

CONSTRUCTION AND DEMOLITION WASTE: GERMANY, SWEDEN, FRANCE, AND SLOVAKIA

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Abstract

Construction and demolition waste (CDW) is one of the largest contributors to the total waste volume in the EU, necessitating effective legislative measures for its proper management, processing, and recycling. This paper focuses on analysing the legislation and recycling approaches to CDW of four EU countries: Germany, Sweden, France, and Slovakia. The legal instruments for CDW recycling in these countries are compared to identify differences and similarities in their approaches. The results reveal that countries with stricter legislation and stronger infrastructure, such as Germany and Sweden, achieve higher recycling rates. In contrast, countries with less developed infrastructure, such as Slovakia, face greater challenges in meeting EU recycling goals. The paper underscores the importance of harmonising legislative frameworks and sharing best practices among EU member states for the effective management of CDW.

Keywords

Legislation, construction and demolition waste

1 INTRODUCTION

The building and construction sector is globally the largest contributor to the consumption of natural resources. Furthermore, this industry is responsible for approximately 39% of global energy-related carbon dioxide emissions [1], and accounts for 35% of worldwide waste sent to landfills, leading to significant environmental impacts [2], [3]. As a result, the construction and demolition sector plays a key role in efforts to improve sustainability and material circularity in society, both within the European Union and globally [4]. In 2020, the construction and demolition waste (CDW) recovery rate in the EU was relatively high compared to other waste streams, reaching 89% at the EU level (Williams et al., 2020), though there are considerable differences between Member States [5] as shown in Fig. 1.

However, this high recycling rate may be somewhat misleading, as it usually does not account for the recovery of valuable materials from CDW. Most recycled demolition materials are used as filler material in road construction or as backfilling material. These recycled materials simply do not possess the necessary technical properties required to be reused for the purpose for which they were originally designed. As a result, this type of recycling leads to lower values for secondary materials compared to their original worth. Consequently, the level of circularity remains low, and the demand for primary materials is not effectively replaced, leading to missed opportunities for energy, material, and emissions savings [7].

CDW consists of a complex mixture of materials, making it challenging to recycle and integrate secondary materials from CDW into the market. On average, the composition of CDW in the EU is as follows: concrete (24%), bricks (5%), ceramics and tiles (1.2%), metals (4.3%), plastics (0.2%), glass (0.2%), gypsum (1.4%), wood (2.3%), insulation (0.3%), and paper and cardboard (0.2%), with the remaining large proportion consisting of mixed (59.2%) and hazardous (1.8%) waste [5].

