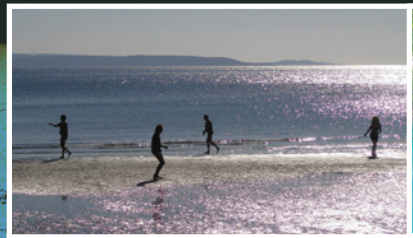




The Environment in Your Pocket

I - 2017

THE ENVIRONMENT IN YOUR POCKET

Impressum

THE ENVIRONMENT IN YOUR POCKET I – 2017

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Croatian Agency for the Environment and Nature

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Press run:
300 copies

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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
Islands, rocks, reefs	1.185
Highest mountain summit	Mt. Dinara, 1.831 m
Counties	21
Cities and municipalities	556 (128 and 428)
Population	4.238.389
Population density per km^2	74.7
Populated islands	48
Language	Croatian
Alphabet	Latin
Political system	Parliamentary democracy
GDP per capita in 2016	10.929 EUR

THE ENVIRONMENT IN YOUR POCKET

Introduction

Dear readers,

Since 1972, when United Nations General Assembly held a Conference on the Human Environment in Stockholm, every year on the 5th of June World Environment Day is being held. Various events are being held on the occasion of this anniversary, such as educational celebrations, environmental volunteering, reforestation and other. For the past 13 years, Croatian Agency for the Environment and Nature is also celebrating this globally the most important day regarding environment protection, who's slogan this year is „Connecting people to nature". Under this slogan, citizens are being reminded of the importance of the nature's values, their characteristics and the goods which is a basis of sustainable development and insurance for human health and wellbeing.

Clean air is the imperative of human health. Oceans, woods and soil are natural reserves of carbon and sources of food and energy. Materials from Earths huge biodiversity are crucial for pharmaceutical industry and manufacture of wide consumer's products. Besides services of public water supply, water ecosystems support agriculture, transportation, industry, energy and tourism. Furthermore, they are irreplaceable in regulating water cycle in nature as in supporting habitats and species living in them.

The basics of EU economy is its natural capital, where ecosystems and their biodiversity are fundamental providers of goods and services. Clean air, fertile soil, drinking water as well as multi-functionality of forests, land and sea productivity, the climate regulation and protection of natural disasters are included here. Considering all of this, it is not a surprise that the first priority goal of The 7th Environment Action Programme for the EU is: „Protection, conservation and enhancement of the Union's natural capital".

THE ENVIRONMENT IN YOUR POCKET

Introduction

Though, much of the actual trends point that the implementation of EU legislative in the environment protection is not yet enough. Improvement has been achieved in the air quality, greenhouse gasses reduction and energy efficiency. However, for decoupling greenhouse gas emissions from economic growth, use of resources and effecting the environment and nature, it will be necessary to invest significant effort.

Besides the fact that using resources in the large scale is unsustainable, and goals in waste management are only about to be reached, it is concerning that the degradation and loss of natural capital has continued. Only 17% of species and habitats are in favourable condition of preservation[1], and 30% of the EU territory is noticeably fragmented. The land use is unfavourable, considering the reduction of fertile soil and the fact that quality of surface and groundwater in some parts of the EU are still not satisfactory.

It is a fact that every individual values dependence on nature as source of their survival and inspiration. Besides offering a place for rest, sports and other activities, nature is still insufficiently explored. Therefore this year's slogan „Connecting people to nature" is inviting us to go to nature, harmonize with it and value it's beauty and know it's importance. On the other hand, this year's World Environment Day sends an invitation for the protection of planet Earth that we all share and appeals that everyone contributes, in its own way, to the preservation and sustainability of the nature.

Croatian Agency for the Environment and Nature

[1] According to Council Directive 92/43/EEZ of May 21st 1992 on preserving natural habitat and wild fauna and flora (OJ L 206, July 22nd 1992)

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Air

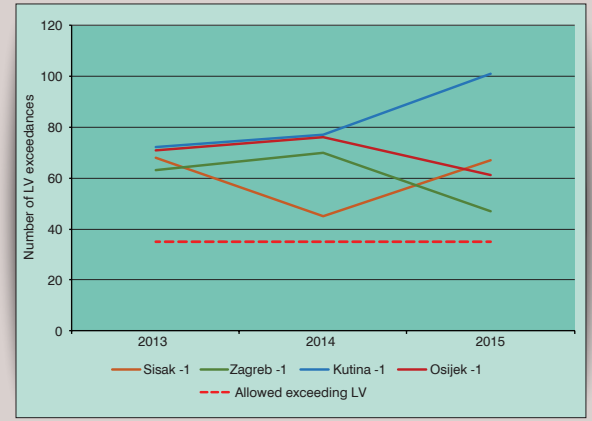
Number of Limit Values Exceedances of the Particulate Matter PM_{10} in Populated Areas

Particulate matter PM_{10} are a mixture of solid and liquid components suspended in air. They are comprised of very small particles of heavy metals, nitrates, sulphates, dust and biological components. The chemical composition of particulate matter depends on the origin of particles. Exposure to exceeding concentration of particulate matter can affect human health, particularly on the respiratory and cardiovascular system.

Trend and current state

Air pollution caused by particulate matter is most significant in populated areas of the continental Croatia, Zagreb and Osijek (agglomeration) and Kutina and Sisak (industrial zone). In these cities the National Air Quality Monitoring Network stations recorded exceedances of the limit values (LV) for more than 35 days a year, thus their air quality is classified into the second category (polluted air). Kutina has the most exceedances of the limit values (72 days in 2013, 77 in 2014 and 100 in 2015) which is the consequence of PM_{10} emissions from small household furnaces, traffic, local industry and transboundary pollution. In 2014 and 2015 Air quality action plans were made for Zagreb, Sisak, Kutina and Osijek, with the accent to particulate matter as a pollutant.

Limit values exceedances of the particulate matter PM_{10} in populated areas



Source: CAEN

Air

Emissions of Precursors of Ozone NO_x, NMVOC, CO and CH_4

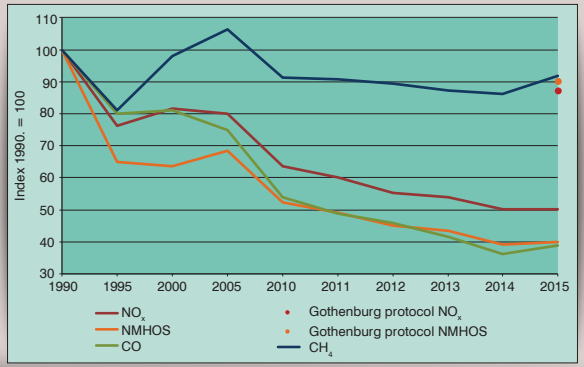
As a secondary pollutant, ozone is a component of urban smog generated in the troposphere by complex photochemical reactions from precursors: NO_x, NMVOC, CO and CH_4. Because of its oxidative properties it has damaging effects on ecosystems. It is a significant problem in larger cities with intensive traffic, where the air quality is poor. Concentration of ground level ozone distinctively depends on meteorological conditions as well as long-range transboundary air pollution of its precursors.

Trend and current state

Emissions of ozone precursors, with the exception of CH_4, are decreasing, especially in regards to the base year 1990. The decrease of NO_x and CO emissions is the result of reduced fossil fuel consumption in the sector of energy, especially traffic due to the introduction of catalytic converters in cars as well as strict emission standard. NMVOC emissions are also decreasing due to usage of the best available techniques in the sector of solvent usage. Although, in 2015, in regards to the previous year, only emissions of CH_4 increased in all sectors that are the source of this emissions, and those are: fugitive emissions incurred due to production, processing, transport and the use of fuel in the energy, agricultural and waste disposal sectors. Ground level ozone is a global problem because of long-range transboundary transports of its precursors. Thus, the implementation of commitments from the Gothenburg protocol[2] set a goal of the common solution on European level. Croatia fulfills the commitment from the Gothenburg protocol, since the emissions of NO_x and NMVOC are lower than the permitted emission quota.

[2] The Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (NN-MU 07/08) is based on approach "multiple effects of multiple pollutants" and defines upper limit values of emissions of SO_2, NO_x, NMVOC and NH_3.

Trend of precursors of ozone NO_x, NMVOC, CO and CH_4 emissions



Source: CAEN

CLIMATE CHANGE

Greenhouse Gas Emissions and Sinks

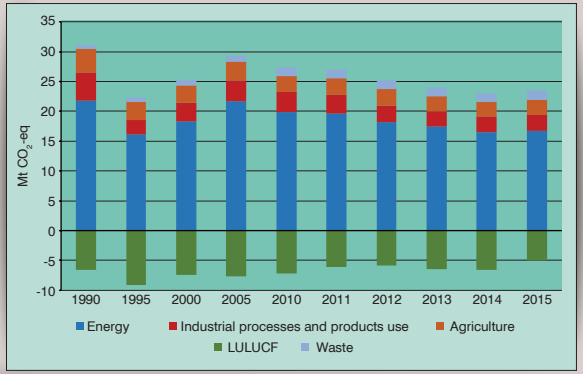
Climate change is a dominant global challenge of the 21st century. Effects are manifested in increase in average air temperature, in quantity of rainfall, oceans temperature and climate extremes (droughts, heat waves and floods). Croatia participates in international activities for reduction of climate changes through implementation of international contracts obligations[3]. By ratifying the Paris Agreement, Croatia has joined other signing countries that have obliged that the average world temperature will contain at a level much lower than 2°C.

