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University of Agribusiness and Rural Development/Bulgaria

University "St. Kliment Ohridski" Faculty of Economics/Republic of North Macedonia

University “Isa Boletini”- Mitrovica, Faculty of Economics / Republic of Kosovo

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PROCEEDINGS

Editors

Prof.Dr. Mariana IVANOVA

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FOREWORD

International Balkan and Near Eastern Congress Series brings together many distinguished social and behavioral science researchers from all over the world. Participants find opportunities for presenting new research, exchanging information, and discussing current issues.

We are delighted and honored to host the IBANESS Congress Series in Plovdiv / Bulgaria. Presented papers have been selected from submitted papers by the referees. Sincere thanks to those all who have submitted papers.

We hope that through exchange of the presented researches and experiences, the Congress will enhance communication and dissemination of knowledge in Balkan and Near Eastern Countries.

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Legislative Challenges in Sustainable Packaging Waste Management in North Macedonia

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Abstract: ESG (Environmental, Social and Governance) practices and ESG reporting are justifiably becoming one of the most current global topics. Corporate engagement with the natural environment and the wider and local social environments in which they operate is subject to increased observation by all stakeholders, including the investors. Sustainable packaging waste management allows companies to manage risk well, improve their operational performance, build a good business reputation, secure new business opportunities, and, if necessary, have much better access to capital and financing. Packaging waste management is one of the central topics in the field of the environment. Dynamic changes and limited global progress in addressing this problem encourages continuous change in regulation. The connection of Macedonian companies with the European Union market, the harmonized functioning of companies with European law raise it to a level of necessity and a strong condition for further cooperation. On the other hand, the impression is that the regulation in North Macedonia does not follow these trends.

The author analyzes the current legislative framework that regulates packaging waste management in North Macedonia. By using comparative analysis of the changes that are taking place in the regulation of this issue on the territory of the European Union, the author draws conclusions that detect the main points where future regulatory pressure is expected. Adapting to the new rules, raising the awareness of Macedonian companies and ensuring a correct deadline for fulfilling the new obligations is key to continuing cooperation with the markets of the Union and raising the level of environmental protection in general.

Keywords: ESG, waste management, deposit system, packaging.

1. INTRODUCTION

According to Eurostat, 40% of the plastic and 50% of the paper used in the European Union in the period 2010-2021 were used for packaging. The large consumption of primary raw materials conflicts with the principles of the circular economy and the waste hierarchy. According to the latest data published on 10 October 2025, 79.7 million tons of packaging waste were generated in the European Union in 2023. The largest share concerns paper, 32.3 million tons or 40.4% of all packaging waste. This is followed by plastic with 19.8%, glass with 18.8% and wood with 15.8%. Packaging made of metal and other materials has the smallest share (Eurostat, 2025).

Packaging waste management is becoming a challenge like never before. The basic “3-R strategy” representing the reduce-reuse-recycle idea, is being upgraded to the “5-R strategy” by adding refuse at the very beginning and reform as the second to last option in waste management establishing a space for not creating any waste at all and later in the life cycle of a product acknowledging its other opportunities to still be useful, generally known as refuse-reduce-reuse-reform-recycle idea (Jenčo & Hletková Ploszeková, 2025). The European Union took bold steps in 2025 to tame and tackle this global problem.

A review of the literature in the Republic of North Macedonia reveals a gap in both academic and professional publications regarding regulatory comparisons between North Macedonia and the EU in the field of packaging waste management. Toshevska-Trpchevska, Kikerkova and Makrevska Disoska, E. (2017) recognized as a most important factor for inefficiency of green economy concept is nonenforcement of the law, also constraints of the organization of institutions and human resources; stakeholder (non) awareness; and lack of technical management in all phases from collection to final disposal of waste. Also, there are few studies focusing on the operation of vending machines in North Macedonia, specifically in the Pelagonia region (Angeloska-Dichovska, Gjorgjioska, Boshkoska & Janeska, 2023), as well as other research examining ESG or CSR aspects of Macedonian companies.

This highlights the urgent need to draw parallels with changes in European law and to identify the key issues on which Macedonian legislators and companies should focus. It is essential to distinguish which legal alignments should be prioritized and which can be deferred until more favorable circumstances.

2. CURRENT CHANGES IN PACKAGING WASTE MANAGEMENT IN THE EUROPEAN UNION

The Directive of the European Parliament and of the Council of 20 December 1994 (94/62/EC) on packaging and packaging waste is about to become history. The Directive on Packaging and Packaging Waste (94/62/EC) has triggered a process of rapid implementation of national-level policies that aimed to reduce impacts of packaging waste on the environment as well as to boost the market for both packaging products and waste (Mrkajić et all, 2018). But this act, which laid the foundations for the management of packaging waste, cannot meet modern challenges. The new Packaging and Packaging Waste Regulation (PPWR) 2025/40 enters into force on 12 August 2026. The final version of Regulation 2025/40 was officially published on 22 January 2025, but it will apply from 12 August 2026. It is directly applicable in the same way in all Member States, without the need to transpose it into national law. With its entry into force, the Directive of the European Parliament and of the Council of 20 December 1994 (94/62/EC) on packaging and packaging waste will cease to be valid.

