers develop the potential to promote the expansion and market positioning of the local food business. This business is significant for the future and influences both the quality of life and sustainable development in economic, and social aspects. The interest in healthy food from urban agriculture is increasing with the support of local producers because of the spreading ideas about a healthy and environmentally friendly life. The issue of branding local food and production, traditional and typical products is currently being discussed.

- Local food offers opportunities for synergies between new and established businesses by complementing, upgrading production and services, as well as by tightening and closing production chains.

- Business services are diversified through the marketing of health foods, menus in restaurants that do not simply offer food, but place a particular focus on its qualities (gourmet, "real, with" real "products), vegetarian/vegan restaurants, etc.; recreation services, culinary events/days, festivals, farmers' markets, festivals (focusing on traditions, customs); educational initiatives based on food cultivation and culinary skills.

- Interviewed urban producers did not mention the "shady side" of informal and unregulated producer-consumer relationships based on closeness and trust. I could be suggested because they are convinced of the qualities of their products and the growing interest in the production from urban agriculture. Producers who sell in the farmers' markets are convinced of their economic need and benefits, not only because they meet their customers there, but also because it is a secure and regulated market with requirements and rules that "further" lighten business and increase confidence. However, the issue of the sale of home-produced foods that are not of good quality and

beyond all registration and accountability is very substantial. This issue has to be specially studied.

- Urban farmers operate in the urban economic and social environment and this provides them with various opportunities and responsibilities that go beyond the production. On the other hand, the impact of the city on farms and agriculture is complex and is associated with new opportunities, niches for the development and diversification of agricultural activities.

Based on the analysis of the economic effects of urban agriculture for people and society and the impact on the quality of life, can be concluded that urban agriculture does not provide the nutritional resources that the city needs. Therefore, the production capacity and economic benefits of urban agriculture that is developed on the territory of Sofia municipality are not highly evaluated by the respondents at this stage. Employment and income for citizens could be created in market niches, where specific business models for small businesses are applied. These models include mainly flexible part-time work to provide additional income, but also full-time farming, especially in peripheral urban areas. The characteristics of agricultural activity in and around the city area are linked to short supply chains: trust in each connection during the product life cycle, personal contact, solidarity with producers, nature care, very fast feedback and the opportunity to improve production and the service.

References

Agbonlahor, M., Momoh, S., Dipeolu, A. (2007). Urban vegetable crop production and production efficiency. – International journal of vegetable science, 13(2), pp. 63-72.

Brayant, C., Sanchez, N.C., Delusca, K., Daouda, O., Sarr, A. (2013). Metropolitan Vulnerability and Strategic Roles for Peri-urban Agricultural Territories in the Context of Climate Change and Vulnerability. – Cuadernos de geografia, 22 (2), p. 55-58.

Cofie, O., Adam-Bradford, A. & Drechsel, P. (2006). Recycling of urban organic waste for urban agriculture. – In: van Veenhuizen, R. Cities Farming for the Future: Urban Agriculture for Green and Productive Cities, RUAF Foundation/IDRC/IIRR, Leusden.

Draganova, M. et al., DN 05/18 Urban agriculture as a strategy for improving the quality of life of urban communities, project funded by the Bulgaria science fund, project coordinator assoc. prof. Mariana Draganova.

Drechsel, P., Kunze, D. (1999). Synopsis from International Workshop on Urban and Peri-Urban Agriculture: Closing the Nutrient Cycle for Urban Food Security and Environmental Protection, Accra, August 1999. Text available at www.CityFarmer.org.

Fleury, A., Ba, A. (2005). Multifunctionality and sustainability of urban agriculture. Urban Agriculture Magazine, 15. Multiple functions of urban agriculture. Leusden. RUAF Foundation. https://www.ruaf.org/multifunctionality-and-sustainability-urban-agriculture.

FAO. (2007). Profitability and sustainability of urban and peri-urban agriculture, Agricultural management, marketing and finance occasional paper. 19. http://www.fao.org/3/a-a1471e.pdf.

Hallett, S., Hoagland L., Toner, E. (2017). Urban Agriculture: Environmental, Economic, and Social Perspectives. – Horticultural Reviews, Vol. 44, First Edition. Edited by Jules Janick. published by John Wiley & Sons, Inc. https://onlinelibrary.wiley.com/doi/book/10.1002/9781119281269.

Henriksen, K., Bjerre, M., Almasi, A.M., damggaard-Grann, E. (2012). Green Business Model Innovation. Conceptualization Report. Nordic Innovation Publication. [cit. 12.3.2014]

Hoornweg, D., Munro-Faure, P. (2008). Urban Agriculture For Sustainable Poverty Alleviation and Food Security. http://www.fao.org/fileadmin/templates/FCIT/PDF/UPA_-WBpaper-Final_October_2008.pdf.

Hunold, C., Sorunmu, Y., Lindy, R., Spatari, S., & Gurian, P. L. (2017). Is urban agriculture financially sustainable? An exploratory study of small-scpale market farming in Philadelphia, Pennsylvania. – Journal of Agriculture, Food Systems, and Community Development, 7(2), pp. 51–67. http://dx.doi.org/10.5304/jafscd.2017.072.012.

Jamal, M., Mortez, S. (2014). The Effect of Urban Agriculture in Urban Sustainable Development and Its Techniques: A Case Study in Iran. – International Journal of Agriculture and Forestry, 4(4).pp.: 275-285. doi: 10.5923/j.ijaf.20140404.03.http://article.sapub.org/10.5923.j.ijaf.20140404.03.html.

Kinkese, T., Pride, C. (2017). The Social, Economic and Health Impacts of Urban Agriculture in Zambia. – Asian Journal of Advances in Agricultural Research. 3(1). pp. 1-8. Article no. AJAAR.36720. ISSN: 2456-8864.

Krikser, T., Zasada, I., Piorr, A. (2019). Socio-Economic Viability of Urban Agriculture – A Comparative Analysis of Success Factors in Germany. – Sustainability, 11(7), pp.1999, doi: 10.3390/su11071999.

Lohrberg, F., Licka, L., Scazzosi, L., Timpe, A. (eds.). (2016). Urban Agriculture Europe Jovis Verlag GmbH.

Nugent, R. (2003). Economic Impact of Urban and Periurban Agriculture. In Annotated Bibliography on Urban and Periurban Agriculture. ETC Urban Agriculture Programme. Leusden, The Netherlands.

Nugent, R. (2000). The impact of urban agriculture on the household and local economies. The Impact of Urban Agriculture on the Household and Local Economies. Thematic Paper 3. pp. 67-97.
https://www.researchgate.net/publication/237237115_The_impact_of_urban_agriculture_on_the_household_and_local_economies.

Pickard, D., Koleva, G., Draganova, M., Nakova, A., Chengelova, E. (2018). Urban agriculture as a scientific – research field: a theoretical and methodological framework. – Philosophical Alternatives, No. 2, p. 60-72.

Pölling, B., Prados, M-J., Torquati, B. M., Giacch, G., Recasens, X., Paffarini, Ch., Alfranca, O., Lorleberg, W. (2017). Business models in urban farming: A comparative analysis of case studies from Spain, Italy and Germany. – Moravian geographical reports, 25(3), p. 166-180.

Simatele, D., Binns, T. (2008). Motivation and marginalization in African urban agriculture: The case of Lusaka, Zambia. – Urban Forum, 19(1), pp. 1-21.

Simatele, D., Binns, T., Simatele, M. (2012). Sustaining livelihoods under a changing climate: The case of urban agriculture in Lusaka, Zambia. – Journal of Environmental Planning and Management, 55(9), pp. 1175-1191.

Smit, J., Nasr, J. (1992). Urban agriculture for sustainable cities: using wastes and idle land and water bodies as resources. – Environment and Urbanization, 4(2), p. 141-152.

Van der Schans, J. W. (2010). Urban Agriculture in the Netherlands. – Urban Agriculture Magazine, 24, p. 40-42.

Zasada, I. (2011). Multifunctional peri-urban agriculture – A review of societal demand and the provision of goods and services by farming. – Land Use Policy, 28 (4), p. 639-648.

Konstantin Stankov[1]

ECONOMIC ASPECTS OF DIFFERENT SHEEP PRODUCTION SYSTEMS IN BULGARIA

Bulgarian sheep husbandry is the most traditional occupation that helped people earning their living for thousands of years. It has laid the foundations of the crafts and industry in our country. The manuscript presents information on the measures taken by the European Parliament (EP) for the sheep husbandry development during the next decades. Detailed data on the state and development of sheep farming in Bulgaria for a period of 118 years are presented and recommendations are made in line with the theses from the EP resolution. The results of the study show that the sheep population in EC countries are declining by 2% annually. Compared to the 1980s, their number has decreased by 25 million. Sheep meat consumption in the EC has declined by 3.5 kg at 2 kg per capita. For the same period, a drastic decrease in the number of sheep and their products has occurred in Bulgaria. Compared to the 1980s, the number of sheep in the country was reduced by over 9 million. The total sheep meat production has decreased about 23 times, and that of sheep milk – 4.5 times. Consumption of sheep meat in Bulgaria decreased to 1.5 kg per capita. Sheep wool, which before the transition was a leading source of income, was removed from the group of main products and included in the by-products group.

From this part, it may be concluded that Bulgaria has a substantial natural resource of pastures and cultivable land for the development of a significantly larger scale of livestock husbandry as it had been at all stages of country's development. Raising animals on pastures could be a good source of revenue for people, providing higher added value and contributing to the revival of rural areas.

The next part of the paper presents information on the main economic indicators of dairy ewes and local autochthonous sheep breeds. The influence of the farming system on the ultimate economic results in the farms: extensive in the mountainous areas; semi-intensive in semi-mountainous areas and intensive for the plain regions of the country was studied. For this purpose, three of the most typical Bulgarian sheep farms with 300 ewes, 60 replacement female yearling sheep and 7-8 rams were selected. All natural and economic indicators were reported per one ewe.

Sheep subject of the study was from the Bulgarian Dairy Synthetic Population, which is the most typical representative of Bulgarian dairy sheep husbandry (65.9% of the population). The second breed is the indigenous Srednorodopska sheep – a most typical representative of autochthonous sheep farming with a relative share of 26.59%. Both breeds account for 90% of the national sheep population.

The results from the investigation of the three flocks reared under different geographic and technological conditions evidence a relatively poor economic effect. Sheep reared indoor all year round whose feeding was balanced, showed better economic performance.

