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EXPLORING THE LEGAL FRAMEWORK OF GENETICALLY MODIFIED ORGANISMS IN THE WESTERN BALKANS

Abstract

In the Western Balkans, comprising Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, Serbia, and Kosovo[3], there exists a diversity of perspectives on the matter of genetically modified organisms (GMOs) and their associated politics. Given the growing significance of this issue and the ongoing discourse within the EU regarding new genomic techniques (NGTs), the primary objective of this paper is to assess the prevailing regulatory landscape within the region. The findings underscore the vital need for a harmonized regulatory framework concerning NGTs among countries in the same geographical vicinity. The absence of such coherence could potentially cast doubt on the viability of the Open Balkan initiative. This article thus serves as a foundational resource for governments, scholars, and policymakers engaged in the formulation of GMO-related policies, fostering a comprehensive understanding of the regional dynamics and facilitating informed decision-making.*

Keywords: GMOs, gene editing, law, Western Balkans, Open Balkan initiatives

JEL classification: *F50, F68, Q18.*

ИСТРАЖИВАЊЕ ПРАВНОГ ОКВИРА ГЕНЕТСКИ МОДИФИКОВАНИХ ОРГАНИЗАМА НА ЗАПАДНОМ БАЛКАНУ

Апстракт

На западном Балкану, који обухвата Албанију, Босну и Херцеговину, Северну Македонију, Црну Гору, Србију и Косово, постоје различита гледишта по питању генетски модификованих организама (ГМО) и њихове политике. С обзиром на све већи значај овог питања и текући дискурс унутар ЕУ у вези са новим геномским техникама (НГТ), примарни циљ овог рада је да процени преовлађујући регулаторни пејзаж у региону. Закључци подвлаче виталну потребу за хармонизованим регулаторним оквиром који се тиче НГТ-а међу*

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земљама у истој географској близини. Одсуство такве кохерентности могло би потенцијално довести у сумњу одрживост иницијативе Отворени Балкан. Овај рад стога служи као темељни ресурс за владе, научнике и креаторе који се баве формулисањем политика у вези са ГМО, подстичући свеобухватно разумевање регионалне динамике и омогућавајући информисано доношење одлука.

Кључне речи: ГМО, уређивање гена, право, Западни Балкан, иницијатива Отворени Балкан

Introduction

National approaches to the regulation of genetically modified organisms (GMOs) vary significantly among countries, yet they tend to align with two predominant regulatory models. Europe, for instance, has invested considerable time and effort into establishing a comprehensive regulatory framework, which it has successfully shared as a standard for precautionary regulation worldwide. Conversely, the United States (US) has pursued a policy that treats genetically modified and conventional foods as essentially indistinguishable (Gaskell et al., 1999; Runge et al., 2001). As a result, countries with strong economic ties to the European Union (EU) often harmonize their national regulations with EU recommendations, while those closely linked to the US tend to adopt a regulatory framework similar to that of the US.

After decades of implementing precautionary regulations, it appears that the EU has decided to significantly reduce them and bridge the gap between its regulations and those of the US. The reason for closing the gap between the two superpowers is the emergence of new genomic techniques (NGTs), also known as new breeding techniques (NBTs). After the release of the statement titled 'A Scientific Perspective on the Regulatory Status of Products Derived from Gene Editing and Its Implications for the GMO Directive' by the Scientific Advice Mechanism in November 2018 (Group of Chief Scientific Advisors, 2018), the European Commission initiated research studies conducted by the Joint Research Centre (JRC) (Broothaerts et al., 2021). Building upon the findings of this study, the European Commission (EC) requested the initiation of a European initiative aimed at revising regulations pertaining to certain NGTs. A reform proposal comprises three levels of regulation: Tier 1 - For GM plants that only require a pre-market notification for introduction to the market as such or in products; Tier 2 - For GM plants, a case-by-case decision will determine whether GMO authorization is required; Tier 3 - Transgenic GM plants will always necessitate GMO authorization (Voigt, 2023). The new regulation categorizes Tier 1 as equivalent to conventional plants, providing an explanation that plants obtained through laboratory manipulation using NGTs could also potentially arise naturally or be the result of traditional breeding processes, without the introduction of foreign DNA into the gene pool. For Tier 2, the evaluation will center on the altered trait. To determine if GMO authorization is required (through risk screening), the notifier will provide information for authorities to assess potential risks to human health or the environment associated with the GM plant or its derived products. Tier 3 comprises transgenic plants obtained through traditional genetic engineering methods.

