

COMPARATIVE ANALYSIS OF THE REALIZATION OF SUSTAINABLE DEVELOPMENT GOALS RELATED TO FOOD AND AGRICULTURE

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Abstract

The achievement of sustainable development goals is very current at the global and national level, in all economic sectors, including the agri-food sector, with a focus on people, the planet and prosperity. Accordingly, the subject of research in this paper is the realization of the Sustainable Development Goals (SDGs) that directly or indirectly relate to food and agriculture. The aim of the research is to point out achievements and key challenges for the coming period in terms of implementing the SDGs. Based on the latest available data from the FAO (Food and Agriculture Organization of the United Nations), this paper conducts a comparative analysis of the implementation of the SDGs in the world, with a special emphasis on the Republic of Serbia. The research results show that the realization of these goals is nowhere at a high level, which means that much greater efforts and coordination are needed in the future than have been undertaken so far.

Key words: *Sustainable Development Goals (SDGs), agriculture, food, world, Republic of Serbia.*

Introduction

Sustainable development is a concept that has very wide application in the economy and society. In contemporary conditions, it is insisted on sustainable development, and the food and agriculture sector is also exposed to these requirements. In accordance with the current relevance of the concept of sustainable development and the importance of food for people, so therefore agriculture, the subject of

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research in this paper is the realization of the Sustainable Development Goals (SDGs) that directly or indirectly relate to food and agriculture. Accordingly, the aim of this research is to indicate the status and trends, i.e. the achievements so far and key challenges for the coming period in terms of implementation of the SDGs related to food and agriculture.

The paper starts from the following research question: Are the Sustainable Development Goals (SDGs) related to food and agriculture being successfully implemented and what does this mean in terms of future activities in this field?

Regarding the methodology in the paper, it is important to emphasize that, based on the latest available data from the FAO - Food and Agriculture Organization of the United Nations (FAO, 2025a and 2025b), a comparative analysis of indicators for the implementation of the Sustainable Development Goals related to food and agriculture was conducted for the world, i.e. regions, with a focus on the Republic of Serbia.

Literature review

The UN World Commission on Environment and Development, known as the Brundtland Commission (UN WCED, 1987), explained in its report entitled *Our Common Future* that sustainable development meets the needs of both present and future generations. The explanation of sustainable development given by this Commission is still widely cited today, after almost four decades, because it is applicable in different development periods, areas, sectors, and makes sense in contemporary living and working conditions, although many circumstances have changed significantly since 1987. This further confirms the value and importance of this definition of sustainable development.

In addition to a series of previous analyses, reports, plans, conferences and other activities, in 2015 the United Nations (UN) adopted the Agenda 2030 (UN, 2015), as a global plan for sustainable development, which commits all countries to strive to achieve the Sustainable Development Goals (SDGs). When it comes to the Republic of Serbia and the Agenda 2030, among other activities, the planning framework is mapped, that is, the commitment to the implementation of sustainable development goals is considered, based on public policies aimed at SDGs, as well as planning, programmatic, strategic and other institutional activities that are implemented for the purpose of sustainable development. This also includes the process of harmonization with the European Union (EU), which in a specific way also contributes to the realization of the SDGs and the Agenda 2030 (RSJP, 2024).

The UN Department of Economic and Social Affairs (UN DESA, 2025) publishes, each year, the Sustainable Development Goals Report, which contains a global overview and country profiles, while the Sustainable Development Report is published by the UN Sustainable Development Solutions Network, i.e. co-published with the University of Dublin (Sachs et al., 2025). Of course, regional and sectoral reports are also published, such as the Europe Sustainable Development Report (Lafortune & Fuller, 2025), then the Tracking progress on food and agriculture-related SDG indicators, by year and region in the world, i.e. by country (FAO, 2025a & 2025b), etc. OECD & FAO (2025) usually make ten-year projections for agricultural sector, analyzing the state, trends and prospects of the agricultural and food products markets, with detailed analysis in the sectors of cereals, milk, meat, oilseeds, etc.

Vos & Bellù (2019) consider current global trends and challenges facing agri-food systems in contemporary conditions, with the fundamental dilemma of whether these systems meet the needs of a large global population. The overall conclusion of this research is that, although existing systems produce plenty of food, significant transformations are needed to ensure that production takes place in an inclusive and sustainable way, given the inevitable impact of climate change, depletion of natural resources, changes in consumer preferences, still present problems of hunger in the world, food market deficiencies, negative impact of urbanization, numerous problems in rural areas, etc.

