

SUSTAINABLE DEVELOPMENT AND DEMOGRAPHIC CHALLENGES IN RURAL AREAS OF THE REPUBLIC OF SERBIA

Katica Radosavljević

Institute of Agricultural Economics, Belgrade, Serbia
katica@ekof.bg.ac.rs
ORCID: 0000-0002-5609-8399

Milica Kočović De Santo

Institute of Economics Sciences, Belgrade, Serbia
ORCID: 0000-0003-3304-7801

***Abstract:** The aim of the paper is to show the elements of a strategic approach to the sustainable development of villages in the Republic of Serbia. The subject of the study is the consideration of demographic, social and natural factors that are important for the survival and development of rural areas in Serbia, focusing on the main challenges and possible directions of agro-economically sustainable development.*

Extreme heat waves are occurring more frequent due to natural fluctuations in global temperature and careless human behavior. These undesirable climate changes have a direct negative impact on the environment. We build on previous key findings and focus on strategic considerations for sustainable rural and agricultural development in times of severe climate change.

Our two main arguments are that agricultural insurance in Serbia should follow the standards and trends of economically developed countries in the market economy in order to mitigate the risks of climate change. A growing number of insurance companies, a more active role of the government and educating farmers about the many advantages that insurance offers, but also different forms of insurance products can have a strong positive impact on the agricultural sector.

The second argument refers to non-market and heterodox approaches that draw on critical agricultural studies and critical development studies by looking for other post-growth economic frameworks for the future.

Key words: agriculture, climate change, neoclassical and heterodox approaches, sustainable development

JEL classification: Q13, M31, F21, F23, P23

1. INTRODUCTION

Food is an essential component of any Earthly society's culture, it is a physiological need, and it relies on the species from ecosystems. Despite having access to plenty of food, 10% of the world's population is hungry (Bliss, Egler, 2020). There are minimum two main issues regarding rural, agricultural development with sustainable food production a) climate changes affects agriculture, and b) the fact that vast scope of agriculture is pushing the Earth system beyond global sustainability thresholds. These interlinked challenges are in feedback loop relation.

An increase in global warming of 1.5°C currently poses serious ecological challenges for the global economy. The rise in temperature can trigger a series of events that will culminate in a breakdown of the socio-ecological system, characterized by an increase in the frequency and severity of extreme weather events. These events — which include heat waves, storms, floods and droughts — are caused by the continuous use of fossil fuels and unsustainable land and energy use (Tešić, Kočović De Santo, Radosavljević, 2023). The 3.5°C increase in global warming allowed by current government policies seriously endangers both human and non-human existence. Continuous expansion intensifies the use of resources, leading to ecological deficit and debt. For this reason, vulnerable populations bear the brunt of the externalization costs of growth, and the world's unsustainable production and consumption patterns exacerbate inequality and environmental degradation.

The European Commission unveiled the European Green Deal in 2019, with the goal of making Europe the first continent to be completely climate neutral by 2050. The deal covers every aspect of the economy, including energy, transportation, agriculture, construction, steel, cement, information and communication technology, textile, and chemical industries, as well as stopping climate change, recovering lost biodiversity, and reducing pollution.

Businesses and organizations within specific industries or other homogeneous groups (sometimes referred to as the target group; examples include agriculture, industry, retail trade, and transportation) may be the cause of specific issues (like pollution) and, as a result, may be able to help solve them (e.g., by improving production processes). They also gain from favorable social, economic, or environmental circumstances (clean water is necessary for the food sector, for example).

There is no doubt that the situation of our biosphere is currently catastrophic, and the measures taken are incredibly inadequate. As a result of the widespread damage to ecosystems and their inability to absorb created waste and emissions, many of the raw materials essential to our economy — such as oil and phosphorus — are peaking (Steffen et al. 2011). This is highlighted by the phenomenon of climate change.

The frequency of disaster events is increasing due to factors such as population growth, unsustainable development and inadequate disaster management, with more than half of the world's population living in climatically vulnerable areas. The frequency of disasters worldwide is expected to rise sharply by 2030 if current trends continue (Tešić, Kočović De Santo, Radosavljević, 2023)). Further warming exacerbates existing risks, so broad-based action is needed to reduce greenhouse gas emissions and strengthen society's ability to withstand climate change. The insurance sector can be extremely helpful in reducing the impact of climate-related disasters by providing financial support and risk management capabilities.