The proposal has stirred not only differences among EU ministers but has also sparked debate among associations and the general public. At the inaugural discussion regarding new genomic techniques held at the close of July 2023, Spain, presently presiding over the EU Agriculture Council, along with the Italian and French ministers, greeted the proposal as a substantial and eagerly anticipated advancement. Nonetheless, there was significant criticism from representatives of Hungary and Austria, who underscored the significance of maintaining GMO-free farming practices. The initial meeting indicated that Germany, Cyprus, Luxembourg, and Lithuania could act as intermediaries between strong proponents and opponents of NGTs (Euroaktiv, 2023). The dissatisfaction with the proposed reform among European regions without GMOs, specific stakeholder groups, farmers, and researchers became particularly prominent at the 10th GMO Free Europe Conference held in Brussels on September 6-7, 2023 (GMO free Europe, 2023). The most significant argument put forth by critics was that 94% of all new GM plants already on the market and/or in commercial development fall into Tier 1, the category for which the EC proposes complete deregulation, effectively implying full openness to NGTs in Europe (Brankov, 2023).

As countries in the Western Balkans navigate their position between two influential global powers, they are in the process of developing their own distinct GMO legislation. As an illustration, Albania, which received substantial assistance from the US during its transformation from one of Europe's most secluded and authoritarian communist regimes into a democratic nation with a market-driven economy (USAID, 2023), has embraced the principle of substantial equivalence. In contrast, Serbia, where a minimum of four distinct forces - the EU, the US, Russia, and China - are vying for influence (European Parliament, 2017), has implemented more rigorous protective standards that surpass the requirements of EU legislation.The other countries in the region find themselves somewhere along this spectrum, adjusting their GMO regulations accordingly (Brankov et al., 2022). In the near future, Western Balkan countries will face an important decision - whether to implement deregulation of new NGTs or to include NGTs within existing GMO regulations.

Considering the influence of the GMO regulations on market and the dynamics of international trade (Perdikis et al., 2004), this paper's central objective is to evaluate the existing legal framework governing GMOs in the Western Balkans. Subsequently, it aims to project the potential future legislation concerning NGTs in the region.

The structure of this paper unfolds as follows: Section 2 delineates the research methodologies and data sources utilized in this study. In Section 3, we present the findings, encapsulated as "Variations in GMO Regulations across Western Balkan Nations." Section 4 delves into a comprehensive discussion of the findings, while Section 5 concludes with a succinct summary of the results.

Methods and Data

To facilitate a profound comprehension of legal frameworks, pinpoint vital components, and delve into their core, this paper adopts a qualitative approach in scrutinizing legislation across six countries/territories in the Western Balkan region: Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, Serbia, and Kosovo*.

In addition to textual and comparative analyses, a contextual analysis approach was employed. This was deemed essential as it allows for a comprehensive understanding of the factors that influenced the formulation and implementation of laws, including their historical, political, and social contexts.

Our study integrates information derived from official national legal documents, complemented by reports sourced from the Foreign Agricultural Service (FAS) within the United States Department of Agriculture (USDA) - specifically, the GAIN reports. Additionally, we drew upon agricultural data provided by Agricultural Policy Plus, an online platform that serves as a communication hub in the realm of agriculture and rural development for the South Eastern European countries.

Variations in GMO Regulations across Western Balkan Nations

Albania lacks specific legislation dedicated solely to GMOs, instead addressing them through a broader interpretation of various existing laws (Jaupi et al., 2014). Currently, GMO products in Albania are subject to several key regulations (Table 1), including the_Food Law (2008, last amended 2022) that serves as a primary legal framework addressing the regulation of GMOs in food and feed products. However, it approaches GMO food and feed in a broad and nearly equivalent manner to non-GMO products. It delegates the responsibility for developing specific regulations related to risk assessment and risk management to the Ministry of Agriculture through subsequent by-laws. However, despite the passage of sixteen years since the adoption of the Food Law, there has been no advancement in GMO-related legislation (EC, 2022).

