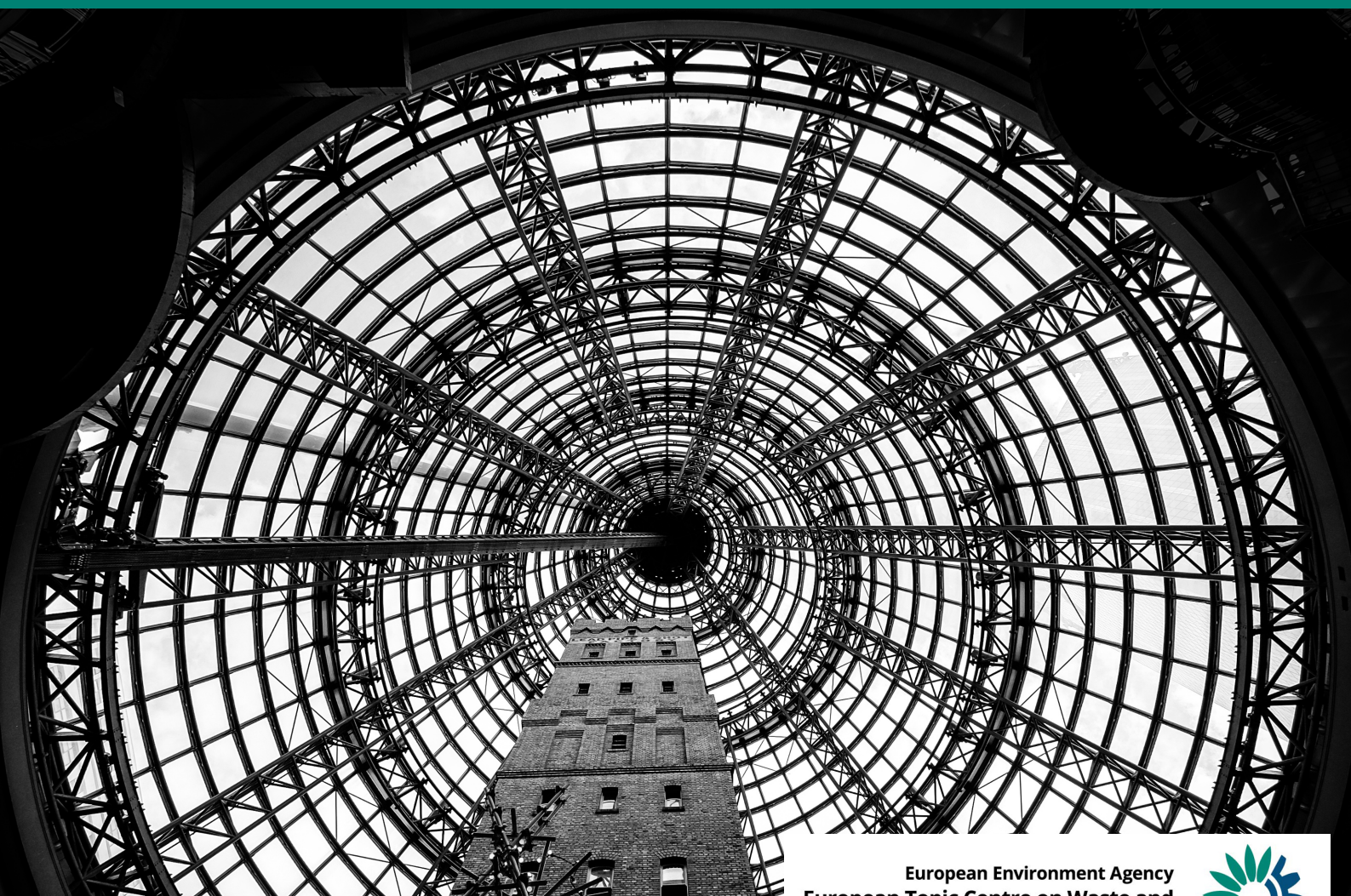


Resource efficiency and circular economy in Europe – even more from less

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



European Environment Agency
European Topic Centre on Waste and
Materials in a Green Economy



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This country profile was prepared as part of the 2019 EEA review of material resource efficiency, circular economy and raw material supply policies, which aimed to collect, analyse, and disseminate information about experience with the development and implementation of these policies in EEA member and cooperating countries.

At the time of writing, a summary report is being finalised. The report reflects on trends, similarities and differences in policy responses, showcases selected policy initiatives from member countries and identifies possible considerations for the development of future policies.

These country profiles were compiled and finalised by members from the European Topic Centre on Waste and Materials in a Green Economy, namely Bart Ullstein, Bettina-Bahn Walkowiak, Jeroen Gillabel, Margareta Wahlström, Jutta-Laine Ylijoki, Dirk Nelen, Theo Geerken, Veronique Van Hoof and Evelien Dils. The responsible EEA project managers for the work were Pawel Kazmierczyk and Daniel Montalvo.

