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

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

July 2019

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Acknowledgements

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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.

Hungary, facts and figures

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

GDP: EUR 124.1 billion (0.8 % of total EU28 in 2017)

GDP per capita: EUR 12,700 (purchasing power standard) (42.2% of EU28 average per capita figure in 2017)

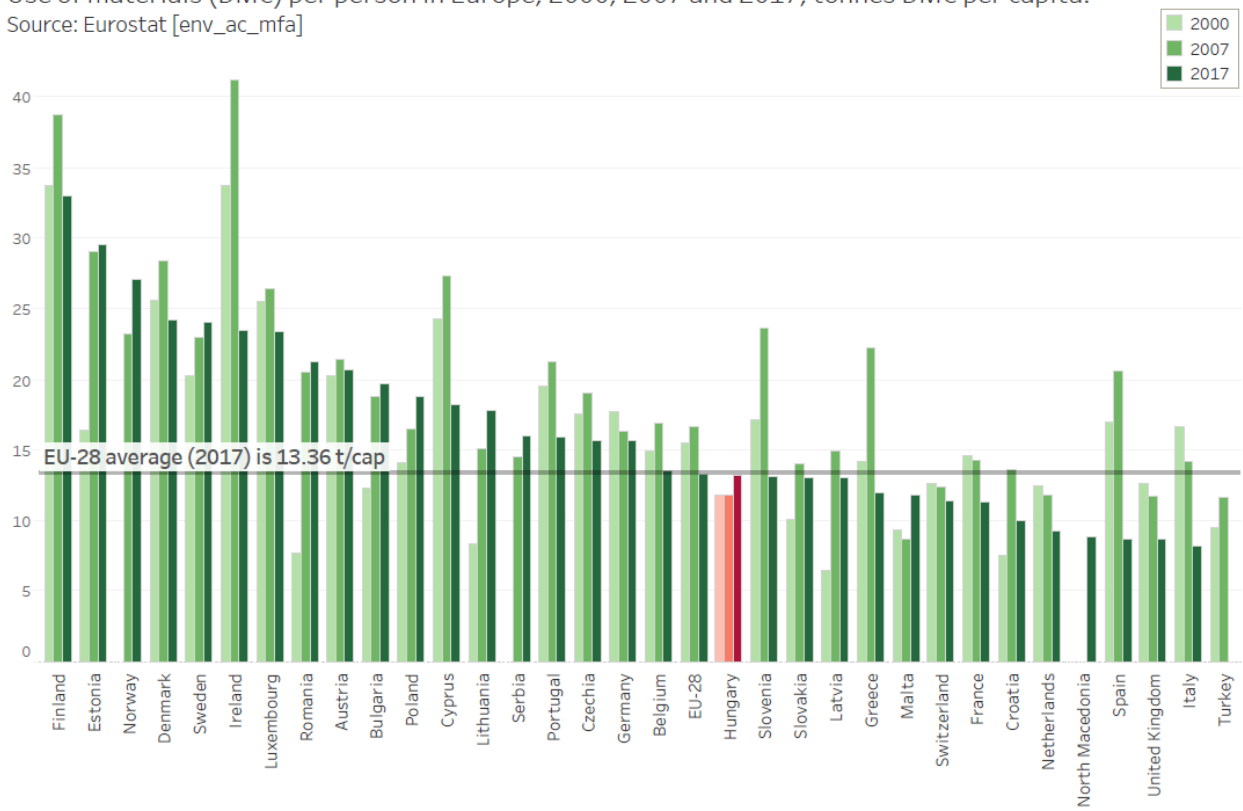
Use of materials (domestic material consumption (DMC))
129.3 million tonnes DMC (1.9 % of EU28 total in 2017)
13.2 tonnes DMC/capita (98.9 % of EU28 average per capita in 2017)

Structure of the economy:
agriculture: 4.4 %
industry: 30.3 %
services: 65.3 %

Surface area: 93.0 thousand square kilometres (km^2) (2.0 % of total EU28)

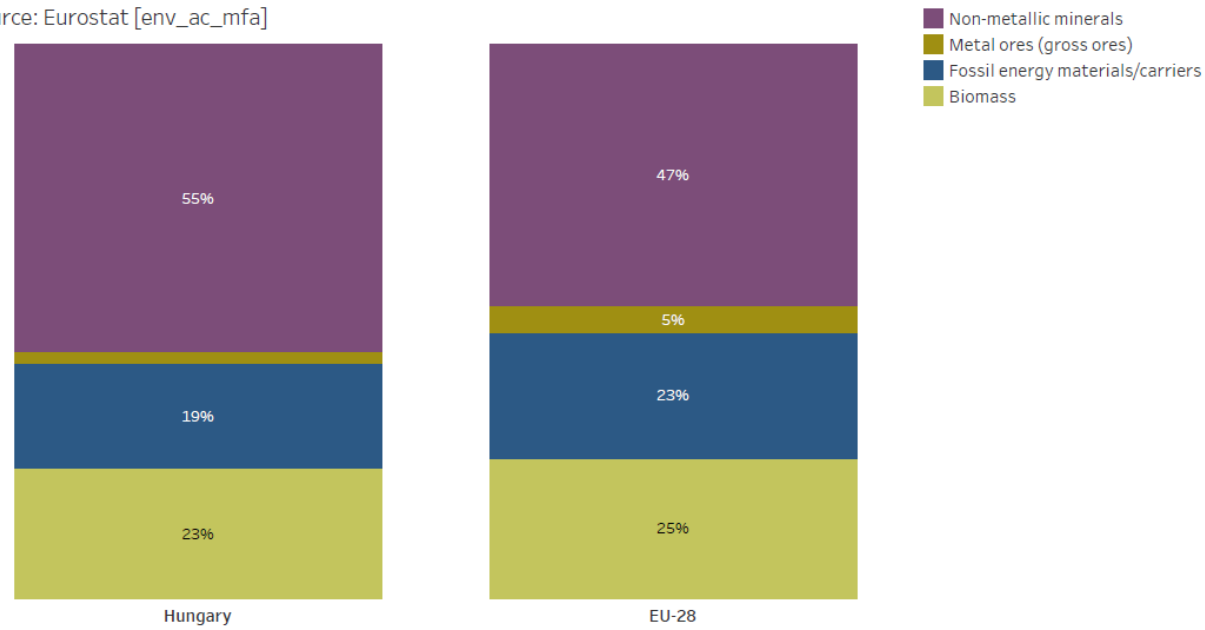
Population: 9.8 million (1.9 % of EU28 total in 2017)

Use of materials (DMC) per person in Europe, 2000, 2007 and 2017, tonnes DMC per capita.
Source: Eurostat [env_ac_mfa]



