Resource efficiency and circular economy in Europe – even more from less

An overview of policies, approaches and targets of Montenegro in 2018

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European Environment Agency
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Materials in a Green Economy

Contents

Acknowledgements

Montenegro, facts and figures

Note: data in this section was sourced from Eurostat databases (April 2019), except where noted otherwise

GDP: EUR 4.3 billion (in 2017)

Per capita GDP: EUR 6,907.4

Structure of the economy:
agriculture: 8.4 %
industry: 19.4 %
services: 72.2 %

Surface area: 13.8 thousand square kilometres (km^2)

Population: 622,400 (0.12 % of EU28 total in 2017)

Policy framework

Driving forces for material resource efficiency and circular economy

On September 20, 1991 the Montenegrin Assembly adopted the Declaration of Ecological State Montenegro, in which it is stated that 'by respecting our dues to nature which is the source of our health and the inspiration of our freedom and culture, we turn ourselves to the protection of hers, in the name of our own survival and the future of our successors'. Following the adoption of the Declaration and the decision in it, the Constitution of Montenegro from 1992 contains definition of Montenegro as ecological state and the same was confirmed by the Constitution from 2007.

The decision to develop Montenegro as an ecological state requires dedication, endurance, bold decisions and significant financial investment. Facing the consequences of unsustainable development tendencies incurred by the inherited structural disbalance of a socialist planned economy from the period before the 1990s, an abrupt drop in overall socio-economic values during the 1990s, a tendency to procure accelerated economic growth and continuous accelerated prosperity, and to compensate for missed opportunities by introducing economic reforms during the transition period in 2000, requires determined and efficient action.

Dedicated national strategies or roadmaps for material resource efficiency and a circular economy

There is no specific material resource efficiency and circular economy strategy or an action plan in Montenegro.

Overview of dedicated national or sectoral strategies for raw materials

There is no one overall strategy for raw materials on the national level.

On the other hand, material resources have been addressed within the National Strategy for Sustainable Development (NSSD) until 2030, but from the perspective of management of human, social, natural and economic sectors.

Key economic sectors for the improvement of resource efficiencies
- Energy: in the energy sector we still have high material intensity even though a decline of 23.1 per cent was registered; resource productivity is one of the lowest (only EUR 0.07 of GDP per tonne of domestic material consumption (DMC)), while the metabolic rate, reflecting consumption of domestic natural materials per capita – DMC per capita, in this sector grew by 19.2 per cent. However, in consideration of a still high rate of material, energy and emission intensity, this sector has the highest potential for the improvement of the overall resource efficiency of the Montenegrin economy. Within the energy sector the most consumed energy source is fossil fuels, which have a central position and represent a necessary resource for the renewal of economic activity. For that reason, it is rather important, excluding their high emission intensity and harmful environmental impacts, to procure safe supplying of economic actors with these resources.

- Civil engineering: this is the sector with by far the largest share in domestic consumption of materials. In addition, analysis of resource efficiency indicators shows low efficiency in this sector, which is reflected in a 43 per cent increase in material intensity and 50 per cent reduction in resource productivity, as well as a 25.4 per cent increase in DMC per capita for the period 2006–2013. As the decline in gross added value in the civil engineering sector was not followed by a decline in DMC, and there was serious deterioration in resource efficiency, this sector should also become a priority for the improvement of resource efficiency. Research demonstrated that further standardisation and improvements and consideration of different options are necessary to:
  - stimulate more resource-efficient production and use of construction materials;
  - consider options for the longer-term use and duration of construction materials;

- reduce quantities of construction waste;
- analyse and enable recycling of construction materials that are mainly disposed of at waste disposal sites;
- enable recycling of asphalt, concrete and other materials that are recyclable;
- apply recommendations regarding construction of buildings with minimal emissions;
- introduce energy-efficient project planning and construction;
- procure the use of construction materials and products that improve the energy characteristics of buildings;
- procure adequate facility maintenance;
- enable and encourage reconstruction of the existing housing stock;
- ensure more adequate infrastructure planning;
- procure the use of ecological materials in construction.