Trend and current state

According to Kyoto Protocol obligations, from 2008 to 2012 Croatia has decreased greenhouse gasses 95% compared to base year 1990. Signing the Doha Amendment, Croatia has obligated to further reduction of greenhouse gas emissions for about 20% compared to base year, which is about 25.06 Mt per year. In 2015 overall greenhouse gasses emissions amounted to 23.5 Mt, and the largest contributor was the energy sector (about 71.2%), followed by Industrial processes (11.3%), Agriculture (10.9%) and Waste (6.6%). Greenhouse gases sinks from LULUCF sector amounted to 21.2%. (4.98 Mt). Increased salvage logging, eliminating trees damaged by windbreaks, and fires that have 9 416 ha of surface led to decreasing sinks for 30%, compared to data collected in 2010.

[3] UN Framework Convention on Climate Change climate change aproximate convention (UNFCCC)

Greenhouse gas emissions and sinks in the Republic of Croatia by sectors



Source: CAEN

CLIMATE CHANGE

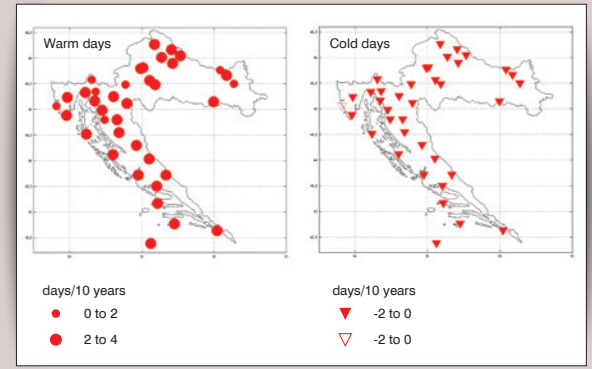
Annual Trend of Warm and Cold Days

Warm and cold days are in the group of temperature extremes index, recommended by the World Meteorogical Organization (WMO, 2009.)[4]. Warm days are defined as the number of days with the maximum air temperature higher than 90th percentile of maximum air temperature for that calendar day in the period from 1961 to 1990. Cold days are defined as the number of days with maximum air temperature lower than the 10th percentile of maximum air temperature for that calendar day in the period from 1961 to 1990.

Trend and current state

Analysis of annual trend of warm and cold days in Croatia is based on the data of maximum day air temperature in the period from 1961 to 2015 on 38 climatological stations of Meteorological and Hydrological Service. During 55-year period a warming is observed, which is manifested in the increased number of warm days (2 to 4 in 10 years) and the decrease of cold days (1 to 2 in 10 years). Increased number of warm and decreased number of cold days is statistically meaningful in all of Croatian area. Occurrence of warm and cold days can increase the risk for human health and have negative effects on plants and animals.

Annual trend of warm and cold days



Source: DHMZ

[4] *WMO (2009) Guidelines on Analysis of extremes in a changing climate in support of informed decisions for adaptation. Climate Data and Monitoring WCDMP-No.72* http://lacad.ciifen.org/ES/documents/WCDMP_72_TD_1500_en_1.pdf

INLAND WATERS

Ecological Status of Surface Waters

Water resources are exposed to human impact that can lead to deterioration of water quality. Cumulative effects of the pressure on water environment have an impact on water quality. It is difficult to qualify that impact since there is no simple method for abstraction of complex impact such as disappearance of species, habitat fragmentation and other long term changes in the water environment.

Trend and current state

Ecological status of surface waters is rated in relation to biological, hydromorphological and basic physicochemical and chemical elements that follow biological elements.[5] Categories of ecological status are: high, good, moderate, poor and bad. According to data of Hrvatske vode[6] it is estimated that satisfactory (high and good) ecological status isn't achieved in about 66% of the total length of watercourses which catchment area is larger than 10 km^2, i.e. on 58% of river water bodies, 54% of lake water, bodies, i.e. about 79% area of the lakes and about 55% area of the transitional waters (66% of the transitional water bodies) and about 12% of the area of the coastal waters (35.5% of the coastal water bodies). For water bodies that aren't in good status appropriate measures should be carried out to stop negative processes and possibly lead to a good status. For water bodies that are estimated that will not achieve a good status after the implementation of the basic measures, additional measures will be applied[7].

Estimated ecological status of surface waters
(according to the length or areas of water bodies)

Source: Hrvatske vode

[5] Regulation on water quality standards (OG 73/13, 151/14, 78/15, 61/16)
[6] River Basin Management Plan 2016-2021
[7] Selection and regulation of implementation will follow after the effects of basic measures for all sources of pollution that effect the status of water bodies are verified by monitoring and analysis. Summary of Programme of measures is listed in River Basin Management Plan 2016-2021, pages 324-478.

INLAND WATERS

Urban Waste Water Treatment

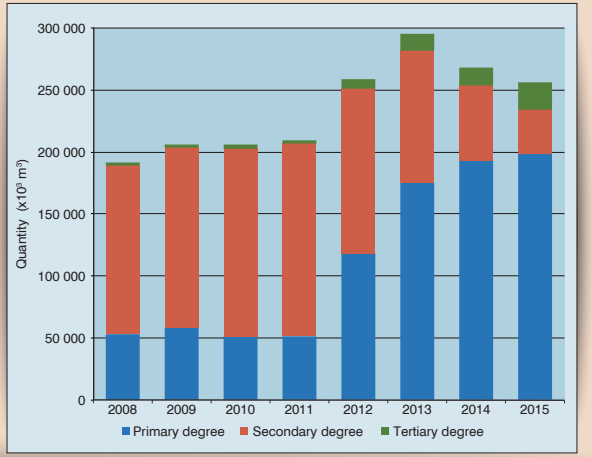
The Urban Waste Water Treatment Directive[8] is a regulated obligation of member countries to collect and treat waste water at an appropriate level in all agglomerations before discharging into the recipients.

Trend and current state

According to documentation of Hrvatske vode[9] there are 245 urban waste water discharge systems with 1 959 163 residents connected (46% of residents). Waste water treatment covers 1 512 985 residents (35% of residents), connected to 110 active waste water treatment plants with different degree of waste water treatment[10]. According to Croatian Bureau of Statistics, about 70% of collected waste water is treated. In 2015, 447 872 000 m^3 waste water has been collected, of which 256 690 000 m^3 has been treated. The largest part (77%) has been treated by primary treatment, 14% by secondary treatment and 9% by tertiary treatment. In the observed period waste water quantities treated by primary and tertiary treatment plants show continuous growth, as well as quantities of waste waters treated by secondary treatment plants. In 2014 the decrease has been recorded, which was probably related to oscillations of total quantities of urban waste water treated.

[8] Urban Waste Water Treatment Directive 91/271/EEC has been included in Croatian legislative in Ordinance of emission limit values for wastewater discharges (OG 80/13, 43/14, 27/15, 03/16)
[9] Water Management Plan 2016-2021
[10] There are 28 other wastewater treatment plants, with total capacity of 107 455 ES, which are not yet functional because of unconstructed public sewage system

Quantities of urban waste water treated related to degrees of treatment



Source: CBS

SEA AND COASTAL AREA

Sea Bathing Water Quality

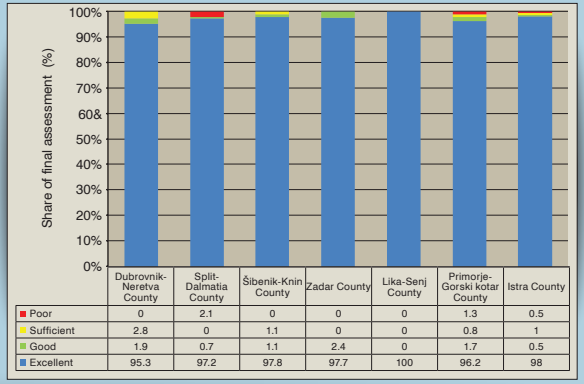
Monitoring of the sea bathing water quality is being carried out systematically since 1989. Individual, annual and four years assessment (excellent, good, sufficient and poor) are used to classify sea bathing water quality and they are determined based on the monitoring of bacteriological parameters (intestinal enterococci and *Escherichia coli*). Final assessment[11] includes a four year period (the last bathing season and the three preceding years).

Trend and current state

Final assessment of sea bathing water quality from 2012 to 2015 was made based on measurements of bacteriological parameters at 884 sites. The sea bathing water quality was excellent at 97.1% sites, at 1.2% good, at 0.9% sufficient and poor at 0.8% sites. The monitoring data shows that sea bathing water quality can be improved by the systematic building and reconstruction of systems for collecting, treating and disposing of waste waters in the coastal areas, as well as enhanced managing of beaches, sea and coastal area. During 2015 a large number of suggestions were made for new sampling points, mostly related to beaches with high attendance.

[11] Final assessment is made at the end of each bathing season based on the results of the monitoring of sea water quality in the last and the three preceding year and it is based on data set of around 40 results. The calculation of final assessment is based on the presence of microorganisms, fecal pollution indicators and pollution risk assessment. Final assessment is marked by colored square where color matches the assessment: blue – excellent, green – good, yellow – sufficient, red – poor.

