9 Monitoring framework

This chapter puts forth a monitoring framework with specific indicators tailored to each recommendation within the five priority areas presented in the roadmap for North Macedonia. This framework is a crucial tool for the effective implementation of the circular economy roadmap, playing a key role in assessing progress towards strategic targets and goals set for North Macedonia's circular transition.

Defining key indicators and monitoring progress

Establishing a monitoring framework for a circular economy is essential to track the progress towards specific targets and goals included in the roadmap for North Macedonia. This framework, using a set of indicators, plays a crucial role in evaluating the overall transition to a circular economy in North Macedonia over time. It will enable the policy makers of North Macedonia to grasp the country's performance on selected circular economy measures, identifying areas that need further intervention. The monitoring process is not only instrumental in setting new long-term priorities for the circular economy, as emphasised by the European Commission (2018[1]), but also for providing feedback for the development of strategies and planning documents among different economic actors (Alaerts et al., 2019[2]). This approach aligns with the dual purpose of indicators: forward-looking to offer guidance and backward-looking to provide feedback and evaluate performance (Ekins et al., 2019[3]).

A circular economy monitoring framework can take various forms, utilising a broad range of existing indicators and those still in development. These frameworks typically incorporate a comprehensive set of relevant indicators, recognising the complexity of the concept and the difficulty of capturing it with a single metric due to its multifaceted and expansive nature. These frameworks may adopt the structure of distinct, not necessarily interconnected, indicators, or they can be organised employing a multi-tiered approach. This approach may involve a limited number of headline indicators for communication purposes, supplemented by a dashboard featuring specific thematic indicators. Such a multi-layered approach facilitates the inclusion of more detailed information at additional levels, such as regional, city, sectoral or product group levels, and allows focusing on specific strategic objectives and recommendations.

The academic literature strongly recommends a departure from commonly used macro-level indicators. Instead, it advocates the inclusion of indicators that provide direct feedback to policy makers regarding specific products and services. These indicators should also address consumer and business behaviour, as well as societal needs, pertaining to the circular economy (Alaerts et al., 2019[2]; Ekins et al., 2019[3]; Giljum et al., 2011[4]; Potting et al., 2018[5]). Furthermore, there is a recognised necessity for additional indicators to precisely measure the effects and processes of the transition itself. This involves establishing connections between the circular economy and environmental impacts while capturing potential rebound effects (Potting et al., 2018[5]; Alaerts et al., 2019[2]).

Two sets of indicators proposed for North Macedonia's monitoring framework

The proposed monitoring framework, designed to facilitate the implementation of the roadmap's recommendations (Table 9.1), adopts a two-tier structure.

1. A set of headline indicators designed to track the broader circular transition of the Macedonian economy (Table 9.2). These draw heavily on the EU Circular Economy Monitoring Framework (European Commission, 2023[6]) and are categorised into five categories: 1) production and consumption; 2) waste management; 3) secondary raw materials; 4) competitiveness and innovation; and 5) global sustainability and resilience.

2. A set of indicators assigned to each priority area to oversee progress in specific recommendations (Table 9.3). Some of these indicators may take a qualitative form, such as operational metrics monitoring the progress made on a specific recommendation (e.g. the implementation has started, is ongoing or completed). Others are presently in an experimental phase requiring further refinement of the indicator or additional data collection (e.g. monitoring the revenues generated from specific environmental taxes).

The proposed sets of indicators offer a comprehensive overview of relevant metrics for monitoring both the implementation of recommendations and the overall circular economy transition in North Macedonia. During the preparation of the future policy framework or an action plan, North Macedonia may consider reassessing these exhaustive lists of indicators and opt for those for which data are currently, or might become, available. Nevertheless, for effective and evidence-based policy making, there is a need to enhance data collection and co-ordinate the collection process. Priority should be given to addressing existing gaps in the availability and quality of key circular economy-related data, particularly those pertaining to waste generation and waste management. Establishing an impact assessment mechanism is a potential solution to ensure that the monitoring framework is effectively executed and to secure its long-term continuity.

