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Green Silk Road and Sustainable Agriculture in Southeast Europe

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Green Silk Road and Sustainable Agriculture in Southeast Europe

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Abstract

The disruption in the supply of food as strategic resource during COVID-19 pandemic, highlighted the need for countries to provide a more stable internal food supply. The focus of this paper is on the countries of Southeast Europe (SEE), which have significant but underutilized agricultural potentials. The SEE countries need financial, but also technical and expert assistance for sustainable growth in agricultural productivity. China is emerging as the most appropriate partner given the long-term and successful cooperation with CEE countries and its focus on green investment within new concept of Green Silk Road. In addition, China has made a remarkable technological breakthrough in the field of sustainable agriculture, including production and implementation of Smart Agriculture principles and tools.

This paper point to the untapped opportunities of partnership between China and SEE countries in the field of implementation of sustainable food production, with a focus on the concept of Smart Agriculture (SA). The most important questions of this research are: "What specific concepts of Smart Agriculture are the most appropriate for SEE countries?" and "In which segments of sustainable agriculture does China have the most ability to provide technical and expert assistance?" The results indicated great potential of joint projects in the form of application of China`s technical achievements in SEE agriculture, but also of transferring the entire China`s successfully applied concept of "resource and ecologically sound" (RES) agriculture, which seems very compatible with the needs of SEE agriculture.

Introduction

The networking of economies in the contemporary globalized world has led to an impressive growth of trade, both in finished products and within production chains. In many countries, globalization has stimulated production and economic growth. However, in extraordinary circumstances, such as the one during the Covid-19 pandemic, all the weaknesses of this strong interdependence have manifested themselves. Through value chains, the epidemic has affected even countries whose production has not been interrupted by pandemic constrains and which does not directly dependent on vulnerable economies. Producers at the one end of the production chain (raw materials and services) are prevented from exporting goods due to disruptions of demand in the next downstream market. Manufacturers of parts, components and semifinished goods reduce their output due to the suspension or reduction of imports of the downstream market of finished goods. They reduce also import of inputs from abroad. So, all regions face the consequences of being connected to global supply chains.

Many authors, as well as experts and politicians, have previously warned about the excessive dependence of economies on foreign trade partners, but only pandemics have indicated the real scope of this risk. Production and exports have been temporarily suspended in many international production chains, for example in the automotive sector (parts, accessories, vehicles), many workers have lost their jobs, but after health consolidation, production and sales have been largely compensated. Procurement was only delayed. It is similar with all products whose procurement is not on a daily basis. However, food supply is a completely different category in international trade. Food is needed every day in all markets, and any delay in the supply of inputs can has catastrophic consequences. The production and exports of food cannot be compensated due to the sensory nature of most inputs. Covid 19 most directly pointed to the need to increase the degree of self-sufficiency of each country in terms of supplying the most important food products.

The focus of this research is the agriculture of Southeast Europe (SEE): Bulgaria, Romania, Serbia, North Macedonia (hereinafter referred to as Macedonia), Albania, Montenegro, Bosnia and Herzegovina (hereinafter referred to as Bosnia), and Croatia. For this region agriculture has larger share in the economy than in other parts of Europe, it has a great importance for internal supply stability, but also for export position. Due to the lag in the progress of other economic activities during the transition period, agriculture is one of the few sectors in which SEE countries have significant comparative advantages. These countries have very favorable natural conditions and resources and great, but untapped opportunities to achieve significant competitive positions, if not in the world, then at least in the European market. By improving agriculture, SEE can support the growth and development of the entire economy and raise employment rates. That is why revitalization, modernization and increasing agricultural productivity are crucial for SEE countries.

Since the SEE countries do not have enough domestic resources to implement advanced concepts of sustainable productivity growth, such as Smart Agriculture (SA), they need foreign partners, with experience in this field. Consideration of possible assistance from China (not only financial, but above all technical, technological, professional, advisory, etc.) is based on the fact that the SEE countries are part of the area included in the Chinese initiative China-CEE Cooperation, 17 + 1. Second, green investing is part of the new China's Green Silk Road agenda. Third, agriculture is particularly emphasized as a sector of interest to Chinese companies under the Belt and Road Science, Technology and Innovation Cooperation Action Plan, the 14th five-year plan, as well as in the keynote speech of president Xi Jinping at the China-CEEC Summit 2021. Fourth, China made significant breakthrough in the technology and principles of the SA concept. The aim of the China-SEE agriculture cooperation would be to improve environmental impact, health, quality and diversity of agricultural production in SEE, with a potentially joint appearance with high-quality food in the Western European market.