The sheep breeds and farming systems, subject of the present study provide sufficient objective information for the present state of Bulgarian sheep husbandry. The results allowed making important conclusions on the future development of the branch and proposing directions for its successful development.
JEL: Q1; Q12; Q13

[1] *Konstantin Stankov, PhD., is Chief Assistant professor in Faculty of Economics at Trakia University – Stara Zagora, e-mail: kocestankov@abv.bg.*

Introduction

Bulgarian sheep husbandry has been always present regardless of historical perturbations. For centuries it has played a leading role in people's life and livelihood, laying the foundation of the first crafts and industry in Bulgaria. Sheep husbandry marked the beginning of trade with other countries occupying a significant share of export goods produced in the country.

Sheep husbandry in Bulgaria had a leading role in all subsequent stages of the development of the state as seen from numerous documents and research studies (Law for promotion and breeding of sheep with quality wool in the Principality of Bulgaria, 1892; Savov and Totev, 2013; Stankov et al., 2003, 2005; Tyankov et al., 1997, 2000).

Sheep farming products were widely popular in our country and apart from direct consumption and for everyday life, provided raw materials for the industry (Breeds of livestock animal species in the Republic of Bulgaria, 2013; Stankov et al., 2007; Slavov, Stankov, 2013; Panayotov et al., 2005; Stankov and Radev, 2007; Yordanov et al., 2017).

During the transition from a planned to a market-oriented economy, the number of sheep and sheep products have markedly decreased. Some of the cultured breeds created with the efforts of the best Bulgarian selectioners were liquidated. Now the number of sheep and the genealogical structure of available breeds is at the critical threshold, which requires undertaking measures for the preservation of the most traditional livestock branch in Bulgaria.

The economic performance in sheep and goat farming at this stage, despite the subsidisation, is not good. This applies to all productive areas and categories of sheep and partly goats (Ivanov et al., 2020). The reasons for this are the disintegrated sheep farming, the poor realisation of the products, namely the lack of sufficient markets, low purchase prices (often below the cost of the products), the lack of guarantees from producers to buy milk throughout the lactation period and markets for late lambs and culled ewes. These reasons may be regarded as objective, but there are other very important and purely subjective reasons. In this group, poor performance on sheep well below the genetic background of animals production has the most significant influence on poor economic performance and low profitability of sheep husbandry. This is due to the mean selection, inadequate nutrition depending on the physiological condition, the still primitive rearing technologies, the lack of qualified personnel, the inadequate professional training of farmers etc. (Tyankov et al., 1997, 2000; Ivanov et al., 2020).

The elimination of the first group, identified as objective reasons, depends to a large extent on the state authorities and the active assistance of the professional branch organisations. The second group is mainly within the competence of non-governmental organisations, legally supported by the state bodies.

The economic results in sheep from the Bulgarian Dairy Synthetic Population were published by Mihaylov (1995), Mihaylova-Toneva (2011), Popova et al. (2007), Iliev (2011 a,b), Slavova et al. (2015). The authors found that the highest relative share was that of

remuneration and social security, between 42-46% and feed – about 40%. Revenues were about 60% of animal sales and 40% of milk sales.

All studies show a low or negative cost-effectiveness.

Similar conclusions about the low economic efficiency of sheep husbandry were made previously by other authors – Georgiev (1990), Ivanov (1990), Momchilov (2003; 2005), Stankov et al. (2003), Bashev (2003), Tyankov et al. (1997). Despite the numerous recommendations, strategic guidelines and regulations, significant economic results have not yet been achieved. Unfortunately, there is still no recognised Bulgarian dairy breed in Bulgaria, despite the attempts and schemes to create one (Dimov, 1995; Hinkovski et al., 1984; 2008; Tsvetanov, 1989).

Studies on the productive and economic performance of local sheep breeds were carried out by Atanasov et al. (2010), Stoykova (2004), Kuzmanova (2006), Odzhakova (2017) and on Pleven Blackhead sheep - by Stoykova (2004). The results of the surveys showed relatively good productive indices for Bulgarian local breeds and opportunities for their improvement. There is a potential for increase of economic performance, a challenge to future selection. Autochthonous sheep breeds, reared mainly I mountainous and semi-mountainous regions in extensive farming systems, are very adapted for the production of organic milk and dairy products.

Of interest is the information on high-mountainous autochthonous breeds presented by Odzhakova (2017). The data show that the Srednorodopska sheep are small, adapted to the harsh mountainous conditions and very tough. The author believes that this breed should not be subject to aggressive selection, but preserved in its authentic form as a local genetic resource.

The purpose of this study is to present information about the development of Bulgarian sheep husbandry from the Liberation of Bulgaria from Ottoman ruling to present days. Along with this, it aimed to monitor and analyse the current state of productivity and the main economic indicators of three groups of sheep, including two dairy and one from the most typical autochthonous breeds, reared in different geographical conditions and production systems.

Material and methods

The first part of the study presents information about the current state of sheep husbandry in EC member states and the prospects for its further development. The same part presents the state of Bulgarian sheep husbandry. Data on the number of sheep and produced products for the period embedded by the official statistics are presented in graphical form.

The materials will serve as proof of the traditional nature of sheep husbandry. This is an important requirement in the work of the European Commission for Agriculture and Food to the European Parliament in determining the incentives to support traditional activities and protect the national dairy and meat products of member states. For Bulgaria, sheep

husbandry plays a significant role in the revival of rural areas and the maximum use of available national natural resources.

The second part of the analysis provided a discussion of productivity and economic results of the commonest productive types of sheep. These are the autochthonous Srednorodopska and the Bulgarian Dairy Synthetic Population (BDSP).

The flocks included in the study were allotted into three groups and reared in the three possible geographical areas in Bulgaria, namely: mountainous, semi-mountainous and plain. Each group is represented by 300 ewes, 60 replacement yearling females and 7-8 rams. The three flocks were not included in the selection control and only received a subsidy from top-up payments.

The first group, designated as Srednorodopska, is reared entirely extensively in a pasture-indoor system and is mainly served by workers from the family. During the lambing campaign and the lactation period, an additional worker is employed to take care of the lambs and participation in the milking of ewes. Milking was done twice, manually. The majority of the lambs are sold on the retail market during the Easter and Saint George's Day holidays.

The second group is from the Bulgarian Dairy Synthetic Population (BDSP) reared in the Strandzha region under semi-mountainous conditions. The farm is also family-owned and served mainly by the family and one additional worker during the season. The milking of ewes was also twice daily with milking dumplings. For most of the year, sheep grazed on pasture with a shepherd. The realisation of the lambs was similar to that of the first group.

The third group, also from BDSP breed, were reared in the Varna region. Over the last two years, ewes were reared entirely indoor with mechanised feeding and milking with DIO 4 A. Milking at the beginning of lactation was three times per day, after which it became twice daily. The lambs were also sold on the domestic retail market.

The three farms sold the milk to different processing enterprises from March to the end of August. During the last two months of the milking campaign, there were serious problems with the purchase of milk, so farmers were often forced to process it at home and to sell dairy products on the farmer markets or freely.

Ewes were fed self-made fodders with protein additives to concentrate feed.

The first and second flocks grazed on pastures, leased from the municipal fund. Some of them were hardly utilisable being located in different and remote areas.

Costs and revenues were valued at current prices. The calculated profit was in BGN and the profitability – in percents. Revenues and costs were relative to one ewe and the effect of one ewe was sought on this basis. The information was collected from the accounting data of the respective farms.

The data were processed using mathematical and statistical modules of an MS Excel.

Results and discussion

Analysis of sheep husbandry's condition in Europe and Bulgaria

The European Parliament resolution of May 2018 (2017/2017 (INI) presents the actual state and prospects of sheep and goat husbandry in EC member states. The facts on the state of sheep husbandry in the EC are exceptionally disturbing. Compared to the 1980s, the population of small ruminants has decreased by 25 million. Sheep meat consumption in the EC declined from 3.5 kg per capita to 2 kg per capita. Sheep husbandry was outlined with the lowest cost efficiency in the agrarian sector, and sheep farmers – with a lowest income. No interest in the sheep husbandry from the part of young people is available.

Alexandrova (2020) outlined that in December 2019, a total of 82.54 million sheep were reared in EC member states, which was by 1.59 million fewer compared to 2018. The decrease vs the previous year was by 2%, and vs 2016 – by 4%. The number of sheep in countries with traditionally developed sheep husbandry as Spain, France, Italy, Greece, has decreased. The only increase was demonstrated in Ireland by 2.9% and Romania – by 0.6%. The expectations are that sheep flocks in the EC after Brexit will decrease by one quarter compared to pre-Brexit levels.

The EP resolution has drawn the following more important conclusions: the decrease in sheep and goat population to their full absence in geographically disadvantaged areas results in impairment of their ecological sustainability and landscape preservation, impairs biodiversity and erosion control.

Insufficient production of sheep meat in EC countries requires import from third countries, where quality standards, regulatory and environmental requirements are not as stringent. This undermines the competitiveness of European products during the most sensitive periods of the year for sheep husbandry (Easter and Christmas), as well as during the rest of the year.

- Brexit could lead to major changes in the trade of sheep and goat meat in the EC, as this country is the largest producer but also importer of such meat. The United Kingdom imports about half of its market quota from New Zealand and almost two-thirds from Australia and has an EU commitment that cannot be given up.

- An additional factor influencing the low income of European sheep farmers is that wool is not approved as an agricultural product in line with Appendix I to the Treaty on the Functioning of the European Union, but is classified only as an animal by-product as per Regulation (EC) № 142/2011.

- Sheep and goat farmers have to face the heavy bureaucracy and administrative burdens arising not only from the CAP but also from other EU rules, such as the rules on the processing of animal by-products not intended for human consumption.

At the background of the pan-European problems, which also apply to our country, the position of national sheep husbandry, which has long traditions and has formed a significant part of both the produce and consumption of products, is even worse in the EC, as could be seen from the following facts:

- Compared to the 1980s, the number of sheep and goats in Bulgaria has decreased by over 9 million (compared to 25 million in EU countries)

- The consumption of sheep and goat meat by Bulgarian citizens – traditional consumers of this meat is less than 1.5 kg. per capita (vs average of 2 kg for EC countries).

- The purchase of sheep husbandry produce – sheep and goat's milk, of culled animals, wool and skins is extremely unsatisfactory. The problems with the horizontal integration between the sheep farmers and the vertical one between producers, processors and traders are overtly expressed.

- Severe regulatory, purely bureaucratic veterinary requirements, which artificially increase the costs in the sector have been imposed and demotivate sheep and goat farmers which in addition to the year-round hard work etc.