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

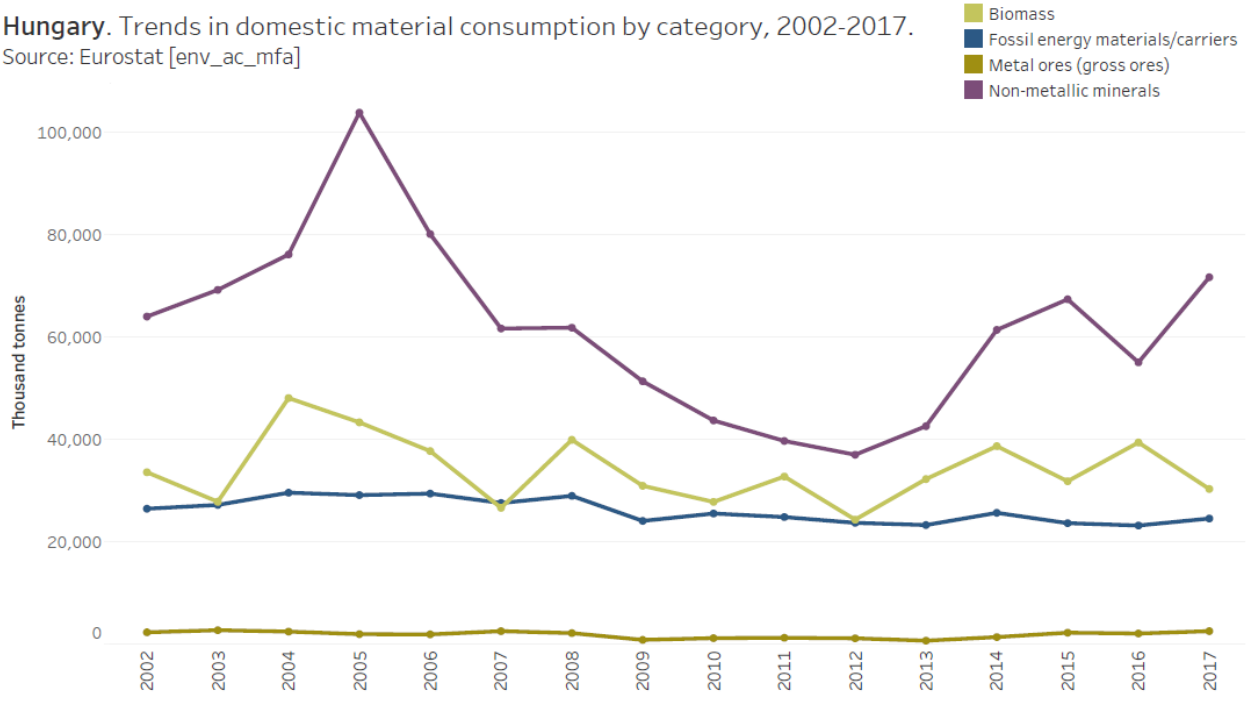
Source: Eurostat [env_ac_mfa]



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

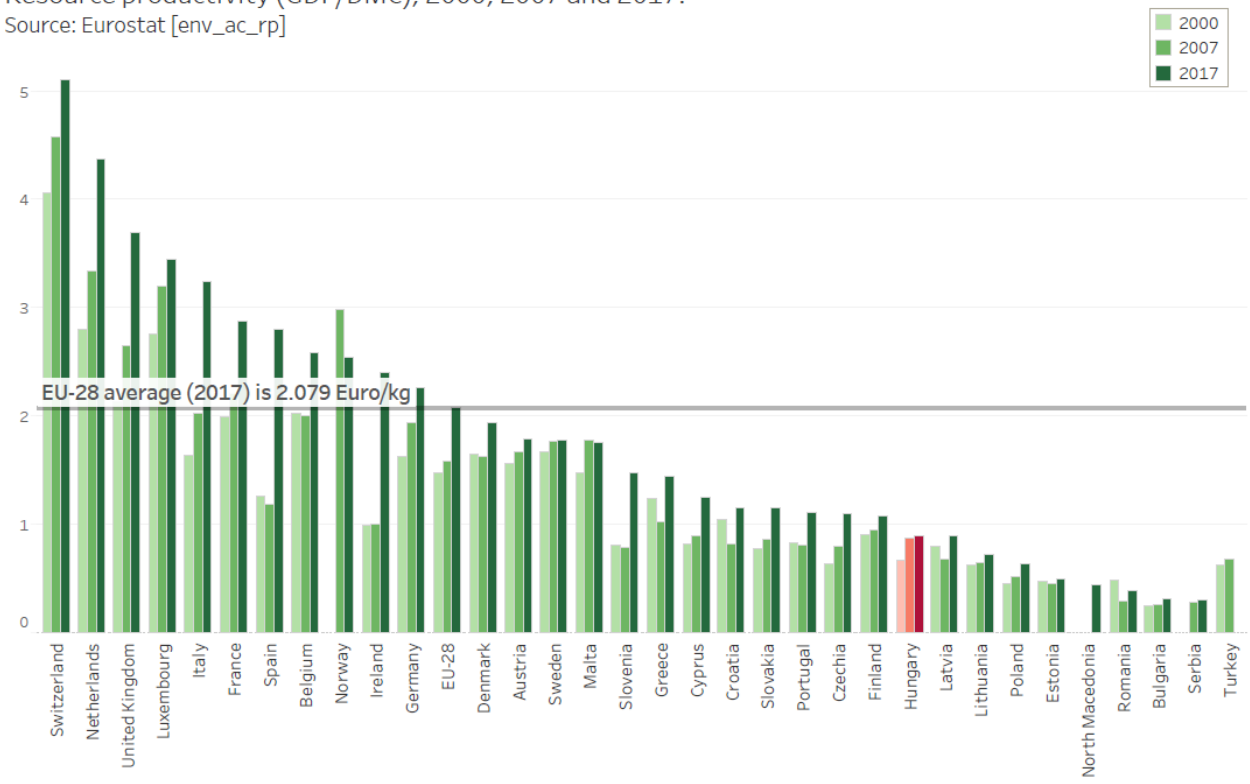
Hungary. Trends in domestic material consumption by category, 2002-2017.

Source: Eurostat [env_ac_mfa]



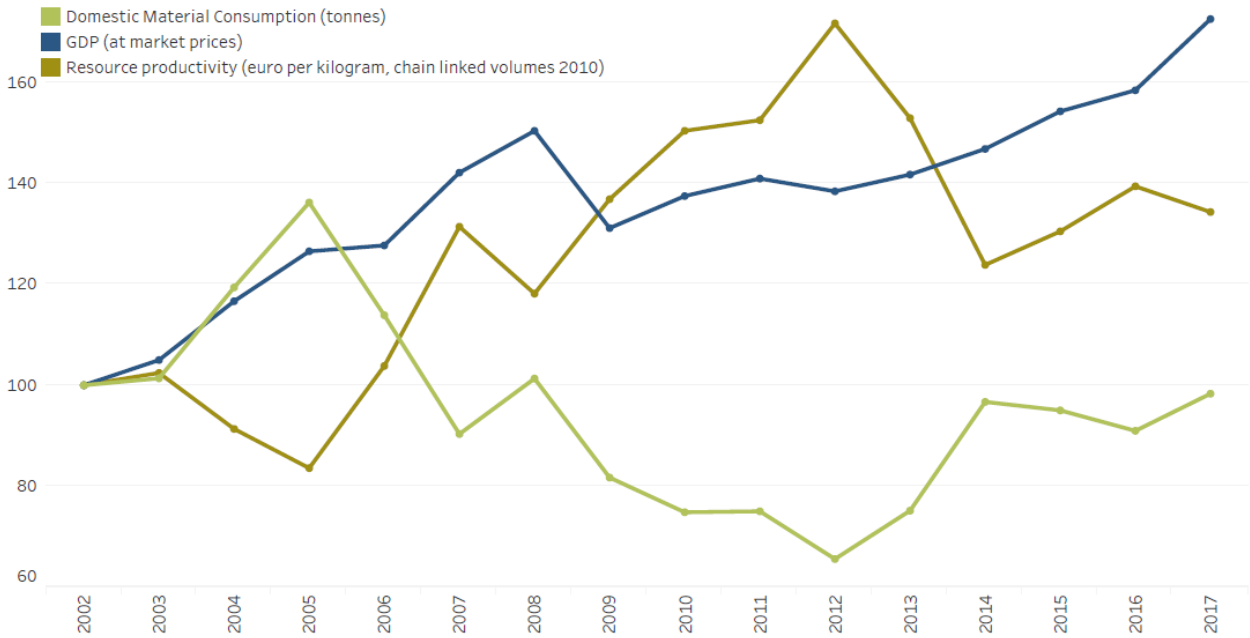
Note: The domestic material consumption categories 'other products' and 'waste for final treatment and disposal' are excluded from the figure.