The aim of this paper is to point out the untapped opportunities of partnership between China and SEE countries in the field of implementation of sustainable food production and exports. The most important questions of this research are: "What aspects of smart agriculture are the most appropriate for SEE countries?" and "In which segments of smart agriculture does China have the most ability to provide technical and expert assistance?"

The structure of the paper consists of three chapters. The first chapter concerns the strengths and weaknesses of agriculture in SEE countries. The second one analyzes the principles and means of the Smart agriculture concept, as a new solution for sustainable agriculture production, as well as the applicability of these measures to SEE agriculture. The third chapter is an analysis of the reasons why we consider China to be the most suitable partner of SEE countries in improving agriculture. It explores the conceptual framework for involving agriculture in the new Green Silk Road initiative, with the intention of pointing out the compatibility of the improved Chinese concept of BRI and the current development needs of SEE countries. This chapter also describes successful examples of China's implementation of new approaches to agricultural development, as well as China's achievements in the development, innovation and production of the most important tools in SA, such as agricultural drones and sensors. A separate section in the third chapter deals with the assessment of the applicability of Chinese experiences and knowledge to agriculture in SEE countries.

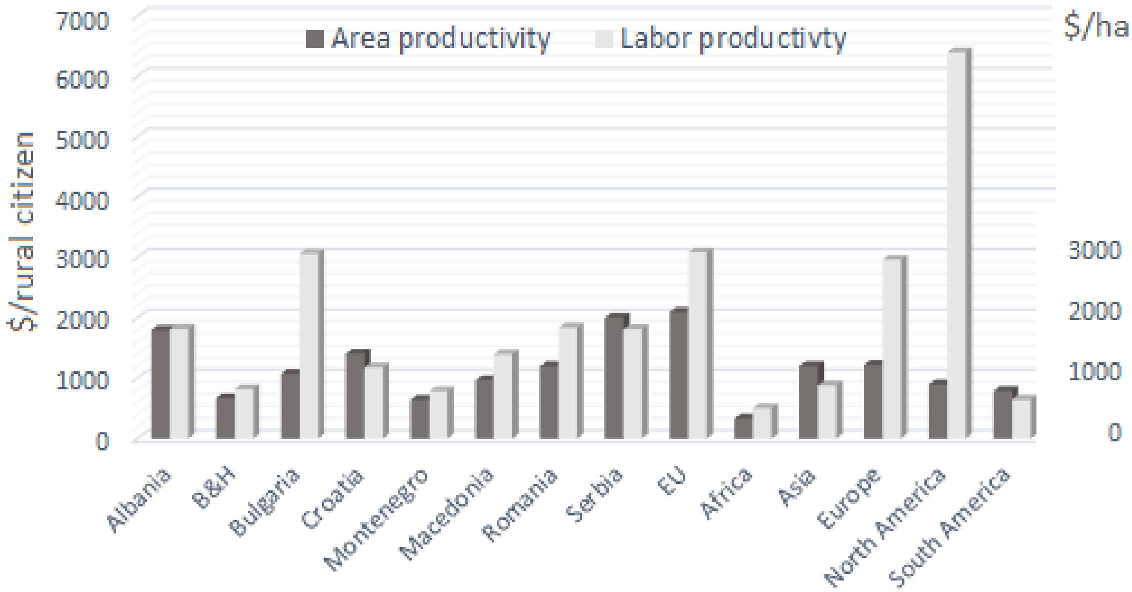
1. Strength and weaknesses of SEE agriculture

Agriculture has traditionally played an important role in the Southeast Europe economies. The SEE countries have favorable natural conditions and resources, which provide the opportunity to agriculture sectors to be economically significant, both in terms of value added and employment (OECD 2018, 548). The share of agriculture in the GDP of SEE is large compared to the world average (3.5%) and the European Union (EU) (1.7%). In Serbia, Bosnia, Macedonia and Albania, agriculture participates from 6% to as much as 19% (Albania) in their GDP, in Croatia, Romania and Bulgaria it is around the world average, only Montenegrin agriculture does not have significant place in its economy (World Bank indicators, 2020).

