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Successful European and Local Practices in Encouraging Communities to Apply 3R (Reduce, Reuse, Recycle) Methods
Joint Report

GÜNEKAB Güney Edirne Katı Atık Birliği

TEHNOPOL GALAȚI

Spectri

KOZLUCA

UZUNKÖPRÜ 1868 BELEDİYESİ

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Summary

This report provides local governments with a comprehensive view to the local, regional, national and European practices in sustainable waste management and initiatives aiming enhancing community participation. Incorporating a summary analysis of successful waste management practices in European and Black Sea Basin (BSB) countries, this study presents good examples of strategies and models for effectively implementing the 3R (Reduce, Reuse, Recycle) approach. Successful practices in Europe are supported by public awareness, effective waste segregation systems, and incentive-based policies. Local initiatives in BSB countries achieve positive outcomes through context-specific solutions and community-centered approaches. Effective waste management is possible through the leadership of local governments, the participation of civil society organizations, and cooperation with the private sector. The implementation of 3R methods is crucial for conserving natural resources, reducing waste generation, and providing economic benefits.

In this context, local governments should develop strategic plans for waste management and implement sustainable policies. Effective campaigns should be organized to raise public awareness and encourage participation. Waste segregation and recycling infrastructure should be strengthened, and modern technologies should be utilized. Collaborative projects should be developed through partnerships with civil society organizations and the private sector. By analyzing successful case studies, local solutions tailored to specific conditions should be devised.

This report provides local governments with practical insights and guidance to adopt more effective and sustainable approaches to waste management. Expanding the implementation of the 3R methods is a significant step toward ensuring environmental sustainability and leaving a more livable environment for future generations.

INTRODUCTION

The increasing global population, industrialization, and consumption habits have led to a significant rise in both the quantity and diversity of waste. This situation accelerates the depletion of natural resources, increases environmental pollution, and exacerbates global issues such as climate change. To ensure a sustainable future, it is crucial to implement fundamental changes in waste management and promote environmental awareness.

The 3R concept, which forms the foundation of sustainable waste management, represents the principles of **Reduce, Reuse, Recycle**. These principles aim to minimize waste generation, use existing resources efficiently, and contribute to the conservation of natural resources by repurposing waste materials:

- **Reduce**: Reviewing consumption habits to prevent unnecessary use; preferring products with less packaging; saving energy and water; and choosing durable, long-lasting products instead of disposable ones.
- **Reuse**: Using functional products multiple times; repairing old items or repurposing them for different uses; opting for second-hand products; and reusing packaging materials.
- **Recycle**: Using waste materials as raw materials for new products; sending glass, paper, metal, and plastic to recycling facilities; and composting organic waste for use as fertilizer.
- The implementation of 3R practices provides numerous benefits in terms of environmental protection, economic development, and social well-being.
- **Environmental Protection**: Conservation of natural resources; reduction of waste generation and prevention of environmental pollution; reduction of greenhouse gas emissions and combating climate change.
- **Economic Development**: Creation of new job opportunities in the recycling sector; reduction of raw material costs; and energy savings.

- **Social Well-being**: The opportunity to live in a cleaner and healthier environment; increased environmental awareness in society; and shared responsibility for a sustainable future.

By analyzing successful case studies from European and Black Sea Basin (BSB) countries, the report seeks to provide solutions tailored to local conditions.

METHODOLOGY

This study follows a methodology aimed at examining the topic of **"Successful European and Local Practices in Encouraging Communities to Implement 3R (Reduce, Reuse, Recycle) Methods"** and providing practical guidance to local governments. The research process focuses on analyzing both successful practices in Europe and local initiatives in Black Sea Basin (BSB) countries.

A **mixed research approach** was adopted in this study, integrating both qualitative and quantitative research methods. The following steps were followed to collect data from successful case studies in Europe and BSB countries:

- **Literature Review**: A comprehensive examination of academic articles, reports, policy documents, and other relevant publications; monitoring the latest research and developments on 3R practices, waste management, and community participation.
- **Case Studies**: A detailed analysis of successful waste management projects and initiatives in Europe and BSB countries; for each case study, an assessment of project objectives, applied methods, achieved outcomes, and encountered challenges; identification of key success factors and transferable models from successful practices.

Various project partners played crucial roles in the preparation of this guide:

- **Data Collection**: Each partner identified successful case studies in their region and gathered relevant data.
- **Analysis**: The collected data were evaluated using a common analytical framework; partners contributed to data analysis based on their areas of expertise, enriching the report's findings.

The primary and secondary data sources used in this report include:

- National and local waste management strategies, regulations, and plans.
- European Union waste management directives and policies.
- Scientific articles and books on 3R practices, waste management, and community participation.
- Websites, blogs, and other online resources related to waste management.

This methodology aims to enhance the reliability and validity of the report while providing **practical and actionable guidance** for local governments.

EU POLİCİES GUIDING WASTE MANAGEMENT AND 3R (REDUCE, REUSE, RECYCLE) PRACTICES

The European Union (EU) has established a comprehensive legislative and policy framework to promote sustainable waste management and encourage the application of 3R (Reduce, Reuse, Recycle) principles. These policies aim to minimize waste generation, improve resource efficiency, and transition towards a circular economy.

KEY EU POLICES AND DIRECTIVES SHAPING WASTE MANAGEMENT AND 3R PRACTICES

The Waste Framework Directive (2008/98/EC, last amended in 2018)

The Waste Framework Directive (WFD) sets the foundation for waste management in the EU and establishes the **waste hierarchy**, prioritizing waste prevention, reuse, and recycling over disposal. Key provisions include:

- The **waste hierarchy**: Prevention → Reuse → Recycling → Recovery → Disposal.
- The **polluter pays principle**: Those responsible for waste generation bear the cost of managing it.
- The **extended producer responsibility (EPR)**: Producers must take responsibility for the entire lifecycle of their products, including take-back and recycling schemes.
- A **binding target** to recycle **at least 55% of municipal waste by 2025**, increasing to **65% by 2035**.

The Circular Economy Action Plan (CEAP) (2020)

As part of the **European Green Deal**, the CEAP aims to reduce waste generation and ensure that resources remain in the economy for as long as possible. Key measures include:

- Promoting sustainable product design to enhance **durability, reparability, and recyclability**.
- Strengthening the **right to repair** for consumers.
- Phasing out single-use plastics and promoting **reusable packaging**.
- Encouraging high-quality recycling and secondary raw material markets.