Resource productivity (GDP/DMC), 2000, 2007 and 2017.
Source: Eurostat [env_ac_rp]

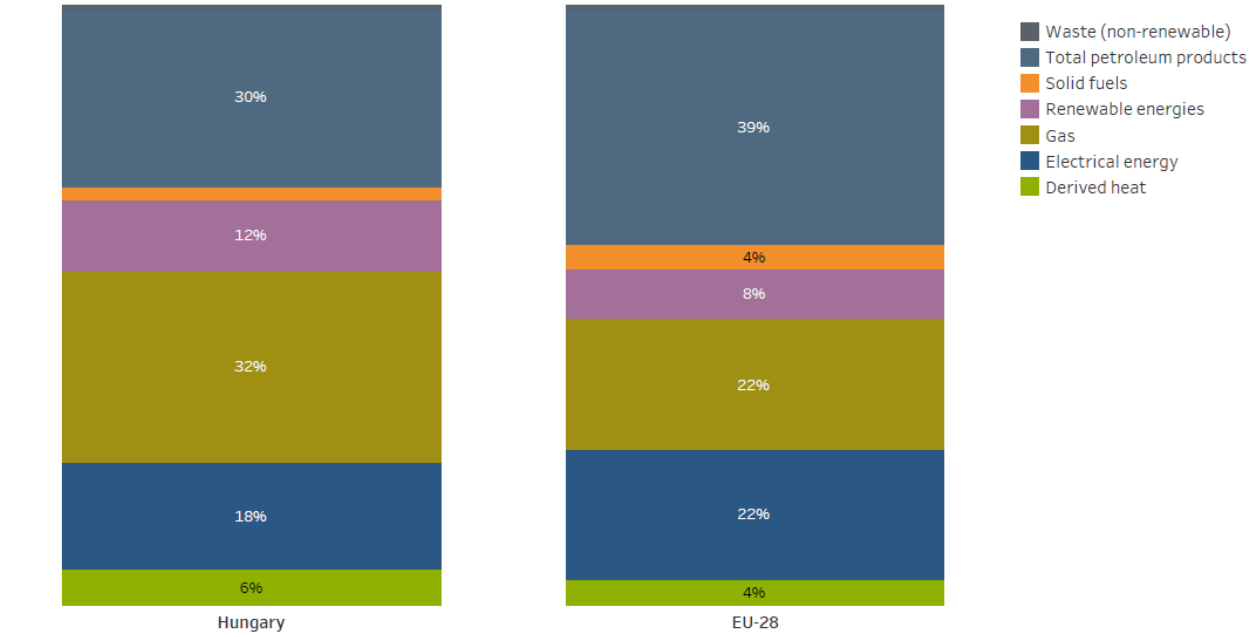


Note: GDP expressed in chain linked volumes 2010.

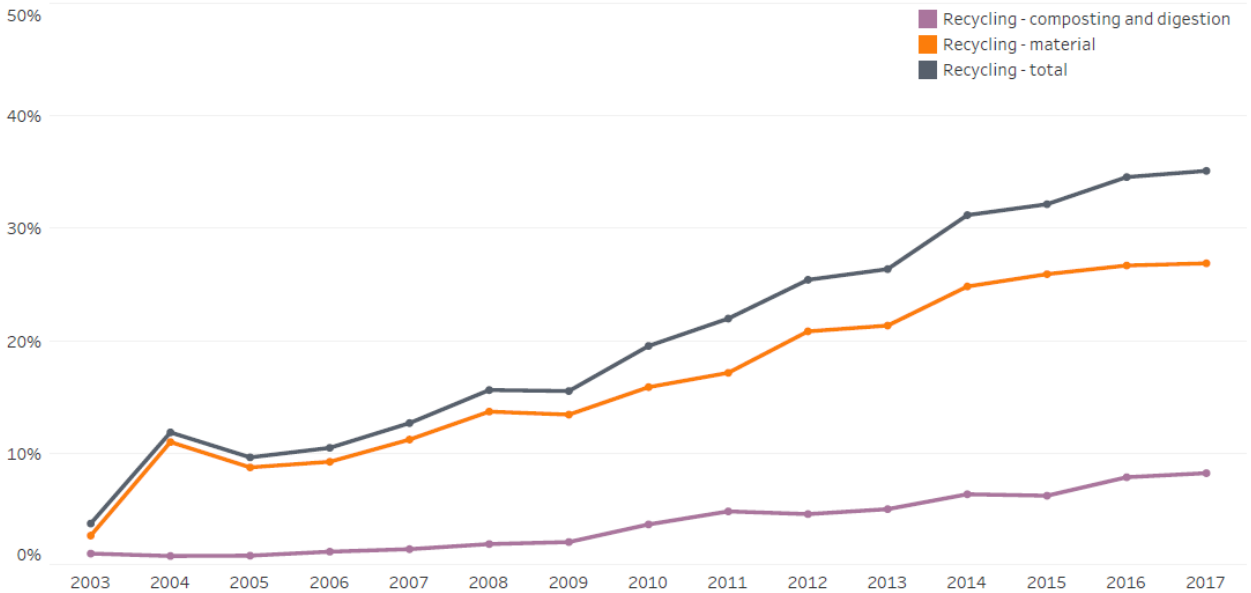
Hungary. GDP, DMC and resource productivity trends, 2002-2017, index 2002=100.
Source: Eurostat [env_ac_mfa], [env_ac_rp] & [nama_10_gdp]



Hungary & EU-28. Primary energy consumption by energy product, 2016.
Source: Eurostat [nrg_100a]



Hungary. 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

For Hungary, the rationalisation of resource management is an important issue since the country is poor in raw materials, relies on energy and material imports, and is increasingly dependent regarding certain resources. The conscious, efficient and effective management of resources, the avoidance of overexploitation and the mitigation of environmental impacts resulting from use are key issues from the social, environmental, security of supply and competitiveness points of view. Greater resource efficiency in production and clean, environmentally conscious production have competitive advantages in themselves (4th National Environment Programme (NEP)).