SEE countries have significant production, but also unused capacity. As the goal is to determine more precisely which segments of SA would be most suitable for SEE countries, the basic characteristics of their agriculture must be determined.

In assessment of economic sustainability of agriculture in SEE countries, calculating productivity is the starting point. Productivity is the most important economic characteristic of agriculture. Productivity is a ratio between the output volume and the volume of inputs, but given the very inaccurate records of agricultural workers in most SEE countries, we cannot use existing FAO data for total factor productivity (TFP). In this research productivity is calculated (approximate but comparable) according to FAO data of income from agriculture, agricultural area and the number of rural populations, instead employees in agriculture. In addition to SEE countries, productivity has been calculated for individual regions of the world and especially for the EU, as the nearest market (Figure 1).

Figure 1. The agricultural productivity in SEE countries and other regions



As the results show, productivity by agricultural area in Serbia is almost equal to the productivity of the EU, which has the highest productivity in the world. Both have a value of more than $ 2,000 per hectare. Albania and Croatia are also not far behind. The lowest incomes per land unit are Bosnia and Montenegro with about $ 600 per hectare, Macedonia and Bulgaria are also very far from the productivity of the EU, but also of Europe as a whole and Asia. In terms of labor productivity, among SEE countries, Bulgaria has the highest productivity with about $ 3,000 per rural population, while other SEE countries earn less than $ 2,000. Bosnia and Montenegro again have the lowest per capita incomes, with incomes almost three times lower than the average of SEE countries.

The main problem of agricultural production in all regions of the world except Africa, is the excessive use of chemical inputs (pesticides, herbicides, fungicides, but also fertilizers, among which only nitrogen fertilizers have negative effects if they accumulate over a long period of time). In SEE countries, nitrogen fertilizers consumption is on average quite high. In Croatia is higher than the average in any region of the world, with 108 kg/ha. It is relatively high in Montenegro, Bulgaria and Serbia. The other four countries have low level of consumption (Table 1).

On the other hand, chemical inputs for crop protection are used (on average) in moderation. Croatia and Bulgaria have higher consumption of pesticides inputs than other countries, but it is still lower than consumption in EU and Europe on average, Asia and South America. Bulgaria has extremely high herbicide use, Croatia relatively high use, while other

SEE countries have very low consumption. Fungicides and bactericides are also mostly used in Croatia and Bulgaria, but also in Albania, which uses other chemical inputs in minimal quantities. Among SEE countries, Macedonia has the lowest use of all chemical inputs (Table 1).

Table 1. The key features of agricultural sustainability in SEE countries and other regions

Countries	Nitrogen fertilizers kg/ha	Pesticide kg/ha	Fungicides and bactericides kg/ha	Herbicide kg/ha
Albania	55.07	0.63	0.33	0.12
B&H	61.96	0.82	/	/
Bulgaria	97.13	1.71	0.31	0.86
Croatia	108.25	1.51	0.44	0.46
Montenegro	83.7	/	0.28	0.03
Macedonia	38.3	0.14	0.05	0.01
Romania	48.62	0.41	0.12	0.22
Serbia	76.22	0.35	/	/
Regions				
EU	90.96	2.01	0.84	0.71
Africa	15.88	0.37	0.03	0.03
Asia	107.28	2.40	0.32	0.65
Europe	51.39	2.94	0.41	0.40
North America	71.47	1.90	0.08	0.69
South America	59.74	3.61	0.22	0.97

Source: author`s calculation on basis of FAO stat

Data on the high productivity of most countries in the region, with the use of relatively small amounts of chemical inputs, indicate a good basis for achieving a higher degree of sustainability of agricultural production. Increasing productivity and overall production levels, but also health and food quality are important goals for every country. The advantage of SEE is that sustainable agriculture can be established with less effort, resources and time than in many countries that are large food producers. The additional use of chemical inputs is not the way to improve sustainable production. Additional mechanization, which is not disputable in ecological sense, has simply reached its limits, i.e. it cannot enable the addition of production growth. As well assessed by the OECD commission: "…increasing the sector's competitiveness through innovation and structural change are key pathways" (OECD, 2018, p. 548).

