THE ENVIRONMENT IN YOUR POCKET
I - 2015

CROATIAN
ENVIRONMENT AGENCY

THE ENVIRONMENT IN YOUR POCKET

THE ENVIRONMENT IN YOUR POCKET I - 2015

Publisher:
Croatian Environment Agency

Editor-in-Chief :
CEA Acting Director
Rene Vukelić mag.ing.aedif.

Editorial Board:
MSc. Mira Zovko
Hana Mesić
Ivana Lampek Pavčnik

Prepared by:
PhD. Martina Cigrovski Mustafić
Andrina Crnjak-Thavenet
Željko Crnojević
MSc. Snježana Dominković-Alavanja
Melita Došen
Goran Graovac
Laila Gumhalter Malić
Branka Ilakovac
Ines Katić
Gordana Kolačko
Predrag Korica
Dino Križnjak
Jasna Kufrin
Biserka Mladinić
Tatjana Obučina
Petra Pilipić
Dunja Pofuk
Dejana Ribar-Pope
Bernarda Rožman
Andreja Steinberger
Tea Strmecky
Tomislav Tesla
Vedran Vađić
PhD. Marijana Zanoški-Hren
Nina Zovko
MSc. Mira Zovko

Translation:
Abol d.o.o.

Layout, print and cover page design:
Tiskara HIP, Zagreb

Cover page photos:
Goran Brcko, Ante Delač, Antonija Hohnjec, Tonći Pavelin, Zvonko Radičanin, Mirko Sorak

Print run:
150 copies

Croatian Environment Agency | Trg maršala Tita 8, 10 000 Zagreb, Croatia
Phone: +385 1 48 86 840 | Facsimile: +385 1 48 26 173
E-mail: info@azo.hr | Internet: www.azo.hr

ISSN 1846-8454

THE ENVIRONMENT IN YOUR POCKET

Basic Data on the Republic of Croatia

Mainland surface area	56,594 km^2
Territorial sea surface area	31,479 km^2
Coastline length	6,278 km
Inslands, rocks, reefs	1,185
Highest mountain summit	Mt. Dinara, 1 831 m
Counties	21
Cities and municipalities	556 (127 i 429)
Population	4 284 889
Population density per km^2	75.4
Populated islands	47
Language	Croatian
Alphabet	Latin
Political system	Parliamentary democracy
GDP per capita in 2014	10 129 EUR

THE ENVIRONMENT IN YOUR POCKET

Introduction

Dear readers,

Celebrating the World Environment Day[1] we have been, by tradition, presenting the state of the environment for eleven consecutive years. Your interest in this brochure, small in terms of format but highly informative in terms of its contents, has prompted us to work continuously on its improvement. From the first edition until this day 10 new thematic areas have been introduced so this year's publication provides data for 19 thematic areas.

In general, the Croatia has environment which is of exceptional quality. We therefore continue providing an overview of impacts on Croatia's environment, and point to areas which require that certain measures must be taken.
Although lower compared to the base year 1990, the increased emissions of particulate matter PM_{10} are still found in some major towns of continental Croatia. Greenhouse gas emissions are below the level set by the Kyoto Protocol. However, in order to meet the 2035 target, energy efficiency measures and the use of renewable energy sources are to be encouraged more strongly. Nitrate concentrations in groundwater used for public water supply are considerably below the maximum allowed concentration. The 2014 flood events affected a total of 430 km^2 and caused great material damage and degradation of the environment. Croatia can still boast with the highest quality seawater, despite increased concentrations of nutrients (inorganic nitrogen and orthophosphates) recorded in certain coastal areas as a consequence of anthropogenic impacts of wastewater that have to be reduced. The share of Croatia's areas in the Natura 2000 network[2] is second largest in the EU (36.7% of land).

The mine suspected areas are still present (613 km^2 in 2014). Windfall devastated almost 30,000 ha of forest land in 2012. Land areas used for organic farming have been increasing

[1] http://www.unep.org/wed/

[2] NATURA 2000 is the largest coordinated network of nature conservation areas in the world.

steadily and accounted for 40,641 ha in 2013. Municipal waste generated in 2013 amounted to 402 kg per capita. The strategic objective of decoupling solid waste generation from economic growth has not been achieved yet. Air emissions from the industrial sector are decreasing, as a result both of policy measures taken and reduced energy consumption caused by the economic crisis.

Mariculture production is increasing and it is brought in line with strict environmental requirements. The sector of passenger transport continues to be dominated by road transport which is the major source of air pollution. From the aspect of environmental protection, acceptable modes of transportation to be promoted include the combined rail transport and alternative modes of transport (bicycles, carpooling, and carsharing[3]). Rail freight transport accounts for only 1.5%[4], which clearly indicates that its potential is underused. The decoupling of economic growth from material exstraction used and domestic material input is a consequence of the economic crisis and decreasing production rather than of implementation of sustainable production and consumption policies.

The world's population is expected to hit nine billion by 2050. This global trend points to the inevitable global competition for resources (food, water, raw materials) accompanied with an increased pressure on ecosystems. It is questionable whether the ecological boundaries of this planet are able to support economic growth based on current production and consumption patterns. The response of both the European and global environmental policy lies in the integration of environmental objectives and sectorial policies, or, in other words, in the development of green economy[5] which uses financial and other incentives to encourage innovations and investments in environmental goods and services, while creating the so-called green jobs.

[3] E.g. use of bicycles, carpooling (sharing of vehicles and travel costs when travelling together in a car), carsharing (car rental for short periods of time, often by the hour).
[4] According to the volume of goods transported per kilometre (tkm).

[5] Green economy is defined as an economy in which policy measures and innovations encourage the society to utilize resources in a sustainable manner, thus ensuring the human well-being in an inclusive manner, while maintaining the natural systems that sustain us.

THE ENVIRONMENT IN YOUR POCKET

Table of Contents

THE ENVIRONMENT IN YOUR POCKET

Table of Contents

AIR

Trends in Emissions of Acidifying Pollutants

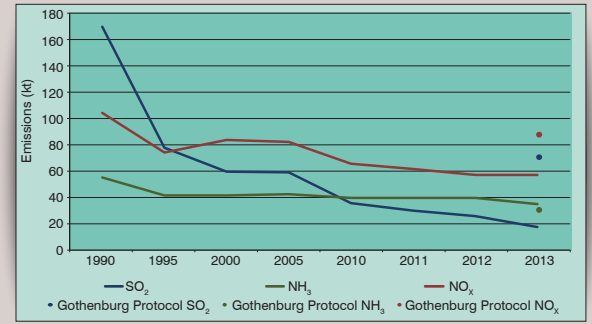
Sulphur dioxide (SO_2), nitrogen oxides (NO_x) and ammonia (NH_3) are major pollutants that cause acidification and eutrophication. Substances that cause acidification decrease the pH value of water and the soil and thus have a negative effect on ecosystems and biodiversity. Croatia is a party to the Convention on Long-range Trans boundary Air Pollution[1] and the pertinent seven protocols which put the obligation on the country to reduce emissions of the air pollutants mentioned above.

Trend and current state

The emission of major acidifying substances shows a general downward trend, especially compared to the base year 1990. According to the Gothenburg Protocol which aims to abate acidification, eutrophication and ground-level ozone, Croatia reached the emission reduction targets for SO_2 and NO_x, with the exception of NH_3 emissions which exceed the permitted level of 30 kt. At the time when Croatia was allocated the emission level (30 kt), detailed data were not available. Emission allocations were found to be overestimated and an exhaustive technical description was submitted to the Convention Secretariat aiming at their adjustment.

Total SO_2 emissions have been constantly declining and reached 16.4 kt in 2013, which is by 90.4% lower compared to 1990. This reduction is primarily the result of using low-sulphur fuel and increased natural gas consumption. NO_x and NH_3 emissions have also decreased by some 40% compared to 1990. The predominant source of NO_x is fuel combustion in the energy sector, especially fuel combustion in road transport[2]. It should be noted that NO_x emissions are to a greater extent connected to technologies applied and to a lesser extent connected to the quality of the fuel used. The agricultural sector contributes to the total NH_3 emissions with a share greater than 80%.

Trends in emissions of acidifying pollutants SO_2, NO_x and NH_3



Source: CEA

[1] Convention on Long-range Transboundary Air Pollution (http://www.unece.org/env/lrtap/lrtap_h1.html)

[2] Transport is a subsector of the energy sector.

AIR

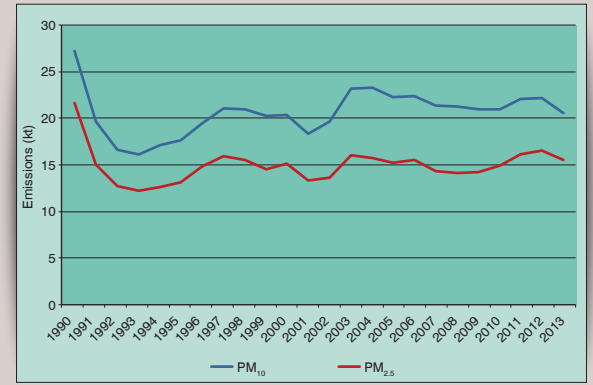
Particulate Matter PM_{10} and $PM_{2.5}$ Emissions

Particulate matter PM_{10} and $PM_{2.5}$ are a mixture of organic and inorganic substances suspended in the air as tiny dust particles. They are the result of fuel combustion processes (in energy sector and transport), industrial production and fertilizer management. They are harmful to human health because they penetrate into the respiratory tract and reduce human resistance to allergies and infections. Air pollution caused by particulate matter is found most frequently in populated areas of the continental Croatia, in Zagreb, Osijek, Kutina, Sisak and Slavonski Brod.

Trend and current state

PM_{10} emissions in 2013 decreased by 7.9% compared to the previous year. Considering the trend in relation to the base year 1990, the emission is 25.3% lower. $PM_{2.5}$ emissions in 2013 were also 5.9% lower compared to the previous year and 29.1% lower compared to the base year.
Despite the variable trend seen over the entire period observed, particulate matter emissions were reduced. This is a result of a number of factors, such as reduced activities in the fuel combustion sector, use of low ash fossil fuels, increased use of natural gas and lower organic fertilizer use.

PM_{10} and $PM_{2.5}$ emissions



Source: CEA

CLIMATE CHANGE

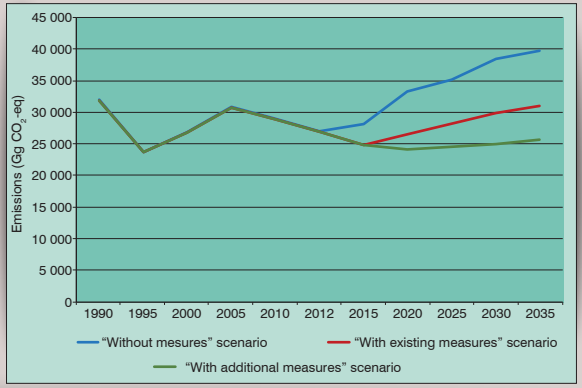
Projections of Greenhouse Gas Emissions and Sinks Including the Policy and Measures

Projections of greenhouse gas emissions and their removal by sinks are used to show and analyse the downward or upward trend of greenhouse gas emissions in the following period. Data from the previous period forms the basis for predicting possible future emissions and sinks.