Little progress has been made in the socio-economic sphere. Not much has been done in relation to the income stabilization measures that are permitted under the risk management toolbox. Although income stabilization measures were planned in some member states, including Spain's Castilla y Leon region, Hungary, and Italy, they have not yet been put into practice. The cultural and historical disparities among EU member

states can account for a portion of the variation in crop insurance acceptance. For example, according to Zubor-Nemes et al (2018), crop insurance is partially required in Poland and Hungary. Therefore, many developed countries have introduced insurance against multiple types of risk and new insurance models such as insuring crops and yields based on weather derivatives, insuring the total value of crop production, or insuring the income derived from crop production, concludes Radosavljevic, K., (2021).(pg. 208). Serbia has extremely good climatic and geographical predispositions for practicing organic (ecological unconventional) agriculture, but also for growing special plant and animal species, which are distinguished by their specificity and, compared to other products, make up a relatively small part of the international and world market, recommendation is Radosavljevic, K., (2017.). (pg. 163)

There are few directions, and possible modelling paths to think about agriculture within the limits i.e. within the state of emergency. What agriculture should look like to become more sustainable? What types of economic, production and consumption patterns, and market practises do we need for the future times? How mitigate the climate change risks? As such, our aim is to reveal economic and non-economic instruments and interventions, which could contribute to further sustainable food production.

Thinking in terms of agricultural insurance in Serbia is relevant, as it should hold central place in contemporary market economic logic. In such case, it should follow standards and trends of economically developed countries. What will contribute to this are an increasing number of insurance companies doing business in this market, a more active role of the government, and educating farmers in the many advantages that insurance offers.

Agricultural insurance is dependent on the nation's level of agricultural development as well as the type of insurance being used—that is, whether agricultural producers are covered by private or public insurers. In most developed countries, private insurance businesses are significantly more effective than government-run ones when it comes to crop and yield insurance. They have demonstrated greater adaptability in their operations, efficiency in resolving specific issues, and inventiveness in coming up with fresh ideas to meet the demands of service consumers in the agricultural production sector. Some nations even have public-private partnerships, like Spain.

The investigation of the feasibility of creating index-based insurance and its real-world implementation is a novel method of problem-solving. An option to the conventional approach to crop and yield insurance is index insurance, in which insurance benefits are distributed not on the performance of a specific agricultural holding but rather on average income/prices in a given area or variations in certain objective meteorological parameters like temperature, precipitation totals, concludes Turvey C.G. (2001).

On the other hand, there are various heterodox economic approaches, which we found highly important in seeking economic alternatives for sovereign, healthy, more human and sustainable food production.

Our goal is to point out the challenges and limits of agricultural development, while at the same time understanding neoclassical and heterodox economic approaches that, in combination, can provide good solutions for the transition to more economically sustainable solutions in the time of major climate challenges and changes. An important topic for future sustainable agrarian development is about the political economy and ecology of (de)growth, which are of great interest cross-sectioned with critical agrarian studies. In order to dispel the myth that economic growth always leads to more prosperity, it is necessary to answer the fundamental questions of who benefits in growth systems, what happens to poverty and the development of rural areas?

The economy is made up of more than just markets. Most ecological economists are aware of this. Occasionally, we supplement the well-known economy-in-society-in-nature with an inner "markets" domain. A common misconception is that the economy consists of only the goods and services that are created, traded, and sold. Economic practices and institutions without markets are crucial, as the Covid-19 epidemic has shown. If masks, tests, treatments, news, and scientific information were openly available to everyone, communities could more successfully restrict the virus's spread (Berger et al., 2020; Chan and Yuen, 2020; Bliss and Egler, 2020). Similar to previously, if individuals had the alternative means of obtaining food and shelter, they are less likely to have to sell their labor for a living. This made people more resilient to economic downturn without compromising their basic needs. Some examples of different non-market economic organization, as Covid-19 revealed us, are highly relevant for future thinking regarding different and more sustainable organization of food production system. While

attempting to keep the Covid-19 physical distancing measure, staff and volunteers have quickly arranged "food banks" to receive large amounts of product developed for the "now-closed eateries" for the growing ranks of unemployed workers (Carson, 2020, Bliss, 2019, Bliss and Egler, 2020). In some other cases the "mutual aid collectives" were established to enable the distribution of food and resources (Milstein, 2020). The reason why it is important to study non-market economic practices and institutions i.e. non-market economies, lies in the fact that these forms of economy are not intended for sale and transfers other than buying and selling, often completely operating without money (Bliss, 2020).