The area that offers new significant solutions to increase production without further impairment of human health and the environment and enables most of the stated goals in terms of achieving product quality, is smart agriculture. Its principles and tools are listed earlier, and below they are linked to the specific needs and problems of SEE agriculture.

2. Smart agriculture as a solution for sustainable agriculture in SEE

2.1. Concept of Smart Agriculture

The concept of sustainable development imposes a new techno-economic paradigm in agriculture, which implies knowledge economy, with a focus on the specific conditions and needs of individual geographic location (farm of plot) instead of universal approach. It incorporates the idea of so-called *site-specific management* – "the variable management of inputs to soils and crops to identifiable locations within fields with the goal of optimizing profitability" (Pierce, 2010). This approach was first called precision agriculture (today the term Smart Agriculture is mostly used), emphasizing precision of measuring parameters of water, air and land, and the implementation of a precisely determined required amount of input. In general, SA implies the application of information technologies in agriculture with the aim of optimizing production efficiency, quality and minimal environmental impact.

There is a wide range of innovations in the field of information technology which can significantly change the way food is produced. The application of these innovations is very diverse in the agricultural and food sectors: from simple mobile applications to high-tech "digital farms" that use integrated systems that include satellites, drones, robotics, sensors and big data analytics (OECD, 2018, p. 2). New *technologies* provide almost unlimited possibilities for:

1. Collection of agro-data (sensors, drones and satellite monitoring of crop growth, soil quality, water resources and climate);
2. Processing and analysis of obtained data (digital platforms and agrometeorological platforms, which imply the existence of a system of agrometeorological stations); and

3. Action based on processed information (internet of things, process automation, robots).

Domains in which the *principles* of SA enable optimal management are land, water, nutrients, weeds, diseases and pests/insects (systematization based on Zachariah, 2019).

- Land; Most countries have long faced a shortage of agricultural land, due to the needs of a growing population. Even countries with a large territory often do not have a sufficient amount of arable land (deserts, steep mountainous areas, permafrost, etc.). SA allows to increase the productivity of land that is already used for agriculture, without the need to expand the land fund.
- Water; Since the traditional irrigation practice involves applying water uniformly, without taking into account the spatial variability in soil and crop water needs, precision agriculture optimizes the water input and crop response, while minimizing adverse environmental impacts (Zacharia, 2019).
- Soil and nutrients; Soil fertility is not just the amount of nutrients, but whether plants can get the nutrients when they need them. The decades-long use of synthetic fertilizers alone leads to the impoverishment of the soil, the reduction of the humus layer and thus to products that lack all the nutrients except the elemental ones found in synthetic fertilizers (nitrogen, phosphorus, potassium and calcium). Site-specific nutrient management combines plant nutrient prerequisites at every development phase and the soil's capacity to supply those nutrients (Zacharia, 2019).
- Weeds; Weed species vary greatly over very short geographical distances. Each type of soil has its own typical types of weeds. SA allows the application of the smallest amount and the most effective type of herbicide, which saves the soil and water from pollution.
- Diseases and pests/insects occur on every farm. They are not so much specific for certain areas, as for weather conditions, or a very specific combination of temperature and humidity in the air and soil. Instruments of SA can monitor the incidence of crop diseases and pests from the ground micro and air macro perspectives. IoT technology can collect real-time weather parameters of the crop growth by means of numerous inexpensive sensor nodes (Gao et al, 2020). In this way, the minimum amount, exact time and type of chemical inputs are determined. This results in healthier products while reducing costs.

a. Applicability of Smart Agriculture measures in SEE countries

All the potential achievements of SA can be important, but its segments are not equally significant for every country or region. Some of these technologies or principles are not needed at all or at least not in the current constellation of inputs and productivity. As the aim of this research is to determine which principles of SA are most important for SEE countries, a short cost/benefit analysis assesses the needs for certain technologies or principles, based on the presented data.