Final assessment of bathing water quality for the period from 2012 to 2015 by counties



	Dubrovnik-Neretva County	Split-Dalmatia County	Šibenik-Knin County	Zadar County	Lika-Senj County	Primorje-Gorski kotar County	Istra County
Poor	0	2.1	0	0	0	1.3	0.5
Sufficient	2.8	0	1.1	0	0	0.8	1
Good	1.9	0.7	1.1	2.4	0	1.7	0.5
Excellent	95.3	97.2	97.8	97.7	100	96.2	98

Source: MEE

SEA AND COASTAL AREA

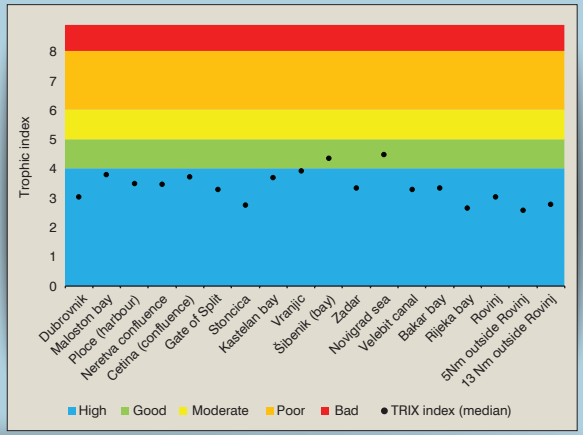
Quantitative Assessment of the Ecological Status of Transitional, Coastal and Marine Waters- Trophic Index

Quantitative assessment of the ecological status of transitional, coastal and marine waters concerning eutrophication is expressed by the trophic index and classified in four classes according the values of the trophic index (median) <4 high, 4-5 good, 5-6 moderate, 6-8 poor and >8 bad status. Ecological status determination is of primary importance when planning and managing coastal areas including the selection of proper waste water discharge system into the sea as one of important sources of pollution.

Trend and current state

The values of the trophic index measured in 2015 show that the ecological status in the most part of Croatia's marine waters can be evaluated as high. The exception is the area of Šibenik port where the rating was one degree lower, good. For the first time, the status was measured at stations located in the Novigrad Sea. However, the measured values cannot be classified according to the above mentioned classification, since they are not in the category of transitional waters, although they are in the expected range of values for marine waters. The status has slightly improved compared with the past few years in the area of east Kaštela bay, as well as Bakar bay and now is slightly above the limit of high status. Status on Vranjic station has significantly improved compared to 1990's, when occasionally it was bad. Further ecological status improvement is expected through full implementation of the project "ECO - Kaštela bay" and after connecting all facilities as well as rainfall in this area to waste water collection and discharging.

Trophic index in 2015



Source: CAEN

SOIL AND LAND

Soil Organic Carbon Content

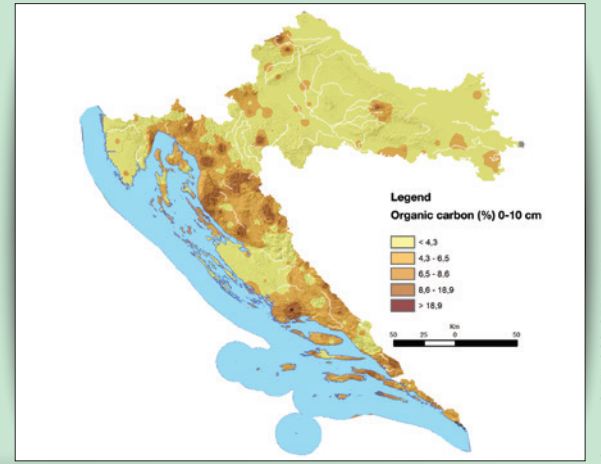
The soil contains world's largest organic carbon stocks and has key role in the global carbon cycle by regulating dynamic bio-geochemical processes and greenhouse gasses exchange with the atmosphere. Organic matter and soil organic carbon insures food production and water availability and also decreases the effects of climate change.

Trend and current state

Fossil fuels combustion is the biggest anthropogenic source of carbon in the atmosphere, followed by intensive agriculture and unsustainable management of soil and land. Soil organic carbon (SOC) stocks in surface layer (0-30 cm) are especially sensitive to changes in management of soil and land use. Sustainable management and agro-technical measures can significantly reduce losses, preserve the remaining SOC stocks and neutralize degradation of soil and land, all the while assuring the soil quality and the resistance of agrarian ecosystems to environmental change. In Croatia, soil organic carbon content in the surface layer of soil (0-10 cm) is 4.3%, while at 10 to 20 cm depth SOC is 2.5%. Lower concentrations of SOC in soil are typical for agricultural land that emits carbon into the atmosphere in the form of CO_2 due to mechanical soil tillage. Higher concentrations of SOC can be found in forestry soil and grasslands where organic matter slowly and easily decomposes and incorporate in the soil.

[12] *Project "Change of soil organic carbon stocks and the calculation of total nitrogen (N) and soil organic carbon (C) trends and relations C:N"*

Soil organic carbon content



Sources: CAEN, CGS, CFRI, ALA[12]

SOIL AND LAND

Land Use Changes from 1990 to 2012

The land is a limited resource on which most of human activities takes place, from production (agriculture, forestry, mineral exploitation, industry) to socio-economic activities (infrastructure, housing, recreation and other). Land use and changes in land use are the main drivers of environmental change and they significantly affect human life quality, economy and ecosystems.

Trend and current state

Corine Land Cover data were bases for development of Land Use Matrix for the period from 1990 to 2012. The matrix allows monitoring of land use changes that are taking place within the group of categories. For example, in the group category of Forest Land (Deciduous, Coniferous and mixed wood) land cover interchanges (changes within the group category) have been recorded on 137 362 ha. Furthermore, changes between different group categories can be followed. For example, during the referred period, 44 549 ha of Grassland have turned to Forest Land, while 36 620 ha of Forest Land have turned to Grassland. Final changes within each category show increase or decrease of area. According to Land Use matrix, in the period of 22 years, increase of area was recorded in Settlements (for 28 939 ha) and Wetland (for 574 ha) due to decrease of area in other categories of land use.

Land use matrix for the period from 1990 to 2012

1990 ↓ 2012 (ha)	Settle-ments	Cropland	Forest Land	Gra-ssland	Other Land	Wetland	Increase from 1990 to 2012 (ha)	Sum of changes (ha)
Settle-ments	2 899	8 247	11 038	9 476	536	154	32 349	**28 939**
Cropland	202	16 522	6 064	21 635	306	51	44 781	**-188**
Forest Land	175	5 349	137 362	44 549	2 755	544	190 733	**-5 427**
Grass-land	96	14 592	36 620	39 123	15 938	151	106 519	**-10 918**
Other Land	25	0	4 278	2 209	1 830	42	8 384	**-12 980**
Wetland	14	259	798	445	0	1 347	2 862	**574**
Decrease from 1990 to 2012 (ha)	3 411	44 968	196 160	117 436	21 364	2 289	385 628	0

Source: CAEN

BIODIVERSITY

Invasive Alien Species of Union Concern

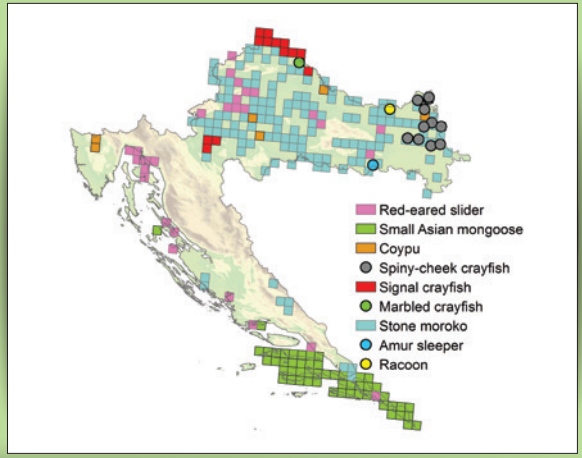
The list of 37 invasive alien species of Union concern (the Union list) is adopted on the basis of the available scientific evidence and risk assessments by Commission Implementing Regulation[13]. Listed species are forbidden in the EU, which means they cannot be brought into the territory of the Union, placed on the market, kept, bred, used or exchanged neither released into the environment. The Union list is the initial list and will regularly be updated.

Trend and current state

Some of the species from the list are already established in the territory of the Union and some are not yet present. Member states have the obligation to ban the import and take measures for early detection and rapid eradication of new invasive alien species (IAS), as well as to apply effective management measures for those IAS which are widely spread so that the adverse impact they cause is minimised. The damage that invasive alien species cause in the EU is estimated on more than 12 billion EUR per year. According to currently available data, 9 species from the Union list have been recorded in Croatia: red-eared slider (*Trachemys scripta*), small asian mongoose (*Herpestes javanicus*), coypu (*Myocastor coypus*), decapod crabs (spiny-cheek crayfish *Orconectes limosus,* signal crayfish *Pacifastacus leniusculus,* marbled crayfish *Procambarus fallax* f. *virginalis*), fishes (stone moroko *Pseudorasbora parva,* amur sleeper *Perccottus glenii*) and raccoon (*Procyon lotor*).

[13] Commission Implementing Regulation (EU) 2016/1141 of July 13th 2016. http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1476184277248&uri=CELEX:32016R11411

Distribution of invasive alien species from the Union list in Croatia



Source: CAEN

BIODIVERSITY

Monitoring of Stranded Strictly Protected Marine Species

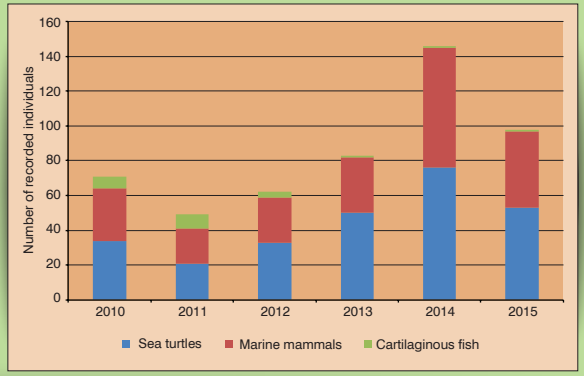
Croatian Agency for the Environment and Nature runs National Alerting and Monitoring System for captured, dead, injured and sick animals of strictly protected species. A part of this System is Protocol for Alerting and Monitoring of dead, sick or injured strictly protected marine species (marine mammals, sea turtles and cartilaginous fish). The Protocol is functional since 2010, alerts are reported through Emergency number 112, and numerous associates are included in its implementation[14].