Sheep husbandry in Bulgaria is now represented by the dairy industry and local (autochthonous) breeds. A small part of sheep are represented by the Ile de France and Mouton Charolais breeds imported from France. Almost all created merino and semi-merino sheep breeds were liquidated. According to Bobeva (2019), during the census of livestock in 1905 and 1910 in the Kingdom of Bulgaria, 2 sheep per capita were available. In the years 1980-1984 this number was already 1.3 sheep and goats per capita, holding the 4th and 5th place in the world with regard to the number of small ruminants per 100 ha managed area (after Australia, New Zealand, Argentina and Uruguay). Now there are 0.19 sheep per capita, which is the average in the EC countries, but many of them had no tradition in sheep farming (Figure 1).

Figure 1

Sheep population in Bulgaria
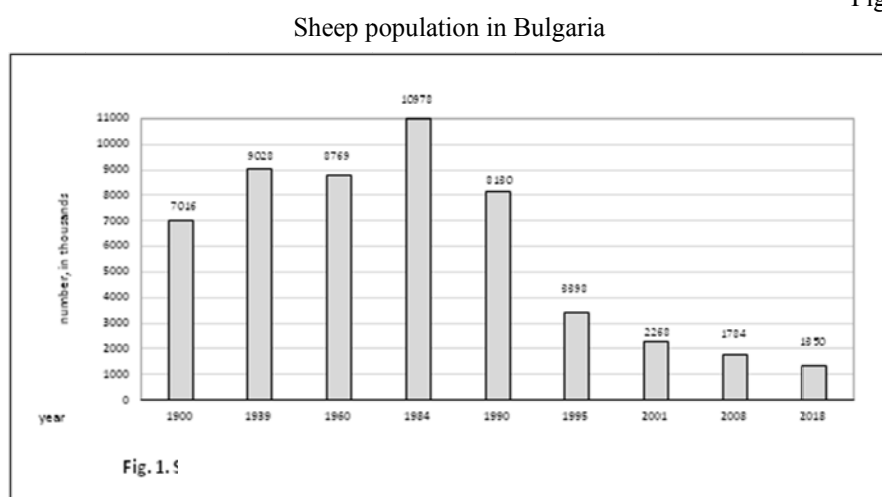
The reasons for the catastrophic reduction in the number of sheep in Bulgaria is the wrong concept of a market-driven economy and the free market without creating the necessary prerequisites for this. The strict regulations related to environmental protection,

transportation and animal welfare, identification and traceability of ready products from the farm to the fork increase costs by at least 10% (Bulgarian Farmer, 2014).

As products are concerned, leading positions were either lost.

There is convincing evidence about the high nutritional value of mutton and lamb meat, and recently, about functional qualities of young animals' meat. Apart being a nutritious and healthy food, mutton is tightly linked to religions, both Christianity and Islam.

The collapse of mutton production in our country is substantial – from 169 thousand tonnes at the beginning of the transition to 10.73 thousand tonnes in 2018 (Figure 2). The average slaughter weight has dropped from 20.8 kg to 11 kg. This is explained by the substitution of heavier merino and crossbred lambs and yearling sheep with lambs from lighter dairy and local breeds and by predominant sales of lower-weight dairy lambs. The practice of fattening lambs and yearling sheep intended for export mainly to the Arab countries' markets, has also been discontinued. The reduction in mutton production is about 23 times.

Figure 2

Sheep meat production
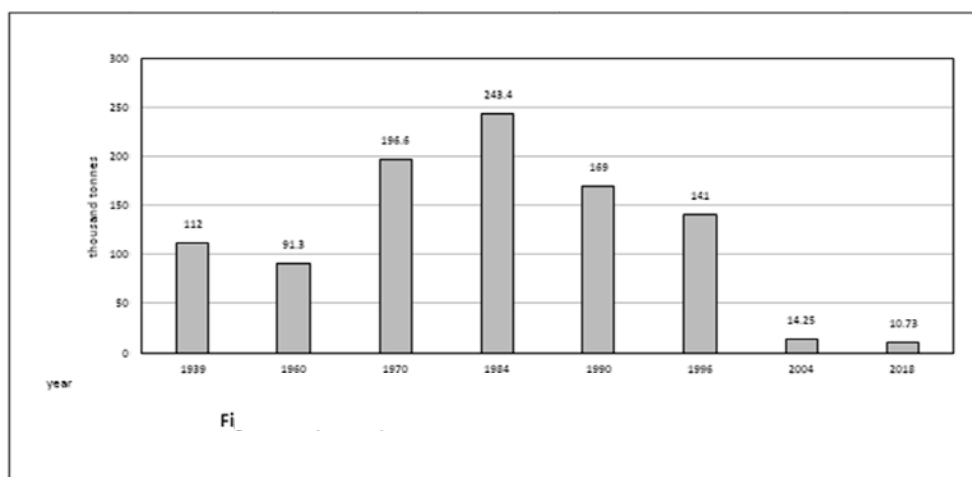
In the 1980's to the early 1990's our country was one of the largest exporters of live small ruminants and meat from sheep and goats in the world. For the period 1980-1984 annual export of yearling sheep from Bulgaria was over 1 million animals, reaching a peak in 1980 – 1.3 million. The average slaughter weight was 20.8 kg.

The countries to which fattened yearling sheep were exported were Libya, Lebanon, Saudi Arabia, France, and of lambs: Greece and Italy. In terms of small ruminants export, Bulgaria held the third place in the world in 1978, and 5th place in 1982-1984 (Stankov et al., 2002).

During the last two decades, a considerable reduction of consumption of natural authentic products produced from sheep and goats has occurred. Young consumers are not aware of the true taste of these dairy products.

Milking sheep and producing unique dairy products is an old centuries-old tradition. The main dairy products from sheep milk, which can be defined as national, are the Bulgarian white brined cheese, the Balkan yellow cheese and sheep butter. These are products with a long history considered to be primary foods for the people of our lands. Of particular interest are some dairy products from sheep, which are unique, but produced in limited amounts: such as katak, krokmach, goatskin cheese (Tulum), green cheese, yellow cheese with marigold starter culture etc. The production of some of these products is banned as according to the European standard, dairy products must be produced from pasteurised milk, but if they are pasteurised, the product will not be in its natural form. It is inexplicable how some EC member states produce unpasteurised dairy products without any restrictions, and in our country, this is not allowed. Sheep dairy products are produced in a similar way in neighbouring Balkan countries. Obviously, legislative changes and opportunities should be sought to protect these products in the EC, because they will disappear, along with centuries-old traditions of their production.

The most valuable food is yogurt, including that produced from sheep and goat milk. The high-fat content of sheep milk is at the expense of the beneficial, defined as anticarcinogenic linoleic acid. In 1905, the evidence provided for Lactobacillus bulgaricus, which determines the unique taste of yogurt, Bulgaria became known throughout the world and Bulgarian dairy products set foot on 4 continents.

During the transition to market economy, sheep milk production has declined about 4.3 times, despite the orientation to dairy sheep farming (Figure 3). The causes are the lower population of sheep, low level of selection and reproduction, hence insufficient milk yields.

Figure 3

Sheep milk production
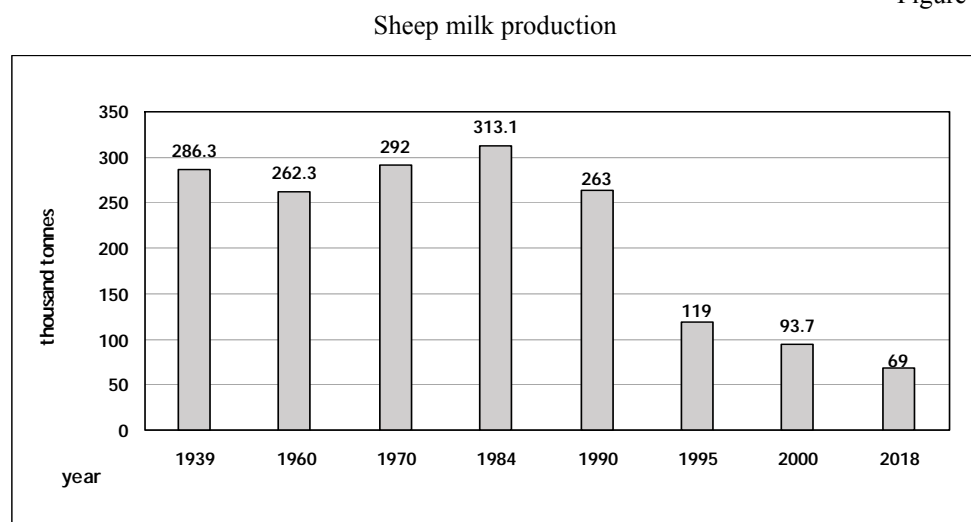
These facts are very serious prerequisites for change in the attitude during production and especially, processing of sheep dairy products.

Figure 3 presents the wool production in Bulgaria for the years during which statistics on this indicator are kept. In recent years, there is no information on purchased quantities of wool. Data for the last year in which reports for the purchased amount of wool is available to show that the reduced production is 7.2 times compared to the 1980s. This is a consequence of shrank consumption, reduced demands and low wool prices on the national and international market. According to Regulation № 142/2011 and Appendix I to the Treaty on the Functioning of the European Union, wool is not recognised as an agricultural product and is classified as an animal by-product. The activity of the wool textile enterprises, which for decades had processed sheep wool produced in the country and have provided employment to many Bulgarian citizens and added value from this extremely valuable product, has been greatly reduced. All this puts sheep farmers at a disadvantage compared to other livestock farmers and due to the fact that wool is subject to stricter transport requirements compared to recognised agricultural products, as well as due to the impossibility of carrying out market interventions for wool through a common market organisation. All this had a detrimental effect on the economic results of sheep farms in our country and especially on those of the wool-producing branch and has greatly contributed to an enormous reduction in the population of merino and semi-merino sheep breeds.