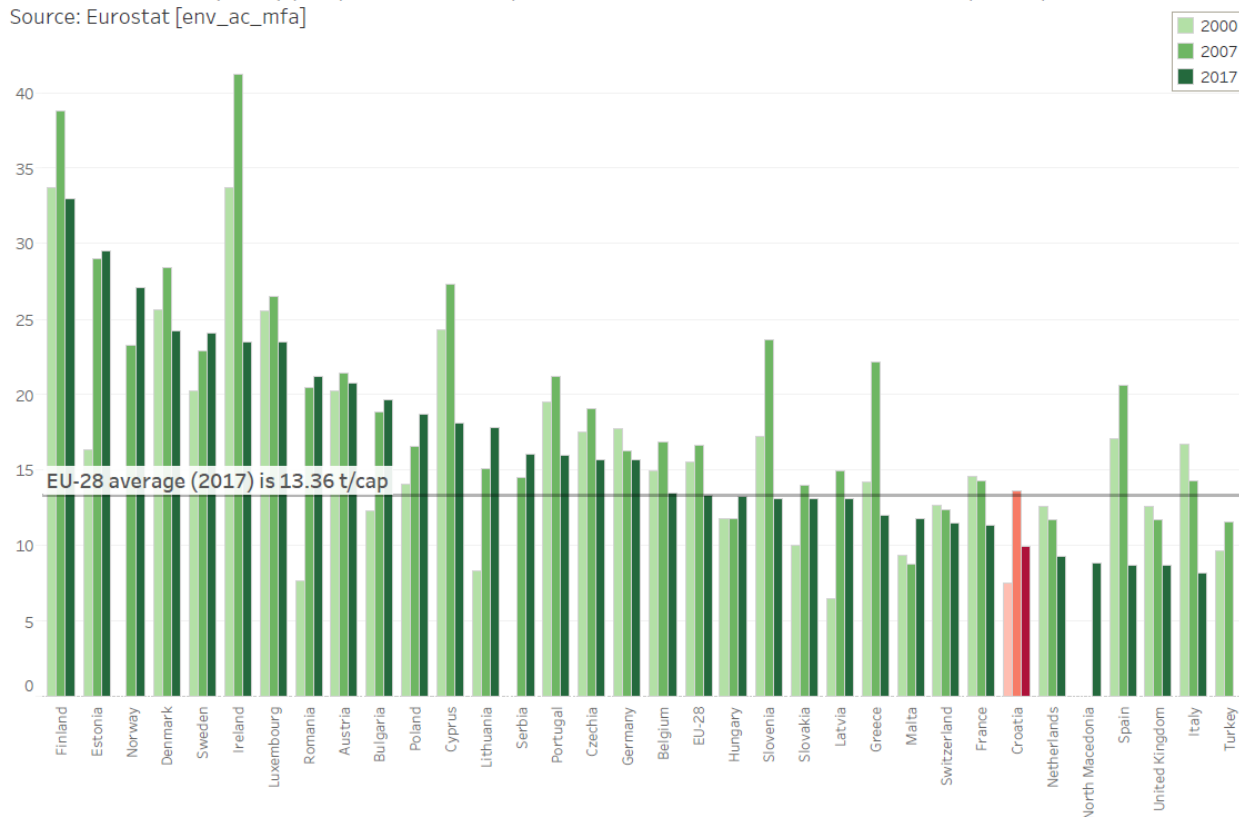
Croatia, facts and figures

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

	GDP: EUR 49.0 billion (0.31 % of total EU28 in 2017)
	Per capita GDP: 11,900 Euro (purchasing power standard) (39.5 % of EU28 average per capita figure in 2017)
	Use of materials (domestic material consumption (DMC)) 41.1 million tonnes DMC (0.6 % of EU28 total in 2017) 9.96 tonnes DMC per capita (74.5 % of EU28 average per capita in 2017)
	Structure of the economy: agriculture: 3.7 % industry: 26.2 % services: 70.1 %
	Surface area: 56.5 thousand square kilometres (km ²) (1.2 % of total EU28)
	Population: 4.2 million (0.8 % of EU28 total in 2017)

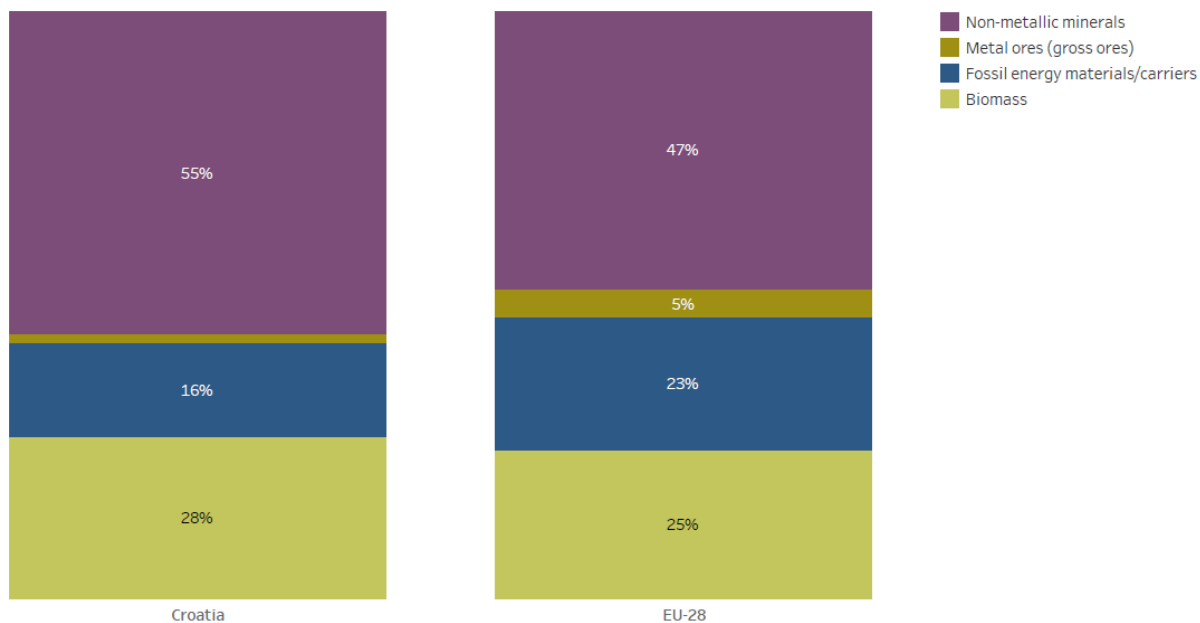
Use of materials (DMC) per person in Europe, 2000, 2007 and 2017, tonnes DMC per capita.

Source: Eurostat [env_ac_mfa]



Croatia & EU-28. Domestic Material Consumption by material category, 2017.

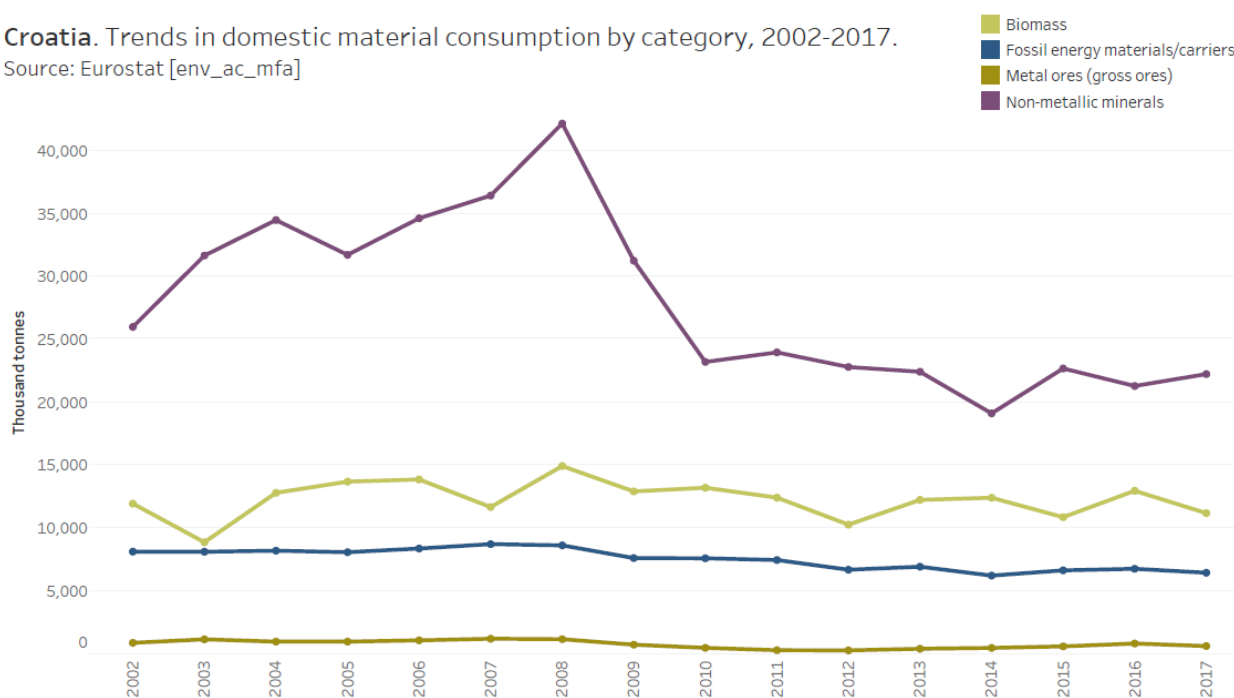
Source: Eurostat [env_ac_mfa]



Note: The domestic material consumption categories 'other products' and 'waste for final treatment and disposal' are excluded from the figure.

