

SURVEY

on existing policy and legislation, networks and cooperation initiative to reduce river and marine litter in Black sea region

Analysis of legislation, policies, stakeholders and institutions



April, 2019

Common borders. Common solutions.

ANALYSES SUMMARIZING REALIZED SURVEY IN 5 PARTICIPATING REGIONS IN TURKEY, BULGARIA, ROMANIA, MOLDOVA, UKRAINE

5 case studies in 5 target regions in TURKEY, BULGARIA, ROMANIA, MOLDOVA, UKRAINE

Each of these case studies consists of the following information:

- Background information: general information for the scope of survey and the target area
- Analysis on legislation concerning marine litter in 5 target regions. List of laws with focus on environmental protection sector with the focus on waste management, water management in Bulgaria
- Legal and policymaking framework and its practical implementation in target regions
- List with key pollutants in target regions and short analyse of the environmental situation in the target area
- National, trans-border and cross-border initiatives in target regions
- List of main stakeholders and institutions in target regions with the focus on waste management and water management

The analyses have been elaborated in the frame of MARLENA Project, MARLENA – Marine and River Litter Elimination New Approach, financed under the first call for proposals for the ENI Cross-Border Cooperation Program in the Black Sea Basin and for EMS BSB-139 Project and aims at investigating the cooperation, local governance strategies and legislation in local waste management in 5 target regions in Turkey, Bulgaria, Romania, Moldova, Ukraine.

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Background information: general information for the target area

The Black Sea is a natural inland water basin situated between Europe and Asia. Six countries share the Black Sea coast: Bulgaria, Georgia, Romania, Russia, Turkey and Ukraine. The lengths of their respective coastlines are: Bulgaria - 354 km, Georgia 310- km, Romania 225 km, Russia - 800 km (including the Azov Sea), Turkey - 1329 km and Ukraine - 2782 km (including the Azov Sea). A population of about 16 million people inhabits the coastal zones of the six countries.

The following are some of the basic geographical characteristics of the Black Sea: total area 422 000 sq km (441 000 sq km including the shallow Azov Sea), maximum depth — 2212 m, average depth 1300 m, volume 540 000 cubic km, wave height up to 6 — 7 m, wave length up to 90 — 100 m, tidal variations — 3 to 10 cm, average winter temperature of seawater - 4°C, average summer temperature of seawater — 22—24°C. The largest bays on the Black Sea are the Karkinitiski, the Burgas, the Kalamitski, the Dnieprovski, the Dniestrovski, the Sinop and the Samsun Bay. The largest rivers flowing into the Black Sea are the Danube, the Dnieper, the Don, the Dniester, the Kuban, the Southern Bug, the Rioni, the Kizil—Irmak and the Kamchia rivers.

The Black Sea with its total area of roughly one third the size of continental Europe is one of the largest inland water basins in the world. It is almost entirely isolated from the world's oceans but is over 2 km deep in places and receives river inputs from a large catchment territory, including major parts from seventeen countries and the second, third and fourth largest rivers in Europe, respectively the Danube, the Dnieper and the Don.

The Black Sea is connected to the Mediterranean only through the narrow and winding Bosphorus Straits, a 35-km natural channel, as little as 40 m deep and 700 m wide in places. It leads to the Sea of Marmara and then to the Aegean Sea through the Dardanelles. This complex natural system makes the replenishment of seawater in the Black Sea very slow.

Every year the rivers pour an average of 350 cubic km of water into the sea and since it receives more fresh water than it loses from evaporation, the average salinity is quite low 18‰. The surface outflow, a mixture of seawater and fresh water, from the Black Sea to the Aegean amounts to about 610 cubic km annually. To compensate for this loss of water, the Black Sea receives an inflow from the Mediterranean with higher salinity but the volume is roughly twice smaller. It enters the sea as an underflow through the Bosphorus, which also carries the outflow. The two do not mix very easily and as a result the Black Sea has got a surface layer about one hundred metres deep which contains more fresh water than the waters below.



TURKEY
DEMİRKÖY MUNICIPALITY



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I. INTRODUCTION

KIRKLARELİ

Kırklareli, located on the parts of the Yıldız (Istranca) Mountains and Ergene Plain of the Marmara Region, is surrounded by Bulgaria in the north, Black Sea in the northeast, Tekirdağ in the south and southeast and Edirne in the west.

The province, which has an area of 6,550 square kilometers, has a 180 km land border to Bulgaria and 60 kilometers coastline at the Black Sea.

The north and east of our province, which is 203 meters high from the sea level, is mountainous and forested, the other parts are generally flat lands.

Forestry Lands

The forests within the boundaries of Kırklareli province are located within the borders of Kırklareli, Demirköy and Vize Forest Directorate. The forestry area of Kırklareli province is 129.965.0 hectare.

The slopes of Yıldız Mountains facing the Black Sea are covered with forests. These forests rise up to 1000 meters along the slopes of the mountains starting from the coast.

Protection areas of the region.

NATIONAL PARKS			
NAME	PROVINCE	DISTRICT	AREA (ha)
İğneada Longoz Forests	Kırklareli	Demirköy	3155
NATURAL PARKS			
NAME	PROVINCE	DISTRICT	AREA (ha)
Kavaklımeşe Woods	Kırklareli	Merkez	35,55
NATURAL PROTECTION AREAS			
NAME	PROVINCE	DISTRICT	AREA (ha)
Kasatura Bay	Kırklareli	Vize	329
WETLAND AREAS			
NAME	PROVINCE	DISTRICT	AREA (ha)
Dupnisa Cave	Kırklareli	Dereköy	0,25
İğneada Floodplain	Kırklareli	Demirköy	3000

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National Parks and Similar Fields

The Igneada Longoz Forests National Park in Demirköy, the Kasatura Bay Nature Conservation Area in Kıyıköy / Vize and the Kavaklımeşe Natural Park in the central district are the national parks and similar fields.

İğneada Longozu; An Important Plant Diversity

The mixture of dune, lake, marshy and subasar forest habitats which is known as Longos Forests are mostly found in the east of İğneada, in the south of the Black Sea and 15 km south of the Bulgaria border. Longos forests consist mainly of ash, alder, elm, poplar, walnut, linden and willow trees.

Kasatura

The Kasatura contains a large coastal dune system. The area is of international importance and hosts some rare and endemic plants.

Seas

Black Sea is located in the east of Kırklareli. The salinity of the surface waters is low due to the large amount of fresh water and rains in the rivers pouring into the Black Sea. While this ratio is 0.18% in the central part of the sea, it is around 0.16% in the coasts of Kıyıköy and İğneada. The low salinity on the coast of İğneada facilitates the freezing of the water.

In 2017, 32 samples were taken from 4 monitoring points and no non-conformity was observed.

Beaches

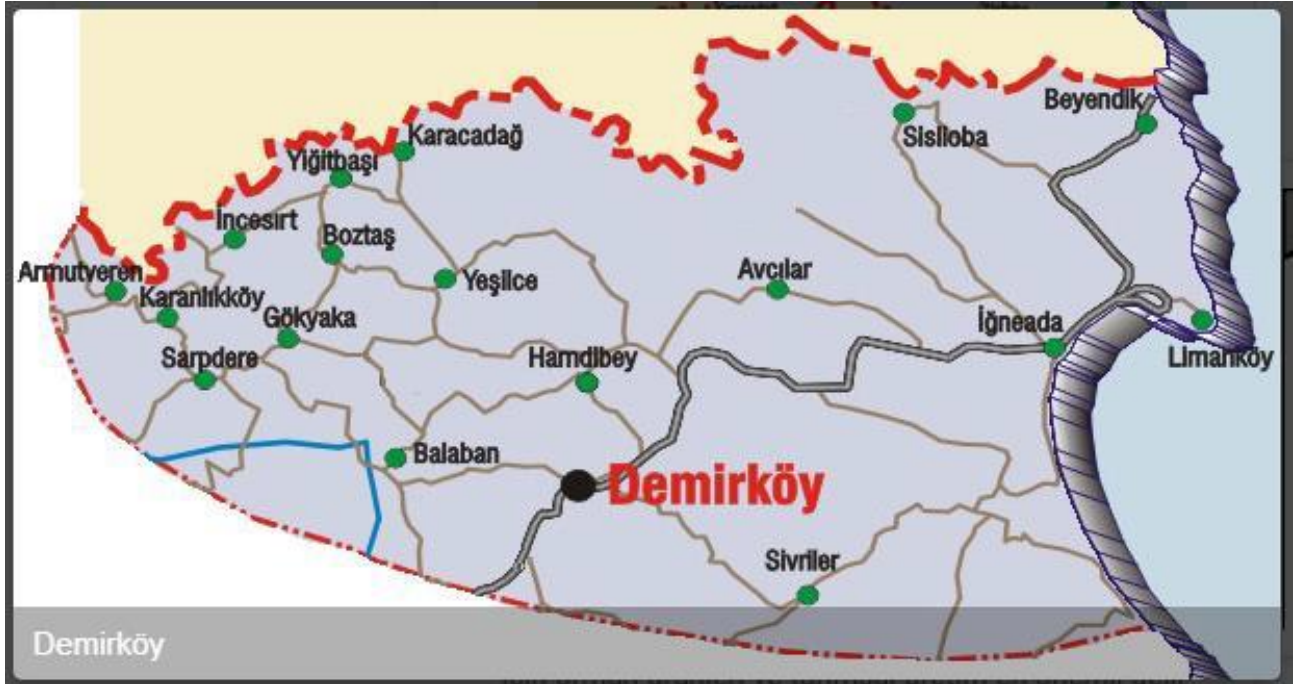
Kırklareli has about 60 km of natural sand, rock and marshes. The most important beaches of the Black Sea coast, still preferred by local and foreign tourists, are Kıyıköy, İğneada and Kasatura.



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DEMİRKÖY



Demirköy is a green settlement with a small population on the mountain range called Istranca or Yıldız, which is 400 meters high, and houses the İğneada Longoz forests on the Black Sea coast. At the international level, the Istranca Mountains are defined as one of the 5 most important areas in Central and Eastern Europe for the protection of the European natural heritage. For Demirköy, which is located in a large forest region, forest products and agricultural production are the most important sources of income. There is almost no industrialization. İğneada, a town of Demirköy, is on the coast of the black sea, which is available for the sea tourism with its unexplored coastlines and the green meets the blue.

II. CONTENT AND OBJECTIVES

With the scope of the Black Sea Border Cooperation, MARLENA Project which is financed by the EU has been carried out between 6 countries including Turkey, Greece, Bulgaria, Romania, Ukraine, Moldova to reduce the pollution of rivers and marine waters in the Black Sea Basin and draw attention to the environmental pollution.

Demirköy Municipality is participating in the Project with aim of improving the creek bed passing through the district center and using it for the tourism facilities. **Purpose of the Survey:** Within the scope of the project, our purpose is to determine the studies, strategies, inter-institutional cooperation and awareness level of the institutions and organizations in the region.

Survey Area: Demirköy and the settlements around it were determined for the survey. In this study, a survey was conducted in Kırklareli, Demirköy, İğneada and Kızılköy.

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Frame of the Survey; The survey was conducted to determine the level of awareness and education level of MARLENA, regarding the importance of biodiversity and environmental protection in target groups such as young people, tourists, firms, local authorities and authorities, educational organizations in relation to river and marine pollution problems.

III. ENVIRONMENTAL LEGISLATION

a. Structure of the Legislation and Analysis

The Constitution of the Turkish Republic gives the power of legislation to Turkish National Grand Assembly and the power of the Decree Law to the Council of Ministers. The application details of the laws are determined by the Regulations. The Regulations are published by the institutions who follow and apply the Laws and Regulations.

Under the directives, there are circulars and directives covering specific or field- specific applications.

The Environmental Law was published on 9th August 1983 with no.2872. All issues such as environmental duties, responsibilities, responsible people, measures, inspections, sanctions, etc. are gathered under the Environmental Law. The Ministry of Environment and Urbanization carries out its control, supervision, follow-up and other administrative duties through the Provincial Directorates of Environment and Urbanization in all provinces. Before the establishment of the enterprises, taking into account the pollutant effect that may occur during the activities, they have to submit and get approval of the report (Environmental Impact Assessment Report-EIA), which determines the measures to minimize the effect.

The facilities established by approval of the EIA can not start the operation without taking the determined permissions considering the pollutant elements from the administration.

Enterprises have to carry out measurements during their activities according to the pollutant effect of the waste/emmission/ noise as the determined regulations and have to notify the administration.

The Ministry of Environment and Urbanization oversees the facilities through both the ministry and provincial organizations and implements sanctions on the non-conformities they have identified.

During their activities, enterprises are responsible for the prevention of pollution in case of contamination, stopping pollution in cases where contamination occurs, taking necessary legal, economic and social measures in order to eliminate or reduce the effects of pollution, implementation of environmental legislation and all environmental management procedures.

The enterprises are to determine whether the facilities that cause or may cause environmental pollution as a result of their activities, to comply with the legislation of the activities that subject to audit, and to evaluate whether the measures are implemented effectively. They have to continuously employ the environmental officer to organize the annual audit programs, or to provide environmental management services from environmental consultancy firms or to establish an environmental management unit.

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b. Existing Legislation List

Key Stakeholders	Type	Name
Ministry of Environment and Urbanization	Legislation	The Law of Environment
Ministry of Environment and Urbanization	Regulation	Waste Management Regulation
Ministry of Environment and Urbanization	Regulation	Regulation on the control of solid wastes
Ministry of Environment and Urbanization	Regulation	Water pollution control regulation
Ministry of Environment and Urbanization	Regulation	Removal of Waste from Ships and Control of Waste
Ministry of Environment and Urbanization	Regulation	Regulation on Environmental Inspection
Ministry of Environment and Urbanization	Legislation	Emergency Response and Compensation of Damages in the Pollution of Marine Environment by Oil and Other Hazardous Substances
Ministry of Environment and Urbanization	Legislation	Cultural and Natural Heritage Protection Act
Ministry of Environment and Urbanization	Legislation	Coastal Law
Ministry of Agriculture and Forestry	Legislation	Forest Law
Ministry of Agriculture and Forestry	Regulation	Implementing Regulation on the Implementation and Follow-up of Basin Plans
Ministry of Agriculture and Forestry	Regulation	Regulation on the protection of drinking water basins
Ministry of Agriculture and Forestry	Regulation	Regulation on protection of watersheds and preparation of management plans
Ministry of Agriculture and Forestry	Legislation	National Parks Law
Ministry of Agriculture and Forestry	Legislation	Pasture Law
Ministry of Agriculture and Forestry	Legislation	Cultural and Natural Heritage Protection Act

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Ministry of Energy and Natural Resources	Legislation	Mining Law
Council of Ministers	Legislation	Municipal Law
Council of Ministers	Legislation	Law of Misdemeanors

IV. IMPORTANT POLLUTANTS AND THEIR EFFECTS IN THE REGION

As a result of the survey conducted in Kırklareli, it shows that two different regions are formed at the point of assessment of environmental pollution. These areas are Ergene Plain (Basin) - Yıldız (Istranca) Mountains and Black Sea. These two areas have completely opposite conditions.

According to the results of the survey, when we consider our project region, no significant contamination or pollutants were detected in the project area. In the region, the pollutants can be listed as domestic wastewater, domestic solid waste and the waste of the vacationers.

V. KEY STAKEHOLDERS IN THE REGION AND SURVEY RESULTS

The survey area was determined as Kırklareli Central District, Demirköy, İğneada and Kıyıköy. A survey was conducted with 23 institutions and organizations in this area. The weakest point of the survey is having the opposite conditions between the Ergene Basin and our project region's in terms of environmental pollution. Taking into consideration of the given answers, the Ergene region will not reflect the real situation of our project region, but the participants of the survey were especially stated that the project area was the Istranca Mountains and Black Sea Coast (Demirköy District).

In spite of this reminder, it was observed that the participants answers were not satisfying because of their not knowing the area or considering the place they live (Ergene Basin). We need to take this point into account when evaluating.

In the survey;

- ✓ the points under the threat of pollution in the region,
- ✓ Pollutant parameters,
- ✓ activities of institutions and organizations on the subject,
- ✓ joint work of institutions and organizations,
- ✓ We have tried to determine the level of awareness of institutions and organizations, employees and the people of the region.