Figure 4

Sheep wool production
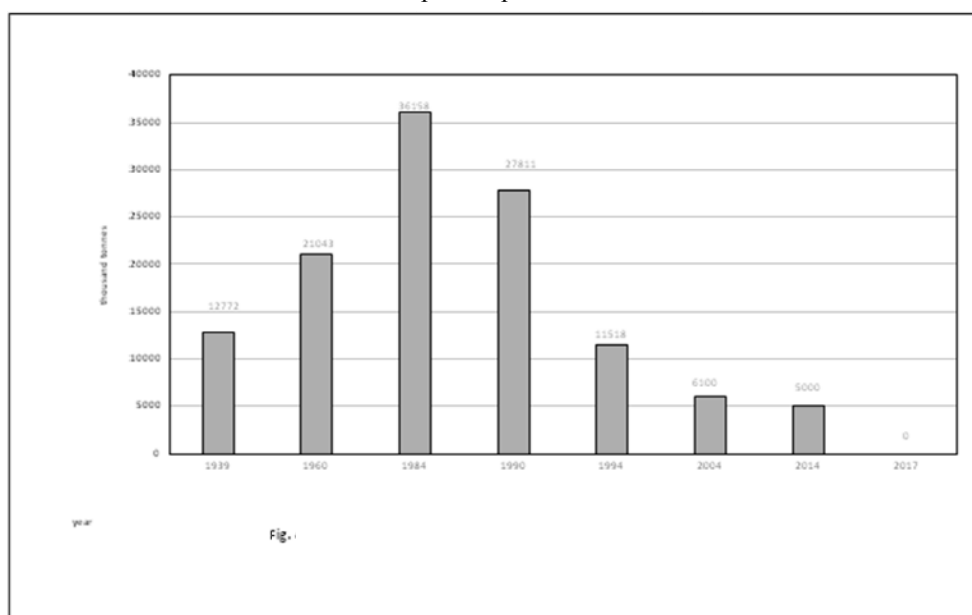
Regardless of the productive type and productive performance of the sheep, they produce wool. Farmers are obliged to shear the sheep and sell the wool. At the current purchase prices, the paradox is that they pay a higher price for shearing the sheep, compared to the amount of money they receive from the sale of the wool.

It is necessary to insist through the European Commission on amending Regulation (EU/ 1069) 2010 and Regulation EU/142/2011 on the processing of animal by-products, in the case of sheep wool, which is not a product intended for human consumption. It is also necessary to insist that sheep wool and skins should be included among the products that meet the requirements for funding and support.

In the conclusion of this part, it can be stated that the EP's recommendation to the EC member states is to analyse the condition of sheep farming and to develop medium- and long-term strategies for improving the sector. For better support of sheep farming, the share of coupled production and direct aid to young farmers and new entrants in the industry has to be increased. Important recommendations are the creation of new commercial breeds and the conservation of indigenous genetic resources, and the introduction of innovative methods and technologies to enhance competitiveness.

For Bulgaria, where dairy sheep farming is a priority, the recommendation for production of processed products and obtaining maximum added value is of essential importance. The creation of short or local food chains and direct sales of sheep products is a good opportunity to increase the income of direct producers, but in strict compliance with hygiene and health standards. It is proposed for discussion and decision to include wool in the group of main products. The removal of heavy bureaucratic and unnecessary restrictions and the opening of market prices outside the EU is an important prerequisite for improving economic performance and increasing the competitiveness of sheep production in EC member states. The data from the study on the historical development of sheep husbandry show that this is a traditional occupation for Bulgaria and there is potential for successful and competitive sheep breeding.

Analysis of the economic state of main branches in sheep husbandry

The main goals of economic research are related to the analysis of data to support people engaged in production to develop policies for the development of the respective branch. For Bulgarian sheep farming, which is experiencing a crisis, this is absolutely necessary.

The present study performs an analysis of data on the leading branches in sheep husbandry, namely dairy and local (autochthonous), which make up over 90% of sheep in Bulgaria.

Based on the data reported in the respective reports, the natural and value indicators per ewe for each of the flocks were determined (Table 1).

The data showed that the purchase price of milk varied from 1.30 for the Srednorodopska ewes to 1.40 for the BDSP rearing indoor. For the latter, produced and sold milk was significantly more than that of the other two farms and the national average. This was due to indoor rearing with constant access to feeders and drinkers, and balanced nutrition with respect to energy and protein. The three-fold milking during the first two months of

lactation was also important. In the second and third flocks, the purchase price of milk averaged over the period was higher, which was also due to the better quality of milk at milking and storage until its purchase.

Tables 1

Natural and value indicators of the farm (revenue)

Indicators	Srednorodopska ewes			BDSP (Bulgarian dairy Synthetic population) – indoor–pasture			BDSP (Bulgarian dairy Synthetic population) – indoor only		
	kg	average price	total BGN	kg	average price	total BGN	kg.	average price	total BGN
Milk for lactation period	45	1.30	58.50	82	1.35	110.7	128	1.40	179.20
Marketed lambs in kg from one ewe	25.3	5.0	126.50	30.1	5.0	150.5	31.02	5.0	155.1
Wool	2.5	1.50	3.75	3.2	1.50	4.8	3.1	1.5	4.65
Culled sheep sold (relative share from the flock)	13.83	1.5	20.75	18.75	1.50	28.12	12.1	1.5	18.15
Subsidy for 2018	-	-	39.60	-	-	39.60	-	-	39.60
Total	-	-	249.10	-	-	333.72	-	-	396.7

In the first farm, the value milk had a relatively low share from revenues – 23.5%, while that of meat was 50.8%. The other percentages came from wool that was nearly priceless, sold adult and young animals for meat and breeding, and subsidy. The subsidy per animal constituted 15.9% of the income of ewe. The fertility of this flock was 1.15 lambs per ewe on average, realised at an average weight of 22 kg or a total of 25.3 kg average live weight per ewe.

In the third group, in which the ewes were reared indoor all year round, the milk yield was relatively higher – 128 kg and accounted for 45.2% of the farm's revenue. The fertility was 1.32 lambs and a total weight of 31.01 kg sold. The relative share of sheep meat was 39.15 and the subsidy was 10.5%. The data showed that milking in indoor rearing had a stronger impact on farm income.

The data in the Table 2 showed that variable costs represented 55% and fixed costs 45%. The largest relative share was that of forage – 44.5% of the total costs and labour, 37.3% respectively. Revenues from the produce with the subsidy were 249.10 BGN per ewe, the costs were 220.84 BGN or the profit was 28.26 BGN. Without the subsidy, the revenues were 209.5BGN, or the losses from a ewe were 11.34 BGN. The high feed costs are explained by the fact that a considerable part of the concentrate and additives during the indoor period were purchased.

Table 2

Production costs of farm # 1 under mountainous rearing conditions

Indicators	Value, BGN	I% of variable and fixed costs	% of total costs
I. Variable costs			
Total variable costs	121.46	100.00	55.0
Feed	98.18	80.8	44.5
Veterinary services	4.50	3.7	2.0
Water, electricity	7.20	5.9	3.3
External services	11.58	9.6	5.2
II. Fixed costs			
Total fixed costs	99.38	100.00	45
Labour	82.39	82.9	37.3
Buildings	3.24	3.3	1.5
Machinery	13.75	13.8	6.2
Total production costs	220.84		

Table 3 shows the production costs of sheep from the semi-mountainous areas, which were mainly reared on the pasture. During the winter, sheep were housed indoor, fed self-made fodders, supplemented with protein and other feed additives needed to feed the sheep indoor.

Table 3

Production costs of sheep from the semi-mountainous areas

Indicators	Value, BGN	% of variable and fixed costs	% of total cost
I. Variable costs			
Total variable costs	169.5	100.00	54.5
Feed	143.1	88.4	46.0
Veterinary services	3.6	2.0	1.2
Water, electricity	8.3	5.0	2.7
External services	9.8	5.8	3.2
Civil contracts	4.7	2.8	1.5
II. Fixed costs			
Total fixed costs	141.5	100.00	45.5
Labour	128.1	90.5	41.2
Buildings	1.1	0.8	0.3
Machinery	12.3	8.7	4.0
Total production costs	311.00		

The data in the table showed approximately similar results to those of the first group. A different element in this group was the payment of civil contracts for additional services and higher labour costs. The farm was of a family type, but the length of the milking period was longer, which also increased the costs of paying the additional employee.

Revenues from the sold produce were 333.72 BGN, expenses were 311 BGN. With the received subsidy the profit was 32.72 BGN, and without the subsidy a loss of 15.59 BGN was realised.

Table 4 shows the production costs of the sheep flock reared indoor all year round. The area was intensive, with a very good forage base. All the necessary feed were provided for the needs of the flock. Bulky feeds were provided in the form of haylage with constant access to feeders. Concentrates were self-made, with protein and vitamin-mineral supplements.

Table 4

Production costs of farm # 3 – indoor rearing

Indicators	Value in BGN	% of variable and fixed costs	% of total cost
I. Variable costs			
Total variable costs	189.0	100.00	57.1
Feed	171.4	90.7	51.8
Veterinary services	2.6	1.4	0.8
Water, electricity	8.9	4.7	2.7
External services	6.1	3.2	1.8
II. Fixed costs			
Total fixed costs	142.0	100.00	42.9
Labour	123.5	87.0	37.3
Buildings	1.9	1.3	0.6
Machinery	16.6	11.7	5.0
Total production costs	331.0		

The data in the table showed that feed accounted for the largest share of variable costs. This is normal because costs with the highest relative share are for labour. In addition to the owner, two other sheep breeders were involved in the farm, employed year-round. Revenues from the production in 2018 for the flock amounted to BGN 386.7 per ewe, costs BGN 331. Profit along with the subsidy per ewe was BGN 65.7 and without the subsidy it was also with a positive sign, only at this farm: 17 BGN.

Our data about BDSP ewes were similar in terms of the relative proportion of costs to those reported by Popova et al. (2007) and Slavova et al. (2015), but differed significantly as the rate of return was concerned.

The analysis of the three farms using different production technologies, but approximately the same farm organisation showed that without the subsidy, production was losing. Only with indoor rearing, self-produced feeds and the direct involvement of the owners in the production process, there was, though, a small positive result without subsidisation.

Profitability is one of the most important economic factors because it shows how much investment in production produces profit and, accordingly, what the profitability of the production activity on a given farm is.

The data in Table 5 show that in all flocks studied, the profitability of revenues and costs were positive, albeit with low subsidy per ewe values. Following the exclusion of the subsidy, the profitability of the first two flocks reared in extensive and semi-intensive conditions was negative. The only exception was the flock raised intensively all year round. This is explained by the higher milk productivity and fertility, as well as the better purchase price of the milk. All of these flocks cannot be looked for as breeding effect since they were at the same level of selection beyond selection control.

Table 5

Profitability of the income and expenditure of the farms studied.

Indicators of ewes	Farm №1 Srednorodopska	Farm №2 BDSP semi-intensive	Farm № 3 BDSP indoor
Income	249.10	333.72	396.70
Costs	220.84	311.00	331.00
Profit with subsidy	28.26	32.72	65.70
Profit without subsidy	-11.34	-15.59	17.00
Profitability of revenue with subsidy	+11.34	+9.80	+16.56
Profitability of revenue without subsidy	-4.55	-4.67	+4.2
Cost-effectiveness with subsidy	+12.80	+10.30	+19.83
Cost-effectiveness with subsidy	-5.13	-5.01	+5.14

Conclusion

Sheep farming is the oldest traditional livelihood of the people who lived in our lands. It laid the foundations of the first crafts and industrial production in Bulgaria. At present, sheep breeding in our country is at the critical threshold in terms of the number of animals, breeds, level of selection and production technologies. This requires rapid measures for revival of sheep husbandry in Bulgaria and its transformation into a modern and dynamic branch of the Bulgarian economy, based on scientific progress and innovation. Bulgaria has a huge natural resource of pastures and cultivable land, which through animal husbandry will provide a livelihood for people, produce add value and revive Bulgarian villages. A good precondition is the recommendation and commitments of the European Commission for stimulation and further successful development of sheep husbandry, providing the European market with the missing products produced in the Union – this is an important and integral part of Bulgarian traditions, economy, history and culture.