The existing legislation in Albania lacks clarity when it comes to whether the introduction of GMO products into the market requires prior assessment and authorization, and this process remains undefined. While the Food Law mandates the labeling of GM food and feed products, it does not specify whether this should be based on the detectability of genetically modified DNA or protein in the final products, nor does it establish trace thresholds for the inevitable presence of GM material in food or feed. To address these gaps, Albania should establish an effective traceability system for products containing or derived from GMOs that have been authorized for market placement. Additionally, the country has not yet defined requirements for testing and validation methods to detect GMOs, which is a crucial aspect of the approval process. Regarding the release of GMOs into the environment and ensuring coexistence, Albania needs to make significant efforts in developing appropriate legislative measures and enhancing institutional capacities. It is essential to clarify the roles and responsibilities of various institutions involved in handling and overseeing GMO-related issues. Strengthening the professional skills and technical capabilities of these responsible institutions is paramount, and this may involve establishing reference laboratories and providing comprehensive staff training. Furthermore, fostering public participation and facilitating information sharing is equally vital for the effective management of GMO-related matters (Jaupi et al., 2014).

As a consequence, the status regarding the import of genetically engineered products remains uncontrolled. The country allows imports GM food or feed upon authorization (FAO, 2018). It is probable GM food or feed has been regularly imported

into the country, especially animal feed because Albania is a significant importer of protein meals used in animal feed, and roughly 90 percent of the global soybean supply is genetically engineered. Since soybeans are not cultivated locally, Albania relies entirely on imports for soy-related products (International Trade Administration, 2021). For instance, in 2014, Albania imported animal feed valued at $239,000 from the United States (GAIN, 2015).

Bosnia and Herzegovina instituted a GMO ban under the Food Law in 2004. This moratorium remained in effect for five years until the enactment of the Law on GMOs ("The Official Gazette of B&H" No. 23/09) and the subsequent implementation of regulations (FAO, 2023), as detailed in Table 1.

The enactment of the Law on GMOs and the subsequent Rulebooks in Bosnia and Herzegovina aligns with pertinent EU legislation. While these regulations technically allow for the authorized use of genetically engineered products, the process of adopting the implementing bylaws spanned several years. It wasn't until August 2015 that the Bosnia and Herzegovina Food Safety Agency issued the first permits for the import and marketing of GMO feed. Prior to this, much like Albania, it's likely that GM feed was regularly imported into the country, as Bosnian and Herzegovinian farmers heavily rely on such imports for livestock feed.

Currently, in Bosnia and Herzegovina, GM soybeans have received approval and have been introduced into the market for a period of five years, exclusively for use as animal feed. These soybeans are identified by various unique codes corresponding to different types (MON-Ø4Ø32-6, ACS-GMØØ6-4, MON-877Ø1-2, MON-89788-1, MON-877Ø1-2 x MON-89788-1, DAS-81419-2, MON-877Ø8-9, MON-87751-7, DAS-444Ø6-6) (FAO, 2023). It's important to note that Bosnia and Herzegovina does not domestically produce any GM food or feed. The country does not actively monitor the Low-Level Presence/Adventitious Presence (LLP/AP) situation and does not conduct safety assessments of GM food. Nevertheless, it enforces mandatory labeling regulations for GM food, clearly indicating the presence of GMOs.

The Law prohibits the cultivation of crops developed through modern biotechnology in specific areas, including nature-protected zones, ecological regions, areas designated for organic farming, and those designated for eco-tourism. Furthermore, it restricts the planting of genetically engineered crops for reproductive purposes to areas approved by the Council of Ministers, following recommendations from the Food Safety Agency (FSA). When the provisions of the GMOs Law cannot be applied, the regulations outlined in the Food Law and its associated bylaws will come into effect.

Bosnia and Herzegovina, in collaboration with the "Danube Soya Initiative" and with the backing of the Austrian Federal Environment Agency and the German Organization for International Cooperation (GIZ), has established a voluntary standard for "GMO-free" products. This standard applies to products of both plant and animal origin, and it requires that these products be manufactured using raw materials and additives that are neither genetically engineered nor derived from genetically engineered sources. Currently, the only products certified as "GMO-free" in Bosnia and Herzegovina are table eggs and vegetable oils (GAIN, 2022).