Trend and current state

Based on past emissions and certain assumptions as regards general economic parameters such as the GDP growth rate and population number, including specific data coming from individual sectors (e.g. costs of energy sources, production growth indices, agricultural land use policy and forest and waste management methods), emissions are calculated for three different scenarios: "without measures", "with existing measures" and "with additional measures" scenario.
Projections for "without measures" scenario indicate that compared to the base year 1990 emissions will rise sharply and be as much as 24.6% higher in 2035. According to the "with existing measures" scenario, the 2035 emissions will remain approximately at the 1990 level and one of the most important measures will include the promotion of the use of renewable energy sources and energy efficiency. If the measures mentioned were applied and incentives for their implementation increased, emissions according to the "with additional measures" scenario would be 20.2% lower compared to the base year.

Projections of greenhouse gas emissions for the period 1990-2035



Source: CEA

CLIMATE CHANGE

Production and Consumption of Ozone-Depleting Substances

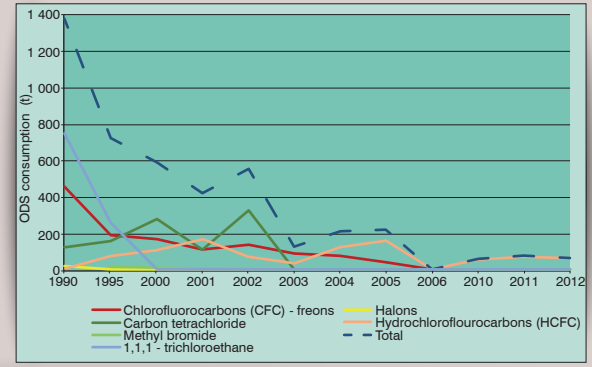
Ozone-depleting substances (ODS)[1] impoverish ozone and deplete the ozone layer which results in increased UV-B radiation and thus poses a serious threat to human health and ecosystems. Moreover, many substances used presently as substitutes for ODS have a great global warming potential. Nevertheless, there is now some fresh evidence for the decrease in the atmospheric load of ODS and early indications for the stratospheric ozone recovery.

Trend and current state

Due to implementation of international[2] and national legislation[3] and numerous projects, the ODS consumption in Croatia has been constantly decreasing. By gradual introduction of substitutes for ODS from 1990 to 2012 their consumption was reduced by some 95%. In the period from 2008 to 2012 the highest consumption related to the use of HCFCs in the sector of refrigeration and air-conditioning equipment. HCFC consumption in 2012 amounted to 64.43 t which is 92.5% of the total ODS consumption. The ODS phase-out in Croatia is scheduled for end of 2015 which is even 24 years ahead of the Montreal Protocol deadline. As part of the EIS, the CEA established REG1, REG2 and PNOS databases which make it possible for all persons concerned to fulfil their legal obligations through electronic equipment.

[1] Controlled and new substances listed in Annex I and Annex II to Regulation (EC) No. 1005/2009 which are and/or were used in refrigeration equipment and systems, insulation materials, plastic packaging, cleaning agents, sprays etc.
[2] Vienna Convention for the Protection of the Ozone Layer (OG-IT 12/93) and Montreal Protocol on Substances that Deplete the Ozone Layer (OG-IT 12/93, 11/93, 8/96, 10/00, 12/01)
[3] Regulation on Ozone-depleting Substances and Fluorinated Greenhouse Gases (OG 90/14)

Consumption of ozone-depleting substances from 1990-2012



Source: CEA

INLAND WATERS

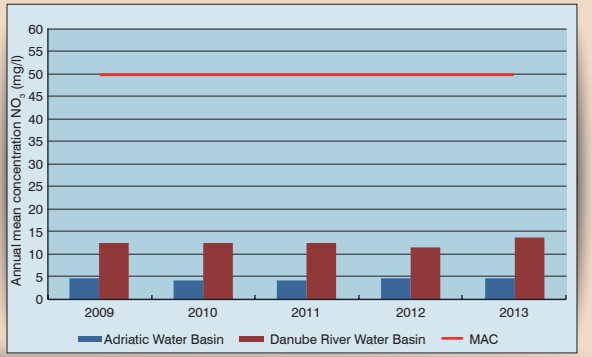
Nitrates in Groundwater

Increased concentrations of nitrate in Croatia's groundwater are mostly a result of intensive agricultural production. The greatest share of groundwater captured (90%) is used for public water supply which makes it extremely important to protect this resource. According to EU directives[1] and regulations of the Republic of Croatia[2] the state is constantly monitored and the monitoring data are used as a basis for determining the activities needed to meet the standards[3] defined and to assess the effectiveness of protection measures implemented.

Trend and current state

As an indicator of trends of nitrate concentrations in groundwater, the monitoring data obtained from 206 measuring stations located in the Danube River Basin and 22 measuring stations in the Adriatic Basin were used. In the period from 2009 to 2013 no changes in nitrate concentrations were recorded (about 4.5 mg NO_3/l in the Adriatic Basin and from 10-15 mg NO_3/l in the Danube River Basin). Annual mean concentrations in Croatia are lower than average annual mean concentrations measured in European[4] water bodies which amounted to about 19 mg NO_3/l in the same period. Considering nitrates, the state of groundwater is estimated to be good, with the exception of certain groundwater bodies (Southern Istria, Ravni kotari and Varaždin) where the allowed nitrate concentrations were found to be exceeded.

Annual mean concentrations of nitrates (mg NO_3/l) in groundwater



Source: Hrvatske vode

[1] Directive 2006/118/EC of the European Parliament and of the Council of December 12th 2006 on the protection of groundwater against pollution and deterioration and the Council Directive 98/83/EC of November 3rd 1998 on the quality of water intended for human consumption

[2] Regulation on Water Quality Standards (OG 73/13), Ordinance on Conformity Parameters and Methods to Analyse Water Intended for Human Consumption (OG 125/13, 141/13)

[3] Nitrate quality standard, or maximum allowable concentration (MAC) for groundwater is 50 mg NO_3/l.

[4] http://www.eea.europa.eu/data-and-maps/indicators/nutrients-in-freshwater/nutrients-in-freshwater-assessment-published-6

INLAND WATERS

Urban Wastewater Treatment

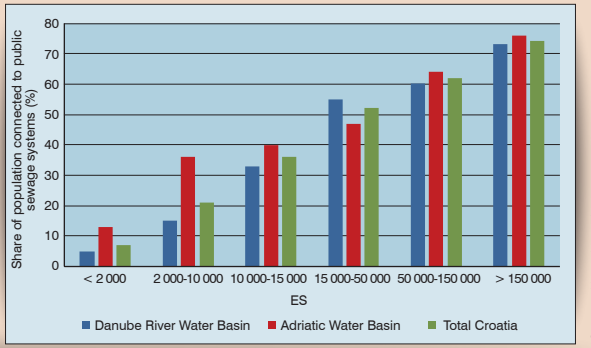
The collection and treatment of urban wastewater is ensured by constructing the public sewage system. At the EU level this issue is regulated by the provisions of the UWWTD[1] transposed into Croatia's legislation through the Ordinance on Limit Values of Wastewater Emissions[2]. The general principle of the Directive is the obligation of the member states to ensure the collection and treatment of urban wastewater by an adequate type of treatment in all agglomerations before its discharge into receivers.

Trend and current state

At present about 46% of the population are connected to the public sewage system (estimate for 2012[3]). This percentage varies considerably depending on the agglomeration size – the bigger the agglomeration, the more population has access to public sewage system. It is estimated that existing municipal facilities are used to treat wastewater coming from about 35% of the total population which is some 75% of wastewater collected by public sewage systems. The share of untreated wastewater collected by public sewage systems is about 11%. In 2013 in operation were 123 wastewater treatment plants for various stages of treatment and various capacities. According to the installed capacity, the majority of facilities had the design capacity of 10,000 p.e. and according to the type of treatment they were used for the secondary treatment. The prevailing facilities in the Adriatic Water Basin are those for the primary treatment.

[1] Urban Waste Water Treatment Directive No. 91/271/EEC
[2] OG 80/13, 43/14
[3] 2013 data are currently not available.

Share of population connected to public sewage systems according to agglomeration size in 2013



Source: Hrvatske vode

INLAND WATERS

Flood Events in the Republic of Croatia

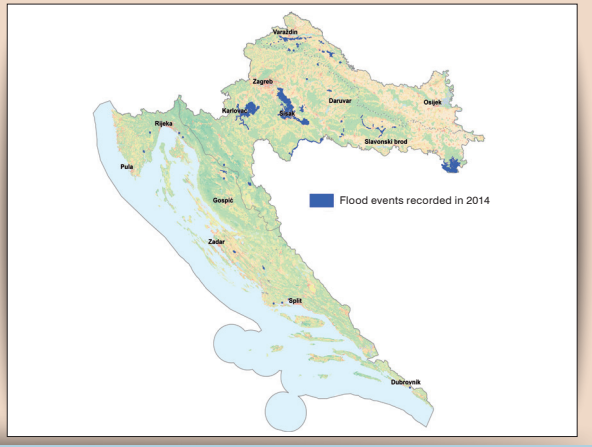
Flood is an unusually great overflow of water in a certain area that can be caused by natural forces (large amount of rainfall, accumulation of ice in watercourses, landslides, earthquakes) or other factors such as dam failure and war destruction. It is considered a natural disaster and may lead to the loss of human life and great material and environmental damage. By taking different construction and non-construction measures the risk of flooding may be reduced to an acceptable level.

Trend and current state

According to the Register of Flood Events kept by Hrvatske vode, there were 35 major flood events in 2014 covering an area of a total of 430 km^2. Great flooding affected the areas around the towns of Sisak, Karlovac and Varaždin. The largest flood was recorded in May in the Sava River basin close to Županja as a result of an extreme rainfall and amounts of water brought by southern effluents of the Sava River. On May 17th 2014 the Sava River near Županja reached the maximum historic water-level (1,168 cm) and flow rate (6,007 m^3/s). Until then the highest flow rate was recorded on January 19th 1970 and amounted to 4,161 m^3/s. The mean 30-year average values of the water level and flow rate in the period from 1984 to 2013 measured at this measuring station were 228 cm and 1,038 m^3/s. According to the Water Act[1] and the National Flood Protection Plan[2], the flood protection is managed by Hrvatske vode. The central management and the establishment of the system of connections and information sharing for the flood protection at the national level are ensured by setting up the Flood Protection Headquarters.

[1] OG 153/09, 130/11, 53/13, 14/14
[2] OG 84/10

Spatial distribution of flood events recorded in 2014



Source: Hrvatske vode, DHMZ

SEA AND COASTAL AREA

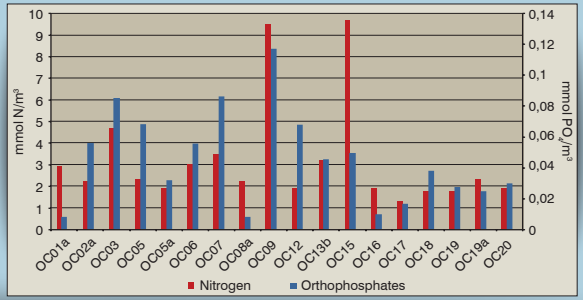
Nutrients in Transitional, Coastal and Marine Waters

Nutrients levels (nitrogen and phosphorous compounds) represent one of the criteria for determination of good environmental status according to the MSFD[1] qualitative descriptor 5. An increased input of nutrients into waters may cause the increased growth of phytoplankton which may lead to degradation of the ecosystem and/or its sustainable utilization. Apart from high concentrations of nutrients, typical indicators of eutrophication include low water transparency, hypoxia/anoxia of the near-bottom layer and high concentrations of chlorophyll *a* (phytoplankton biomass).