Trend and current state

From 2010 to 2015, a total of 509 stranded individuals of strictly protected marine species have been recorded. Thereof 267 individuals of sea turtles (52.5%), 221 individuals of marine mammals (43.4%) and 21 individuals of cartilaginous fish (4.1%). Most of them were dead animals (69.7%), while the rest were injured (17.9%) or healthy animals (12.4%). As for recorded species, most of them were individuals of Bottlenose dolphin and Loggerhead turtle, the species that are permanent residents of the Adriatic. Accidental catch in fishery tools was the most common recorded cause of death of marine mammals, especially Bottlenose dolphin and cartilaginous fish. The most common recorded cause of death of sea turtles was mechanical injury caused by boat propeller or collision with coastal rock usually during severe storms.

[14] You can find the detailed description of the Protocol at this link http://www.dzzp.hr/eng/national-alerting-and-monitoring-system/k/protocol-for-alerting-and-monitoring-of-dead-sick-or-injured-strictly-protected-marine-species-marine-mammals-sea-turtles-and-cartilaginous-fish-1291.html

The number of recorded stranded individuals of strictly protected marine species



Source: CAEN

FORESTRY

Fire-Affected Areas and the Number of Fires in the Republic of Croatia

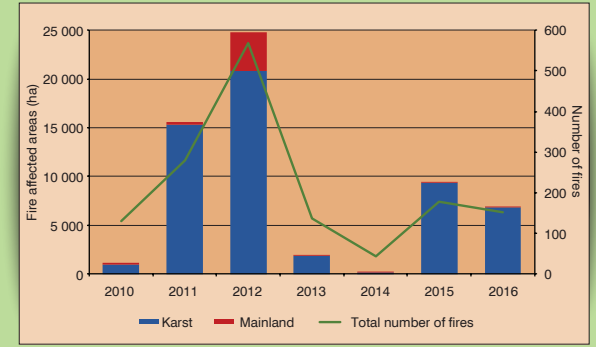
Besides causing considerable economic damage and representing risk for human health and life, forest fires have negative affect on environment. The most obvious repercussions of fires are: loss of habitat, reduction of plant and animal species in forests, groundwater contamination and increase of CO_2 emissions.

Trend and current state

From 2010 to 2016 almost 90% of the total fire affected area was recorded in Dalmatian karst, coast and islands, except for 2012, when the share of fire affected area in continental Croatia was 20%. Basic cause of fires on Dalmatian karst were easily flammable plant layer, long term drought periods and increased number of tourists during the summer months. Most vegetation fires (569) and areas affected by fires (24 804 ha) were recorded in 2012. According to Ministry of Agriculture data, 2016 recorded only 151 fire with 7 065 ha of burned area. Using the Canadian resarch method, *Canadian Forest Fire Weather Index*[15] between 1981 and 2010, increase of potencial vegetation fire danger from middle to north Adriatic, Dalmatian hinterland, Lika and east Croatia was discovered, as well as longer fire season on Adriatic compared to referenced climate area from 1961 to 1990. Since 2013 increase of extreme windbreaks was recorded and the salvage logging was done. According to the data, salvage logging performed in case of windbreaks exceeded the post-fire salvage logging, for more than a few times.

[15] *FWI - Meterological index of fire hazard consists of six components that account for the effects of fuel moisture and wind on fire behavior.*

Areas affected by fires and the number of fires



Source: MA

FORESTRY

Forest Damage by Transboundary Air Pollution

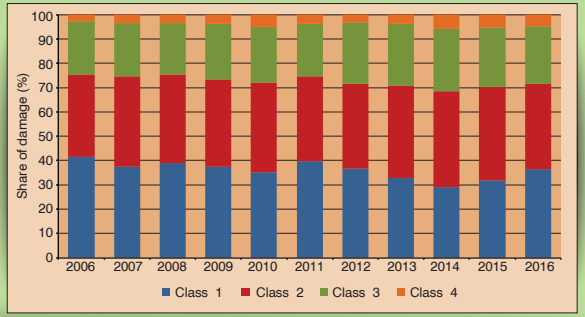
One of the causes of forest dieback is transboundary air pollution. Monitoring within the UN's Convention on Long Range Transboundary Air Pollution has been applying since 1985 in Croatia, and within it the International Co-operative programme on Assessment and Monitoring of Air Pollution Effects on Forest, since 1987[16].

Trend and current state

The assessment parameters of damaged forests ecosystems are defoliation and discoloration. Basis for determining the defoliation classes are: class 0 = 0 to 10% (no defoliation), class 1 = 11 - 25% (slight defoliation), class 2 = 26 – 60% (moderate defoliation) and class 3 and 4 > 60% (severe defoliation). Classes 2, 3 and 4 are considered when determining sever defoliation of trees. In 2016 forest damage assessment on 95 points was conducted, which included 2 376 different tree species (2 037 deciduous trees and 339 conifers trees), has shown further decrease of severe defoliation compared to previous years. Thus from the total number of trees in 2014, 31.5% was in the in the severe defoliation class, 29.7% in the year 2015, while in 2016 28.5% were severe defoliated. Though, the largest number of trees is still in no defoliation or slight defoliation class (classes 0 and 1). When monitoring individual species of trees, pedunculated oak was the most vital (common beech in the previous years), and severely damaged species were black pine, narrow-leafed ash and silver fir with severe defoliated parts: 62.8%, 72.2% and 64.2%. Further significant deterioration compared to 2015 was reported with narrow-leafed ash which is now the most damaged species.

[16] *Pollution Effects on Forests - ICP Forests*

Tree damage degree



Source: CFI

AGRICULTURE

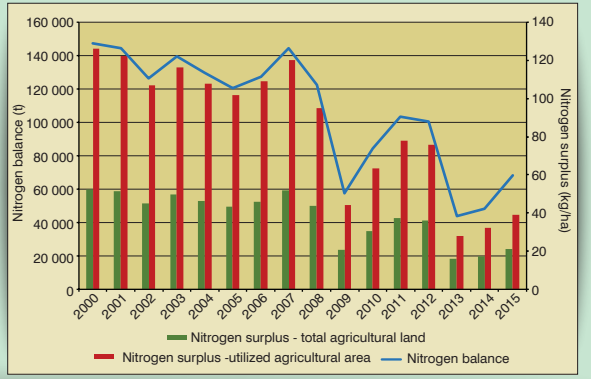
Nitrogen Balance

The total nitrogen balance in agricultural soils varies depending on numerous factors. In dry years, nutrient utilization is lower, yields are lower, so there may be significant nitrogen surpluses. For the calculation of nitrogen balance, it is necessary, among other data, to have a data about the consumption of mineral and organic fertilizers, land use, crop yields and nitrogen contents in these yields, as well as information on atmospheric nitrogen deposition and livestock production.

Trend and current state

In the period from 2000 to 2015, the nitrogen balance was positive. The nitrogen surplus from 147 530 t in 2000 was reduced to 44 040 t in 2013 due to factors such as reduction of nitrogen fertilizer inputs and total number of livestock. Over the last five years, the surplus of nitrogen has averaged around 89 000 t. If, for the same period, nitrogen surplus per unit of agricultural area of the total agricultural land is observed for the same period, a reduction of as much as 60% may be noticed. Apart from the fact that the nitrogen balance is monitored in relation to the surface of the total agricultural land, it is important to observe it in relation to the so-called utilised agricultural area also. Compared to the utilized agricultural areas, the surplus of nitrogen per unit area decreased by 69% over the same period of time. For the last five years, the surplus of nitrogen in relation to the total agricultural land area averaged 32 kg/ha, and given the utilised agricultural area used 63 kg/ha. With respect to the values recorded in 2 000, these values may be observed in the context of reducing nitrogen load, especially in aquatic ecosystems.

Nitrogen balance



Source: CBS, CAEN

AGRICULTURE

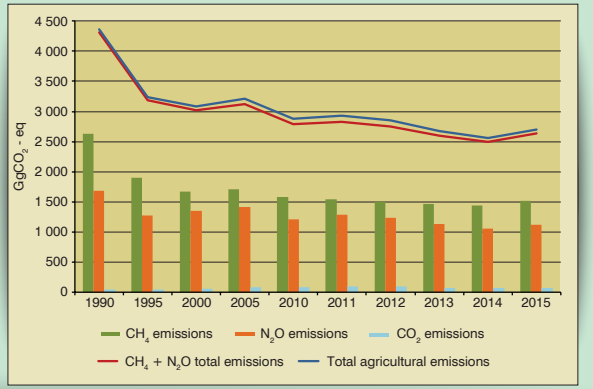
Emissions of Methane and Nitrous Oxide From Agriculture

Methane (CH_4) and nitrous oxide (N_2O) are greenhouse gases which, besides the waste management sector, are also the result of agricultural activity. Methane is a direct product of animal metabolism, and the largest producers are ruminants. Methane emission levels depend on the digestive tract of the animal, the amount and type of diet and manure management. There are three sources of N_2O: direct N_2O emissions from agricultural soils, direct N_2O emissions from animal breeding and indirect N_2O emissions conditioned by agricultural activities.