The importance of environmentally sound technologies that protect the environment, pollute less and use resources in a more sustainable manner has to be emphasised (National Environmental Technology Innovation Strategy (NETIS)).

Ecosystem services provided by natural resources – whether in nature- or human-regulated ecosystems – have direct and indirect benefits for society. Amongst the benefits are provisioning services (food, animal feed, raw materials), regulating services (climate stabilisation, pollination, flood control), supporting services (nutrient cycling, soil formation), and cultural services (recreation, education, art inspiration) (National Framework Strategy on Sustainable Development (NFSSD)).

In the field of forest management, it is important to support the increasing supply of wood to promote the sustainable use of wood as a climate friendly, renewable material. The forestry programme strongly supports natural forest management methods as effective tools for resource efficiency. A separate section on this topic is given under Question 4 (National Forest Strategy).

Regarding security of supply, sustainable energy management must strike a balance between environmental (resource-efficient, climate-neutral), social (secure, accessible, non-harmful to health) and economic (cost-effective) considerations (National Energy Strategy 2030).

Increasing the employment rate and competitiveness of the country are also major economic and social drivers (National Reform Programme 2017 of Hungary (NRP2017[1])). Consistency between the NRP2017 and the EC Partnership Agreement with Hungary, with its 11 thematic objectives, includes an objective related to the protection of the environment and the promotion of resource efficiency. It emphasises that the focus of development is on strengthening environmental protection in agriculture and the development of water utilities for agriculture and rural development, aligning with the Water Framework Directive, the development of wastewater management systems, and the development of the urban environment. Developments regarding waste management support the competitiveness of small and medium-sized enterprises (SMEs) and employment, and are thus closely connected to the NRP2017.

Since Hungary is heavily dependent on imports of raw materials and energy, it is vital to turn towards a circular economy to reduce dependency on external resources and the fluctuation of global energy prices. However, as yet there is no dedicated national strategy. Circular economy is currently covered by several other policy instruments that are mentioned in this document.

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

A dedicated national resource efficiency strategy does not yet exist in Hungary. However, comprehensive national policies for natural resources are dealt with in a dedicated section of the NFSSD. Its 2015 and

[1] http://ec.europa.eu/info/sites/info/files/2017-european-semester-national-reform-programme-hungary-hu_0.pdf (Hungarian)

2017 progress reports include a performance evaluation and specific indicators. The Ministry of Agriculture/government has decided that the circular economy shall be managed together with material resource efficiency.

The 4th NEP is the overarching environmental policy giving high priority to resource efficiency. In addition, resource efficiency is highlighted in other sectorial policies, for example NETIS, the National Waste Management Plan (NWMP) and Waste Prevention Programme (WPP), the National Forest Strategy (NFS), the National Energy Efficiency Action Plan and Renewable Energy Action Plan 2010–2020 (NREAP) (non-exhaustive list). Further information can be found in section 'Policies which include elements of material resource efficiency'.

Work has been ongoing in the Ministry of Agriculture regarding the EU's Circular Economy Package, including the Waste Directives and the Action Plan, since 2015. Moreover, the Ministry has hosted several meetings of governmental experts and taken part in professional forums concerning the implementation of a circular economy. Based on the outcomes of these meetings, an expert group has been established to prepare future action. In 2018, the task and responsibilities concerning the Circular Economy Package were transferred to the Ministry for Innovation and Technology in the frame of a governmental reorganization. The Ministry still intends to set up an action plan for circular economy in Hungary.

Overview of dedicated national or sectoral strategies for raw materials

There is no dedicated national or sectoral strategy for raw materials in Hungary. An action plan is in preparation, which deals with the management and utilisation of mineral resources, particularly energy resources, and partially with secondary resources, for example the extraction of rare Earth elements from tailings. This action plan follows the logic of the yearly list of critical materials of the European Commission (EC).

<u>The National Forest Strategy (2016–2030)</u>

The importance of implementing sustainable forest management has been discussed, defined and supported as a common goal by several international organisations including the United Nations, the Food and Agriculture Organization of the United Nations (FAO), the EU and others, for decades. Sustainable forest management ensures the conservation and enrichment of forests, taking the impacts on forest ecosystems and habitat of both natural factors and human intervention into account. Further, it assists and enables the maintenance of forests' multiple functions, having an impact on environment, society and economy. **Sustainable forest management** thus makes a large contribution to:

- reducing the impacts of climate change;
- conserving biological diversity;
- producing wood as a renewable raw material and source of energy;
- eradicating poverty through the benefits received by doing forestry works;
- protecting healthy food;
- provisioning clean potable water;
- improving the environmental conditions of the country and consequently enhancing and maintaining the quality of human life.

Regarding wood as a raw material, the National Forest Strategy partially covers national raw material resources, calling on stakeholders to conduct sustainable forest management (Chapter 7 on rational forest use). The Strategy addresses the sustainable production of wood rather than its end use. Sustainable forest management and forest-related land use have three main requirements:

- replant forests (only) in place of harvested/cleared forest, thus ensuring continuous land cover and enhancing climate change mitigation – alongside promoting biodiversity;
- ensure forest degradation neutrality and/or improvement in the state of forests;
- fulfil expectations regarding the forest's purpose – recreation, economy, nature conservation, etc.

There has been an overall increase in Hungary's woodland cover, not only forests but other wooded land-cover types as well, according to FAO classification, in order to provide wood biomass as fuel for green energy in parallel with EU targets for renewable energy production. The National Forest Strategy sets a target of 27 per cent tree cover of the country's total area (recent coverage is 21 per cent), to be continuously maintained in the middle and long terms (an exact timeline has not been set). With the 27 per cent target Hungary aims to reach the EU average while avoiding any impact on food security. The National Territorial Plan (Országos Területrendezési Terv) is in line with the Strategy and sets a similar goal for national woodland cover. Beyond forests, other types of tree cover such as short rotation coppice (one of the ecological focus areas of the EU Common Agricultural Policy's Greening regulations) may also contribute to renewable energy fuel sources.

The Strategy prioritises the planting of native tree species where feasible. In certain areas, however,, acacia – an alien species that was imported and planted in large numbers in the 18th century and became an essential part of the semi-natural landscape – is among the major planted forest species due to geographical conditions. In addition, climate change is a major challenge for sustainable forest management, therefore climate change-resilient varieties (within species) play a special role in climate change adaptation in forestry.

In Hungary, the growing stock in forests is constantly expanding, sequestering carbon at the rate of approximately 4 million tonnes of carbon dioxide per year. This contributes significantly to mitigating the effects of climate change and air pollution.

Policies which include elements of material resource efficiency

The 4th **National Environment Programme** (27/2015 (VI.17) Parliamentary Decision, 4th NEP) is the overarching environmental policy giving high priority to resource efficiency. The Programme aims to improve resource efficiency in different sectors, defines specific targets and facilitates a life-cycle approach. The main strategic objectives are protection and sustainable use of natural assets and resources, improving resource efficiency and promoting a green economy. The aim is to facilitate the efficient management and sustainable use of natural resources while considering the prevention of pollution and the loading/regeneration capacity of the environment. According to the provisions of the Programme, particular attention should be paid to the decoupling of socio-economic development from environmental pressures – the well-being of the population should be increased in a way that facilitates the reduction of environmental impacts.