In terms of technology, there is no doubt that the collection of data by sensors and drones and their processing on digital platforms provide each farm with precise instructions on the necessary activities. However, the last phase, the automatic implementation of these instructions, in addition to being the most expensive segment of SA, reduces the need for labor. Some countries need this solution, while for SEE countries, with already high unemployment rates, especially rural ones, this would have potentially negative effects (Stanojević, 2019).

Combining the data on agriculture in SEE and the possibilities of SA indicates that all countries in the region have needs for many technologies and management principles in the field of SA. Some characteristics are common, but there are also different specific problems for which SA offers solutions.

For example, SEE countries generally have sufficient water resources, as well as significant amounts of precipitation, so for now they do not need to save water at the level of accurate measurement by sensors. These farms lack the classic irrigation systems, the construction of which generally exceeds the financial capabilities of these countries, especially in the Western Balkans. Only after the increase of irrigation systems, drip irrigation systems can be applied, as one of the first aspects of SA.

On the other hand, the specific problems of individual countries indicate the need for urgent and mass application of the principles of SA. As shown in Table 1, Bulgaria and Croatia have significantly higher pesticide use and lower productivity per ha. This is an example of farms when chemical inputs can no longer increase productivity, but only further pollute the soil, and make food increasingly poor in nutrients. They need the most precise application and gradual reduction of toxic substances in soil and water. Serbia does not have a large use of pesticides, but high consumption of nitrogen fertilizer. This (along with the monocultural approach to the fields), according to recent data, has almost halved the layer of humus in Vojvodina, a province with record grain production. Serbia needs the most control over the use of fertilizers (ex. nitrogen sensors), and a broad orientation towards organic production, due to the very good other preconditions in mind. But, in general, as it stated, the all SEE have comparative advantages due to good climate, water, a strategic location, and low pollution in most areas.

Given all of that, in many areas of each of these countries, organic production can be established in less time (conversion usually takes years) and at lower cost, but without the application of the principles of SA it can hardly make a significant profit. Other advantage is willingness of most governments in the region to facilitate and accelerate all new development initiatives. Besides, existing scientific and expert resources could bring out many segments of SA, from the production of new seed species (Serbia, Romania, Macedonia) to IT support for IoT technologies in most countries.

However, as developing countries have limited access to new technology solutions, all these internal resources are insufficient to make a stronger technological breakthrough. SEE countries need a partner, and China has been a reliable partner for many SEE countries for many years, with a higher level of technology in agriculture and recent excellent achievements in this field.

3. China as a potential partner in improving the agriculture of SEE

3.1. Concept of the Green Silk Road

In 2013 the *New Silk Road* project was conceived "*a long-term policy and investment program which aims at infrastructure development and acceleration of the economic integration of countries along the route of the historic Silk Road*" (official internet site of BRI).

In 2019 BRI has evolved to include a set of investment sustainability principles called the Green Investment Principle (GIP). Seven key principles cover the entire investment process, from strategy to project implementation, i.e. strategy, operations, and innovation.[1] In his keynote speech at the China-CEEC Summit 2021, Chinese President Xi Jinping emphasized that these principles also apply to CEE countries. "We need to focus on green development and forge drivers of future-oriented cooperation…To enhance green development, we may take the China-CEEC Year of Green Development and Environmental Protection as an opportunity to

[1] For more details on the Principles, see *Green BRI Center* - https://green-bri.org/green-investment-principle-gip-belt-and-road-initiative

deepen exchange and cooperation in green economy, clean energy and other related areas" (MFA, 2021). On the same occasion, he stressed that Chinese investments in the future will be focused on the most technologically demanding segments of the economy. "We need to step up cooperation in science, technology and innovation" (MFA, 2021).

However, even before the publication of the concept of GIP, the Belt and Road Science, Technology and Innovation Cooperation Action Plan came into force in 2016. Particularly important for this research is the part of the Plan that relates to "joint development and demonstration of agricultural technologies, equipment and machinery such as energy- and water-efficient agriculture, dissemination of climate-smart agricultural development model…" (CCICED, 2018, p. 8). This research is most directly related to this Chinese Plan, as its elaboration at the level of SEE countries.