The results of the study of the three flocks reared under different geographical and technological conditions showed a relatively low economic effect. Minimum profit and positive profitability have been established by including the subsidy per animal within the identification system. Better economic indicators were shown by animals kept indoor all year round, whose nutrition was balanced and complete.

An important result from the present study was the fact that there were possibilities for intensive dairy sheep husbandry developing through the implementation of innovations and technological update. Along with this, organic rearing systems, towards which there is increasing interest, may operate on the basis of the conserved local autochthonous sheep breeds.

The study allowed making useful conclusions for family-scale sheep breeding practices and some recommendations, the most important of which are:

- The economic effect and consequently higher profitability of sheep farms can be obtained if the selection is improved and modern methods of reproduction are implemented. Success can only be guaranteed by higher productivity of sheep.

- Better integration between producers, resellers, processors and traders is imperative, to ensure the purchase of products throughout the entire production cycle at a cost-effective and profit-oriented price.

- Professional organisations and producer groups in which all sheep breeders should be involved, can play an important role. This will allow pooling of resources, provision with the necessary technical means, construction of small and mobile dairies, and slaughterhouses and direct sales of goods.

- Reducing the administrative burden and relieving sheep breeders of non-core activities is essential and a guarantee of success.

- Increasing the knowledge and skills to use modern technical means and technologies is absolutely essential.

References

Alexandrova. (2020). The sheep population in the EC decreases. Agrozona. Bg.

Atanasov, A., Girginov, D., Semerdjiev, V., Maslev, Ts., Tomov, A. (2010). Economic values of fertility and milk yield in sheep. – Journal of Mountain. Agriculture on the Balkans, Vol. 13.4.2010, p. 842-850.

Balevska. (1964). Sheep Husbandry. Sofia: State Publishing House for Agricultural Literature.

Bashev, H. Effectiveness of Agrarian Organizations with Transaction Cost Accounting. – Agricultural Economics and Management, 2, pp. 13-20.

Bobeva. (2019). Census of livestock, poultry and bees in Bulgaria in 1905 and 1910. ZBobeva@nsi.bg.

Breeds of livestock animal species in the Republic of Bulgaria, 2013. Catalogue, IASRJ, Sofia.

Bulgarian Farmer. (2014). More than 100 million sheep are farmed in the EC. bgfermer.bg.

Dimov, D. (1995). Results of a study of applied breeding schemes for dairy sheep. Dissertation, AU, Plovdiv, 158 p.

European Parliament resolution of 3 May 2018 on the current situation and future prospects for the sheep and goat sectors in the EU (2017/2117(INI)).

Georgiev, I. (1995). Economic efficiency of production lines in sheep breeding for the region of Southeastern Bulgaria. Dissertation, Sofia, p. 3-26.

Hinkovski, Ts., Raycheva, E., Metodiev, N. (2008). Evaluation of the productivity of sheep from the Bulgarian Dairy Synthetic population. – Animal Science, 3, p. 35-41.

Hinkovski, Ts., Stoyanov, A., Donchev, P., Boykovski, S. et al. (1984). Guidelines for the Creation of a Synthetic Dairy Sheep Population and Technology for their Breeding. SSA, S., p. 37.

Iliev, A, Stoyanov, A., Stankov, I., Miteva, Ch., Mitev, Y. (2008). History of Livestock Husbandry. Stara Zagora, p. 166.

Iliev. (2011b). Productive characteristics of sheep from the Synthetic population of Bulgarian dairy. – Animal Science, 5, p. 30-34.

Iliev. (2011a). Study on live weight and fertility in sheep from the Synthetic population of Bulgarian dairy. – Animal Science, 4, p. 19-23.

Ivanov, B., et al. (2019). Analysis of the state of agriculture and the food industry. SWOT analysis, p. 85-88.

Ivanov, I. (1990). Economic efficiency of production lines in sheep breeding for the region of South-East Bulgaria. Abstract of dissertation, Sofia.

Kuzmanova, D. (2006). Investigation, analysis and evaluation of existing sheep production systems in the plain part of Pleven region. Dissertation, AU Plovdiv, 125.

Law on Promotion and Breeding of Sheep with Quality Wool in the Principality of Bulgaria State Gazette, 7, 11.1.1892.

Mihaylov, N. (1995). Structural problems of livestock husbandry. Collection Where to in Livestock Husbandry. I. Scientific Conference of Zooengineers, October 1995.

Mihaylova-Toneva, M. (2011). Economic efficiency of sheep rearing from the Bulgarian Dairy Synthetic Population. – Animal Science, 1, p. 14-17.

Momchilov, H. (2003). Efficiency analysis and profit maximisation in the production of sheep's milk according to the example of the Skalitsa sheep farm, Yambol region. – Journal of Economics and Management of Agriculture, N 3.

Momchilov, H. (2005). Economic efficiency of sheep breeding for the region of Southeastern Bulgaria. Abstract of dissertation, Sofia.

Odzhakova, Ts. (2007). Our goal is to preserve the mountainous sheep breeds from extinction. – Agro journal, 05.09.2017.

Panayotov, D., Stankov, I., Slavov, R., Pamukova, D. (2005). Actual problems of sheep and goat farming. Collection of reports, Stara Zagora, p. 27-40.

Popova, Y., Laleva, S., Slavova, P., Krastanov, Zh., Stanev, S. (2007). Economic efficiency of dairy and meat-type sheep farms in intensive regions of the country. http/eifnomic-effectiveness.html.

Savov, R., Totev, S. (2013). Breed-related distribution of cattle, sheep and pigs in Bulgaria.

Slavov, R., Stankov, I. (2013). Innovations and development of sheep and goat farming. – Scientific Conference with Internaitonal Participation, Stara Zagora, p. 36-44.

Slavova, V., Stancheva, N., Laleva, V., Popova, Y., Slavova, P. (2015). Economic efficiency of the flock of sheep from the Bulgarian Dairy Synthetic Population reared in the EB-DP at ZI – Shumen, Tzarev Brod. – Animal Science, 5, p. 90-99.

Stankov, I. et al. (2002). Problems of livestock husbandry in the Republic of Bulgaria. Reserach and Applied Conference, May 22-23, Stara Zagora.

Stankov, I., Mitev, Y., Radev., V. (2005). Bulgarian livestock husbandry in the eve of accession to the EU. Collection of reports, Stara Zagora, p. 2-26.

Stankov, I., Radev, V. (2007). Role of agrarian production for development of rural regions at the time of euro integration. Collection of reports, Stara Zagora, p. 26-31.

Stankov, Iv., Pavlov, D., Slavov, R., Radev, V. (2003). Integration Processes in Bulgarian Agrarian Production. National Science Conference Dedicated to Earth Week, Stara Zagora, p. 5-77.

Staykova, M. (2004). Production efficiency in dairy sheep farming. Abstract of dissertation. IF, Pleven.

Tsvetanov, V. (1989). Investigation of the effect of the breed in the initial stage of the creation of a synthetic dairy sheep population. Dissertation, S., p. 153.

Tyankov, S., Dimitrov, I., Stankov, I., Slavov, R., Panayotov, D., Georgiev, Iv., Kabov, G. (1997). Sheep and goat breeding. State, Problems and Prospects, Sat. Livestock Breeding in Bulgaria, Stara Zagora, p. 23-28.

Tyankov, S., Dimitrov, I., Stankov, I., Slavov, R., Panayotov, D. (2000). Sheep and Goat Farming. Stara Zagora.

Yordanov, et al. (2017). Breeds of livestock animal species in the Republic of Bulgaria. Catalogue, IASRJ, Sofia.

Mariana Ianeva[1]

DEVELOPING A METHODOLOGY FOR TOURISM REGION MANAGEMENT (THE CASE OF SOFIA)

The present study aims to develop a methodology for the management of tourism regions created and registered in Bulgaria, based on the Concept for tourism zoning, from the point of view of the main and additional product specialisation. Based on established theoretic models, such as the descriptive and the conceptual, as well as on good practices of developed receptive and emitting tourism destinations, the current study creates a toolkit for future research and evaluation of the management of newly developed tourism regions, and in particular, the Sofia tourism region.
JEL: L83; L21; O26

Introduction

Most developed and developing countries view tourism as one of the leading priorities in their government policies. Nowadays, tourism is considered one of the most important sources of income in the economy as a whole (Alexandru, 2015, p. 59). This necessitates the study of tourism management at different levels (macro, meso and micro) and the opportunities for its sustainable development, analysing the various concepts and good practices regarding the macro level in this direction, which are the subject of study.

Regarding the search for opportunities for the development of receptive tourism destinations and their sustainable development, more and more attention is given to the development of specialised types of tourism, which in Bulgaria are a priority, both on the basis of the Tourism Development Strategy in Bulgaria and on the basis of the Concept for tourism zoning.

In tourism management, the integrated management of the different tourism regions is important, and it should be included in a common strategic framework with a general marketing plan for tourism development, for both, Bulgaria and the individual tourism regions. It is necessary to pay attention to trends and forecasts and the new market environment. The legislation in Bulgaria in the field of tourism zoning contributes to the development of tourism products, as well as to the differentiation of the activities of the Organisations for tourism regions management (Tsonev, Pandzherova, 2020, p. 32).

---

[1] *Mariana Ianeva, Department of Economics of Tourism, Faculty of Economics of Infrastructure, University of National and World Economy, Bulgaria, E-mail: m_janeva@unwe.bg.*

Purpose

The purpose of the study is to develop a sustainable management model that will build on the existing planned activities by creating a set of tools for research, evaluation and analysis of its activities, which will increase the region's management efficiency and the benefits for all participating stakeholders, as well as its promotion.

The subject of analysis is the creation of a sustainable management model for the management of the newly created tourism regions in Bulgaria, with an emphasis on the Sofia tourism region based on the adaptation of leading management models and good practices.

The object of study is the Sofia tourism region from the point of view of the scheduled activities for internal and external region management during its registration, as well as its product specialisation.

Methodology

The following methods have been used to structure the program: documentary research method, comparative.