Resource efficiency is also highlighted in other sectoral policies, for example the National Environmental Technology Innovation Strategy (NETIS), National Waste Management Plan (NWMP) and Waste Prevention Programme (WPP), National Framework Strategy on Sustainable Development (NFSSD), National Forest Programme (NFP), National Energy Efficiency Action Plan and Renewable Energy Action Plan 2010–2020 (NREAP) (non-exhaustive list).

The 4th NEP and NETIS highlight the importance of stimulating green/sustainable public procurement, especially concerning eco-innovation, eco-design for sustainable goods and services, energy and resource efficiency, and non-hazardous technology and products. There are nine areas in NETIS – horizontal-type technological innovation; waste; water; air; noise and vibration; agriculture and soil protection; remediation; renewable energy; and construction – in which reaching set targets could facilitate the shift to a green economy. Resource efficiency and material and energy management all have to be taken into consideration if these targets are to be reached.

The NETIS deals with specific issues such as product technologies, process technologies, know-how, procedures, goods and services, equipment, and organisational and managerial procedures. The NETIS is connected to the EU thematic Strategy on the Sustainable Use of Natural Resources, which provides a

broad strategy to reduce the negative environmental impacts of using natural resources. The vision and objectives of the Strategy are to:

- foster environmental industry and technology;
- increase the share of environment-related innovation and competitiveness;
- achieve a paradigm shift from end-of-pipe to prevention;
- increase effectiveness;
- decrease primary material use;
- increase reuse/recycling and improve resource-efficient services.

The National Framework Strategy on Sustainable Development 2012–2024 addresses resource efficiency in the context of the green economy and supports investment in resource efficiency. One of the focus areas is the selective collection of construction waste and the improvement of resource efficiency during planning. The Waste Prevention Programme (WPP) forms part of the National Waste Management Plan **(**NWMP).

Other strategies and policies that include resource efficiency are:

- the New Széchenyi Plan for green development[2];
- the National Building Energy Strategy (NBES) 2015–2020[3] for sustainable resource use in the building sector;
- the National Energy Strategy 2030, for sustainable use of energy resources;
- the National Energy Efficiency Action Plan to 2020[4];
- the National Renewable Energy Action Plan 2010–2020;
- Hungary's National Reform Programme 2015 under the Europe 2020 strategy[5].

The Ministry for National Economy adopted the so called **Irinyi Plan** on innovative industry development in Hungary. Point 1.5 of the Irinyi Plan concerns the Extension of the National Industrial Symbiosis Programme/circular economy, and sets out the following:

'Industrial symbiosis has been recognised as one of the most important driving forces of job creation, green economy, eco-innovation and resource efficiency. It is one of the features of this symbiosis that it transforms production systems by making them similar to biological systems. In these systems, there is generally no waste and each material and resource have their own place. Traditional industrial production generates a large amount of waste, but the side products and waste of the companies involved in such symbiotic systems are all utilised. That is why the resource and energy efficiency of production increases. The synergies created with the principles of industrial symbiosis lead to easily detectable environmental results. The reduction of carbon dioxide emissions contributes to the achievement of EU and national objectives undertaken in environmental protection. The state must play the role of a catalyst in the development of an industrial symbiosis.'

A green and circular economy promotion plan is currently in preparation in compliance with the goals of the Irinyi Plan.

[2] http://palyazat.gov.hu/new_szechenyi_plan (English)

[3] http://www.kormany.hu/download/d/85/40000/Nemzeti%20E%CC%81pu%CC%88letenergetikai%20Strate%CC%81gia%20150225.pdf (Hungarian)

[4] http://www.kormany.hu/download/1/25/80000/IIINemzeti%20Energiahatékonysági%20Cselekvési%20Terv_HU.PDF (Hungarian)

[5] http://ec.europa.eu/europe2020/pdf/csr2015/nrp2015_hungary_en.pdf (English) and https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/european-semester-your-country/hungary_en (English)

After the revision of the National Waste Management Plan (NWMP) in 2018, the preparations of the plan for the next period are ongoing in parallel with legislation work concerning the EU Circular Economy Waste Package.

Institutional setup and stakeholder engagement

Prime Minister's Office

The Prime Minister's Office is responsible for Governmental Offices nationally, as the establishment of such offices was part of simplifying public administration and making it more citizen-friendly. As an example, Government Windows are access points to the government enabling citizens or companies to direct enquiries straight to a government representative. The Prime Minister's Office also administers the European Inter-ministerial Committee (EKTB), which provides a platform through which government officials can share, oversee and accept EU-related documents. It also serves as a forum for professional discussion.

Ministry of Agriculture

In Hungary, the Ministry of Agriculture is responsible for the majority of environment-related issues. As such, the Ministry is responsible for formulating the strategic and regulatory framework for waste and chemicals management and for creating environmental protection strategies. The Ministry of Agriculture operates the Waste Information System (WIS)[6] which is the basis of the data supply for Regulation EC 2150/2002.

Ministry for Innovation and Technology

The Ministry of National Development is responsible for the waste management in general: legislation, organisation, strategical planning, data supply. Furthermore, for the organisation, control and professional leadership of public services in the field of waste management, and is also in charge of energy, mining and mineral resource policy.

Ministry of Human Capacities

Chemicals management is a vital part of the circular economy. The Ministry of Human Capacities has standalone responsibility for chemical safety as well as a shared responsibility with the Ministry of Agriculture for chemicals management and regulation.

The **Hungarian Central Statistical Office** is the institution responsible for actual data supply to Eurostat and for the compilation of the national report. This Office and the Ministry of Agriculture are jointly responsible for the quality of the data sets and for professional control. Government Decree 309/2014 (XII. 11.) on data registration and supply obligations on waste came into force on 1 January 2015. Pursuant to that, business organisations have regular or ad hoc reporting liabilities based on the type of business.

The **National Energy Advisory Network (NEAN)** was set up and supervised by the Ministry of National Development and began work in Hungary on 1 January 2017. This network consists of around 100 energy advisory officers based in government offices (two graduate energy advisory officers in each office) – providing energy advice for all interested stakeholders, free of charge.

The rationale behind NEAN is that the SME sector and local governments – according to studies – do not pay enough attention to their energy costs or undertake energy audits, and energy management is not common – although for large companies, energy audits are both common and obligatory. Energy costs are therefore higher than is justified due to the lack of good practice, knowledge and expertise in energy consumption. The energy costs of any given local government are expected to fall by 5–10 per cent within

[6] The WIS operates within the National Environmental Information System which belongs to the Ministry of Agriculture as respondent for environmental issues.

one to two years after NEAN involvement – without needing other developments such as significant investment. By 2020 all Hungarian SMEs – about 8,000 enterprises – will have access to energy advice free of charge. The energy optimisation of an annual average of 10,000 companies could be realised by the launch of NEAN, which might result in approximately 5–10 per cent energy savings per company.

Deputy State Secretary of State for Sustainable Developments (under the Ministry for Innovation and Technology)
For the waste streams subject to environmental product fee legislation there is a specific obligation to collect and treat the waste, the purpose of the environmental product fee being to provide funding for the collection and treatment of specific waste streams with more serious environmental impacts. Activities related to environmental awareness raising also come under the remit of the Deputy State Secretariat.