However, for most of the obligations, implementation is planned to proceed gradually from 2026 to 2040. The main focus is on reducing packaging waste, promoting recycling, improving environmental compatibility and increasing transparency. What is particularly important is that the principle of 'design for recycling' is central to the directive's revision (Matlhare, 2024).

Quite justifiably, most of the obligations apply to the manufacturer as the main stakeholder. The Regulation introduces a key innovation: a minimum recyclability requirement for materials and a three-category classification of packaging (A, B, and C). The highest "A" applies to materials with a recyclability of at least 95%, "B" to materials with a recyclability of 80% and "C" with a recyclability of 70% by weight per unit of product. Thus, packaging with a recyclability rate below 70% will not be able to be placed on the market from 2030. From 2038, all packaging placed on the EU market must have a recyclability rate of at least 80%. All companies must adapt their production processes if they want to continue selling in this attractive market. In the meantime, numerous challenges lie ahead, including design changes and possible changes in packaging suppliers. By 2028, the European Union Commission should adopt detailed rules and criteria for recyclability for each type of packaging, guided by the possibility of separate collection of packaging, obtaining quality secondary raw materials, taking into account available recycling techniques, the quality of the output products, the availability of waste, the energy required and greenhouse gas emissions, etc. The only exceptions are packaging for the transport of dangerous products, medical products, pharmaceutical packaging, diagnostic devices, packaging for baby food, etc.

What is new is that before placing on the market, a procedure for assessing the conformity of the packaging should be initiated and a separate EU declaration of conformity should be issued. The technical documentation includes a description of the packaging and its purpose, a conceptual design, a test report, a qualitative description of the assessment carried out, and the like.

Legislatively, a strong attempt is also being made to prevent excessive packaging. The Regulation establishes obligations to minimize packaging to the necessary dimensions in order to reduce waste generation, without compromising product quality or functionality. In this regard, "double walls" and false bottoms of packaging are prohibited. Empty space in secondary and transport packaging must not exceed more than 50% of the total space. The calculation is performed according to a methodology prescribed by the Commission. Alongside the reduction of excessive packaging and the optimization of logistics processes, this approach can generate significant economic and environmental benefits. First, cost reduction for purchasing new packaging materials and cost reduction for recycling fees, the second elimination of negative influence on the environment by respecting the waste management hierarchy and principles of the circular economy (Fidlerova, Makyšová, Sklenárová & Bajdor 2021).

Starting from 1 January 2030, plastic packaging must also contain a minimum amount of recycled material. From 2030, beverage manufacturers must have at least 30% recycled material in non-returnable packaging. The obligation increases significantly in 2040 when that threshold is set at 65%.

Packaging labeling will be harmonized at the EU level and this obligation comes into force in mid-2028. From 2030 onwards, specifically listed packaging will not be permitted to be placed on the market. Annex V lists single-use plastic packaging for food and beverages in which food and beverages are filled and consumed in catering establishments, single-use plastic packaging for repackaging fresh fruit and vegetables in quantities of less than 1.5 kilograms, single-use packaging for cosmetic and hygiene products and personal hygiene products in the accommodation rental sector, very light plastic carrier bags except when necessary for hygiene purposes and when they prevent food from spilling, and the like.

The deposit system will become mandatory from 2029. This is one of the largest changes that will generate large costs for manufacturers, especially in EU member states where the deposit system has not yet been implemented. Member States are required to take measures to ensure that at least 90% of the mass share of single-use plastic bottles with a volume of up to 3 liters and single-use cans with a volume of up to 3 liters are collected separately on an annual basis. An exception from the application of the deposit system is allowed only for countries that meet the separate collection targets for plastic bottles by other means (80% in 2026 and 90% in 2028), which is extremely difficult to achieve as an obligation except through the deposit system.

Although it is not a mandatory obligation, the Regulation recommends that Member States consider the possibility of including glass beverage bottles and cardboard packaging in the deposit system for the same purpose. The exceptions are the packaging of grapevine products, aromatized wines, wine-like products, spirit drinks based on alcohol and milk and milk products specified in Article 50 paragraph 4 of the Regulation. The minimum requirements for organizing the deposit system are listed in Annex X of the Regulation, including the obligations for the existence of one or more licensed operators who would be in constant coordination, rules for a minimum deposit, equal access, the obligation for operators to operate on a non-profit basis, the obligation to conduct public awareness campaigns, the prohibition of the obligation to purchase a new product when returning the packaging, and the like.