The Packaging and Packaging Waste Directive (94/62/EC, last updated in 2018)

This directive sets ambitious targets for the reduction and recycling of packaging waste, including:

- **65% of packaging waste** must be recycled by 2025, increasing to **70% by 2030**.
- Specific targets for **plastic (50%), wood (25%), ferrous metals (70%), aluminum (50%), glass (70%), and paper/cardboard (75%)** by 2030.
- Restrictions on **single-use plastics** and incentives for **eco-design** in packaging.

The Landfill Directive (1999/31/EC, updated in 2018)

This directive aims to reduce landfill waste and prevent environmental pollution by:

- Requiring **member states to reduce landfill waste to a maximum of 10% of municipal waste by 2035**.
- Banning the landfilling of separately collected **paper, metals, plastics, and glass**.
- Encouraging **waste-to-energy recovery** as an alternative to landfilling.

The Single-Use Plastics Directive (2019/904)

To combat plastic pollution, this directive:

- **Bans certain single-use plastic products** (e.g., plastic straws, cutlery, and plates).
- Requires **90% separate collection** of plastic bottles by 2029.
- Mandates that **plastic bottles must contain at least 25% recycled content by 2025** (rising to 30% by 2030).

The Eco-Design Directive (2009/125/EC)

This directive ensures that products are designed with sustainability in mind, focusing on:

- **Durability, reparability, and recyclability**.
- Reducing material and energy consumption throughout a product's lifecycle.
- Encouraging **resource-efficient product design** to minimize waste.

Zero Waste Strategy

The Zero Waste Strategy is a long-term approach aimed at minimizing waste generation and utilizing waste as a resource. This strategy goes beyond waste management and promotes sustainable consumption and production models. It focuses on waste prevention, recycling, and recovery, setting higher targets for waste reduction and resource efficiency. It is closely linked to climate change mitigation, resource efficiency, and sustainable consumption.

EU policies provide member states with a legal framework and targets for waste management, ensuring consistent and effective implementation. Concepts such as the waste hierarchy and Extended Producer Responsibility (EPR) distribute waste management responsibilities among producers, consumers, and local authorities, creating a more sustainable system. The circular economy and zero waste strategies drive innovation and investment, fostering the development of new technologies and business models. Additionally, the EU's financial support mechanisms provide resources to help member states improve waste management infrastructure and expand 3R practices.

For example:

- Setting EU-wide targets for specific waste streams such as packaging waste, electronic waste, and batteries, requiring member states to develop national plans to meet these targets.
- Implementing Extended Producer Responsibility (EPR) schemes, ensuring that producers contribute to waste management costs throughout their products' lifecycle.
- Providing EU funding for circular economy projects, supporting innovation and scaling up successful waste management practices.

This comprehensive policy framework plays a crucial role in improving waste management and 3R practices across Europe.

These policies provide guidance for local governments, businesses, and citizens on achieving sustainable waste management.

CASE STUDIES OF SUCCESSFUL 3R INITIATIVES

GERMANY

Germany is a global leader in waste management, thanks to a comprehensive framework based on energy reduction, reuse, recycling and recovery. Here are the main aspects summarized:

Legislative framework and waste management hierarchy

Germany has a rigorous legislative framework for waste management, based on national legislation and European regulations. The most important normative acts in this field are:

Waste Management Act (KrWG - Kreislaufwirtschaftsgesetz)

The Circular Economy and Waste Management Act, known as the Kreislaufwirtschaftsgesetz (KrWG), which came into force in 2012, regulates waste management in Germany. It implements the European Waste Directive and includes measures to reduce the amount of waste produced and promote recycling and reuse.

KrWG includes the principle of waste hierarchy, which must be respected at all stages of waste management, from prevention and reuse, to recycling, energy recovery and disposal.

Landfill Act (Deponieverordnung - DepV)

The Deponieverordnung Act regulates the landfilling of waste in landfills, setting strict requirements for their construction and operation, as well as measures to protect soil and groundwater. According to this regulation, waste can only be landfilled in conditions that comply with environmental protection standards, and landfills must be monitored on a long-term basis.

Packaging regulations (Verpackungsverordnung - VerpackV)

The Verpackungsverordnung regulates the management of packaging and packaging materials in order to reduce their impact on the environment. The law includes measures for: Packaging

collection and recycling systems: Packaging manufacturers and distributors are obliged to participate in packaging collection and recycling schemes. These schemes are organised by liability organisations such as Der Grüne Punkt.

Packaging Storage Systems (Pfand): Plastic or metal bottles and cans can be returned to receive a return fee, which encourages their recycling.

Closed Cycle of Substances and Waste Management Act (KrW-/AbfG):

The KrW-/AbfG Act (Movement of Substances and Waste Management) is an important regulation in Germany, which imposes a strict waste management system, with a focus on the principle of the "closed loop" of substances. It has several essential objectives:

- *Separate waste collection*: The law requires that waste be collected separately at the source (e.g. at home, at work, in institutions), to facilitate recycling and reuse. Waste must be sorted into specific categories, such as paper, plastic, glass, and organic waste.
- *Citizens' involvement in the recycling process:* The law promotes the active involvement of citizens in waste management, by educating them and creating easily accessible selective collection systems. This helps to increase the recycling rate and reduces the volume of waste that ends up in landfills.
- *Waste prevention:* The law includes measures to reduce waste production, such as strategies to make products more sustainable and easier to recycle.
- *Prioritizing recycling and material recovery:* The closed cycle of substances encourages the use of recycled materials to produce new products, thus reducing the need to use natural raw materials.

Waste management hierarchy

It prioritizes waste reduction, reuse, recycling and, as a last resort, energy recovery. The hierarchy includes the following stages:

- *Waste prevention:* This is the most important measure and aims to reduce the amount of waste produced, by optimizing production processes, reducing packaging and promoting sustainable products.

- *Reuse:* Encourage the reuse of products or their components, instead of throwing them away or recycling them. Reuse may include repairing, reusing, or reselling products.
- *Recycling:* After preventing waste and reusing it, recycling becomes an important option. This involves turning waste into secondary raw materials that can be used to produce new products. Recycling contributes significantly to saving natural resources and reducing the impact on the environment.
- *Energy recovery:* In situations where waste cannot be reused or recycled, energy recovery becomes a viable option. This process involves recovering the energy contained in the waste through incineration or other conversion methods, to produce electricity or heat.
- *Final waste disposal:* It is the last option in waste management and involves storing waste in a safe way, usually through landfill or other methods that minimize environmental risks.