Trend and current state

The total emissions of greenhouse gases from agriculture in 2015 amounted to 2 555.32 $GgCO_2$-eq, representing 10.9% of the total national emissions. CH_4 and N_2O emissions account for 97% of total greenhouse gas emissions from agriculture, and the remaining 3% are CO_2 emissions. Croatia has obligated to reduce greenhouse gas emissions in accordance with international agreements[17] and related to climate change. Over the period from 1990 to 2015, total greenhouse gas emissions from agriculture decreased by more than 38%, primarily due to a decrease in the total number of livestock (for example dairy cattle). The largest reductions are recorded for the CH_4 (42%) and N_2O emissions (34%).

Methane emissions (CH_4) and nitrous oxide (N_2O) from agriculture



Source: CAEN

[17] United Nations Framework Convention on Climate Change (OG-IA 2/96), Act on Ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (OG-IA 5/07), Act on Ratification of the Doha change of Kyoto Protocol (OG-IA 6/15), Act on Ratification of the Paris Agreement (OG-IA 3/17)

WASTE MANAGEMENT

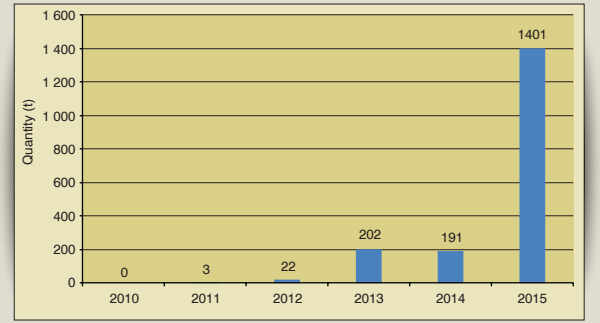
Textile and Footwear Waste in Municipal Waste

Textile and footwear waste collected from households and similar waste collected from service sector are considered to be municipal waste. It is necessary to implement the measures that prevent the formation of textile and footwear waste, especially to encourage their reuse and then recycling.

Trend and current state

The total consumption of textile and clothing products, leather and fur products as well as footwear in 2015 was 129 776 t. The quantity of generated textile and footwear waste (industrial and municipal) was estimated at 58 627 t. Out of this figure, 15% (8 761 t) was collected separately, where industrial waste comprised the biggest share (around 7 360 t). Generated textile and footwear waste that is municipal waste was estimated at 50 806 t in 2015, which makes 11.9 kg per resident. It is mostly textile and footwear waste mixed with other materials in mixed municipal waste (46 851 t) or bulky waste (2 554 t) that are disposed at landfills. Only 1 401 t (3%) was collected separately and only 1 173 t (2,3%) recycled. The remaining quantities were probably stored or reused. It is important to consider the flow of used clothing and footwear which was not considered waste, and 1 263 t of that category was collected in 2015 with the plan of reuse, which could contribute to recovery share with additional 3%.

Separate collection of textile and footwear waste in municipal waste



Textile and footwear waste in municipal waste, 2015	Quantity (t)
Industrial textile waste	50 806
Biodegradable textile waste	25 403
Landfilled textile waste	47 317
Recycled textile waste	1 173
Other (pre-treatment, storage, unknown and other)	2 316
Used goods – collected for reuse, e.g. donation	1 263

Source: CAEN

WASTE MANAGEMENT

Waste From the Exploration and Exploitation of Mineral Resources

In mineral resources are included energy mineral resources (hydrocarbons and mineral material), industrial processing mineral resources, construction materials mineral resources, architectural-building stone (ABS) and metal mineral resources[18]. Residual material, created by exploration and exploitation of mineral resources, which stays at the location concessionaires usually are not consider as waste, because it is most likely inactive material.

Trend and current state

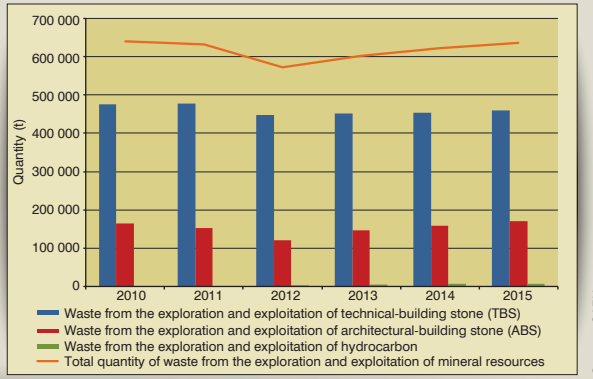
In 2015 there were 661 exploitation fields – most fields of the ABS stone (240) and construction sand and gravel (91). It was dug up 12,3 million t of mineral resources (9,1 million t of technical-building stone – TBS and 71 000 t of ABS)[19]. Through the project[20] carried out by the CAEN it is estimated that during the period from 2010 to 2015, equal quantities of waste from the exploration and exploitation of mineral resources appeared. In 2015 total quantities of waste from the exploration and exploitation of mineral resources was estimated on 636 300 t (without residual material, which there was 1 million t), and it was composed of waste from the exploration and exploitation of TBS (459 600 t), ABS (170 000 t) and hydrocarbon (6 700 t). It is estimated that the largest quantities of this waste are found in Istria and Split-Dalmatia county. Undertaken quantities of waste are mostly deposited at landfills.

[18] Mining Act (OG 56/13, 14/14)

[19] Ministry of Economy, Entrepreneurship and Crafts – Energy and mining management

[20] „Increase of flow and quality of construction waste and mineral material research and exploitation waste data in Croatia", 2017.

Quantities of waste from the exploration and exploitation of mineral resources



Source: CAEN

WASTE MANAGEMENT

Biodegradable Municipal Waste

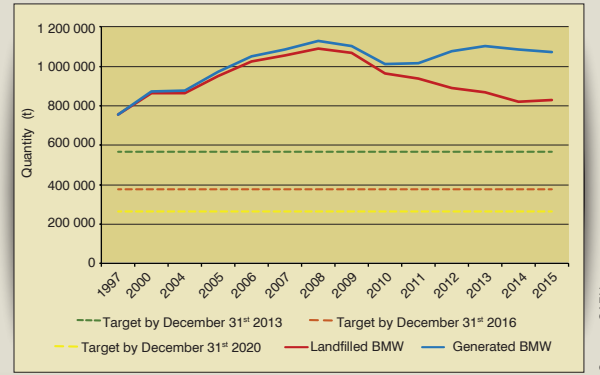
Biodegradable municipal waste includes food, garden and parks waste, paper, cardboard, natural textiles, wood and other types of biodegradable waste like wood furniture which comes from households and similar sources.

Trend and current state

Croatian Agency for the Environment and Nature collects information on generated and landfilled municipal waste and waste landfills for the purpose of monitoring the achievement of the targets prescribed by the Act on Sustainable waste management[21] and the Council Directive on the landfill of waste[22].
From 2009 to 2015 the share of landfilled municipal waste in the total amount of generated municipal waste decreased from 97 to 83%. In 2015 the total of 1 318 741 t of municipal waste was landfilled at 135 landfills, whereof the total quantity of landfilled biodegradable municipal waste was 828 454 t. A small increase of only 1% of the landfilled quantities of biodegradable municipal waste was recorded in 2015 compared to the previous year, when 819 757 t of this waste was landfilled. Although the target prescribed by the Act (decrease of biodegradable waste by the end of 2013) wasn't yet fulfilled, the data for 2010 to 2015 show significant decrease of the total disposed quantities compared to the total generated quantities, from from 95% to 77%. The largest shares in the total recovered amount of biodegradable municipal waste in 2015 were paper and cardboard (75%) and bio waste (16%).

[21] Act on Sustainable Waste Management (OG 94/13)
[22] Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (OJ L 182, 16.7.1999)

Landfilling of biodegradable municipal waste



Source: CAEN

ENERGY

Renewable Electric Energy Sources

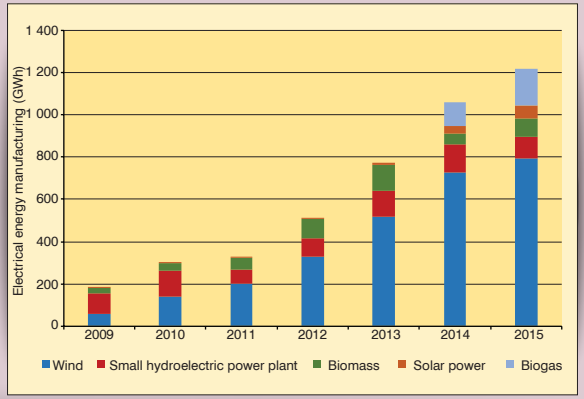
By manufacturing electric energy from renewable sources[23] greenhouse gasses emissions decrease and the energy sustainability of the system is increased, which is one of the primary goals of European environment protection policies. Since 2013 an encouragement fee for manufacturing electricity from renewable energy sources has been appointed[24].

Trend and current state

Manufacturing of electric energy from renewable sources is continuingly growing. In 2015 it has increased 6.8 times compared to 2009 (from 178.7 to 1 219.6 GWh), or from 1.4% to 10.7% in the total manufactured electric energy (without large hydroelectric power plants). Biggest increase is from wind energy (from 33.3% in 2009 to 65.3% in 2015) when 796.3 GWh of energy was produced with installed electrical power of 418 MW. Water power manufacture varies depending on hydrological conditions, while biomass and biogas[25] is increasing and in 2015 it made 21.7 % of total manufacture. Since 2013 solar power production is increasing continuously. Compared to the previous year, 2015 has shown 77.5% increase of electrical energy production from biomass, 62.2% from solar power, 53.8% from biogas and 9.1% from wind energy.