In 2008, **North Macedonia** introduced the Law on GMOs, under the auspices of the Ministry of Environment and Physical Planning. This legislation encompasses a range of bylaws that address various aspects, including the prohibition of GMO release

in specific areas and environments, the establishment of advisory bodies, intentional GMO release, and the restricted application of GMOs (Table 1).

North Macedonia's legislative framework for the authorization, import, and cultivation of GMOs is compatible with EU legislation. Furthermore, there is the the Law on Food Safety ("Official Gazette of RM No. 187/13", Article 55), with its amendments and revisions, including the prohibition of import, production, and placing on the market of genetically modified food "...until Macedonia becomes an EU member." This was seen as North Macedonia's establishment of a fundamental Food Law framework, aiming to create an integrated system where there should no longer be overlapping jurisdiction of institutions - the Food Directorate and the Veterinary Administration. North Macedonia currently lacks both a regulatory framework and a structured system for assessing the safety of GM foods. However, it does enforce mandatory and affirmative labeling regulations for GM food products, clearly indicating their GMO content (FAO, 2019).

Although North Macedonia banned the production and trade of GMO food in 2013, with the condition "...until it becomes an EU member", in reality, soybeans come from the Thessaloniki port, and traders buy cheap genetically modified soy, which is sold on the market without any control, as if it were GMO-free (Donev, 2019).

Two years after gaining independence from Serbia in 2008, **Montenegro** enacted the Law on GMOs ("Official Gazette of the Republic of Montenegro" no. 22/2008). This legislation established the regulatory framework for overseeing the controlled utilization, deliberate environmental release, and commercialization of GMOs and GMO-derived products. Furthermore, in line with the Law on Food Safety (Official Gazette of Montenegro no. 57/2015), the government introduced more comprehensive regulations concerning GM foods. These regulations are designed to ensure a high degree of human health protection and implement effective measures to preempt potential consequences linked to food or feed.

It's important to note that Montenegro has not conducted safety assessments of GM foods to date and does not anticipate conducting such assessments in the near future. Additionally, the country does not produce any GM food or feed but permits their importation, subject to authorization. Montenegro enforces mandatory labeling regulations for GM food products, explicitly indicating their GMO content (i.e., "It contains GMO") (FAO, 2022). Given that Montenegro relies on imports for approximately 90% of its food and livestock feed (Brankov&Matkovski, 2022), and due to the absence of GMO testing laboratories, it is plausible that GM foods may circulate in this market.

Serbia has been addressing GMO-related matters since 2001, with the adoption of the Law on GMOs, which established regulations for the controlled use, deliberate release into the environment, and marketing of GMOs and GMO products. Subsequently, on May 29, 2009, the National Assembly of the Republic of Serbia passed a new Law on GMOs (published in the 'Official Gazette RS,' No. 41/09). This law includes a comprehensive ban on the marketing of GMOs and GMO products, encompassing GM food and feed, as well as the commercial cultivation of GMOs. Serbia stands out among the previously mentioned countries due to the fact that 80% of its cities and municipalities (135 out of 169) have declared themselves GMO-free. A significant campaign, known as 'Serbia without GMO,' has been actively ongoing for several years (Brankov & Lovre, 2018). Since 2013 and the signing of the Danube Soya Declaration, Serbia has significantly increased soybean and soybean oil production, as well as exports. Serbia is the only self-

sufficient country in the Western Balkans in the production of soybeans and is the largest producer and exporter of unmodified soybeans in South East Europe (Agrofin, 2021).

However, it is worth noting that Serbia's border has been porous on multiple occasions, allowing GM seeds to enter the country. GM soy was discovered in certain years, such as in 2000 (5-7 hectares), 2005 (420 hectares), 2010 (200 hectares), and so on (Brankov, 2013).

Furthermore, there is currently no authorized system for certifying and labeling non-GMO local products in Serbia. This absence of a distinguishing label between locally produced non-GMO food items and imported products, particularly meat, milk, and other animal-based goods from GM-fed animals, poses a challenge. Additionally, there is no official framework to enhance the value of local production and set it apart from GM-produced imports. Consequently, local livestock farmers using non-GM feed face increased market competitiveness (Agroberichten Buitenland, 2020).