Other authors have been researching important aspects and factors of sustainable development for decades, with some also focusing on issues of food, agri-food sector, rural development, etc. For example, Rede et al. (2025) research on the linkages between food security, agriculture and the Sustainable Development Goals, through bibliometric analysis, indicates that the USA, followed by India and China, showed the highest level of publication activity in this field, with a focus on achieving zero hunger, climate action and the sustainability of life on land, through the prism of agriculture and food security. This study highlights the great need for collaboration among researchers, development policymakers, and practitioners in this field. It also indicates that key actors in agriculture are responsible for achieving food security, guaranteeing sustainable agricultural production, and implementing activities to preserve natural resources and the environment. The research also contributes to the academic community, as it synthesizes available relevant data, analyses and contemporary trends, identifies gaps, proposes future directions for research and development, and suggests decision-making based on relevant information in global and national efforts for

food security and sustainable agriculture. An overview of good practices, policies and mechanisms for the development of sustainable agriculture, in line with SDG 2 (Zero Hunger), is provided by Hiywotu (2025), with the aim of inspiring joint efforts and decision-making based on relevant information, towards building resilient and sustainable food systems, which will effectively face the global challenge of hunger, malnutrition, etc.

Veselinović et al. (2022) emphasize the agricultural policy as a very important factor for sustainable agrarian and overall rural development in contemporary conditions. There is a significant concern about whether agri-food trade can support sustainability, so therefore innovations, modern policies, and changes that can provide systemic transformations for sustainable development are also suggested for this field (Ralph et al., 2025).

Dangles & Struelens (2023) argue that scientists and experts engaged in the agri-food sector should consider SDG 2 and other related sustainable development goals with much greater care, in order to more adequately identify all essential prerequisites, necessary financial incentives and other relevant support factors necessary for the timely and successful implementation of the concept of sustainable development and the goals it implies.

Research results and discussion

The FAO (2025a) assessment regarding the realization of SDG 2 (Zero Hunger), the sustainable development goal most closely related to food and agriculture issues, is that the world is still at a moderate distance from achieving this sustainable development goal, with stagnating progress – Figure 1.



Figure 1. Assessment of progress in achieving SDG 2 in the world – current and trend status

Source: FAO, 2025a.

Table 1 shows the numerous indicators used to measure progress in implementing the SDGs related to food and agriculture.

Table 1. Key indicators of progress towards the realization of the Sustainable Development Goals related to food and agriculture

SDGs – Sustainable Development Goals / indicators related to food and agriculture:

- SDG 2.1.1 Prevalence of undernourishment
- SDG 2.1.2 Prevalence of moderate or severe food insecurity
- SDG 2.3.1 Productivity of small-scale food producers
- SDG 2.3.2 Average income of small-scale food producers
- SDG 2.4.1 Share of agricultural area under productive and sustainable agriculture
- SDG 2.5.1.a Plant genetic resources for food and agriculture
- SDG 2.5.1.b Animal genetic resources for food and agriculture
- SDG 2.5.2 Proportion of local breeds classified as being at risk of extinction
- SDG 2.a.1 Agriculture orientation index for government expenditures
- SDG 2.c.1 Indicator of food price anomalies
- SDG 5.a.1 Share of women among agricultural land owners
- SDG 5.a.2 Women's right to ownership of agricultural land
- SDG 6.4.1 Change in water use efficiency over time
- SDG 6.4.2 Level of water stress
- SDG 12.3.1.a Food losses index
- SDG 14.4.1 Proportion of fish stocks within biologically sustainable levels
- SDG 14.6.1 Combating illegal, unreported and unregulated fishing
- SDG 14.7.1 Sustainable fisheries as a percentage of GDP
- SDG 14.b.1 Promoting small-scale fisheries
- SDG 15.1.1 Forest area as a proportion of total land area
- SDG 15.2.1 Sustainable forest management
- SDG 15.4.2.a Mountain green cover index
- SDG 15.4.2.b Proportion of degraded mountain area

Source: FAO, 2025b.

The indicators regarding the implementation of the SDGs related to food and agriculture are monitored globally, but also regionally (Figure 2).