Key programmes and initiatives

Sistemul "Dual System" (The Green Dot)

The "Dual System", also known as Der Grüne Punkt (Green Dot), is a packaging waste management initiative, introduced in 1991, in response to the strict regulations on Extended Producer Responsibility (EPR). This is one of the most efficient systems in the world for collecting and recycling packaging.

The Der Grüne Punkt system operates on the basis of a well-structured economic and logistical circuit, which involves collaboration between producers, consumers, authorities and private waste management operators.

Principles

- *Packaging collection*: The system is based on separating packaging waste from the rest of the household waste. This is achieved by separating packaging into distinct categories (plastics, metals, glass, cardboard, etc.) that are deposited by consumers in special containers, such as green and yellow recycling bins, often referred to as 'green dots'.
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- *Recycling and reuse:* After collection, the packaging is processed and recycled. The recycled materials are then reused to manufacture new products, thus reducing the need to use new natural resources. For example, plastic can be reused to create new packaging, and paper and cardboard can be recycled to create other paper products.
- *Manufacturers' responsibility:* Under this system, manufacturers and distributors are responsible for managing the packaging they place on the market. They must participate in the recycling system, paying taxes for each unit of packaging put into circulation. These fees are paid to the organization Der Grüne Punkt, which coordinates the entire system.
- *Financing and organisation*: The system is managed by the organisation Der Grüne Punkt, which monitors and coordinates the collection and recycling of packaging. This is a *private organization, working in partnership with local authorities and recycling companies.*

Return Deposit System (Pfand)

Germany's Return Deposit System (Pfand) is a packaging recycling system, especially for beverage bottles and cans, that encourages consumers to return packaging after use, to be recycled and reused. This system is very well implemented in Germany and aims to reduce waste and stimulate recycling through an economic system based on the return of bottles and cans

Principles

- *Initial deposit:* When a consumer buys a beverage packaged in a bottle or can (usually PET, glass or aluminium), they pay an additional amount, called a 'Pfand' (deposit). This amount varies depending on the type of packaging: generally, for glass bottles and aluminum cans, the deposit is 25 cents, and for smaller PET bottles, the deposit can be 25 cents or 15 cents.
- *Drinking the beverage and storing the packaging:* After the consumer drinks the product, the bottle or can can be returned to a collection point, and the deposit paid at the time of purchase is refunded.
- *Return of packaging:* Empty packaging (bottles, cans) is returned to special collection machines, located in most shops, supermarkets and convenience stores. These vending machines scan the barcodes of the packaging and return the deposit amount originally paid. Sometimes, the packaging can also be returned manually to store checkouts, where staff pick it up and scan it.
- Recycling and reuse: After the packaging is returned, the bottles and cans are cleaned, sterilized and reused by the manufacturers to be reused in the packaging of new beverages. In the case of plastic (PET) packaging, it is usually recycled and reused to

create new plastic bottles or products. The system ensures that each package is reused or recycled, thus reducing the amount of waste that ends up in landfills.

Biogas and composting initiatives**:** Organic waste is converted into renewable energy and compost, promoting the circular economy.

Innovations and technologies

- **Waste-to-Product**: Materials are turned into new products, reducing the use of virgin resources.
- **Advanced technologies**: The use of baling and composting systems optimizes waste processing and decreases environmental impact.

Challenges

- **Recycling contamination**: The presence of contaminants in recycling streams affects efficiency.
- **Public education**: A broader education on the correct sorting of waste is needed.
- **Integration of technologies**: The expansion of circular economy practices requires advanced AI-based sorting and analysis systems.

NETHERLANDS

The Netherlands ranks among the world leaders in waste management, thanks to a well-defined set of policies, inter-institutional collaborations, innovative financial instruments and circular economy initiatives. With an impressive recycling rate of around 78% of waste, controlled incineration for 19% and sending only 3% to landfills, well below the EU average of 40%, the Netherlands has demonstrated that a strategic and integrated approach can produce exceptional results.

Key factors contributing to this performance include:

Close collaboration and clear responsibilities

The Netherlands' success in waste management is based on effective cooperation between the different levels of government and the private sector. This collaboration includes:

- Inter-institutional cooperation: Coordination between industry, local, provincial and national authorities ensures uniform and efficient waste management. For example, cities are responsible for collecting household waste, while the state provides clear regulations.
- Legislative framework: Waste management laws clearly set out the responsibilities of all actors involved. National waste management plans include specific targets and regular evaluations to monitor progress.

Proactive environmental policies

The Netherlands has adopted ambitious environmental policies since the 1960s, addressing environmental issues in an integrated manner. Among the outstanding initiatives, the following stand out:

- ***Producer responsibility**: The introduction of this concept in the 1990s obliges companies to manage products throughout their life cycle, including the disposal stage. Thus, electronics manufacturers, for example, are responsible for recycling old devices.*
- ***Pioneering laws**: Over the decades, the Netherlands has regulated the use of hazardous materials, such as asbestos, and has adopted strict standards for recycling.*

Effective financial instruments

Another pillar of Dutch success is the use of taxes and financial incentives to encourage sustainable behaviors:

- ***Landfill tax**: The introduction of this tax in 1995 had a major impact, discouraging landfilling and incentivising controlled recycling and incineration. As a result, the percentage of waste sent to landfills has dropped dramatically.*
- ***Differentiated rates for collection**: Consumers pay differentiated fees depending on the amount and type of waste generated, which motivates the reduction of waste.*

Organization of waste treatment methods

The Netherlands has developed a well-organised waste treatment system, involving public-private partnerships and the use of advanced technologies:

- **Public-private partnerships**: incineration and composting facilities are operated in a mixed system, encouraging collaboration between municipalities and private companies. This guarantees efficiency and adequate capacity for waste stream management.
- **Municipal leaders**: Cities like Amsterdam manage their own waste treatment facilities, contributing to the independence and efficiency of the system.

Circular economy initiatives

*A central element of the Dutch strategy is the transition to a circular economy. The "**From waste to raw material**" program promotes the reuse of materials in closed chains. Concrete examples include:*

- Cross-industry collaboration: Recycling plants work together with manufacturers to meet the quality standards needed to reuse materials.
- Promoting eco-innovation: Dutch companies are developing innovative solutions, such as the use of plastic waste for the production of building materials.

