



O1 - Action plan: concept of CE applied in automotive industry



Rudolf Pástor, CVTI SR



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1. Introduction

A variety of local, national, and international circular economy policy frameworks have been developed and established all over the world. Various policy instruments, ranging from fiscal measures and regulations, to investment proposals and informative tools, are used (WEF, 2021).

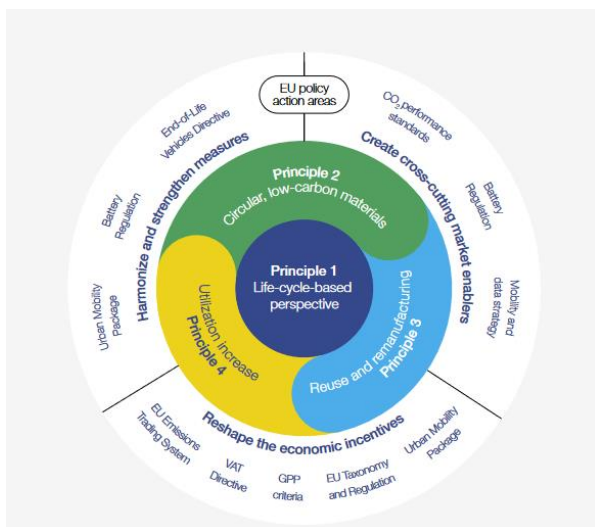
Meanwhile, governments can expedite the process of circularity by providing the right infrastructure and standards for circularity. Policymakers have an essential role to play. Most have not yet begun to install the policies and regulations required to support large-scale systems change (WEF, 2023).

The European automotive sector has ascended to the top of the global industry. Fundamental changes in the industry, however, are threatening Europe's lead position. If the European automotive sector is to stay ahead in this changing competitive landscape, leaders will need to make some tough decisions. Above all, a shared vision regarding the sector's positioning is needed (McKinsey, 2019).

Under the European Green Deal, the Commission announced the adoption of a new EU industrial strategy by the end of March 2020, along with a new circular economy action plan including a sustainable products initiative to support the circular design of products, and particular focus on resource-intensive sectors such as textiles, construction, electronics and plastic (EC, 2020).

The EU is conducting various important revisions of key legislations and complementary policy tools in the coming years. Policy-makers in the EU now have the opportunity to use upcoming policy changes to create stable conditions for the capital-intensive automotive industry and send clear signals for automotive circularity. The Circular Cars Initiative (CCI) EU policy roadmap for automotive circularity outlines three policy action areas that will work hand in hand to accelerate the circularity principles (Figure 1) (WEF, 2021).

Figure 1: EU Policy Action Framework to accelerate automotive circularity



Source: WEF (2021)



Primary role of the state - adjust policy instruments and create appropriate framework opinions for the transition to CE (vertical and horizontal integration to CE model).

Vertical integration means the implementation of international and European statutes at national and regional level. The state must monitor global trends and EU recommendations and stimulate domestic market in the right direction through legislation and economic instruments.

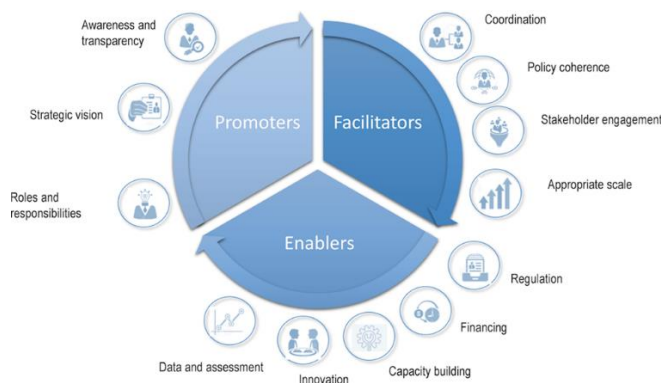
Horizontal integration takes into account the need and importance of non-governmental, public and private sector, as well as various areas of state administration or ministries. The state should therefore support cooperation with both the private and public sectors and between different government sectors (Milos, 2021).

Promoting, facilitating and enabling the circular economy

Moving towards a circular system is an opportunity for rethinking production and consumption patterns; improving environmental quality and resource efficiency; creating new business models; promoting citizens and business acceptance and awareness on the circular economy through awareness change; and boosting innovation, as identified by surveyed cities and regions (OECD, 2020). All actors have a role to play in the transition towards the circular economy: policymakers can use several policy levers, ranging from strategy development to capacity building, economic incentives and regulation, amongst others. As such, the transition is not just a way to optimising the present linear system, using green and clean techniques for production. It is about changing relations across value chains and identifying synergies across sectors.