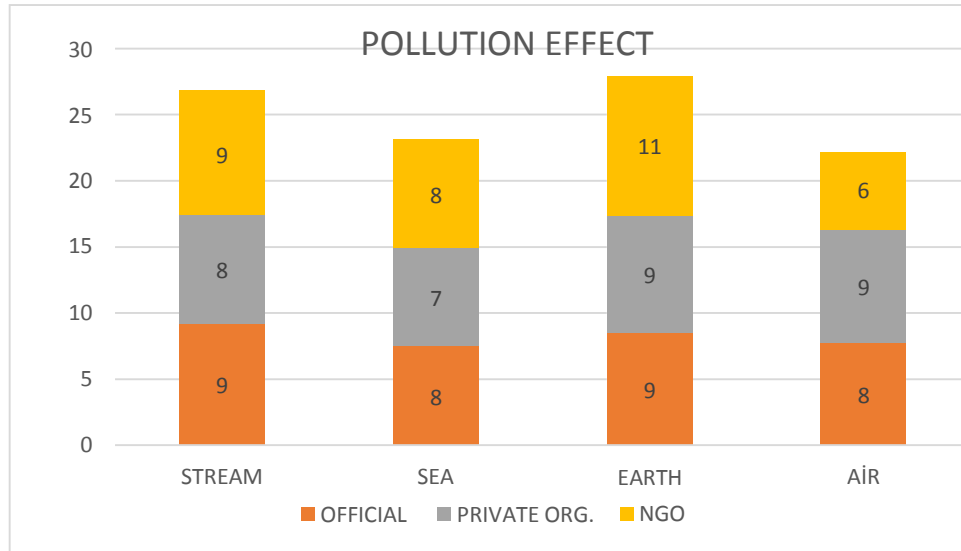
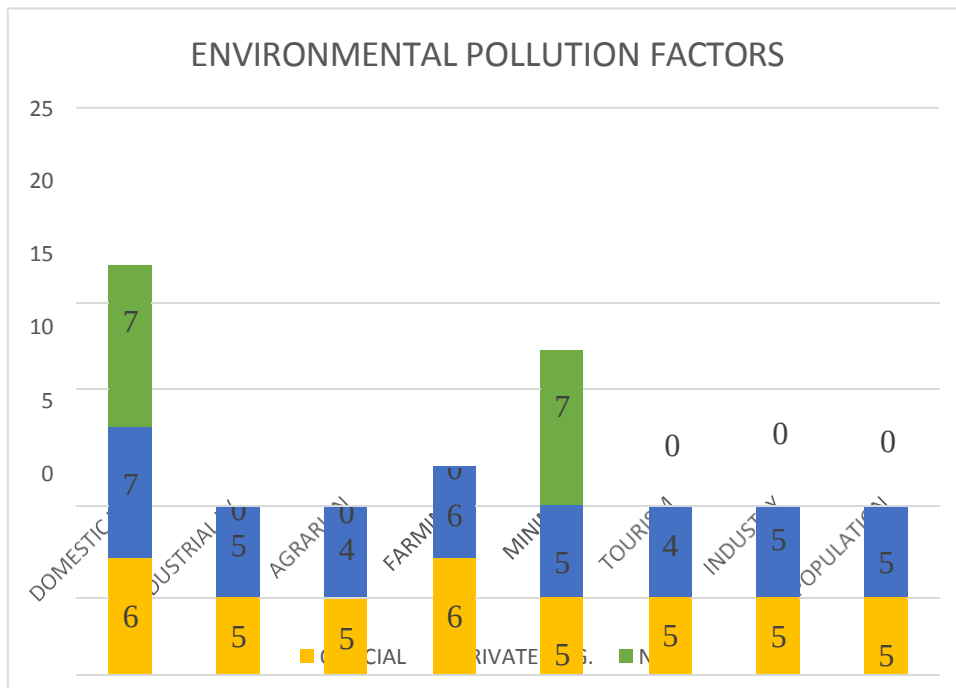
The list of institutions and organizations visited and determined to be related to the environment and the protection of the environment in the region;

- a. Provincial Directorate of Environment and Urbanization / Kırklareli

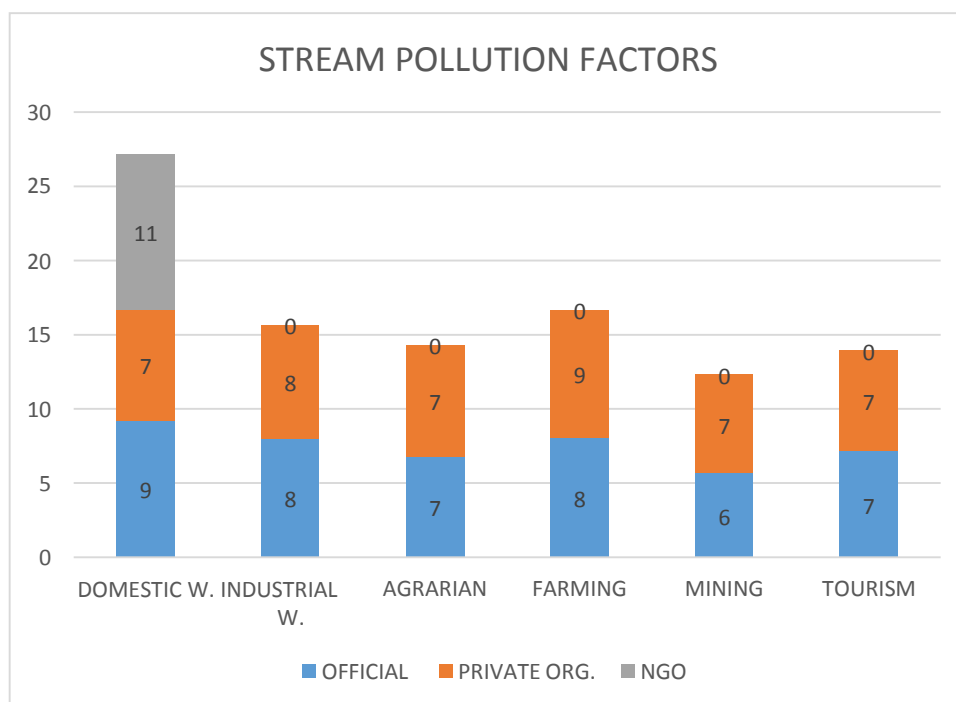
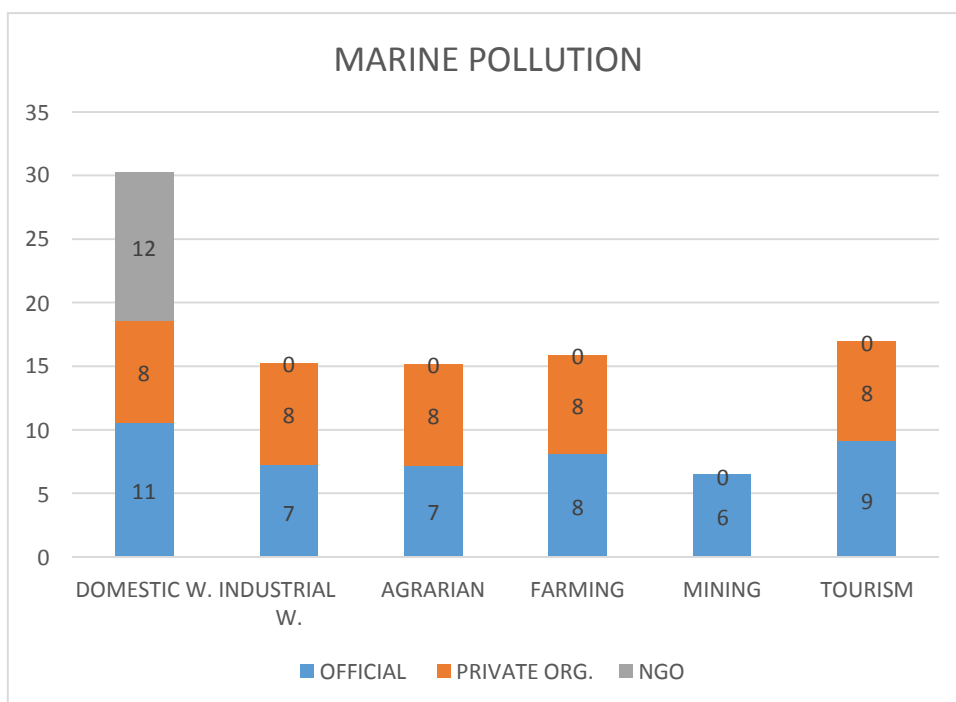
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b. Istanbul Regional Directorate of Forestry

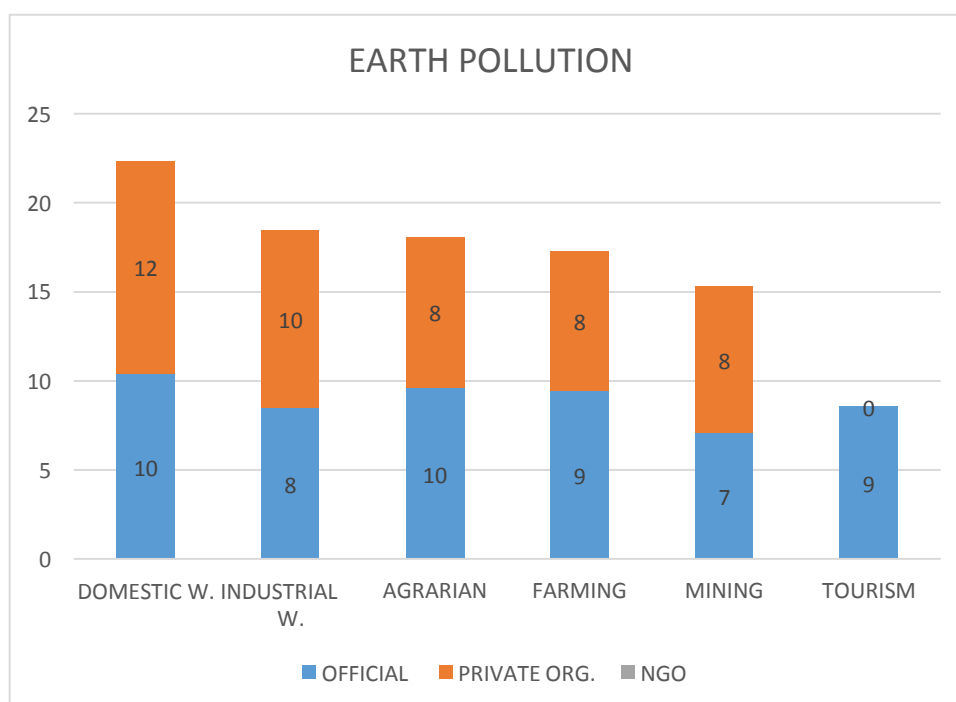
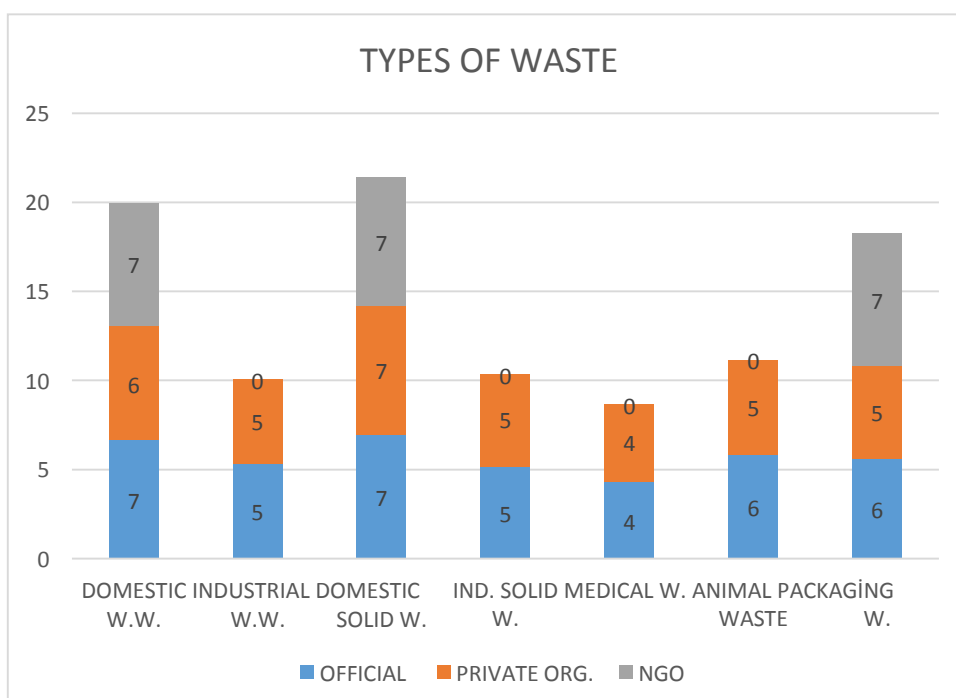
- i. Kırklareli Forest Management Directorate / Kırklareli
- ii. Demirköy Forestry Directorate / Demirköy
  - 1. Demirköy Forest Management Chief / Demirköy
  - 2. İğneada Forest Management Chief / İğneada
  - 3. Macara Forest Management Chief / İğneada
- iii. Vize Forest Management Directorate
  - 1. Midye Forest Directorate / Kıyıköy
- iv. Provincial Directorate of Nature Conservation and National Parks / Kırklareli
  - 1. İğneada Longoz Forests National Park Visitor Center
- c. City administrations / Kırklareli
- d. Municipalities
  - i. Kırklareli Municipality
  - ii. Demirköy Municipality
  - iii. İğneada Municipality
  - iv. Kıyıköy Municipality
- e. KIRK-KAB Kırklareli Local Governments Solid Waste Disposal Plant /Kırklareli
- f. Trakya Development Agency (TRAKYAKA)
- g. Non-governmental Organisations
  - i. DAYKO / Kırklareli
  - ii. TEMA / Kırklareli
- h. Companies in the Region
  - a. SALKIM Orman Ürünleri San. Ve Tic. Ltd.
  - b. İğneada Resort Hotel



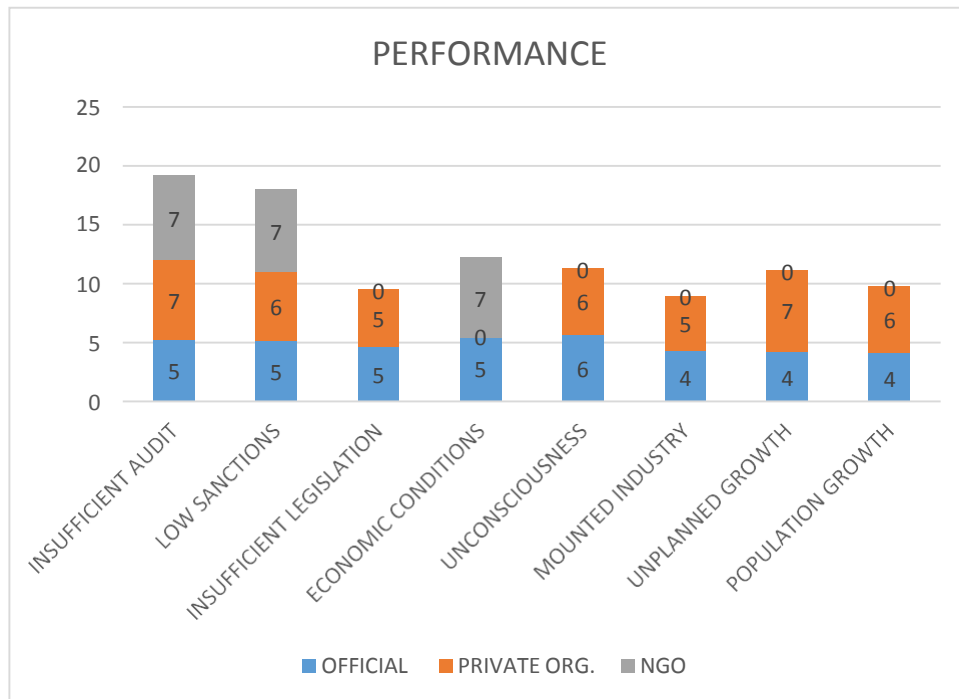
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When the results of the survey were evaluated in general terms, a critical level of pollution was not detected, but the following topics came to the fore.

- ✓ **Solid Waste Disposal:** KIRK-KAB regular storage area has been established with the participation of regional local administrations. But the storage area is far from our project area. Local governments do not have the economic power to send their waste regularly. They store solid wastes in their wild storage facilities.
- ✓ **Wastewater Disposal:** There are no wastewater treatment plants in the the project area or the existing ones do not work. Due to the fact that population density is not high and wastewater is not discharged at one point, so wastewater is not a problem. However, because of the tourism potential of the region and the increasing number of visitors each year, it is necessary to take measures.
- ✓ **Cleaness of the Common Areas:** The common areas (Beaches, forest, national park, picnic / recreation areas, courtyards, etc.) of people are hosting more and more visitors. The cleaning and cleaning of these areas are uncertain. The Forestry Directorate, National Parks Directorate, Special Provincial Administration and municipalities seem to be in charge of this issue but it is uncertain who takes the responsibility.
- ✓ **Active Mines:** The participants have emphasized the existancy of the open mines which have been inactive in the region but they have not been rehabilitated.

CONCLUSIONS for the Region of Demirkoy:

- ✓ Lack of Industry,
- ✓ Still unexplored for the sea and nature tourism by the entrepreneurs,
- ✓ The region is under protection because of natural features,
- ✓ The population density is not too high (even decreased),
- ✓ The coastline traffic is not dense because of being away from the busy routes,

Because of the mentioned points above, the region has been kept clean and untouched and the results of the survey support this fact. Istranca Mountains, Demirköy, İğneada and its surroundings are one of the rare places that constitute a chain of ecologically related to ecosystems in our country. Therefore, the change of a parameter associated with the water resources feeding the area will affect the entire ecosystem. It is important to keep the region with such a sensitive ecosystem in the future as it is today. Since Demirköy Municipality is the largest local government in the region, it has to protect and develop the region, has to raise awareness of the people of the region, visitors and citizens on this subject and has to present them to the future generations with its present form. Demirköy Municipality should develop environmental policies and focus on good practices and cooperation initiatives in order to collect and dispose of solid wastes at the source and to reduce river and marine litter in the Black Sea region.