Future perspectives and objectives

Through integrated strategies, the Netherlands demonstrates how the balance between economic development and environmental protection can be achieved. The Netherlands aims to maintain its leadership position in waste management by setting ambitious targets for the future, including:

- **Increasing the recycling rate**: the objective is to increase the recycling rate of household waste from 50% to 65% by 2030.
- **Plastic reduction**: aims to recycle plastic packaging more efficiently and combat microplastics through strict regulations. It also aims to reduce their impact on marine ecosystems and promote innovative alternative materials
- **Incentives for the circular economy:** The government plans to introduce new financial incentives and additional regulations to support the deployment of advanced recycling technologies.

Example for sustainability

The Netherlands is another example of sustainability, as it successfully applies sustainability models to mobility, construction, and consumption. A clear example of material recycling in the country is the construction of two sections of a bicycle path in the cities of **Zwolle** and **Giethoorn**, which are made entirely from recycled plastic. While plastic has been used in road construction elsewhere, this is the first time it has been made entirely from plastic in the Netherlands.

Worldwide, more than 350 tons of plastic are used each year, with a large portion of it being disposed of in landfills or through incineration. **PlasticRoad** is a company that recycles plastic waste and uses it in road construction, creating a durable outlet for plastic waste and providing a valuable second life for it. The bicycle path contains a significant amount of recycled plastic, but the company's ultimate goal is to use 100% recycled plastic. This system is designed to enable faster road construction with less environmental impact and reduced CO2 emissions. Additionally, improved drainage is expected to create resilience against heavy rainfall and help reduce flooding.

A team, including scientists from **Glasgow Caledonian University**, has managed to produce pavement stones capable of meeting the energy needs of cities. These stones, suitable for use on pedestrian pathways and resistant to weather effects such as rain and snow, are expected to supply energy for many cities in the near future. The pavement stones are installed on streets and walkways in small tile-sized sections. On sunny days, they generate 200 watts of energy per square meter, while this number drops to 150 watts on cloudy days. According to Gowaid, although these pavement stones are more expensive than standard ones, the energy savings they provide will allow them to pay for themselves in a short period. The team hopes that this technology will spread worldwide in the future, particularly in universities, stadiums, and many public areas.

Recycled Park

Recycled Park is a floating park in the city of Rotterdam, Netherlands, made entirely from recycled plastics collected from the river. The park is not just a space for the public to visit but also helps clean the Nieuwe Maas River by stopping plastic waste from mixing into the ocean.

After five years of development, which included designing the park and transforming plastics into something new, as well as raising funds, the Recycled Island Foundation finally introduced the prototype of the park on July 4th.

The park was built in modular hexagonal sections, which means that the park can grow as new materials are collected. The park not only serves to reduce plastic waste pollution but is also designed as a wild habitat for micro-region animals such as snakes, worms, larvae, insects, and fish.

The project's creator, **Ramon Knoester**, told **Lonely Planet**, "This prototype shows the potential of what we can do with marine debris. **Recycled Park** is a floating green structure where birds nest, fish swim, and people can relax above the water. Visitors can see how nature has taken over this first artificial and natural terrain from two seating structures."

The **Recycled Island Foundation** and 25 other partners placed traps on the **Meuse River** to collect plastic waste, which was then transformed into 28 hexagonal blocks that make up the park, eventually creating **Recycled Park**. The team spent a year and a half developing, testing, and improving the waste traps, and ultimately created a system to capture floating plastics in

rivers and harbors. The trash trap they developed can capture floating waste without being affected by ship traffic or tidal changes.

WELSH GOVERNMENT

The Welsh Government has stood out for its strong commitment to making Wales a greener, more egalitarian and more prosperous country. Since its creation in 1999, Wales has achieved notable performance in waste management, consolidating its position as a global leader in recycling. Today, Wales ranks first in the United Kingdom, second in Europe, and third in the world in terms of household waste recycling rate. This success is due to a clear vision, close collaboration, strategic investments and well-defined policies.

Key achievements in recycling

These achievements highlight the importance of an integrated policy system that combines inter-institutional collaboration with the active involvement of local communities. The efficiency of

this system is amplified by clear strategies and consistent investments in infrastructure and education.

Wales' key achievements in recycling reflect a holistic model that integrates clear public policies, citizen engagement and the use of advanced technologies. Every stage of this progress has been supported by collaboration between authorities, the private sector and local communities, demonstrating that sustainable change can be achieved quickly when there is a common vision.

Exponential growth in household recycling

By educating the public about the benefits of recycling and setting ambitious targets, a favorable ecosystem has been created for the adoption of sustainable behaviors. This process was also supported by constant communication between authorities and citizens to ensure transparency and broad support.

This growth was possible thanks to the adoption of practical and well-targeted measures, which focused on educating citizens and ensuring efficient logistics solutions. In particular, local authorities received support in the form of funding and training to tailor recycling programmes to the needs of each community.

One of Wales' most remarkable achievements is the significant increase in the household recycling rate. From a rate of only 5.2% in the period 1998-1999, it reached 60.7% in the period 2018-2019. This increase was possible due to:

- **Legal recycling targets:** The Welsh Government has imposed clear targets on local authorities, which has led to faster adoption of recycling practices.
- **National campaigns:** Initiatives such as 'Recycle for Wales' have been instrumental in educating and motivating citizens to get actively involved in recycling. Through visual campaigns and collaborations with schools, a long-term awareness of the benefits of recycling has been created.

Modernized infrastructure for collection

The modern infrastructure system allows for the efficient management of an increasing volume of recyclable waste. By using advanced technologies such as automated sorting and anaerobic digestion, authorities have been able to maximise the recovery of useful materials and reduce carbon emissions.

A well-developed infrastructure is essential to support citizens' recycling habits. By modernising recycling centres and expanding collection services, Wales has demonstrated that accessibility plays a crucial role in the success of waste management programmes.

The Welsh Government has allocated more than £1 billion to support local authorities in developing waste collection infrastructure. Thanks to these investments:

- **99% of households benefit from food waste collection services.** This waste is converted into renewable energy through anaerobic digestion processes, contributing to both waste reduction and clean energy production.
- **The recycling centres have been upgraded** to handle more than 20 types of waste. These include facilities for reusing and repairing objects, such as furniture or small appliances. The stores associated with these centers allow citizens to purchase repaired products at affordable prices, supporting the local economy.
- **Reduced waste collection:** Reducing the frequency of general waste collection has encouraged households to recycle more, while automated sorting systems at recycling centres ensure more efficient separation of recyclable materials.