Table 9.1. Complete list of recommendations for each priority area

Priority area	Short term	Medium term	Long term
Circular business models for SMEs	Provide awareness-raising campaigns and training programmes on the circular economy for small and medium-sized enterprises (SMEs), including showcasing of good practices and access to finance	Implement supporting legislation and economic instruments for resource recovery and a circular supply of materials models	Implement supporting legislation and economic instruments for product life extension, sharing and product service models
	Introduce calls for circular business models projects within existing funding programmes, including technical support for the public administration for the development and implementation of such programmes	Consider establishing a dedicated funding programme for SMEs to scale up circular business models	Organise investor-entrepreneur matchmaking events
	Provide financial and technical assistance to SMEs (business support, access-to-finance support)	Support capacity building and entrepreneurship skills, vocational training, and acceleration and mentoring programmes	
	Support collaboration between SMEs and academia, as well as regional and international collaboration on research and development (R&D) and innovation	Establish a circular economy stakeholder/business platform to strengthen collaboration within and across value chains	
Towards a circular construction sector	Establish a working group on circular construction	Launch circular construction and renovation pilots	Introduce end-of-waste criteria for certain construction materials
	Support scaling up innovation and ensure funding for innovative circular construction and renovation projects (initially through donor funding, link with the Smart Specialisation Strategy)	Introduce (mandatory) selective demolition in combination with a gradually increasing landfill tax for construction and demolition waste	Introduce quality standards for secondary and recycled construction materials
	Improve measurement and monitoring of construction and demolition waste flows	Strengthen green public procurement of construction works by public entities	
		Promote digitalisation of the construction industry	
Towards a circular biomass and food system	Establish a working group on the circular bioeconomy and improve multi-stakeholder collaboration	Introduce and scale up infrastructure for separate collection of bio-waste	Provide funding and technical support for circular bioeconomy projects
	Raise awareness, education and skills on food waste prevention, separation of bio-waste at source, composting, and the circular bioeconomy in general	Promote green public procurement of food and catering services	Strengthen the regulatory framework supporting the use of compost and digestate in agriculture, with a focus on a quality assurance system
	Consider tax incentives to support food donations	Support investment into small-scale industrial composting and anaerobic digestion facilities to treat agricultural waste and municipal bio-waste	

Textile industry	Develop a national strategy on sustainable and circular textiles	Introduce ecodesign requirements for textiles to make them last longer, easier to repair and recycle, as well as requirements on minimum recycled content	Financially support circular design projects and innovation
	Provide financial and technical support for projects that reduce textile waste in manufacturing	Introduce mandatory separate collection of textile waste for households	
		Introduce an extended producer responsibility take-back scheme for textiles	
		Support investment in recycling and reuse of textiles	
Mining and metallurgy	Develop a study to understand the circular economy potential in the mining and metal processing value chains in North Macedonia	Facilitate industrial symbiosis to further support the use of waste from the mining and metal processing/production companies and creation of markets for secondary raw materials	Apply circular principles in procedures for issuing permits and concessions
	Incorporate circularity principles into the new Strategy for Geological Research and Sustainable Use and Exploitation of Mineral Resources for 2025-2045	Improve understanding of circular practices on-site and data availability to map out material flows of metals and minerals	Consider introducing recovery obligations to support material recovery and secondary raw materials production
		Support upstream eco-innovation and R&D to enhance metal and mineral value chains for a low-carbon economy	

Table 9.2. Proposed headline indicators based on the EU Circular Economy Monitoring Framework to monitor the economy-wide circular transition in North Macedonia

No.	Indicator group	Indicator name
Production and consumption		
1	Material consumption	Material footprint (tonnes per capita)
2		Resource productivity (index 2000=100)
3	Waste generation	Total waste generation per capita (kg per capita)
4		Generation of waste excluding major mineral wastes per GDP unit (kg per EUR 1 000, chain linked volumes [2010])
5		Generation of municipal waste per capita (kg per capita)
6		Food waste (kg per capita)
7		Generation of packaging waste per capita (kg per capita)
8		Generation of plastic packaging waste per capita (kg per capita)
Waste management		
9	Overall recycling rate	Recycling rate of municipal waste (%)
10		Recycling rate of all waste excluding major mineral waste (%)
11	Recycling rates for specific waste streams	Recycling rate of overall packaging (%)
12		Recycling rate of plastic packaging (%)
13		Recycling rate of waste electrical and electronic equipment separately collected (%)
Secondary raw materials		
14	Contribution of recycled materials to raw materials demand	Circular material use rate (%)
15	Trade in recyclable raw materials	Imports (thousand tonnes)
16		Exports (thousand tonnes)
Competitiveness and innovation		
17	Private investment, jobs and gross value added related to circular economy sectors	Private investments (% of GDP at current prices)
18		Persons employed (% of total employment)
19		Gross value added (% of GDP at current prices)
20		Industrial symbiosis initiatives (number)
21	Innovation	Patents related to waste management and recycling (number)
Global sustainability and resilience		
23	Global sustainability from circular economy	GHG emissions from production activities (kg per capita)
24	Resilience from circular economy	Material import dependency (%)