- Agriculture: the agricultural sector saw no decoupling of DMC from gross added value in recent years, which illustrates inefficient and unsustainable consumption in this sector. Although material intensity has fallen by 60 per cent, gross added value has increased by 90 per cent, neutralising its fall. Given the significance of the agricultural sector in the Montenegrin economy, together with organic agriculture, this sector should be one of the priorities for resource efficiency. Consequently, additional measures and processes are needed to establish certain standards in this sector regarding resource efficiency.

- Tourism: this sector, which is characterised by low rates of material intensity, in the previous period had an improvement in resource efficiency of 57.4 per cent and an increase in metabolic rate of 26.7 per cent[1]. However, as tourism has links with the rest of the service sector and also with other sectors in general, small steps towards the greening of tourism will have an exceptionally big impact on greening the entire economy. The tourism sector is a significant consumer of natural materials and contributor to the carbon footprint – directly or indirectly through accommodation and transport services, food consumption and others. Climate change and the tourism sector are closely associated, given that this sector is a significant greenhouse gas producer, while climate change has a knock-back effect on it. Key areas with many possibilities for tourism greening and resource efficiency improvements are: energy, water, waste and preservation of natural values (nature such as forests, ecosystems and protected areas, but also 'space' – landscape values).

For the period 2006–2013, MONSTAT prepared a publication *Material flow indicators in Montenegro*, in line with UN and EU methodology. It includes the following classification of material into four categories: biomass; metallic resources; non-metallic resources and fossil fuels.

The NSSD defines measures that support a resource-efficient circular economy in the extractive industry, namely:

Measure - 3.4.7 Minimise environmental impacts and improve economic performance in the exploitation of mineral resources.
3.4.7.1 Develop and apply adequate instruments which will in the long run enable achievement of resource efficiency in the of use of domestic raw materials in existing and future activities in the industrial sector, such as the application of circular economy elements: reuse of products for the original or other purposes; recovery of products or reproduction of some of the product elements, material and its components cascading, for example, textiles used for clothes can become

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[1] http://www.nssd2030.gov.me/ (English) and
http://www.me.undp.org/content/montenegro/en/home/library/human_development/NHDR2014.html (English)

furniture textiles, then insulation textiles; recycling of material at the beginning, during and at the end of life.

Several strategies exist that cover this topic, such as the National Strategy for Sustainable Development (NSSD) until 2030[2], which the government of Montenegro as adopted in July 2016, and the Waste Management Strategy by 2030 adopted by the government of Montenegro in July 2015.

A concept of resource efficiency and circular economy was introduced into the NSSD to 2030 (July 2016) as a key strategic direction for enabling sustainable growth and the development of Montenegro until 2030. The NSSD defines a framework and specific set of activities within its Action Plan for the introduction of concepts that complement a green economy – on which it is rather dependent – as well as for improved implementation of sustainable consumption and production patterns as one of the ways that could lead to improved use of resources. For example, specific objectives were defined in the Action Plan: 'Improve resource efficiency in key economic sectors', with measures to: improve resource efficiency through the introduction of market-oriented measures, i.e. through the introduction of economic instruments in key economic sectors – environmental taxes, fees and charges for users, trade certificates, green finances, green procurements, subsidies, permits and marketable bans; improve resource efficiency by introducing regulatory instruments – norms and standards, obligations and responsibilities for environmental protection, environmental control and standard implementation; encourage research and development in the area of resource efficiency and human resource development; etc.

Problems regarding implementation of circular economy patterns are being observed specifically with reference to waste management. The beginning of industrialisation and transition towards a market-based economy brought an unsustainable model of economic growth to Montenegro, which is similar to many other developing countries, of take, produce, consume and discard; it is a linear model resulting from the assumption that materials extracted from nature are inexhaustible. Taking into account that the linear economic growth model turns out to be unsustainable and that competition for the use of scarce raw materials has become ever stronger, transitioning to a circular zero-waste economy has become one of the prerequisites for sustainable development and increased resource efficiency.