Capitalist expansion has almost reached its earthly limits, as Simone Weil rightly pointed out. However, determining the course of this change is still crucial (Weil, 1933). It is crucial to critically examine how social movements have challenged the theory of capitalist expansion i.e. how these movements relate to sustainability and degrowth principles and whether they may form coalitions. Furthermore, examining the contributions of non-capitalist smallholders provides insightful information on sustainable farming practices (Holt-Giménez Citation, 2010, Martínez-Alier et al. 2016, Borrás, 2019). Finally, it is crucial to understand the rise of new ideologies and movements such as eco-spirituality, permaculture, slow food, vegetarianism/veganism, radical homemakers, back-to-the-land, alternative ideas of the good life, etc. (Greaber, J.F., 2020). These projects are the breeding ground for social change and could form the basis for a general awareness that supports alternative agro-economic thinking to mitigate the undesirable socio-economic realities that are the inspirations and doorways for a sustainable future.

2. THE INTERNATIONAL FRAMEWORKS FOR STRATEGIC SUSTAINABLE DEVELOPMENT

Considering the significance of the environment and the global issues at hand, data from the expert and scientific evidences and reports covering the years 1999–2000 were examined. With specified sustainable development strategies, we will see what the present state of affairs is based on the most recent statistics available from the UN Development Program (UNDP) as well as the fundamental issues that the current generation is facing below. The data that are being presented pertain to the year 2020 and we observe that the outcomes of 2020 were significantly impacted by the COVID-19 pandemic.

The European Union's strategy for adapting to altered climatic conditions—The strategy was adopted in February 2021, building upon the previous EU Strategy from 2013, whose primary objective is to enhance the resilience of the EU and its member states to climate change. Within the framework of the EU Strategy, member states are also called upon to adopt their comprehensive strategies and secure financial resources to implement identified/adaptation activities, as well as to strengthen national adaptive capacities. In principle, the EU insists on establishing an effective monitoring, reporting, and evaluation system, prioritizing monitoring and reporting. The EU Strategy particularly emphasizes the necessity of establishing systems for efficient adaptation at the local level, through the Climate and Energy Initiative of the Covenant of Mayors. (Covenant of Mayors for Climate and Energy initiative). In principle, the EU insists on establishing an efficient monitoring, reporting, and evaluation system, prioritizing monitoring and reporting. The strategy has four main objectives: to make adaptation smarter, faster, and more systematic; and to enhance international action on adapting to altered climatic conditions.

The new EU legislation, which commenced implementation in 2021 in line with the Paris Agreement, introduces adaptation to altered climatic conditions for the first time. Regulation 2018/1999 mandates the inclusion of an analysis of the impact of altered climatic conditions on energy supply security in the National Energy and Climate Plans (NECPs), primarily through the availability of water for energy production facilities and the availability of biomass.

The biennial reports on the implementation of NECPs are required to include information on adaptation to altered climatic conditions. Regulation 2018/1999 also prescribes the obligation of biennial reporting on programs and strategies for adaptation to altered climatic conditions, planned and implemented actions, including:

- Basic objectives and institutional organization;
- Climate scenarios, climatic extremes, climate change impacts, vulnerability assessment, risks, and main climate hazards;
- Capacity for adaptation to altered climatic conditions;
- Plans and strategies for adaptation to altered climatic conditions;
- Monitoring and evaluation system;
- Progress in implementation, including best practices and changes in management.

- The Green Agenda for the Western Balkans includes climate action as one of its five pillars, encompassing decarbonization and adaptation to altered climatic conditions. The Western Balkan states have fully supported and adopted it, along with the regional Action Plan for its implementation, stemming from the Sofia Declaration on the Green Agenda for the Western Balkans.

3. AGRICULTURE FACING CHALLENGES

Agricultural producers can only obtain a sense of security by decreasing the amount of risk. According to Roberts R.A.J. (2005.) agricultural insurance is “a subset of risk management measures, the development of which depends on the cost/benefit ratio to the agricultural holdings or companies, as well as on the supply on the insurance market.”