Notes: GDP: gross domestic product; GHG: greenhouse gas.
Sources: Eurostat (2023[7]); OECD (2021[8]).

Table 9.3. Proposed dashboard of specific indicators for five priority areas for North Macedonia

Indicator[1]	Description	Link to recommendation	Source[2]
Circular business models for SMEs			
Awareness-raising campaigns on the circular economy	Number of campaigns	**Provide awareness-raising campaigns and training programmes on the circular economy for SMEs**	Data to be provided by the Agency for Promotion of Entrepreneurship of the Republic of North Macedonia (APPRM), the Fund for Innovation and Technological Development (FITD), or chambers of commerce and industry
Small and medium-sized enterprises' (SMEs) awareness of circular business models	Share of SMEs aware of the circular economy		Regional Cooperation Council (Balkan Barometer Survey) or nationwide survey
Mainstreaming education on the circular economy into university-level curricula	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Support capacity building and entrepreneurship skills, vocational training, and acceleration and mentoring programmes on the circular economy**	Data to be provided by the Ministry of Education and Science
Environment-related research and development (R&D) and innovation expenditure by state and business sectors	Gross expenditure on research and development (GERD) %	**Support collaboration between SMEs and academia, as well as regional and international collaboration on R&D and innovation**	Indicator to be developed based on Eurostat by the Agency for Research, Technology and Innovation. Data to be provided by the APPRM or the FITD
Creation of a circular economy platform[3]	Action-specific indicator for monitoring the creation of the platform (yes/no)	**Establish a circular economy stakeholder/business platform**	Data to be provided by the co-ordinating institution (e.g. Ministry of Economy)
Number of platform members[3]	Number		
Number of events/workshops organised as part of the platform[3]	Number		
Matchmaking events organised	Number of events	**Organise investor-entrepreneur matchmaking events**	Data to be provided by the APPRM or the FITD
Budget allocated to circular economy projects under a concrete programme	Amount (MKD)	**Introduce calls for circular business models projects within existing funding programmes. Provide financial, combined with technical, assistance to SMEs (business support, access to finance support)**	Data to be provided by the APPRM or the FITD
Training courses on circular business models	Number of events organised Number of technical modules created as part of funding programmes		
SMEs benefitting from financial support for the creation of new circular business models	Number of SMEs		
SMEs benefitting from non-financial support for the creation of new circular business models	Number of SMEs		
Technical support for the public administration for the development and implementation of such programmes	Number of trainings		Data to be provided by the Ministry of Economy, the APPRM or the FITD
SMEs supported by funding programmes to scale up circular business models	Number of SMEs	**Consider establishing a dedicated funding programme for SMEs to scale up circular business models**	Data to be provided by the APPRM or the FITD