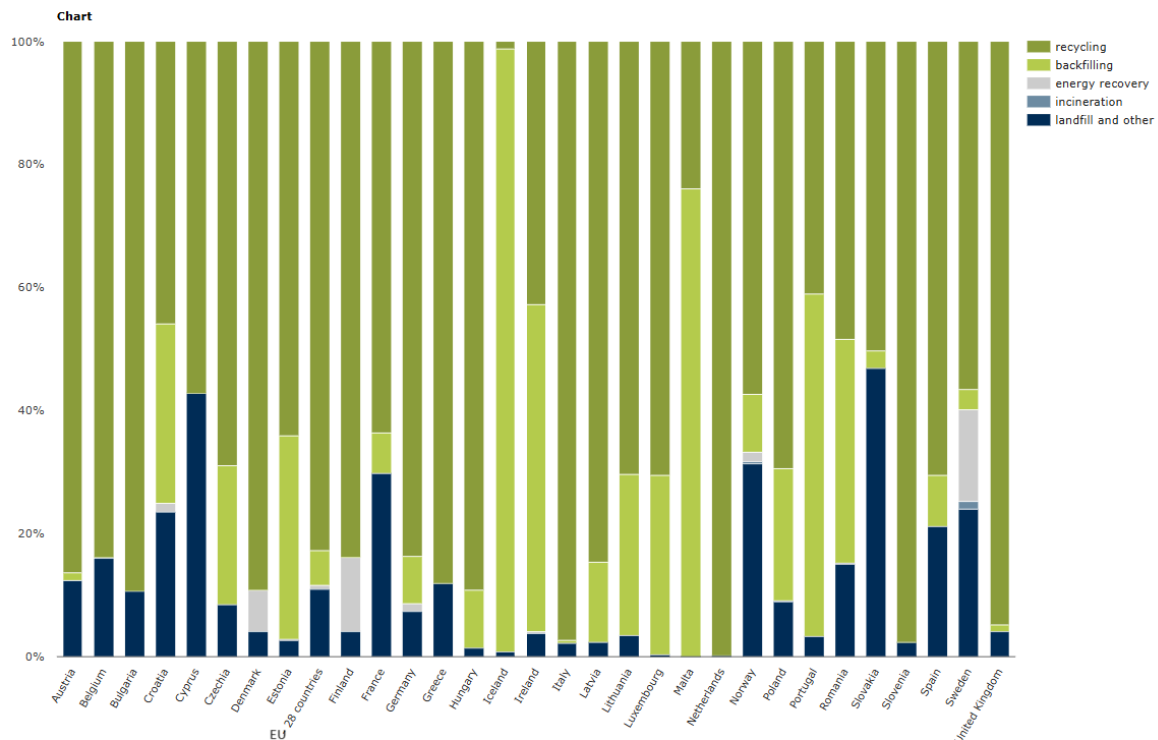


Fig. 1 Mineral waste from construction and demolition, waste treatment [6].

Many individual construction and demolition waste fractions are not recyclable due to inefficient demolition processes or, even if potentially recyclable, are not recycled due to economic constraints. Although recycling technology exists for almost all CDW material fractions, there are economic and non-economic barriers to CDW recycling in the EU, including: 1. high recycling costs compared to other treatment options such as incineration or landfilling, 2. a lack of local buyers, 3. regulations (e.g., chemical composition, quality requirements), 4. competition with products made from primary raw materials at lower prices – all these factors contribute to the lack of markets for certain CDW fractions [5]. Even the lack of trust in the quality of recycled materials is still a serious barrier to the use of these materials in the EU [8].

Although the use of recycled materials is certainly one approach to reducing environmental impacts, recycling construction and demolition waste can be an effective way to reduce the amount of waste while also decreasing the need for the extraction of new raw materials [9].

The aim of the paper is to present the latest information on the measures and legislation adopted in four European countries- Germany, Sweden, France and Slovakia- in relation to CDW, and to compare the situations regarding the treatment of CDW in these selected EU countries.

2 METHODOLOGY

This paper focuses on comparing legislative approaches to the management of construction and demolition waste (CDW) in four European countries: Germany, Sweden, France, and Slovakia.

Selection of Countries

The countries were selected based on their significance with regard to waste legislation in Europe and their varying approaches to managing construction and demolition waste. Germany, Sweden, and France are considered leaders in environmental policies, while Slovakia is a country with an emerging legislative framework.

Collection of Documents and Legislative Texts

Key legal documents and legislative regulations related to CDW management were collected for each country, including national laws, regulations, decrees, and EU directives that impact the management of construction and demolition waste.

Comparative Analysis of Legislation:

A comparative analysis was carried out on these documents to identify similarities and differences between the countries. The following were compared for each country: the main legislative tools and frameworks for CDW management (e.g., laws, regulations, decrees), the recycling and waste reduction goals that have been set, the conditions for the implementation of recycling technology, and the infrastructure available for CDW processing. To support the comparison of legislative approaches, current statistics on CDW management in each country were included, such as data on recycled materials, waste generation, and the success of recycling programmes. These statistics were obtained from public databases such as Eurostat, national environmental agencies and environmental policy reports.

3 RESEARCH

The European Union's Legislative Framework

The EU is currently placing increasing emphasis on the recycling of construction and demolition waste. According to current data, construction and demolition waste accounts for up to 30% of all waste in the EU, with a large proportion of this waste being potentially recyclable and reusable in the construction industry. The Waste Directive requires EU member states to set targets for increasing the recycling rates of these wastes. [10]. Currently, the EU's goal is to achieve a minimum of 70% recycling of construction and demolition waste by 2030. This target is also supported by the implementation of schemes that promote material recovery and the use of recycled materials in new construction projects [11].

Waste Framework Directives

Within the EU, the legislation concerning construction and demolition waste is outlined in several key documents, the most important of which is the Waste Framework Directive 2008/98/EC. This directive sets the basic rules for waste management in the EU and defines waste as materials that are considered to be waste and subject to legislative measures.