3.2. China's achievements in the field of Smart Agriculture

There are numerous case studies of the application of the principles and instruments of Smart Agriculture in China. We will list the most important ones for possible application in SEE.

The adoption of drones in China's agricultural sector for monitoring the condition of crops, monitoring the occurrence of diseases and pests, detection of areas where watering or drainage is required, monitoring of weed communities, etc., is growing at a rapid pace. As the world leading manufacturer of civilian drones, drone technology is readily available in China. "The number of agriculture drones is estimated to have doubled between 2016 and 2017, reaching 13,000 aircrafts" (Chung, 2019). Ipsos Business Consulting stated examples of pollination for pears in Xinjiang, crop protection on irregular terrain for Pepper Trees in Jiangjin district, and defoliant spraying for cotton harvest in Xinjiang (Chung, 2019). These examples have shown that the use of drones has reduced the average time of work by 2-8 times, reduced the number of labor and saves a considerable amount of costs for farmers.

In China "sensor technology is currently the most widely used" (Ge at al., 2021). At the end of 2017, about 96%, of villages have and internet access, the retail sales of rural networks reached RMB 1.25 trillion Yuan, 426 cost-effective agricultural IoT products and technologies have been formed by the implementation of IoT pilot project (Zhao, 2019).

Fan et al (2021) documented the effects of applying the principles of sustainable agriculture in Yunan Province. By monitoring intervention policies (about 30 types) over a 12-year period, they found that the strongest positive effects in this province had interventions:

Tighten Pesticide Regulation, Ecological Compensation and Soil Pollution Prevention. The key result of this quantitative research is not only related to Yunnan Province, but is universal. The application of a specially developed agro-ecological sustainability index (AESI) as a method of evaluating the results of interventions, showed that ”interventions should be combined with an integrated planning process for the targeted areas because of the complexity of the agro-ecosystems. Single or non-linked interventions are therefore inadequate and could have an adverse effect on the system” (Fan et al, 2021, p. 10). So, all interventions and measures should be integrated into the broader strategy or concept.

The pilot area in Changsha-Zhuzhou-Xiangtan city cluster in Hunan Province is one of the most successful examples of the implementation of the concept of “resource and ecologically sound agriculture” (RES). This was (and still is) a high-tech agricultural industrialization base, an export-oriented agricultural base, and an agricultural product processing base in Hunan Province (Chen, 2020). The aims of this project were “to conserve resources, use resources rationally and increase resource utilization” (Pu, Zhang and Wen, 2021). Some of the techniques used are: accelerating the cultivation of new varieties, the development of new agricultural resources, and the application of new technologies (agro-sci-tech for farmers, technology-assisted agriculture) (Chen, 2020). The pilot project is not conceived as a one-time experiment in the application of technologies, but in the implementation of principles, which continue to initiate new improvements. In Changsha City, as the most successful example in this cluster, eight new agricultural technologies has promoted and ten new varieties of quality crops implemented. Farmers’ income in Chang-Zhu-Tan RES Pilot Area has increased significantly, and the level of people’s livelihood has been significantly improved (Chen, 2020, p. 319).

Pu, Zhang and Wen (2021) quantitatively assessed the industrial land use efficiency of these pilot project in 13 prefecture-level cities in Hunan Province (including the CZTUA). The results showed that industrial land use efficiency has increased over the years; the pollution emission index clearly decreased each year. Based on the analyzed variables, they found that the formation of the RES “may also contribute to sustainable economic development in other transitional countries in the world” (Pu, Zhang and Wen, 2021).

3.3. Possibility of cooperation between China and SEE in agriculture

Cooperation between China and CEE, of which SEE is an integral part, has been expanding for a decade. China has invested significant funds in numerous projects, so far mostly in infrastructure, but there have been investments in transport, energy and metal industry. Striving for long-term cooperation, China invests in those sectors for which financial support is most needed and for which the host country does not have sufficient internal resources (Stanojević, 2020, p. 109).