Trend and current state

Similar to previous years, increased concentrations of inorganic nitrogen measured in 2013 at monitoring stations[2] were recorded in the areas of freshwater inflow (the Neretva and Jadro estuary, the bays of Kaštela, Bakar and Šibenik). The highest concentrations of orthophosphates caused by anthropogenic impacts were recorded in the bays of Šibenik and Kaštela and in the port of Ploče. While increased concentrations of inorganic nitrogen in the majority of areas mentioned may be seen as a consequence of natural processes, i.e. input to watercourses, the Krka estuary is considered especially vulnerable considering the additional input of nutrients. Therefore, it is necessary to find an adequate solution for the discharge of urban wastewaters of Šibenik and its surroundings which is the primary source of pollution. In the context of implementing the requirements set by the MSFD and transposed into the national law through regulations[3], preliminary documents and action programmes for the marine environment and coastal area strategy are in the process of preparation. The national marine environment monitoring programme[4] was adopted late in 2014.

Annual mean concentrations of nitrogen and orthophosphates (0-10 m) in 2013



Source: IOF, Split

[1] Marine Strategy Framework Directive (2008/56/EC)
[2] See the list of monitoring stations with the indication of the type of water in the Glossary.
[3] Regulation establishing the framework of activities of the Republic of Croatia in the protection of the marine environment (OG 136/11) replaced by the Regulation on Development and Implementation of Documents of the Strategy for Marine Environment and Coastal Area Management (OG 112/14)
[4] Decision on adoption of the Action Programme of the Marine Environment and Coastal Area Management Strategy: Monitoring and observation system for ongoing assessment of the Adriatic Sea (OG 153/14)

SEA AND COASTAL AREA

Chlorophyll *a* in Transitional, Coastal and Marine Waters

Chlorophyll *a* is one of the indicators used for determination of good environmental status according to the MSFD[1] qualitative descriptor 5. It points to the direct impact of the nutrient input into the water column. Chlorophyll *a*, as the measure of phytoplankton biomass, is included in the majority of monitoring programmes as a biological indicator of eutrophication with the best geographical coverage at the European level.

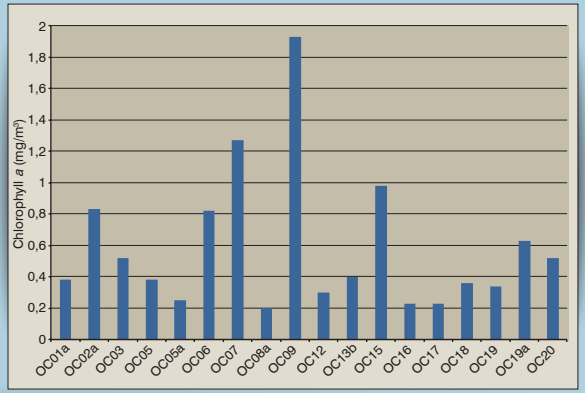
Trend and current state

Annual mean concentrations of chlorophyll *a* in 2013 recorded at the monitoring stations[2] shown were within the ranges typical of oligotrophic seas. Increased concentrations are still recorded in the bays of Kaštela, Bakar, Mali Ston and Šibenik where the highest annual mean value was measured. Seasonal distribution of phytoplankton biomass in the Adriatic corresponds to their seasonal cycle. So the highest biomass occurs in winter and spring while summer is characterized by the biomass decline in the surface layer. The only exception is the OC07 (Vranjic) monitoring station where higher summer values in the surface layer indicate the inflow of nutrients of anthropogenic origin. Changes in chlorophyll *a* concentrations in marine waters of the Northern Adriatic caused by the nutrient inputs from the Po River correspond to interannual changes.

[1] Marine Strategy Framework Directive (2008/56/EC)

[2] See the Glossary for the list of names of OC monitoring stations with the indications of the type of water used in the publication for the purpose of calculating and indicating the eutrophication indicators.

Chlorophyll *a* in transitional, coastal and marine waters



Source: IOF, Split

SOIL AND LAND

Loss of Soil Due to Changes in Land Use

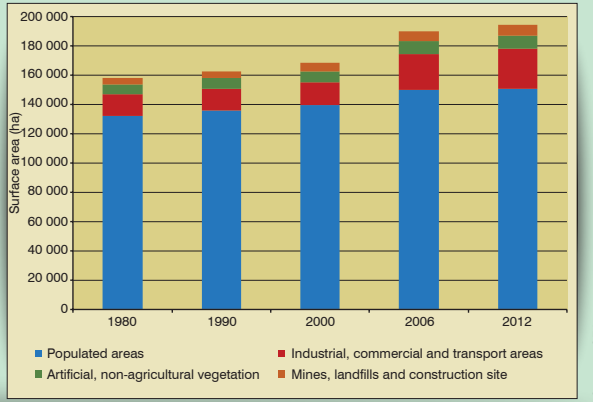
Soil is a living system with multi-purpose, interdependent and hardly separable roles, whose importance is manifested in services delivered to the ecosystems and the human community. Soil sealing for the purpose of constructing settlements and infrastructure facilities is considered to be highest degradation and permanent loss of soil as a natural habitat and a protector of biodiversity, production resource and an eco-regulation system[1]. Priority becomes spatial role of soil as a carrier of infrastructure, the basis for human activities and the source of raw materials.

Trend and current state

According to the CLC Land Cover database[2], in 1980 artificial area covered 157,757 ha, i.e. 2.8% of Croatian territory, compared to 194,133 ha or 3.4% in 2012. In the period of 32 years the artificial area increased by 0.6% which may lead to conclusion that the loss of soil was insignificant. However, the highest increase in the observed period was recorded in industrial, commercial and transport facilities (88%) and mines, landfills and construction sites (80%). Their spreading is sealing the soil of agricultural, forestry and other natural areas, which, apart from the loss of soil as a production resource and an eco-regulation system, leads to fragmentation of natural habitats and ecosystems. It must be emphasized that soil loss caused by sealing cannot be perceived through the share of artificial area in the total of national territory only. It is necessary to take into consideration other environmental pressures at the local level and estimate possible loss of services provided by the soil to ecosystems.

[1] The role of soil as an environmental receiver, collector and substance (pollution) exchanger.
[2] CLC – CORINE Land Cover is a digital database that collects data regarding the land cover according to the CORINE nomenclature of the European Environment Agency.

Soil loss due to increase in artificial areas



Source: CEA

SOIL AND LAND

Contaminated Sites Management

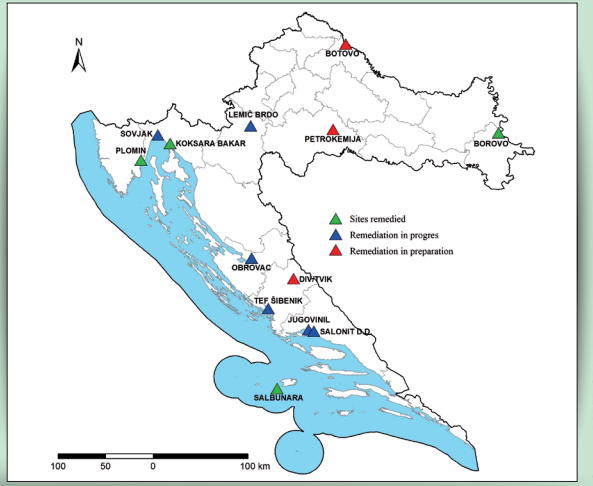
The Waste Management Strategy[1] and Plan[2] of the Republic of Croatia have identified 13 historical contaminated sites ("hot spots"). They are result of long term inappropriate management of industrial (technological) waste and they are endangering the environment and human health.

Trend and current state

"Hot spots" cover an area of approximately 710,000 m^2. Industries (petroleum, chemical, metal, non-metal, textile and leather) are identified as sources of contamination, while major contaminants identified are polycyclic aromatic hydrocarbons (PAHs) (29%), heavy metals (23%), chlorinated hydrocarbons, mineral oils and aromatic hydrocarbons (BTEX) (12% each) and asbestos waste and phosphogypsum (6% each). The remediation of "hot spots" is financed or co-financed by the Environmental Protection and Energy Efficiency Fund which also carries out the supervision depending on the proprietary structure of the site. The sites owned or used by active legal entities are subject to the "polluter's pays" principle, which means that all costs caused by environmental pollution must be borne by the owner or the user of the site. By the end of 2014 remediation of four sites was completed, for six sites it is still in progress and for three sites the remediation is in preparation.

[1] Waste Management Strategy of the Republic of Croatia (OG 130/05)
[2] Waste Management Plan of the Republic of Croatia for the period from 2007 to 2015 (OG 85/07, 126/10, 31/11)

Remediation of waste contaminated sites



Source: EPEEF, CEA

BIODIVERSITY

Surface Area and Number of Protected Areas

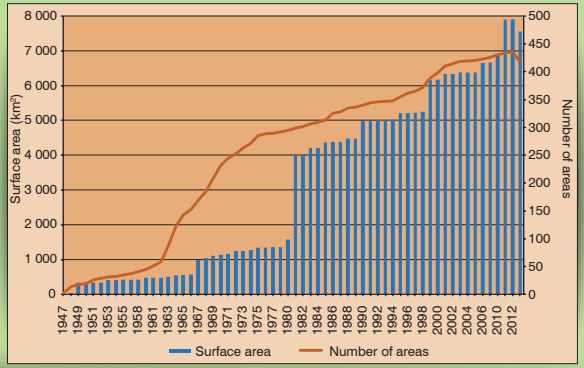
Protected areas are geographically clearly defined areas managed with the aim to achieve long-term conservation of nature and associated eco-system services. According to the Nature Protection Act[1] they are designated into nine categories of protection. In Croatia there are eight national parks and 11 nature parks. These categories are designated by the Croatian Parliament and the categories of strict and special nature reserves by the Government of the Republic of Croatia. Other categories fall within the competence of the county assemblies and the Zagreb City Assembly. The designation of protected areas under any of the categories of protection represents one of the essential instruments of nature and eco-system conservation.

Trend and current state

According to the Protected Areas Register kept by the Ministry of Environmental and Nature Protection a total of 419 protected areas cover an area of 755,551 ha which is 8.56% of the total national territory. Since 1947 when the first protected area was designated (Opeka Arboretum – protected natural rarity) the number of protected areas has been constantly rising until 2012. However, in 2013 the decline in the number and in the surface of protected areas was recorded due to the revocation of protection of several smaller areas which lost the characteristics for which they had been designated protected (Biograd na moru – the alley of cypress, Jasikovac, Javornik – peak Tisov, Mali Lošinj – stone pine, Martijanec – a group of trees, Metković – cypress, Nedenšćina – the park surrounding the caste, Lake Omladinsko, Orebić – the alley of cypress, Osmoliš, Trsteno - Brsečine, the Vujnović grove) and the expiry of the preventive protection (Sunjsko polje and Brbišćica). The category of nature parks accounts for the largest surface area with the share of 4.79% in the total national territory.

[1] OG 80/13

Surface area and number of protected areas (as per 14.10.2013)



Source: SINP

BIODIVERSITY

Natura 2000 Barometer

Natura 2000 is an ecological network of sites important for conservation of species and habitat types that are threatened in the EU[1]. Natura 2000 aims contribute to the conservation of the favourable status of a thousand of endangered and rare species and some 230 natural and semi -natural habitat types. So far this ecological network has included about 28,000 sites covering almost 20% of the EU territory which makes it the largest system of conservation areas in the world.