Kosovo* does not have specific national legislation concerning the regulation of GMOs. Since Kosovo's status is complex, it does not have a fully functioning government, and some of its regulatory matters are administered by the United Nations Mission in Kosovo (UNMIK). There is reasonable suspicion that unregistered GM soy enters Serbia through Kosovo (Sevarlic, 2019). It can be inferred that GMOs may be in circulation in the market in Kosovo, as this territory has been receiving food aid for decades, which may contain GMOs.

All the countries in the Western Balkans have ratified the Cartagena Protocol on Biosafety to the Convention on Biological Diversity. Albania did so in 2005, Bosnia and Herzegovina in 2009, North Macedonia in 2005, Montenegro in 2006, and Serbia in 2006. Furthermore, Albania has been a Party to the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress since 2018.

The regulation of new genome techniques, such as gene editing (e.g., CRISPR-Cas9), has not been developed in any Western Balkan country. Additionally, public discussions about them are not as widespread.

Table 1. GMO Regulatory Framework in the Western Balkans

Country	Legislation Specifically Addressing GMOs	Additional Legislation and Pertinent GMO Regulations
ALB	No	• Law on Food (No 9863/2008) • Law governing the production, processing, certification, and marketing of "bio products" (No 9199/2004) • Law on environmental protection (No. 8934/2002) • Law on protected areas (No. 81/2017) • Law on environmental impact assessment (No. 8990/2003).

BIH	Yes Law on GMOs ("Official Gazette of B&H" No. 23/09)	• Rulebook on the form and manner of keeping the unique register of genetically modified organisms ("The Official Gazette of B&H" No. 17/12). • Rulebook on establishing a system for the development and assignment of unique codes for genetically modified organisms ("The Official Gazette of B&H" No. 68/12). • Rulebook on the content of the notification and technical dossier for the placing on the market of genetically modified organisms or products containing and/or consisting of or deriving from genetically modified organisms and on the requirements for labeling and packaging of genetically modified organisms or products containing and/or consisting of or deriving from genetically modified organisms ("The Official Gazette of B&H" No. 78/12 and 62/15). • Rulebook on conditions and procedures for granting authorization for placing genetically modified food and feed for the first time on the market of Bosnia and Herzegovina and the requirements relating to their traceability and labeling ("The Official Gazette of B&H" No. 78/12). • Rulebook on the content and scope of risk assessment for placing on the market of genetically modified organisms and products consisting of, containing, or originating from genetically modified organisms and the methodologies for making risk assessments ("The Official Gazette of B&H" No. 79/12). • Rulebook on conditions of monitoring the environmental impact of genetically modified organisms or products containing and/or consisting of or originating from genetically modified organisms and their use ("Official Gazette of B&H," No. 64/14). • Rulebook on the procedure of evaluation and authorization of laboratories for testing, control, and monitoring of genetically modified organisms and products containing and/or consisting of or deriving from genetically modified organisms ("Official Gazette of B&H," No. 73/17). • Decision on the amount of the special fee for issuing a decision on the approval for placing on the market of genetically modified food and feed ("Official Gazette of BiH," No. 61/14).
MKD	Yes Law on GMOs (Official Gazette of RM No. 35/08)	• Annex to the Regulation on the determination of areas and surfaces where the release of genetically modified reproductive material into the environment is prohibited (Official Gazette of RM No. 113/09) • Regulation on the determination of areas and surfaces where the release of genetically modified reproductive material into the environment is prohibited (Official Gazette of RM No. 112/09) • Decision on the establishment of the National Water Council (Official Gazette of RM No. 149/09) • Regulation on the content of the emergency measures plan (Official Gazette of RM No. 163/09) • Regulation on the content of information for conducting risk assessment resulting from intentional release of GMOs (Official Gazette of RM No. 148/09) • Regulation on the limited use of genetically modified organisms*(Official Gazette of RM No. 08/11)

MNE	Yes Law on GMOs ("Official Gazette of the Republic of Montenegro" No. 22/2008).	• Law on Food Safety (Official Gazette of Montenegro no. 57/2015
SRB	Yes Law on GMOs ('Official Gazette RS,' No. 41/09)	• The Law on Food Safety (Official Gazette of RS, No. 41/09)
Kosovo*	No	• /

Source: FAO (2018-2023); GAIN (2015, 2022); European Commission (2022).