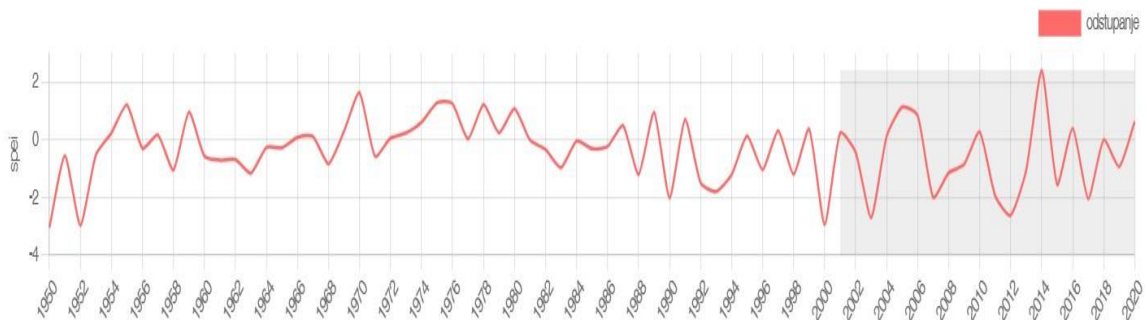
It may be observed that agricultural insurance generally serves two roles: it provides a more secure path to obtaining bank loans to farmers who are trying to improve their business; it helps with uninterrupted spending of agricultural holdings when they experience seasonal fluctuations caused by severe weather events conclude Ghosh, P at al (2000). According to Iturrioz R. (2009), globally, crop insurance makes up approximately 90% of the total agricultural insurance premium. Risk-averse individuals are more likely to opt into traditional agriculture (reflected as traditional seeds in the experiment) and are less likely to use modern farming inputs that require financing (high-yield varieties) despite the availability of insurance, conclude Brick, K at al (2015). The entire agribusiness system depends on agricultural insurance because it has “an important role as a measure of protection and improvement of agricultural production, conclude Sredojević, Jeločnik and Subić (2010). The factors that influence the use of agricultural insurance can be grouped into the following: risk comprehension, size of the farm, farm owner’s level of education, past experiences with using insurance, income level, kind of crop, and use of inputs, conclude Wang, M, at al (2016) and Tóth, J. and Nemes, A. (2014).

The SPEI (Standardized Precipitation Evapotranspiration Index) drought index is based on the SPI (Standardized Precipitation Index) but incorporates a temperature component, allowing for the consideration of temperature's impact on drought development through the basic calculation of the water balance. SPEI has an intensity scale where both positive and negative values are calculated, identifying wet and dry events. For the platform's purposes, the period

used for calibrating the index is 1961. - 1990. years.

Graph 1. Republic of Serbia drought index - deviation for the period 1950. – 2020. compared to 1961. – 1990.

Srbija / SPEI indeks suše (speiča) - odstupanje za period 1950-2020 u odnosu na 1961-1990



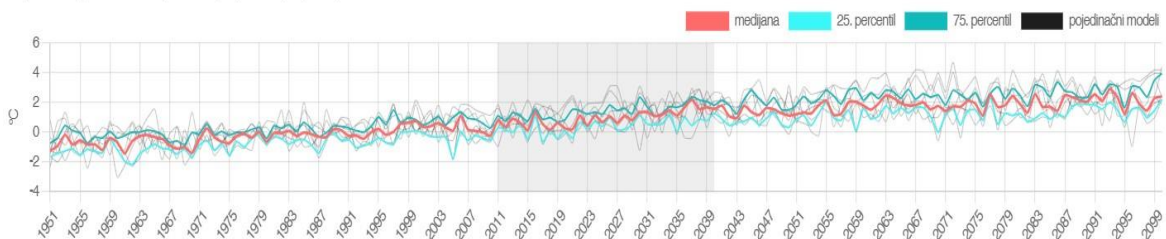
Source: <https://atlas-klime.eko.gov.rs/lat/map>

Graph 1. represents future changes (climate projections) when observed as a variable mean daily temperature, with the reference period being 1971. – 2000. years and the period of observed

changes being 2011-2040 years for the Republic of Serbia. These data are generated based on the results of climate models for various scenarios of future greenhouse gas emissions.

Graph 2. Mean daily temperature deviation for the period 1951. – 2100. compared to 1971. – 2000.

Srbija / Srednja dnevna temperatura (tas) - odstupanje za period 1951-2100 u odnosu na 1971-2000 i za scenario RCP45

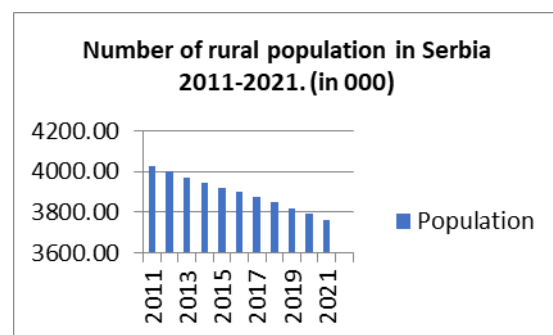


Source: <https://atlas-klime.eko.gov.rs/lat/map>

In the long run, the development of agricultural insurance depends on finding a means of encouraging farmers to utilize insurance products. To this end, the government must play a more active role, and local governments must also be included. Furthermore, the collaboration of the three parties involved—the government, farmers, and insurance companies—is crucial.