Plastic bag fee

This policy has not only reduced the consumption of plastic bags, but has also set a precedent for other types of environmental taxes aimed at encouraging responsible behaviour. The impact of this measure was felt not only locally, but also internationally, inspiring similar policies in other states.

Wales was the first in the United Kingdom to introduce, in a revolutionary way, the tax on single-use bags. This initiative led to a significant reduction in their use and inspired other nations to adopt similar policies. According to recent reports, the use of plastic bags has decreased by more than 70%, thus helping to reduce plastic pollution.

Future initiatives for a circular economy

Through future initiatives, the Welsh Government aims not only to build on the progress already made, but also to respond to new global challenges such as climate change and finite resource management. Integrated strategies aim to transform the economy into a sustainable model that can also be replicated internationally.

Promoting the circular economy

The transition to the circular economy requires a fundamental change in the way resources are produced and used. Investments in technological innovations, such as chemical recycling or the manufacture of products from renewable materials, are essential to support this transformation.
The Welsh Government wants to create a circular economy, where materials are reused and recycled as much as possible. The objectives include:

- **Increasing the lifespan of resources:** Developing sustainable supply chains that reduce dependence on virgin resources. This goal is supported by partnerships between companies to optimize industrial recycling processes.
- **Reducing carbon emissions:** Through advanced recycling and technological innovations, Wales is helping to significantly reduce emissions from industrial activities. Examples include the use of renewable energy in recycling processes and the conversion of food waste into biogas.

Limiting the use of single-use plastic

Another major objective is the gradual elimination of single-use plastic that is difficult to recycle. Through strict policies and the promotion of biodegradable alternatives, Wales wants to reduce the impact of plastic pollution on ecosystems. To this end, the authorities are working with research centres to develop innovative materials, such as edible packaging.

Integrating recycling into national culture

Education plays a key role in creating a culture of sustainability. From implementing modules on recycling in schools, to organizing fairs and community events, these efforts build a sense of collective responsibility towards the environment.

Recycling is encouraged as a social norm. By educating younger generations and organising public campaigns, the Welsh Government hopes to create a collective behaviour focused on sustainability. Dedicated educational programs in schools include hands-on recycling activities, and local competitions motivate communities to improve environmental performance.

Wales' success in waste management is a clear example of a commitment to environmental protection and innovation. Through clear policies, strategic investments and education, the Welsh Government is demonstrating that a transition to a circular economy is not only possible, but also essential for a sustainable future. With ambitious goals such as achieving a 100% recycling rate by 2050, Wales continues to inspire other regions to follow this successful example. The implementation of these measures not only reduces pollution, but also creates green jobs and stimulates technological innovation, strengthening the local economy.

SLOVENIA

The transnational process in Slovenia has started with a Communication Strategy to accelerate ownership of the transition, engage all stakeholders and build dialogue around the topic of circular transition. The implementation of the Communication Strategy includes the involvement of intermediaries such as the Joint Research Centre, Climate-KIC and EIT Raw Materials to develop and co-create a Deep Demonstration of a Low Carbon Economy through Circular Economy. This brings new know-how and knowledge, building on all activities and achievements made so far at national level. The focus of the Communication Strategy is on systemic change for the transition, while making it more tangible and sustainable

Slovenia's Communication Strategy is based on 3 main pillars:

- Circle communities and education;
- Business and monitoring;
- Policy making and innovation (public procurement, higher education, capacity building).

A new Circular Economy Center is being established, which is key to organizing the program and attracting additional knowledge.

ROMANIA

An example successfully applied in Romania, which reflects approaches in accordance with the Waste Framework Directive (2008/98/EC), is the initiative of the city of Brașov for the selective collection and sustainable management of waste. Through strategic investments, public-private partnerships and population education campaigns, Brasov has demonstrated that a local community can achieve notable results in a short time.

Key elements of success in Brasov

- **Selective collection at source**, starting with 2019, Brasov has implemented a mandatory selective collection system, separating waste into four main categories: paper/cardboard, plastic/metal, glass and residual waste. This system was supported by the free distribution of specialized containers and campaigns that educated the population about the importance of correct recycling.
- **Modernized recycling and composting centers,** infrastructure investments have included the construction of automatic waste sorting centers, as well as the development of composting facilities for biodegradable waste. These centers have not only reduced the amount of waste sent to landfills, but have also generated useful products, such as compost used in agriculture.
- **Differentiated taxes and financial incentives,** Brasov has implemented a system of differentiated taxes for sanitation, where households that recycle correctly benefit from substantial discounts. This approach has motivated citizens to take an active role in reducing non-recyclable waste.
- **Educational campaigns and community involvement,** education has played a key role in changing the behavior of the population. By collaborating with schools and organizing community events, the authorities have managed to create a culture of responsibility

towards the environment. Inter-school competitions and volunteer programs to clean up the city helped reinforce this message.

- **Public-private partnerships.** Brasov's success was also possible thanks to the collaboration with private companies in the recycling field, which provided the technology and expertise necessary to modernize waste management processes. This partnership has enabled the city to use advanced technologies, such as automatic sorting, to maximize recycling efficiency.

Notable results

- **Increasing the recycling rate:** in just a few years, Brasov has reached a recycling rate of over 40%, exceeding the national average of 13%.
- **Reduction of waste sent to landfills: thanks to** the modernized system, the amount of non-recyclable waste has decreased considerably, helping to protect the environment.
- **Generating green jobs:** The development of recycling and composting centres has created new employment opportunities in the green sector, supporting the local economy.

The Brasov model demonstrates that success in waste management can be achieved through a combination of clear policies, community involvement and the use of modern technologies. To scale up these results at the national level, Romania should:

- ✓ **Investments in infrastructure:** the construction of recycling and composting centers similar to those in Brasov, equipped with advanced technologies, can significantly increase the recycling rate in other regions.
- ✓ **Continuous education:** the creation of national campaigns promoting selective collection and the benefits of the circular economy can change citizens' mindsets and motivate active participation.
- ✓ **Tax incentives:** Implementing green taxes and benefits for households and businesses that recycle correctly can accelerate the transition to a green economy. Incentives may also include subsidies for the development of innovative recycling technologies.
- ✓ **Strategic partnerships:** Working with private firms and NGOs to improve recycling processes can bring valuable expertise and innovative solutions. These partnerships can

also support social programs by integrating disadvantaged people into productive activities.