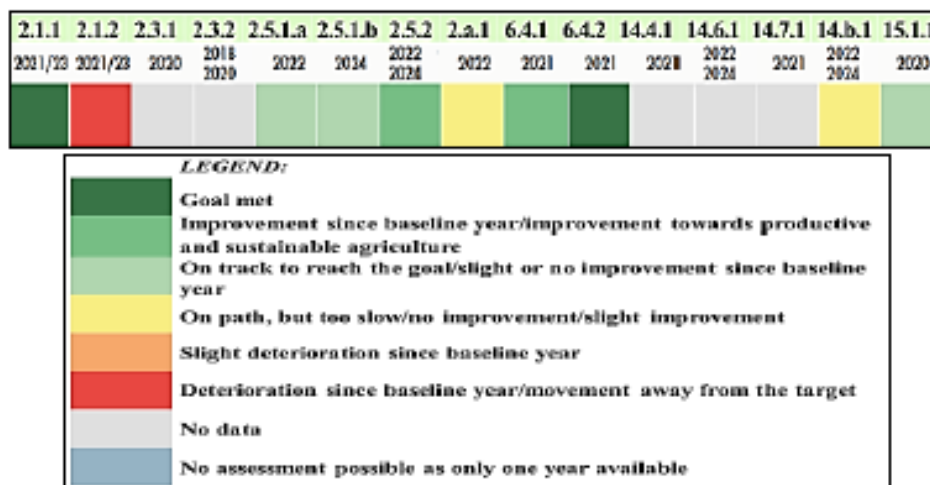


Figure 2. Trends in the implementation of the SDGs related to food and agriculture, with key indicators for the world, Europe and Central Asia

Source: FAO, 2025b.

Table 2, according to the available indicators, shows trends in the implementation of the Sustainable Development Goals related to food and agriculture for the Republic of Serbia, with indicators 2.1.1 and 6.4.2 showing the best results in achieving the SDGs.

Table 2. Trends in the implementation of sustainable development goals related to food and agriculture in the Republic of Serbia, according to available indicators (data refer to the different years in the period 2018-2024)



Source: FAO, 2025b.

In the period 2015-2024, for the Republic of Serbia only one indicator related to food and agriculture was most available (it was available every year). Namely, it was the indicator 2.5.2, while certain indicators, such as 2.3.1, 2.3.2, 5.a.1, 12.3.1.a, 14.4.1, 14.6.1 and 14.7.1, were not available for any year in the observed period (Table 3).

Table 3. Availability of indicators related to food and agriculture in the Republic of Serbia, in the period 2015-2024 (number of years of availability: 1-10)

2.1.1	2.1.2	2.3.1	2.3.2	2.4.1	2.5.1.a	2.5.1.b	2.5.2	2.a.1	2.c.1
8	8	-	-	7	7	5	10	8	8
5.a.1	5.a.2	6.4.1	6.4.2	12.3.1.a	14.4.1	14.6.1			
-	1	7	7	-	-	-			
14.7.1	14.b.1	15.1.1	15.2.1	15.4.2.a	15.4.2.b				
-	1	6	6	2	2				

Source: Based on FAO, 2025b.

Conclusion

Numerous strategic documents of renowned international organizations and institutions, various regional, national and sectoral reports, as well as analyses by domestic and foreign authors on the implementation of the concept of sustainable development, accompanied by various indicators of socio-economic development and the state of the environment, indicate that, regardless of decades of significant institutional, scientific and professional efforts around the world, the full realization of all sustainable development goals in practice, in the context of the current strategy Agenda 2030, is highly questionable. It is questionable, especially considering the relatively short deadline (remaining period) for its implementation until 2030 and the current unenviable state of implementation of the SDGs so far, both globally, regionally, nationally, sectorally, etc. These observations suggest that reform processes in the economy and society are necessary, which, through synergistic activities, in accordance with the SDGs, should lead to a better balance of the economic, environmental and social components of development, including the solving all existential issues, like food, agricultural production and similar related issues. This is not just about one necessary activity that needs to be undertaken or just one actor in the development process, but rather about a large number of necessary efforts, both institutional and at lower levels. They require the engagement of all key actors at the global, macro and micro levels, down to the role of individuals in the economy and society, with the aim of sustainable development.