[23] Renewable energy sources are: Solar power, wind, geothermal energy and energy produced from biomass, biogas and small hydroelectric power plants
[24] Act on encouragement fee for manufacturing electricity from renewable energy sources and cogeneration (OG 128/13)
[25] By 2014 biomass and biogas data have been displayed together, and since 2015 they are displayed separately.

Electrical energy manufacturing from renewable sources



Source: EIHP

ENERGY

Energy Consumption in the Construction Sector

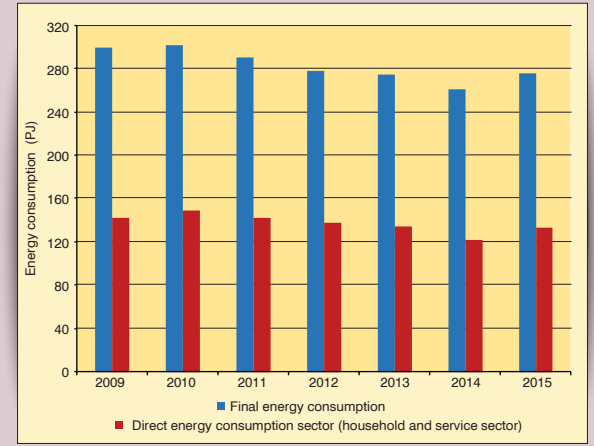
The construction sector, which includes households and services, is the largest individual energy consumer. The modernization of the existing ones and the construction of new buildings is realized through the implementation of the measures defined in the Energy Development Strategy of the Republic of Croatia[26] and 3rd National Energy Efficiency Action Plan.

Trend and current state

The construction sector in Croatia accounts for about 48% of direct energy consumption, which is more than the EU-28 average (43.2%). From 2010 to 2014 energy consumption in the construction sector decreased with a slight increase in 2015 (by 10.75 PJ). During this period, the programs[27] were actively implemented, for example in the energy renovation of the family homes, encouraging the purchase of energy-efficient household appliances, individual measurement of the heat energy consumption, increased heat protection in buildings, increasing the efficiency of street lighting and electronic devices and increasing the use of renewable energy sources. The program for the renewal of multi-residential buildings from 2014 to 2020[28] has approved 200 000 000 HRK for the energy renewal of 430 buildings.

[26] OG 130/09
[27] The decrease of energy consumption in the building sector programme (since 2012), Energy renewal of public sector building programme (2014 and 2015), Energy renewal of commercial buildings programme
[28] The Implementing Body is The Environment Protection and Energy Efficiency Fund.

Energy consumption in construction sector



Source: EIHP

INDUSTRY

Extraction of Mineral Resources

Croatia is characterized by a large variety of non-metallic mineral resources. It mainly exploits technical-building stone (TBS), architectural-building stone (ABS), building sand and gravel, brick clay and hydrocarbons (oil, gas). The exploitation of mineral raw materials depletes natural goods, changes the landscape and consequently has a significant impact on the quality of soil, water/sea etc.

Trend and current state

Compared to 2010, in 2015 TBS exploitation increased by 2.8%, while building sand and gravel increased by 13.3%. Exploitation of ABS decreased by 3.2%, and brick clay by 4.8%, while the exploitation of raw material for cement production has seen highest decline from 3.7 million t to 3.5 million t. In the observed period, oil extraction increased by 10% and gas exploitation decreased by 34.7% compared to 2010. This trend can be attributed to the reduction of reserves in reservoirs and the level of technology applied to exploitation. In general, a downward tendency in the exploitation of mineral resources can be explained by the impoverishment of natural resources as a major cause, as well as by negative economic trends affecting the industry, especially on construction (the main consumer of exploited mineral resources).

Extraction of mineral resources

Mineral resources ($x10^3$ m^3)	2010	2011	2012	2013	2014	2015
Construction sand and gravel	2 293.81	2 824.52	2 888.61	2 625.79	2 346.23	2 600.276
ABS	73.34	73.73	69.24	69.579	70.082	70.979
Brick clay	520.53	886.70	642.489	291.05	276.662	495.653
Raw materials for cement	3 664.80	3 222.26	3 229.72	3 150.46	3 731.786	3 472.533
TBS	8 838.26	8 260.88	6 485.68	7 873.22	8 485.405	9 086.722
Oil	563.11	528.45	511.68	499.51	518.27	619.446
Natural gases	2 833.22	2 571.46	2 086.38	1 963.316	1 824.026	1 850.463

Source: MEEC

INDUSTRY

Environmental Permits

Facilities that carry out activities[29] that can cause emissions to soil, air, water, sea and waste production are obliged to obtain an Environmental Permit. The purpose of this permits is to reduce the emissions and the generation of waste, reducing them to the least possible extent by applying the best available techniques. This ensures a unified approach to environmental protection, i.e. integrated protection of all environmental components.

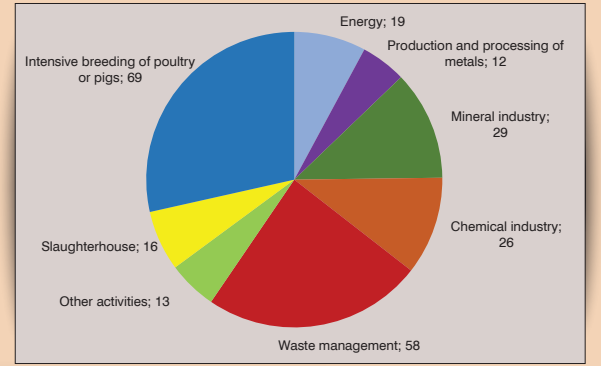
Trend and current state

The data on issued Environmental permits are entered in the Inquest register of usage permits for which the integrated pollution prevention and control permits for existing installations have been established (BOUDR)[30]. In the period from 2010 to 2016, a total of 289 environmental permits were issued (including decisions, additions and corrections) for 242 installations. Most permits are issued for facilities with activity of poultry or pig farming (69), including slaughterhouses (16) and waste management (58). The 2010 license-issuance trend, when there were only 4, is significantly increasing from 2013 to 2015 when 58 and 85 environmental permits were issued. After this period, the number of issued permits in 2016 decreases (50). The largest numbers of facilities with Environmental permits are located in Osijek-Baranja (37), Sisak-Moslavina (23) and Varaždin County (23).

[29] Activities defined by Annex 1, Regulation of Environmental Permit Act (OG 8/14)

[30] On the basis of delivered environmental permits/decisions/amendment/correction from the Ministry of Environment and Energy, CAEN enters the data in BOUDR database.

Number of facilities with environmental permits[30] issued in 2016



Source: CAEN

CHEMICALS

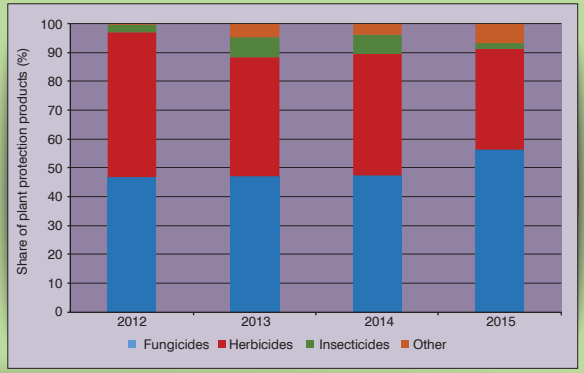
Quantities of Plant Protection Products Placed on the Market in the Republic of Croatia

Placing Plant Protection Products (Croatian abbreviation SZB)[31] on the Croatian market is regulated by the Act on the Implementation of the Regulation 1107/2009[32]. All PPPs should be registered or approved by the Ministry of Agriculture before being placed on the market.

Trend and current state

In the period from 2012 to 2015, an average of 2 166.6 tons of SZB was sold annually on the Croatian market, of which, the most fungicides and herbicides (on average 91%). In the same period, sales of herbicides decreased, and sales of fungicides and categories of other PPPs (limacides, plant growth regulators, etc.) increased. Due to the very rainy periods during 2013 and 2014, there was a significant development of plant pests, diseases and weeds, resulting in an increase in the quantity of fungicide sold and the category of other PPPs, primarily the limacid (snail suppressants). Since the use of the PPP is very represented, both in agriculture and in forestry, the Ministry of Agriculture, in cooperation with relevant stakeholders, carries out education about safe handling and proper application and informs the general public[33].

Share of plant protection products placed on the market in the Republic of Croatia



Source: MA, CBS, CAEN

[31] Plant protection products are products for the protection of plants and plant products of all harmfull organisms or prevention of effects of such organisms, they are intended to act on life processes of plants (like growth effect products), conservation of plant products, destroying unwanted plants or plant parts and to prevent or counteract unwanted plant growth.
[32] Act on the Implementation of the Regulation 1107/2009 (OG 80/13)
[33] Leaflet „Illegal pesticides – don't put your crops at risk"; http://crocpa.hr/dokumenti/pdf/AC_letak_A5_20150325_web.pdf

TOURISM

Water Use in Tourism

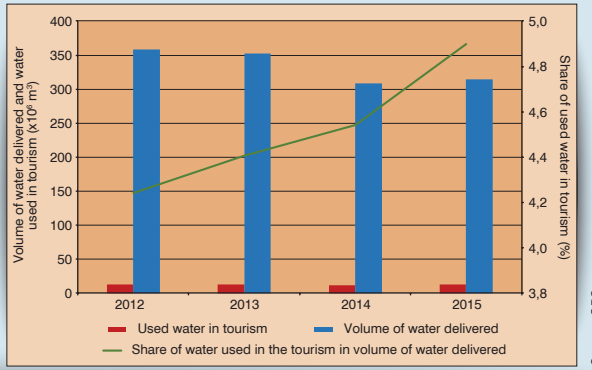
Thanks to its natural beauty and a preserved environment Croatia has a tremendous tourist potential. Tourism development as one of the strategic economic determinants of the state development carries indisputable pressures on the environment and nature. These environmental pressures are particularly pronounced in the coastal counties during the summer tourist season.