The example of Brasov shows that Romania has the potential to become a regional leader in sustainable waste management. By replicating this model and adopting policies in line with the principles of sustainable waste management, the country can make significant progress towards a circular economy. This would not only reduce the impact on the environment, but also boost the local economy by creating jobs and promoting technological innovation. Romania can learn from these experiences to build its own path towards sustainability. In addition, the implementation of advanced systems for monitoring and reporting progress can ensure the transparency and efficiency of the strategies adopted.

BULGARIA

With Decree No. 95 of April 4, 2024 A Circular Economy Council has been established, a body for coordinating executive authorities on issues related to the transition from a linear to a circular economy, which ensures cooperation with other state bodies, local government bodies and non-governmental organizations in determining and implementing state policy in the areas of the circular economy.

Effective and timely action in this direction involves identifying, actively engaging and involving stakeholders from all key economic sectors of each country and region. This includes mapping resource flows, identifying where value is lost in value chains and supporting organizations to engage in effective collaboration to share information, skills and resources.

Good practice introduced in kindergartens in Varna Municipality and other municipalities to replace the use of single-use plastic cups for water and other drinks for children with reusable metal cups. The change brings environmental and economic advantages. According to the eco-organization "Public Center for Environment and Sustainable Development", a medium-sized kindergarten spends about 5,000 leva per year on cups, and one kindergarten group uses 150-300 plastic cups for water daily. Within a year and a half, 19 kindergartens from the cities of Sofia,

Blagoevgrad, Pazardzhik, Targovishte, Elin Pelin, Pernik and Chepelare have supported the environmental campaign and replaced plastic cups with stainless steel ones and have managed to prevent the waste of 2 million single-use plastic cups (7 tons of plastic waste) and have saved society 60,000 leva, which would have gone to the purchase of these cups.

Good practices for preparing for reuse of textile waste

The waste collected in the containers is transported by specialized companies for the treatment of textile waste to their sites, where the contents of the containers are subsequently sorted. During the process, the waste is sorted by type, with those suitable for reuse being separated. Another part of the textile waste is sorted and cut and used as cotton rags for the industry. Textile materials that are not suitable for direct reuse such as clothes or rags, and other waste separated in the sorting process (e.g. packaging), are baled and handed over to other companies for proper recycling and utilization. Unsuitable textile materials (e.g. jeans and white textiles) are sorted by color, their zippers and buttons are cut out and handed over to installations for the production of insulation wool.

Nearly 1,110 tons of textile waste were collected in specialized containers last year, of which 861 tons (79%) were prepared for reuse, and 217 tons (21%) were sent for recycling.

TÜRKİYE

Global developments in the transition to a circular economy and zero waste management system are being closely monitored in our country of Türkiye. Necessary updates are being made in environmental legislation accordingly. Furthermore, various projects have been implemented to find sustainable solutions for resource conservation, preventing environmental pollution, increasing recycling rates, and reducing waste production.

The **Zero Waste Project**, which aims to prevent waste, and to evaluate the non-preventable portion through reuse, recycling, and energy recovery to send the least amount of waste to disposal, was launched in September 2017. The legislative provisions for **Zero Waste Management** and the **Deposit Return System** were included in the **Environmental Law No.**

2872 in December 2018. Institutions began to rapidly transition to zero waste management, and by 2019, 25,000 institutions had joined the system. However, the sustainability of these systems is crucial. For this purpose, monitoring the efficiency of the systems, periodically repeating awareness-raising activities, and implementing inspection and penal measures are necessary.
By September 2021, since the launch of the Zero Waste Project, energy savings equivalent to one month's usage for 1.5 million households had been achieved. Approximately **24.2 million** tons of waste were recovered for the economy, resulting in savings of 356 million kWh of energy and 437 million cubic meters of water. The emission of 3 million tons of greenhouse gases was prevented, and 265 million trees were saved. To ensure more effective participation in zero waste management, local governments have **been required to establish zero waste departments starting in 2022**.

In January 2019, a charge was introduced for shopping bags to reduce plastic use. As a result, plastic bag usage decreased by 75% in 2020. This led to a reduction of 8,300 tons of greenhouse gas emissions, 3 million MWh of energy savings, and 1.8 million barrels of oil consumption savings. To protect our seas and coasts and leave a livable environment for future generations, the **Zero Waste Blue Project** was launched in June 2019.

In July 2019, the Zero Waste Regulation was published. The purpose of the regulation is to establish a zero waste management system that aims to protect the environment, human health, and all resources in waste management processes, in line with the effective management of raw materials and natural resources, and the principles of sustainable development. The regulation specifies the final deadline for transitioning to the zero waste management system for local administrations, buildings, and campuses. The transition date varies depending on the institution or organization, but it is expected to be completed by December 31, 2022. The Zero Waste Regulation was revised in October 2021. The latest version emphasizes the necessity of establishing waste collection centers where waste separated at the source is sent for recovery or disposal.

Additionally, for chain supermarkets and sales points with an enclosed sales area of over 400 m², there is a new obligation to create collection points for non-hazardous paper, glass, metal, plastic waste, as well as for the separate accumulation of batteries, small electrical appliances, or textile waste when these items are sold. The minimum area for waste collection centers is determined based on the population served by the municipality. The regulation also includes provisions for setting up mobile waste collection centers in shopping malls.

To guide the transition to Zero Waste Management, the Ministry of Environment, Urbanization, and Climate Change has published **Zero Waste Management System Implementation Guides** for institutions and organizations. The common implementation steps for institutions and organizations are as follows:

1st Designation of the Working Team

Determining the responsible individuals for the establishment, implementation, and monitoring of the zero waste management system.

2nd Planning

- Identifying the types of waste, their sources, and the available equipment,
- Assessing the status of responsible personnel,
- Identifying factors that may affect the type and quantity of waste.

3rd Training and Awareness Activities

Conducting necessary training and awareness-raising activities to promote the system and encourage participation.

4th Monitoring, Record Keeping, and Improvement

Conducting periodic monitoring and keeping records to identify deficiencies and areas for improvement in the implementation of the system (Ministry of Environment, Urbanization, and Climate Change, 2020).