Disccusion

Since the dissolution of communist regimes in the 1990s, the Western Balkans have been undergoing multifaceted and intricate changes. These transformations are inherently complex, characterized by concurrent processes of democratization, transition, nation-building, state-building, and European integration (Jano, 2008). Accession talks are currently in progress with Montenegro and Serbia, while Bosnia and Herzegovina has been granted candidate country status. Accession negotiations with Albania and North Macedonia are ongoing, and Kosovo* is considered a potential candidate for EU membership. This transformative journey involves a range of structural and legislative reforms.

In the consolidation phase of the newly emerged Western Balkan states, the region experienced overall economic growth and increased agricultural productivity prior to the outbreak of the pandemic. However, this did not necessarily translate into greater competitiveness in relation to European export markets. Among the key weaknesses of the agricultural sectors in these countries are predominantly small-scale farms, a lack of market integration, and inadequately enforced production and food safety standards (Petrick, 2010).

The Western Balkan countries exhibit varying agricultural characteristics. All countries in the region, except Serbia, are net importers of agri-food products, with a growing trade deficit (Table 2). Serbia is the only country with an overall self-sufficiency level above 100% and so far successfully plays the role of the region's key supplier (Brankov et al., 2022). Farm sizes range from the smallest in Albania, averaging just 1.2 hectares, to the largest in Montenegro, with an average size of 4.5 hectares. Rural areas are inhabited by nearly half of the region's population, with the percentage being the highest in Bosnia and Herzegovina at 51% and the lowest in Montenegro at 32%. When it comes to employment, agriculture makes up a significant share, constituting 36.4% of total employment in Albania but only 7.1% in Montenegro. In terms of its contribution to the overall economy, agriculture played a substantial role in 2019, accounting for approximately 21% of Albania's GDP, 15% of Kosovo's GDP, 9.3% of

North Macedonia's GDP, 7.4% of Serbia's GDP, and the smallest proportion, 6.4%, of Montenegro's GDP.

Table 2. Key Agricultural Statistics for Western Balkan Countries/Territories (2019)

	GVA Share (All Sectors)	Rural population (%)	Agri. Sector Share in Total Emp (%)	Trade Bal. Agri-Food. (mill. EUR)	Agri. Total Land. (000 ha)	Agri. Total Land. (ha/pc)	No. of Agri. Holdings (000)	The average farm size (ha)
ALB	21.3	39	36.4	-609.6	1,201	0.42	352.1	1.2
BIH	6.6	51	9.4	-1270	2,217	0.64	363.4 (2013)	2.0
MKD	9.3	42	13.9	-210.8	1,265	0.6	178.1 (2016)	2.5
MNE	6.4	33	7.1	-529.6	257.5	0.41	43.8	4.5
SRB	7.4	44	15.6	1,311	3,482	0.5	564 (2018)	3.7
Kosovo*	15.3	/	/	-694.4	416	0.23	130.7 (2014)	3.2

Note: GVA (Gross value added of the agriculture, forestry, hunting and fishery sector at current prices); UAA (Utilised agricultural area).

Source: Agricultural Policy Plus (2023); data for the average farm size was used from Lovre (2016); data for rural population from World Bank (2023)

Following the 2008 crisis, which interrupted the EU's enlargement policy for the Western Balkans, the region has witnessed increased engagement from non-EU countries, including China, Russia, Turkey, and the United Arab Emirates. This engagement primarily encompasses direct investments, trade, and energy security initiatives (Vulovic, 2023). Trade integration between the Western Balkan countries and the EU has not yielded sufficient benefits, with all countries, except for North Macedonia, clearly experiencing trade deficits with the EU. The current trade integration model with the EU does not enhance the competitiveness of the Western Balkan nations. Improved trade integration could be achieved through the reduction of non-tariff barriers, such as the removal of specific import quotas, and by promoting competitiveness through institutional modernization and infrastructure development. Additionally, investments in green and digital transitions could enable the Western Balkan countries to establish themselves as more resilient economic hubs (WIIW, 2023). The EU's inability to implement a geoeconomic strategy in its neighboring regions is evident through the following observations: China's influence as a trading partner in the EU's neighboring countries is rapidly expanding. China is increasingly offering debt financing for investment projects as part of its Belt and Road Initiative. Furthermore, China's share of ICT imports is on the rise across the neighboring regions, whereas the EU's share is in decline. This trend is particularly evident in the area of infrastructure, where China poses a significant challenge to the EU.