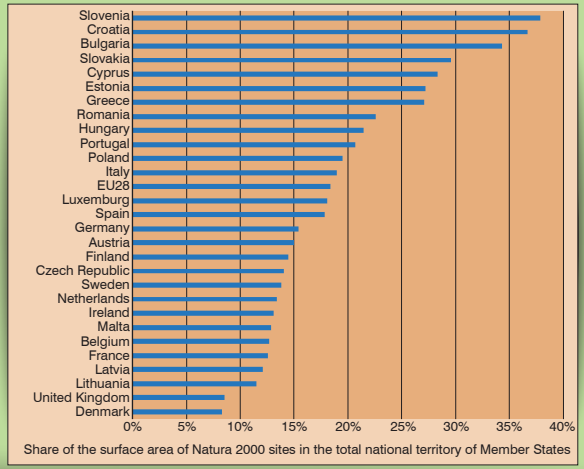
Trend and current state

Natura 2000 sites are determined using scientific criteria while respecting interest and wellbeing of people that inhabit those sites. The Natura 2000 barometer[2] gives an overview of the number and size of special areas of conservation of importance wild taxa and habitat types, including special protection areas of importance for protection of birds. This overview of data is updated on a yearly basis and is valid for the state as per December 31st 2013. Among the Member States Slovenia has the highest share of the ecological network of the mainland territory (37.8%), and it is followed by Croatia (36.7%) and Bulgaria (34.3%). The countries with the lowest share include United Kingdom (8.6%) and Denmark (8.3%).

[1] Directive of the Council 92/43/EEC of May 21st 1992 on conservation of natural habitats and wild fauna and flora (OJ L 206, 22.7.1992) and Directive 2009/147/EC of the European Parliament and the Council of November 30th 2009 on conservation of wild birds (OJ L 20, 26.1.2010)

[2] http://ec.europa.eu/environment/nature/natura2000/barometer/index_en.htm

Natura 2000 barometer



Share of the surface area of Natura 2000 sites in the total national territory of Member States

Source: EEA

FORESTRY

Impacts of Natural Disasters on Forests

Natural disasters such as windfall, pest invasion and the so-called complex forest drying out[1] cause permanent damage to forests. In order to maintain their favourable health status it is necessary to perform a sanitation cut on a yearly basis, i.e. removal of trees permanently damaged by natural disasters. The sanitation cut is expressed as the so-called accidental income.

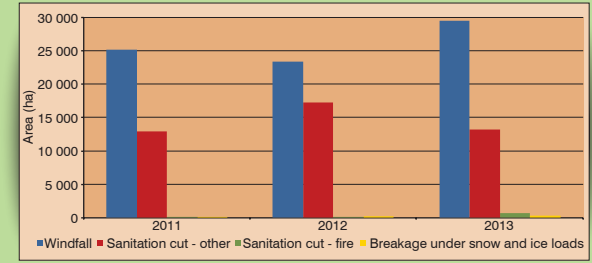
Trend and current state

The area of forests and forest land in Croatia accounts for some 48% of the continental part of the country (2,730,766 ha). Compared to the total forest area, the share of state-owned forests is 76%. They are managed by Hrvatske šume d.o.o which are responsible for monitoring and implementation of measures for maintaining favourable forest health status[2]. Considering the impacts of natural disasters on forest areas affected, they are mostly exposed to the impacts of windfall. According to the total annual cut performed, the share of accidental income is 2.5% on average. The so-called other sanitation cut, which means removal of trees permanently damaged by biotic and/or abiotic factors, accounts for the largest portion of the accidental income (ranging from 50 to 65%). It is followed by cutting the trees damaged by windfall (ranging from 35 to 40%), while forest damage caused by fire and breakage under snow, and ice loads are present to a lesser degree. According to the forest health parameters, the health status of Croatian forests is better than that found in forests of Western Europe.

[1] Complex forest drying out means concerted influence of harmful biotic and abiotic factors. Biotic factors include e.g. plant diseases and harmful insects and abiotic factors are breakage under snow and ice loads, windfall, draught and frost. Although it belongs to the group of abiotic factors, breakage under snow and ice loads is monitored separately.

[2] Some of the measures include sanitation cut, pest control and afforestation.

Forest areas affected by natural disasters



Source: Hrvatske šume d.o.o.

Accidental income	Wood stock cut (m³)		
	2011	2012	2013
WINDFALL	63,037	47,936	62,315
BREAKAGE UNDER SNOW AND ICE	134	575	762
SANITATION CUT - Fire	230	1,061	20,112
SANITATION CUT - Other	91,837	90,006	84,767

FORESTRY

Mine-suspected Forest Areas

A major portion of mine-suspected areas (MSA) as remnants of the Homeland War is still to be found in the category of forests and forest land.

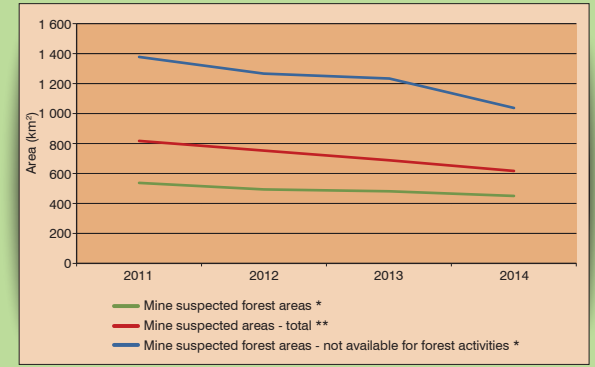
Trend and current state

Until February 1st 2014 the total MSAs covered an area of 613 km^2 and were located in 10 counties and 79 towns and municipalities. In the period from 2011 to 2014 the share of mine-suspected forest areas in the total MSAs varied from 65 to 73%. Even if a minor portion of a compartment and/or a subcompartment is designated a MSA, it is separated from management and designated a forest area currently not available for forestry activities. Due to such practices forest areas not available for forest activities exceed the total MSAs recorded in Croatia.

In 2014 MSAs were removed from the Dubrovačka and Virovitičko-podravska counties. The Croatian Mine Action Centre plans to remove MSAs in 2015 from the area of the Vukovarsko-srijemska County, from the Prašnik[1] Forest in the Brodsko-posavska County and from the major part of the counties Karlovačka, Ličko-senjska, Zadarska and Šibensko-kninska. According to the plan mentioned the total MSAs are expected to be reduced by 50 to 70 km^2.

[1] Prašnik Forest is a unique forest of old Slavonian common oak.

Mine-suspected forest areas



Source: Hrvatske šume d.o.o.*, CMAC**

AGRICULTURE

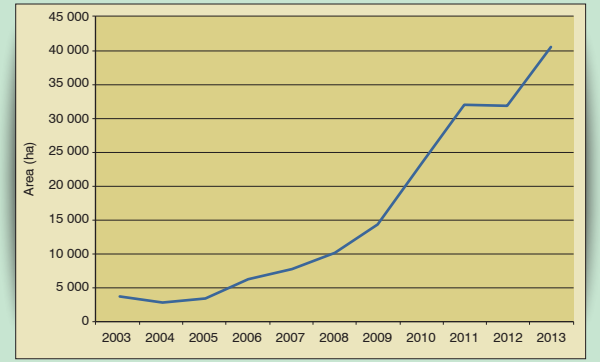
Area under organic farming

Organic agriculture is the production of agricultural crops in which the application of synthetic fertilizers and pesticides is prohibited, while at the same time it is necessary to maintain and enhance fertility and biological activity of the soil. This production is only allowed on soils where industrial and other polluters are not present.

Trend and current state

In Croatia the beginnings of agricultural production which follows the principles of organic farming date back to 2002 when the first 52 ha were entered into the Register[1]. In the following year there was already a considerable increase – by the end of 2003 3,506 ha were recorded. In 2004 areas under organic production decreased for several reasons: inability to meet the organic production criteria, reduced subsidies and disorderly land proprietary relations. In the period from 2005 to 2011 the organic land area increased considerably (from 3,184 ha to 32,036 ha). Apart from the increase in arable land, this was due to registering large areas covered by bee pastures. Although the registration of new organic agricultural areas stagnated during 2012, by the end of 2013 the Register had 40,641 ha enrolled, which is a 27% more than the previous year.

Area under organic farming



Source: PAAFRD, MA

[1] Register of Entities Engaged in Organic Farming

AGRICULTURE

Livestock Production

Livestock breeding is a branch of agriculture concerned with breeding small stock and bovine cattle with the aim to produce various food and raw materials for further processing (e.g. leather, wool). The major branches of livestock breeding are cattle, pig, sheep, goat and poultry breeding. The share of livestock breeding in the total agricultural production is an indication of the level of agricultural development in terms of economy and ecology.

Trend and current state

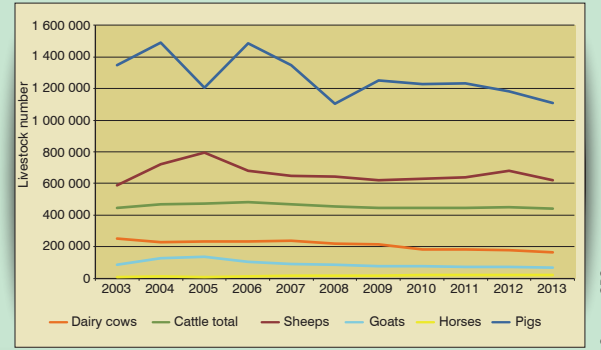
The use of manure is affecting the soil organic matter by increasing it and improving the soil structure and its fertility. However, besides being of benefit to the ecosystem, livestock breeding is also pressure to environment. In this regard it is important to monitor the number of individuals within specific livestock categories[1] because of their various contributions to the pollution of environment. So the major contribution to CH_4 air emissions from the agricultural sector is due to the number of cattle, primarily the subcategory of dairy cows.

Considering the period from 2003 to 2013, the number of cattle remained stable (annual average 462,000), but the number of dairy cows showed a downward trend (a decline of almost 34%). Nevertheless, the contribution to CH_4 air emissions from agriculture in that period (sector of enteric fermentation and manure management) did not drop substantially because the breeding of other animal categories is also a contributor. So, e.g. the number of pigs varies according to the so-called pig breeding cycle[2], the number of sheep shows a variable trend and the number of goats is on the decline. In the period observed the number of horses increased continuously and reached 20,300 in 2013 which represents a rise of over 100%.

[1] Animal classification according to IPCC methodology

[2] Usually a four-year cycle in which the market prices fluctuate, resulting in the production increase or decrease.

Livestock number according to major categories



Source: CBS

WASTE MANAGEMENT

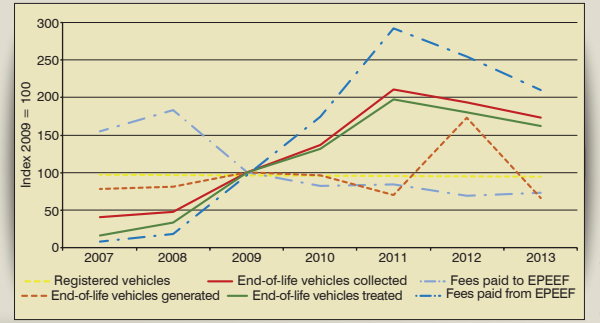
End-of-life Vehicles Management

The Directive on end-of-life vehicles[1] has clearly defined objectives for the re-use, recycling and recovery of end-of-life vehicles. Moreover, by this Directive the manufacturers are encouraged to design new vehicles without harmful substances, vehicles which will be easier to recover after expiry of their life cycle.