Croatia. Trends in domestic material consumption by category, 2002-2017.

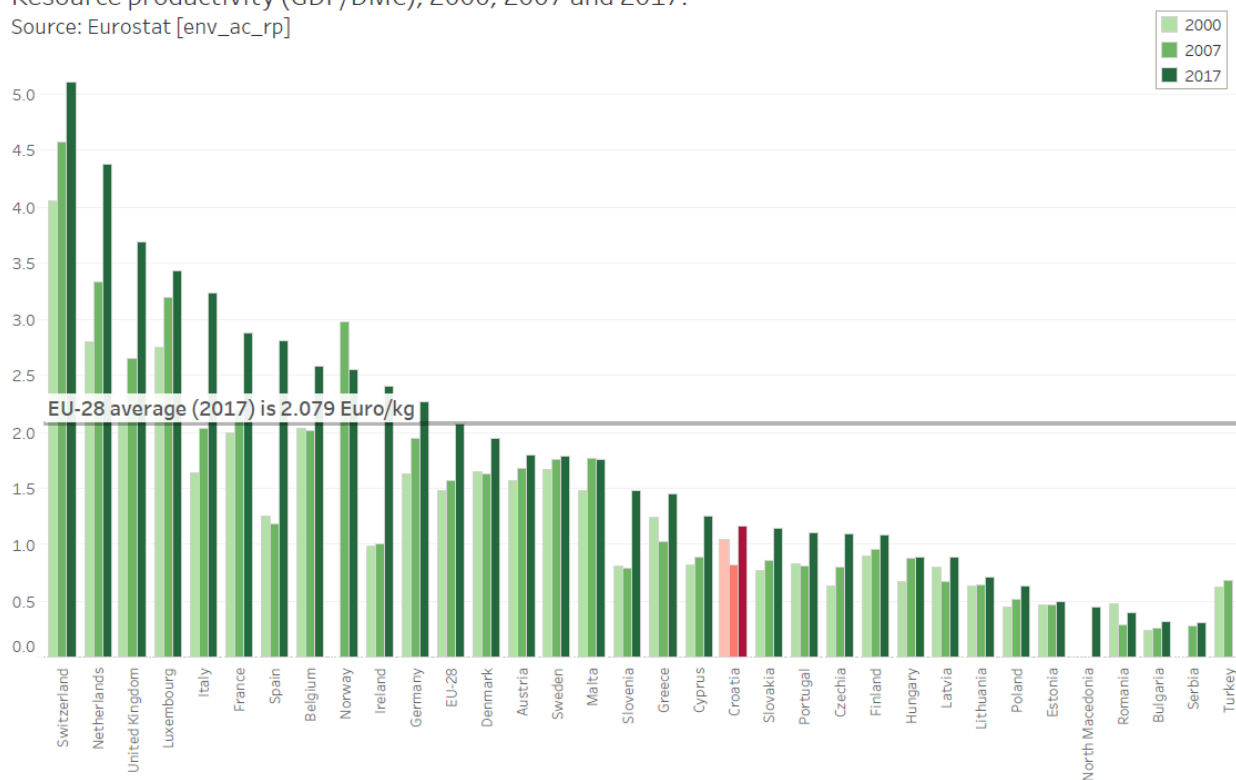
Source: Eurostat [env_ac_mfa]



Note: The domestic material consumption categories 'other products' and 'waste for final treatment and disposal' are excluded from the figure.

Resource productivity (GDP/DMC), 2000, 2007 and 2017.

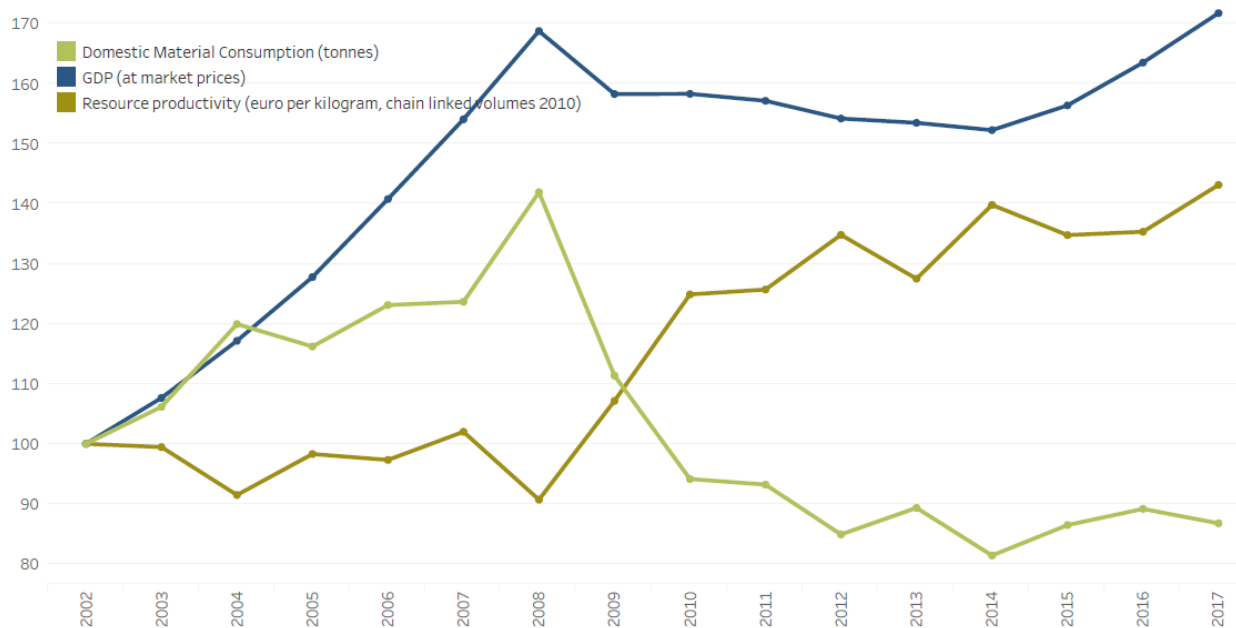
Source: Eurostat [env_ac_rp]



Note: GDP expressed in chain linked volumes 2010.