In July 2019, the **Turkey Deposit Return System (TÜDİS) Project** was launched. The project, developed under the auspices of the Ministry of Environment, Urbanization, and Climate Change, focused on the technical, administrative, and financial requirements of the deposit return system planned for implementation in Turkey. The deposit return system is one of the most efficient

methods for enabling closed-loop recycling, conserving resources, and ensuring effective recycling and reuse. Therefore, the initiation of the transition to this system in our country is an important step toward adapting to a circular economy.

In December 2019, the **Regulation on the Recovery Participation Fee** was published. The regulation covers the procedures and principles for collecting the recovery participation fee from sales points for plastic bags, and from producers/importers for other products.

Also in December 2019, the **Regulation on the Landfilling of Waste** was amended, and Temporary Article 1 includes the following statement: "To ensure the recovery of municipal waste in accordance with the zero waste management system, the use of environmentally compatible physical, chemical, biological, or thermal technologies is essential. The pre-processing facilities and capacities using these technologies must be structured to ensure that at least 60% by weight of the municipal waste collected in 2035 will be recoverable.

In December 2020, the **Turkey Environmental Agency** was established. The main duties of the agency are:

- To establish, operate, or oversee the operation of the deposit management system,
- To engage in activities related to the improvement of the environment,
- To contribute to the reintegration of recyclable products into the national economy, the establishment and implementation of the zero waste management system,
- To raise public awareness and sensitivity about environmental issues

In June 2021, the new **Packaging Waste Control Regulation** was published. Starting in 2021, national recycling and recovery targets were set for the country.

In July 2021, the **Green Deal Action Plan** was published. The action plan outlines steps to be taken in a broad range of areas, including climate change mitigation, green financing, EU carbon border adjustment regulation, a green and circular economy, clean, economic, and secure energy supply, sustainable agriculture, sustainable smart transportation, and diplomacy. The plan aims to inform companies, particularly Small and Medium-sized Enterprises (SMEs), about

environmental labeling and waste management, create awareness for the recycling of food waste and leftovers, and raise consumer awareness in 2021.

The preparation of a **National Circular Economy Action Plan** was planned for 2022, but was prepared in September 2024.

In this context, the goal is to establish technical criteria for the use of recycled secondary products and materials. It is also anticipated that the technical and administrative work for the implementation of the **Green Organized Industrial Zone (Green OSB)** and **Green Industrial Area Certification System** will be completed within the same timeframe. The widespread adoption of the environmental labeling system in 2023, along with the completion of R&D studies on the reuse of waste and residues in agricultural production by 2024, is planned. Between 2022 and 2027, it is planned to contribute to the industry's transition to a green and circular economy and emissions reduction through the use of IPA funds and international financing sources (Ministry of Trade of the Republic of Turkey, 2021).

The **Paris Agreement**, which entered into force in 2016 to mitigate climate change, was also ratified in Turkey in October 2021. The main objective of the agreement is to limit global temperature rise, caused by human-induced greenhouse gas emissions, to below 2°C compared to pre-industrial levels, with a focus on keeping the rise below 1.5°C. The Paris Agreement also aims to enhance the ability to adapt to climate change, promote low greenhouse gas emissions without negatively affecting food production, and establish financial flows for low-emission and climate-resilient development (United Nations, 2015).

In addition to supportive legislation for the transition to zero waste management and alignment with the circular economy concept, there are also efforts from the relevant sectors. A report published by the Turkish Industrialists and Businessmen's Association (TÜSİAD) highlights the benefits of the European Green Deal and the Circular Economy Action Plan for the Turkish business community. According to the report, Turkey's dependence on imported intermediate goods has been rapidly increasing. When considering energy dependence, this rate stands at 23%,

but without energy, it is approximately 16%. As of 2016, the share of imported intermediate goods in exports is 42.2%. With the transition to a circular economy, the efficiency in resource use will reduce external dependence. The concept of circularity is not just about a change in practice; it will also initiate a shift to a different economic model. Therefore, it is emphasized that developing data-driven processes and providing sufficient time for effective participation of the business community and sectors in the legislative preparation process is crucial for establishing a successful system.

In 2016, the Sustainable Development Association (SKD) and the European Bank for Reconstruction and Development (EBRD) established the Circular Economy Platform. The platform's goal is to address the information/resource needs in the field of circular economy, provide measurement mechanisms, offer technical grant support, and create opportunities for collaboration (Circular Economy Platform, 2022).

The **11th Development Plan** also states that Regional Development Agencies will continue to support clean production practices. The **Industry and Technology Strategy 2023** places particular emphasis on supporting green production, **Green Organized Industrial Zones (OSBs)**, and clean production investments in OSBs. Under the leadership of the **Ministry of Environment, Urbanization, and Climate Change**, within the framework of EU alignment studies, projects supported by the **EBRD** have been carried out to establish **End-of-Waste** criteria and promote the concept of secondary raw materials. A roadmap has been developed for this, and it is planned that the work will continue with a new EU-supported project. Efforts are also being made to implement eco-design and eco-labeling practices in production. The **Regulation on Environmentally Sensitive Design of Energy-Related Products** establishes criteria for product designs to allow market entry, aiming to minimize energy consumption and environmental impacts (Circular Economy Platform, 2022). Significant progress has also been made in the business world towards reducing plastic pollution, with 34 companies declaring their commitments to fight plastic pollution (SKD Turkey, 2021).

One of the waste management facilities established in Turkey under the framework of integrated waste management planning is **EDİKAB** in **Edirne**, which was created by the cooperation of **Edirne Municipality** and the district municipalities of **Havsa**, **Süloğlu**, and **Lalapaşa**. In addition to the founding municipalities, **Edirne Provincial Special Administration** later became a member of the Union, representing 96 villages within the union's boundaries. The facility, which cost **10 million 100 thousand TL** to establish in 2018, will be capable of producing enough electricity to meet the needs of 6,400 households for one month when it reaches full capacity. EDİKAB has leased the operation of the facility to **Atlas Sanayi ve Ticaret Limited Şirket** for 29 years. EDİKAB does not pay disposal fees for waste, making it the first and only such facility in Turkey. Through an agreement, the Union will receive 10% of the revenue from the waste collection and disposal company's turnover. The previous landfill area has started to be transformed into a green space with the municipality's resources.