Trend and current state

Increased water consumption as well as increased waste water discharge during the summer tourist season is heavily burdening the communal infrastructure of coastal counties. Estimates of water use in the tourism sector are calculated according to Eurostat's method[34]. Looking at the period from 2012 to 2015, volumes of total water delivered decreased by 12.1% (from 358.3 million m^3 in 2012 to 314.9 million m^3 in 2015). In the same period, the number of foreign tourist overnight stays has increased by 15%, resulting in an increase of water consumption in tourism. Nevertheless, it is interesting that in the total delivered water, this increase in relation to the significant increase in the number of tourists in the observed period is 0.7% (increase from 4.2% in 2012 to 4.9% in 2015). Water consumption in tourism is highly seasonal and for long-term use of this resource it is necessary to ensure the sustainability and adequate water quantity and its quality (water supply protection, construction of waste water treatment plants, waste disposal remediation etc.) as well as systematic data monitoring provided by a unique methodology.

[34] Data of total delivered water i.g. the water sold to the consumers, number of nights by foreign tourists and population number have been used for calculation.

Water use in tourism



Source: CBS

FISHERIES

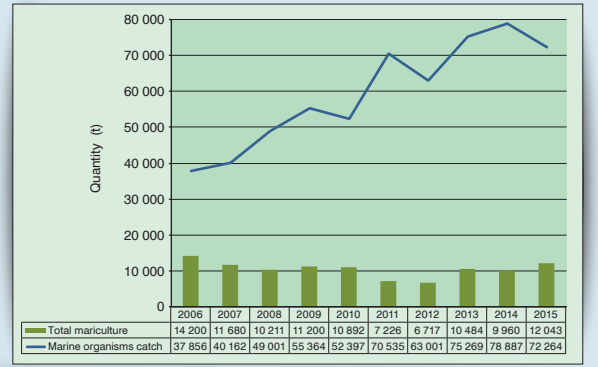
Marine Fishing and Mariculture

Marine fishery catch data are necessary for monitoring the sustainability of bio-resource management. Negative consequences on the environment can be significantly reduced by proper and timely implementation of zoo-technical measures. Croatian mariculture includes the farming of white fish (sea bass, sea bream and sharp snout bream), oily fish (tuna) and shellfish (oysters and mussels). The shellfish breeding is carried out in the production areas that are under the continuous national monitoring.

Trend and current state

In the period from 2006 to 2014, the total annual catch of marine organisms grows from 37 856 t to 78 887 t. Reduction of the total catch in 2015 to 72 264 t was caused by the drop in catch of blue fish, primarily pilchard (by 9%), but also because decreased catch of white fish (dominantly hake in the last 3 years) and cephalopods. This trend is a consequence of the reduction of fishing effort pertaining small oily fish and biomass of demersal species. The increase in catches in 2015 compared to the previous year was recorded for anchovy, tuna (regulated by the quota system), cartilaginous and crabs (soft shell crab, not referring to shrimp). The same year saw a rise in mariculture production by about 17% compared to 2014 due to cage breeding of white fish (growth of 20%). The production of shellfish has been decreasing since 2011 due to the predation of sea bream. Approximately 400 t more tunas were grown in 2015 compared to 2014, and in the coming years further growth of production is expected due to the liberalization of protection measures.

The catch and farming of marine organisms



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total mariculture	14 200	11 680	10 211	11 200	10 892	7 226	6 717	10 484	9 960	12 043
Marine organisms catch	37 856	40 162	49 001	55 364	52 397	70 535	63 001	75 269	78 887	72 264

Source: CAEN/IOF

TRANSPORT

Number of Emergency Events by Mode of Transport

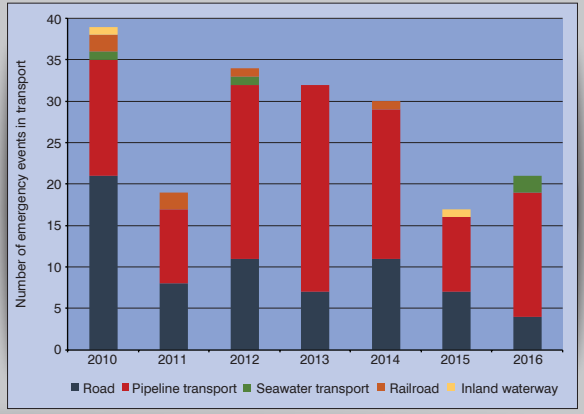
Transportation of dangerous goods represents a potential threat to all components of the environment, property and human health. Therefore, it is relevant to define the legal conditions of transport and transport safety, as well as the relationship to the environment and its protection.

Trend and current state

From 2010 to 2016, the total number of emergency events in transport declined from 39 to 21. At the beginning of the observed period in 2010, there were emergency events in all mode of transport, and the most frequent was the road emergency events with share of 54%, pipeline with 36%, railway with 5% and finally the inland waterway, seawater and costal transport with share of 3% each. Throughout the observed period, the major number of emergency events was in pipeline transport which is being transported oil and gas (in 2013 there was 25 emergency events). In recent years, the number of emergency events in road transport is decreasing. It is important to mention that the European Agreement Concerning the International Carriage of Dangerous Goods by Road has been implemented in Croatian legislation by the Dangerous Goods Transportation Act[35], as well as the belonging annexes A and B[36] with the aim of reducing the risk of pollution, in particular reducing the number of accidents that includes hazardous substances.

[35] OG 79/07
[36] OG-IA 5/08

Number of emergency events by mode of transport



Source: MEE/EI

HEALTH AND SAFETY

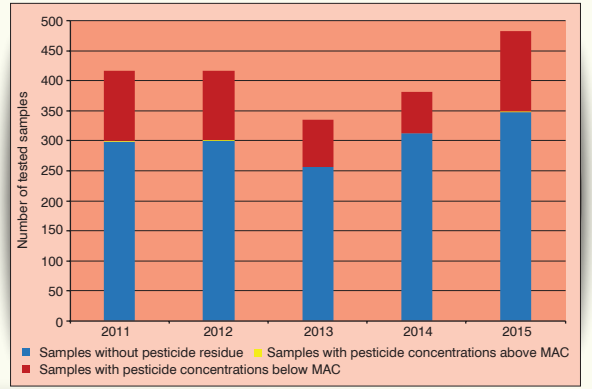
Pesticide Residues in Food

Pesticide residues *in* and *on* food are the residues that appear as a result of use in the plants protection, biocidal products and in veterinary medicine. Since 2007, the National Monitoring Program for Pesticide Residues *in* and *on* Products of plant origin has been implemented in Croatia. The program is prepared and coordinated by the Ministry of Agriculture, sampling is carried out by the Sanitary Inspection Ministry of Health while laboratory analysis of samples is performed by CIPH. The aim of pesticide residues monitoring is to establish the amount of pesticide residues *in* and *on* food, to check compliance with the maximum allowable concentrations (MAC) and to determine to what extent pesticide residues above the MAC represents a risk to human health.

Trend and current state

In the observed period, the number of tested samples has increased from 416 samples in 2011 to 483 samples in 2015. Of the total sample size tested, the major number (75% in the observed period) refers to samples with no pesticide residues. In approximately 25% of the total number of samples the level of pesticides was below MAC, and only one sample in 2011, 2012 and 2015 had a level above MAC. Given the fact that in 2013 and 2014 none of the samples contained pesticide residues above MAC, and for the remaining years of the observed period only one sample contained an unacceptable level of pesticide residues, it can be estimated that consumer exposure to pesticide residues in Croatia is considerably lower than the EU average (in Croatia 0.2% and for the EU-28 2.6% in 2014).

Number of samples tested on pesticide residues *in* and *on* food



Source: MA

HEALTH AND SAFETY

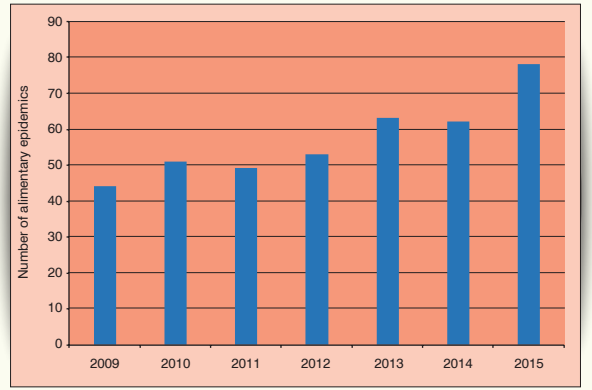
Alimentary Epidemics

Alimentary infections are illnesses caused by consumption of food contaminated with pathogenic organisms (bacteria, viruses, parasites). If there is a large number of affected people at the same time, we talk about alimentary epidemics.

Trend and current state

In the observed period, the total number of alimentary epidemics increased from 44 epidemics in 2009 to 78 epidemics in 2015, of which the major number of epidemic was caused by salmonella, bacteria found in soil, water, plants and meat, milk, eggs and their products. Only in 2015, this bacteria was the cause of 41% of the total alimentary epidemics, while Norovirus caused 27%, and Rotavirus 18% of the total alimentary epidemics. If we consider the number of people infected by Salmonella (salmonellosis), it has decreased from 275 cases in 2009 to 165 cases in 2015. In addition to education and supervision of people who handle food professionally, it is very important to continuously educate the wider population, which is primarily carried out by public health institutes. Also, in Croatia, the National Rapid Alert System for Food and Feed (HR RASFF[37]) operates in accordance with the Ordinance[38] and it applies in the case of an incident that may be a direct or indirect risk to human health.