Extended producer responsibility (EPR) schemes established	Number	**Strengthen legislation and economic instruments to support resource recovery and circular supply of materials business models**	Data to be provided by the Ministry of Environment and Physical Planning (MoEPP)
Recovery rate of waste covered under EPR schemes	Ratio of overall waste prepared for reuse, recycled or subject to material recovery to waste generated (%)		
Green public procurement (GPP)	GPP share in public contracts (in volume and value) across all procured products and services (%)		Data to be provided by the Public Procurement Bureau
Products/services covered by minimum recycled content criteria in GPP	Number		
SMEs with certification based on life cycle or eco-design	Number	**Focus on strengthening legislation and economic instruments that support product life extension, sharing and product service models**	Data to be provided by the MoEPP
Awareness-raising activities on the benefits of green certificates and eco-labels	Number		
Introduction of quality standard for reused or recycled products	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)		
Construction			
Creation of a working group on circular construction	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Establish a working group on circular construction**	Data to be provided by the co-ordinating institution (e.g. Ministry of Transport and Communication or Ministry of Economy)
Initiatives carried out through the working group	Number of initiatives (including events like workshops, fairs, etc.)		
Financial resources mobilised for circular construction projects	Amount provided through grants (MKD)	**Support scaling up innovation and ensure funding for innovative circular construction and renovation projects**	Data to be provided by the Ministry of Transport and Communication or the Ministry of Economy
	Number of companies/projects supported through existing or new funding schemes		
Subsidies and other tax incentives for research and innovation laboratories	Number of companies/projects benefitting from tax incentives		
	Amount of subsidy provided to circular construction project (MKD)		
Creation of national or regional renovation/research programmes	Number of programmes established		
	Grants provided for business model innovation in the construction sector (amount in MKD)		
	Guides developed on enhancing circularity in the built environment (action-specific indicator for monitoring the implementation of the recommendation [yes/no])		
Ongoing/completed construction and renovation pilots	Number	**Launch circular construction and renovation pilots**	Data to be provided by the Ministry of Transport and Communication or the Ministry of Economy
Construction projects applying to certification programmes and the inclusion of eco-designed products	Share		
Launched/completed feasibility studies for circular construction and renovation projects	Number		

Establish a monitoring system for the use of construction material	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Improve measurement and monitoring of CDW flows**	Data to be provided by the Ministry of Transport and Communication, the Ministry of Economy, or the MoEPP
Inventory of waste produced by construction and demolition by quality specifications	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)		
Trainings of construction companies on reporting waste production (through audits, inspections, surveys, tracking devices)	Number		
Construction and demolition waste (CDW) generation	Amount (kg) Share of total waste generated (%) Share of industrial waste generated (%)		Data to be provided by the MoEPP or MAKSTAT
Recovery rate of CDW	Ratio of overall CDW prepared for reuse, recycled or subject to material recovery to CDW waste generated (%)		
Introduced digital tools, such as materials passports or building information modelling	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Promote digitalisation of the construction industry**	Data to be provided by the Ministry of Transport and Communication, the Ministry of Economy
Developed national legislation for mandatory selective demolition for CDW	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Introduce (mandatory) selective demolition for CDW**	Data to be provided by the Ministry of Transport and Communication, the Ministry of Economy, or the MoEPP
Issued environmental permits for selective demolition	Number		
Developed technical standards for the design and execution of selective demolitions	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)		
Revenue generated from a landfill tax on inert CDW	Amount in MKD	**Implement landfill taxes, including for CDW, in combination with better enforcement of waste legislation**	Data to be provided by the Ministry of Transport and Communication, the Ministry of Economy, or the MoEPP
Initiated awareness-raising campaigns for strengthening enforcement of adequate CDW collection	Number		
Enforcement and supervision mechanisms to prevent illegal dumping of waste	Amount of fines (MKD) Number of abusive practices fined by enforcement authorities		
Developed national legislation for granting end-of-waste status to construction and building materials	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Introduce end-of-waste criteria for certain construction materials**	Data to be provided by the Ministry of Transport and Communication, the Ministry of Economy, or the MoEPP
Waste streams with introduced end-of-waste criteria	Number		
GPP of construction and renovation activities	GPP share in public infrastructure contracts (in volume and value)	**Strengthen the use of GPP criteria in the construction sector to stimulate demand**	Data to be provided by the Public Procurement Bureau
Feasibility study on the quality and performance of secondary construction materials	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Introduce quality standards for secondary and recycled construction materials**	Data to be provided by the Ministry of Transport and Communication or the MoEPP
Quality standards introduced	Number		