The trend of constant decline in the number of rural population in Serbia is another major constraint to the development of Serbian agriculture. Graph 3 represents the movement of rural population for the period 2011–2021. From 4,028 thousand in 2011, the number of rural population reached a figure of 3,760 thousand in 2021.

Graph 3. Rural Population in Serbia 2011. – 2021. (in 000)



Source: <https://www.fao.org/faostat/en/#data>

The demographic and migration issues that our nation is facing are the result of poverty, natural and migratory movements, and a decline in the overall population of the Republic of Serbia. Many other socioeconomic issues, including poverty and social isolation, regional disparities and inequities, a lack of local initiative and

competitiveness, and a loss of cultural identity, are attacking rural communities.

CONCLUSION

Crop and yield insurance against multiple/all the sources of risk could provide more comprehensive protection for future agricultural investments. Since this type of insurance would help protect the continuity of agricultural producers' purchasing power, produce capacity, and ability to settle their immediate liabilities on time, it could also act as a protective mechanism for the national economy. One possible barrier to the introduction of this kind of insurance is how insurance companies would pay for its implementation without jeopardizing their business's profitability. A percentage of the expenses would need to be covered by the government in order to resolve this problem.

Alongside fostering innovation in climate solutions, the insurance sector can alleviate the strains imposed by contemporary capitalism by advocating for sustainable practices and extending insurance coverage to the most vulnerable segments of society. Offering crop insurance to farmers and flood insurance to residents in high-risk zones not only mitigates losses and facilitates economic recovery post-natural disasters but also incentivizes responsible resource management practices essentially important for sustainable rural and agricultural development. Insurance products safeguarding natural resources like forests, fisheries, and biodiversity encourage their sustainable utilization, thereby curbing over-exploitation and safeguarding livelihoods dependent on them. In terms of the economy, insurance strengthens financial resilience by cushioning unforeseen costs. Insurance helps reduce poverty by guaranteeing business continuity and preserving employment opportunities. In essence, the insurance industry is becoming a key player in reducing the risks associated with climate change and addressing the difficulties of modern capitalism. Such unique perspectives allow for a deeper understanding of climatic processes and lead to the development of new types of goods. In navigating modern capitalism, the insurance industry is championing the interests of the most marginalized by supporting environmentally friendly measures and offering tailored protection plans such as microinsurance and natural resource protection goods (Tešić, Kočović De Santo, Radosavljević, 2023, Vujanović, Kočović De Santo, 2023).

Determining the method of government support for farmers. Based on other countries' experiences, subsidizing the cost of insurance, that

is, the premiums that farmers pay to insurance companies has shown to be the best form of support, keeping in mind that the subsidized amount must be acceptable to both the government and the agricultural producers. Additionally, for young farmers who wish to remain in rural areas and continue to work in agriculture the premiums should be higher and, if the government budget allows, should be 100% subsidized for the first 5 or 10 years.

The insurance of agricultural production contributes to the economic stability of crop and livestock production by providing protection to agricultural producers and creating a surplus reserve for insurance companies via premiums paid. The positive effects of insurance in agricultural production will reflect on future potentials for agricultural development as well as the competitiveness of the national economy.

According to Mihailovic et al (2023), achieving the full potential of agricultural production requires the establishment of cooperation between local producers, institutions and companies (pg. 147). In the current discussion on growth and agricultural constraints, Critical Agrarian Studies (CAS) and degrowth overlap as an important field of study (McGreevy, S.R et.al. 2022). Moreover, analyzing the contributions of non-capitalist small-scale farmers yields valuable insights into sustainable agricultural methods. Additionally, it is imperative to grasp the emergence of novel ideologies and movements like eco-spirituality, permaculture, slow food, vegetarianism/veganism, radical homemakers, back-to-the-land, and alternative concepts of well-being. These initiatives serve as catalysts for societal transformation and could lay the groundwork for widespread awareness that fosters alternative agricultural-economic paradigms, thereby mitigating the adverse socio-economic conditions that inspire and facilitate a sustainable future.

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