Results

Tourist zoning in the development of Bulgarian incoming tourism is not a new idea for the theory and practice in our country. Although there are many different interpretations, zoning has a half-century history, but without any practical implementation until the emergence of the Concept for tourism zoning and the registration of Organisations for tourism regions management. At the same time, the need for tourism zoning in Bulgaria is recognised by almost all stakeholders in the tourism sector. It is motivated by the general desire for development of competitive tourism, implementation of regional tourism policy in accordance with the territorial features and specifics of different parts of the country and effective regional marketing to make tourist areas recognisable to potential tourists and successfully "sell" – both on the domestic and international market.

On the basis of the separate geographical areas in the respective region, assuming the development of different types of tourism, the Concept for the tourism zoning has been created in the country. It is directly related to the implementation of the new Tourism Act of March 26, 2013. According to Art. 15. (1) of this law, the differentiation of tourist regions in the country will be made for the purpose of formation of regional tourism products and realisation of regional marketing and advertising.

According to the provisions of the Tourism Act, tourism zoning covers the entire territory of the country and municipalities are the smallest territorial module used to delineate the boundaries of the regions, but are not identical to them. There are 28 districts, 265 municipalities in Bulgaria (*Law on the Administrative-Territorial Organization of the*

Republic of Bulgaria, 1998, Act 6). Selected are **9 tourism regions** (*Concept for tourism zoning,* 2016a, p.4) that are large enough to be clearly recognisable on the tourist map and small enough to be managed effectively.

For the purposes of the successful mid-level management in the developed tourist countries in Europe are created the so-called Destination Marketing Organizations, which have a number of rights and obligations in terms of the successful and sustainable development as well as for promotion of the respective tourist region (Yaneva and Portarska, 2019a, p.57).

In Bulgaria, this issues, related to the management of the marketing organisations of destinations have not been explored, but a number of foreign authors such as Lundtorp, Wanhill, Kozak, Tinsley, Lynch, Kerr, Barron, Wood, Bonham, Mak, Howie and others have worked in this direction, and their analysis has been applied in practice by many European tourist countries. One of the main definitions is holistic. According to it, there is a problem in the management in the sense of coordinating the actions between the different sites (Yaneva and Portarska, 2019b, p.57). This conclusion leads to studies that analyse the problem of the productivity of destinations in the sense of "location as a whole" (Lundtorp and Wanhill, 2001; Kozak, 2002). The term "location" (Ribov, 2008) means a determination of the location, i.e. determining the region of the tourist sites.

The destination marketing organisation's main task is to promote a city, region or country to increase the number of visitors. It promotes the development and supply of a destination by focusing on conventional sales as well as on the marketing of tourism and services. Promotion is one of the main activities of these organisations and therefore one of the highlights of the present study is the development of a model for the positioning of the tourist region and the development of specialised tourist products for the development and improvement of a marketing strategy, and communication policy aimed at targeted markets that are adequate to the region's products (Yaneva, Portarska, 2019a, p. 50).

Such scientific works exist in Bulgaria in particular, but they concern the repositioning of Bulgaria as a tourist destination (Rakadzhiyska et al., 2005). This type of marketing organisations of destinations promote economic development of the destination through increased visits from tourists and business travellers who generate income through accommodation per night in a particular destination, visits to restaurants and commercial revenue.

Nowadays, marketing organisations of destinations are being set up in many destinations to guide the development of destinations. Traditionally responsible for the marketing of destinations, organisations are becoming strategic leaders in their development. This role requires leadership and coordination in management within a coherent strategy. In fact, destination marketing organisations serve to facilitate the link between the private sector, the public sector and other related parties. By working together, their decisions influence strategically the development of tourist destinations. Thanks to this unique opportunity, the marketing organisation is invaluable in supporting tourism development, especially in developing destinations, where tourism is an important engine for the economy and a mechanism for building a balanced social capacity. In our opinion, the tourist regions in Bulgaria, identical to the tourist destinations in Europe, fall into the group of developing

countries, as there is still no effective management mechanism in place for them (Yaneva, Portarska, 2019b, p. 51).

The need to conduct a study to analyse and evaluate the activities of internal and external development of a destination, as well as the development of specialised tourism products, typical for it, aims to create a sustainable management model of a tourism region and its specialised products by the Organisations for tourism regions management in Bulgaria.

In this research, the author focuses on developing a methodology for the study of tourism regions, and in particular the Sofia tourism region. According to the Concept for tourism zoning in Bulgaria, we believe that we could put 3 of the 9 independent tourism regions as a priority for the development of Bulgaria as a year-round tourism destination and improve its reputation of a cheap destination beyond that notion. In our opinion, the development of health tourism, business tourism (MICE tourism) and urban entertainment should be a priority, especially for the Sofia tourism region.

When clarifying the terminology, it is necessary to specify that the Organisations for tourism regions management in Bulgaria are popular and recognisable in the foreign literature as Marketing organisations for management of tourism destinations (MODs – Marketing organisations of the destinations) (Bornhorst, Ritchie, Sheehan, 2010, pp. 572-589). In this regard, we are talking about a Management Organisation of the Sofia Tourism Region.

The main goal of the marketing organisation is to create a management plan and a marketing strategy for the destinations. Thus, the core function of the organisation becomes a "destination entrepreneur" and acts as a catalyst and organiser for the commercialisation of tourism. Because of this, it can be concluded that there are different types of destination management organisations. In this sense, some are highly marketing-oriented while others are undertaking also other activities. Some are very small in the sense of resources (financial and human), while others are very large and have employees who specialise in many different areas of activity. It would be very positive for the tourism sector if the internal and external destination development model eventually starts to reflect the breadth of activities in destination management and marketing organisations. For this reason, both academically and practically discussions of the model are expected and possible (Yaneva, Portarska, 2019c, p. 59).

In the Sofia tourism region, there is a business tourism specialisation in 4 subtypes of the MICE complex – meetings, incentives, conferences, exhibitions. The same applies to health tourism, in terms of its subtypes: spa, wellness, balneotherapy and medical tourism.

Urban leisure tourism does not find a place in the Concept of tourism zoning for the Sofia region at present. It is specified as a priority for the Danube region and for the Thrace region. In the opinion of the author, the presence of anthropogenic data for the implementation of urban leisure tourism in Sofia tourism region exists at a higher degree than in the regions specified in the Concept. Evidence of this are the many entertainment venues – hotels with casinos and gaming halls, shopping malls, restaurants and entertainment and many more. Also, in the last five years, as a result of the presence of many low-cost airlines flying to Sofia from foreign destinations, there has been a

significant increase in weekend tourism travelling for entertainment (Gaydarov, 2018a, p. 135). These arguments support the opinion that urban leisure tourism has a significant contribution to the development of the tourism region, and therefore its research and analysis should be a priority, along with business and health tourism for the Sofia tourism region.

Each tourism region should be seen as part of the system whose main elements are in constant interaction with the environment, the interested parties operating in it, on the one hand, and on the other, each region is in constant competition with similar locations (Portarska, 2018, p.239). With the help of appropriate methods and approaches, these correlations can be compared and analysed, as well as the successful marketing management of the respective tourism region and its product specialisation can be assessed.

Based on established theoretic models, such as the descriptive (Presenza, 2005) and the conceptual (Arbogast, Deng and Maumbe, 2007) model, as well as on good practices in tourism developed in receptive and emitting tourism destinations, this research creates a toolkit for successful positioning and promotion of the destination for further studies and evaluation of the management of the newly developed tourism regions, and in particular of the Sofia tourism region.

The hypothesis proves or rejects the assertion that the successful operation of an organisation for the management of the tourism region supports the overall development of the region – local authorities, stakeholders, i.e. businesses, as well as the local population and the potential tourists.

According to Heath and Wall, stakeholders are all accommodation sites, restaurants, attractions, tourism organisations, tourist and information centres and residents of the tourism region (Heath, Wall, 1992). The quality of the offered tourism services aims mostly at reaching a high level of supply.

The introduction of rules and conditions for preserving the environment in the practice of health and cultural tourism will contribute to the preservation of natural resources and cultural and historical heritage. It is necessary for such to be a priority of the modern marketing management of the Organisations for tourism regions management in Bulgaria. In this regard, marketing managers must develop a marketing strategy, plans and policies, collect marketing information, establish contacts with consumers, create a strong brand of the tourism region, promote current product programs, provide value to consumers, and ensure the long-term growth of the destination (Tsonev, 2017, pp. 19-20).

In order to clarify the terminology in the current study, the term "stakeholders in tourism", in contrast to its broad concept, uniting all participants in the tourism market, according to the Tourism Act is limited to tourism enterprises operating in the region and those that send tourists to it. At present, a liaison unit, which conducts the marketing policy of the tourism region, unites the interests and successfully manages the destination, has been established. The establishment of such units is set out in the Tourism Act, which states: "The Act provides for the establishment of Organisations for tourism regions management and defines their functions" (*Concept for tourism zoning,* 2016b, p. 4). The stipulated activities of the Bulgarian Organisations for tourism regions management at their registration are not

grouped by internal and external marketing activities in the management of destinations known in the literature through the conceptual and descriptive model. These models are well established in the management of tourism destinations in Europe and are adapted to their specifics. The already stipulated activities in Bulgaria for the Sofia tourism region do not exhaust all the possibilities, which would provide efficient management of the region. This raises the need to create a methodology with the toolkit to conduct empirical studies in order to assess the management of the region, and the results shall serve to enrich the activities of internal and external management, as well as to optimise the management organisation itself.

In this study, all possible activities are restructured and completed in order to create a successful management model for the region. The current activities for the registration of the Sofia tourism region lack those that would ensure the successful development of the specialised tourism products set as a priority for it. In this regard, it is necessary to add similar ones in order to successfully manage and develop the specialisation (basic and extended) of the respective tourism region.

The management organisation of the Sofia tourism region was registered on 07.10.2019. In the following methodological framework, the registered activities for internal and external management of the region were restructured and grouped, as well as completed by other important indicators for the effective management of the destination (see Table 1). The complementing and grouping are carried out on the basis of the established models for the management of tourism destinations, namely the conceptual and the descriptive models, whose founders are Angelo Presenza and Dave Arbogast.

The Sofia tourism region comprises the capital, but also the towns of Pernik and Kyustendil and there are 23 municipalities. The region has the largest population and ranks third in terms of revenue, after the two Black Sea regions (*Association of the guest houses in Bulgaria*, 2015). This is another argument in support of the selected region for developing a methodology, in terms of the possibility to secure the human resources in tourism and in terms of the costs incurred by the local population for the purchase of travel agencies' package products in the region.

Based on the Concept for tourism zoning, it is necessary to further develop the existing specialisations, which will provide a wider range of priority tourism products typical for the region and ensure its competitiveness.