3. WHAT ARE THE KEY CHALLENGES FACING MACEDONIAN COMPANIES?

Waste management in North Macedonia is still treated as a peripheral issue, as evidenced by the limited Macedonian professional literature, particularly in the field of packaging waste management. Issues of transparency of Macedonian companies, but also the pressure on waste prevention are expected to gain relevance in the future. The obligation to introduce a deposit system is expected to have the strongest financial implications for beverage producers.

Macedonian companies listed on the stock exchange and according to the current so-called "soft provisions" are obliged to report on their performance and their impact in terms of the environment, social issues and governance (ESG) (Macedonian Stock Exchange, 2021). This is a wide range of issues that need to be analyzed separately. For some of the obligations, Macedonian companies show better results compared to countries in the region (for example, gender equality in boards of directors, etc.). (see more Gjorgjioska, Janeska, Spaseska, & Risteska Jankuloska, 2025). Waste management represents one of the key issues in the protection of the natural environment. These include, but are not limited to, the company's contribution to climate change through greenhouse gas emissions; the energy, water, and other resources it consumes; the waste it generates; and the impact of its activities on the natural environment and biodiversity.

Accountability in managing these risks is becoming a priority standard. In order to transparently report on compliance with the Code of Corporate Governance, including on the management of environmental issues, companies publish completed questionnaires that are publicly available. The growing attention to ESG reporting, the adaptation of EU requirements, implementation of some of them in the Macedonian legislation to a certain extent and also the implementation of European standards by MSE acts, have become a trigger for a skyrocketing number of companies that published ESG reports or supplementing annual reports with ESG and CSR issues (Gjorgjioska, Gligorovski & Obednikovska, 2024).

The analyses made for the annual reports of joint-stock companies including Information on environmental issues and adoption and publishing internal acts that address its responsibility for the environment and social issue, for 2023 show encouraging results. The average transparency level of all analysed companies for all indicators is 73%, which means that the Macedonian companies can be categorized in companies with “good level” of transparency and almost half of analysed companies belong in "very good" transparency level (Gjorgjioska, Janeska, Spaseska, Boshkoska & Gligorovski, 2025). However, this is only a small number of companies in North Macedonia. It seems that a large number of Macedonian companies are not aware of the changes that regulate the management of packaging and packaging waste in the European Union.

Although legislative changes within the European Union do not have direct implications for Macedonian law, North Macedonia is nevertheless obliged to progressively align its legislation with that of the Union. There is additional pressure on export-oriented companies that must harmonize their operations if they want to be present in this market. In the Law on Packaging and Packaging Waste Management, there is no provision that regulates the percentage of recyclability of the materials from which the packaging is made. The absence of such a provision can lead to a devastating state of conformism for Macedonian manufacturers, especially those that

are export-oriented. On the other hand, a hasty and poor change in the type of packaging can also lead to negative impacts on the quality of the products. What can be a special problem for manufacturers is in relation to the shelf life of products, which is often intrinsically related to the packaging material, so shortening that period can make dramatic changes in the placement of products. The Food and Beverage sector is particularly called upon in these processes as a driver of change, carrying a demand for innovative solutions to maintain food quality and safety while minimizing impact on natural resources (Operato, Panzeri, Masoero, Gallo, Gomes and Hamd, 2025).

The Macedonian Law on Packaging and Packaging Waste Management does not have any specific national targets relating to the collection of waste plastic products (bottles), but they are part of the targets for plastic waste management. Hence, there is no direct normative pressure to change the current packaging waste management system and introduce a deposit system.

The largest beverage producers in North Macedonia, responsible for producing and importing more than three quarters of all PET bottles and aluminum cans placed annually on the Macedonian market, are founders and members of the collective scheme Pakomak Ltd., Skopje; therefore, the positions of this scheme can be considered highly relevant.

Pakomak Ltd., Skopje is dedicated to achieving all challenging targets in the most efficient way. In order to more successfully achieve the legal targets, a few years ago it began to operate the so-called "deposit without deposit" or "incentive based system" using returnable vending machines. The system is based on providing incentives to citizens who return their PET bottles and cans to reverse vending machines. This differs significantly from the deposit system that is becoming mandatory in the EU. The question that now arises is whether it is time for a deposit system in packaging management in Macedonia.