Trend and current state

The Ordinance on the Management of End of Life Vehicles[2] was adopted in 2006, based on which 16 companies were given concessions for the collection and two for the treatment and recovery. Since the expiry of concessions in 2012, eight companies have been conducting the collection and two the treatment and recovery on the basis of a temporary contract. From the year 2007 the number of registered vehicles is without oscillations and amounted to 0.34 vehicles per inhabitant in 2013. The same goes for the number of end-of-life vehicles generated, with the exception of 2012 when for a large number of vehicles registration was not renewed. After the year 2011 in which 35,100 t of end-of-life vehicles were collected and treated, this activity decreased to 28,800 t in 2013. The amounts of fees paid to the EPEEF upon the import of the vehicles show decrease after 2008 as a consequence of a decrease in vehicle import. In 2013 the fee for the import of the vehicle was 0.85 HRK/kg, out of which EPEEF pays the collectors 0.70 HRK/kg for every end-of-life vehicle collected[3], and to the treatment operators 0.75 HRK/kg for every vehicle treated.

End-of-life vehicles management



Source: CEA

[1] Directive 2000/53/EC of the European Parliament and of the Council of September 18th 2000 on end-of life vehicles
[2] OG 136/06, 31/09, 156/09, 53/12, 86/13, 91/13
[3] Until 2010 this charge was 0.30 HRK/kg of end-of-life vehicle

WASTE MANAGEMENT

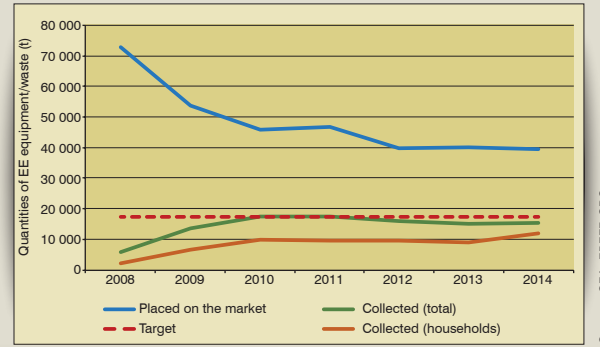
EE Waste Management

Electrical and electronic waste is globally one of the fastest growing types of waste. Due to substances that it contains (toxic metals and brominated flame retardants) this waste is mostly classified as hazardous. It is, therefore necessary to adopt regulations that lay down the measures to prevent the generation or rather encourage the increase in the share of EE waste collected and recovered.

Trend and current state

The EE waste collection target of 4 kg per inhabitant of Croatia was met in 2010, but the following years saw the decline in the quantities collected as a result of lower consumption of EE equipment. According to the Directive[1] and the Ordinance[2], the target quantity to be collected will gradually increase and reach 45% as of 2016 and 65% of EE equipment placed on the market (or 85% of the total EE waste generated) as of 2019. In 2014 39,169.12 t of EE equipment were placed on the market and 15,482 t were collected of which 12,000 t came from households (2.8 kg per capita). 15,433 t of EE waste were recovered, all of which in the territory of Croatia. The majority of waste was collected in the categories of consumer equipment and photovoltaic panels (41%) and large household appliances (34%). The largest quantities were collected in the City of Zagreb and the Zagrebačka County (34%), and the most efficient counties were Krapinsko-zagorska and Dubrovačko-neretvanska with 5.6 and 4.9 kg of EE waste collected per capita.

EE waste management



Source: CEA, EPEEF, CBS

[1] Directive 2012/19/EU of the European Parliament and of the Council of July 4th 2012 on waste electrical and electronic equipment) (WEEE) (OJ 197, 24.7.2012)

[2] Ordinance on Management of Waste Electrical and Electronic Equipment (OG 42/14, 48/14)

WASTE MANAGEMENT

Waste Generation Intensity

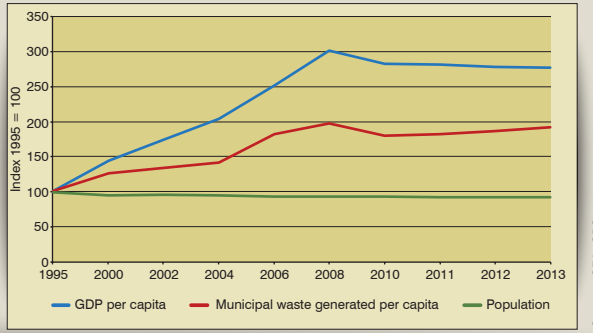
The indicator follows the decoupling of the link between waste generation and economic growth and is presented as a relation between the amount of generated waste (municipal in this case) per capita and gross domestic product (GDP).

Trend and current state

The decoupling of connection between waste generation and economic growth of the country is defined by the Sustainable Development Strategy of the Republic of Croatia[1]. However, the target to reduce waste generation has still not been met. Namely, the municipal waste generation trend followed the GDP trends until 2010, after which the GDP continued the decreasing trend while the quantities of municipal waste generated kept increasing despite the decrease in the population. Thus, in 2013 the GDP amounted to 10,147 EUR per capita and the quantity of municipal waste generated per capita was 402 kg. Such trends point to the need of changing the patterns of behaviour both in the production and consumption sectors, or rather to the need of directing the society towards sustainable use of resources and the concept of circular economy in which waste represents an inevitable source of raw materials.

The Waste Framework Directive[2] requires that EU Member States adopt national waste prevention programmes. The EU data available indicates the trends of decoupling waste generation from economic growth in the production and services sectors, as well as for the households the decoupling of the waste generation in relation to the consumption. In the period from 2004 to 2012 the municipal waste generated in EU per capita decreased by 4% and amounted to 481 kg per capita in 2012. The effects of waste prevention programmes adopted in most of the countries are yet to be evaluated, because it is too early to correlate the decrease in the waste generation with their implementation and effectiveness.

Waste generation intensity



Source: CEA, CBS

[1] OG 30/09

[2] Directive 2008/98/EC of the European Parliament and of the Council of November 19th 2008 on waste and repealing certain Directives

ENERGY

Final Energy Consumption by Sectors

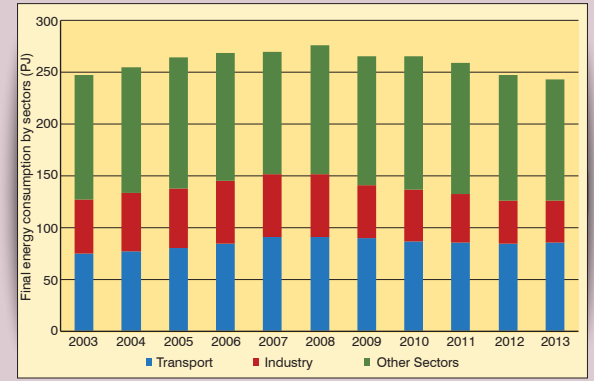
Final energy consumption includes energy used by transport, industry and other sectors. Furthermore, a dominant sector in final energy consumption is other sectors, which includes energy consumption in households, services, agriculture and construction.

Trend and current state

In the period from 2003 to 2008 the final energy consumption showed an upward trend with an increase of 11.8% and in 2008 accounted for 67% of the total energy consumption[1]. The highest final energy consumption (276.77 PJ) was registered in 2008, but until 2013 it decreased by 12%. It is connected with the decline of energy consumption in industrial sector by 33%, as a result of the financial and economic crisis. In 2013 the industrial sector accounted for only 16.8%, while one third of the final energy consumption was used by transport (35%) and almost a half (48%) by the other sectors. Major energy consumers are households which account for 27 to 31% of the final energy consumption. In 2013 the direct energy consumption in Croatia amounted to 1,494 kg of oil equivalent per capita, which is 33.5% lower than the EU-28 average.

[1] Final energy consumption includes the direct consumption of energy (supply of energy product to industry, transport, households, services, agriculture and construction for energy purposes), non-energy consumption, transport and distribution losses, operational consumption and transformation losses.

Final energy consumption by sectors



Source: EIHP

ENERGY

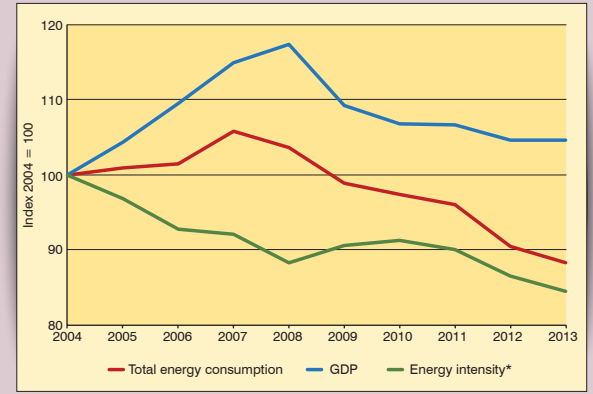
Energy Intensity

Economic growth results necessarily in increased energy consumption, accompanied by increased load on all environmental components. Energy intensity provides information on how much energy should be used to reach the unit of gross national product (GDP).

Trend and current state

This indicator follows the trend of decoupling total energy consumption from economic growth. In other words, the main objective is to use energy as rationally as possible and achieve economic growth and at the same time preserving the environment. According to data for the observed period, the desirable downward trend of energy intensity and decoupling was recorded until 2006, however in the next year the total energy consumption already followed the GDP growth rate and the earlier mild trend of decoupling stopped. The crucial year was 2008 with the beginning of the financial and economic crisis, clearly reflected in all the trends observed. Therefore, the data are observed for the period from 2004 to 2008 when energy intensity dropped by 11.7% and for the period after 2008 (until 2013) which was characterised by minimum decrease in energy intensity, of only 4.4%. Considering the entire period, the energy intensity decrease was 15.6%. Compared to the average EU-28 intensity, the energy intensity of Croatia in 2013 was 15.2% higher.

Energy intensity



*Eurostat methodology

Source: EIHP

INDUSTRY

Eco-efficiency in industry

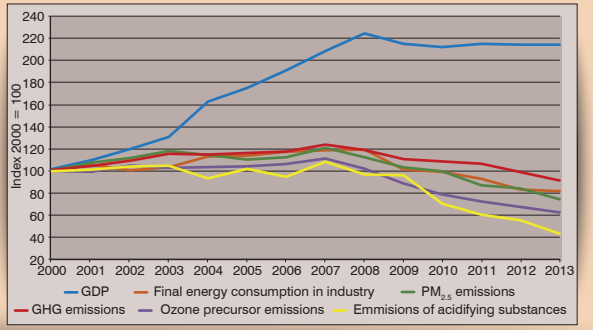
Industrial production may only be ecologically efficient if the supply of goods and services satisfies the needs of people and contributes to the quality of life, at the same time reducing environmental impacts and intensity of the natural resource use.

Trend and current state

In the period from 2000 to 2013 pollutant emissions coming from the industrial sector[1] were mostly increasing, with minor oscillations until 2007, after which they started to fall. The highest drop was recorded in emissions of acidifying substances[2], with values 58% lower compared to 2000. The downward trend of ozone precursor emissions[3], which fell below values recorded in 2000, still continues. In the observed period, the $PM_{2.5}$ emissions were reduced for 26.8%. After several years of mildly rising (until 2007), the GHG emissions showed a downward trend and in 2013 remained below the emission level of 2000 (a 9.7% drop). The increase in final energy consumption in industry was recorded until 2008, but the years until 2013 saw a considerable drop (as much as 33%).
The reduction of emissions coming from the industrial sector is due to low-sulphur fuels, increased natural gas consumption, upgraded technologies in the energy sector, introduction of best available techniques in the sector of using organic solvents and increased use of renewable energy sources (wind power and hydropower plants), but also the drop of industrial production and the use of fuels as a result of economic crisis. Since 2008 the GDP started to fall continuously and the consequences are still felt in industrial activities.