Agriculture, so far, has not been the focus of Chinese investment within the BRI. Cooperation in the field of agriculture with SEE countries exists, but is mainly limited to trade in agricultural products. This is especially true in the Western Balkans, while in Bulgaria and Romania there are recently additional joint development projects. With the aim of intensifying cooperation in the field of agriculture, an Association for the Promotion of Agricultural Cooperation between China and the Central and Eastern European countries (APAC), established and started working in 2015 in Bulgaria. Within this multilateral program, two 17 + 1 Demonstration Zones projects have been implemented in Plovdiv (Bulgaria) so far. On a bilateral basis, the first China-Romania Agricultural Science and Technology Park was inaugurated in 2019, “marking the beginning of bilateral substantive cooperation in modern agriculture” (Xinghua, 2019-05-17).

President Xi Jinping announced further intensification of cooperation in the field of agriculture: “We need to deepen agricultural cooperation in a bid to double CEE countries' agricultural exports to China and raise two-way agricultural trade by 50 percent over the next five years. We propose setting up a farm produce wholesale market in the CEE region and introducing an exchange program for young agricultural professionals” (MFA, 2021).

For all SEE countries, exports to China are of great importance, but the opportunities and needs for other forms of cooperation are much greater. Without a significant increase in production, SEE countries cannot increase exports either.

The readiness to invest in the green development of partner countries is not the only reason why we consider China the most suitable partners in projects for the sustainable development of agriculture. As a country facing a lack of natural resources for food production and the consequences of overuse of chemicals in agriculture, China has made significant progress in developing, manufacturing and implementing of various segments and tools of SA (agro-drones, sensors, GPS, remote sensing), as well as in adopting the principles of sustainable agriculture. The first chapter lists a number of examples, selected so that they can be implemented on the problems of agriculture in SEE.

The first chapter lists a number of examples, selected so that they can be implemented on the problems of agriculture in SEE. Among them, we consider the most important the RES strategy, which China successfully implements in several locations. The RES is original, accessible and widely acceptable concept because, in addition to technological achievements and the principles of sustainable agricultural development, it also includes the principles of traditional agriculture, such as intensive farming, land cultivation through land use, and biological pest control. The limitations of traditional agriculture are overcoming by the sci-tech, but not all its aspects are excluded. This is of particular importance as a model for SEE countries, which have many elements of traditional agriculture. SEE countries lack not only innovation, but a meaningful and applicable concept of sustainable agricultural development.

4. Conclusions and recommendations

The countries of Southeast Europe generally have very favorable natural conditions and resources and significant agriculture production. SEE countries have other advantages in agriculture: relatively low use of chemical inputs, ie low soil and water pollution, not expensive labor, internationally recognized agricultural institutes and capable scientific staff. Despite, in most cases these countries are net food importers, solely due to the large trade deficit with the EU. In addition to the deficit, which is the result of the weak political position of these countries in relation to the EU, SEE agriculture has a lot of untapped potential in terms of quantity and quality of products.

Research shows that the application of principles and instruments of SA could enable these countries sustainable agricultural production, which means an increase of production without additional land occupation, environmental disturbance, and with savings of scarce resources. This would make it possible to reduce imports and, with additional efforts, increase exports. Organic production has special potential to achieve these goals, and in many areas of each of these countries, it can be established in less time (conversion usually takes years) and at a lower cost than usual. The reasons have already been cited as the advantages of SEE agriculture in terms of sufficient resources, relatively low use of chemical inputs, and scientific and professional resources in many SEE countries.

Since that these advantages are not sufficient to make a stronger technological breakthrough, SEE countries need a stronger partner in economic and technological terms. China has been a reliable partner of many SEE countries for many years, it has a higher level of technology in agricultural production, extensive experience and excellent achievements in the implementation of all segments of SA. Equally important, China has a plan and intention to invest in the agriculture of SEE countries on a win-win basis, which it consistently adheres to.