North Macedonia is still building the infrastructure and is not ready for the implementation of a deposit system in the short term. The current “incentive based system” provides good results in managing this type of waste and meeting national goals. However, further improvement and investment in a network of returnable vending machines is needed in order to reach the figure of 400, which is considered optimal for the territory and population of North Macedonia. In the past period, solutions currently applied in Lithuania, Germany, Estonia, Croatia, and Slovakia were also analyzed. The advantages of the deposit return system (DRS) relate to the efficiency of waste collection, the cleanliness of the collected material, the high percentage of collected waste and the small negative impact of informal collectors on the functioning of the system. The main challenges for Macedonian producers are the exceptionally high infrastructure investments and elevated operating costs.

Analyses conducted by one of the most experienced consulting firms, Horváth, engaged by the Ministry of Environment and Physical Planning of North Macedonia, along with the positions of the producers and the largest collective actor, indicate that under current conditions, the existing system for managing this waste stream should remain in place. At the end of 2025, the total number of installed reverse vending machines on the territory of the country is 85. Investments in the machines continue intensively and in the next decade Pakomak Ltd., Skopje plans to install and manage around 400 reverse vending machines that will be part of an “incentive-based system”. The system has been positively received by municipalities, which are increasingly allocating budgetary funds to provide additional “green points”. Through the existing system of extended responsibility, reverse vending machines and the collection of plastic and can waste through conventional channels (bins, containers, door-to-door access), it is expected that the high national goals will be realized. As long as such a combined approach can achieve national targets, the system can serve as a successful alternative to the deposit-return system.

The next question is what measures will be taken if the existing system fails to achieve the minimum national waste collection targets?

The position of Pakomak Ltd., Skopje and the manufacturers it represents is that in that case the operator that would manage the deposit system should be established by the industry. This is also the recommendation of the consultancy company that was hired by the Ministry of Environment and Physical Planning. The system is most effectively managed by the producers rather than by the state. The collected material should be owned by the system operator. In this way, there will be good control over quality recycled PET that becomes a valuable raw material. The system should apply exclusively to PET and cans, just like the current "incentive based system". In this way, the existing reverse vending machine infrastructure, which is already in place, could be integrated into the new system. Glass packaging that is not returnable should not be included in the deposit system, as it is typically collected through the HORECA channel and via public collection containers. The motivation of HORECA

entities is further reinforced through the use of certified trademarks such as Pakomak Eco Restaurant, Pakomak Eco Zone, and Pakomak Eco Café (Gjorgjioska, & Mateski, 2022).

Evidence indicates that efforts are underway to expand the network of reverse vending machines across the country. The incentive-based system is also increasingly accepted by consumers, as evidenced by 61,305 downloads of the "EkoMak" mobile application in 2025—a significant increase from 42,545 users in 2024. According to the analyses, the efficiency in the use of machines is also improving. North Macedonia currently lacks a sufficiently developed infrastructure for implementing the deposit system. The existing combined approach has produced solid results and should be sustained, alongside further investment in infrastructure. In the past period, several analyses of consumers' attitudes towards packaging waste have also been conducted. Thus, one of the detailed analyses in the Pelagonia region confirms that the practice of waste management is not a regular process practiced by all citizens; a certain part has the habit of regularly selecting waste, but still a large part of the population does not have such an ecological behavioral practice. Encouraging ecological behavior among citizens can be achieved through targeted initiatives and motivating factors, with a special emphasis on the interest in using reverse vending machines (Angeloska-Dichovska, et al, 2023). In addition to educational campaigns, it is also necessary to implement additional programs with financial incentives. These programs should be carefully designed to motivate and reward individuals for adopting stronger recycling practices. Financial incentives can include discounts on products or services, loyalty programs or other tangible rewards that serve as a convincing incentive for active participation in recycling efforts (Gjorgjioska, Angeloska-Dichovska, Boshkoska & Janeska, 2023).

4. CONCLUSION

The Macedonian law on packaging waste management is not in line with Regulation (EU) 2025/40 of the European Parliament and of the Council of 19 December 2024 on packaging and packaging waste. In the following amendments that must be made, the primary focus should be on the obligations of manufacturers in the packaging design process. The absence of norms regulating this issue, including the percentage of packaging recyclability, can create a major problem for exporting companies in the event of their non-compliance with the regulation, which could ultimately result in them being prevented from selling on the territory of the European Union. This is the priority part of the regulation that should be implemented by Macedonian companies. There is still no regulatory pressure regarding the implementation of a deposit system for packaging waste management in the country, but it is undeniable that this process is becoming more and more certain and inevitable. Unlike the pressure for changes in the design, there is still time to implement the deposit system and this can be done in a foreseeable period after a significantly better infrastructure than the existing one is set up. In the period that follows, Macedonian companies, either individually or through the chambers of commerce, must proactively engage in a detailed analysis of the changes in the European Union and plan timely adjustments to new trends. It is undeniable that these measures will entail substantial costs that must be borne in the interest of environmental protection without compromising product quality.

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