Directive 2008/98/EC also establishes a waste management hierarchy, where the priority is: waste prevention, preparation for reuse, recycling, other forms of recovery, and finally, landfilling or incineration, which are considered the least preferred solutions.

2018/851/EC – This directive primarily addresses the management of CDW and sets requirements for the collection, sorting, and recycling of construction waste. Based on this directive, member states are required to establish national targets for CDW recycling [12].

Specific regulations for construction and demolition waste

Directive 2012/19/EU on waste electrical and electronic equipment and Directive 2011/65/EU on the restriction of the use of hazardous substances in electrical and electronic equipment also apply to construction and demolition waste that contains electrical or electronic components. These regulations set special requirements for the collection, processing, and recycling of such equipment [13].

Within the EU legislation, there are also rules for the management of hazardous wastes, such as asbestos or lead-based paints, which are commonly found in older buildings and during demolition work. The Hazardous Waste Directive 91/689/EEC (Council Directive 12 December 1991 on hazardous waste) sets the criteria for identifying and managing hazardous waste. The methods to be used are described in Annex V of Directive 67/548/EEC, as amended by Commission Directive 84/449/EEC or later Commission directives, taking into account the work and recommendations of relevant international organizations, particularly the OECD. Specifically, for asbestos, there

are also specific regulations, such as Directive 2009/148/EC on the protection of workers from risks related to exposure to asbestos at work, which focuses on health protection when working with asbestos [14].

Each EU member state has its own specific regulations that comply with European legislation but may be adapted to local conditions. Some countries stand out for their ambitious measures in the field of construction and demolition waste. Four EU countries have been selected for comparison to gain a partial overview of the current situation regarding CDW treatment: Germany, Sweden, France and Slovakia.

Germany

Construction and demolition waste accounts for approximately 52% (around 200 million tons) of the total waste generated in the Federal Republic of Germany and therefore exhibits significant potential for recycling [15]. In Germany, the legislation concerning demolition waste is very detailed and strict, focusing on environmental protection, the promotion of recycling, and sustainable waste management. Key legislative acts in the field of demolition waste include the Waste Act (Kreislaufwirtschaftsgesetz, KrWG) and the Regulation on Demolition Waste (Abfallverzeichnis-Verordnung, AVV), as well as EU directives that are implemented into German law. [15,16].

The Waste Act (Kreislaufwirtschaftsgesetz, KrWG)

This law, which came into effect in 2012, is the fundamental legal regulation governing waste management in Germany. It supports the circular economy, where the main goal is to maximise the reuse of materials and minimise waste generation. The law applies to all types of waste, including demolition waste, and includes the following principles: **Prevention of waste generation:** The KrWG promotes efforts to prevent waste generation even during the design and construction of buildings, with an emphasis on the reuse of materials. **Recycling and reuse:** In the case of demolition waste, there is an obligation to recycle the largest possible share of waste to minimise the amount that ends up in landfills. **Producer responsibility:** This law establishes the principle that any entity that generates or processes waste is responsible for its proper management [17].

The Regulation on Demolition Waste (Abfallverzeichnis-Verordnung, AVV)

The AVV Regulation defines the specific classification of various types of waste, including demolition waste, and establishes responsibility for its proper categorisation, processing, and management. Demolition waste in Germany is classified as construction waste, and includes materials such as concrete, bricks, metal, wood, and glass. This legal regulation stipulates that waste must be carefully sorted and labelled to ensure it is properly processed and recycled [18].

The Substitute Building Materials Ordinance (EBV) 2023

The EBV ordinance encourages the use of secondary raw materials and supports the development of a circular economy. At the same time, the strict standards it imposes for the materials used helps to protect soil and groundwater as essential resources while preventing the release of harmful environmental substances [19].

EU Directives Implemented into German Law

Germany has implemented several waste-related EU directives which are also relevant for demolition waste, such as: **Directive 1999/31/EC on the landfill of waste:** This directive regulates the operation of landfills, setting requirements for the technical aspects of their construction, monitoring, and closure, as well as for environmental protection. In German law, this directive was implemented through the Landfill Ordinance (DepV), which governs the rules for the operation and closure of landfills in Germany. **Directive 2008/98/EC on Waste:** This directive establishes the basic principles for waste management within the EU, including the recycling of construction and demolition waste. **Directive 2018/851/EU on Waste:** This directive primarily regulates recycling targets and the reduction of landfill waste within the EU, requiring each member state, including Germany, to implement these targets into their national legislation [20].