The circular economy can be implemented if proper governance conditions are in place. As such, the Checklist for Action, based on 12 key governance dimensions (Figure 2), provides guidance to governments to promote, facilitate and enable the circular economy. While this Checklist is devoted to cities and regions, these dimensions can be applicable at all levels of government. The 12 dimensions are grouped into three clusters corresponding to the complementary roles of cities and regions as promoters, facilitators and enablers of the circular economy (OECD, 2022).

Figure 2: The governance of the circular economy in cities and regions: A Checklist for Action



Source: OECD (2020)

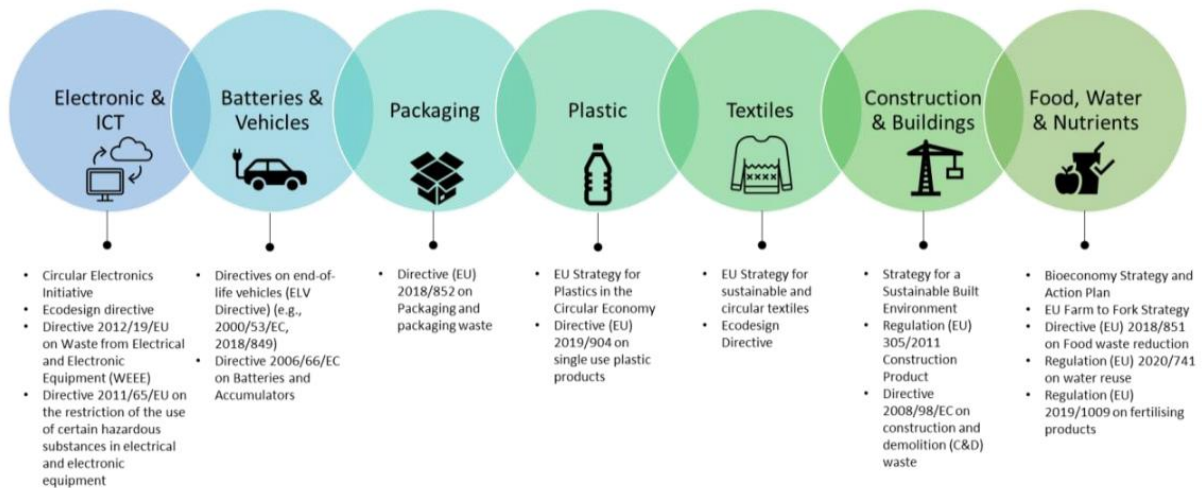


2. The EU policy framework and financing programmes

As a response to the global pressure on resources and valuable materials leaving the economy, the EU has made the transition to a circular economy one of its priority policy areas (OECD, 2022).

During the last years, the European Commission has ensured great prominence to the topic of circular economy on the local and regional levels. The EU’s **Circular Economy Action Plan (CEAP)**, adopted in 2015, introduced a comprehensive body of legislative and non-legislative actions which aimed to transition the European economy to a circular model. The Action Plan covered several policy areas, value-chains and sectors alongside cross-cutting measures to support change through innovation and investment. Crucially, ambitions have also been set out through the European Green Deal (European Commission, 2019), under which the updated Circular Economy Action Plan – mentioning explicitly the CCRI among the urban circular initiatives– was rolled out (European Commission, 2020). Differently from the first CEAP, which defined five priority areas facing specific challenges (i.e., plastics, food waste, critical raw materials, construction and buildings, and biomass and biobased products), the updated CEAP extends the scope of priority areas by addressing ‘key product value-chains’, i.e., the product chains that use the most resources and where the potential for circularity is high. These are illustrated in Figure 3 along with some of the key EU strategies and legislations underpinning each value-chain (EC, 2022b).

Figure 3: The seven key product value-chains of the 2020 Circular Economy Action Plan



Source: EC (2022b)

Alongside the specific initiatives and legislations linked to sectors or value-chains of key products, the CE transition is also guided by – and contributes to – cross-cutting EU strategies. As an example, circular systems will be some of the critical drivers of the new Industrial Strategy (including the **Action Plan on Critical Raw Materials**) as they will promote the supply of critical raw materials and foster the



resilience of local economies, as well as the Zero Pollution action plan by reducing waste generation and environmental degradation.

One of the key conditions for successful CSS upscaling and replication is access to a critical mass of public and private investment. It is important that the progress of circular solutions goes hand in hand with the development of a **Circular Economy Investment Plan (CEIP)** that identifies concrete investment opportunities, making the project economically feasible. In this context, the EU foresees a varied funding programme, which can benefit the circular cities and regions dealing with the implementation of the CSS. In particular, the demonstration and replication of CSSs are one of the key objectives of Horizon Europe: Cluster 6 (Food, Bioeconomy, Natural Resources, Agriculture and Environment).