Hungarian Office for Mining and Geology (HOMG)
The HOMG performs state geological and mining tasks, dealing with mineral resource management such as data collection and maintenance of inventories for primary mineral resources and mining wastes and collecting royalties. The Geological and Geophysical Institute of Hungary (GGIH) provides appropriate information for geology and other relevant natural resources. From 1 July 2017, by merging the HOMG and GGIH, the Mining and Geological Survey of Hungary (MGSH) will perform tasks on mineral resource management. Centralisation is in progress but tasks related to exploration, exploitation and clients of mining entrepreneurs remain under the former administrative model.

In order to achieve sustainable resource management, the Hungarian Office for Mining and Geology (HOMG) and the Geological and Geophysical Institute of Hungary (GGIH) provide data and information on mineral resources and contribute to the objectives of material resource efficiency, the circular economy and raw materials supply by national and international projects.

The co-operation with other authorities, such as for nature conservation and land use planning, is structured. HOMG and GGIH were involved and recently became active in many EU-funded projects, such as SARMA, SNAP SEE, MINATURA2020, in which one of the most important tasks is to organise national/regional stakeholder consultations for the representatives of mining, industry, ministries, authorities, research institutes, and non-governmental organsations (NGOs) to build the capacity and co-operation for improving the regulatory framework on national and EU levels. Guidance and Joint Vision documents have been developed[7].

No comprehensive demand-supply analyses for raw materials have been developed at national and regional levels by the HOMG.

Approaches to resource efficiency and circular economy policy evaluation

There are no measures to evaluate impacts and effectiveness of policies for a resource-efficient circular economy, although policy feedback can be obtained from earlier datasets such as the Waste Information System (see section 'Institutional setup and stakeholder engagement' and 'Indicators to monitor progress towards a resource-efficient circular economy').

Monitoring and targets

Targets for resource efficiency and circular economy

The 4th NEP, in line with relevant EU goals and other strategies, contains specific targets related to resource efficiency, for example:

[7] www.snapsee.eu (English)

- to increase the use of construction and demolition waste to at least 70 % by volume (through preparation for reuse, recycling and other material recycling of non-hazardous construction and demolition waste);
- to increase the ratio of renewable energy resources in total gross energy consumption to 14.65 %.

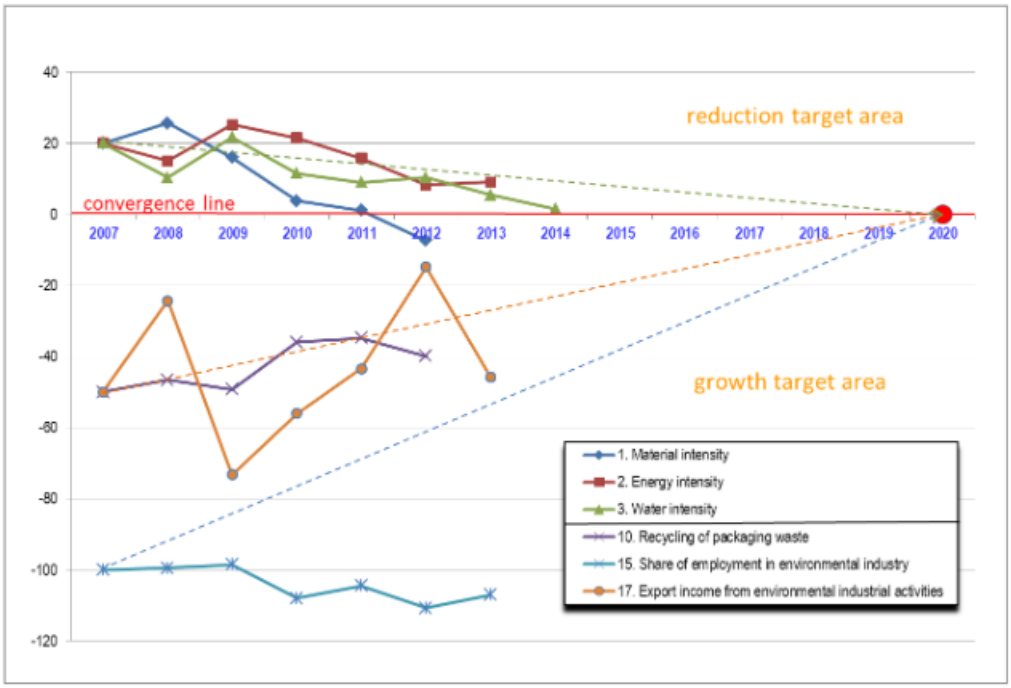
NETIS is part of the Hungarian National Reform Programme's 18th measure. The vision is to foster environmental industries and technologies, focus on environmental innovation, reduce primary material use and encourage reuse and recycling, and to ensure a paradigm shift from an end-of-pipe stance on environmental issues to the prevention of problems.

Hungary has adopted 17 targets to be achieved by 2020. These are expressed in terms compared to 2007 levels.

Table 1 Hungary's 2020 resource efficiency targets Indicator	Unit	Target 2020, % (2007=100%)	Overall target
1. Material intensity	DMC/GDP	80	reducing raw material consumption
2. Energy intensity	toe/GDP	80	reducing raw material consumption
3. Water intensity	m^3/GDP	80	resource efficiency
4. Import dependence on fossil fuels	%	75	resource efficiency
5. Share of renewables in electricity production	%	275	using renewable energy sources
6. Energy efficiency of road transport	toe/tkm	80	resource efficiency
7. Energy efficiency of rail transport	toe/tkm	85	resource efficiency
8. Consumption of packaging material in trade	tonnes	75	developing waste recycling
9. Generation of municipal solid waste	kg/person	70	developing waste recycling
10. Recycling of packaging waste	%	150	developing waste recycling increasing use of secondary raw materials
11. Waste water generation	m^3	70	frugal use of resources
12. Population connected to WWTP	%	125	resource efficiency
13. Environment-related RDI expenditure by state and business sectors	GERD %	200	developing and distributing high added-value and knowledge-intensive technologies
14. Trade in energy-saving equipment	million HUF	250	frugal use of resources
15. Share of employment in environmental industry	%	200	developing and distributing high added-value and knowledge-intensive technologies
16. Environment-related patents and certifications registered	number	300	developing and distributing high added-value and knowledge-intensive technologies
17. Export income from environmental industrial activities	%	150	developing and distributing high added-value and knowledge-intensive technologies

Note: DMC = domestic material consumption; toe = tonnes of oil equivalent; tkm = tonne-kilometres; GERD = gross expenditure on research and development.
Source: NETIS

Figure 1 Distance-to-target analysis of selected indicators used for monitoring NETIS



Source: Hungary's presentation at EEA resource efficiency webinar, 4 December 2015

It is the government's aim that the building stock, mostly outdated as regards energy use, should be refurbished by owners as efficiently and economically as possible, whereby households' maintenance-related overhead costs could be reduced and harmful environmental effects caused by emissions could be cut down. The National Building Energy Strategy notes that the primary energy savings target to be achieved by the renovation of residential buildings and public buildings is 40 petajoules by 2020.