Within the framework of this research, based on an analysis of the status and trends in the implementation of the SDGs related to food and agriculture, the achievements and key challenges for the coming period in this field have been pointed out. Moreover, considering the initial hypothesis of this paper, it was observed that the realization of the above sustainable development goals, generally in the world, and also in the Republic of Serbia, is not at a high level. However, certain results have been achieved, which means that significantly greater institutional efforts and other accompanying activities in this field are necessary in the future. Hence, this is multiple significant. Namely, this is important for economic development, and therefore for the agricultural and food sector as a whole. Also, it is relevant in the broader social context, as well as for the preservation of ecosystems, which are among the key pillars of sustainable development.

References

1. Dangles, O., Struelens, Q. (2023). Is food system research guided by the 2030 Agenda for Sustainable Development? *Current Opinion in Environmental Sustainability*, 64, 101331, <https://doi.org/10.1016/j.cosust.2023.101331>
2. FAO (2025a). *Tracking progress on food and agriculture-related SDG indicators 2025*, Food and Agriculture Organization of the United Nations, Rome, <https://doi.org/10.4060/cd5832en>
3. FAO (2025b). *Tracking progress on food and agriculture-related Sustainable Development Goals indicators in Europe and Central Asia*, FAO, Rome & Budapest, <https://doi.org/10.4060/cd5742en>
4. Hiywotu, A. M. (2025). *Advancing sustainable agriculture for goal 2: zero hunger - a comprehensive overview of practices, policies, and technologies*, *Agro-ecology and Sustainable Food Systems*, 49(7), pp. 1027-1055, <https://doi.org/10.1080/21683565.2025.2451344>
5. Lafortune, G., Fuller, G. (2025). *Europe Sustainable Development Report 2025: SDG Priorities for the New EU Leadership*, SDSN (Sustainable Development Solutions Network), Paris & Dublin University Press, Dublin, <https://doi.org/10.25546/110692>
6. OECD & FAO (2025). *OECD-FAO Agricultural Outlook 2025-2034*, OECD, Paris & FAO, Rome, <https://doi.org/10.1787/601276cd-en>
7. Ralph, A., Peter, Q., Festus, T., Emmanuel, A., Butu, M., Ellen, H. N. (2025). *Interlinkages Between Agri-Food Trade and the SDGs at the Global, Regional and Local Level*, *Journal of International Development*, 37(4), pp. 951-977, <https://doi.org/10.1002/jid.3994>
8. Rede, G. D., Sangode, P. B., Dikkatwar, R., Sarda, V., Singu, H. B. (2025). *Relationship between food security, agriculture and the sustainable development goals: a bibliometric analysis*, *Agricultural and Resource Economics: International Scientific E-Journal*, 11(1), pp. 288–316, <https://doi.org/10.51599/are.2025.11.01.11>
9. RSJP (2024). *Srbija i Agenda 2030 - Mapiranje nacionalnog planskog okvira u odnosu na ciljeve održivog razvoja*, Republički sekretarijat za javne politike, Beograd.

10. Sachs, J., Lafortune, G., Fuller, G., Iablonovski, G. (2025). *Financing Sustainable Development to 2030 and Mid-Century, Sustainable Development Report 2025*, SDSN, Paris & Dublin University Press, Dublin, <https://doi.org/10.25546/111909>
11. UN (2015). *Transforming Our World: The 2030 Agenda for Sustainable Development, A/RES/70/1*, United Nations, New York.
12. UN DESA (2025). *The Sustainable Development Goals Report*, United Nations Department of Economic and Social Affairs, USA, <https://www.un.org/en/desa>
13. UN WCED (1987). *Brundtland Report "Our Common Future*, UN World Commission on Environment and Development (Brundtland Commission), USA.
14. Veselinović, P., Despotović, D., Ristić, L. (2022). *Agricultural policy as an element of sustainable rural development of the Republic of Serbia*, In: (Eds): Jonel Subić, Predrag Vuković, & Jean Vasile Andrei, *Sustainable agriculture and rural development II* (pp. 121-130), Institute of Agricultural Economics, Belgrade.
15. Vos, R., Bellù, L. G. (2019). *Chapter 2 - Global Trends and Challenges to Food and Agriculture into the 21st Century*, In: (Eds): Clayton Campanhola & Shivaji Pandey, *Sustainable Food and Agriculture* (pp. 11-30), FAO & Elsevier.