Other relevant funding schemes supporting the deployment of CSSs might be the Cohesion Policy 2021- 2027, INTERREG and LIFE programmes (EC, 2022b).

2.1 EU framework on CE in automotive industry

The EU has been at the forefront of circular policy efforts creating frameworks such as the Circular Economy Action Plan (CEAP), Extended Producer Responsibility (EPR) or the new battery directive (2023).

The automotive ecosystem is undergoing a fundamental transformation related to the twin green and digital transitions, in which European regions are at the forefront of the change. To ensure that the process is fair and just, we need to establish multi-stakeholder processes at the European and regional levels (EC, 2022d).

In December 2015, the EC adopted the Closing the Loop – An **EU Action Plan for the Circular Economy** package to support the EU’s transition to a circular economy. The initiative was designed to contribute to “closing the loop” of product lifecycles, through recycling and reuse (OECD, 2020). Some of legislative proposals amending the legal act are related to automotive industry, e.g. **“Directive on end-of-life vehicles, on batteries and accumulators and waste batteries and accumulators, and on waste electrical and electronic equipment”**.

The European Green Deal provides a unique opportunity for the European automotive value chain to accelerate the transition to a resource-efficient, low-carbon and competitive future. However, setting the right level of ambition and placing the supply chain on an attainable path to sustainability requires close public-private collaboration. The automotive sector can support it by accelerating the use of circular materials, higher value-retention processes, and improving the utilisation of vehicles (EURACTIV, 2021).

Requirements for the proportion of recycled plastics in packaging, construction materials and cars.

Policy tools for automotive circularity

An optimal policy mix that creates conducive framework conditions for circular products and services entails fiscal measures, regulations and standards, public procurement and infrastructure



aspects, public investments, collaboration platforms (such as public-private-partnerships and research projects), as well as educative and informative tools.

These measures can be implemented on a mandatory or voluntary basis. Policy for automotive circularity covers all types of policy tools: some policy interventions are purely aimed at promoting automotive circularity, while others have only indirect effects (see Table 1 for selected examples). Generally, policy tools to accelerate the clean energy and electromobility transition (such as subsidies, taxes, registration rights and urban policies) have already been used extensively. An overview of policy tools used in other mobility-related areas that could be adopted for automotive circularity can be found in the Circular Cars Initiative’s policy research agenda (WEF, 2021).

Table 1: Policy tool overview

Instrument	Description	Example
Strategic	- Coordinated policy strategy	- Roadmaps, mobility strategies
Regulatory	- Statutory regulations and standards	- CO2, emission performance assessment - End-of-Life Vehicles Directive
Economic	- Fiscal/economic measures	- Reduced VAT - Carbon pricing schemes
	- Public procurement and investment	- Investment in end-of-life infrastructure - Shared fleets
	- Research funding	- Horizon 2020, Horizon Europe
Information	- Material flow data, mobility data	- Collaboration platforms via public-private-partnerships - Integrated multi-modal mobility platforms
	- Educative and information tools	- Information on emissions per trip taken - Transparency on recycled materials

Source: WEF (2021)

2.2 EU Action Plan for the Circular Economy

End-of-life directive for vehicles

Entering into force already two decades ago (18 September 2000), Europe’s End-of-Life vehicle directive (**ELV Directive**) aimed to ensure safe and environmentally sound production, recollection, dismantling and disposal of end-of-life vehicles.

Among others, it prohibits the use of certain hazardous substances when manufacturing new vehicles and sets targets for recycling vehicles. However, the regulation has not been entirely successful as an estimated 35% of all vehicles in the EU are considered of unknown whereabouts at their end of life, and high-value recovery of materials used in vehicles remains elusive.



Instead, this rule for vehicles must be revised with a lifecycle perspective and improved data transparency. It should include targets for higher-value-retention processes (e.g. remanufacturing), recovery targets differentiated by material type and quality, carefully balanced content quotas for recycled materials, and well-functioning vehicle (de)-registration systems.

Given the transition to new supply chains with the transition to zero emission, and the increase in current car park replacement rate, the window of opportunity to shape the footprint of end-of-life is now. In 2021-2022, the EU is conducting various important revisions of key legislations and complementary policy tools (Table 2).