Innovative Approaches to Recycling Demolition Waste

Germany also supports innovative technologies for the processing and recycling of demolition waste. These technologies include techniques for concrete restoration, processing recycled materials, and reusing demolition materials in the construction of new buildings. Many German companies are engaged in researching and implementing these technologies to improve the efficiency and sustainability of construction processes [21].

Germany has established itself as a leader in sustainable waste management, particularly in the recycling of construction and demolition waste. The country has developed a comprehensive legal framework that includes not only environmental standards but also economic and technical measures that support the circular economy in construction. The Waste Management Act (KrWG) and other specific regulations, such as the Waste Ordinance (AVV), emphasise the responsibility of producers and waste processors to properly sort, recycle, and minimise waste. German legislation also takes into account technological and innovative approaches to recycling demolition materials, with research activities supporting new technologies and more efficient processing of materials. These technologies not only reduce environmental impact but also increase the economic value of recycled materials. In order to minimise landfill waste, Germany has implemented strict regulations on waste sorting and supports processes that enable the reuse of materials in construction. Specific measures, such as supporting the recycling of concrete, metals, glass, and wood, alongside incentives for municipalities and businesses to reduce demolition waste, show that Germany not only implements strict environmental standards but also invests in infrastructure and technologies that reduce raw material consumption and support the circular economy. At the same time, the country places an emphasis on education and awareness regarding proper waste management, increasing public engagement in this area.

Thanks to this strong legislation and supportive political will, Germany has become a model for other EU countries in recycling construction and demolition waste. The country has demonstrated that effective regulation, supported by innovation and collaboration between the public and private sectors, can significantly contribute to environmental protection and the long-term sustainability of the construction industry.

Sweden

In Sweden, the construction and real estate sectors produce a significant amount of waste. In 2020, approximately 14.2 million tons of primary construction and demolition waste were generated, including more than 0.6 million tons of hazardous waste. This represents 40% of the country's total waste and 19% of its hazardous waste, excluding mining waste [22]. Sweden focuses on minimising waste from construction activities. The country utilises innovative technologies for recycling construction materials, as well as legislative measures that promote the reuse of materials in construction. The goal is also to reduce CO₂ emissions within the construction industry. [23].

Sweden has strict legislation regarding demolition waste, which promotes recycling and the sustainable management of these materials. The key objective is to minimise the environmental impact of construction and demolition activities and support the circular economy. Swedish legislation requires construction and demolition companies to sort and recycle waste, thereby reducing the amount of waste that ends up in landfills. Additionally, there is a strong emphasis on using recycled materials in construction and supporting technologies that enable the efficient processing and reuse of demolition materials. This approach is part of Sweden's broader environmental policy, which focuses on sustainable development and the protection of natural resources, including land and water [24]. Some of the main legislative frameworks include:

The Environmental Code (Miljöbalken, 1998:808)

This law is the fundamental legal framework for environmental protection in Sweden. It ensures that all activities, including construction and demolition work, are carried out with consideration for the protection of natural resources. The law sets requirements for waste reduction, recycling, and reuse. It also mandates that construction and demolition companies assess the environmental impacts of their activities [25].

The Waste Ordinance (Avfallsförordning, 2011:927)

This regulation governs waste management in Sweden and establishes rules for the sorting, collection, recycling, and disposal of waste, including demolition waste. It sets requirements for proper waste sorting, minimising the

amount of waste that ends up in landfills, and promotes recycling and the reuse of materials from demolition activities. It also mandates the keeping of waste records and regular monitoring and reporting [26].

Regulations on Demolition and Waste Handling (Bygg- och rivningsavfall, 2020)

These regulations specifically address demolition waste. They provide details on the processing, recycling and disposal of such waste. They also emphasise the requirement to conduct an environmental risk assessment before demolition work begins, ensuring that harmful substances (such as asbestos) are properly handled and removed [27].