[1] Includes business sectors: 1A Energy – emissions from fuel combustion (excluding the business sector 1A3 Fuel combustion in transport and 1A4 Fuel combustion in general consumption sector), 1B Energy – fugitive emissions from fuels and 2 Production processes and use of products.
[2] Emmissions of acidifying substances expressed as acidification index (Aeq) and calculated using weight coefficients: SO_2 0.0313; NO_x 0.0217 and NH_3 0.588.
[3] Ozone precursor emissions expressed as NMVOC-eq and calculated using the factors: NO_x 1.22; NMVOC 1; CO 0.11 and CH_4 0.014.

Eco-efficiency in industry



Source: CBS, EIHP, CEA

CHEMICALS

Biocidal Products

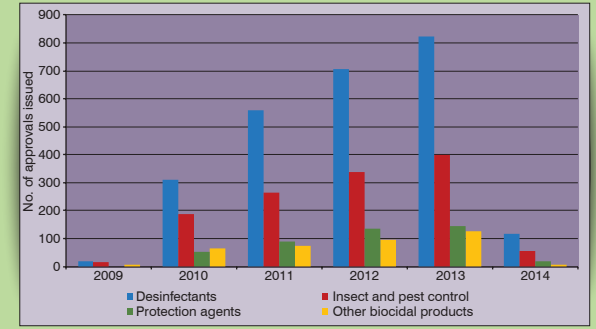
Biocidal products are active substances and preparations containing one or more active substances, intended to destroy or prevent the action of harmful organisms by chemical or biological means. Before placing on the market, biocidal products must be approved by the Ministry of Health, or the Biocidal Products Commission. After the approval is issued, they are entered into the Register of Biocidal Products. Lists of biocidal products, which have an approval for placing on the market of the Republic of Croatia[1], are published in the Official Gazette on a yearly basis.

Trend and current state

In the period from 2009 to 2013 biocidal products approved according to the Biocidal Products Act[2], were entered into the Register of Biocidal Products. According to the data for that period the number of biocidal products entered into the Register was rising, especially disinfectants (personal hygiene products, disinfectants used for food, water, etc.) and insect and pest control products (insecticides, rodenticides, repellents, etc.). A new Commission started operating in 2014 in accordance with the provisions of the new Regulation[3] and biocidal products are now entered into the Register on the basis of approvals issued according to the provisions of the new legislation. Therefore, the lower number of approvals issued in 2014 does not mean the decreased number of biocidal products placed on the market. It is, instead, a result of adjustment of the national legislation to legislation of the EU.

[1] List of biocidal products approved for placing on the market (OG 115/14)
[2] OG 63/07, 35/08, 56/10
[3] Regulation (EU) No. 528/2012 of the European Parliament and of the Council of May 22nd 2012 concerning the making available on the market and use of biocidal products (OJ 167, 27.6.2012)

No. of approvals for placing biocidal products on the market



Source: MH

TOURISM

Tourism Density

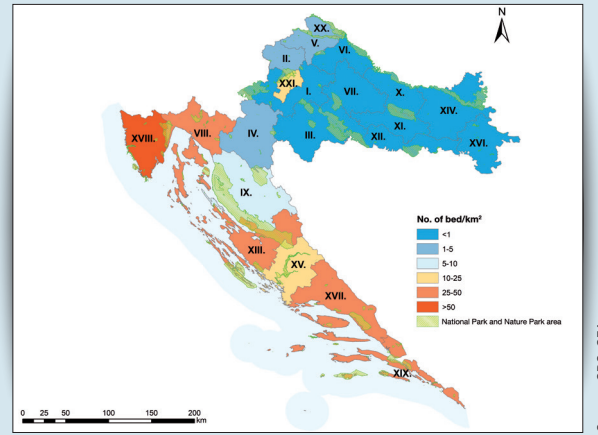
This indicator shows the concentration of tourist accommodation capacities in Croatia. It helps to evaluate the development of a tourist destination, but also the pressure on space and infrastructure system (water supply, waste water discharge, etc.).

Trend and current state

The spatial distribution of number of the bed places indicates a higher density of accommodation facilities in coastal area. In all of the coastal counties the density of accommodation facilities exceeds 20 bed places/km^2 with the exception of the Ličko-senjska County (5 bed places/km^2). Except the coastal counties, the number of bed places per km^2 exceeds 20 in the area of the City of Zagreb only. The national average of the density of accommodation capacities is 15.5 bed places/km^2.

It is important to note that those data do not include information about second homes and apartments (residential tourism). This type of tourism is important from the aspect of the occupation of space and development of tourist destination, primarily in the coastal area (e.g. spreading of apartments in Spain), including the movement of a large number of people during vacations which represents an additional pressure on the infrastructure system.

Tourism density



Source: CBS, CEA

FISHERIES

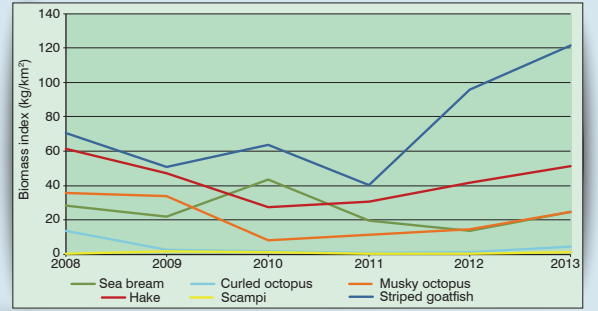
Biomass Index

The fish stock status in the Adriatic Sea is evaluated using the method of estimating the biomass population or by studying the long-time trends in biomass index. The status of population of demersal (bottom trawl) species is followed through biomass index trends based on the results obtained by the MEDITS[1] scientific surveys.

Trend and current state

In 2013 the mean biomass index value for six demersal economically important fish species in the territorial sea of the Republic of Croatia[2] showed an upward trend, with the exception of the fishing zone A.
Since 2010 the hake biomass index has been constantly rising. According to data by fishing zones, the hake biomass index in all parts of the Adriatic Sea was higher in 2013 than previous year, except in the fishing zone C (growing site and fish hatchery for this species). In 2013 the striped goatfish showed a marked rise in the biomass index compared to 2012 in all fishing zones, except the Middle Adriatic open sea waters. The scampi biomass index showed a downward trend over the entire area surveyed. It was slightly higher in 2013 than previous years, but is still highly unfavourable. In the period observed biomass indices for curled and musky octopus showed oscillations and were mostly associated with hydrographic circumstances in the sea. In 2013 they were higher than several previous years. In 2012 the sea bream population showed a mild biomass index recovery over the entire area surveyed, with the highest one recorded in the fishing zone G where most of the biomass of this species may be found.

Biomass index



Source: IOF

[1] MEDITS is an international programme for trawl suvey of the Mediterranean and Adriatic Sea which makes it possible to prepare species distribution maps, estimate the biomass and identify growing sites and hatcheries.
[2] The territorial sea of the Republic of Croatia is divided into seven zones: A- west coast of Istria, B- open North Adriatic, C- open Middle Adriatic (the Jabuka Pit), D - open South Adriatic, E and F – North Adriatic channels and G – Middle Adriatic channels.

FISHERIES

Aquaculture

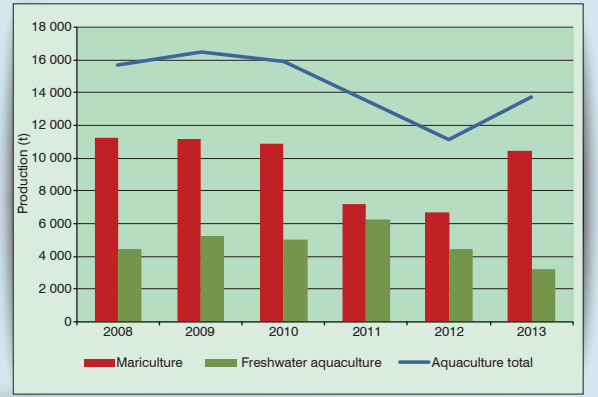
Environmental load on fish farming sites is reflected in changed physical and chemical properties of the water column and the sediment, and in degradation of biodiversity. In order to achieve and maintain good environmental status and responsible and sustainable aquaculture management, it is necessary to plan the fish farming and development in accordance with the requirements of the environment and nature protection. Responsibility for sustainable management lies with the regional/ local authority in charge of the spatial planning.

Trend and current state

After a five-year period characterized by stagnation and decline, the aquaculture production has been showing an upward trend since 2012. This is due to the recovery in mariculture production, primarily as a result of investments in production aggregation in conjunction with a new approach to fish farming by means of open-sea cages. The trend of relocating cage fish farming from coastal areas to semi-open and open local waters helps reduce the impact on vulnerable coastal habitats. Although the freshwater aquaculture production showed a mild upward trend until 2011, a downward trend has been evident since 2012. Namely, long years of draught caused a drop in carp production in fishponds despite emergency measures taken and hydrotechnical infrastructure renewal and modernization of traditional fish farming. Moreover, a considerable drop in freshwater aquaculture production in 2013 may be attributed to the stop in carp production in the "Ruda"[1] fish farm which has the highest capacity for rearing salmonid species.

[1] The fish farm is located on the River Ruda joining the River Cetina in the southern area of the Sinjsko Polje Valley.

Aquaculture production



Source: IOF, MA-FD

TRANSPORT

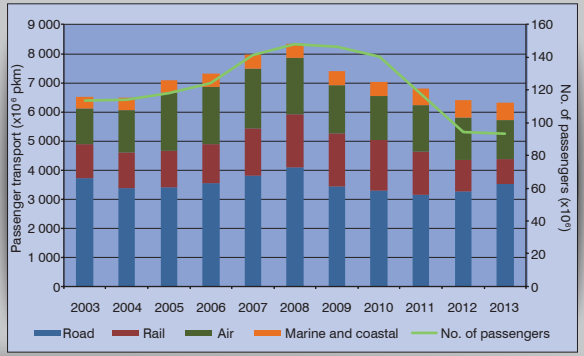
Passenger Transport

Considering the ever-growing global trends regarding mobility of people, and the fact that road transport, being the most important in passenger transport, represents the major air pollutant, it is absolutely necessary to encourage environmentally acceptable modes of passenger transport – rail, combined and alternative.

Trend and current state

The highest number of pkm travelled was recorded in 2008 (8.3 billion pkm), but in the period that followed trend is decreasing which coincided with negative economic trends. So in 2013 a total of 6.3 billion pkm was exceeded, of which the road transport had the greatest share (55.5%). It was followed by air transport with 21% (1.34 pkm) and rail transport with a share of 13.5%. The highest number of passengers conveyed in total was recorded in 2008 (148 million passengers), but in 2013 this number was 93 million (a decrease of 37.2%). Road passenger transport remains the most frequent mode of transportation (54 million passengers in 2013) and accounts more than a half of the total passenger transport. In the period from 2001 to 2009 the number of passengers conveyed by rail showed a constant upward trend due to subsidies and inclusion of the rail in public transport of the City of Zagreb[1]. However, after 2009 this number declined, especially after 2011 when co-funding of public transport in the City of Zagreb[2] was cancelled. In period from 2009 to 2011, the number of passengers conveyed by rail dropped considerably by 67%.

Passenger transport by public modes of transportation



Source: CBS

[1] Since the third quarter of 2006 the total passenger transport has included free tickets (pupils, students, pensioners, social tickets) based on the Contract on subsidies for costs due to the inclusion of railway into public transportation system of the City of Zagreb.
[2] Since July 1st 2011 subsidized tickets have been excluded from the calculation, which is now based on the number of tickets sold and identity cards for urban and suburban transport; this must be taken into consideration when comparing the data presented.