Table 2: Key EU policy interventions for accelerating automotive industry

Q2/2021	Revise the CO2 emission performance standards for cars and vans in line with the updated EU climate targets and require standardized life-cycle based CO2 assessment disclosure for vehicles, to prepare the legislation for the incorporation of full vehicle life-cycle emissions.
Q3/2021	Leverage the Urban Mobility Package’s revision for harmonized, conducive framework conditions for shared mobility, such as national legal frameworks, high-occupancy vehicle access regulations, and conducive pricing systems
Q4/2021	Adopt the Battery Regulation proposal , in particular increasing ambition levels in recovery quota for lithium and upholding the requirement for battery carbon footprint disclosure to set the foundations for vehicle life-cycle-based assessment.
Q4/2021	Develop an ambitious EU Taxonomy for Circular Economy, supporting high-value circularity processes, to channel capital into solutions for automotive circularity.
2021-2022	Revise the ELV Directive with a life-cycle perspective and improved data transparency, and include targets for value-retention processes (e.g. remanufacturing, recovery targets differentiated by material type and quality, content quotas for recycled materials, and well-functioned vehicle (de)-registration systems.
Ongoing	Support the establishment of efficient, standardized data-sharing for material life cycle management through digital product passports and shared mobility through integrated multimodal transport applications, as part of the European Green Deal and Mobility Data Space
Ongoing	Promote remanufacturing and refurbishment by improving the access to information and further supporting the ongoing development of harmonized global certification systems of remanufactured and refurbished parts.
Ongoing	Enable VAT reductions for repair services as well as remanufactured and refurbished products, spare parts with recycled content, and car-and ride-sharing.

Source: WEF (2021)

ELV Directive set clear targets for ELVs and their components. It also prohibits the use of hazardous substances when manufacturing new vehicles (especially lead, mercury, cadmium and hexavalent chromium) except in defined exemptions when there are no adequate alternatives.



Since this Directive was introduced in 2000, several amendments have been made. The EU has also introduced several related rules such as the Directive on the type-approval of motor vehicles regarding their reusability, recyclability and recoverability (EC, 2022a.)

Batteries and accumulators

On December 10th, 2020, the EC published its proposal for a revision to the Battery Directive 2006/66/EC. This regulation aims to ensure that all stages of a battery's lifecycle correspond to the ambitious goals of the Circular Economy action plan.

The Circular Cars Initiative underscores that this regulation, especially if implemented in its ambitious form, could become the world's first ever sustainable battery law, underpinning the development of a green and competitive transition to electric mobility.

In particular, the Initiative calls for increasing ambition levels in recovery quota for lithium and upholding the requirement for battery carbon footprint disclosure to set the foundations for vehicle lifecycle-based assessments (EURACTIV, 2021).

Batteries and accumulators play an essential role to ensure that many daily-used products, appliances and services work properly, constituting an indispensable energy source in our society. Every year, approximately 800.000 tons of automotive batteries, 190.000 tons of industrial batteries, and 160.000 tons of consumer batteries enter the EU.

Not all these batteries are properly collected and recycled at the end of their life, which increases the risk of releasing hazardous substances and constitutes a waste of resources. Many of the components of these batteries and accumulators could be recycled, avoiding the release of hazardous substances to the environment and, in addition, providing valuable materials to important products and production processes in Europe (EC, 2022b).

The EU ban on the sale of new petrol and diesel cars from 2035 is expected to have significant implications for the battery market. As more people switch to electric vehicles (EVs), demand for batteries to power these vehicles is expected to increase. As a result, an ever-increasing number of devices will rely on batteries for their energy needs. In this context, it is becoming significantly important to develop new types of batteries that can store more energy in a smaller package, have a shorter amount of time and last longer than ever before and at the same time use fewer critical raw materials and pave the way to a circular economy (Homburg, 2023).

2.3 Transition of the mobility ecosystem: auto sector action plan

In January 2022, the EC published its vision for the transition of the mobility ecosystem. This document includes a **range of scenarios for transforming the automotive**, rail and shipping industries – encouraging synergies between these sectors.

In response, the European Automobile Manufacturers' Association (ACEA), the European Association of Automotive Suppliers (CLEPA), the European Council for Motor Trades and Repairs (CECRA) and the



European Tyre and Rubber Manufacturers' Association (ETRMA) have published their '10-point action plan (Table 3) for a resilient, innovative, sustainable and digital mobility ecosystem'.

Employees and consumers should be at the heart of the **transformation of the automotive sector**, the associations argue. The environmental and digital implications of the Green Deal should be key pillars of the transition pathway, not forgetting recent supply chain disruptions caused by COVID-19 and the war in Ukraine.

Table 3: 10-point Action plan for a resilient, innovative, sustainable and digital mobility ecosystem

1.	Develop a supply chain resilience strategy
2.	Create a government-automotive stakeholder forum
3.	Boost EU competition policy in line with national measures
4.	Ensure pragmatic energy policy, built on a combination of energy carriers
5.	Guarantee security of supply, keeping in mind new dependencies from electrification
6.	Keep a technology-open approach, allowing all low- and net-carbon solutions to compete
7.	Support demand-side measures for vehicle and tyre renewal
8.	Expedite regulatory work on the digitalisation of transport
9.	Support a sectoral Skills Pact with concrete measures as well as funding
10.	Ensure innovation-focused public procurement in transport

Source: ACEA (2022)

3. National efforts to transition to a circular economy (SK)

A circular economy is increasingly part of national policy agendas. Policies for a circular economy span multiple sectors and simultaneously entail specific implications for diverse industries. A holistic, topdown circular economy framework can enable a systemic approach to sectoral policies. In this vein, a **variety of local and national circular economy policy frameworks** have been developed and established (WEF, 2021).