There are numerous barriers in the transition towards a circular economy, and they imply: lack of skills and investments in product design so as to make them suitable for circular economy, which can facilitate and increase reuse, recovery, repair and product maintenance; poor pricing signals which do not sufficiently encourage the reuse of resources, mitigation of pollution or innovations; lack of motivation because of, *inter alia*, lack of political and other measures for internalisation of external costs; insufficient intersectoral cooperation and cooperation between certain value chains; limited consumer acceptance of a potentially higher number of services within a business model, for example, leasing instead of owning and result-based payment models. Potentially more efficient production and consumption models are even less accepted by producers and consumers, and there is a lack of consumer awareness, for example about food product perishability; lack of investment in green procurement in many public institutions; lack of investment in recycling and maintenance of the existing infrastructure, and in innovation and technology (confining users to existing technologies; insufficient waste separation according to waste type at disposal sites; and a lack of policy linking across different levels.

Detailed measures for the creation of an efficient integrated waste management system are contained in the new National Waste Management Plan in Montenegro for the period 2015–2020, in particular through its Action Plan, which defines the timeframe and dynamics as well as responsible entities and financial resources to implement these activities. The government of Montenegro adopted the Plan in July 2015.

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[2] http://www.nssd2030.gov.me/ (English)

Material resource efficiency is also addressed within the Waste Management Strategy by 2030. Based on the analysis of scenarios, data and calculations provided in the Waste Management Strategy, the NSSD until 2030 defines key measures and activities that need to be implemented in order to achieve application of the circular economy concept in the area of waste management.

In that regard, the general goal in the area of waste management is to establish a sustainable waste management system and constant improvement thereof. In order to achieve that general goal, the NSSD until 2030 has defined the strategic goal to 'Improve waste management applying the circular economy-based approaches' as the first priority, to be achieved through application of the following measures.

1) Encourage activities aimed at the reduction of waste generated in the territory of Montenegro.
2) Apply primary selection of waste as efficiently as possible, as a prerequisite for the achievement of clearly defined goals in the area of reuse and recycling of discarded materials, which implies considerable investment in separate collection systems in the coming period, followed by appropriate awareness-raising programmes.
3) Establish efficient waste selection and recycling, the collection, separation, treatment, reuse of recyclables, as well as a system for prevention of waste; include incentives for the development of recycling activities, stimulate secondary raw materials markets and demand for recyclables.
4) Develop a system for the management of special waste streams, for example, used batteries and accumulators, used tyres, end-of-life vehicles, waste electric and electronic equipment, packaging waste, construction and demolition waste, biodegradable waste, sewage sludge, veterinary waste, animal by-products, medical waste, industrial waste.
5) Circular economy approaches should be gradually introduced into the waste management system – a shift from a landfill system to a circular waste management system, applying measures for the encouragement of resource-efficient use of raw materials in production, enabling a reduction in waste generation, especially hazardous waste, and the use of waste as alternative fuel, applying approaches based on recognition of the economic and environmental importance of waste, establishing macro analysis and sector material flow analyses (material flow accounting), and introducing related circular economy indicators.
6) Improve the application of penalties in waste management and raise awareness about the importance and advantages of sustainable waste management (ecological knowledge, ecological behaviour, ecological situation valuation).

The NSSD defines a measure "4.3.4 Gradually introduce approaches of circular economy into waste management practice" (shift from a landfill system to circular waste management system):
4.3.4.4 Through implementation of measures encouraging resource-efficient use of raw materials in production, enable reduction of generated waste, especially of hazardous waste: promote and encourage product design which enables durability and is more suitable for dismantling and adaptation (companies should apply principles of eco-design to their products, such as minimal use of non-renewable resources, elimination of toxic and harmful substances as much as possible, use renewable resources at the level or below the level of their regeneration; increase lifetime of products and potential for their reuse, and finally facilitation of sorting and recovery of products in final phase of the use thereof); encourage modern circular and regenerative forms of consumption; encourage cross-sectoral approach and cooperation between different actors in the entire supply chain in order to optimise product life cycle.