Alimentary epidemics



Source: CIPH

[37] *Rapid Alert System for Food and Feed*; http://www.veterinarstvo.hr/default.aspx?id=1253
[38] Ordinance on Rapid Alert System for Food and Feed (OG 155/13)

GENERAL ENVIRONMENTAL ISSUES

Funds of EPEEF Collected Through Fees

Charges on polluters of the environment, environmental user fees[39], charges on burdening the environment with waste, and special environmental charge for motor vehicles represent the dedicated revenues of the Environmental Protection and Energy Efficiency Fund (EPEEF). Fees are used to finance environmental protection and energy efficiency, in accordance with the Act on the Environmental Protection and Energy Efficiency Fund[40]. In addition to the fees stipulated by this Act, funds are also collected through special waste categories fees based on the Act on Sustainable Waste Management[41] and fees based on the Air Protection Act[42].

Trend and current state

In the period from 2011 to 2015, the largest resources in the amount of 3.6 billion HRK, was collected through fees for special categories of waste[43]. Following are the funds collected through a special environmental fee on motor vehicles in the amount of 1.1 billion HRK and charges on polluters of the environment (182 million HRK). In 2015, revenues generated under the Air Protection Act have increased considerably thanks to the trading of greenhouse gas emissions (589.5 million HRK) and make 37.5% of the total revenues realized in 2015. However, it should be noted that greenhouse gas emissions from 2013 and 2014 will be included in the 2015 revenue as well, and this cannot be expected in the coming years.

[39] The environmental user fee has not yet been introduced since that the implementing regulations have not yet been adopted.
[40] OG 107/03, 144/12
[41] OG 94/13
[42] OG 130/11, 47/14
[43] Packaging and packaging waste, waste tires, end-of- life vehicles, waste lubricant oils, waste batteries and accumulators, EE waste

Funds of EPEEF collected through fees

Type of fees	2011	2012	2013	2014	2015
Charges on polluter of the environment	69 429 822	71 493 692	21 013 135	9 748 993	10 297 404
Special environmental charge for motor vehicles	228 296 330	228 738 097	225 726 484	235 304 582	191 944 643
Charges on burdening the environment with waste	0	2 756 052	944 282	2 863 557	1 929 363
Fees for special categories of waste	720 313 950	702 691 663	704 901 499	721 180 409	778 395 080
Revenues from the air protection act	1 575 951	907 960	927 522	830 032	590 533 090
Total (HRK)	**1 019 616 052**	**1 006 587 464**	**953 512 923**	**969 927 572**	**1 573 099 580**

Source: EPEEF

SUSTAINABLE CONSUMPTION AND PRODUCTION

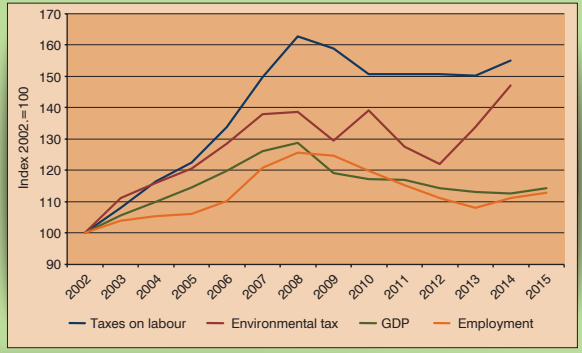
Components of Sustainable Development in the Economy of the Republic of Croatia

The concept of sustainable development implies the balance of social, ecological and economic needs of society. For its implementation, there is a whole range of political goals, measures and financial instruments prescribed by documents at the national, European and global level. It is one of the goals of the EU, set out in The 7th Environment Action Programme: "Ensuring the investment in environmental policy and climate policy and to address environmental related costs". In this regard, the introduction of fiscal measures to support sustainable use of resources is considered in a way to "shift the burden" of taxation from work to environmental pollution and resource exploitation.

Trend and current state

In Croatia, environmental allocations in the form of tax revenues are defined in the area of energy, transport, pollution and resource use, while tax on labour include taxes paid by employers and employees, and are classified as income tax and contributions for compulsory insurance, for example health insurance. Environmental releases in the observed period grew by 47% and account for 10.5% of total state tax revenues. Croatia's revenues from the environment related taxes in 2014 amounted to 4% of GDP (2.4% for energy only), while the EU average was 2.5%. On the other hand, tax on labour increased by almost 55% over the same period, and in 2014 they account for 42.7% of total tax revenues and account for as much as 16.3% of GDP. These trends clearly point to the need to improve the current tax policy concept, as taxation of pollution and use of resources can generate increased revenues and significant benefits for society and the environment.

Components of sustainable development



Source: Eurostat, TAXUD

PUBLIC RELATIONS

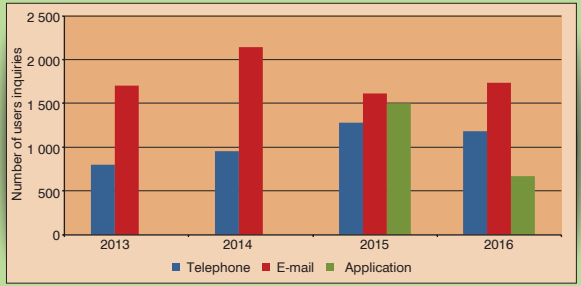
User Support

In the monitoring and reporting on the environment system, obligators of data delivery are the key link. CAEN has been continuously, for years providing user support for obligators, but also for verifiers and data users, in all thematic areas within our jurisdiction.

Trend and current state

Obtaining the quality of data is achieved by prompt and customized education of all stakeholders in the process of collecting, verifying, processing and displaying of data and information. We may name emission data providers under a common denominator: “pollutants”. Here, however, we do not only have in mind just large economic entities which, with their activities, contribute to the emission of pollutants into the air, water, sea and soil. So-called small and middle sized businesses also “contribute” to the burdening of the environment. For all reporting areas, CAEN provides support through specialized user manuals and instructions via telephone, e-mail, and in the last few years through the so-called Help-desk application. Industry Help-desk is the first such application developed in 2014. It provides support to obligators of the EPR, RPOT / OPVN, BOUDR and SNM systems. In the first three years of work (2014 - 2016) a total of 2 170 queries have been answered through this application. Based on the category of users, requests were submitted mostly by the obligators of data delivery (97.2%), then by the potential obligators of data delivery (2.5%) and by the expert and other interested public (0.3%).

User Support, Industry Help-Desk



	User Support TOTAL	Telephone	E-mail	Application
2013	2 500	800	1 700	-
2014	3 096	952	2 144	-
2015	4 388	1 276	1 612	1 500
2016	3 595	1 185	1 740	670

Source: CAEN

THE ENVIRONMENT IN YOUR POCKET

Abbreviations

ALA – Agricultural Land Agency
BOUDR - Register of use permits which determine the integrated environmental protection requirements and decisions on integrated environmental requirements for existing facilities
CAEN – Croatian Agency for the Environment and Nature
CBS – Croatian Bureau of Statistics
CFI – Croatian Forest Research Institute
CGS – Croatian Geological Survey
CH_4 – methane
CO_2 – carbon dioxide
DHMZ – Meteorological and Hydrological Service
EC – European Community
EI – Environmental Inspection
EIHP – Energy Institute Hrvoje Požar
EPEEF – Environmental Protection and Energy Efficiency Fund
EPR – Environmental Pollution Register
EU – European Union
GDP – gross domestic product
IOF –Institute for Oceanography and Fisheries, Split
IT – International treaties
LV – limit value
LULUCF – Land use, land use change and forestry sector
MA – Ministry of Agriculture
MAC – maximum allowable concentration
MEE – Ministry of Environment and Energy
MEEC – Ministry of Economy, Entrepreneurship and Crafts
Mt – megaton (10^6 t)
Nm – nautical mile
N_2O – nitrous oxide
OG – Official Gazette
OJ L – Official Journal of the European Union (OJ) is the official collection of EU legislation (L series) and other official documents of institutions, bodies and agencies of the EU (C series and its accessories)
PM_{10} – Particulate matter; aerodyn. diameter < 10 μm
PJ – petajoule (10^{15} J)
PPP – Plant protection products
RES – Renewable energy sources
RPOT/OPVN –Register of facilities in which the presence of dangerous substances are determined / Record of reported major accidents
SNM – Strategic noise maps
SOC – Soil Organic Carbon
TAXUD – Taxation and Customs Union
UNFCCC – United Nations Framework Convention on Climate Change
WMO – World Meteorological Organization

Glossary

Fugitive (diffuse, non-persistent) emissions – emissions of volatile organic compounds into the air, soil and water from solvents contained in any product, released into the environment through windows, doors, vents and similar openings rather than exhausts.

Final energy consumption – represent energy consumption in industry, transport and other sectors (households, services, agriculture, construction)

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

Fishing effort – the product of the fishing capacity and activities of a fishing vessel in certain fishing forms, and for the vessel group it's a sum of fishing efforts of all vessels

Precursors – are formed by chemical or photochemical reactions from primary pollutants (primary go into the atmosphere directly from emission source)

Fire Weather Index (*Fire Weather Index*, FWI) – numerical assessment of potential fire intensity is classified in 5 fire hazard classes: FWI < 5 – very low; 4< FWI < 9 - low, 8< FWI < 17 - moderate, 16< FWI < 33 - high , 32< FWI – very high.

The Environment in Your Pocket I - 2017

Croatian Agency for the Environment and Nature