The concept of resource and ecologically sound (RES) is particularly interesting for SEE agriculture. The future cooperation between China and SEE countries in the agricultural sector should include not only capital investment, but also the transfer of knowledge, expertise and experience with obstacles. RES is easily acceptable to SEE countries, whose agriculture has retained many traditional segments, which cannot be made sustainable and efficient by simply purchasing drones and sensors. RES has a strong long-term development component, as opposed to most projects related to the application of SA achievements to a specific demonstration farm. In all cases in the SEE countries, such projects have remained at the level of specific demonstration area, without any impact on the country's farmers.

In the case of Chinese investments within the BRI, the win-win approach and goals have always been achieved so far. Although agriculture has not yet been the subject of investment, a highly practical and purposeful approach to any investment within the BRI would certainly yield concrete results.

References

- Belt and Road Initiative. Official internet site: https://www.beltroad-initiative.com
- CCICED (2018) *Special Policy Study on Green Belt and Road and 2030 Agenda for Sustainable Development*, Policy Paper, China Council for International Cooperation on Environment and Development.
- Chen, W. (2020) Challenges and Opportunities for Chinese Agriculture Feeding Many While Protecting the Environment,
- Chung, J. (2019) *China's Agriculture Drone Revolution*, Ipsos Business Consulting, china-agriculture-drones.pdf
- Fan, J., Fan, X., Jintrawet, A., Weyerhaeuser, H. (2021) Sustainability Interventions on Agro-Ecosystems: An Experience from Yunnan Province, China. *Sustainability*, (13) 5698. https://doi.org/10.3390/su1310569
- FAOSTAT (2020) http://www.fao.org/faostat/en/#data
- Gao, D., Sun, H., Hu, B. and Zhang, S. (2020). Framework for Agricultural Pest and Disease Monitoring Based on Internet-of-Things and Unmanned Aerial Vehicles, *Sensors*, *20*(5), 1487; https://doi.org/10.3390/s20051487
- Ge, S., Wenbin, W., Yun, S., Peng, Y. and Qingbo Z. (2021) *The latest progress in the research and application of smart agriculture in China*, China National Knowledge Infrastructure CNKI, https://en.cnki.com.cn/Article_en/CJFDTotal-NXTS201802002.htm

- MFA - Ministry of Foreign Affairs of the PRC (2021) *Keeping up the Momentum and Working Together for a New Chapter in China-CEEC Cooperation*, Keynote Speech by Xi Jinping, President of the PRC at the China-CEEC Summit, Beijing, 9 February 2021. https://www.fmprc.gov.cn/mfa_eng/zxxx_662805/t1852860.shtml
- OECD (2018) *Competitiveness in South East Europe: A Policy Outlook 2018*, Competitiveness and Private Sector Development, OECD Publishing, Paris, https://doi.org/10.1787/9789264298576-en.
- Pierce, F. J. (2010). Precision irrigation. Landbauforschung Völkenrode, 340, 45-56.
- Pu, W., Zhang, A. and Lanjiao, W. (2021) Can China's Resource-Saving and Environmentally Friendly Society Really Improve the Efficiency of Industrial Land Use? *Land* 10(7), 751. https://doi.org/10.3390/land10070751
- Stanojević, N. (2019). The role of information technology in sustainable agricultural development. *Ekonomski vidici*, 26(1-2), pp. 1-17.
- Stanojević, N. (2020). *Effects of China`s New Silk Road on the participating economies*, Eliva press.
- USDA (2018) https://www.ers.usda.gov/data-products/international-agricultural-productivity/
- WEF (2018). *The Global Competitiveness Report 2018*, World Economic Forum.
- WEF (2021) *Food Technology and Innovation*, https://intelligence.weforum.org/topics/a1Gb0000000pTDPEA2?tab=publications
- World Bank indicators (2020). https://data.worldbank.org/indicator
- Xinghua (2019) *First China-Romania agricultural SCI&TEC Park inaugurated in Bucharest*, 2019-05-17. http://www.china-ceec.org/eng/hzjl_1/glyhz/jm1/t1664230.htm
- Zachariah, A.B. (2019) *Precision Agriculture: The Future of Farming*, Delve Publishing, Canada.
- Zhao, C. **(**2019**)** State-of-the-art and recommended developmental strategic objectives of smart agriculture[J]. *Smart Agriculture*, 1(1): 1-7.