Institutional setup and stakeholder engagement

There is no specific institutional framework for circular economy only, but at the moment, within the process of monitoring the progress of NSSD implementation, activities on implementation of the circular economy concept in practice have been coordinated by the National Council for Sustainable Development, Climate Changes and Integrated Coastal Zone Management.

The National Council was established by the government in 2002 as a cross-sectoral advisory body on issues of sustainable development. The Council has 26 members – representatives of all relevant stakeholder groups including relevant ministries, universities, business sector, non-governmental organisations (NGOs) and independent experts. The Council has four expert working groups for NSSD until 2030, which deal with the issues of circular economy, climate change adaptation and mitigation and integrated coastal zone management. The President of Montenegro is chairing the Council.

The Working Group for Sustainable Resource Management has 13 members – relevant representatives of competent ministries (sustainable development and tourism, economy, agriculture and rural development), representatives of three municipalities, representatives of the university, NGO and business sectors, the Nature and Environment Protection Agency and the National Statistical Office (MONSTAT). Members of the working groups are appointed by the National Council for a period of three years. The working groups meet at least twice a year.

The basic task of the Working Group, starting from different levels of resource scarcity and increasing pressures on excessive exploitation, is to influence the development and delivery of guidelines for different strategies and policies, based on the principles of sustainable development and efficient and sustainable use of ecosystems.

The Working Group submits its inputs, suggestions and recommendations for the strategies and policies under development to the National Council, which, after their consideration, are submitted for adoption to the government through reports from the sessions of the National Council.

This mechanism is implemented to ensure the consistency of sector-based strategies with the NSSD. The sector-based strategies are assessed by the Working Groups with regard to their areas of expertise. On the basis of the reports provided by the Working Groups, the National Council issues conclusions and recommendations to the government, which in turn calls on the relevant ministries to take the necessary measures to implement the recommendations. The Secretariat of the National Council provides monitoring of the implementation of recommendations by the various relevant ministries and includes a review of the results of this monitoring in the agenda of National Council meetings. The Secretariat of the National Council is based in the Ministry of Sustainable Development and Tourism – Division for Sustainable Development and Integrated Coastal Zone Management, and it provides monitoring for implementation of National Council recommendations.

The Ministry of Sustainable Development and Tourism is in charge of the coordination, monitoring and reporting on the implementation of the NSSD until 2030, and therefore of the implementation of its Action Plan containing measures and sub-measures related to resource efficiency and the circular economy.

Approaches to resource efficiency and circular economy policy evaluation

The impacts and effectiveness of policies for a resource-efficient circular economy can be monitored through domestic material consumption (DMC), for which an assessment was made for the first time in the 2014 Human Development Report regarding resource efficiency, and it includes energy consumption indicators, land surface under organic production, direct material input (DMI) and domestic extraction (DE), amongst others[3].

DMC was included as one of the key composite indicators within the NSSD and regular monitoring of this indicator by MONSTAT is planned. Unfortunately, MONSTAT needs additional financial support to enable regular monitoring of this indicator.

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[3] http://www.me.undp.org/content/montenegro/en/home/library/human_development/NHDR2014.html (English)

Monitoring and targets

Targets for resource efficiency and circular economy

Some of the targets defined within the Action Plan of the National Strategy for Sustainable Development (NSSD) until 2030 are:

- a reduction in DMC of 20 per cent by 2030 in relation to the average for 2005–2012, i.e. an annual DMC reduction of 1.1 per cent until 2030 or a DMC reduction of 1 tonne per capita by 2030;
- a 60 per cent increase in resource productivity by 2020 compared to 2013, and by 103.8 per cent by 2030;
- an increase in resource productivity in the service sector (tourism) of 164.6 per cent by 2020 compared to 2013;
- an increase in resource productivity in agriculture and fisheries of 93.6 per cent by 2020 compared to 2013;
- an increase in resource productivity in the construction industry of 201.1 per cent by 2020 compared to 2013;
- an increase in resource productivity in the energy sector of 158.4 per cent by 2020 compared to 2013;
- an increased in resource productivity in the processing industry of 9.7 per cent in 2020 compared to 2013.
- an established waste management system: by 2020 at least 50 per cent of the total quantity of collected glass, paper, metal and plastic waste is recycled, as well as at least 70 per cent of non-hazardous construction and demolition waste; 25 per cent of primary selected waste and landfilling of biodegradable waste reduced to 35 per cent compared to 2010; 95 per cent of total generated waste is collected by 2030;
- the proportion of construction/built-up areas over the total area of coastal municipalities does not exceed 10 per cent;
- by 2030 greenhouse gas emission levels reduced by 30 per cent compared to the 1990 baseline;
- energy intensity (GIC/GDP) is 262.2 in 2020;
- the proportion of energy generated from renewable sources in total energy consumption is 27.7 per cent in 2020;
- the national goal for the proportion of renewable energy sources in gross total energy consumption of 33 per cent by 2020 is achieved, with more ambitious goals set for 2030.

Reports on progress in the implementation of the NSSD will be done on a biannual basis. The first progress report will be prepared during 2018 and published in 2019[4].

Indicators to monitor progress towards a resource-efficient circular economy

Chapter 7 of the National Strategy for Sustainable Development (NSSD) to 2030, *Monitoring and Implementation of the NSSD and Measuring Sustainable Development of Montenegro by 2030,* defines the way to establish a system for monitoring the sustainability of national development, including monitoring achievement of the sustainable development goals, measures and tasks set out in the Action Plan accompanying the NSSD.

The Strategy sets out that the platform for processing NSSD-relevant indicators needs to be established by 2019, and that the first pilot report on implementation of the NSSD's measures needs to be drawn up by 2019. The report should include the processed data on sustainable development indicators, for which an obligation has been laid down in terms of introducing them into the monitoring and reporting system.

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[4] http://www.me.undp.org/content/montenegro/en/home/library/human_development/NHDR2014.html (English)

The NSSD sets out four groups of indicators:
- sustainable development indicators identified by the United Nations Statistical Commission, with a list of 241 indicators. Analysis of the current condition reveals that out of 241 sustainable development indicators, a total of 49, 20.3 per cent of the total number, are being fully monitored in Montenegro, and that another 34, 14.1 per cent of the total number, are being partially monitored. Official and administrative producers of statistics should take over a further 54 sustainable development indicators from the UN list by 2018, as a result of which reporting in Montenegro would cover 56.8 per cent of the total number of indicators. An additional 32 sustainable development indicators from the UN list need to be incorporated in the period 2018–2020, so as to ensure that 70.1 per cent of the total number are monitored in Montenegro. An additional 24 indicators need to be introduced in the period 2020–2022, which would lead to reporting on 80.1 per cent of the total number of indicators from the UN list. Incorporation of a further 27 indicators in the period 2020–2024 would create conditions for monitoring 91.2 per cent of the indicators from the UN list.
   o SDG 8.4.1 Material footprint (MF), material footprint per capita and material footprint per unit of GDP;
   o SDG 8.4.2 Domestic material consumption (DMC), domestic material consumption per capita, and domestic material consumption per unit of GDP;
   o SDG 7.1.2 Proportion of the population with primary reliance on clean fuels and technology;
   o SDG 7.2.1 Renewable energy share in total final energy consumption;
   o SDG 12.5.1 National recycling rate, tonnes of material recycled.