BULGARIA

Burgas region and Malko Tarnovo municipality

Bulgaria covers an area of 110,370 km². Bulgaria has a great variety of topographical features, mostly mountains with lowlands in north and southeast, but also plains, plateaus, basins, gorges, and deep river valleys. The position of BG is characterised of the strategic interesting location to Turkey with controlling key land routes from Europe to the Middle East and Asia.

Population (1 000): 7,101,859 inhabitants
(2017) GDP at market prices: 50,430.1 million Euros
(2017) GDP per inhabitant in PPS (Purchasing Power Standard EU 28 = 100): 49
(2016) GDP growth rate: 3.6% (2017) Inflation rate: -1.2% (2017) Unemployment rate: 6.2% (2017) General government gross debt (Percentage of GDP): 25.4% (2017) General government deficit/surplus (Percentage of GDP): 0.9% (2017) Capital city: Sofia Official EU language: Bulgarian Currency: BGN
Source: Eurostat (last update: 20 December 2017)



In Bulgaria the population is unevenly distributed across the country. About 71 % of the population was living in urban areas Sofia, which is the largest city and capital of Bulgaria (1.236 million in 2017) .ⁱ

The Black Sea Basin Management Area in Bulgaria covers 16567.93 km² of land territory and 6,358 km of aquatory or 14.9% of the country's territory and 100% of the Black Sea aquatory. To the west it borders the Danube basin district and the East Aegean basin district, to the north with the Republic of Romania, to the south with the Republic of Turkey.

The Black Sea Basin Directorate region perform planning, monitoring, informational features, and management of water, exclusive state ownership.

Basin Directorate for Water Management in the Black Sea Region - was established by the Minister of Environment and Water in 2002, in accordance with Directive 60/2000 of the European Union and national legislation and regional division of the Ministry.

The Black sea basin Management area included three Black Sea districts - Dobrich, Varna and Bourgas. Taken together, they generate 13.1% of the Gross Value Added (GVA) and Gross Domestic Product (GDP) on a national scale.

Approximately 80% of the area and 90% of the population of the three areas fall within the Black Sea basin district.

Burgas Province (district) is a province in southeastern Bulgaria, including southern Bulgarian Black Sea Coast. It is bounded on the south by Turkey. The province is named after its administrative and industrial centre - the city of Burgas - the fourth biggest town in the country. It is the largest province by area, embracing a territory of 7,748.1 km² that is divided into 13 municipalities with a total population, as of December 2017, of 411579 inhabitants.

Municipality Malko Tarnovo is located in the southern part of the Burgas region. The area of the municipality is 798.5 sq. km, making it the third largest municipality in Burgas region. Malko Tarnovo borders the municipalities: Sredets, Sozopol, Primorsko and Tsarevo, and Republic of Turkey to the south. The municipality of Malko Tarnovo falls entirely within the Nature park "Strandzha" and many protected areas under NATURA 2000. The geographical characteristics and spatial development of municipality Malko Turnovo (located in Strandzha Mountain and in the valleys of the rivers Veleka and Rezovska and their tributaries) are a prerequisite for settlement of various civilizations since ancient times. The cultural heritage of the region is the result of layering of past civilizations and eras that have specific memory and identity in place.

The main river is Veleka which flows through the middle of the municipality from the west to the east and divides it into two halves. Here she receives two main tributaries of the Mladezhka river and Ayder river and many smaller ones. Here passes also Rezovska river and Kiten river. The rivers flow into the Black Sea, enabling transportation of marine litter which is non-biodegradable and seriously damages the living organisms and might threaten the biodiversity. The current project directs the efforts of the partners to preserving the environment and reduction of the marine litter.

I. Analysis on legislation concerning marine litter in Bulgaria. List of laws with focus on environmental protection sector with the focus on waste management, water management in Bulgaria

Bulgaria became party to the vast majority of global and regional **multilateral environmental agreements (MEAs)** prior to its accession to the EU in 2007. Implementation of MEAs is a priority for the Ministry of Environment and Water and other governmental institutions. Good efforts are applied and clear criteria for prioritization of meetings exist to ensure the participation of Bulgaria in all important meetings under MEAs, given financial constraints. National implementation reports are generally submitted on time and focal points are appointed for all MEAs to which the country is a party.

Bulgaria ensures public participation in the development of the Bulgarian position for decision-making in the framework of MEAs and in implementation of MEAs. Consultations with NGOs have been organized prior to and after important MEA meetings, representatives of NGOs have been included in national delegations to MEA meetings. In many cases, draft national reports are published with an invitation to the public to submit comments. However, in general there is no systematic policy on how to involve the public

and NGOs in development of the Bulgarian position for decision-making in the framework of MEAs and in implementation of MEAs.

Waste management

The total amount of municipal waste generated decreased from close to 5 million tons in 2000 to slightly more than 3 million tons in 2016. The amount of waste generated per capita decreased accordingly, from more than 600 to 442 kg/capita/year. The number of settlements and inhabitants served by collection services increased substantially. Nowadays, 99.6 per cent of the population is covered with waste services.

The formal system of separate collection of packaging waste was introduced in Bulgaria in 2004. At that time, only slightly more than one third of the generated packaging waste was recycled, and by 2014 this proportion had reached 61.7 per cent.

Bulgarian policy on organic waste is to reduce landfilling, especially of biodegradable organic waste. Construction of regional sanitary landfills is the first step to reducing the environmental burden of such waste (preventing contamination of the soil and groundwater and reducing methane emissions). Bulgaria has a target to reduce biodegradable waste on landfills to 35 per cent of the total quantity of organic waste generated in 1995 until 2020. The Ministry of Environment and Water has set a target of 25 per cent separate collection of municipal biowaste in 2016, 50 per cent in 2020 and 75 per cent in 2025.

The fourth National Waste Management Plan for the period 2014–2020 aims at discontinuing the link between economic growth and waste by preventing the generation of waste and by setting specific quantitative targets for preparation of reuse, recycling and other forms of recovery for specific wastes.ⁱⁱ

Strategic and programme documents in Bulgaria

- **National Waste Management Plan 2014-2020**

Bulgaria has developed a National waste prevention programme (NWPP) in accordance with the requirements of the WFD and Article 50 of the Waste Management Act for the first time. NWPP is an integral part of NWMP and identifies measures for implementation of the highest level in the waste management hierarchy.

The fourth NWMP is the transition from waste management to the efficient use of waste as resources and sustainable development by prevention of their generation, as far as possible. Successful implementation of the plan will lead to the prevention and reduction of the harmful effects of waste on the environment and human health and reduce the use of primary natural resources.

The plan supports the central and local authorities to concentrate limited financial resources from national and EU sources on priority projects in the field of waste management.

National waste prevention programme. Included sub-programmes to:

- achieve the objectives for preparing of re-use and recycle of municipal paper, metal, plastic and glass waste

- achieve the objectives of biodegradable waste, including bio-waste
- achieve the targets for recycling and recovery of construction and demolition waste
- achieve the targets for recycling and recovery of widespread waste
- improve the management hierarchy of other waste streams and reduce the risk to the environment from landfills for municipal waste
- improve the capacity of institutions for waste management
- improve the quality of information helping to make informed management decisions
- improve awareness and participation of the population and business in waste management activities
- Coordination with other plans and programs

Short analyses of the existing legislation in Bulgaria

Institutions

The Ministry of Environment and Water (MOEW) is responsible for the development and implementation and drafting of the national waste management policy as well as regulation of the activities in the public and private sectors. The MOEW performs some of the activities by the Executive Environmental Agency (EEA) and a network of 16 Regional Inspectorates of Environment and Water (RIEW) that are specialized control bodies of the Ministry and control the implementation of the waste management activities on their territories.

Inspectorates ensure that the 58 waste management regions, set by the National Waste Management Program (2009- 2013) under their supervision comply with environmental standards. However, limited enforcement capacity of the Inspectorates will make closing all of about 200 non-compliant dump sites challenging.

Municipalities (264 in total) play an important role in the implementation of the policy in the environmental sector. Municipalities are organised in Regional Municipal Associations, which are responsible to implement the national waste management policy on the regional level.

Under the new mechanism for development of the waste management infrastructure with the support of the Operational Programme Environment, which was introduced in 2009, the funds for regional investments in the regional systems are now being allocated by central level decision making.

The Environmental Protection Act establishes the general regulatory framework for SEA. The SEA Ordinance further specifies the SEA system.

Bulgaria has established a single environmental ex-ante quality assurance system by integrating Natura 2000-appropriate assessment procedures, as well as coordinating Integrated Pollution Prevention and Control permitting process and integrating the Seveso process of chemical safety in the EIA procedures

Waste Framework Directive: Bulgaria transposed the WFD into national law by the **Waste Management Act**, promulgated in SG 53/ 13 July 2012.

The further legislation is also of relevance in regard to the WFD

- ☐ Ordinance No 9 on the conditions and forms for submission of information for waste management activities and the Public Register of closed enterprises and activities (promulgated in SG 95/2004)
- ☐ Ordinance for definition of the order and amount of the product fee for products which after their use generates widely spread waste (promulgated SG 120/2008, last amended SG 29/2011)
- ☐ Ordinance for construction and demolition waste management and recycled constructional materials use (promulgated in State Gazette 89/ 13 November 2012)

Landfill Directive and WAC Decision

- ☐ Ordinance No 8 on the conditions and requirements for construction and operation of landfills and other facilities and installations for waste disposal and recovery
- ☐ Ordinance No 7 on the requirements for sites determined for placing of waste treatment facilities
- ☐ Ordinance No 14/ 15 November, 2010 on the conditions and requirements for calculation of the deductions and spending of collected funds for activities related with closure and post closure activities on landfill sites (promulgated in SG 93/ 2010)

Packaging Directive: Ordinance on packaging and packaging waste The EU requirements on incineration have been transposed by Ordinance No 6 on the conditions and requirements for construction and operation of incineration-plants and co-incineration plants (SG 78/07.09.2004).

Further the EU requirements on shipments of waste (including financial guarantee), WEEE, batteries and accumulators, ELVs and waste oils have been transposed accordingly.

The regional system for waste management in the region of Burgas serves 210 settlements in total, with about half a million residents. The municipalities falling into the scope of the system are: Burgas, Sredets, Kameno, Nesebar, Pomorie, Aytos, Ruen, Karnobat and Sungrulare. An infrastructure has been built for environmentally-friendly neutralization of the entire quantity of household and construction waste generated on the territory of the region of Burgas.

II. Legal and policymaking framework and its practical implementation in Bulgaria

Environmental legislation and the policy framework for environmental protection and sustainable development driven by the EU requirements has been strengthened. However, effective implementation of legislation and policies remains a challenge. Bulgaria has been particularly slow in implementing the environmental legislation at the subnational level in areas demanding high infrastructure investments, such as waste and water management. Several key overarching environmental policies have not yet been adopted or have been adopted with delays.

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At the same time, there are various requirements for specialized environmental policies, in particular at the local level, which further increase policy fragmentation and the administrative burden. The processes of strategic planning are poorly linked to budget plans. At all levels, there is insufficient capacity to develop and implement the wide range of environmental policies. The necessary level of legislative and policy coordination between national and local environmental authorities has not yet been achieved. Bulgaria has established a legislative framework specifying the procedure, scope, methodology and quality assurance system for the obligatory RIA. The scope and the implementation of RIA on the ground has included assessment of environmental impacts.

The Ministry of Environment, in cooperation with the Regional Inspectorates on Environment and Water, should improve the quality assurance mechanism ensuring the effective implementation of the obligations of the Strategic Environmental Assessment, especially at regional level and the provision of support to those carrying out Strategic Environmental Assessments.

The NDP BG 2020, the National Reform Programme and the Government Programme for Stable Development for the period 2014–2018 provide, to some degree, long-term strategic guidance for a transition towards a green economy in Bulgaria. While Bulgaria has been scaling up investment in a green economy, sectoral policy approaches to a green economy are not sufficiently integrated due to the lack of coordination on development, implementation and monitoring of the policies and initiatives to promote a green economy. There are no specific coordinating mechanisms for green economy policies in place.

Marine litter

Litter is a pressure on the marine environment that eventually finds its way to the seafloor and onto beaches. Implementation of the **Marine Strategy Framework Directive** has led to an improved understanding of macro- and micro-litter, notably from plastics. Sources of marine litter have been mostly attributed to the following human activities: tourism and recreational activities, urban waste, industrial activities, shipping and commercial fishing. To fight marine litter, Member States draw on a number of existing EU laws, notably on waste management, urban waste water or port reception facilities¹, as well as on international agreements and the action plans of Regional Sea Conventions². Based on their national programmes, it appears that all 16 Member States are taking, or plan to take, measures to improve waste management in the fisheries sector. The most common measures notified are beach clean-ups, ‘fishing for litter’ and communication initiatives. While these have a modest impact on reducing the pressure, they help to raise awareness and thus to prevent future pollution. However, targeted measures for beach litter, such as limiting the proliferation of single-use plastics or reducing microplastics and litter from aquaculture, appear to be underdeveloped. For example, only five Member States³ specifically addressed aquaculture.

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¹ Directive 2000/59/EC of the European Parliament and of the Council of 27 November 2000 on port reception facilities for ship-generated waste and cargo residues, OJ L 332, 28.12.2000, p. 81-90.

² Regional action plans exist for the North-east Atlantic, Baltic and Mediterranean regions, while the action plan for the Black Sea is being developed.

³ France (in the North-east Atlantic), Ireland, Italy, Spain and Sweden.

- The programmes of measures for marine litter have to be seen in the wider context of developments at EU level, which led to the adoption of the Circular Economy Package⁴, the European Strategy for Plastics⁵ and a legislative proposal on marine litter and single-use plastics⁶.
- Of the 16 Member States, only 6⁷ expect to achieve good environmental status for litter by 2020. Malta is the only Member State having applied for an exception on the grounds that actions from neighbouring countries would allegedly hamper its efforts; however, such proposed justification does not appear to be fully substantiated and no alternative timeline is reported.

The Marine Strategy Framework Directive (MSFD) sets the framework for Member States to achieve by 2020 Good Environmental Status (GES) for their marine waters, considering 11 descriptors. One of these descriptors (descriptor 10) focuses on marine litter, stating that GES is achieved only when "properties and quantities of marine litter do not cause harm to the coastal and marine environment". An important step in the implementation of the MSFD are the measures to protect the marine environment, which Member States had to put in place by 2016, and which also address marine litter.

Factsheet for new measures under Article 13 of Marine Strategy Framework Directive 2008/56/EO

This measure fact sheet is the result of coordination between the UBA project 'Implementation of the Marine Strategy Framework Directive (MSFD) in Bulgaria – Development of Programmes of Measures under Article 13', carried out by Fresh Thoughts/Intersus, and the EC project 'DG Environment) 'Technical and administrative support for the joint implementation of the Marine Strategy Framework Directive (MSFD) in Bulgaria and Romania – Phase 2', carried out by ARCADIS-Belgium.

Measure characteristics	Management area: <i>Black Sea</i>	Code: BLKBG No. of measure: 21
Measure title	Mainstream marine litter into existing legislation	
Short, precise description of the	In Bulgaria, EU and international law governing litter and waste has been transposed into national legislation. However, litter is still a	

⁴ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *Closing the loop — An EU action plan for the Circular Economy*, COM(2015) 614 final.

⁵ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *A European Strategy for Plastics in a Circular Economy*, COM(2018) 28 final.

⁶ Proposal for a Directive of the European Parliament and of the Council on the reduction of the impact of certain plastic products on the environment, COM(2018) 340 final.

⁷ Belgium, Finland, France, Ireland, the Netherlands and the United Kingdom.



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measure	problem in inland and marine waters, indicating gaps in legislation and/or enforcement problems. <u>The implementation of the measure includes the following activities:</u> 1. Analyze the gaps in current legislation in terms of the MSFD targets set up on marine litter, including results of such analyses from on-going and completed projects. 2. Prepare proposals for regulatory changes, as well as regular meetings with the competent authorities to discuss the results and proposals. 3. Prepare institutional analysis for current opportunities and the need to ensure implementation of the proposed legislative amendments. 4. Carry out procedures for amending the regulations. 5. Ensure that amendments to national legislation are adequately enforced (e.g. higher fees, more controls). For example, regarding beach litter, this measure could be executed through strengthening the polluter-pays-principle by imposing stricter bans and penalties on littering on beaches; by tightening the obligations of contractors of beach cleaning activities; and by strengthening the necessary control and enforcement activities. Example on the implementation this measure: The most common waste on the beaches are different type of plastic bags and pieces, bottles and pieces of them > 50 < cm, caps and rings, cigarette butts and filters, polystyrene pieces 2,5 > < 50 cm, and fast food packing. Although there are existing regulations on cleaning beaches, there is still a low level of execution of control and clean-up. Solution: To achieve a reduction in waste, especially artificial plastic beach / coastal litter, it is necessary to introduce more stringent regulatory requirements for concessionaires and users of the beaches (legal and natural persons). This will be done through planning and implementation of further legislative actions to strengthen the control by the competent authorities to: 1. Firms – contractors of beach concessions on beach cleaning activities to reduce the accumulation of waste on beaches and its introduction into marine environment. 2. Individuals, users of the beach services. <u>Possible steps to the guarded and unguarded beaches:</u> - increasing the number of control inspections on the beaches under concession during the summer. - stricter penalties and increasing their size in case of offences by concessioners (throwing out waste improperly, creating preconditions

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	for pollution of the beach and the coastal waters and a health risk to beach users). - stricter penalties and increasing their size in case of offences by individuals (throwing out waste improperly, creating preconditions for pollution of the beach and the coastal waters and a health risk to beach users). - organization of seasonal campaigns for cleaning each year at unguarded beaches by an Order of Minister of Regional Development and Public Works. The last action could be implemented in the frame of the planned transboundary measure „Annual awareness raising campaigns adressed to business (commercial, beach users, fishermen, etc.) and public (tourists, students, children, etc.) related to the sources and the environmental consequences of marine litter and the need for waste recycling“. Voluntary beach cleaning activities are very effective in removing marine litter from the environment but limited in scale in comparison to the scale of the problem.