Furthermore, a noteworthy 85% of the populace in Serbia, the region's primary supplier country, demonstrates significant support for Russia, as reported by Euroaktiv in 2023. Additionally, 40% of respondents, according to Carnegie Europe's 2023 study,

express a preference for discontinuing membership negotiations with the European Union. Serbia holds a prominent position as the largest agricultural market in the Western Balkans, distinguished by a rich heritage in agricultural production and food processing. Notable among Serbia's products with substantial production and export potential are grains, oilseeds, sugar, fruits, vegetables, non-alcoholic beverages, water, and confectionery items. The food processing sector contributes to approximately one-third of Serbia's overall processing industry (ITA, 2023). Serbia also holds a global leadership position in the production of non-GMO corn and raspberries, establishing a niche market for these products, with customers guaranteed GMO-free corn (Reuters, 2016).

The suspension of the EU integration process with the Western Balkans, coupled with the overall outlook of gradual progress, has left political leaders and the public in the region disheartened and disillusioned with the EU. As a response to these challenges, an initiative known as 'Open Balkan' has emerged among Western Balkan nations. This regional cooperation initiative aims to establish a unified market akin to the European Union, enabling the free movement of citizens, goods, capital, and services among its member states. Launched in 2019, this initiative has garnered the support of Serbia, Albania, and North Macedonia, with further signatories anticipated (Tota &Culaj, 2023).

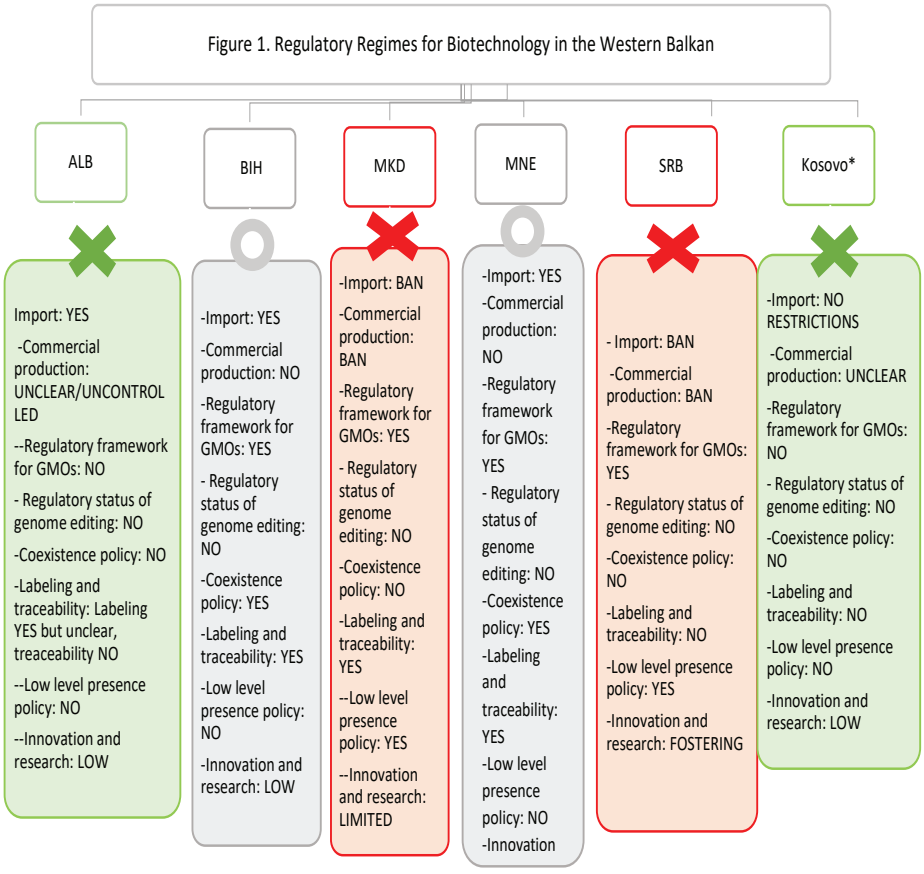
Variations in GM policies across various Western Balkan countries (Figure 1) are influenced by a range of factors, with significant public resistance being a prominent contributor.It can be most easily explained through the example of Serbia. So far, well organized anti-GMO social movements have blocked Serbia's accession to WTO, and brought the political elite into a very difficult situation. Under the influence of the EU, the US, WTO, and Serbian import interest groups, government officials occasionally hint at the possibility of amending the stringent laws. However, such decisions are consistently postponed until the next election cycle, which occurs very frequently in Serbia. On the surface, it may appear that the political leadership acknowledges the unfavorable public sentiment and the country's comparative advantages in producing non-GM foods and feeds within the agriculture sector. Nevertheless, they do not sufficiently safeguard Serbia's agricultural potential and seed breeding endeavors. Furthermore, the government tend to favor foreign seed providers while impeding domestic production. From this perspective, Serbia has become an attractive destination for corporate interests.