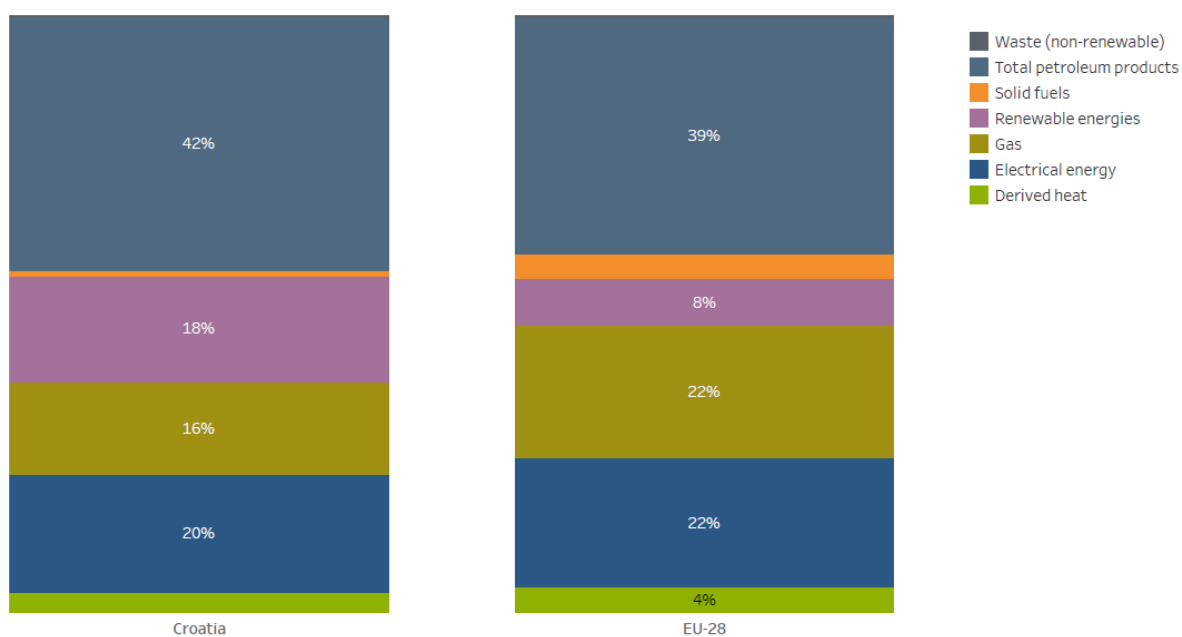
Croatia. GDP, DMC and resource productivity trends, 2002-2017, index 2002=100.

Source: Eurostat [env_ac_mfa], [env_ac_rp] & [nama_10_gdp]



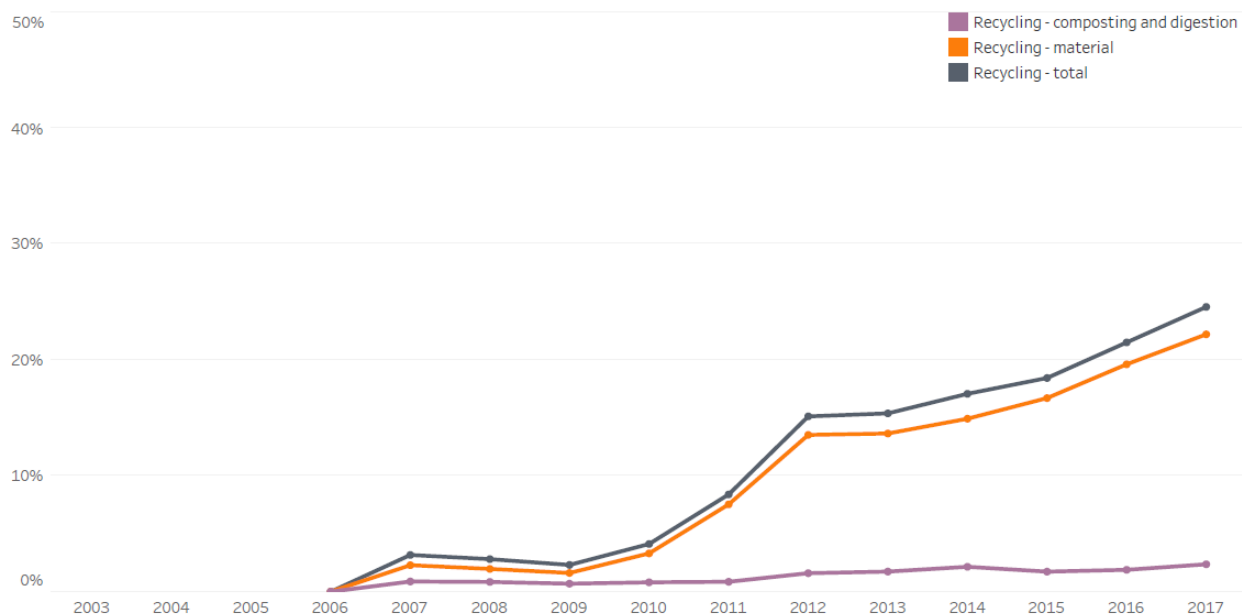
Croatia & EU-28. Primary energy consumption by energy product, 2016.

Source: Eurostat [nrg_100a]



Croatia. Recycling of municipal waste, 2003-2017, as share of total waste treatment.

Source: Eurostat [env_wasmun]



Note: The amount of municipal waste treatment is reported for the treatment operations incineration (with and without energy recovery), recycling, composting and landfilling.

Policy framework

Driving forces for material resource efficiency and circular economy

The main needs and motivations that drive the development and implementation of policies related to material resource efficiency, circular economy and raw materials supply in Croatia are environmental, social, political and economic issues. The key priorities that drive national efforts to develop policies in these areas are:

- improving the waste management system by increasing recycling of municipal waste to meet the EU's recycling target by 2020, and facilitating the transition to a circular economy together with the improvement of resource efficiency and eco-innovation;
- improving material resource efficiency (particularly concerning non-metallic minerals (quarrying) as most of the minerals exploited in Croatia are non-metallic), energy efficiency, and efficient use of other resources, for example the reuse of treated technological waste and wastewater;
- economic growth through encouraging and creating new business models, cost savings and increasing the reuse of waste as a source of raw materials;
- improving sustainable competitiveness by stimulating economic growth and development while increasing resource efficiency and energy efficiency, and decreasing waste generation and disposal;
- creating new green jobs to decrease unemployment;
- environmental and nature protection and sustainable development, involving a reduction of environmental impacts through the more efficient use of raw materials, reduction of waste generation, and reduction of emissions.

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

Croatia is yet to adopt a dedicated national material resource efficiency strategy or action plan, but did adopt the **Strategy for Sustainable Development of the Republic of Croatia** (OG 30/09) in February 2009 that refers to efficient use of resources in a broad sense (More information about the strategy under paragraph 'Policies which include elements of material resource efficiency').

Croatia has not yet adopted a dedicated national circular economy strategy, action plan or roadmap. According to the Strategic Plan for 2017–2019 of the Ministry of Environment and Energy (MEE), the financing of a study on the implementation of the concept of a circular economy in Croatia is planned.

Overview of dedicated national or sectoral strategies for raw materials

The **Mineral Raw Materials Management Strategy of the Republic of Croatia, 2008** is the basic document determining mineral raw materials management and planning of mining at the state level. The Strategy determines the state of mineral raw materials management, ensuring the safe and reliable supply of mineral raw materials, the rational exploitation of mineral raw materials and the sustainable use of mineral raw materials, ensuring environmental protection in all areas of mining activity. The main objective is sustainable mineral raw materials management, implying the exploitation of materials as required while preserving them for future needs. The Strategy mostly refers to domestic extraction but also covers imports. Because certain material categories are scarce in Croatia, some have to be imported, especially metal ores. Domestic exploitation of mineral raw materials has to be carried out in accordance with all provisions and environmental protection requirements, including protection measures to prevent negative impacts on the environment based on adopted and implemented environmental impact assessments.