III. List with key pollutants in district Burgas and short analyse of the environmental situation in the target area

Marine litter is a global concern, affecting all the oceans of the world. Every year, millions and millions of tonnes of litter end up in the ocean worldwide, posing environmental, economic, health and aesthetic problems.

Poor practices of solid waste management, waste water (including storm water) collection and treatment, lack of infrastructure and awareness of the public at large about the consequences of their actions aggravate substantially the situation.

Key pollutants

The most significant process causing degradation of the Black Sea as far as pollution is concerned has been the massive **over-fertilisation** by nitrogen and phosphorus compounds, coming largely from agricultural, domestic and industrial sources. This phenomenon called **eutrophication** has changed the entire Black Sea ecosystem. The compounds enter the sea from sources in the 17 countries in its drainage area. The coastal countries contribute roughly 70% of the total amount and almost all the remaining amount enters the sea via the Danube River.

Discharge of insufficiently treated **sewage**: introduce microbiological contaminants into the Black Sea and pose a threat to human health and in some cases hamper the development of sustainable tourism and aquaculture. The discharge is estimated at about 571 million cubic metres annually.

Oil pollution. Oil enters the sea as a result of operational discharges of vessels and accidents, as well as through land based sources. Oil pollution levels are not high in the open sea but are unacceptable in many coastal areas. Annually some 95 000 tons of

unrecoverable oil waste is discharged into the Black Sea. **Toxic substances** such as pesticides and heavy metals do not appear to pollute the whole sea but appear in 'hot spots' near certain well-identified sources. These polluters are usually associated with heavy industry and with the economic decline in the region their use has decreased considerably.

Radioactive substances have been introduced to the Black Sea in small quantities from nuclear power generation and as a result of the Chernobyl accident in 1986.

Uncontrolled deballasting from ships has introduced to the Black Sea exotic species, brought from other parts of the planet and flourishing in the new environment. Some of them have proliferated becoming predators to the indigenous species thus damaging the Black Sea ecosystem.

Solid waste dumped into the sea from ships and coastal towns. As an enclosed sea, the Black Sea is particularly vulnerable to this kind of pollution as any floating or half-submerged waste is inevitably washed ashore. Some beaches have a high accumulation of garbage presenting a risk to marine animals and humans.

The impact of **shipping** and the large ports on the marine environment is significant and includes issues related to illegal waste disposal, washing of vessels, the use of toxic chemicals and paints, and transportation of hazardous materials. The discharge of such materials, especially petroleum products, causes significant damage to the marine environment, economy (tourism, fishing, agriculture) and human health.

According to the policy for waste management in Bulgarian ports waste are separated to the following categories:

- ship - generated waste (garbage as domestic, food and plastics);
- industrial waste (scrap, paper, wood, plastics, etc.).
- hazardous waste (used batteries, fluorescent lamps, etc) and dangerous liquid substances.
- oil waste (sludge & bilge) and wastewaters (sewage).

Main sources of marine litter are:

Land-based:

- land-fills
- rivers and floodwaters
- industrial outfalls
- discharge from storm water drains
- untreated municipal sewerage
- littering of beaches, coastal areas (tourism)

Sea-based:

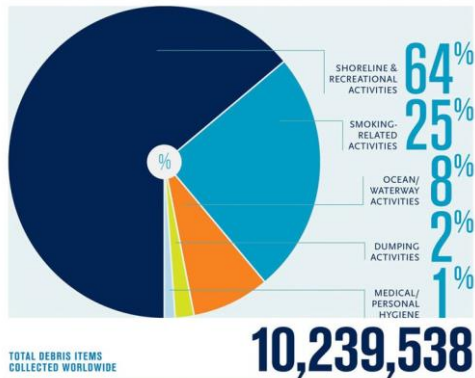
- fishing industry
- shipping (e.g. transport, tourism, fishing)
- offshore mining and extraction
- illegal dumping at sea
- discarded fishing gear



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2009 WORLDWIDE SOURCES OF MARINE DEBRIS



The results of the conducted monitoring of ML (Seasonal dynamics of **marine litter along the Bulgarian Black Sea coast**, June 2017. A. Simeonova, R. Chuturkova) exhibited that the beaches along the Bulgarian Black Sea coast were highly polluted. The most significant levels of pollution were due to the category: artificial polymer materials - 84.3%. Dominant in this category, including 92 types were the cigarette butts and filters, followed by plastic caps/lids of beverages and plastic cups and cup lids.

The results of the conducted ML monitoring along the Bulgarian Black Seaⁱⁱⁱ beaches exhibited greatest numerical predominance of category:

Artificial polymer materials during the whole period (through all seasons) - 16,690 number of items (nos.), which represented 84.3% of the total ML

The next ML category with higher amounts recorded was Paper/cardboard - 7.2%, followed by category: Metal - 2.6% and category: Glass/ceramics - 2.5%. The rest of the registered ML categories were of lower proportion: Rubber - 0.79% and processed wood - 0.69%.

Regarding **the Polymer category**, including 92 types of items in the survey form, the highest was the quantitative distribution of cigarette butts and filters.

Category: artificial polymer materials. Regarding the Polymer category, including 92 types of items in the survey form, the highest was the quantitative distribution of cigarette butts and filters

1. Cigarette butts and filters
2. Plastic caps/lids of beverages
3. Plastic cups and cup lids
4. Plastic caps/lids unidentified
5. Plastic/polystyrene pieces 2.5 ÷ 50 cm
6. Crisps packets/sweets wrappers

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7. Drink bottles N 0.5 L
8. Small plastic bags
9. Drink bottles ≤ 0.5 L
10. Plastic rings from bottle caps/lids

Category: paper/cardboard

1. Paper fragments
2. Cigarette packets
3. Newspaper and magazines
4. Cups and food trays
5. Other paper items
6. Cardboard boxes and fragments
7. Cartons/Tetrapack (others)
8. Cartons/Tetrapack (milk)
9. Paper bags
10. Tubes for fireworks

Category: metal

1. Cans (beverage)
2. Bottle caps and lids
3. Other metal pieces b50 cm
4. Cables
5. Industrial scrap
6. Paint tins
7. Fishing related weights, hooks
8. Tableware
9. Household batteries
10. Other cans

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Category: glass/ceramic

1. Bottles incl. pieces
2. Construction material
3. Other glass items
4. Glass and ceramic fragments N 2.5
5. Light bulbs
6. Jars incl. pieces
7. Tableware
8. Fluorescent light tubes

Category: rubber

1. Other rubber pieces
2. Inner tubes and rubber sheet
3. Condoms, incl. packaging
4. Balloons and balloon sticks
5. Rubber bands
6. Tyres and belts
7. Balls
8. Bobbins (fishing)
9. Rubber boots
10. Wheels

Category: cloth/textile.

2. other textiles, incl. rags
3. rope, string and nets
4. clothing/rags (clothing, hats, towels)
5. shoes and sandals
6. sails and canvas
7. carpets and furnishing
8. backpacks and bags
9. sacking
10. tampons and tampon applicators

Category: processed wood

1. Ice – cream sticks
2. Processed timber
3. Other wood N 50 cm
4. Corks
5. Other wood b50 cm
6. Pallets
7. Crates

8. Matches and fireworks

IV. Trans-border and cross-border initiatives

Cleaning up the oceans is one option, it is however not the most efficient method against marine litter. You could compare it to scouring the sand in the desert and this is simply something that no country could afford. The solution is to tackle the problem at its source. Marine litter is also one of the clearest symbols of a resource *inefficient* economy. Valuable materials are polluting our beaches and damaging our environment instead of being pumped back into our economy. Therefore, a circular economy approach which puts the emphasis on preventing waste and on recycling and reuse of materials and products in the first place, is the best solution to the marine litter problem.

Joint cross-border measures Bulgaria- Romania

- Development of Regional Marine Litter Action Plan (joint methodology for quantifying the marine litter, identification of sources, prosecution of offenders, etc.). This measure is developed as common (joint) measure with Romania in the scope of EC project (DG Environment) “Technical and administrative support for the joint implementation of the Marine Strategy Framework Directive (MSFD) in Bulgaria and Romania – Phase 2”. , See appendix 1
- Improvement of management of ship generated waste - Generally this measure includes an assessment and enforced control of the activities of illegal dumping, collection and transportation of ship - generated waste (this includes garbage as domestic, food and plastics in term of MARPOL Annex V, and also oil waste (sludge & bilge) and wastewaters., see appendix 2
- Coordinated set up and / or support of regular (yearly) awareness raising campaigns addressed to business (commercials, beach concessioners, users of beach services, fishermen, etc.) and public (tourists, students, children, etc.) related to the sources and the environmental consequences of marine litter and the need for waste recycling., see appendix 3
- Awareness building (educational campaigns) of and advisory services for Fisheries Local Action Groups (FLAGs) regarding effective use of environmentally friendly fishing techniques and equipment, see appendix 4

Cooperation Initiative in Burgas

The European Commission’s Directorate General for Maritime Affairs and Fisheries, the Bulgarian EU Presidency and the Municipality of Burgas are happy to invite you to European Maritime Day 2018. The conference took place on 31 May and 1 June 2018 in Burgas, Bulgaria.

MINISTERIAL DECLARATION TOWARDS A COMMON MARITIME AGENDA FOR THE BLACK SEA

Burgas Declaration - 31 May 2018

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The Ministers responsible for maritime affairs of the participating countries, namely the Black Sea coastal States – Bulgaria, Georgia, Romania, the Russian Federation, the Republic of Turkey and Ukraine – as well as the Republic of Moldova, met during the European Maritime Day in Burgas on 31 May 2018 under the chairmanship of Bulgaria and in the presence of H.E. Mr Karmenu Vella, European Commissioner in charge of Environment, Fisheries and Maritime Affairs and H.E. Ambassador Michael B. Christides, Secretary General of the Organization of the Black Sea Economic Cooperation.

Burgas Declaration UNDERLINING that the respect for the norms and principles of international law is at the core of regional cooperation in the Black Sea;

- The United Nations Convention on the Law of the Sea as well as the other relevant international conventions and customary international law related to activities in oceans and seas are fully considered;
- The International Maritime Organization (IMO) sets a regulatory framework ensuring a safe, secure, efficient international shipping industry and a green and sustainable maritime transportation system.

V. List of main stakeholders and institutions in district Burgas with the focus on waste management and water management

Key stakeholders in waste prevention activities

State

The state should create effective conditions and regulations to support the participants in the activities of waste prevention to fulfil its obligations under the WFD and WMA. For this purpose, the state can provide the relevant legislation, as other taxes and/or fees that stimulate production or consumption with less waste. The state may also be governed by statutory instrument even bans on certain products if it is not contrary to European standards, and the determination of liabilities, such as mandatory redemption restrictions in distribution, regulation of transportation, storage and treatment of waste, etc. Moreover, under Art. 49 and Art. 50 of the WMA state is obliged to implement measures to plan and prepare waste management plan and waste prevention program. The introduction of licensing and registration regimes is also duty of the state, which is regulated by WMA.

Municipalities

Municipalities are responsible for waste collection in their territory by performing this activity individually or through regional associations. Under Art. 52 of the Waste Management Act, they are required to prepare waste management programmes, which structure, goals and projections meet NWMP, including WPP, by virtue of the WMA is an integral part of NWMP. In municipal programs and regulations for waste management can be included very specific measures for such as limiting the use of disposable utensils at public events.

Economic and scientific entities, NGOs

In order to prevent waste the operators supported by the scientific community can develop products and production processes that are environmentally friendly and less waste and optimize existing processes and products. Products put on the market must be longer long

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life, easy to repair and produced and marketed without unnecessary packaging. The operators, supported by scientific organizations can take measures to waive the production of environmental-friendly products. So far, that refusal is more voluntary and driven by marketing or other reasons, but it

can be made compulsory in the development and enforcement of relevant laws, regulations and standards. NGOs that support the ideas of a society striving for zero waste can create platforms and voluntary networks of all operators who are willing to contribute to the implementation of these policies.

Households

Although major amounts of waste are not generated by households, respectively from end buyers, measures to prevent waste are directed at the majority of them. Each user can restrict the purchase of goods that lead to a lot waste generation and thus to force manufacturers to stop or at least reduce the production of such goods. At this stage it means the user has this consciousness that even be willing to tolerate restrictions in their "comfort", respectively, to put more effort and time. Therefore, real and existing waste prevention among consumers can be expected when the market offers enough goods and services that are efficient from an environmental perspective.

ROMANIA

GALATI

The **Galati (FLAG-related area)** in Romania is one of the five 5 project –related target regions, all of them (Demirkoy /Turkey, Malko Tarnovo/ Bulgaria, Cahul/ Moldova and Odessa / Ukraine) known to have rich biological diversity and tourism potential.

PROJECT AREA Romania

The implementation area of the MARLENA project in Romania is part of the “Lower Prut” Natural Park, known as the Meadow Fisheries Lower Prut area and its floodplain; it stretches along the Eastern part of Galati district, along the Prut River downwards to the Danube, also including the area along the Danube (yellow highlighted map¹). This is an area of great biodiversity, home to a large variety of flora and fauna. With more than 200 species of birds breeding in the area - of which 50 are included in the Romanian Red Book of as vulnerable species, endangered species and critically endangered species.

The project-related area is also densely populated, mostly rural, except for the Galati mu- nicipality that is the capital of the entire district (see Table no.1 below).



	Territorial Administrative Units	Area (km ²)	Population 2016	
			Females	Males
1.	Galati Municipality (partial)	207,34	45.078	42.366
2.	Cavadinesti	110,16	1.565	1.592
3.	Foltesti	69,00	1.666	1.730
4.	Frumusita	108,91	2.760	2.750
5.	Mastacani	65,22	2.569	2.706
6.	Oancea	52,27	712	723
7.	Suceveni	70,40	946	944
8.	Tulucesti	72,62	3.853	3.922
9.	Vladesti	61,31	1.025	1.100

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10.	Branistea	61,95	2.112	2.079
11.	Sendreni	46,91	1.913	1.939
	Total	926,09	64.199	61.851

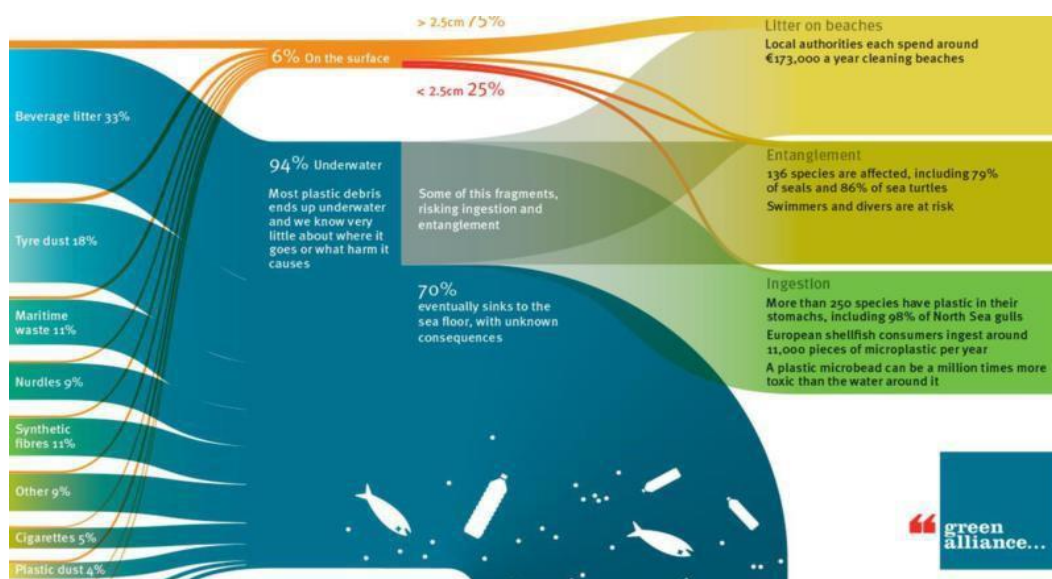
There is a less than a hundred kilometer - distance between the Prut River's flowing into the Danube and, farther on, towards the Delta the waters of which end up into the Black Sea through its three branches, St. George, Sulina and Kiliya.

Along this stretch of the River and within the Delta area, there are villages, and the most important urban locations being Tulcea and Sulina towns.