TRANSPORT

Freight Transport

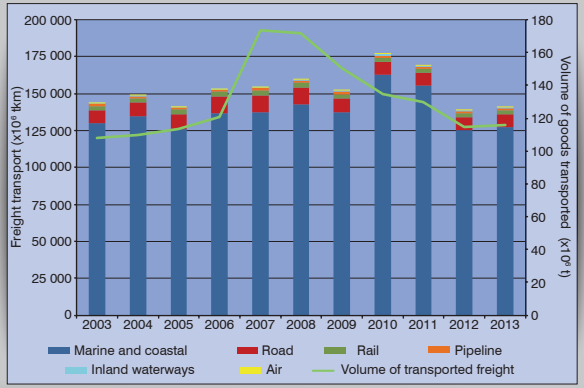
Freight transport is one of the most significant indicators of environmental impacts of transport. Besides being a source of air pollution and an important source of greenhouse gases, it requires high-quality infrastructure, thus affecting directly the biological and landscape diversity. Above all, it should be noted that transportation of hazardous substances poses a potential threat to environmental components (e.g. marine oil transportation).

Trend and current state

Over the entire observed period the largest volume of freight (expressed in tonne kilometres – tkm) was transported in 2010 (176.8 billion tkm). In the following period the volume transported decreased by as much as 20.4%. The predominant mode of transportation is marine transport, accounting for around 90% of the total freight transport, which is followed by road transport with a share of some 6%. Since 2008 the share of the volume of freight transported by rail has been constantly on decline, indicating that this mode of transportation is underused and that railway lines need to be modernized due to international, regional and local transport. Although the share of inland waterways transport is only 0.5%, a considerable rise from 100 tkm in 2003 to 771 tkm in 2013 was recorded due to changes in the methodology[1]. The total volume of transported freight was increasing constantly until 2007 when it reached the highest value – 173.6 million tonnes. However, in the years that followed the transported volumes dropped considerably. If we compare year 2013 with 2007, the total volume of transported freight decreased by as much as 33%. In 2013, 140.8 billion tkm were exceeded and 116.3 milion tonnes of freight conveyed.

[1] Since 2008 the inland waterways transport has also included transit.

Freight transport according to modes of transportation



Source: CBS

HEALTH AND SAFETY

Vector-borne Diseases

Vector-borne diseases are infections transmitted by a third organism, the so-called vector (mosquitos, ticks, lice and similar). The significance of their systematic monitoring is based on the fact that climate conditions (temperature and humidity) have a direct impact on the spread and density of vectors, and thus on their potential for disease transmission.

Trend and current state

Lyme borreliosis is a cause of about 85% of all new cases of vector-borne diseases reported in Croatia. Although there is currently no Lyme borreliosis vaccine available, the development of serious generalized forms may be prevented if the disease is recognized and treated in time at an early stage. The incidence of tick-borne meningoencephalitis (TBM) is kept low by preventive vaccination of persons at high risk for disease transmission by ticks (forestry workers, hunters, mountaineers, excursionists). The third commonest vector-born disease is imported malaria (the last case of autochthonous malaria was recorded in 1954), while other vector-borne diseases occur sporadically. Since 2010 the occurrence of tropical vector-borne diseases transmitted by mosquitos (Dengue and the West Nile fever) has been recorded.
Despite an upward trend in the number of new cases, especially of Lyme borreliosis, Croatia is behind the majority of countries of the European Union considering the number of newly diagnosed cases. According to the CISID[1] database of the World Health Organisation, the highest number of new cases of Lyme borreliosis was recorded in Poland (9,016 in 2011) and Slovenia (5,552 in 2011).

Number of cases reported in the Croatia by the type of vector-borne diseases

Vector-borne diseases	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014*
Lyme borreliosis	220	301	266	439	435	492	499	434	661	467
Tick-borne meningoencephalitis (KME)	28	20	11	20	44	36	26	45	44	25
Malaria - autochthonous	0	0	0	0	0	0	0	0	0	0
Malaria - imported	7	6	8	6	3	8	7	23	7	23
Leishmaniasis	2	1	5	3	1	0	1	2	5	3
Dengue fever	0	0	0	0	0	1	1*	1*	3	2
Chikungunya	0	0	0	0	0	0	0	0	0	0
Mediterranean spotted fever	1	1	4	2	1	0	2	1	4	2
West Nile meningoencephalitis	0	0	0	0	0	0	0	6	20	1
Other vector-borne diseases (Ehrlichiosis)	0	0	0	0	0	3	0	0	0	0
Total no. of new cases reported	**258**	**329**	**294**	**470**	**481**	**540**	**535**	**511**	**744**	**543**

Source: CIPH

[1] Centralized information system for infectious diseases (CISID) http://data.euro.who.int/cisid/?TabID=67

* Reports on cases in 2014 are in the process of collecting, so the data are not final.

GENERAL ENVIRONMENTAL ISSUES

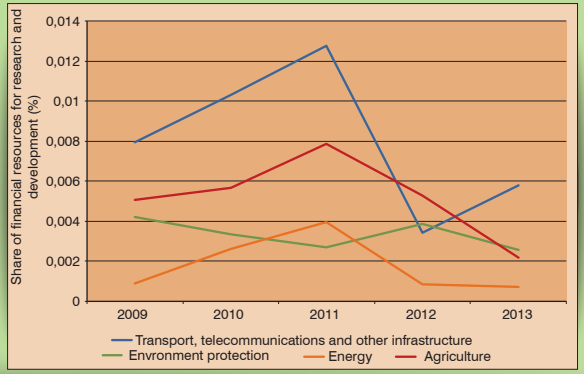
Share of Budgetary Resources and Allocations for Research and Development

According to the Europe 2020[1] strategy, research, development and innovations are prerequisite conditions for a smart, sustainable and inclusive growth. The intensity of research and development is presented as a share of budgetary resources and allocations for individual social and economic targets[2] associated with the environment in relation to the GDP. This is the way to follow the trends in establishing a favourable framework for researchers and entrepreneurs.

Trend and current state

The research and development intensity in Croatia in 2013 amounted to 0.62%, of which only 0.01% were allocated to targets associated with the environment (environmental protection, energy, agriculture, transport, telecommunications and other infrastructures). These shares lag far behind the level of EU-28 countries which in 2013 allocated 2% to research and development and 0.08% to environmental issues. The largest portion of funds intended for environmental issues in Croatia was allocated in 2011 (0.027%) which was then followed by a sharp drop. During the period observed, with the exception of 2012, most of the funds were allocated to transport, telecommunication and other infrastructure targets. The EU aims at increasing total financial resources intended for research and development to 3% of the GDP by 2020, while according to the Partnership Agreement between Croatia and the European Commission the target set for the Republic of Croatia is 1.4%[3] of the GDP.

Share of budgetary resources and allocations for individual targets in relation to GDP



Source: CBS

[1] EUROPE 2020 A strategy for smart, sustainable and inclusive growth /*COM/2010/2020 final*/
[2] Nomenclature for the analysis and comparison of scientific programmes and budgets NABS 2007, Eurostat
[3] Partnership Agreement between the Republic of Croatia and the European Commission on EU Structural and Investment Funds for Growth and Jobs in 2014 to 2020

SUSTAINABLE CONSUMPTION AND PRODUCTION

Decoupling Economic Growth from Domestic Extraction Used and Direct Material Input

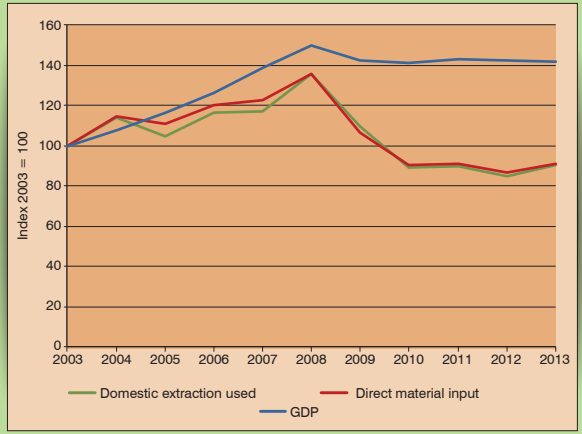
The sustainable production and consumption targets imply efficient use of resources and an economic growth[1], while at the same time reducing materials used in production and consumption. The main objective is to achieve a balanced and stable economic growth with the least impact on environmental quality.

Trend and current state

The decoupling of economic growth from domestic extraction used and direct material input is an indicator that provides information on whether material resources are used efficiently. This information is especially important in view of the fact that domestic extraction used reduces their availability. Resource categories include biomass, metal ores, non-metal minerals and fossil fuels. In the period from 2003 to 2008 domestic extraction used and direct material input showed an upward trend, closely followed by gross domestic product (GDP). The growing trend in domestic extraction used and direct material input stopped in 2009 after which a mildly variable trend continued until 2012. The increased domestic extraction used and direct material input was recorded again in 2013, but still remained below the level of 2003 material consumption. A more marked decoupling of economic growth from resource exploitation and material input has been recorded since 2009, although more as a consequence of economic crisis and reduced production than of policies and measures taken to achieve sustainable production and consumption, or efficient use of resources.

[1] Followed by GDP trends

Decoupling economic growth from domestic extraction used and direct material input



Source: Eurostat*, CBS

* Data on volumes of domestic extraction used and direct material input in the period from 2003 to 2007.

PUBLIC RELATIONS

Number and Breakdown of Public Inquiries Addressed to the Croatian Environment Agency

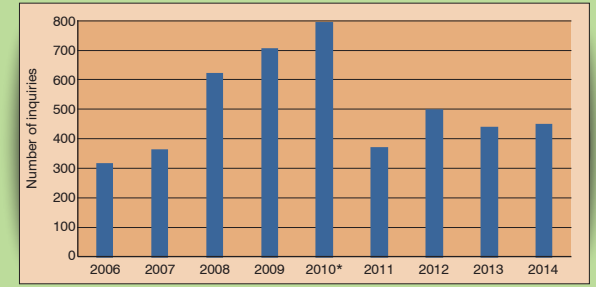
The Croatian Environment Agency provides public access to environmental information through databases, reports (www.azo.hr) and other publications, in this way fulfilling its obligation to monitor and report on the state of the environment at the national level. Furthermore, direct communication with the public is achieved through timely replies to inquiries received.

Trend and current state

In the last nine years the Agency received 4,608 inquiries, a half of which was related to waste issues. The interest in the Environmental Pollution Register (EPR) with 14.4% of inquiries shows an upward trend and is followed by inquiries relating to data contained in other EIS databases (8%). General environmental issues were the subject matter of 7.8% of inquiries, while air and climate changes accounted for 5.3% and inland waterways/sea for 3.4% of the total number of inquiries. The least inquiries were related to sectorial pressures (1.8%), soil (1.3%) and biodiversity (0.8%). In nine years the Agency forwarded 332 inquiries to competent institutions, mainly to the Ministry of Environmental and Nature Protection and to the competent inspectorate.

Considering the annual average, the structure of applicants has not changed substantially. Of the total of 3,696 applicants, a half was private businesses, and the interest of citizens is constantly growing (17.2%). Local self-government units submitted 7.2% requests, foreign citizens and institutions 7% and ministries 4.8%, followed by state-owned companies (4.1%) and the scientific community (3.8%). In the last nine years non-governmental organizations submitted only 1.4% of requests, while schools and health care institutions, public institutions and expert institutions (agencies, institutes) account for 1.2%. With 0.8% of requests participants in various projects are ranked at the very bottom of the list.