At national and subnational levels, a large number of countries have been developing their respective circular economy strategic frameworks and roadmaps. Within the EU alone, more than 60 such frameworks at different levels (national, regional and municipal) have been developed since 2015. The common aim of these strategic frameworks revolves around developing measures to accelerate the transition to a circular economy.

A great diversity of approaches towards developing circular economy strategic frameworks exist across countries. They largely depend on the local context, the existing challenges and potential benefits, as well as on the underlying drivers and stakeholder involvement in the development and implementation of policy actions and strategies related to a circular economy. Yet, the strategic frameworks have some building blocks in common. They each build on the following elements (OECD, 2022):

- Vision and strategic objectives that the transition aims to achieve.
- Links to related strategies and an enabling policy framework.
- Stakeholders involved in the process of creation and the implementation of the strategy.



- Selection of priority areas.
- Quantitative targets and monitoring of their attainment.
- Implementation measures driving the transition.

3.1 Existing Circular Economy Policy Landscape in the Slovak Republic

The Slovak Republic, as other countries, has responded to these global developments by proposing, adopting and implementing relevant policies and legislation in the areas of resource efficiency and circular economy, and by applying recommendations proposed by the EC and the OECD (OECD, 2022)

Circular economy is gradually winning political support in Slovakia and several framework conditions have been created to facilitate progress, e.g. in the area of waste management. During the EU Council presidency in 2016, the main goal within the Environment Council was to actively contribute to the current European discussion about the transition to the green economy and circular economy (Ministry of Environment of the Slovak Republic, 2022).

Policy analysis (OECD, 2022) covered approximately 30 policy documents (out of a long list of around 60) currently in place and identified across a number of thematic areas considered to be highly relevant for the transition to a circular economy. This thematic scope includes both technical and biological cycles in the circular economy, as well as policy frameworks enabling this transition, such as education and digitalization (Figure 4).

Screening of the selected policy documents classified them into “core”, “directly related” and “complementary” (see Table 4). The categorisation methodology identified 6 core policy documents, directly related policy documents within 11 thematic areas, and 5 complementary policy documents within 5 relevant thematic areas.

Table 4: Categorisation of policy documents

Category	Definition
Core policies	Core policy linked to circular economy. The policy focuses largely on a circular economy-related thematic area or at least on one of its core principles.
Directly related policies	Policy that is directly relevant to a circular economy, e.g. focusing on one of its sectors or principles, however, it goes beyond them in scope. Such a policy applies to a wider range of areas outside circular economy.
Complementary policies	Policy which has less direct links to circular economy and goes significantly beyond it in scope, e.g. the policy acts as an enabling factor and can be applied to a wide range of areas.

Source: OECD (2022)

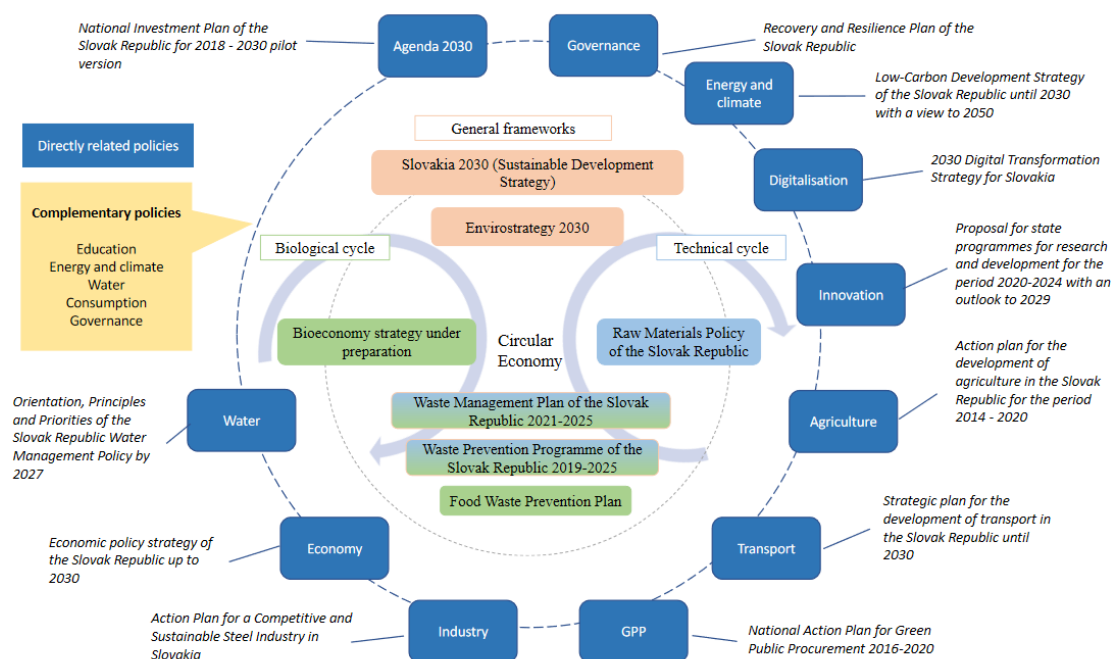
The analysis of policy documents was based on mapping out similarities and differences across four key elements contained in the strategies and plans:

- Vision – aspirations for the future.



- Goals – the qualitative goals the policy document sets out to achieve.
- Targets – the quantitative targets the policy document puts forward to achieve the goals.
- Key implementation measures – specific instruments and measures the policy document recommends to achieve its goals and targets

Figure 4: Overview of the Slovak policy landscape relevant to a circular economy



Source: OECD (2022)

The core policy framework for materials and waste Figure 4 shows that the core policies relevant to the circular economy in the Slovak Republic include two general frameworks (**Slovakia 2030**, **Envirostrategy 2030**), one sectoral policy on raw materials related to the technical cycle in a circular economy (**Raw Materials Policy**), and three waste management related policies (**Waste Management Plan**, **Waste Prevention Programme**, **Food Waste Prevention Plan**), the details of which are outlined below.

- **Vision and Sustainable Development Strategy of Slovakia up to 2030** (hereafter “Slovakia 2030”, adopted by the Slovak Government on 20 January 2021). Slovakia 2030 is the key overarching strategic document outlining key changes and measures to achieve sustainable development in the Slovak Republic by 2030. It replaces the National Regional Development Strategy and forms the basis for the National Investment Plan to 2030 Pilot Version (Ministry of Investments, Regional Development and Informatization, 2020). The adopted strategy takes



into account a number of recent developments, including the European Green Deal, the new EU budgetary programming period 2021-2027 as well as the impacts of the COVID-19 pandemic of 2020. While the strategy goes beyond circular economy, its strategic importance makes it a core policy document in the Slovak policy landscape.

- **Greener Slovakia – Strategy of the Environmental Policy of the Slovak Republic until 2030** (hereafter “Envirostrategy 2030”). This is the key overarching strategic document for the implementation of environmental policy to 2030 for the Slovak Republic. It is broader than circular economy, however, the circular economy is integrated into the strategy’s vision and core goals (Ministry of Environment of the Slovak Republic, 2019).
- Updated **Raw Materials Policy for the Slovak Republic**. This policy document defines the overall goals and priorities with regard to the use and protection of raw materials (energy and non-energy). Furthermore, it regulates the organisation of the raw materials market and requirements in the Slovak Republic (Ministry of Economy of the Slovak Republic, 2004). A new raw materials policy of the Slovak Republic is under preparation.
- **Waste Management Plan (WMP)** of the Slovak Republic 2021-2025 (hereafter “WMP”). The plan is the core waste management policy document for the Slovak Republic that comes from an obligation under the EU Waste Framework Directive (Ministry of Environment of the Slovak Republic, 2021).
- **Waste Prevention Programme (WPP)** of the Slovak Republic 2019-2025 (hereafter “WPP”). Similarly, the Waste Prevention Programme comes from its obligation under the EU Waste Framework Directive (Ministry of Environment of the Slovak Republic, 2018) and complements the WMP.
- **Food Waste Prevention Plan** (hereafter “FFP”). This document presents a national long-term plan to prevent and decrease food waste and food losses in the Slovak Republic along the entire food value chain (Ministry of Agriculture and Rural Development of the Slovak Republic, 2016). It has been prepared by the Ministry of Agriculture and Rural Development, and it complements the WMP and WPP.

3.2 Action plan for the development of electromobility in the Slovak Republic

The **action plan for the development of electromobility in the Slovak Republic (2022)** follows on from the national strategic documents The action plan for the development of electromobility in the Slovak Republic (Resolution No. 110/2019) and Revision and Update of the National Policy Framework for the Development of the Alternative Fuels Market (Resolution No. 557/2019). In order to maintain the competitiveness of our industry in the transformation of the automotive sector as even with the inevitable transition to sustainable mobility, it is necessary to adopt new policies and introduce measures that will strengthen the development of emission-free mobility in Slovakia. By creating and subsequently approving this strategic document, the Slovak Republic will prepare for the binding adoption of the Regulation of the European Parliament and the Council on the introduction of infrastructure for alternative fuels and on the repeal of Directive 2014/94/EU of the European Parliament and the Council (Ministry of Economy of the Slovak Republic, 2022b).