Producer Responsibility for Construction and Demolition Waste (Förordning om producentansvar för bygg- och rivningsavfall)

This regulation establishes rules for producer responsibility regarding the handling of construction and demolition waste, promoting recycling and reducing environmental impacts in the construction sector. These rules ensure that waste from construction and demolition projects is either recycled or properly disposed of [28].

The Construction Products Regulation (EU 305/2011)

This European regulation, which has also been implemented in Sweden, governs the use of recycled materials in construction. It encourages the use of eco-friendly materials and recycled raw materials, contributing to the reduction of demolition waste [29].

Sweden has established a robust regulatory framework aimed at environmental protection, with a clear focus on minimising waste, promoting recycling, and supporting a sustainable construction industry. Through comprehensive legislation, the country encourages the recycling of construction and demolition waste, with strict requirements for waste sorting, material reuse, and the safe disposal of hazardous substances. Swedish laws also mandate environmental impact assessments for demolition projects, ensuring that any harmful materials are properly handled and disposed of. Additionally, Sweden's proactive stance on using recycled materials in construction, alongside incentives for adopting green technologies, contributes to efforts aimed at reducing the environmental footprint of the building sector. This approach not only helps in reducing landfill waste, but also fosters a circular economy within the construction industry, making Sweden a leader in sustainable building practices. Through these policies, Sweden is demonstrating how effective legislation can drive innovation, support environmental goals, and ensure the long-term sustainability of the construction industry.

France

France is known for its approach to the "circular economy", where recycling and the reuse of construction materials is a priority. In addition to laws on producer responsibility and recycling, the government also supports research and innovation regarding new methods for processing and recycling construction waste.

France has a robust legislative framework that regulates the management of demolition waste and promotes the sustainable processing of these materials. Key regulations and laws related to demolition waste include:

The Environment Code (Code de l'Environnement)

This law represents the fundamental legal framework for environmental protection in France. It regulates all forms of waste, including demolition waste, and sets rules for waste management, reduction, recycling, and reuse. The law requires demolition companies to sort waste and responsibly manage materials that can be reused [30].

Décret n° 2011-828 (2011)

This regulation focuses on rules related to demolition and construction waste, which are part of France's broader recycling policy. It sets specific obligations for processing demolition waste, including that which contains hazardous materials (e.g., asbestos). These regulations also include requirements for the collection, sorting, and recycling of waste before its disposal [31].

The Law on Energy Transition for Green Growth (Loi relative à la transition énergétique pour la croissance verte, 2015)

This law focuses on promoting sustainable development and environmental protection, which includes reducing waste and increasing recycling. It sets the goal of reducing the amount of waste sent to landfills and supports the circular economy. In relation to demolition waste, this law requires construction companies to improve the processing of recycled materials and reduce the negative environmental impacts of demolitions. [32].

The Waste Plan – Recycling of Construction and Demolition Sector Waste (Plan déchets – Recyclage des déchets du BTP)

This plan was adopted to improve the management of waste from the construction and demolition sector in France. It sets specific goals and measures to increase the recycling and reuse rates of materials generated during demolition work. The plan supports the development of technologies that enable the efficient recycling of concrete, bricks, and other construction materials [33].

The Regulation on Asbestos and Hazardous Materials (Réglementation sur l'azote et les matériaux dangereux)

This regulation sets strict requirements for the removal of hazardous materials, such as asbestos, which may be present in old structures that are to be demolished. It ensures that such materials are handled safely and in compliance with environmental standards.

The Circular Economy Roadmap (Feuille de route pour l'économie circulaire)

As part of its circular economy strategy, France has developed the "Roadmap for the Circular Economy", which focuses on reducing waste, recycling, and promoting the reuse of materials, including demolition waste. In this way, the country supports an approach that emphasises sustainability and reduces the consumption of natural resources [34].

Waste Producer Programmes (Éco-mobilier and Eco-déchets)

France has also implemented producer responsibility programmes, such as Éco-mobilier, which include waste from the construction sector. The goal of these programmes is to promote the recycling of materials, such as wood and metals, which may originate from demolition work.