On one hand, in 2022, a landmark Agreement was signed at the World Economic Forum (WEF) headquarters in Geneva, paving the way for the establishment of the WEF Center for the Fourth Industrial Revolution in Serbia. This marks a pioneering initiative within the Western Balkans region. The ecosystem that will take shape around this Center is poised to harness the existing infrastructure, including the National Artificial Intelligence Development Platform, the Genome Sequencing Center, and the forthcoming Bioeconomic Center - BIO4 campus (RTV, 2022). On the other hand, Serbia presently allocates a relatively modest budget to support scientific endeavors, with the total national investment in research amounting to only 0.89% of GDP in 2016. A significant portion of this budget is channeled toward education rather than research. Insufficient funding is directed toward critical investments in research infrastructure, and access to equipment and facilities owned by other institutions such as universities and research institutes remains limited. High-impact projects like the BioSense/ANTARES undertaking in Novi Sad primarily benefit a select group of researchers in proximity,

rather than the broader research community (SPHERE, 2017). Consequently, the long-standing phenomenon of brain drain poses considerable challenges to the realization of the goals associated with the Fourth Industrial Revolution.

However, the outcome of the state's somewhat ambiguous policy stance will be contingent upon the realization of broader political objectives. Should Serbia successfully meet all the requirements for EU accession, the stringent laws may be revised. Conversely, if the government abandons the pursuit of EU membership, and if the movement maintains its current momentum, it is unlikely that the laws will be altered. The same can be applied to gene editing regulations.

If Serbia retains its current restrictive laws, while, for instance, Albania allows the free and full importation of GMOs or enforces the gene editing regulations proposed by the European Commission, the existence of an Open Balkan initiative would lose its purpose. Since the Open Balkan initiative implies the free movement of goods, it also implies the free movement of GMOs and NGTs. In this scenario, the Serbian law would become irrelevant. In other words, for the Western Balkans to maintain the Open Balkan initiative, all member countries must establish uniform laws concerning GMOs and NGTs.



Source. The authors' composition

Conclusion

This analysis delves into the current regulatory landscape for GM products and crops within Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, Serbia, and Kosovo*. Despite these nations hailing from the Western Balkans region, their stances on GMOs vary significantly (as illustrated in Figure 1). Notably, Albania and Kosovo* exhibit support for GMOs, while Bosnia and Herzegovina and Montenegro align with EU regulations. Meanwhile, Macedonia and, to a greater extent, Serbia, ostensibly strive to maintain a GMO-free status. None of the countries examined have established rules pertaining to NGTs. The diverse stances of Western Balkan countries on GMOs and NGTs highlight the complexity of this issue within the region.

In summary, it is imperative for countries within the same region to adopt a uniform regulatory framework on NGTs issue. Failure to do so could render the Open Balkan initiative untenable. The trajectory of GMOs and NGTs will be influenced by ongoing geopolitical developments. Regardless of the eventual outcome, it remains crucial to concentrate efforts on disseminating precise and transparent information to the public. Divergent perspectives underscore the need for deliberate reflection and constructive discourse among policymakers. Irrespective of the outcomes, it remains essential for these countries to uphold open lines of communication, exchange precise information, and participate in collaborative initiatives aimed at aligning regulatory frameworks with the unique requirements and ambitions of the region.

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