Biomass and food			
Adequate infrastructure for the separate collection of municipal bio-waste	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Introduce and scale up infrastructure for separate collection of bio-waste**	Data to be provided by the MoEPP
Recycling rate of municipal waste – composting	Share (%) and amount in kg		Data to be provided by the MoEPP or MAKSTAT
Uptake of home composting	Number of homes conducting composting		
Subsidies for municipalities to adopt pay-as-you-throw schemes	Amount of subsidies (MKD)		Data to be provided by the MoEPP
Monitoring and enforcement to deter illegal landfilling (including fines)	Amount of fines (MKD) and number of fines attributed		Data to be provided by the MoEPP and the inspection office
Financial support for composting and anaerobic digestion facilities	Amount (MKD); can be from local or international funds	**Support investment in industrial composting and anaerobic digestion facilities to treat organic agricultural waste and municipal bio-waste domestically**	Data to be provided by the MoEPP
Assessment examining the required legislative changes to provide stronger incentives for greater use of compost and digestate on agricultural land	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Strengthen the regulatory framework supporting the use of compost and digestate in agriculture, with a focus on a quality assurance system**	Data to be provided by the MoEPP
Amendment to the legislation regulating the management of bio-waste and specifying the technical requirements for composting to introduce elements of an improved quality assurance system for compost and digestate	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)		
Uptake of food donations	Quantity of donated food and trend over years	**Consider tax incentives to support food donations**	Data to be provided by the MoEPP
Guidance manual on GPP methodology for public authorities (consider the EU guidance and EU GPP criteria for food, catering services and vending machines)	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Promote GPP of food and catering services**	Data to be provided by the Public Procurement Bureau
Uptake of GPP of food and catering services in public contracts	In volume and value		
Establishment of a dedicated bioeconomy research and innovation programme	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Provide funding and technical support for circular bioeconomy projects**	Data to be provided by the APPRM, the FITD or the MoEPP
Businesses/entities benefitting from financial support to promote the development of biorefineries and biotechnology	Number of SMEs		
Businesses/entities benefitting from technical support to promote the development of biorefineries and biotechnology	Number of SMEs		
Creation of a working group (or sub-group) on the circular bioeconomy	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Establish a working group on a circular bioeconomy and improve multi-stakeholder collaboration**	Data to be provided by the co-ordinating institution (e.g. Ministry of Economy, the MoEPP)
Initiatives carried out through the working group	Number of initiatives (including events like workshops, fairs, etc.)	**Introduce and scale up infrastructure for separate collection of bio-waste**	
Establishment of voluntary agreements	Number		

Awareness campaigns on the circular bioeconomy	Number of campaigns Number of entities involved	**Raise awareness, education and skills on food waste prevention, separation of bio-waste at source and composting as well as the circular bioeconomy in general**	Data to be provided by the co-ordinating institution (e.g. Ministry of Economy, the MoEPP)
Textile industry			
Mapping of the state-of-play of the textile industry (key trends, recent developments and key challenges)	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Develop a national strategy on sustainable and circular textiles**	Data to be provided by the Ministry of Economy
Establishment of reporting mechanisms for textile waste data	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)		
Financial support for businesses on circular production practices in the textile industry	Number of businesses supported	**Provide financial and technical support, including training, to businesses and their employees to improve production processes and reduce textile waste from production**	Data to be provided by the Ministry of Economy or chambers of commerce
Training courses on circular production practices in the textile industry	Number of events organised Number of technical modules created as part of funding programmes		
	Number of businesses supported		
Textile waste generated as part of production processes	Share of textile waste generated as part of production processes out of total textile waste generated (%) Share of textile waste out of total share of fabric used in production processes (%)		Survey-based, data to be provided by the Ministry of Economy
Assessment of national recycling and reuse capacities for textile waste	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Support investments in recycling and reuse projects for textiles and/or facilitate exports of textile for recycling and reuse**	Data to be provided by the MoEPP or MAKSTAT
Establishment of infrastructure for textile waste recycling and reuse	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)		
Recycling and reuse of all textile waste	Recycling rate of industrial textile waste (%) Recycling rate of household textile waste (%) Reuse rate of industrial textile waste (%) Reuse rate of household textile waste (%)		
Landfilling of textile waste	Share of total textile waste (%)		
Incineration of textile waste	Share of total textile waste (%)		
Guidelines for exports and customs on shipment of textile waste	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)		Data to be provided by the Customs Administration
Exports of textile waste for recycling and reuse	Share of textile waste exported (%)		Data to be provided by the Customs Administration
Collection of textile waste from households	Share of households covered by textile waste collection services (%) Number of textile waste collection points	**Introduce mandatory separate collection of textile waste from households**	Data to be provided by the MoEPP
Establishment of an EPR scheme for textile	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Introduce EPR obligations for textiles**	Data to be provided by the MoEPP