Indicators to monitor progress towards a resource-efficient circular economy

The Hungarian Central Statistical Office (HCSO) annually publishes nationally aggregated material flow accounts calculated using 2001 Eurostat methodology.

The relevant indicators (per unit of GDP and per person) are:

- domestic material input (DMI);
- domestic material consumption (DMC);
- domestic extraction.

These indicators are published regularly by the HCSO in two document series: 'Environmental snapshots of Hungary'[8] and 'Indicators of Sustainable Development of Hungary'[9].

The Ministry of Agriculture operates the Waste Information System (WIS), the basis of data supply for Regulation EC 2150/2002. The Hungarian Central Statistical Office is the institution responsible for the actual data supply to Eurostat and for the compilation of reports to Eurostat. The two institutions are jointly responsible for the quality of the data sets and for professional control.

Government Decree 309/2014 (XII. 11.) on data registration and supply obligations on waste came into force on 1 January 2015. Pursuant to that, business organisations have regular or *ad hoc* reporting liabilities based on the type of business.

[8] http://www.ksh.hu/docs/eng/xftp/idoszaki/ekornyhelyzetkep13.pdf
[9] http://www.ksh.hu/docs/eng/xftp/idoszaki/fenntartfejl/efenntartfejl16.pdf

The data received pursuant to Government Decree **309/2014 (XII. 11.)** are processed by the Waste Management Information System (WIS). 2004 was the first year for which data is available in the system. Data that are collected:

- annual data on the quality of waste generated;
- annual data on the management of non-hazardous waste;
- quarterly data concerning the management of hazardous waste.

Thresholds of generated and/or stored waste volumes, for which the above reporting is mandatory:

- hazardous waste: 200 kilograms per year (kg/year);
- non-hazardous waste: 2,000 kg/year;
- non-hazardous construction and demolition waste: 5,000 kg/year.

Resource efficiency, circular economy and the 2030 Sustainable Development Goals

There are no dedicated initiatives that specifically target the Sustainable Development Goals (SDGs) in Hungary, however some examples may apply, such as the Wasteless (Maradék Nélkül) initiative, which helps to achieve SDG12, and the Warmth of Homes (Otthon Melege) programme which helps to achieve SDG7 (both initiatives described in the section on Examples of good practice and innovative approaches).

Examples of innovative approaches and good practice

Examples of good practice and innovative approaches

It is widely thought that activities serving environmental protection (such as energy saving) and sustainability are costly rather than money-saving. According to Article 7 of the Energy Efficiency Directive, Hungary has to achieve energy savings by end consumers of 1.5 per cent per year between 1 January 2014 and 31 December 2020. Two examples of how Hungarian policy serves the balance between the economy and the environment follow.

1) There is a significant corporate tax allowance that supports companies' investment in the field of energy efficiency in order to achieve a shortened, five-or six-year pay-back period. The tax allowance may amount to a total of 30 per cent of the eligible costs of the investment, up to EUR 15 million.
2) A measure introduced in 2016 as an amendment to Act No. LVII of 2015 concerning energy efficiency is the obligation to have a specialist energy referee in every high-energy-consuming economic organisation. The referee has to be an external consultant and have the relevant qualifications. The task of the energy referee is to promote the introduction of energy-efficiency approaches and behaviours in the operation and decision-making of the company. Based on international experience with this new tool, companies will be able to make 1–3 per cent energy savings annually. The definition of a high-energy-consuming enterprise, which was set by Governmental Decree 122/2015 (V. 26), is one that consumes more than 400,000 kilowatt hours (kWh) of electricity or 100,000 cubic metres (m^3) of natural gas or 3,400 gigajoules (GJ) of heat per year.

Environmental Product Fee

An economic regulatory instrument launched to influence consumer habits and reduce material use, Act LXXXV of 2012 on the Environmental Product Fee, entered into force on the 1 January 2012. The Environmental Product Fee is a fee for the producer or distributor and is due on the domestic release of batteries (accumulators), packaging material, other products made of petroleum, electrical and electronic appliances, tyres, papers used as an advertising, other plastic products, other products from the chemical industry and office paper either produced in Hungary or imported from the EU or third countries. Domestic release means the release into domestic free circulation for private use and the purchase of stock.

Issued three years before relevant EU targets, the Act prescribes a significantly high fee on lightweight plastic carrier bags of HUF 1,900 (EUR 6) per kilogram at present. After the fee's entry into force, the number of marketing outlets that provide these plastic bags free of charge reduced remarkably – as did the number of bags. The annual use of lightweight plastic carrier bags is now about 85–95 bags per person, and is expected to fall below the target set for 31 December 2019 in the relevant 2015/720 EU Directive.

Wasteless (Maradék Nélkül)[10] campaign of the National Food Chain Safety Office

About **1.8 million tonnes** of food waste are produced annually in Hungary. A significant proportion of this, more than one third, is produced by households. According to national research, this is **68 kilograms per person** annually, of which about half is avoidable (Szabó-Bódi *et al.*, 2018[11]). Although this is less than some extremely wasteful countries, it still accounts for a major part of Hungarian consumers' environmental impact. Altogether, Hungary has to manage more than 300,000 tonnes of unnecessary biodegradable waste, which has a serious impact on the environment, taking into account not only the loss itself but also the process of production.

Recognising the problem, the National Food Chain Safety Office (NFCSO/NÉBIH) started its Wasteless programme with the financial support of the EU's LIFE (l'Instrument financier pour l'environnement) programme, with the aim of decreasing Hungarian food waste. While determining the aims of the programme, the thematic priorities of the 7th Environmental Action Programme of the European Union were applied.

Thus, the main objectives of the project are:

1. decreasing the proportion of food waste among Hungarian families, through changing consumers' attitudes and behaviour patterns through a **communication campaign**;
2. increasing food waste awareness and the level of knowledge of children attending primary school through a **school programme**;
3. collecting good practices which contribute to preventing the generation of food waste and based on that, developing a **guide book** for concerned food chain participants;
4. collaboration and cooperation with other EU Member States in order to contribute to the **international implementation** of the project's results.

Warmth of Homes (Otthon Melege) programme

The aim of the programme is improving the efficiency of household energy consumption and, through this, greatly reducing carbon emissions. Since the programme's launch in 2014, HUF 31 billion (EUR 100 million) were allocated for sub-programmes through which 164 000 households have so far received support in the form of non-refundable subsidies. The programme consists of several sub-programmes, all of them aimed to help energy efficiency. The first of these was launched in September 2014. The sub-programmes are financed from domestic budgetary resources including international carbon quota trade incomes by the Ministry of National Development in order to further reduce households' energy costs. The Warmth of Homes programme and its sub-programmes target the replacement of outdated household equipment including refrigerators and washing machines, the replacement of boilers and heating systems, doors and windows, as well as complex energy-efficient renovation of apartment houses.

Secondary raw materials

Regarding the recycling or reuse of mine wastes from tailings and slag heaps, pilot projects are under way at some universities (Budapest and Miskolc) to provide construction raw materials. In many cases secondary resources – mine slag heaps, power plant fly ash, metallurgical slag, etc. – are used in the construction of infrastructure.