As such, these locations and their inhabitants are the direct beneficiaries of the area assets, but, at the same time, they are the contributors to the pollution of the Black Sea; the main three urban localities have a larger population but, together with the villages, the total of population equivalent come up to 500-600 inhabitants. The economic activities, agriculture, cattle breeding, households and the tourism all contribute to both the population welfare and to the Black Sea pollution, as well.

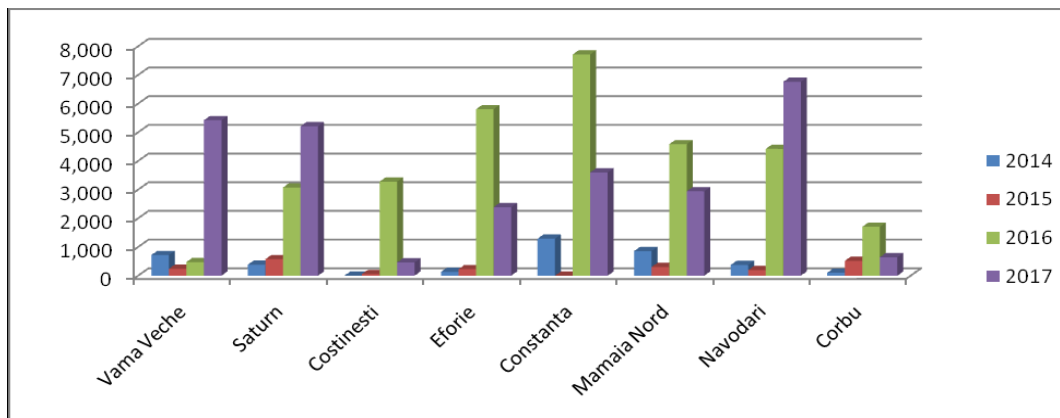
The marine pollution, with particularly the anthropogenic litter, has increased over the past years which also affected the Black Sea Romanian coast becoming, thus, a worldwide major concern. By receiving the drainage from a 1.9 million km² basin that amounts to about one third of the area of continental Europe, the Black Sea is very vulnerable to pressures from land-based human activity and shipping activities, as well.

The overloading of the Black Sea marine and coastal environment with marine litter constitutes one of the most urgent and difficult environmental problems in the region, constantly extending over the entire catchment area of the drainage basin (see Fig.1 below²).



Graphic 1 below: Marine litter situation at the Romanian seaside – quantity and locations /year

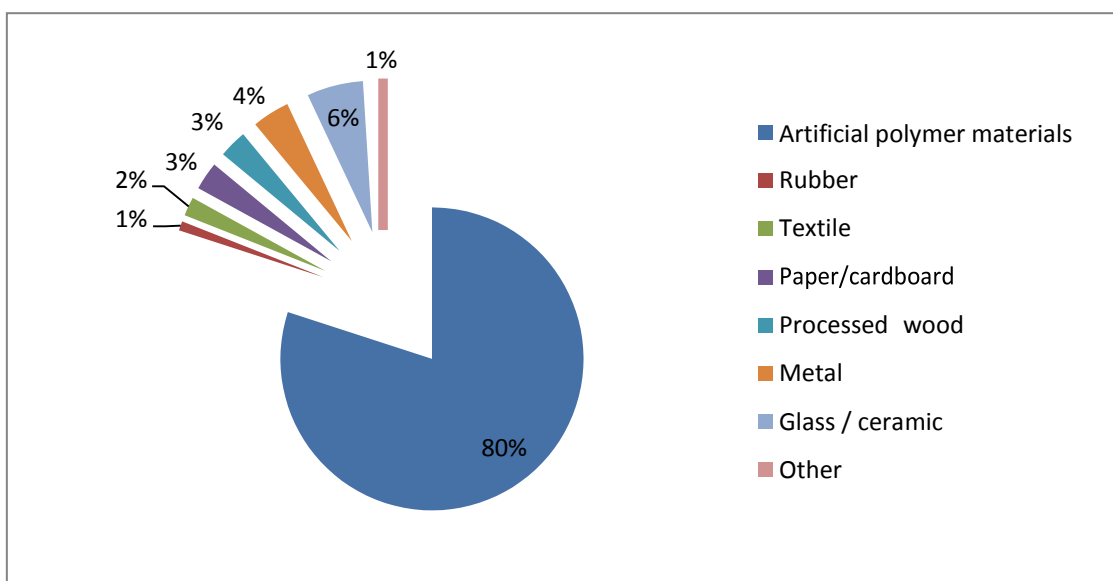
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³ Graphic 1 & 2 Marine litter situation at the Romanian seaside - Source: MARE NOSTRUM

⁴ Composition and spatial distribution of marine litter along the Romanian Black Sea coast - Angelica Paiu, Mihaela Mirea Candea, Marian Paiu, Anca-Maria Gheorghe.

Graphic 2 below: Marine litter situation at the Romanian seaside - composition



I. Legislation on environmental protection sector with the focus on:

Water management - The most important legislative pieces are the Marine Strategy Framework Directive (MSFD), the Water Framework Directive (WFD) and the Urban Waste-Water Treatment Directive (UWWTD)

As the MSFD highlights:

- “The marine environment is a precious heritage that must be protected, preserved and, where practicable, restored with the ultimate aim of maintaining biodiversity and providing diverse and dynamic oceans and seas which are clean, healthy and

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productive. In that respect, this Directive should, inter alia, promote the integration of environmental considerations into all relevant policy areas and deliver the environmental pillar of the future maritime policy for the European Union.

(4) In line with Decision No 1600/2002/EC of the European Parliament and of the Council of 22nd of July 2002, **a thematic strategy** for the protection and conservation of the marine environment has been developed with the overall aim of promoting sustainable use of the seas and conserving marine ecosystems.(...)

This approach should include protected areas and should address all human activities that have an impact on the marine environment”.

Marine waters under the sovereignty and jurisdiction of Member States of the European Union include waters in the Mediterranean Sea, the Baltic Sea, **the Black Sea** and the North-east Atlantic Ocean, including the waters surrounding the Azores, Madeira and the Canary Islands”. 2*(MSFD, 2008)

EU Marine Strategy Framework Directive (MSFD) 2008/56/CE (Marine Directive) was adopted on July 17, 2008 and due to be transposed into national legislation by 2015.

 **It was transposed, in Romania, by Law no. 6/2011 that establishes the strategy for the marine environment**

The key concepts of the Marine Directive, to secure fulfilment of an overarching goal, are:

 PROTECTED,

- *Overall objective is to achieve OR maintain Good Environmental Status (GES) of the EU's marine waters by 2020*

 SUSTAINABLE,

- *By foreseeing an ecosystem-based approach to the management of all human activities that have an impact on the marine environment*

 COMMON.

- *The Directive foresees a regional approach to implementation and establishes European marine Regions on the basis of geographical and environmental criteria. The common approach aims at meeting the GES by 2020 timeline, develop Marine Strategies in cooperation with neighbouring countries and adopting an adaptive management approach getting the strategies reviewed every six years.*

Of great important is the regulation that Member States should then determine for their marine waters a set of characteristics for Good Environmental Status (GES) which must be developed with the involvement of all interested parties (stakeholders).

- The next step towards achieving good environmental status (GES) should be the “establish- ment of environmental targets and monitoring programmes for on-going

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assessment, enabling the state of the marine waters concerned to be evaluated on a regular basis (MSFD)”.

GES: Among the 11 descriptors in Annex 1, the No.10 GES descriptor to the Directive is considered as having high level importance and is generic across Europe and highlights that “marine litter does not cause harm to the coastal and marine environment”.

More recent decisions (27/09/2017) stress EU Member States must develop **strategies to achieve good environmental statuses in their marine waters by 2020”**.

This objective aims at “having clean, healthy and productive seas”.

GES Indicators:

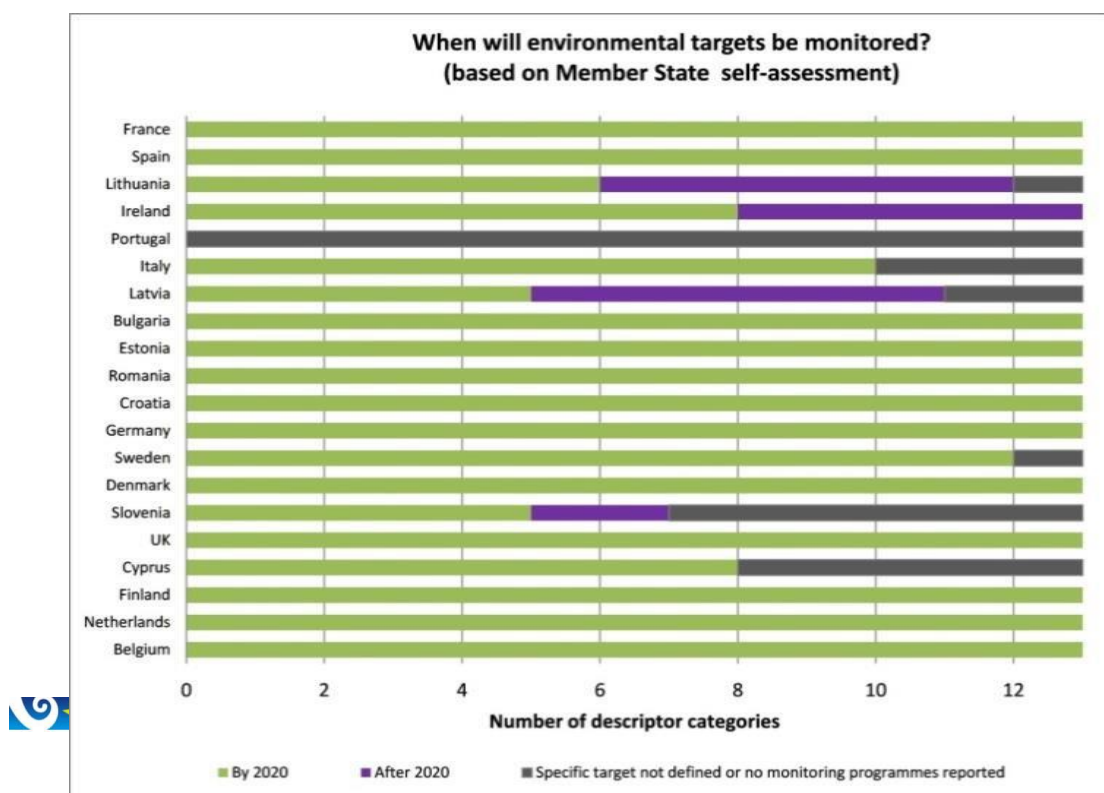
- ☐ Trends in the amount of litter washed ashore and/or deposited on/along coastlines
- ☐ Trends in the amount of litter in the water column (including floating on the surface) and deposited on the sea floor.
- ☐ Trends in the amount, distribution and, where possible, composition of micro-particles (in particular micro-plastics)
- ☐ Trends in the amount and composition of the litter ingested by marine animals

GES Targets:

- ☐ X% of overall reduction in the volume of litter on coastlines from 2010 levels by 2020
- ☐ Less than X% of sea birds having more than 0.1 g plastic particles in their stomach
- ☐ No increase in micro- plastic by 2020” (Seas for Life, p.15)

In the following section we present a series of graphics (3 to 6) related to the E.U Marine Monitoring programme⁵ for various aspects, and main GES descriptors:

Graphic 3 below: monitoring timeline / country



Note: Romania, must achieve the monitoring of all the descriptor categories by 2020

The MSFD builds on existing EU legislation being complementary to other policies such as WFD 2000/60/EC- a framework for the Community action in the field of water:

The Water Framework Directive is closely linked to Marine Directive by having set, years earlier, a goal of achieving Good Status for all EU surface and groundwater waters connecting it with the Good Environmental Status under the Marine Directive. Actions have already been taken to reduce marine pollution from land based sources and protect coastal and transnational waters, vital spawning grounds for many marine and fish species.

Comment: as part of the **WFD's requirements**, the EU Member States were expected to reach good ecological status and good chemical status in inland and coastal waters by 2015. However, it now seems that this ambitious goal could not be achieved in time. In response, in 2012 the European Commission published a 'Blueprint to Safeguard Europe's Waters' to take additional action to strengthen water policy and address the challenges of safeguarding Europe's water resources for all users.

Programmes to monitor water status must be established, along with programmes of measures for each river basin district in order to achieve the specified environmental objectives. Then, for each river basin district, a river basin management plan must be produced with the active involvement of all interested parties.

Finally, the specific programmes of measures must be implemented so as to achieve the objective of good status for all waters within each river basin. The first RBM plans covered the period 2009-2015. They were revised in 2015 and then every six years thereafter.

The review process is described in five parts corresponding to the sub-sections within Annex II Section 1, i.e.

1. Characterization of surface water body types;
2. Eco-regions and surface water body types;
3. Establishment of type-specific reference conditions for surface water body types;
4. Identification of Pressures;
5. Assessment of Impacts.

The management plans for river basin districts can be complemented by more detailed management programmes and plans for a sub-basin, a sector or a particular type of water body.

To achieve environmental objectives, the River Basin Management Plan provides the implementation of the "Programme of Measures (PoM)".

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The programs of measures include basic measures that provide implementation of the EU requirements in the field of water, and where the basic measures are not sufficient, supplementary measures are applied to achieve the status / good ecological potential and good chemical status.

The WFD River Basin Management Plan (RBMP) and the Program of Measures (PoM)

The river basin management plan (RBMP) is essentially a snapshot in time and is the subject of continual review.

The RBMP provides:

Evidence and documentation mechanism for the information gathered including: pressures and impact assessment, environmental objectives for surface and ground waters, quality and quantity of waters, and the impact of human activity on water bodies,

Facilitates coordination of the programmes of measures and other relevant programmes within the river basin district, and

Guarantees the main progress reporting mechanism to the EC as required by the WFD Article 15.

The program of measures is the key component of the river basin management planning process (WFD, Article 11) as it is the main mechanism for achievement of the Directive requirements, through actions to be taken during the plan period to secure the WFD's broader aims of:

-  reducing organic and nutrients pollution;
-  helping to ensure the progressive reduction of discharges, emissions and losses of hazardous substances;
-  reducing the level of purification treatment required for drinking water; improving the efficiency of water use;
-  mitigating the effects of floods and droughts.

The Directive refers to use of the **combined approach** to river water quality management, that is, the use of both environmental quality standards for the water bodies and emission limit values for any discharge of effluent to them.

The environmental quality standards are the main driver when emission limit values are being considered. Emission standards provide the minimum standards but stricter controls on effluent discharges, including those from diffuse pollution, will be needed if these minimum standards are insufficient to meet Directive requirements.

Programmes of Measures are co-ordinated across River Basin Districts and each River Basin Management Plan (RBMP) contains a summary of the measures required in that district.

According to the WFD principles, the party responsible for a risk that a water body's environmental objectives will not be met should pay for the necessary risk management measures (i.e. the polluter pays principle).

Four main principles are laid down in the Directive:

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❖ Planning/Regulation/Monitoring/Information and reporting

Specifically, the Directive requires:

- ✚ The collection and treatment of waste water in all agglomerations of >2000 population equivalents (p.e.);
- ✚ Secondary treatment of all discharges from agglomerations of > 2000 p.e.; more advanced treatment for agglomerations >10 000 population equivalents in designated sensitive areas and their catchments; third treatment is to target agglomerations up to 100,000 p.e.;
- ✚ A requirement for pre-authorisation of all discharges of urban wastewater, of discharges from the food-processing industry and of industrial discharges into urban wastewater collection systems;
- ✚ Monitoring of the performance of treatment plants and receiving waters; and
- ✚ Controls of sewage sludge disposal and re-use, and treated waste water re-use whenever it is appropriate”.

Implementation of the Urban Wastewater Treatment Directive in Romania

The **Council Directive 91/271/EEC concerning urban waste-water treatment (UWWTD)** has been fully transposed in Romania by Government Decision no. 188/2002 amended by G.D. no.352/2005.

In line with the UWWT Directive provisions (Table 2), Romania (the central water and environmental authority) developed a guidance presenting the methodology for defining agglomerations. The Guidance addresses (i) the legal basis for implementing the UWWT Directive, (ii) the definition of the term Agglomeration and (iii) the approach and procedures to define Agglomerations.

Size of Agglomeration	Requirements	
	Sewer system	Treatment
> 10,000 p.e. ⁷	Provided with a collecting system (Art. 3 paragraph 1)	Subject to more stringent treatment (Art. 5 paragraph 2)
> 2,000 p.e.	Provided with a collecting system (Art. 3 paragraph 1)	Secondary or equivalent treatment according to Annex I B (Art. 4 paragraph 1, 3)
< 2,000 p.e	No specific requirement	No specific requirements, but subject to “appropriate treatment” (Art. 7) for agglomerations with an existing sewer network

Table 2. Summary of requirements of UWWT Directive 91/271

A key measure to avoid marine litter is having an effective **waste management** infrastructure and services and this offers wider benefits than just mitigating marine litter.

The purpose of the **Waste Management National Plan (WMNP)** is to create at national level, a **Common borders. Common solutions.**

broad framework for waste management in order to have minimum impact upon environment. It completes the Waste Management National Strategy that was revised in 2013, strategy that establishes Romania's policy and strategic objectives in the waste management field for the horizon 2014-2020. The main approach is for Romania to develop into a recycling society that abides to the waste hierarchy, with regards to all the waste types related to the WMNP.