The Ministry of Economy of the Slovak Republic is trying to reduce Slovakia's energy dependence on fossil fuels and at the same time pursues the long-term goal of achieving a carbon-neutral economy. One of the current steps is the drafting of the Action Plan for the development of electromobility in the Slovak Republic, which the Ministry will submit to the interdepartmental comment process in the coming days.

The action plan submitted by the Ministry of Economy is part of the reform part of the Recovery and Resilience Plan, which the Slovak Republic has undertaken to adopt. The proposal contains 15 specific measures that will help bring electromobility closer to a larger number of residents. Key measures include the construction of ultra-fast charging stations along highways and expressways, which will help eliminate charging time for electric cars in transit. All 79 districts in Slovakia should also get new charging stations. The plan also provides for the simplification of the construction of charging stations, as well as the introduction of user benefits for owners of cars with green labels (Ministry of Economy of the Slovak Republic, 2022b).

The biggest advantage of electric cars is precisely their high energy efficiency. This is at the level of 77% for electric cars, which is significantly more than for diesel (20%) or gasoline (16%) vehicles. An electric car becomes more environmentally friendly after approximately 70,000 km. The Ministry considers energy that does not need to be produced to be the most ecological (Ministry of Economy of the Slovak Republic, 2022a).

More than one hundred million euros are to go into the development of electromobility in Slovakia in the coming years. Support for the construction of ultra-fast charging points along the TEN-T corridors, charging points in cities, the introduction of the "right to a charging point" or the simplification and acceleration of the charging infrastructure construction process. These are just a few of the total of 15 measures that the state plans to implement in the coming years with the aim of increasing the development of electromobility in Slovakia. This follows from the proposal of the Action Plan for the Development of Electromobility in the Slovak Republic (2022), which the Ministry of Economy of the Slovak Republic submitted to the interdepartmental comment procedure (ENERGIEPORTAL, 2022).

According to the Ministry of Economy of the Slovak Republic, its implementation should significantly increase the availability of charging infrastructure for electric vehicles. Another benefit is to help with the decarbonization of transport and start the trend of reducing dependence on fossil fuels in this sector.

The action plan follows on from the same document from 2019, which also contained 15 measures, but some of them were not implemented in practice. An example is the fact that although the existing legislation allows municipalities and municipalities to establish a zero-emission or low-emission zone, such a zone has not yet been created in Slovakia (ENERGIEPORTAL, 2022).

The aim of the action plan (AP) is to ensure, through the proposed measures, that consumers perceive low-emission mobility as problem-free, with the aspect of accelerating the introduction of the relevant infrastructure. The AP contains 15 measures (Table 5) that have the nature of direct support for the use of highly ecological, low-emission vehicles and the possibility of a financial mechanism to support the development of charging infrastructure, as well as the nature of motivational support. The current motivation to purchase vehicles can be supported by benefits such as e.g. distinguishable marking of vehicles, the possibility of using lanes reserved for public transport, or permission to enter low-



emission zones, or the use of parking lots intended for a narrower group of users (Ministry of Economy of the Slovak Republic, 2019).

Table 5: List of measures in Action plan for the development of electromobility in Slovakia

1.	Inclusion of the topic of electromobility in all relevant state strategies and policies
2.	Continuity of direct support for the use of low-emission vehicles
3.	Long-term financial mechanism to support the development of charging infrastructure
4.	Information campaign
5.	Realization of the legal, technical and business environment for electromobility in the Slovak Republic
6.	Accelerated depreciation of electric cars and charging stations for electric vehicles
7.	Application of the principles of green public procurement in the purchase of motor vehicles
8.	Distinctive marking of electric vehicles
9.	Use of reserved lanes by electric vehicles
10.	Low-emission zones
11.	Simplification of the administrative process in the construction of charging infrastructure
12.	Legislative introduction of the obligation to build charging infrastructure when building new ones parking spaces
13.	Installation of a charging station in the parking lots of state institutions
14.	Adaptation of electrotechnical qualification for the production and service of electric vehicles

Source: Ministry of Economy of the Slovak Republic (2019)

4. Policy recommendations for successful automotive transformation

The following policy recommendations are meant to support the government effort to forge a path for Slovakia's automotive transformation. Their uptake would improve the business environment, facilitate talent and innovations development, with positive spillover effects for unlocking the green and digital transformations across economic sectors and industries:

Summary of recommendations

- Improve general business conditions especially for green projects by speeding up the administrative process and cutting red tape
- Clarify and support eligibility of green projects for EU financing to leverage risk capital
- Accelerate implementation of the EU green public procurement (GPP) scheme supporting green innovations, science, and research
- Prepare potential greenfield sites (in terms of ownership, change of use etc.)
- Foster collaboration between tech universities and industry and within the wider RDI ecosystem in the region
- Strengthen international university exchanges and collaboration between regional research institutes



- **Using dual education and creating new in demand majors at universities**
- Develop a strategy for 'brain drain to brain gain' in cooperation with universities that removes structural barriers to the Just Transition Fund (JTF)
- Provide a specific pathway for the transformation of the labour force
- **Update the transition policies in light of the current crisis, including the Skills Agenda. Support a sectoral Skills Pact for the automotive sector, support up- and re-skilling of the labour force with concrete measure and financing mechanisms**

Governments across the EU and in the Visegrad group have implemented such policies and progress has been made. Some are short-run strategies, including direct government subsidies or loans to attract new production, typically battery gigafactories to the country. Other measures are long-term strategies, like investments in infrastructure and human capital, research and the labour markets, that will help ensure a sustained and long-term competitiveness.

Slovakia will have to balance the short and long-term strategies to maintain its place in the global value chains in the wake of the green transition (GLOBSEC, 2022).

In January 2022, the European Commission published its vision for the transition of the mobility ecosystem. This document includes also specific recommendations for auto sector (ACEA, 2022).

Specific recommendations for auto sector

- Manage the technological transition to zero and carbon-neutral mobility
- Keep mobility affordable, especially considering growing energy, materials and fuel costs
- Manage the structural change in automotive regions
- Provide a specific pathway for the transformation of the labour force

5. Conclusions

The automotive industry, like its supply and value chains, will be significantly affected by the anticipated legislative changes. The coming years will be defined by ecological transformation, which will include electrification and new emission standards.

The EU has been at the forefront of circular policy efforts creating frameworks such as the Circular Economy Action Plan (CEAP), Extended Producer Responsibility (EPR) or the new battery directive. Although these programmes build momentum, achieving a systemic shift will require more ambitious and holistic initiatives that are broader in scope, interconnected among industries and aligned across countries and regions in order to create global standards, trade rules and consistent incentive structures (WEF, 2023).

CEAP is the most ambitious and comprehensive proposal ever put forward to reduce the environmental and climate impact of our products and economic activities.

There is also some criticism related the final version of CEAP, e.g. despite the introduction of a goal to double the share of secondary materials in the economy by 2030 (circular material use rate), no target



was set for reducing resource use and its impacts in absolute terms. Waste prevention targets for businesses and industries are also missing (EEB, 2020).

According to EURACTIV.com, such a goal was present in previous versions of the action plan, but did not make it into the final document.

Circular economy is gradually winning increasing political support in Slovakia and several framework conditions have been already created to facilitate progress in this area.

In terms of individual sectors, the automotive industry is crucial in the Slovak economy, and therefore also for the transition to a circular economy. The research and innovations in the production area and in the area of transformation of waste into new products and repeated increase in the value of used materials as having the biggest potential. Mainly the innovative approach to the design of a product and introducing sophisticated production models has the biggest impact on the whole life cycle of a product.

The **primary role of the state in the transition to circular economy** is to modify policy instruments so that appropriate framework conditions are created opinions for the transition, taking into account the importance vertical and horizontal integration circular model. By **vertical integration** means the implementation of international and mainly European legislative measures at national and regional level. The state must follow global trends and EU recommendations and stimulate the domestic market in the right direction with the help of legislation and economic instruments. **Horizontal integration**, in turn, takes into account the need and importance of promoting non-governmental, public and private entities, as well as various areas of state administration or ministries. The state should therefore support cooperation with the private and public sector and between individual government sectors (INCIEN, 2018).

The analysis (OECD, 2022) further shows that structural and technological changes across the economy are critical to curb the growth in materials use. Both factors only mitigate growth in the country's baseline scenario to a limited extent. This implies that in addition to sectoral raw materials and waste policies targeted at increasing resource efficiency in specific sectors, the Slovak Republic may want to support additional horizontal policies directed towards greater structural and technological changes. Such policies may include research, innovation and digitalisation, as well as policies directed towards greater use of circular business models and economic instruments, shifting the economy away from materials-intensive industries towards higher-end manufacturing and services.

One of the important policy measures taking into account increased level of electromobility should be support for research, development and production of batteries.

From the Slovak perspective, we consider as an essential problem the **non-existence of the national strategy of transformation of the Slovak economy into the circular economy**, and therefore a non-coordinated procedure of taking measures.



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