- 252 national indicators – indicators that are important in respect of specific national needs.
   o NIE83 DMC;
   o NIE35 MORT, percentage of collected waste glass, paper, metal and plastic prepared for reuse and recycling;
   o NIE37 MORT, quantity of secondary selected waste components;
   o NIE38 MORT, number of recycling centres and recycling yards.

- 31 international indicators – relevant indicators which are not monitored in Montenegro, instead they represent an instrument used by international organisations to report on certain occurrences and processes in Montenegro. These indicators have been, in terms of their contents, considered from the perspective of their implementation as an alternative to the indicators from the UN list.

- 10 complex indicators for cumulative monitoring of sustainability trends – with the aim of ensuring comprehensive monitoring of changes occurring in society with regard to the total impact of implementation of the NSSD and simple communication aimed at decision-makers and the public in respect of the progress that Montenegro has made on its path to sustainability.
   o ecological footprint (EF);
   o domestic material consumption (DMC);
   o resource productivity (RP).

Drafting of the first (2019) pilot report on implementation of the NSSD is expected to reveal the extent of progress in introducing the integrated system for monitoring sustainable development trends in Montenegro; 56.8 per cent of sustainable development indicators should be introduced in the system of statistical monitoring by 2018.

Phases in the process of monitoring and implementing the NSSD until 2030 are:
1) data collecting;
2) reporting;
3) analysis of data obtained;
4) recommendation for improving the document; and

5) NSSD until 2030 periodic audit.

The first three phases will be supported by a functional information system – Indicator Reporting Information System (IRIS). The establishment of a functional information system and database represents the basis for successful measurement of progress. During design and construction, this system must be designed to be user friendly and to facilitate the entering, viewing and analysis of data, and must not become a burden and bottleneck to implementing the NSSD until 2030 monitoring system.

The established system should be simple, efficient and friendly. It should be oriented toward users since its primary purpose is to facilitate implementation monitoring in order to have quality implementation of the NSSD until 2030, and not to represent too massive and inefficient a system that in practice will not work.

Such an organised, functional information system will enable not only simultaneous data collection by subjects responsible for monitoring of certain sustainable development indicators, or the NSSD measures, but also the archiving and further processing towards efficient national and international reporting.

Montenegro has already started the process of customising the existing IRIS online reporting system. This system was co-developed by United Nations Environment Programme (UNEP) and the Abu Dhabi Global Environmental Data Initiative (AGEDI) and enables data sharing among different authorised entities. In this case, the entities will be Montenegrin institutions and official and administrative producers of statistics, who through this system can simultaneously collect, analyse and publish quality-assured information.

For the period 2006–2013, MONSTAT prepared a publication *Material flow indicators in Montenegro*, in line with UN and EU methodology. It includes the following classification of material into four categories: biomass; metallic resources; non-metallic resources and fossil fuels.

Examples of innovative approaches and good practice

Examples of good practice and innovative approaches

Since July 2012, the Division for Sustainable Development and Integrated Coastal Zone Management in the Ministry of Sustainable Development and Tourism has started the initiative/action of regular monthly recycling of the office paper in the ministries, business organisations and other interested organisations, NGOs and small/medium-sized enterprises (SMEs), on the territory of Podgorica as part of its socially responsible initiative. In cooperation with the recycling centre Deponija d.o.o., which offers free-of-charge collection and transportation of collected paper, all the interested organisations are equipped with recycling bins and for five years now, every last Thursday in the month, paper is collected from these organisations and institutions and transported to the recycling centre for further processing. In this way, on average, around 6 tonnes of paper per year is separately collected from around 30 institutions and organisations and sent for recycling.

Resource efficiency and circular economy policy initiatives from subnational to local level

Adoption of the NSSD to 2030 was followed by the preparation of strategies for sustainable development on the local level (municipality and regional). This process is still ongoing, but in 2016 the Ministry of Sustainable Development and Tourism together with the International Labour Organization (ILO) and social partners started the process of consultation and preparation of a green jobs needs assessment and survey on green economy and green jobs in three municipalities in northern Montenegro (Bijelo Polje, Berane and Mojkovac), which has resulted in the development of a report on *Developing Enabling Environment on Green Jobs and Enterprises* in May 2017 for these three municipalities.