The **Strategy on 'Plastics in the Circular Economy'** (2017) p.14 could offer an important vehicle for addressing marine litter. It is important that the costs and benefits of action, as well as promising measures and regarding prevention and reduction of wastes that contribute to generation marine litter, and afterwards, prevent it from reaching the coastal area and the seas; as tourism proves to be the kind of activity that generates piles of litter along the BS coast, mostly during the summer time, waste collection infrastructure and services must be in place and extra measures must be taken. Voluntary campaigns can help but do not solve the problem in its entirety.

The following **circular economy tools** can usefully be reflected in **The Plastics Strategy:**
Extended Producer Responsibility: Use EPR to avoid certain types of marine litter,
most notably **single-use packaging items.**

Note: As of October 21, 2018, the ban on single-used plastic was officially announced.

Research into product design to facilitate reuse, repair, remanufacture and recycling, and complement this by providing more **information on the plastic composition of products.**

Bans for unnecessary and damaging products or activities where viable substitutes exist - e.g. **plastic micro-beads in cosmetics** can be replaced by ground nut shells, marble particles or naturally-grown polymers, and plastic blasting in shipyards can be replaced by ultra-high pressure water jets.

Improved legislation: Provide clear definitions of polymers, waste and secondary raw materials.
Manufacturers need to design their products and packaging to fit into existing recycling systems.

Economic incentives targeting consumption: Make greater use of economic incentives to make market signals part of the solution - i.e. ensure that plastic has a price and is therefore more widely recognized as a valuable resource – e.g. apply deposit-refunds to bottles, and charges/taxes to plastic bags, disposable cutlery, and other one-use items.

Transparency and labeling: Improve transparency on the chemicals contained in plastics – to help with decisions on remanufacture and recycling. In addition, transparency on where personal care and cosmetic products (PCCPs) can do more /or cannot contain plastics. Explore the implications for additives such as flame retardants, plasticizers, pigments, fillers, and stabilizers.

Waste management measures: Invest in waste collection infrastructure and services (at ports), waste management infrastructure and wastewater treatment facilities to avoid dispersion of litter into the marine environment - particularly in coastal areas or near rivers.

Awareness-raising among consumers to improve waste disposal (littering and waste separation), and also **better inform purchasing habits to increase demand for sustainable substitutes** - e.g. cosmetic products not containing micro-beads, (e.g. via Beat the Bead), multiuse bottles and bags,

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purchase of washing machines with filters.

In addition there are two further useful measures beyond the Action Plan:

Fishing for litter: combined incentives to encourage action, and

Develop new products from waste: even if it is not the most cost-effective of solution it can create interesting branding opportunities for manufacturers, raise awareness and contribute to reducing pressure on the marine environment in selective places.

II. Key pollutants and short analysis of the environmental status and cooperation in the target area.

Pollution problems for the Black Sea

1. The most significant process causing degradation of the Black Sea as far as pollution is concerned has been the massive **over-fertilisation by nitrogen and phosphorus compounds**, coming largely from agricultural, domestic and industrial sources. This phenomenon called eutrophication has changed the entire Black Sea ecosystem. The compounds enter the sea from sources in the 17 countries in its drainage area. The coastal countries contribute roughly 70% of the total amount and almost all the remaining amount enters the sea via the Danube River.
2. **Oil pollution.** Oil enters the sea as a result of operational discharges of vessels and accidents, as well as through land based sources. Oil pollution levels are not high in the open sea but are unacceptable in many coastal areas. Annually some 95 000 tons of unrecoverable oil waste is discharged into the Black Sea. Toxic substances such as pesticides and heavy metals do not appear to pollute the whole sea but appear in 'hot spots' near certain well- identified sources. These polluters are usually associated with heavy industry and with the economic decline in the region their use has decreased considerably.
3. **Radioactive substances** have been introduced to the Black Sea in small quantities from nuclear power generation and as a result of the Chernobyl accident in 1986.
4. **Uncontrolled deballasting** from ships has introduced to the Black Sea exotic species, brought from other parts of the planet and flourishing in the new environment. Some of them have proliferated becoming predators to the indigenous species thus damaging the Black Sea ecosystem.
5. **Discharge of insufficiently treated sewage:** introduce microbiological contaminants into the Black Sea and pose a threat to human health and in some cases hamper the development of sustainable tourism and aquaculture. The discharge is estimated at about 571 million cubic metres annually.
6. **Solid waste dumped into the sea from ships and coastal towns.** As an enclosed sea, the Black Sea is particularly vulnerable to this kind of pollution as any floating or half-submerged waste is inevitably washed ashore. Some beaches have a high accumulation of garbage presenting a risk to marine animals and humans.

Out of the key pollutants mentioned before, the Discharge of insufficiently treated sewage and Solid waste dumped into the sea from ships and coastal towns are the most relevant for the river and marine litter issue.

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However the plastics (either micro or macro plastics) are not specifically monitored in Romanian waters.

In the Romanian project related area the source of litter comes mostly from illegal, non-compliant dumping sites that can be found around almost every rural settlement, roads, camping sites, river benches and beaches.



View across Galati town, the Danube and the road to Tulcea town March 19, 2018, credit Petruta Moisi, Ecological Consultancy Center Galati



Luckily, such loads of garbage piled near the banks can be carried to a selective waste station, but not all. In spring, litter can be seen floating along towards the Delta and the Black Sea, and further on to the connected seas and oceans.

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Photos by Leonte Mirela

Along Romania, the litter has never been monitored in terms of quantity, as it was done in Austria, e.g. “Recent studies in **Danube River demonstrate** that up to **41 Tonnes of plastics** (macro and micro plastics) are transported annually by the river **in Austria** (Hohenblum et al. 2015). To present, there is no information about plastic loads in other parts of the Danube River. However, results from studies on other European rivers show that plastics are ubiquitous in freshwater systems. It is therefore important to evaluate the load of rivers to characterize riverine inputs into the marine environments and to close the knowledge gap of pathways, sinks and fragmentation and impact of plastics in freshwater environments”.

The idea of this proposal is a plastic monitoring during the next Joint Danube Survey (JDS) in 2019. Here a joint action between the various JDS-members should be organized”.

As for Romania, an official overview of the existing data for marine waters, as required by MSFD, has been provided by the governmental “Grigore Antipa” National Institute for Marine Research and Development (NIMRD), Constanta, Romania and by Mare Nostrum NGO, Constanta, Romania.

NIMRID OUTPUTS:

- Annual State of the Marine Environment (national and regional);
- BSC-Permanent Secretariat have access to the reported monitoring data, annually, through the Pollution Monitoring and Assessment-Advisory Group;
- Chemical data are reported to EEA-WISE-EIONET, annually;
- Scientific support for EU Directives; implementation is secured under the WFD, MSFD, Shellfish Waters, Bathing Waters.

The status described by NIMRID in 2012 in the framework of the “Initial assessment of the marine waters” highlights the current environmental status and the impact on environment of human activities.

CHALLENGES taken into consideration by the NIMRID experts:

- “Additional scientific data are needed for achieving a coherent and accurate GES

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evaluation.

- Research results to be sent to policy decision makers
- Science-policy gaps to be identified
- Enhance scientific knowledge to assist MSFD implementation

Research PROJECTS relevant to the WFD and MSFD implementation

- FP7 PERSEUS (2012-2015);
- DG ENV MISIS “ MSFD Guiding Improvements in the Black Sea Integrated Monitoring System” (2012-2014);
- LESS WASTE in the North-western area of the Black Sea, (2014);
- CLEAN RIVERS-CLEAN SEA, NGOS ‘Action for environmental protection within Black Sea area;
- Others.

Table no.9 Problem: Contamination of Biota Media: Bivalves, Anchovies, Sprat, Turbot, Horse mackerel - meat

Mandatory parameters	Optional parameters
Cd	Phenols
Cu	Co
Hg	Zn
Pb	Fe
DDT	Ni
DDD	Cr
DDE	PAHs
Lindane	Cs
PCBs	Tr
	Sr
	Total radioactivity

Project MISIS: No.07.020400/2012/616044/SUB/D2

The Project is financed by EC as an activity under the EC DG Env. Programme ‘Preparatory action – Environmental monitoring of the Black Sea Basin and a common European framework programme for development of the Black Sea region/Black Sea and Mediterranean 2011’. MISIS is an integral part of the overall on-going process of harmonization of Black Sea region policy, in compliance to relevant European policy in the field of marine environment protection.

The “State of Environment Report of the Western Black Sea based on Joint MISIS cruise” (SoE-WBS) has been prepared under the MISIS Project ‘MSFD Guiding Improvements in the Black Sea Integrated Monitoring System (www.misisproject.eu, EC DG Env.) One of the core activity of MISIS Project towards supporting the on-going process for revision of monitoring programmes stipulated in the MSFD due in 2014 for the EU-member states at national and regional Black Sea level, according

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to the Project DoW - PA2: “Initial testing of the revised monitoring programmes (field and laboratory work), management of data & assessments” includes:

- Organization of Joint Black Sea Survey for collecting additional data and producing homogenous data sets for the Black Sea based on a single sampling procedure and laboratory analysis of specified determinants and biological quality elements;
- Organizing inter-comparison exercises to evaluate the performance of laboratories involved;
- Screening for new priority pollutants;
- Carrying out ecological assessment of the Black Sea, taking into consideration the requirements in the WFD and the descriptors of the MSFD.

The “State of Environment Report of the Western Black Sea based on Joint MISIS cruise” was produced by the collective contribution of scientist from MISIS partner institutes, under the coordination of IO-BAS as MISIS PA2.

An impressive number of water and sediment physical, chemical (including pollutants) and biological samples (1246), related to 125 parameters were measured during the cruise. Most of the indicators applied in the SoE-WBS originate from the IARs of Bulgaria and Romania, some of them were discussed and agreed during the Joint AG CBD – MISIS Project meeting organized by the Black Sea Commission in Istanbul in 2013 and in addition a number of new potential indicators were tested .

For the first time bottom marine litter was quantified in the Black Sea (at 3 coastal and 3 shelf stations) following the MSFD GES TSG-ML Guidelines 5*.

III. List of Main stakeholders and institutions with the focus on waste and water management, involved in the MSFD implementation (Law no. 6/2011), WFD, UWWTD.

- Ministry of Environment;
- Ministry of Agriculture and Rural Development;
- Ministry of Transport;
- Ministry Regional Development and Public Administration;
- National Environmental Guard;
- Coast Guard, etc.
- National Regulatory Authority for Public Services of Communal Management (ANSRC);
- Local Water and Sewage Companies (under municipal authority or state ownership);
- Local sanitation companies;
- National Institute for Marine Research and development (NIMRID) in charge with developing research activities regarding the ecological status of the marine environment;
- “Romanian Waters” National Administration (ANAR);
- Danube Delta Biosphere Reserve Administration (ARBDD);
- National Agency for Environment Protection;
- National Agency for Mineral Resources;

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- Romanian Naval Authority;
- “Maritime Harbour Administration” National Company;
- Public Health Directorates (Coastal Urban Centres - Constanta, Black Sea resorts, Sulina, Sf. Gheorghe, Chilia);
- Public Administration authorities (along the coastal area);
- Associations for Intercommunity Development A.D.I (for water services , and for waste management services) such as:
  - A.D.I “ECOSERV” Galati
  - A.D.I S.R. APA GALATI

Apart from the above-mentioned governmental entities, it's the public that also need to get to know and respect the legislation. Within the general public, there are organized entities (NGOs, Associations etc.) which have a very important role in providing information to the people, develop training events and street activities and, very important put pressure on the administration and politicians in charge with the good governance. **Cooperation "Lower Danube" Euroregion**, Ecological Consultancy Center Galati, MARE NOSTRUM NGO, Friends of the Danube delta/Prietenii Deltei Dunarii, and many others. Each of such organization is member of EU networks such as the European Environmental Bureau (EEB), Black Sea Ngo Network (BSNN), WWF Danube Carpathian Programme, thus being connected to the EU policy and programmes. Each of them has developed projects raising public awareness on issues such as wastes, wastewater, litter, pollution in general; most of them developed projects that highlight solutions to the problems caused by pollution of air, water, soil, etc.

All these efforts need to be continued and extended to a larger public day after day.

NGOs registered or active in the project area related to the survey topic

1.	Fundatia de Turism si Ecologie a Dunarii de Jos "Ciulinii Baraganului"
2.	Fundatia Eco-Pontica Tulcea
3.	Mare Nostrum Constanta
4.	Oceanic Club Constanta
5.	WWF Romania, Bucuresti
6.	Asociatia de Cooperare Transfrontaliera Euroregiunea Dunarea de Jos, Galati
7.	Asociatia pentru Dezvoltare Durabila "Prut Dunare, Galati
8.	Asociația „Acțiunea Tinerilor Voluntari” - ACTIV
9.	Asociația Agenția de Dezvoltare Locală Schela
10.	Asociația Bike Works Galați
11.	Asociația „Casa Noastră” Galați
12.	Asociația COVURLUI GAL COVURLUI
13.	Asociația “Clubul MECANTURIST Galați”
14.	Asociația Culturală de Tineret „ARGUMENT 21”
15.	Asociația DANUBIANA Galați
16.	Asociația pentru Dezvoltarea Societății Civile Galați
17.	Asociația pentru Ecologie „S.O.S. PRO – NATURA” Galați
18.	Asociația „ELENA DOAMNA” Galați
19.	Asociația „Energia – Dunărea de Jos” din România - AER –Galati
20.	Asociația EURO DEZVOLTARE Galați
21.	Centrul de Turism și Agrement pentru Tineri CETATE- Galati
22.	Asociația Internațională a Studenților în Economie și Management – AIESEC - Galati
23.	Asociația Județeană a Vânătorilor și Pescarilor Sportivi Galați
24.	Asociatia Salvati Dunarea si Delta Bucuresti
25.	Asociația pentru Turism și Ecologie „CLUB ALBATROS” Galați
26.	ASOCIAȚIA DE TURISM ȘI ECOLOGIE PENTRU TINERET VERDE
27.	Clubul Alpin Român Galați
28.	Clubul Gălățean al Mării Negre
29.	Clubul de orientare, turism și ecologie “DOBRE TUDOR” – COTE “DOBRE TUDOR”
30.	Centrul de Consultanta Ecologica Galati

UKRAINE

ODESA

List of local policies and short analysis of the existing strategies and plans regarding the waste management and water management

Comprehensive program for environmental protection, rational use of natural resources and ensuring environmental safety in the Odesa region for the years 2014-2019 (resolution of the regional council of February 21, 2014 No. 1021-VI).

Odesa is one of the powerful economic regional centers of the country, its “sea gate”. The significant diversity of the natural and socio-economic conditions of the city, favorable economic and geographical location of the territory, rich recreational resources contributed to the development of a multidisciplinary, rather complex industrial and economic complex for transport and distribution functions, developed social sectors in combination with the existing resort infrastructure and potentially promising industry tourism.

According to the Program for the Protection and Improvement of the Environment, Odesa for 2013-2016, approved by the decision of the Odesa City Council of June 18, 2013 No. 3506-VI, it was planned to improve the ecological condition of the city, reduce the anthropogenic load on city residents, improve the ecological culture of the population and attitude to the natural environment.

According to this program for the years 2013-2016, the following activities were carried out:

- design and exploration work on the development of the draft background concentrations of pollutants on the streets of Odesa with the placement of greenery on them;
- measures were taken to identify the reserves of natural plant resources, the cost of their protection and reproduction;
- Developed projects for the organization of the territory of improvement of parks, monuments of landscape art to them. Kotovsky, Arboretum of Victory, Savitsky Park;
- made in nature of the boundaries of the parks, monuments of landscape art - Park them. Kotovsky, Savitsky Park and Victory Dendropark, which are objects of a natural reserve fund of Ukraine of local importance and approved by the decision of the Odesa City Council of September 10, 2015 No. 6932-VI;
- a project has been developed to create a park area as an object of a natural reserve fund at the address: metro station Odesa, ul. Central Airport;
- a project was developed for the reconstruction of the water disposal system on the territory of the Savitsky Park and the accumulating pond of the jute factory, which will bring the rates to a proper sanitary and ecological state;
- a project has been developed for the construction of a coastal drainage system from Arcadia up to 16th century. Big Fountain (first stage)
- a feasibility study has been developed for the drainage system for storm water from the Black Sea Beam;
- in order to expand the zones of recreational destination, research works were carried out and the project of re-cultivation of Luzanovsky ponds was developed;
- To solve the problem of pollution of the Black Sea by storm drains of the northern region of the city, a feasibility study of the sewerage of the Kryzhanivska gully was carried out, is the first stage



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of the working draft;

- a project to eliminate the unauthorized landfill and land reclamation in the quarry area of the cement plant was developed;
- scientific studies on the ecological state of the filtration fields have been carried out (according to the results of the study of the soil, the filtration fields are not suitable for agricultural use);
- implemented activities aimed at the implementation of the concept of environmental education.

The program serves as a tool for realizing the goals and objectives defined in the Strategy for the Economic and Social Development of the City of Odesa until 2022 (updated), in the direction of "Clean Odesa".

The program of treatment of solid waste in the Odesa region for the period 2018-2022.