Policies which include elements of material resource efficiency

- The **Strategy for Sustainable Development of the Republic of Croatia** (OG 30/09), adopted by Croatia's parliament in February 2009, is the main document that directs long-term economic and social development, and environmental protection towards sustainable development and the efficient use of resources (water, sea, marine resources, biodiversity, land and soil, etc.) in a broad sense. Promoting sustainable consumption and production is one of the main principles in directing Croatia towards sustainable development. The patterns of sustainable consumption and production can be applied in many sectors in order to reduce the consumption of natural resources, emissions to air, water and soil, and waste generation. Another principle directing Croatia towards sustainable development is the recovery of natural resources, for example through reuse or recycling.
- The **Mining Act** (OG [56/13](#), [14/14](#)), adopted by the Croatian Parliament in April 2013, regulates the management of mineral resources and mining planning, exploration and identification of mineral raw material reserves, exploitation of mineral raw materials, construction and use of mining facilities, creation of mining plans and mining measurements and mine remediation. This Act also regulates concession fees, damage compensation, security measures, safety and protection measures, and administrative and inspection supervision. Mineral raw materials are considered to include energy mineral raw materials, hydrocarbons and fossil fuels; mineral raw materials for industrial processing; and mineral raw materials for the production of construction materials and building stone. The law established an obligation to develop a new mineral raw materials management strategy. The Ministry of Economy, Entrepreneurship and Crafts (MEEC), which is in charge of mining, is responsible for drafting this. The new strategy is in the planning phase and its adoption is expected by the end of 2019. Furthermore, units of regional government are obliged to undertake mining and geological studies, which must be in accordance with the mineral raw materials management strategy, in their areas, covering existing and potential deposits of mineral raw materials. On the basis of these studies, the local and regional government units are obliged to plan the needs and means of supplying mineral raw materials in their strategic spatial planning documents. The law provides an obligation to establish a unified information system on mineral raw materials to ensure the sustainable management and protection of raw minerals. A public tender for the establishment of a unified information system, led by MEEC, has already been announced and IT companies dealing with software development have responded. This project is expected to end in about 18 months to two years.
- The **Industrial Strategy of the Republic of Croatia 2014–2020** (OG 126/14) provides an overview of Croatian economic resources, such as non-metallic minerals, metal ores, agricultural land, forests, water and marine resources. One of the four key priority areas of the Strategy is to encourage cooperation between industry and education, science and technology. One of the operational measures is to adjust the system of education and science to the needs of new technologies and of the green economy.
- The **Strategy for Innovation Encouragement of the Republic of Croatia 2014–2020** directs the Croatian economy towards knowledge-based activities as well as encouraging innovation and creativity as the main driving factors of the economy. The Strategy improves the innovation system and its legislative and fiscal framework, and establishes communication methods and models of collaboration between public, scientific, research and business sectors in order to develop new products, services, business processes and technologies, as well as the method of applying scientific research results in the economy and society as a whole.
- The **Act on Sustainable Waste Management** (OG 94/13, 73/17), adopted in July 2013, provides measures for preventing or reducing the adverse impacts of waste on human health and the environment by reducing the amounts generated, and regulates waste management, which

includes allowing no operations that pose a risk to human health and the environment, and involves making use of the valuable properties of waste. Waste management and waste prevention plans are contained in Article 17 of the Act. Furthermore, local government units, according to Article 39 of the Act, have obligations to carry out educational and informational activities and report on them. Local government units are obliged to take appropriate measures to ensure that educational activities and information provision are implemented, at their own cost, on a yearly basis, including in particular public forums, waste management publications and special features in the mass media such as television and radio. Local government units are also obliged to establish, as part of their official websites, information on waste management in their areas, and keep this information up to date. Reports on the implementation of educational activities and information provision are an integral part of annual progress reports on the implementation of the Waste Management Plan by local government units.

- The **Waste Management Plan of the Republic of Croatia 2017–2022**¹ (OG 3/17) was adopted by the Croatian government in January 2017. The MEE, responsible for the Plan, conducted a Strategic Environmental Assessment in 2016. The concept of a circular economy is explicitly explained and embedded throughout the new Plan. This Plan creates prerequisites for moving to a circular economy, a concept that recognises both industry and the economy but also takes account of environmental and nature protection and thus creates new jobs. It emphasises the prevention of waste generation, reuse, recycling and composting. It regulates the achievement of targets regarding waste generation, separate collection and the recycling of municipal waste.

The constituent part of the Plan is waste prevention and improving waste management using the principles of circular economy. The most important measures to prevent waste generation are the establishment of reuse centres and the provision of home composting equipment. The Plan also proposes:

- measures related to waste generation, such as encouraging reuse of material from demolition, organisation of information and education campaigns on the prevention of food waste, and work on improving data collection and the processing of food waste;
- measures that can affect design, production and distribution, such as promoting sustainable building, and the establishment of a food donation system;
- measures that may affect consumption and use, such as a communication campaign for citizens discouraging the use of plastic bags, promoting home composting, encouraging green public procurement, and encouraging the exchange and reuse of products.

More about key targets follows in the Targets for resource efficiency and circular economy section.

- The **Waste Prevention Plan** contributes to the achievement of the following general waste management objectives:
 - decoupling economic growth from the increase of generated waste;
 - conservation of natural resources;
 - reduction of total waste disposed of in landfill;
 - reducing emissions of pollutants to the environment;
 - reducing the risk to human health and the environment.

Institutional setup and stakeholder engagement

The **MEE** is responsible for sustainable development at the national level. The MEE's scope of work includes tasks related to the protection and conservation of the environment and nature in line with the sustainable development policy of the Republic of Croatia, as well as tasks related to water management

¹ http://www.mzoip.hr/doc/plan_gospodarenja_otpadom_republike_hrvatske_za_razdoblje_2017-2022_godine.pdf (Croatian)

and administrative and other tasks concerned with energy. The MEE coordinates and implements national sustainable development policy related to sustainable consumption and production, ecolabels, green public procurement, use of renewable energy, implementation of energy efficiency measures, cleaner transport and green industry.²

Some aspects of the environment, resource efficiency, circular economy and mineral raw materials fall within the responsibilities of other ministries.

The **MEEC**³ performs administrative and other tasks related to the development and improvement of the competitiveness of the Croatian economy, instruments and measures of economic policy, industrial policy and policy for innovation and new technologies, and mining (including mineral raw materials).

The **Ministry of Agriculture** is responsible for administrative and other activities in the fields of agriculture, fisheries, forestry and rural development. The Ministry prescribes management measures for the biological resources of the sea and fresh water (fisheries and aquaculture/mariculture), performs administrative and other tasks related to forestry and forest protection, and conducts and coordinates rural development measures including on ecological and sustainable agriculture. It also coordinates activities to prevent food waste and maintains the register of mediators for food and feed donation.

Also, there are numerous **agencies** and **committees** that, through their work, encourage the strengthening of environmental protection and the efficient use of resources.