In conclusion, France has established a comprehensive and forward-thinking legislative framework aimed at transforming its approach to construction and demolition waste management. The country's strategy focuses on minimising waste, promoting recycling, and fostering a circular economy that emphasises sustainability. Through a series of robust regulations and initiatives, such as the "Roadmap for the Circular Economy" and producer responsibility programmes like Éco-mobilier, France is actively working to reduce the environmental impact of the construction and demolition sectors. By setting clear targets for recycling, the reuse of materials, and the reduction of landfill waste, France encourages businesses to adopt practices that not only meet regulatory requirements but also contribute to long-term environmental sustainability. The implementation of producer responsibility programmes ensures that manufacturers and waste producers play a key role in the recycling process, helping to close the loop of material use and reduce the demand for new raw materials. Moreover, France's commitment to innovation in recycling technologies, such as improving the processing of demolition waste and hazardous materials like asbestos, demonstrates the country's proactive approach in addressing the challenges of waste management. These advancements allow for the safe reuse of materials like wood, metal and concrete, which would otherwise contribute to environmental degradation if left unmanaged. Ultimately, France's legislative approach reflects a broader shift towards a more sustainable and resource-efficient construction industry. By integrating environmental considerations into the regulatory framework, France is paving the way for a future where waste is seen not as a burden, but as a valuable resource to be reused, recycled, and reintegrated into the economy. This comprehensive approach not only helps to mitigate the environmental impact of construction and demolition activities but also sets a model for other countries to follow in their pursuit of sustainable development and circular economy practices.

Slovakia

The legislation on construction and demolition waste in Slovakia is part of a broader legal framework aimed at environmental protection and waste management. These regulations align with the European Union's legislation and aim to improve waste management, promote recycling and minimise negative impacts on the environment. Here are the key legal regulations governing the management of construction and demolition waste:

The Waste Act No. 79/2015 Coll.

This act regulates waste management in general and includes construction and demolition waste. It complies with European legislation, especially with the European Parliament and Council Directive 2008/98/EC on waste. Key provisions: **Definition of waste:** The act defines what constitutes waste, including construction and demolition waste. **Obligations of waste holders:** Construction companies or individuals carrying out demolitions are obligated to properly manage waste, separate it, and ensure recycling occurs. **Recycling and reuse:** The act mandates the recycling of construction materials and encourages their reuse to reduce the volume of waste sent to landfills. **Landfills:** The act regulates the conditions for establishing and operating landfills for construction and demolition waste and requires them to comply with environmental standards [35].

Decree of the Ministry of Environment of the Slovak Republic No. 366/2015 Coll.

This decree supplements the Waste Act and provides detailed regulations on the management of specific types of waste, including construction and demolition waste. Key provisions: **Categorisation of construction waste:** The decree divides construction waste into different categories (e.g., hazardous waste, inert waste) and regulates how to properly manage them. **Responsibility for waste management:** It defines the responsibilities of entities generating construction waste, including collection, transport, and recycling. **Documentation and record-keeping:** The regulation requires construction and demolition companies to maintain documentation on waste management (e.g., collection, transport, recycling, and disposal). **Recycling and utilisation of waste:** It sets minimum requirements for recycling and the reuse of construction and demolition materials [36].

Directive 2008/98/EC on Waste (EU)

This European directive establishes a framework for waste management in EU member states. Slovakia has transposed this directive into national legislation through the Waste Act. Key points: **Waste management hierarchy:** The directive establishes a hierarchy for waste management, prioritising waste prevention, followed by recycling and other forms of recovery, and finally disposal. **Extended Producer Responsibility (EPR):** The EU encourages systems where manufacturers and suppliers of materials and products are responsible for the recycling and disposal of waste after the end of their product's lifecycle, including construction materials.

Decree No. 344/2022 Coll.

This decree regulates the management of construction and demolition waste in Slovakia. Key points: **Waste sorting:** The obligation to sort waste at the source (concrete, wood, metals, glass, plastics, hazardous waste). **Recycling:** Support for the recycling and reuse of materials. **Hazardous waste:** Strict rules for the disposal of asbestos and other hazardous substances. **Record-keeping and reporting:** Companies must maintain records and report waste data. **Transport and processing:** Established rules for waste transport and processing. **Environmental standards:** Protection of the soil, water, and air. [37].

The decree implements European directives and supplements the Waste Act (No. 79/2015 Coll.). Its goal is to promote recycling, minimise landfilling, and protect the environment.