Total number of inquiries submitted to the CEA



Source: CEA

* By redesigning the website in 2010 the Agency facilitate the use and acquisition of data and information required, thus reducing the number of public inquiries.

THE ENVIRONMENT IN YOUR POCKET

Abbreviations

BTEX – aromatic hydrocarbons (benzene, toluene, ethylbenzene and xylene)

CBS – Croatian Bureau of Statistics

CEA – Croatian Environment Agency

CFC - chlorofluorocarbons – freons

CH_4 - methane

CISID - Centralized information system for infectious diseases

CMAC – Croatian Mine Action Centre

CO_2-eq - CO_2 emission equivalent

CIPH – Croatian Institute of Public Health

DHMZ – Croatian Hydrological and Meteorological Service

EC – European Commission

EEA - European Environment Agency

EIHP –Energy Institute Hrvoje Požar

EIS – Environmental Information System

EPEEF – Environmental Protection and Energy Efficiency Fund

EPR – Environmental Pollution Register

EU – European Union

GDP – gross domestic product

ha - hectare

HCFC - hydro chlorofluorocarbons

IOF – Institute of Oceanography and Fisheries

IPCC - Intergovernmental Panel on Climate Change

kt – kilotonne (10^3 t)

MA – Ministry of Agriculture

MAC - maximum allowable concentration

MA-FD – Ministry of Agriculture – Fisheries Department

MSA – mine suspected area

THE ENVIRONMENT IN YOUR POCKET

Abbreviations

MH – Ministry of Health

MSFD – Marine Strategy Framework Directive

NH_3 - ammonia

NMVOC – non-methane volatile organic compounds

NP – National Park

NP – Nature Park

N_2O – nitrous oxide

OG – Official Gazette

OG-IT – Official Gazette – International Treaties

OJ – Official Journal of the EU (OJ) is an official compendium of EU legislation (L series) and other official documents of the EU institutions, bodies and agencies (C series and its supplements)

PAAFRD – Paying Agency for Agriculture, Fisheries and Rural Development

PAH – polycyclic aromatic hydrocarbon

PE – population equivalent

PJ – petajoule (10^{15} J)

$PM_{2,5}$ - particulate matter with aerodynamic radius up to 2.5 μm

PM_{10} - particulate matter with aerodynamic radius up to 10 μm

RC – Republic of Croatia

SINP – State Institute for Nature Protection

t – tonne

ODS – ozone depleting substance

UVR – ultraviolet radiation

WB – water basin

Acidification – a common name for processes that result in the build-up of hydrogen cations as a consequence of losing base cations (primarily calcium and magnesium). Anthropogenic acidification is caused by acid rains and excessive use of mineral and organic fertilizers.

Agglomeration – an area in which the population and economic activities are concentrated enough to allow the collection and conveyance of municipal wastewater to a wastewater treatment plant or to the final point of discharge into a receiver.

Anoxia – absence of oxygen dissolved in the sea and sediment.

Aquaculture – the farming of aquatic organisms both in the marine environments (mariculture) and freshwater (freshwater aquaculture).

Biological stock – specimens of the same species inhabiting a certain geographic area, sharing the same genetic material and hardly ever mating with specimens from other areas.

Coastal waters - surface water on the landward side of the line which is at a distance of one nautical mile from the nearest point of the baseline, from which the width of territorial waters is measured in the direction of high seas, extending up to the outer limit of transitional waters.

Compartment – A permanent basic unit of the forest management division as part of an individual management unit, established to facilitate management, supervision and field orientation.

Counties in the area of the Republic of Croatia – numerical denotation and the district organization are defined by the Act of Territories of Counties, Cities and Municipalities of the Republic of Croatia (OG 86/06, 125/06, 16/07, 46/10, 145/10, 37/13, 44/13, 45/13):

I	Zagrebačka County with the seat in the City of Zagreb
II	Krapinsko - zagorska County with the seat in Krapina
III	Sisačko - moslavačka County with the seat in Sisak
IV	Karlovačka County with the seat in Karlovac
V	Varaždinska County with the seat in Varaždin
VI	Koprivničko - križevačka County with the seat in Koprivnica
VII	Bjelovarsko – bilogorska County with the seat in Bjelovar
VIII	Primorsko – goranska County with the seat in Rijeka
IX	Ličko - senjska County with the seat in Gospić
X	Virovitičko - podravska County with the seat in Virovitica

XI Požeško - slavonska County with the seat in Požega
XII Brodsko - posavska County with the seat in Slavonski Brod
XIII Zadarska County with the seat in Zadar
XIV Osječko - baranjska County with the seat in Osijek
XV Šibensko - kninska County with the seat in Šibenik
XVI Vukovarsko - srijemska County with the seat in Vukovar
XVII Splitsko - dalmatinska County with the seat in Split
XVIII Istarska County with the seat in Pazin
XIX Dubrovačko - neretvanska County with the seat in Dubrovnik
XX Međimurska County with the seat in Čakovec
XXI City of Zagreb, the capital of the Republic of Croatia, a separate and unique territorial and administrative unit, whose organization is defined by the Act on the City of Zagreb. The denotation was selected for the reason of data overview simplicity.

Databases for the thematic area Air, the area of ozone depleting substances and fluorinated greenhouse gases:

REG 1 – Register of legal and physical entities - craftsmen

REG 2 – Register of authorized persons – maintenance technicians

PNOS – Registration of immobile equipment and plants

Demersal species – organisms that live and feed on the bottom of an aquatic ecosystem.

Descriptor 5 – the fifth qualitative descriptor according to the Marine Strategy Framework Directive (2008/56/EC) used for presenting and determining good environmental status with respect to eutrophication. According to its definition good marine environmental status is achieved when human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters.

Direct Material Input - economic value of domestic extraction used to which material imports is added.

Ecosystem – a dynamic community of plants, animals, algae and microorganisms in conjunction with the non-living environment, interacts as a functional unit.

Energy intensity – total energy consumption expressed in kg oil equivalent and needed to achieve the unit of gross domestic product (GDP) in 1,000 dollar determined by application of the purchasing power parity.

Eutrophication – A process taking place in the aquatic ecosystem by which water is enriched by increased and uncontrolled input of nutrients which favours the excessive growth of phytoplankton and thus the production of organic matter. The decomposing surplus of unused inorganic matter depletes the water of available oxygen, which can lead to hypoxia or anoxia of the near-bottom layer with serious consequences for benthic organisms.

Eutrophication indicators monitoring stations – the data used in this publication for the purpose of calculation and presentation of eutrophication indicators obtained from selected monitoring stations at which during 2013 scientific and experimental monitoring was carried out as part of the projects "Coastal Cities Water Pollution Control Project 2: Consulting services for the definition of the monitoring and observation system for ongoing assessment of the Adriatic sea under the Adriatic sea monitoring programme, Phase II" and "Systematic Monitoring of Transitional and Coastal Water Quality in 2012 and 2013". The project results were used as a basis for the preparation of the Monitoring and Observation System for Ongoing Assessment of the Adriatic Sea (monitoring programme) as the first action programme of the Marine Environment and Coastal Area Management Strategy.

OC01a	First monitoring station at the southern profile in the Dubrovačko – neretvanska County (marine waters)
OC02a	Bay of Mali Ston (coastal waters)
OC03	Port of Ploče (transitional waters)
OC05	The Door of the Town of Split (coastal waters)
C05a	Stončica (marine waters)
OC06	Bay of Kaštela (central) (coastal waters)
OC07	Vranjic (coastal waters)
OC08a	Blitvenica (marine waters)
OC09	Šibenik (bay) (transitional waters)
OC12	Zadar (coastal waters)
OC13b	Velebitski channel (coastal waters)
OC15	Bay of Bakar (coastal waters)
OC16	Bay of Rijeka (coastal waters)
OC17	Kvarner (coastal waters)
OC18	Rovinj (coastal waters)
OC19	5 Nm off Rovinj (marine waters)
OC19a	13 Nm off Rovinj (marine waters)
OC20	5 Nm off Umag (marine waters)

Glossary

Good Environmental Status – according to the Marine Strategy Framework Directive (2008/56/EC) means the environmental status in which the marine and coastal environment are preserved, ecologically diverse and dynamic, clean, healthy and productive within their intrinsic conditions, and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations. Good environmental status is determined according to a total of 11 qualitative descriptors and related criteria and methodological standards, and is monitored through the indicators defined.

Hypoxia – lower-than-normal concentration of oxygen in the sea and sediment.

Marine Organism Biomass – total mass of individuals within the same species by unit of area or volume of a habitat, indicating the productivity of that area.

Marine waters – according to the Marine Strategy Framework Directive (2008/56/EC) this means waters, the seabed and subsoil on the seaward side of the baseline from which the extent of territorial waters is measured extending to the outmost reach of the area where a Member State has and/or exercises jurisdictional rights, in accordance with the Unclos, including coastal waters as defined by Directive 2000/60/EC, their seabed and their subsoil, in so far as particular aspects of the environmental status of the marine environment are not already addressed through that Directive or other Community legislation.

Oligotrophic sea – a sea with a low primary production due to a relatively small amount of dissolved inorganic salts (nutrients) indispensable for photosynthesis of primary producers. The Adriatic Sea is an oligotrophic sea, but the primary production is slightly higher in the northern part due to impacts of the River Po.

Passenger kilometre (pkm) – a unit of measure representing the transport of one passenger over one kilometre.

Phytoplankton – Plant plankton inhabiting marine and freshwater ecosystems. The most important groups of marine phytoplankton include monocellular algae such as diatoms (*Diatomeae*) and flagellate protists (*Dinoflagellatae*).

Preliminary wastewater treatment – municipal waste water treatment at a level lower than the first stage (I) of wastewater treatment, with minimum application of procedures to eliminate coarse dispersed and floating solids from wastewater, including oils and fats, and/or discharge methods, including submarine outlets, which make it possible for the receiver to meet corresponding water quality targets.

Primary production – production of organic matter by photosynthesis using carbon dioxide and water. Primary producers in the sea include phytoplankton, benthic algae and marine flowering plants.

Qualitative descriptor – descriptive presentation of the good marine environment status according to the Marine Strategy Framework Directive (2008/56/EC).

Resource exploitation - extraction of raw materials from the natural environment which are to be used for economic growth and relate to annual amount of raw materials (except water and air) extracted from the environment.

Secondary (II) wastewater treatment – the second stage of municipal wastewater treatment commonly carried out by biological treatment and secondary sedimentation, thus removing up to 70 to 90% BOD_5 and 75% COD of inlet wastewater.

Sink – A process, activity or mechanism that removes greenhouse gases, aerosols or greenhouse gas precursors from the atmosphere, e.g. absorption by plants by photosynthesis.

Sub-compartment – The smallest variable basic area of the forest management unit as part of a compartment, managed separately as a forest stand. Forest stands are divided into sub-compartments according to the cultivation form, stand form, development stadium, type of trees, age, management objective, composition ratio and density.

Tonne - kilometre (tkm) – a unit of measure equal to the transportation of one tonne of freight one kilometre.

Transitional waters – inland waters in the vicinity of river mouths, partly saline as a result of their proximity to coastal waters, but substantially influenced by freshwater flows.

Waste recovery – Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise be used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or economic sector in a larger sense. Annex II to the Sustainable Waste Management Act sets out a non-exhaustive list of recovery operations.

The Environment In Your Pocket 1 - 2015

CROATIAN
ENVIRONMENT AGENCY