The **Croatian Agency for the Environment and Nature (CAEN)**⁴ gathers and analyses data and information on the environment and nature for the purpose of ensuring and monitoring the implementation of environmental and nature protection policies, sustainable development and other professional activities related to environmental and nature protection. The CAEN establishes, develops and manages an information system which consists of environmental and nature databases. It also ensures the conditions of access to relevant environmental and nature data and information at national and international levels, and improves communication and dissemination of information to decision makers and the public. The CAEN produces environmental and nature assessments and reports at the national and EU levels, and monitors the effects of prescribed measures, plans and strategies used as a baseline for steering environmental and nature protection and sustainable development policies. It develops the **National List of Indicators**, and organises and conducts the education of stakeholders, as well as educational and promotional activities in the fields of environment and nature.

The CAEN is the central information authority of the Republic of Croatia for the coordination of reporting and for reporting to the European Commission on the implementation of environmental and nature protection regulations.

The **Croatian Chamber of Economy (CCE)**⁵ is an independent professional and business organisation that promotes, represents and coordinates the common interests of its members at home and abroad. Members of the CCE are all legal entities engaged in business within the Republic of Croatia. The CAEN cooperates with associations and communities of the CCE, especially in the fields of data and information exchange, organisation and participation in education, etc.

The **Environmental Protection and Energy Efficiency Fund (EPEEF)**⁶ is the central point for collecting and investing extra budgetary resources in the programmes and projects of environmental and nature

² <http://www.mzoip.hr/en/> (English)

³ <http://www.mingo.hr/> (Croatian)

⁴ <http://www.haop.hr/> (Croatian)

⁵ <http://web.hgk.hr/> (Croatian)

⁶ <http://www.fzoeu.hr/en/home/> (English)

protection, energy efficiency and the use of renewable energy sources. Funding is secured from the EPEEF's dedicated revenues:

- charges on polluters of the environment;
- charges on users of the environment;
- charges on burdening the environment with waste;
- special environmental charges for motor vehicles.

Approaches to resource efficiency and circular economy policy evaluation

The State Audit Office of the Republic of Croatia prepared the Report on Performance Audit on Mineral Raw Materials Management in December 2016. Its objectives were to evaluate the administrative procedures of the competent authorities in accordance with the adopted regulation and plans related to mineral raw materials exploitation, information systems; the collection of data on mineral raw materials exploitation; the granting of concessions and supervision of concessionaires; implementation of the remediation of premises where mining has been carried out; and evaluation of the management of mineral raw material inventories. The State Audit Office has recommended the development of a comprehensive mineral raw materials management strategy which would be a relevant document and the basis for all activities related to the exploitation of mineral raw materials in the Republic of Croatia. The recommendation is to increase the number of planned supervisions of concessionaires, establish better cooperation and coordination with local government competent bodies (counties, municipalities and cities) and improve the exchange of data and information. These provisions aim to make supervision more effective, and thus minimise unjustified exploitation, while making the management of mineral raw materials more efficient.

In line with these recommendations, the MEEC has started a project to establish a unified information system on mineral raw materials – this is also prescribed by the Mining Act (see also the Policies which include elements of material resource efficiency section).

The *State of the Environment Report*, one of the fundamental environmental documents in the Republic of Croatia, provides a comprehensive assessment of the state of the environment, trends and prospects, and an evaluation of the effectiveness of implemented environmental measures. Pursuant to the Environmental Protection Act (OG 80/13, 78/15), the indicator-based *State of the Environment Report* is produced by the CAEN every four years. The MEE submits the Report to the government, which then submits it to Croatian Parliament. Apart from data, trends, current state and some projections, an evaluation of the current policy measures is provided, not only on environmental and nature protection but also on other sectors including energy, industry and transport. The Report also evaluates the environmental impact of various sectors' strategic and planning documents, providing a broad evaluation of the effectiveness of implemented measures across 17 thematic areas.

The CAEN produced the *State of the Environment Report of the Republic of Croatia for the period 2008–2012*⁷, which was adopted by Croatian Parliament in March 2017. This Report, among others, gives data and information about the current state of the mining sector (mineral raw materials) and evaluates the impact of exploitation of mineral raw materials on nature.

According to the Act on Sustainable Waste Management (OG 94/13, 73/17), every three years the MEE submits a progress report to the government on the fulfilment of obligations, compliance with targets, and efficiency of measures laid down in the Waste Management Plan of the Republic of Croatia 2017–2022.

⁷<https://vlada.gov.hr/UserDocsImages/Sjednice/2017/02%20velja%C4%8Da/20%20sjednica%2014%20VRH/20%20-%2011%20a.pdf> (Croatian)

Monitoring and targets

Targets for resource efficiency and circular economy

Croatian waste legislation has incorporated targets prescribed by EU directives. The following are some additional targets.

- The **Act on Sustainable Waste Management** (OG 94/13, 73/17) defines targets according to the requirements of EU directives on waste. Beside those targets, there are additional ones defined by the new **Waste Management Plan of the Republic of Croatia 2017–2022** (OG 3/17), which go beyond the EU requirements. These targets are to:
 - reduce the total amount of municipal waste generated by 5 per cent;
 - separately collect 60 per cent of the mass of generated municipal waste, primarily paper, glass, plastic, metal and biowaste;
 - separately collect 40 per cent of the mass of biowaste generated;
 - dispose of less than 25 per cent of the mass of generated municipal waste in landfill;
 - separately collect 75 per cent of the mass of construction waste.

All these targets are to be achieved by 2022, taking 2015 as a baseline.

Indicators to monitor progress towards a resource-efficient circular economy

The main indicators used to monitor progress towards a resource-efficient circular economy are:

- decoupling material consumption from economic growth;
- resource productivity;
- domestic material consumption (DMC), DMC per person, DMC per unit of gross domestic product (GDP);
- decoupling economic growth from the environmental pressures of emissions of greenhouse gases (carbon dioxide equivalent), acidifying emissions (sulphur dioxide equivalent) and ground-level ozone precursors (non-methane volatile organic compounds equivalent);
- number of companies implementing an environmental management system (ISO, EMAS).

These indicators can be viewed separately, but some of them use the same data.

The indicators are published in: *The State of the Environment Report of the Republic of Croatia, 2014*⁸ (2009–2012) and *The Selected Environmental Indicators, Nature*⁹ (Odabrani pokazatelji okoliša i prirode u Hrvatskoj, 2016) which are published only in Croatian, and in the Croatian Agency for the Environment and Nature's annual publication *The Environment in Your Pocket*¹⁰.

The Waste Prevention Plan (Chapter 9 and Table in Annex 12.4 of the new Waste Management Plan, OG 3/2017) lists measures and indicators through which the success of the implementation of the Plan can be directly monitored. These include:

- waste production intensity – decoupling economic growth from waste generation;
- reduction of the total amount of construction waste generated;
- reduction of the amount of food waste that ends up in landfill;
- reduction of the total amount of biowaste;
- increase in the number of households composting their own waste.

⁸ <http://www.haop.hr/?t=16&id=5462> (Croatian)

⁹ <http://www.haop.hr/?t=16&id=7012> (Croatian)

¹⁰ <http://www.azo.hr/Publication08> (Croatian)

Currently, municipal waste is monitored and it is planned to collect data on the number of home-composters distributed to households by municipal waste companies – this started in 2016, supported by the Environmental Protection and Energy Efficiency Fund.