[10] http://maradeknelkul.hu/en/ (English)

[11] Szabó-Bódi, B., Kasza, Gy. and Szakos, D. (2018): Assessment of household food waste in Hungary. *British Food Journal*, vol:120, iss:3 DOI: 10.1108/BFJ-04-2017-0255

Seeking synergies with other policy areas

There is no such policy in Hungary to deliberately seek to create synergies and co-benefits between resource efficiency/circular economy and other policy areas, and currently there are no provisions for such an initiative in the short run.

Hungary has no policy initiatives which seek to make imports of materials and products more sustainable.

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

In Hungary the local governance of settlements is partly independent from the government. Issues arising in a specific place that depend on local characteristics need local decisions. Therefore, many settlements have their own initiatives to improve/conserve their environments or nature in their immediate surroundings for the future and to facilitate a transition to a circular economy.

The Climate Change Settlement Association (Klímabarát Települések Szövetsége)[12] is an organisatiom that provides help for settlements in the form of knowledge and guidance on how to improve climate innovation and strategies. There is a link to examples of best practices – although it is not specially aimed at the development of a circular economy, we welcome this initiative to improve settlements in an environmentally friendly way.

Some of their best practices include the following.

Waste-related initiatives:

- In Hegyvidék, Szekszárd, Tatabánya and Zugló, programmes take place a few times a year to educate people about composting and distribute composting frames and bins to the population. This way the biodegradable waste stays at home and can be used. It is equally important for schools and other institutions to collect and compost leaf waste which is achieved through Szekszárdi Climate's Waste Management Working Group.

Water- and wastewater-related initiatives:

- A biological wastewater treatment plant has been built in Alsómocsolád. After removing the sludge, plants, fish and biological organisms, clean the wastewater can then be released into natural water bodies.
- Four reservoirs have been developed in Veszprém for holding rainwater and also to evolve water habitats.
- In Budapest's 11th district's Bikás Park biolake special plants and microorganisms are used to clean the water body biologically, making it self-cleaning.
- In Küngös and Sóly rainwater is collected for irrigation purposes.
- Education about special solutions for water conservation, such as terracing and the building of ridges, in hilly areas.

Energy initiatives:

- In Tatabánya and Veszprém, heat and electrical energy is produced by a gas power plant at landfill sites to utilise landfill gas.
- In Tatabánya, local agricultural, forestry and manufacturing by-products, along with communal wastewater sludge, are used for biogas-based energy production.
- In Nyírbátor and Szekszárd, heat pump geothermic energy is in use.

[12] http://klimabarat.hu/ (Hungarian)

Local food supply development:

- Efforts to become self-sufficient in agriculture in Hosszúhetény involve education and seed exchange campaigns.

Other relevant initiatives – environmental education:

- Under the 1 Birth – 1 Tree programme, a tree is planted for each child born in many settlements, particularly Bátaszék and Pilis.
- The Municipality of the 12th district of Budapest (Hegyvidék) initiated the Together project, which aims to shift the behaviour of building users towards greater energy efficiency.

Transportation:

- More and more settlements are developing initiatives in support of cycling, such as community bike sharing systems.
- There is a boat-sharing start up on Lake Balaton.

Other resources

Examples of policies which go beyond "material resources"

The necessity, purpose and main areas of the revised (1 September 2017) Forest Act No XXXVII of 2009

The purpose of the Forest Act has been to ensure the survival of Hungarian forests and keep them in good condition by coordinating the interests of ownership, the economy and the public. The main goal of the revision was to create a balance between public and economic interests and to ensure state-of-the-art control of forestry through solutions that provide space that is modern, cost-efficient and suitable for farming initiatives.

The revision is primarily due to social expectations of and economic constraints on forest managers. Managers are aware of this and want to meet these expectations. Especially in the case of private forests, however, their only legal obligation is to manage farming and property in a sound manner and with minimal administrative burden.

The Forest Act simplifies national law on existing timber-producing forests and maintains the necessary state control of forests of major public interest within a framework of reduced bureaucracy. The Act covers the principles, rules and financing system of forest management, but with the revision has shifted towards more natural management methods with less emphasis on economics. The revision to the Forest Act may also help boost afforestation; increasing forest cover to 27 per cent of the country is essential.

Forests are able to fulfil their conservation, economic and social functions only if they maintain a good state of health under the impacts of climate change. However, scientific consensus on climate change now advances the necessity of changing forest communities. Statutory regulations were taken into account during preparation of the revision.

The main revisions to the Forest Act are:

1. better definition of expectations and restrictions on forests and forest management, and better use of limited management capacity;
2. development and predictability of state forestry planning;
3. simplification of forestry administration;
4. modernisation of official control of forestry;
5. organising the management of private forests;
6. flexible expansion of the range of forestry benefits for diversified land use;
7. facilitating the placement of certain forestry facilities within the forest area.

Hungary is committed as a priority to protecting the purity of soils and to maintaining it in the long term, as highlighted in the Constitution of Hungary. For this reason, any substances – such as fertilisers – must meet certain legal requirements (authorisation) or be subject to individual official authorisation prior to use. As a result of ongoing harmonisation of the marketing of fertilising products, Hungary attaches particular importance to establishing EU standards (rules) as part of the Circular Economy Package, thereby safeguarding the purity of soils. In parallel it welcomes the establishment of a regulatory framework facilitating the production of fertilisers from recycled organic wastes such as animal or other agricultural by-products or recycled biowaste from the food chain and other secondary raw materials in line with the circular economy model (production of renewable biological resources and the conversion of these resources into value-added products).

The way forward

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

Hungary sees the following main challenges to waste management and ways to tackle them.

- Lack of knowledge and experience. Sharing good practice is essential, and several information campaigns are already under way to promote knowledge sharing and raise awareness among various target groups.
- The relative costs of secondary raw materials. Low market prices of secondary raw materials are key to the transition to a circular economy, but the gap between the market price of primary and secondary raw materials often means that it is not economically feasible to choose secondary raw materials – for example, the low price of oil for plastic production. This hinders policymakers from introducing efficient economic regulations to encourage their use.
- There is no real solution for the use of stabilised biodegradable municipal waste, making it difficult to divert it from landfill.
- Unknown chemical additives in certain products make recycling difficult or unsafe.
- The lack of end-of-waste EU regulation, there are only three regulations, causes uncertainty regarding how materials can cease to be waste. This generates legal uncertainty for operators and authorities, and creates difficulties in the application and enforcement of chemical and product legislation.

Challenges and ways to tackle them in other areas are:

1) Mineral policy should have over-arching links with other policies including land-use planning, environment and industry.
2) Development of an appropriate safeguarding mechanism/declaration to highlight the importance of mineral resources.
3) Selection of criteria and identification of indicators for the circular economy, raw material supply and resource efficiency, where primary and secondary resources are considered.
4) Development of mineral resource inventories: harmonisation with international standards.
5) Providing appropriate data on the quantity and quality mineral resources to land-use planners.
6) Stakeholder consultations should be improved between stakeholders – in mining, industry, ministries, authorities, research institutes and NGOs.
7) Consideration of the economic importance of mineral resources.
8) Introduction of life-cycle analyses into analysis of supply and demand.

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