This report provides an overview of the valid definitions of green jobs, for which there are the following common elements: a green job is a job that contributes to improving the efficiency of energy use and other resources; reducing and eliminating the generation of waste and pollution; protecting and restoring ecosystems and biodiversity; and achieving a reduction in greenhouse gas emissions and adaptation to climate change. The document provides an overview of the national legal and strategic framework for stimulating green jobs, analysing the structure of enterprises in the selected municipalities of Mojkovac, Bijelo Polje and Berane; an assessment of the potential for greening according to the type and structure of a job; an overview of mechanisms for stimulating employment and economic development and non-financial mechanisms for development of a more favourable environment for green jobs and enterprises; and key recommendations and measures for improvement of the existing environment in Montenegro for the development of green jobs – i.e. the greening of existing jobs.

The National Council approved the Report in June 2017, when clear follow-up activities were defined in order to develop an enabling environment for the expansion of the green economy by generating green jobs and greening existing ones, protecting the environment and reducing ecological footprints while at the same time supporting the national economy and increasing public awareness of how green investments can lead to new job creation in the three municipalities.

Other resources

Examples of policies which go beyond "material resources"

There are no specific initiatives, but we have calculated the ecological footprint (EF) within the preparation process of the NSSD as a supplement to the previously calculated DMC. Both indicators have been included in the NSSD as composite indicators that will be monitored regularly within the process of monitoring of the NSSD. The EF is one of the most widely used and recognised indicators of human pressures on ecosystems. It measures the renewable natural resources and ecosystem services demanded as a result of a population's consumption activities and compares it to what national ecosystems are capable of providing.

In the search for indicators to monitor Montenegro's progress towards its NSSD, the EF was proposed to complement the already identified DMC indicator. While DMC provides a detailed picture of Montenegro's consumption of both renewable, such as crops, wood and fish resources, and non-renewable resources including metal ores, non-metallic minerals and energy carriers, it does not inform users about the degree of sustainability/unsustainability of such consumption and the pressure it places on national ecosystems and the biodiversity that inhabits them. The Ecological Footprint analysis is capable of providing such a benchmark, though it does not track demand for non-renewable resources such as ores and minerals. By combining DMC and EF analysis, a more comprehensive picture of Montenegro's resource metabolism has been provided and is available in a study finalised in November 2015.

The way forward

Reflections on future directions of policies on resource efficiency and circular economy

In order to implement these concepts in practice in key economic sectors, several measures needs to be implemented:

1) introduction of market-oriented measures, i.e. through the introduction of economic instruments into key economic sectors – environmental taxes, fees and charges for users, trade certificates, green finances, green procurements, subsidies, permits and marketable bans. The aim of these measures is to reduce externalities or costs which can be incurred due to negative environmental impacts or consumption and the depletion of non-renewable sources;

2) introduction of regulatory instruments – norms and standards, obligations and responsibilities for environmental protection, environmental control and standard implementation. Norms and standards usually target consumers and can be set for the achievement of different goals: resource efficiency improvement, gas emissions reduction, waste reduction, etc.;

3) encourage research and development in the area of resource efficiency, circular economy and raw materials management;

4) improve the availability of information related to the value of natural resources, resource use, resource efficiency, circular economy and sustainable consumption and production, and integrate them gradually into the systems for calculating economic performance – strengthening capacities in competent authorities and publication of selected indicators, statistical tracing, monitoring;

5) promote concepts through educational campaigns and innovations of curricula at all educational levels, promote creation of detailed resource efficiency plans, eco-labelling, agencies for the provision of information to consumers, information desks, objectives for the improvement of environmental quality, cooperation through voluntary actions, promotion of energy efficiency, especially in the sectors of energy, construction, industry, agriculture, tourism, etc.

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