Collection and recycling rate of textile waste through EPR scheme	Amount of collected textile waste through EPR scheme (tonnes) Reuse share of collected textile waste through EPR scheme (%) Recycling share of collected textile waste through EPR scheme (%)		
Development of ecodesign requirements	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Introduce ecodesign requirements for textiles to make textile products more circular, in line with the EU proposal for Ecodesign for Sustainable Products Regulation**	Data to be provided by the Ministry of Economy
Textile companies with ecodesign	Number		Survey-based, data to be provided by the Ministry of Economy
Introduction of eco-labels on textile	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)		Data to be provided by the Ministry of Economy
Financial support for businesses on circular design projects in the textile industry	Number of businesses supported	**Provide financial support to projects that promote and implement circular design projects and innovations in the textiles industry**	Data to be provided by the Ministry of Economy or chambers of commerce
Companies with upcycling business models	Number		
Supporting circular design of textiles through GPP	GPP with textile recycled content (in volume and value)		Data to be provided by the Public Procurement Bureau
Support for industrial symbiosis in the textile industry	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)		Data to be provided by the Ministry of Economy or chambers of commerce
Mining and metallurgy			
Mining waste	Share of total waste generated (%) and the generation trend	**Horizontal indicator – relevant for the entire priority area**	MAKSTAT
Study developed	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Develop a study to understand the circular economy potential in the mining and metal processing value chains in North Macedonia**	Data to be provided by the Ministry of Economy or the Macedonian Mining Association
Trainings/seminars to present a working model for using secondary materials in infrastructure construction to key operators	Number	**Improve understanding of circular practices on-site and data availability to map out material flows of metals and minerals**	Data to be provided by the Ministry of Economy or the Macedonian Mining Association
Business partnerships established as part of the circular economy business platform	Number of partnerships established	**Facilitate industrial symbiosis to further support the use of waste from the mining and metal processing/production companies and creation of markets for secondary raw materials**	Data to be provided by the co-ordinating institution (e.g. Ministry of Economy)
Introduction of new research programme(s) that foster building partnerships for upstream eco-innovation and R&D and support innovative metal production techniques	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Support upstream eco-innovation and R&D to enhance low-carbon metal and mineral value chains**	Data to be provided by the Ministry of Economy
Use of secondary raw materials through GPP	GPP with secondary raw materials (in volume and value)		Data to be provided by the Public Procurement Bureau
Principles incorporated	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Incorporate circularity principles into the new Strategy for Geological Research and Sustainable Use and Exploitation of Mineral Resources for 2025-2045**	Data to be provided by the Ministry of Economy
End-of-waste criteria introduced	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)		
Operators/authorised companies with a waste management plan	Number		

Extraction rate of metal ores and concentrates'	Share of total domestic material extraction (%)		Data to be provided by the Ministry of Economy or MASTAT
Circular principles introduced in procedures for issuing permits and concessions	Action-specific indicator for monitoring the implementation of the recommendation (yes/no)	**Apply circular principles in procedures for issuing permits and concessions**	Data to be provided by the Ministry of Economy
Material recovery as part of mining operations	Share of recovered residual minerals from mining waste and from historical mining waste sites (%)	**Support material recovery and secondary raw materials production**	Data to be provided by the Ministry of Economy or MAKSTAT
Secondary raw materials production	Share of recycled materials to raw materials demand (%)		

1. Headline indicators outlined in Table 9.2 serve as the main benchmarks for monitoring progress in the implementation of the proposed recommendations. The indicators outlined in this table are complementary to those, capturing additional implementation aspects.
2. The source column refers to institutions already collecting relevant data or those that could be in charge of collecting such data in the future.
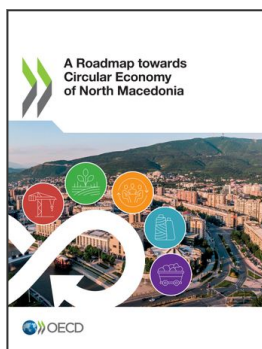3. Circular economy stakeholders' platform-related indicators might differ depending on the format of the platform (on line, physical, hybrid).
Note: MKD – Macedonian denar.

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