The Croatian Agency for the Environment and Nature has developed and published a list of indicators – The National List of Indicators (NLI)¹¹, 2015 revision 3. The NLI is made up of a set of datasheets with detailed methodology for the development of the state-of-the-environment indicators. It is a professional tool of the Croatian Agency for the Environment and Nature and its collaborating institutions for monitoring state-of-the-environment and environmental reporting in Croatia. In cooperation with the competent authorities and professional scientific institutions, the NLI is regularly updated and published on the Agency's website according to the Environmental Protection Act (O.G. 80/13, 78/15). There are defined datasheets for creating material flow account (MFA) indicators, such as material productivity and domestic extraction used.

Resource efficiency, circular economy and the 2030 Sustainable Development Goals

According to the Environmental Protection Act (OG 80/13, 78/15), the MEE has drafted a new Environmental Protection Plan of the Republic of Croatia for 2017–2024. Public consultations were held in December 2016, and the Plan was to be adopted by the end of 2017. This Plan sets out the thematic priorities, specific goals and key measures that need to be implemented at national, regional and local levels. These priorities are:

- I. protection, preservation and enhancement of natural resources and environmental value;
- II. encouraging sustainable consumption and production;
- III. protection of citizens from environmental pressures and health risks;
- IV. strengthening the institutional and legislative framework and cooperation with stakeholders;
- V. improving the knowledge base, information management system and environmental policy;
- VI. development of economic instruments and environmental protection finance;
- VII. improving urban sustainable development;
- VIII. promoting environmental protection for sustainable development at the European and global levels.

The new Plan also proposes measures to achieve the United Nations Sustainable Development Goals (SDGs) by 2030. The new Plan proposes measures for encouraging innovation, research and green technology, and sustainable consumption and production (food, buildings, agriculture, forestry and tourism), as well as systematically increasing knowledge of sustainable development in general. The new Environmental Protection Plan includes measures to achieve SDG Targets 8.4 and 12.2.

The measures for Target 8.4 are:

- implementation of a 10-year framework for sustainable consumption and production programmes;
- transition from a linear to a circular economy, highlighting waste management;
- green public procurement;
- decreasing the environmental footprint of products, services and organisations.

The measures for Target 12.2 are:

- sustainable nature management;
- sustainable management and protection of landscapes;
- sustainable water management;
- sustainable marine and coastal management;
- management and monitoring of air quality;

¹¹ <http://www.haop.hr/?id=5641> (Croatian)

- sustainable forest management;
- sustainable management and protection of land.

Examples of innovative approaches and good practice

Examples of good practice and innovative approaches

- The Croatian government adopted the **National Action Plan for Green Public Procurement for the period 2015–2017 with the view till 2020** (NAP/GPP) in August 2015. This Action Plan is set out on the principles of the circular economy. Its purpose is to encourage the procurement of products and services with lower environmental impacts. Public administration bodies can make an important contribution to sustainable development if they choose products and services with lower environmental impacts. In this way, sustainable consumption and production are promoted, and public administration bodies can reduce their environmental footprint. Examples include procurement of energy-efficient computers, energy-efficient lighting, wooden office furniture from sustainable sources, recycled paper, and cleaning services using ecological cleaning products. There are defined priority groups of products and services for green public procurement: printing and copy paper, motor vehicles, electricity, cleaning services, telecommunication and mobile telephone services together with devices, office and IT equipment. The Plan's goal is to implement green public procurement measures for 50 per cent of public procurement by 2020. The MEE is responsible for green public procurement.
- Between June 2016 and July 2017, the Croatian Agency for the Environment and Nature established a Waste Prevention Portal¹². This aims to contribute to the achievement of waste prevention objectives through the exchange of information and good practice between competent bodies, business entities and citizens. The Portal is a central online site with key information on possibilities, measures and activities to prevent waste generation. Special attention is paid to the collection of data on prevention measures by local government and its cooperating companies. During 2017, data on the activities carried out by local government were collected through survey. Currently the Waste Prevention Portal is available only in Croatian.
- The Environmental Protection and Energy Efficiency Fund financed the development of **Guidelines for Reuse in the Republic of Croatia** (2016). The guidelines currently concentrate on four major product groups that can be reused:
 - 1) Items in extended producer responsibility (EPR) systems:
 - a) electrical and electronic devices.
 - 2) Items outside manufacturer/producer extended responsibility systems:
 - a) textile, clothing and footwear;
 - b) furniture;
 - c) consumer goods.

These Guidelines for establishing a reuse system are intended for all stakeholders in the waste management system and aim to promote and develop a system of reuse. At the local level, the Guidelines provide all stakeholders with access to basic collection models for useful items, and potentially some of them will be interested in developing projects independently or in partnership with other local stakeholders. Finally, the Guidelines provide direct advice and models for the establishment of reuse centres in Croatia, no matter who develops them¹³.

¹² <http://sprjecavanjeotpada.azo.hr/> (Croatian)

¹³ http://www.fzoeu.hr/docs/_v28.pdf (Croatian)

- The Croatia Green Building Council¹⁴ was formed in 2009 by 24 reputable companies and institutions as a not-for-profit organisation and in May 2010 it was formally registered in Croatia. Its objective is to guide the transformation of Croatian construction towards sustainability by promoting green building programmes and technologies, as well as integrating knowledge, experience and insights into the design, construction and management of buildings. The effects of green building are multiple:
 - reduces waste and encourages reuse of materials through recycling;
 - protects water resources;
 - represents an intelligent approach to energy;
 - takes every stage of the life cycle of a building into account.
- The city of Zagreb, Croatia's capital, also co-finances reconstruction of building facades. The renovation project includes all multi-residential buildings in the entire city area. The refurbishment of the street facade is co-financed, with the city providing 80 per cent of the required funds for street facades and 60 per cent of other facades.
- An international conference, Circular Economy in Urban Areas, was held in Poreč from 31 May to 2 June 2017, organised by the *Tehnoeko* journal. The aim of the conference was to exchange experiences of experts from different areas important for city life and encourage complementarity of projects. Discussions covered circular waste management, energy supply, urban wastewater treatment, urban planning and sustainable transport, and other circular economy issues.
- The Third Regional Conference on Environmental Impact Assessment was held in Vodice in September 2017. The Conference was organised by HUSZPO, a non-governmental and not-for-profit organisation established in 2004 by respected legal entities and individuals, all practitioners in the fields of environmental and nature protection. The idea of the Conference was to gather stakeholders from different aspects of environmental and nature protection and enable them to share their knowledge, experience and views through constructive dialogue. The Conference covered:
 - strategic environmental impact assessment (SEA);
 - environmental impact assessment (EIA);
 - nature protection and sustainable use of natural resources;
 - public participation;
 - environmental protection and project financing.

Two papers on circular economy were presented at the Conference: *Synergy of Circular Economy and Environmental Impact Assessment* and *Considering the possibilities of waste management on the principles of circular economy in the sector of tourism*.

Seeking synergies with other policy areas

The **Industrial Strategy of the Republic of Croatia 2014–2020**¹⁵ (OG 126/14), unlike other sectoral strategies, is significantly related to different policy areas and dependent on other strategic documents. Determining this connection or co-benefit is especially important in the implementation process where one of the fundamental challenges is the clear definition of responsibilities and powers of certain stages of the process. The Strategy identifies areas that largely determine competitiveness, namely innovation, investment, entrepreneurship and education. One of the key priority areas is strengthening cooperation between industry and education, science and technology. The system of education and science should be adapted to the needs of new technologies and the green economy, covering advanced manufacturing technology, bioproducts, energy and resource efficiency.