Main objectives of the Program

- To the maximum extent possible, to cover all residents of the Odesa region with an organized waste collection and removal system

- ensuring proper network of disposal facilities

wastes that comply with the requirements of the EU Waste Disposal Directive

- aligning existing facilities, where appropriate, and closing facilities that do not meet the standards and pose a significant risk to human health or the environment

The main indicators of the Program up to 2022 □ Total indicator of household waste processing - 26% of the total volume □ 85% coverage by organized household waste collection services, including urban-type settlements and rural settlements □ 50% coverage by separate collection of "dry" resources components (paper, metal, plastic and glass)

Results from survey performed within the region focussed on the environmental policies, best practices, networks and cooperation initiative in order to reduce river and marine litter in project-related Black Sea region

The survey was attended by 143 respondents aged 11 to 84 years.

It is a pleasure to note Odesa's high level of awareness of ecology. Thus, the vast majority of respondents gave the correct answers from the proposed questions - 75% of the residents know that the plastic bottle is about 200 years old (Fig.1) and 78% are aware of the main problem of the Black Sea (Fig.2). Of particular concern is the fact that the overwhelming majority of such respondents (63%) are young people aged 16 to 23.

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How many years does a plastic bottle decompose?

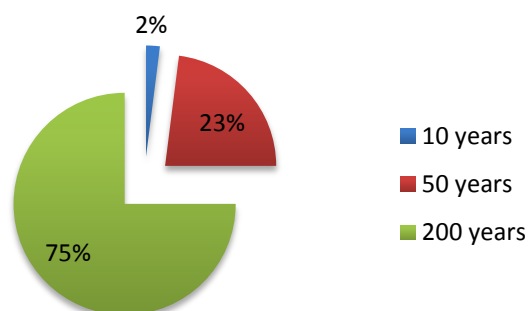


Figure 1

Which pollution factor has the greatest effect on the state of the Black Sea and the rivers flowing into it?

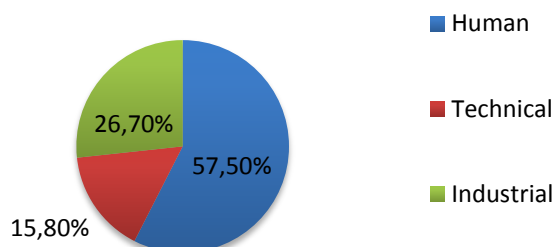


Figure 2

The main sources of information about the environment for the inhabitants of Ukraine are news on television (63%), social networks and the Internet (62%), and newspapers (26%) (Diagram 9). In the EU, there are three main sources includes news on television (58% in 2017, which in turn is less than the same indicator in the

EU in 2011 - 73%), the Internet (42%) and artistic and documentary films (27%), although newspapers also is an important source of environmental information for EU citizens (26%). Ukraine shows a very high figure of the Internet as a source of environmental information; in the EU, none has any such indicator the country (the highest among the EU countries is Latvia (58%) and the Netherlands (54%)). In Ukraine, citizens practically do not use artistic and documentary films as sources of environmental information (only 10%).

List with key pollutants within the project-related area and short analysis of the environmental situation in Odesa region (Ukraine)

№ 3 / п	The name of the administrative territorial unit of the region (district, city)	Number of waste disposal sites (according to regional state administrations)	Number of waste disposal sites (according to housing and communal services)	The number of passport waste disposal sites (according to the data of the Department of Ecology of Odesa regional state administration)		Other waste disposal sites
				landfills for solid waste	other waste disposal sites (incinerators, etc.)	
1.	Ananivskiy district	10	10	6	0	
2.	Artsyzkiy district	26	28	25	0	
3.	Baltskyi district	13	13		0	



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4.	Baltska ter hromada	19	19	16		
5.	Bilhorod–Dnistrovskiy district	34	34	22	0	1
6.	Bilhorod-Dnistrovskiy city			1	1	
7.	Biliaivskiy district	22	26	2	0	
8.	Biliaivska ter hromada	1				
9.	Berezivskiy district	67	67	56	0	
10.	Bolhradskiy district	19	18	18	0	
11.	Velykomykhailivskiy district	23	13	23	0	
12.	Ivanivskiy district	26	26	19	0	
13.	Izmailskiy district	18	18	14	0	
14.	Izmail city			1	0	1
15.	Kiliiskiy district	15	15	15	0	
16.	Kodymskiy district	24	24	21	0	
17.	Lymanskiy district	19	19	18	1	
18.	Podilskiy district	28	29	32	0	
19.	Reniiskii district			1	0	
20.	Podilsk city	15	14	11	0	
21.	Oknianskiy Reniiskii	17	16	3	0	
22.	Liubashivskiy Reniiskii	37	37	2	0	
23.	Mykolaivskiy district	2	1	15	0	
24.	Ovidiopol'skiy district	1	7	6	1	
25.	Reniiskiy district	26	26	27	0	
26.	Rozdilnianskiy district	22	23	34	0	1
27.	Saratskiy district	19	19	15	0	
28.	Savranskiy district	43	41	31	0	
29.	Tarutynskiy district	17	17	19	0	
30.	Tatarbunarskiy	38	34	29	0	

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	district					
31.	Shyriaivskyi district	13	12	1	0	
32.	Zakharivskyi district				4	1
33.	Odesa city			1	2	1
34.	Yuzhne city			0	1	1
35.	Teplodar city			0		
	Total	614	606	484	10	6
				494		

Annually, 700 thousand tons of garbage, including 200 thousand tons of paper, 12 thousand tons of plastic and 25 thousand tons of textiles, are dumped from Odesa to the dump of MSW-1 “Dalnytsky Karey”. Also, after a single use, more than 97% of paper and plastic, more than 65% of aluminum, about 75% of steel are thrown away. All this waste remains mostly stored in landfills due to the ban on the disposal of unprocessed household waste, which entails serious environmental problems.

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MOLDOVA

CAHUL

Legal and constitutional aspects in Moldova regarding the environmental protection sector, focusing on waste management

The field of management of production and domestic waste, in order to reduce it and its maximum reintroduction into the economic circuit, to prevent environmental pollution, is regulated by the Law no.1347-XIII of 09.10.1997 "On production and household waste" (further - Law on Production and Household Waste).

Also, other regulations specific to the field are contained in the Law no.1515-XII of 16.06.1993 "On the protection of the environment" (further - Law on Protection of the Environment) and the Law no.1540-XIII of 25.02.1998 "On the payment for environmental pollution" (further - Law on Payment for Environmental Pollution).

In accordance with Article 28 of the Law on Production and Household Waste, a National Program for the Recovery of Production and Household Waste was elaborated, approved by the Government Decision no.606 of 28.06.2000 „On approval of the Program for the Recovery of Production and Household Waste” (further – National Programme for Waste Recovery). The basis of the elaboration of the program represented the principles of waste minimization, their maximum inclusion in the economic circuit (processing, use) and their ecological placement in the environment, stipulating also the deadlines.

According to the Government Decision no.486 of 02.05.2007 "On the Approval of the Conception on Sanitation for Localities" (further – Conception on Sanitation), the Concept on Sanitation of Localities was approved, which established an action plan regarding its implementation. Some environmental objectives have been included in other national strategies and programs, stating the importance of this area for society.

Finally, on 10 April 2013, by Government Decision no. 248, the Waste Management Strategy for the Republic of Moldova for 2013-2027 was approved (further – Strategy), which aims to establish the tentative development activities of the infrastructure and services needed to manage waste accordingly to protect the environment and human health.

This Strategy establishes the basis for the necessary framework for the development and implementation of an integrated, socially, economically and environmentally integrated system that is based on the controlled waste management in order to limit, in the short term, its environmental impact caused by the disposal and, in medium and long terms, to be socially acceptable and economically feasible.

In 2011, the Integrated Solid Waste Management Strategy for the South Development Region of the Republic of Moldova was developed, but regretfully, this framework document based on a comprehensive waste management summary for the southern area of the country was not approved until now through the Government Decision.

Besides the legislative aspect, an important role in waste management also belongs to the institutional framework. The competences of the Parliament and the Government in the field of environmental protection and waste management are laid down in the Law on the Protection of the Environment. At the same time, some specific attributions of the Government in this field are stipulated in the Law on Production and Household Waste. Also, a number of functional attributions are delegated, through organic laws, to the local public administration authorities (further – LPAA).

The role of monitoring of the quality of environmental components, ensuring the protection of the environment and regulating the use of natural resources is the responsibility of the Ministry of Agriculture, Regional Development and the Environment (further - MADRM). The state environmental inspection on compliance to environmental laws and regulations, including waste management, is exercised by the Environmental Protection Inspectorate (further - EPI), subordinate structure of MADRM.

The tasks related to the state supervision on the sanitary-epidemiological requirements in the field of waste management are delegated to the Ministry of Health (further - MH), exercised through the structures of the State Sanitary-Epidemiological Service.

Duties on the development of legislation in the field, developing of a general scheme of placing the deposits of waste, belong to the Ministry of Agriculture, Regional Development and Environment (further - MADRM).

The main role in waste management at local level is LPAA and the results depend to a large extent on their ability to organize these activities, as well as on what extent the economic agents and society has been involved in the accumulation of financial resources.

I. Brief analyse of existing legislation in Moldova

The application of the waste management principles must be done in accordance with the relevant legal framework. In this context, we can mention the most relevant laws, regulations and decisions of the Government, which regulate the field of waste management:

- Law on Administrative Decentralization (no. 435 of 28.12.2006)
- Law on local public administration (no. 436 of 28.12.2006)
- Law on municipal public utilities (no. 1402 of 24.10.2002)
- Law no. 1515-XII of 16 June 1993 on the protection of the environment;
- Law no. 851-XIII of 29 May 1996 on Environmental Expertise and Environmental Impact Assessment;
- Law no. 1102-XIII of 6 February 1997 on natural resources;

- Law no. 1540-XIII of 25 February 1998 on payment for environmental pollution;
- Law no.1347-XIII of 9 October 1997 on production and household waste;
- Law no. 1236-XIII of 3 July 1997 on the regime of harmful products and substances;
- Law no. 40-XV of 19 February 2004 ratifying the Stockholm Convention on Persistent Organic Pollutants;
- Government Decision no. 1296 of November 20, 2008, "On the method of charging ecological payments for the importat of goods which, in the course of their use, cause environmental pollution, and for the plastic packaging of imported goods and / or" tetra- pack ";
- The provisions of the Basel Convention on the Control of Transboundary Movements of Dangerous Waste and its Removal at National Level have been transposed by Government Decision no. 637 of May 27, 2003, which approved the Regulation on the Control of Transboundary Movements of Waste and its Disposal, which establishes the mechanism for the implementation of the provisions of the Basel Convention aimed at ensuring compliance with the environmental safety requirements for the export, transit and disposal of waste;
- The provisions of the Stockholm Convention on persistent organic pollutants at national level were partially reflected in the Government Decision no. 1155 of October 20, 2004, which approved the National Strategy on the Reduction and Elimination of Persistent Organic Pollutants and the National Implementation Plan of the Stockholm Convention on Persistent Organic Pollutants. As a result there have been destroyed about one third of the stockpiles of pesticides contaminated with persistent organic pollutants (1293 tonnes) and eliminated 18660 units of old electrical capacitors containing polychlorinated biphenyls with a total weight of 934 tonnes.

While analyzing the legal framework the following key points have been identified:

- Responsibility for waste management is a primary competence (eg. village, city, etc.) (Law on Administrative Decentralization, art. 4 paragraph (1) character (b)).
- Local authorities of the first and second level may cooperate to provide public projects or services that require joint efforts by these authorities, which is subject to the conclusion of agreements that deal with decision-making and financing of joint activities (Law on Administrative Decentralization, art. 5). Emphasis is placed on the association between local government level of second level (eg. districts), to associate with other local public authorities in order to carry out public works and services, to promote and protect the interests of local authorities (Law on local public administration, art. 14 (j) and art. 43 (t)). On this basis, it is understandable that local authorities of the second level can associate with each other.
- There is a wide range of options regarding how waste management services can be delivered (Law on municipal public utilities, art. 10), but political preferences could favor the creation of public-private partnership contracts (Law on Administrative Decentralization, article 5).

The implementation of the above principles and the legal framework of the Waste Management Strategy proposed for the South Region were discussed with local and national decision-makers, specifically the options for establishing an "Association" or "Company" at district level, through which the waste management strategy could be implemented. Thus, the following were agreed:

- ✚ The most relevant model is the creation of an **Association of Municipalities**, with the main body - the General Assembly - consisting of delegates of the respective districts.
- ✚ Institutional roles and responsibilities need to be separate and clearly defined to address and solve the existing issues, such as:
  - Doubling efforts;
  - Gaps in service delivery;
  - Lack of standardization;
  - Lack of cooperation and coordination;
  - Conflicts of interest where an entity engages in several roles such as customer and operator.
- ✚ For the efficient (and therefore sustainable) functioning of a regional waste management system, there should be four distinct roles within its institutional system, specifically:
  - 1) Political / planning. This role refers to the policies and plans that will be adopted for the long term in order to ensure that waste management meets national targets (eg: inter-community association, Ministry responsible for environment, etc.).
  - 2) Client (collection and disposal). This role concerns the contracting of one or more entities to provide waste management services in accordance with existing policies and plans, as well as the management of these contracts (eg: mayors, district councils).
  - 3) Operator (collection and disposal). This role relates to the provision of waste management services in accordance with the contracts concluded (eg. private economic operator, municipal enterprise).
  - 4) Regulatory. This role is about ensuring that contract requirements are met (eg: environmental inspectorate).

II. Local policies and short review of existing strategies and plans in the waste and environmental sector

1. Goals, objectives and major targets

A. **The main purpose**, which must be achieved at the level of each community in the southern region of Moldova, consists in establishing an integrated and environmentally safe and economically efficient waste management system in the region.

The major policy directions for waste management in the Republic of Moldova until 2025 include:

- Separate collection of the main types of recyclable waste, accessible to the entire population;
- Extending waste collection services by increasing the number of vehicles;
- Recycling materials such as used oils, automotive batteries, textiles, glass, plastic and rubber;
- Reducing and, if possible, eliminating the negative impact on the environment and the risk to public health caused by existing waste disposal practices.



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To achieve this goal, the National Strategy sets the following main objectives:

- Development of separate collection systems, sorting, composting and recycling stations;
- Improvement of the waste collection system and the development of transfer stations;
- Developing waste disposal capacities;
- Improving governance in waste management;

B. Main objectives

Further, the National Waste Management Strategy proposes specific targets for a number of waste flows:

- packaging waste
- biomass residues from agriculture, manure, wood waste from the wood processing industry
- sludge from wastewater treatment
- tires
- end-of-life vehicles
- electrical and electronic equipment waste
- hazardous waste with the exception of waste oil
- oil
- battery.

C. Major targets

The establishment of the Integrated Waste Management System in the pilot area of the project requires for the implementation of the following short, medium, and long-term targets:

i. Primary collection of municipal waste:

- extension of urban waste collection services to rural areas in the short term, 2015 - coverage of collection services within the range of 15-20 km around the city of Cahul;
- midterm, 2020 – coverage with waste collection services up to 75% of rural areas (population over 500 inhabitants);
- long term, 2025 – coverage with 100% collection services in rural areas (with over 500 inhabitants).

ii. Storage and transfer:

- short term, 2015, the development of waste transfer stations (medium and small) in each district;
- short term, 2015, arrangement of inter-municipal deposits (3-5 per district);
- medium term, 2020 from approx. 200 non-compliant deposits up to 7 landfills;
- long term (2025), storage of waste in up to 3 regional warehouses in the project area.

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Term	2015	2020	2025
Type of waste			
Glass / PET / Paper - targets set as % of weight of total recyclable waste generated	10% - 20 % recycled (rural – urban)	20 – 30 % recycled (rural – urban)	30 – 40 % recycled (rural – urban)
Electrical and electronic equipment waste	In correlation with national legislation on producer responsibility.		
Dangerous waste: batteries, accumulators, tires, pesticides, used oil, light bulbs	In correlation with national legislation on producer responsibility		
Construction waste	40% treated accordingly	55% treated accordingly	70% treated accordingly
Bulky waste	40% treated accordingly	55% treated accordingly	70% treated accordingly
Biodegradable (animal manure, garden, plant, phytosanitary waste)	25% do not reach landfill	50% do not reach landfill	75% do not reach landfill

Table: Types of waste and their degree of recycling for medium and long terms
Waste production and forecasting of waste composition

Forecasts of generated waste and changes in its composition are a basis for defining different methods for treating them, the parameters of different installations and the calculation of costs and benefits of future investments in the waste management system. Population dynamics and waste generation rates are projected over the next 15 years. Waste generation forecasts depend on two major variables: population and economic conditions in the pilot area of the project. Economic growth will allow for increased spending and consumption, which will increase the amount of waste generated on the household. The Gross Domestic Product (GDP) index was used as an indicator of the development of economic conditions. Moldova is part of the category of countries with an average per capita income of USD 2,854 as reported by the World Bank in 2009. According to the forecasts of the National Waste Management Strategy, the GDP growth rate is estimated at about 5% annually. The GDP index at national level is heavily influenced by Chisinau, which is considered to be the most developed city in the country. The South Region is less developed than other regions. Thus, based on discussions with local authorities and experts, it has been decided to use a 2.5% annual GDP growth rate for the South Region.