4 DISCUSSION

All the countries compared – Germany, Sweden, France, the Netherlands, and Slovakia – have robust legislative frameworks for managing construction and demolition waste that align with European regulations. Each country has its specific approaches and measures that reflect local conditions and priorities. Germany is a leader in sustainable waste management, with a focus on the circular economy and innovations in recycling technologies.

Sweden focuses on waste minimisation and supports the circular economy through strict legislative requirements and research support. France supports the circular economy and innovations in the recycling of construction materials, aiming to reduce the environmental impacts of construction and demolition. Slovakia implements European regulations and focuses on recycling, minimising landfill waste, and protecting the environment.

In practice, Slovakia is slightly behind the compared countries (Germany, Sweden and France,) in managing construction and demolition waste, although it is gradually improving and adopting measures to increase efficiency and sustainability. Here is a comparison in key areas:

Recycling and Reuse Rate

- *Germany, Sweden, France:* These countries have highly developed systems for recycling construction and demolition waste. For example, Germany recycles up to 90% of construction waste [38], [39]. Sweden and France also achieve high recycling rates, often above 60–70% [40].
- *Slovakia:* Slovakia has lower recycling rates, although they are gradually increasing. According to statistics, approximately 51% of construction and demolition waste is recycled. The main reasons are insufficient infrastructure for sorting and recycling, as well as lower motivation for construction companies to invest in recycling technologies [41], [42].

Legislation and its Implementation

- *Germany, Sweden, France:* These countries have strict and well-enforced laws that mandate waste sorting, recycling, and minimisation. They also have comprehensive systems for monitoring and reporting waste management.
- *Slovakia:* Slovakia does have legislation in line with European regulations (e.g., the Waste Act No. 79/2015 Coll.), but in practice, enforcement and control are less effective. There are insufficient penalties for non-compliance, which leads to laxer discipline among construction companies.

Waste Processing Infrastructure

- *Germany, Sweden, France:* These countries have a well-developed network of recycling plants and facilities for processing construction waste. They invest in modern technologies for recycling concrete, metals, wood, and other materials.
- *Slovakia:* The infrastructure for processing construction waste in Slovakia is still insufficient. There is a lack of specialised facilities for recycling certain materials (e.g., concrete), which leads to a higher proportion of waste being sent to landfills.

Support for the Circular Economy

- *Germany, Sweden, France:* These countries actively support the circular economy through financial incentives, research programmes, and public-private sector cooperation.
- *Slovakia:* Slovakia is slower to adopt the circular economy. There are insufficient financial incentives for companies to invest in recycling technologies. Most construction projects still prioritise new materials over recycled ones.

Management of Hazardous Waste

- *Germany, Sweden, France:* These countries have strict regulations for managing hazardous waste (e.g., asbestos), including safe removal and recycling. They also have well-equipped facilities for processing such waste.
- *Slovakia:* Slovakia does have legislation for managing hazardous waste, but in practice, there are often issues with insufficient facility capacity and non-compliance with regulations. Asbestos and other hazardous materials are sometimes improperly disposed of.

Awareness and Education

- *Germany, Sweden, France:* These countries invest in education and awareness about sustainable waste management. Construction companies and the public are well-informed about the benefits of recycling and the circular economy.
- *Slovakia:* Awareness of sustainable waste management is still low in Slovakia. There is a lack of systematic awareness campaigns and educational programmes for construction companies and the general public.

Financial Incentives and Government Support

- *Germany, Sweden, France:* These countries provide state subsidies, tax breaks, and other incentives for companies that invest in recycling technologies and sustainable construction practices.
- *Slovakia:* Financial support from the government is limited in Slovakia. Companies often lack sufficient motivation to invest in recycling, as they consider it costly and not very advantageous.

5 CONCLUSION

In practice, Slovakia is still behind the other compared countries in managing construction and demolition waste, especially in the areas of recycling, infrastructure, and enforcement of legislation. The main challenges for Slovakia are: Increasing the recycling and reuse rates of materials. The development of infrastructure for waste processing and recycling. Stricter enforcement of legislation and the introduction of effective penalties for non-compliance. Financial support for companies that invest in recycling technologies. The education of the public to raise awareness of the benefits of sustainable waste management.

Despite these challenges, Slovakia is gradually improving and taking steps towards achieving greater sustainability in the construction sector. However, reaching the level of countries like Germany or France will require a long-term strategy and greater engagement from both the state and the private sector.

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