Table 1

Activities for internal and external management of the Sofia tourism region

	Internal Management Activities of the Region	External Management Activities of the Region
1.	Strategic goals of the region: 1.1. Development and implementation of a marketing strategy in accordance with: • The national marketing strategy; • The national strategy for sustainable tourism development. 1.2. Development and implementation of product strategies. 1.3. Development and implementation of annual plans for tourism development in the region. 1.4. Implementation of projects under European Union programs.	PR activities: 1.1. Development of a logo and a slogan of the region 1.2. Carrying out activities for building a brand, public relations, including media relations. 1.3. Participation in tourism exhibitions and fairs (tourist exchange in Berlin, Moscow and London).
2.	User experience management: 2.1. Organising marketing research and studies: • Of the tourist flow in the region; • Of analysis and forecasts for tourism development. 2.2. Supporting the development, introduction and implementation of voluntary systems for assessing the quality of tourist services and the sustainable development of specialised products in the region.	Advertising of the tourism region: 2.1. Developing advertising videos for the tourism region of Sofia as a destination for business and urban leisure tourism. 2.2. Organising and supporting the activities of the tourist information centres in the region
3.	Organisational and management structure of the region: 3.1. Supporting the activity of the regional governors and the mayors of municipalities in the implementation of strategies and programs for tourism development through opinions and proposals. 3.2. Assisting the mayors of municipalities in fulfilling their obligations under the Tourism Act.	PR in a crisis: 3.1. Developing a PR program with activities in order to restore the confidence of tourists in a pandemic to create an image of the tourist region of Sofia as a destination for a healthy program of business, urban leisure and health tourism.
4.	Management of human resources and the quality of the tourism product: 4.1. Conducting training activities and improving the quality of tourism services. 4.2. Creation and maintenance of a database for tourism in the Sofia tourism region – part of the Unified system for tourist information. 4.3. Exchange of information, standards and good practices.	Organising sightseeing tours for foreign sending tour operators and journalists: 4.1. Selecting tour operators who organise MICE events. 4.2. Selecting tour operators who organise health tourism programs (spa, wellness, medical and balneological tourism). 4.3. Selection of tour operators who organise programs for urban leisure tourism.

Source: Author's adaptation based on the descriptive and conceptual model of tourism destination management.

Table 2

Priority product specialisation of Sofia tourism region

Sofia region	Business and cultural tourism	1. Business tourism (MICE) 2. Cultural tourism (all types) 3. Mountain tourism (all types) 4. Health tourism (all types) 5. Religious and pilgrimage tourism 6. Adventure and ecological tourism 7. Urban leisure and shopping tourism

Source: Adapted from the Concept for tourism zoning of Bulgaria.

Analysing the expanded specialisation of the region, we believe that in the Concept it is necessary to change the wording for additional specialisation in terms of urban leisure and shopping tourism. It is necessary to use the concept of experience tourism, which is broader and covers the opportunities for the development of modern products, where they can use the well-developed superstructure of large hotels and accommodation sites in the spring, summer and autumn seasons for products of gambling tourism (Gaydarov, 2018b, pp. 65-91). Emphasis should also be placed on event tourism, which includes both business and leisure events as festivals (Tagareva, 2015, p.5).

In this regard, we draw a criteria system for research and analysis based on the building of a model for research and evaluation of the Sofia tourism region.

External factors influencing the marketing management of the business, health and urban leisure tourism in Bulgaria, namely political and economic factors and the environment.

The legal framework regulating tourism in Bulgaria, including the Strategy for Tourism Development and other normative acts; the Tourism Act and its parts concerning specialised types of tourism (Basmadzhieva, 2020).

Natural resource availability, with indicators: attractive natural location, view of the authentic natural resource from the site, tangibility and contact with the resource.

Anthropogenic resource availability, with indicators: historical popularity of the location, the concentration of socially significant sites, events held at the location (business from MICE complex – meetings, incentives/ incentive trips, conferences and exhibitions/fairs; health – medical tourism events, spa, wellness, balneological events; entertainment – contests, gambling and other related events related to experiences).

General superstructure and infrastructure of the site, with indicators: location of the hotel, the exterior of the hotel (gardens, outdoor pools, outdoor areas, areas for outdoor physical activities, etc.) hotel interior (luxury, elegance, security, galleries, boutiques, medical centre, SPA centre, business centre, ballrooms, exclusive clubs).

The specialised superstructure of the site, with quantitative and qualitative indicators. Quantitative – number and area of playrooms, types of sports games; a number of halls for business meetings with different capacity, multimedia projectors, technical equipment necessary for the meeting – sound equipment, microphones, flipcharts, work laptops; a

number of spa sites – different types of saunas – infrared, Finnish, Russian and others, number of steam baths, number of water facilities – jacuzzis and swimming pools, variety of therapeutic procedures and massages, variety of devices to strengthen health and beauty and others. Qualitative – style of the premises for providing the games, online visualisation on the occasion of participation in various games, distribution of the casino halls into thematic zones; comfortable furnishing of the meeting rooms, style and theme of the premises, size and shape of the hall, natural lighting; quality of the hydro massage equipment, of the aromatherapy oils and procedures, of the medical procedure, of the fitness equipment and others.

Additional products offered by the site and/or the tour operator, included in the package, with indicators: additional active specialised products and additional passive specialised products. Additional active specialised products – poker lessons, poker tournaments, rent of a hall for individual business meetings, a business centre in the hotel and others. Additional passive specialised products – a tour of the casinos, translation services, access to a high-speed Internet connection and more.

Specialised skills of the staff, with indicators: customers' encouragement, discovering their unexpected needs and desires, providing concierge services, animation and more.

Evaluation of the experience from the use of the product, with indicators: a feeling of cheerfulness, pleasure from the activity itself – experience from consumption of the product in the incentive programs of the tour operators, part of the MICE complex; relaxation and rejuvenation from spa and wellness programs, the emotional balance from wellness programs, enhanced personal self-assessment and self-esteem of the individual due to the consumption of services and others.

The written criteria, indicators and characteristics set in questionnaires for surveying consumers, experts and tourism professionals will provide an opportunity to analyse the data in order to create a sustainable management model for the Sofia Tourism Region and its priority specialised tourism products which will increase the management efficiency in the region, the benefits for all participating stakeholders, as well as its promotion, related to the image of the destination.

The image of destinations is formed mainly by the global tourism policy of the state, by the activities of regional organisations in whose areas are concentrated tourism activities or by established funds in such regions. This is really the basis on which the images constructed in the minds of potential and actual customers are imposed, but not always that is the key factor, which influences on the choice of specialised tourism products by the tourists.

The private sector organisations, especially hoteliers, transporters and restaurateurs, are product-oriented to promote the image of convenience facilities and activities offered at the tourism region. In contrast, the destination marketing organisations focus on the design of the image on the cultural identity and its history and heritage, as well as on the anthropogenic and unique factors of the destination which distinguish it from its competitors (Yaneva, 2011).

The methodology created, in the form of a written toolkit, will support the marketing organisations to manage the tourism destinations; will mediate between the market demand

from the consumers and the offered specialised products by the Sofia tourism region. It is essential to identify product preferences among potential and actual consumers, based on an analysis of the results of an empirical study regarding the evaluation of existing product offerings. The organisation for the management of the Sofia tourism region must establish the need for changes in the product offerings in order to achieve balance and satisfy the consumer demand and the quality of the experience when using the products.

The activities for internal and external management, as well as the activities related to the product specialisation, contribute to the creation of a sustainable model for management of the established Sofia tourism region, based on the adapted and further developed theoretical models and management practices.

Conclusions

The developed model is aimed at analysing and evaluating the activities for internal and external development of the Sofia tourism region, as well as the opportunities for the development of specialised tourism products, corresponding to it. In this regard, the following results can be established:

- Clarifications have been made regarding the terminological apparatus and the wording concerning the additional specialisation of some selected types of tourism in the Concept for tourism zoning of Bulgaria.

- Recommendations are given for focusing on specific events concerning some of the specialised types of tourism such as event tourism, in order to effectively use the adjacent tourist superstructure in the region. It is recommended to participate in tourist exhibitions and fairs, the development of video commercials and last but not least the development of a PR event program as part of the external management activities of the region, which will contribute to creating an image of the Sofia tourism region as a destination for business and urban leisure tourism.

- The need for coordination and setting of appropriate activities of Organisations for tourism regions management, directed at both, the internal and external management of the region, is substantiated.

- The need for expansion of the specialised tourism products is derived, in terms of the development of urban leisure tourism, in order to increase the quality of the overall product offered in the Sofia tourism region.

References

Arbogast, D., Deng, J., Maumbe, K. (2007). *DMOs and Rural Tourism: A Stakeholder Analysis the Case of Tucker County, West Virginia.* Recreation, Parks & Tourism Resources Program, Division of Forestry and Natural Resources, West Virginia University.

Association of the guest houses in Bulgaria. (2015). *General information about the nine tourism zones in Bulgaria.* [online] Available at:

http://www.akgb.bg/?p=420&fbclid=IwAR17acbpk7wOjT7_t4AeD5-RAnY-nuYTJR_lahmSxQKIuVv4zOM75Zb-kic [Accessed: 15 June 2020].

Basmadzhieva, S. (2020). *Applying marketing management for developing health tourism destination.* Sofia: UNWE publishing complex.

Bornhorst, T., Ritchie, B. J. R., Sheehan, L. (2010). *Determinants of tourism success for DMOs & destinations: An empirical examination of stakeholders' perspectives.* – Tourism Management, Vol. 31, N 5, pp. 572-589.

Constantin, A. (2015). *International Health Tourism.* Asociatia Romana de Turism Medical. – International Journal for Responsible Tourism, Vol. 4, N 1, p. 59.

Gaydarov, N. (2018a). *Experience economy and gambling tourism.* Sofia: Avangard Prima, p. 135.

Gaydarov, N. (2018b). *Experience economy and gambling tourism.* Sofia: Avangard Prima, p. 65-91.

Heath, E., Wall, G. (1992). *Marketing Tourism Destinations: A strategic planning approach.* Business & Economics.

Kozak, M. (2002). *Destination benchmarking.* Annals of Tourism research, pp. 497-519.

Lundtorp, S., Wanhill, S. (2001). *The resort lifecycle theory.* Annals of Tourism research, pp. 947-964.

Ministry of Regional Development and Public Works. (1998). *Law on the administrative-territorial organisation of the republic of Bulgaria.* [online] Act 6. Available at: https://www.mrrb.bg/bg/zakon-za-administrativno-teritorialnoto-ustrojstvo-na-republika-bulgariya/ [Accessed: 04 June 2020].