GEORGIA

Source separation in Kutaisi

Kutaisi is one of the first cities in Georgia, where plastic and paper packaging materials separation has been carried out at the municipal level since 2015. This activity became possible thanks to the financial support of the Black Sea Basin Program, the Self-Government City of Kutaisi as a lead Partner, has implemented two projects. The first of them was implemented in 2013-2015. Within the project “Introduction of innovative waste management practices in selected cities of Georgia, Moldova, and Armenia”, for the first time in Georgia, plastic separation at the municipal level started in Kutaisi. Kutaisi's experience has shown that the best results and indicators of plastic separation are observed when transparent containers are used for waste collection. Observations on people's behavior turned out interesting. As studies have revealed, the plastic collection rate is quite high and amounts to 80%, indicating the high motivation of Kutaisi citizens.

Fig.2. Plastic selective collection in Kutaisi

It should be noted the Black Sea Basin program is a good opportunity for Georgia to improve environmental protection and, particularly, the introduction of recycling practices of the EU. Every year, the amount of plastic and paper collected in Kutaisi increases, which requires increased capacity for the corresponding equipment. Approximately 50000-60000 tons of municipal waste are generated in Kutaisi every year, including 10-12% plastic, 15-20% paper. Since 2019, Kutaisi collects 216 tons of cardboard annually.

To increase the capacity for separating plastic and paper/cardboard waste, another important device – A semi-automatic baler horizontal press of BARTONTHECH (Poland) was handed over to Kutaisi in the summer of 2024 with the financial support of the Polish Challenge Fund under the joint project of the Polish- UNDP Partnership: Innovative Solutions for the SDGs. The horizontal-type press baler has significantly increased the separation potential, which allows

Kutaisi to make the separation even more efficient, especially the cardboard and plastic separation.

Kutaisi- Smart Eco City

The City of Kutaisi, represented by a core team of members of the Kutaisi municipality and civil society and academia, has embarked on a 3-year long journey of strategic urban transformation and capability building under the Mayors for Economic Growth facility. The project aims to develop and manage a Portfolio of Urban Transformation options that helps the municipality of Kutaisi explore viable solutions towards becoming a Smart Eco City.

The city has decided to use the Portfolio process to support its environmental resilience ambitions and advance its transformation towards becoming a **Smart Eco City** that is respectful of its environment and resources and can deploy innovative green solutions to address its urban challenges.

The Portfolio is focused on 3 areas to achieve **Sustainable and Responsible Energy Use and Zero Waste** by applying innovation and smart technologies such as Energy, Waste, and Mobility.

Among the options identified within Portfolio is **Smart Waste**. This is most important for Kutaisi city because Kutaisi has made good progress in introducing and implementing modern waste management approaches. Portfolio Journey is the best opportunity for the development of municipal services, an eco-friendly environment, and citizens' behavior.

Within the Eco-Smart City Initiative, new separation points have been established with modern equipment managed by the sensors.

Fig.4. Separation points within Eco-Smart City Initiative, Kutaisi, Georgia.

INCENTIVES FOR PUBLIC PARTICIPATION

The Importance of Promoting Local Participation

Encouraging local participation is crucial for sustainable waste management and environmental protection efforts. The long-term success of waste management projects and 3R (Reduce, Reuse, Recycle) practices depends on the active involvement of local communities. Adopting sustainable habits requires individuals and communities to change their behaviors, which is only possible through local engagement and awareness.

Local communities possess the best knowledge about their specific needs and conditions. Therefore, waste management projects should be designed and implemented in alignment with the priorities and requirements of the community.

When local people actively participate in projects, they develop a sense of ownership and responsibility, ensuring the more effective implementation of waste management policies and practices.

Additionally, local communities can provide valuable feedback on the effectiveness of waste management systems and contribute to monitoring processes. Their involvement brings multiple benefits, including awareness, education, localized solutions, community ownership, and effective implementation. Thus, it is essential to promote active participation in waste management projects and environmental policies.

Education and Awareness Campaigns

Educational programs should be organized in schools, community centers, and through social media. Informative materials should emphasize the benefits of waste reduction, reuse, and recycling, and successful 3R initiatives should be showcased through example projects.

Education and awareness campaigns play a vital role in guiding communities toward a sustainable future. By fostering environmentally conscious individuals and communities, these campaigns contribute to long-term solutions to waste-related challenges.

CONCLUSION

This report aims to help decision-makers in BSB countries develop more sustainable and effective solutions for waste management by providing key insights and strategies.

Key Strategies for Effective 3R Implementation

- Public participation is essential for the success of 3R (Reduce, Reuse, Recycle) practices. Public engagement should be encouraged through awareness campaigns, financial incentives, and community projects.
- Every community has different waste management needs. Strategies should be developed by considering local conditions and requirements.
- Technological solutions, such as smart waste management systems and mobile applications, can help optimize waste management processes.
- Collaboration and partnerships should be established between governments, local authorities, civil society organizations, the private sector, and the public.
- Waste management strategies and practices should be continuously monitored, evaluated, and improved.

Policy and Investment Priorities

- Policies and legal regulations that support 3R implementation at national and local levels should be established.
- Investments in waste management infrastructure should be increased, and the number of recycling facilities should be expanded.

- Education on waste management should start at an early age to make it a part of the culture.

Waste management is not just an environmental issue; it is also a responsibility towards future generations. By implementing sustainable waste management practices, we can protect natural resources, maintain a clean environment, and build a healthier future.

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NEXT Black Sea Basin

G2 Recycling

South Edirne Solid Waste Union
17 Yukari Zaferiye Quarter Pasayigit Street, fl.1,
22800 Kesan -Edirne
Republic of Türkiye
www.gunekab.gov.tr
gunekab@hotmail.com

Galati Tehnopol Association
5A Mircea ce Batran Street
800023 Galati
Romania
www.tehnopol-gl.ro
office@tehnopol-gl.ro

Municipality of Sozopol
HanKrum sqr.2
8130 Sozopol
Republic of Bulgaria
www.sozopol.bg
obshtina@sozopol.bg

Imereti Scientists' Union "Spectri"
9 Robakidze str.
4600 Kutaisi – Imereti
Georgia
www.spectri.org.ge
spectri@gmail.com

Uzunkopru Municipality Administration
160 Cumhuriyet Mahallesi, 19 Mayıs Blvd
22200 Uzunkopru - Edirne
Republic of Türkiye
https://uzunkopru.bel.tr
yaziisleri@uzunkopru.bel.tr

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