¹⁴ <http://www.gbccroatia.org/> (Croatian)

¹⁵ <http://www.mingo.hr/page/kategorija/industrijska-strategija-republike-hrvatske-2014-2020> (Croatian)

The MEEC developed **Guidelines No. 2 – Selection Criteria for the Best Economic Offer**¹⁶, in June 2017. These Guidelines state that other criteria besides price may be used, such as quality, technical advantages, functional and aesthetic properties, ecological characteristics and after-sale services and technical assistance. The term ecological characteristics implies the amount of environmental effects of the production and use of products during their life cycle. These features may be related to material production, energy consumption, air pollution, packaging, etc. The Guidelines also recommend the evaluation of production and processing of food following the principles that support the creation of added value in terms of lower environmental loads (shorter transport distances, fewer packaging materials or packaging made of environmentally acceptable and recycled materials, etc.).

The National Action Plan for Green Public Procurement for the period 2015–2017 with the view till 2020 (NAP/GPP) suggests acquiring equipment with lower environmental impacts, for example electrical, electronic and IT equipment – this also affects the characteristics of imported goods. Some of the criteria for telecommunication and mobile devices include replacement components to extend the equipment's lifetime; specify that components be easily separable, making recycling easier; and stipulate that at least 80 per cent of material used in packaging be recycled.

The Ordinance on by-products and end-of-waste status (OG No. 117/14) provides for companies to register materials as by-products – there are around 150 by-products on the Register operated by the MEE in 2017. End-of-waste status was approved by the MEE for around 20 types of materials which were placed on the Register in 2017.

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

There are several examples of good environmental practice and innovative approaches in Croatia that could serve as an example at a local level.

- Ponikve Eco Island Krk¹⁷ is an ecologically based system for the management of municipal waste, which provides an integrated model of waste disposal, the first of its kind in Croatia. In 2015, the municipality achieved the separation and preparation for reuse and the recycling of 50 per cent of municipal waste – meeting the 2020 target under the Waste Framework Directive. Great importance is given to the promotion of the system and the education of users. Ponikve Eco Island Krk is operated by seven local government units.
- Another good example of systematic education, awareness raising and waste separation at a local level is PRE-KOM in Prelog¹⁸. PRE-KOM is a public utility owned by the city of Prelog and eight municipalities in Međimurje County. PRE-KOM runs educational workshops in kindergartens and primary schools; with continuous educational activity, better results in waste management are being achieved in nine local government units (Donje Međimurje). In 2016, 56.27 per cent of waste was separately collected in Donje Međimurje – meeting the 2020 target under the Waste Framework Directive. Additionally, the first reuse centre open to the general public in Croatia was opened in Prelog in May 2017. This enabled Prelog to become the first local government unit with a complete waste hierarchy. Furniture, clothing and shoes, and consumer goods including kitchen utensils, books, toys, and children's and sports equipment, which are usually disposed of in landfill, are collected, stored and refurbished in this reuse centre. Many of these goods are still usable but need repair or renovation after which they can be reused. At the reuse centre, items are cleaned and repaired before being re-sold, with the payment only covering the repair costs. Collection, storage and refurbishment are financed by the municipal

¹⁶ http://www.javnabava.hr/userdocsimages/Smjernice_01-ENP.pdf (Croatian)

¹⁷ <http://www.ekootokkrk.hr/en> (English)

¹⁸ <http://www.pre-kom.hr/> (Croatian)

waste company. Prelog is a leader in waste management and a model for other counties, cities and municipalities.

- A good example of a local-level reuse initiative is the Humana Nova cooperative¹⁹, a company that pays great attention to social, environmental and economic problems in Međimurje County. Its focus is on textile waste that is collected, classified, re-distributed and sold in stores. Due to the complexity of the collection process, there is a great need for incentives. Such ventures are financed exclusively through the sale of reusable items or materials that can be recycled. The cooperative has so far collected 844 tonnes of clothing and footwear, reducing carbon dioxide emissions from the decomposition of textiles in landfill by 3,038 tonnes. Additionally, by replacing the need for the production of new raw materials, the cooperative has reduced freshwater use by 5 billion litres, fertiliser use by 253 tonnes and pesticides by 168 tonnes. As the cooperative also cares about the community, it has donated goods and services to 100 families and 20 local organisations. The cooperative members are the Association of the Blind of Međimurje County, the Association of People with Intellectual Disabilities of Međimurje County, the Association of Physically Disabled Međimurja, the Muscular Dystrophy Association, the Cerebral Palsy and other Physically Disabled Association, and several individuals.
- The Environment Protection and Energy Efficiency Fund co-finance local government projects for constructing and equipping recycling yards. These free-to-use yards are an important constituent in the municipal waste management system to ensure separate collection of hazardous waste, paper, metals, glass, plastics, textiles and bulky municipal waste. The purpose of these projects is to increase the amount of separately collected municipal waste and reduce landfill.

Other resources

Examples of policies which go beyond “material resources”

The **Strategy for Sustainable Development** of the Republic of Croatia (OG 30/09) contains the basic principles and criteria for determining goals and priorities that will ensure the country’s sustainable development. Promoting sustainable consumption and production is one of the main principles in directing Croatia towards sustainable development. The principles of sustainable consumption and production can be applied in many sectors in order to reduce the consumption of natural resources, emissions to air, water and soil, and waste generation.

The MEE drafted a new Environmental Protection Plan of the Republic of Croatia for the period 2017–2024 for adoption by the end of 2017. The circular economy is specifically mentioned in the new draft. This Plan and proposed measures will support a resource-efficient circular economy in a broader sense that goes beyond material resources. The Plan highlights the most important environmental challenges in Croatia: reducing the environmental footprint of consumption and production, waste management, water management and protection, biodiversity conservation and climate change. The Plan should contribute to reducing the country’s environmental footprint and greening the economy, which will create opportunities for the creation of new green jobs.

¹⁹ <http://www.humananova.org/en/home/> (English)

The way forward

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

The transition from a linear to a resource-efficient circular economy requires specific knowledge and approaches. A resource-efficient circular economy is very complex, so better cooperation between sectors is needed, especially because of divided competences. For example, the MEEC is responsible for mining and industry while the MEE looks after waste management. Strengthening of the policy framework is needed to accelerate the uptake of a circular economy by all economic sectors. Lack of efficient cooperation with some sectors can be an obstacle for policy implementation and achieving objectives.

Another barrier is the lack of a systemic approach to ensuring that all sectors consistently implement policy and measures. Another important element is a lack of the necessary infrastructure for policy to be implemented. Reasons for that include a lack of financial resources and sometimes slow administrative procedures. Competent institutions, the MEE, the CAEN and some local government units work on education and awareness, but it could always be improved. A good example is the large number of conferences on the circular economy (see section 'Examples of good practice and innovative approaches'). Constant education and information about best practice and good examples are of the utmost importance. Furthermore, support and more investment in research and eco-innovation are necessary, as the 2015 share of the budgetary appropriations or outlays for research and development in Croatia was a modest 0.8 per cent of GDP.

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