Ministry of tourisim. (2016). *Concept for tourism zoning in Bulgaria.* [online] p.4. Available at: http://www.tourism.government.bg/sites/tourism.government.bg/files/uploads/raionirane/koncepcia.pdf [Accessed: 04 June 2020].

Portarska, V. (2018). *Tourism region management.* Sofia: Avangard Prima, p. 239.

Presenza, A. (2005). *Towards a model of the roles and activities of destination management organisations.* Faculty of Economics, University of Molise, Italy, World Tourism Organization. Survey of destination management organisations. Madrid: World Tourism Organization.

Rakadzhiyska, S. et al. (2005). *Repositioning of tourist destination Bulgaria.* Science (economics). University of Varna.

Ribov, M., et al. (2008). *Tourism destinations.* Sofia: Trakia M.

Tagareva, S. (2015). *Event business management as a factor for overcoming the seasonality in tourism.* Sofia: Avangard Prima, p. 5.

Tsonev, N. (2017). *Tourism marketing management.* Sofia: Avangard Prima, pp. 19-20.

Tsonev, N., Pandzherova A. (2020). *The thematic parks of the future: Successful business practices for management of tourist districts.* Sofia: UNWE publishing complex, p.32.

Yaneva, M., Portarska, V. (2019a). *Management aspects of the destination marketing organisations.* – Journal of science & research, Vol. 12, p. 50.

Yaneva, M., Portarska, V. (2019a). *Management aspects of the product specialization of a tourist region.* – Revue européenne du droit sociale, Vol. XLV, N 4, p. 57.

Yaneva, M., Portarska, V. (2019b). *Management aspects of the destination marketing organisations.* – Journal of science & research, Vol. 12, p. 51.

Yaneva, M., Portarska, V. (2019b). *Management aspects of the product specialization of a tourist region.* – Revue européenne du droit sociale, Vol. XLV, N 4, p. 57.

Yaneva, M., Portarska, V. (2019c). *Management aspects of the product specialization of a tourist region.* – Revue européenne du droit sociale, Vol. XLV, N 4, p. 59.

Yaneva, M. (2011). *Consulting project for identification and promotion of a tourist destination.* – Journal of Science & Research, Vol. 2 (3), pp. 61-69.

SUMMARIES

Xavier Richet

CHINESE PRESENCE IN THE WESTERN BALKANS: COMPETITION, COMPLEMENTARITY, COOPERATION

This contribution examines the Chinese presence in the Western Balkans region – a country in the process of joining the European Union – the motivations, the methods of entry and the achievements of the Chinese companies which are present there. The impact of this presence is analyzed both in its economic aspects – trade, investment, construction of infrastructure – and geostrategics, in particular its impact on the integration of these countries, on the alternatives that it proposes in the face of the integration process led by the European Union.
JEL: F1; F5; F6; P2; P5

Margarita Atanassova

QUALITY OF WORKING ENVIRONMENT – CHALLENGES TO THE ATTRACTIVENESS OF ORGANIZATIONS AS AN EMPLOYER IN BULGARIA

Attracting and retaining workforce in Bulgaria as part of the emerging integrated European labour market is characterized by a number of challenges related to both the level and dynamics of wages and the Quality of Working Environment. In the context of the multifaceted nature of the Quality of Working Environment concept in the present study, the emphasis is on the managerial capacity of the organizations to ensure both a convincing connection of the work results/achievements with the salary, as well as the compliance with the regulations of the labour and social security legislation. The survey results show that among the working-age population in Bulgaria, the negative attitudes dominate towards the offered in the organizations link between the work results/achievements and the salaries. The incorrect practices in the field of wages and social security "encourage" turnover and reduced motivation of employees with all the ensuing consequences on the attractiveness of organizations in Bulgaria as employers. Successfully overcoming these challenges should be considered as a contribution to improving the quality of the working environment and increasing the attractiveness of organizations as an employer with all the ensuing consequences on the decisions of individuals to participate in the workforce in Bulgaria.
JEL: J21; M12; M 21

Baki Hyuseinov

REGIONAL DIFFERENCES IN THE EDUCATIONAL INFRASTRUCTURE – CHANGES AND CHALLENGES

The current study is dedicated to the research of the differences in regional aspect in the development of educational infrastructure (by region and districts), which give a chance to evaluate the access to education at different levels. For this purpose, choice of indicators that reflect the coverage of the population on a different level of education have been made. As a result of the comparative

assessment of the differences in the educational infrastructure between Bulgaria and the EU countries, it is found that at all levels of education there are positive changes, as on some indicators Bulgaria achieves/exceed the corresponding values of countries with closer or higher social-economic development. Detailed analyzes were conducted to identify regional differences in the access of children/students to pre-school and school education. An adequate place is given to the problem of drop-outs as a factor for reducing student coverage.
JEL: H75; R58; I21; I25

Yanko Hristozov
Petar Chobanov

INNOVATION ENVIRONMENT TOWARDS SMART SPECIALISATION AND CIRCULAR ECONOMY

The present study is devoted to the opportunities provided by the circular economy for the implementation of the integrated strategy for smart specialisation. At the end of the period of validity of the current strategy, it is imperative to monitor the extent to which the identified thematic areas in the strategy have fulfilled their purpose, as well as whether a change in them is necessary.
JEL: Q53; Q55; Q58; L59

Hrabrin Bachev
Bojidar Ivanov
Angel Sarov

UNPACKING GOVERNANCE SUSTAINABILITY OF BULGARIAN AGRICULTURE

Inclusion "fourth" Governance pillar in concept for understanding and assessment system of agrarian sustainability is increasingly justified in academic, government, international, and private organisations documents. In Bulgaria, practically there are no comprehensive assessments of governance sustainability of agriculture. This study tries to fill the gap and suggests a holistic framework for understanding and assessing the governance sustainability of Bulgarian agriculture. Newly elaborated approach is "tested" in a large-scale study for assessing governance sustainability of the country's agriculture at national, sectoral, regional, eco-system and farm levels. It has been proved that it is important to include "missing" Governance Pillar in the assessment of integral and particular sustainability of agriculture and agro-systems of various type. Multiple Principles, Criteria and Indicators assessment of Governance sustainability of Bulgarian agriculture indicate that the Overall Governance Sustainability is at Good but close to Satisfactory level. There is a considerable differentiation in the level of Integral Governance sustainability of different agro-systems. Individual indicators with the highest and lowest values determine the critical factors enhancing or deterring particular and integral Governance sustainability of evaluated agro-system. Results on integral sustainability assessment based on micro and macro data show some discrepancies which are to be taken into consideration in analysis while assessment indicators, methods and data sources improved.
JEL: Q12; Q18; Q56

Zornitsa Stoyanova
Galina Koleva

ECONOMIC ASPECTS OF URBAN AGRICULTURE

External and internal factors influence the potential of urban agriculture development. They lead to numerous effects and some of them stressed on the economic aspect. The benefits and effects of urban agricultural practices have an impact on people, society and the quality of life in the cities. The purpose of the article is based on the evaluation of the economic aspects of urban agriculture to propose conclusions about its economic benefits for people and society in Bulgaria. The study provides a literary review of various perceptions and authoritative views on the effect of urban agriculture from an economic point of view. The data is collected by qualitative methods of research connected to the economic aspects of urban agriculture and assessment is used for generalized conclusions about the economic benefits for people and society. The results are part of scientific project DN 05/18 Urban agriculture as a strategy for improving the quality of life of urban communities, funded by the Bulgarian Science Fund.
JEL: Q1; Q01

Konstantin Stankov

ECONOMIC ASPECTS OF DIFFERENT SHEEP PRODUCTION SYSTEMS IN BULGARIA

Bulgarian sheep husbandry is the most traditional occupation that helped people earning their living for thousands of years. It has laid the foundations of the crafts and industry in our country. The manuscript presents information on the measures taken by the European Parliament (EP) for the sheep husbandry development during the next decades. Detailed data on the state and development of sheep farming in Bulgaria for a period of 118 years are presented and recommendations are made in line with the theses from the EP resolution. The results of the study show that the sheep population in EC countries are declining by 2% annually. Compared to the 1980s, their number has decreased by 25 million. Sheep meat consumption in the EC has declined by 3.5 kg at 2 kg per capita. For the same period, a drastic decrease in the number of sheep and their products has occurred in Bulgaria. Compared to the 1980s, the number of sheep in the country was reduced by over 9 million. The total sheep meat production has decreased about 23 times, and that of sheep milk – 4.5 times. Consumption of sheep meat in Bulgaria decreased to 1.5 kg per capita. Sheep wool, which before the transition was a leading source of income, was removed from the group of main products and included in the by-products group.

From this part, it may be concluded that Bulgaria has a substantial natural resource of pastures and cultivable land for the development of a significantly larger scale of livestock husbandry as it had been at all stages of country's development. Raising animals on pastures could be a good source of revenue for people, providing higher added value and contributing to the revival of rural areas.

The next part of the paper presents information on the main economic indicators of dairy ewes and local autochthonous sheep breeds. The influence of the farming system on the ultimate economic results in the farms: extensive in the mountainous areas; semi-intensive in semi-mountainous areas and intensive for the plain regions of the country was studied. For this purpose, three of the most typical Bulgarian sheep farms with 300 ewes, 60 replacement female yearling sheep and 7-8 rams were selected. All natural and economic indicators were reported per one ewe.

Sheep subject of the study was from the Bulgarian Dairy Synthetic Population, which is the most typical representative of Bulgarian dairy sheep husbandry (65.9% of the population). The second breed is the indigenous Srednorodopska sheep – a most typical representative of autochthonous sheep

farming with a relative share of 26.59%. Both breeds account for 90% of the national sheep population.

The results from the investigation of the three flocks reared under different geographic and technological conditions evidence a relatively poor economic effect. Sheep reared indoor all year round whose feeding was balanced, showed better economic performance.

The sheep breeds and farming systems, subject of the present study provide sufficient objective information for the present state of Bulgarian sheep husbandry. The results allowed making important conclusions on the future development of the branch and proposing directions for its successful development.

JEL: Q1; Q12; Q13

Mariana Ianeva

DEVELOPING A METHODOLOGY FOR TOURISM REGION MANAGEMENT (THE CASE OF SOFIA)

The present study aims to develop a methodology for the management of tourism regions created and registered in Bulgaria, based on the Concept for tourism zoning, from the point of view of the main and additional product specialisation. Based on established theoretic models, such as the descriptive and the conceptual, as well as on good practices of developed receptive and emitting tourism destinations, the current study creates a toolkit for future research and evaluation of the management of newly developed tourism regions, and in particular, the Sofia tourism region.

JEL: L83; L21; O26