Waste production. Waste generation rate (WGR) is the amount of waste generated per capita in one day. There are certain differences in the amount of waste generated in rural and urban areas. Based on available information from other national strategies and expert opinion, the waste generation rate was



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estimated at 0.7 kg / inhabitant / day in the urban area and 0.5 kg / inhabitant

/ day in rural areas. WGR is strongly correlated with GDP, which means it will increase as the GDP

increases, reaching a stabilization value of 0.89 kg / inhabitant / day for urban areas and 0.64 kg / inhabitant / day for rural areas in 2020. Waste prevention policies are expected to be effective in 2020.

Waste forecast. Based on estimates and calculations, a total of 109142.3 tones/waste is estimated to be generated in 2010. It is believed that waste production will reach a peak of 136942.2 in 2020, which means an increase of 20.3% of the base value calculated for 2010. For now this peak value corresponds to the WGR stability level. Due to the constant WGR and the decrease in the population, the amount of waste will decrease to 135578.2 tons / year, which would mean a 1% decrease over the 2020 level.

The composition of the waste that is considered as recoverable in the pilot region of the project is as follows:

- ✚ compostable fractions from the biodegradable waste flow (green waste);
- ✚ recyclable fractions with economic value for recovery, namely:
  - paper and cardboard,
  - plastic, metal and glass.

Morphological analysis of waste is imperative in establishing waste recycling and disposal operations. In the national statistics there is no information on the composition of municipal waste, only data for Chisinau is mentioned in some newsletters, reports and specialized publications. In the absence of specific data for rural localities and district centers, an estimate of the high and low content of recyclable materials was made based on the data in the neighboring country, Romania, the World Bank indications and the opinions of the local experts.

Waste composting, %	Low-income countries	Middle-income countries	High income countries
Biodegradable	40 to 85	20 to 65	7 to 55
Paper and cardboard	1 to 10	15 to 40	15 to 50
Plastic	1 to 11	2 to 13	2 to 20
Metal	1 to 5	1 to 5	3 to 13
Glass	1 to 10	1 to 10	4 to 10
Rubber	1 to 3	1 to 5	2 to 12
Others (sand, ash, etc.)	15 to 50	15 to 40	5 to 20

Table 2. Waste composition based on country income types, World Bank, 2016

Type of waste	Urban, %	Rural, %
Paper and cardboard	10	4
Plastic	9	6
Metal	2	2
Glass	4	2
Biodegradable	45	60
Other wastes (manure, inert waste, CDs, tires, textiles, etc.)	30	26
Total	100	100

Table 3. Two scenarios for waste flows according to waste composition.

Nr.	Product type	Period
1.	Paper waste	3 months
2.	Newspapers	3-12 months
3.	Matches	6 months
4.	Cigarette filter	1-2 years
5.	Chewing-gum	5 years
6.	Aluminum cans	10-100 years
7.	Plastic bottles	100-1000 years
8.	Plastic bags	100-1000 years
9.	Credit cards	1000 years
10.	Glass containers	4-4000 rs

Table 4. Decomposition times for some products

Description of the main pollutants in the Lower Prut Basin / Republic of Moldova / and brief analysis of the environmental situation in the target area

In order to highlight the quality of the environmental components in the Lower Prut Region and, more precisely, the evolution of their quality, a series of annual reports of the nationally responsible institutions for the monitoring of the environmental components for the period 2012- 2015 have been analysed.

Atmospheric air quality in the Lower Prut region is monitored at the EMEP station in the city of Leova. Thus, during the reference period 2012-2014, there is a tendency of increase for the concentration of ammonia, nitric acid, nitrate nitrogen, sodium, calcium and magnesium. For potassium ions, annual mean concentrations are maintained at the same level, and for chlorides, ammonium ions, sulphur dioxide and sulphates show an improvement over time of their concentration in air and aerosols (fig. 3).



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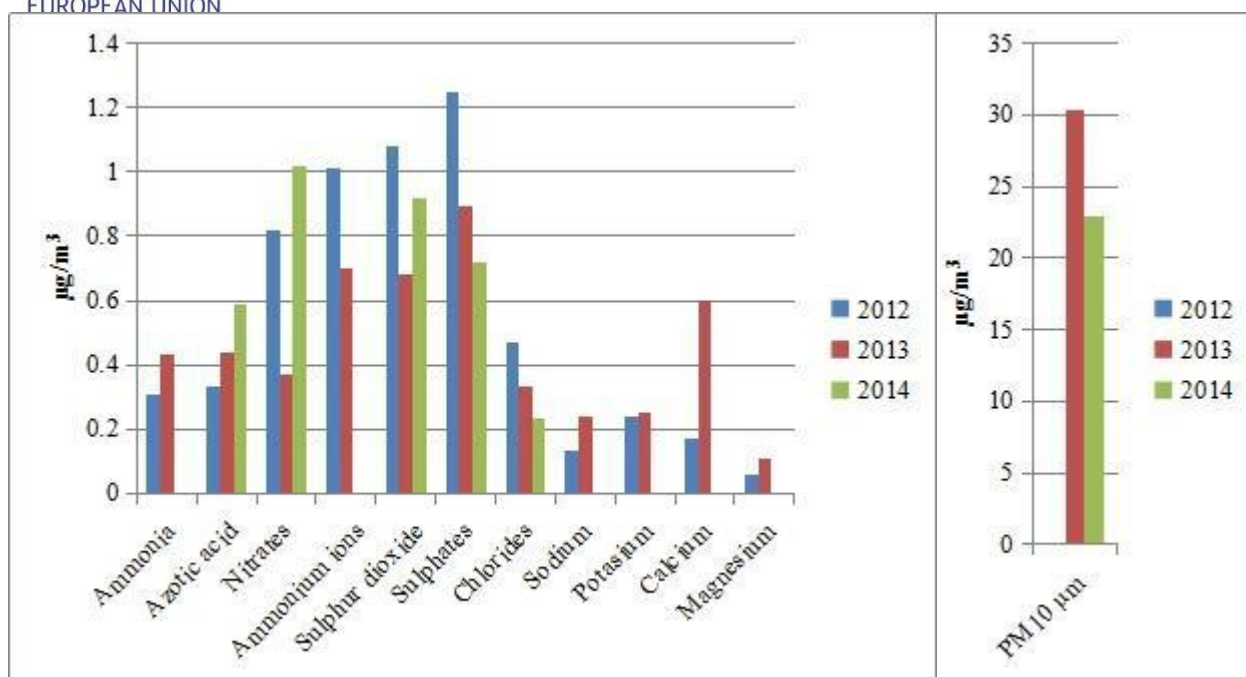


Figure 3. Annual average concentration for pollutants monitored in aerosols and atmospheric air at Leova city station, 2012-2014 period

Assessing data for nitrogen dioxide for the period of 2011-2015 it can be noted that monthly averages in 2014 were the maximum ones for this period, with no exceptions, and in 2015 it decreased considerably for May-July. However, the concentration of this pollutant in atmospheric air increases with the passage of time and continuous industrialization (fig. 4).

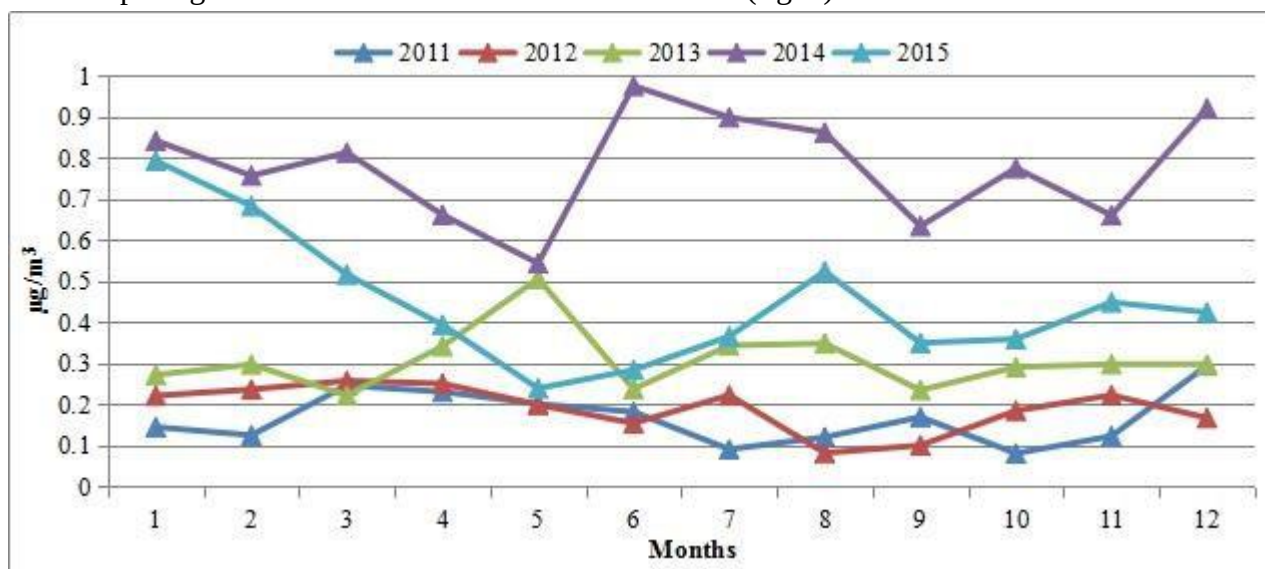


Figure 4. Evolution of monthly average concentrations of NO₂ content at Leova cross-border station over the period 2011-2015.

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Atmospheric precipitation. Estimating the results obtained from the investigations carried out during the period 2012-2015 at Cahul station, it is noticed that the pH of the atmospheric precipitation varied within the limits of 5.92-7.95, the limit values being measured for summary samples in February 2013 and, respectively, the maximum value in February 2014. Thus, during the reference period rainfall had a weakly acidic character to the slightly alkaline (fig. 5).

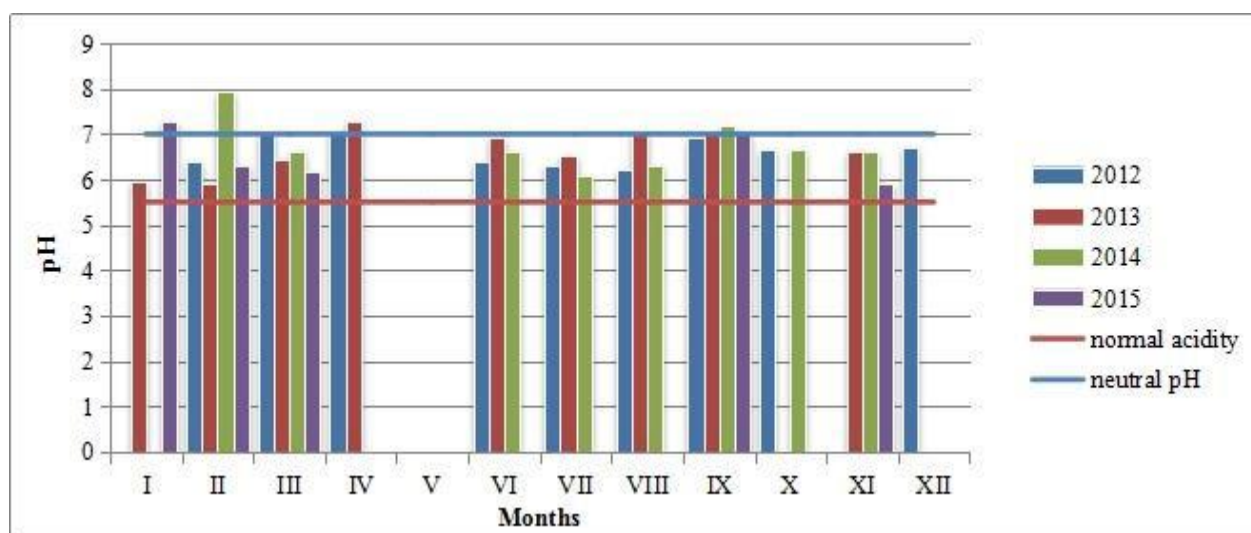


Figure 5. The variation of pH in atmospheric precipitations at Cahul station for the years 2012-2015

However, it should be noted that the results of the measurements performed at the mentioned station reflect a momentary situation, being marked as a series of influences of factors with random evolution over time, the maximum values of the investigated ions recorded in the spring

months, as well as in the during the autumn months, namely when there are seasonal atmospheric changes in the concentration of solid particles in the atmosphere, which in turn implies an increase in the concentration of ions in precipitation.

Sulphates contained in precipitations are largely the result of anthropogenic activity and, in particular, the burning of fossil fuels that release sulphuric gas into the atmosphere and convert to sulphate by oxidation. For the period 2012-2014 an improvement of the quality of the atmospheric precipitation is observed according to this parameter. The same decreasing tendency in concentration was attained in chlorides, hydrogen carbonates, sodium and potassium ions, as well as calcium and magnesium ions (fig. 6).

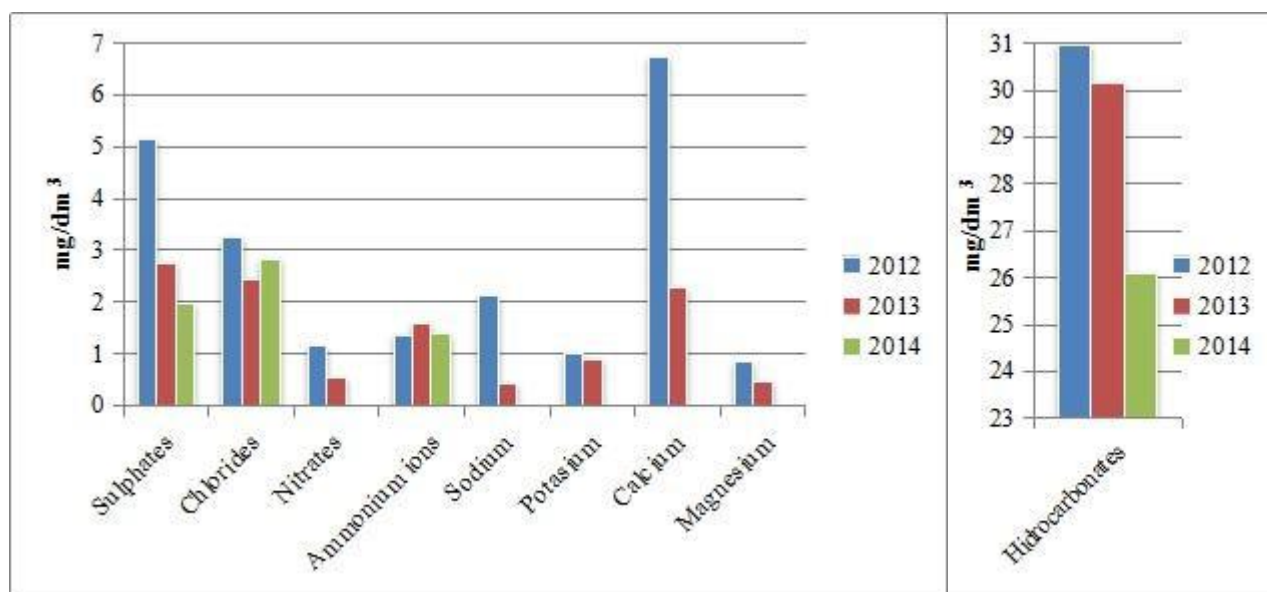


Figure 6. Average annual concentrations of ions investigated in the summarized samples of atmospheric precipitations taken over the period 2012-2014

However, the ammonium ion concentration over time remains at the same level with a slight upward trend. The increased concentration of ammonium ion can be explained as a product resulting from agricultural sector, as well as a product of the processes of water purification and decomposition of household waste.

Atmospheric precipitations loaded with heavy metals are one of the major sources of pollution, affecting soil and water, flora and fauna in their impact area. Heavy metals - lead, cadmium, copper, nickel, chromium - are compounds that cannot be degraded naturally, have a long retention time in the environment and are dangerous in the long run because they can accumulate in the food chain. In the southern part of the republic the atmospheric precipitations have been investigated for heavy metals concentrations at Leova transboundary station.

According to the monitoring data of the persistent organic pollutants investigated at country level, the highest concentration of POPs, during the last 4 years was recorded at Leova station because this area is being impacted by cross-border pollution. The premises that contribute to increasing of the concentration of persistent organic pollutants in Leova and thus partly in the southern part of the republic can be explained by the fact that it is an area subject to cross-border pollution, but also because it is surrounded by agricultural land containing residual amounts of these compounds, which through different paths (wind erosion, thermal exhalation from the soil, etc.) penetrate into the atmospheric air. The measures that can be taken to reduce environmental pollution with POPs are:

- ❖ reduction of discharges due to their intentional use;
- ❖ managing stocks (pesticides and polychlorinated biphenyls (PCBs) and wastes in a safe, efficient and environmentally manner, in order to reduce and eliminate emissions;

- ❖ elaboration of measures for identification and remediation of contaminated areas;
- ❖ promoting information, awareness and education of the population;
- ❖ stimulating monitoring, research and development activities;

The practical implementation of measures to reduce POPs emissions in the atmosphere as well as in all environmental compartments will create favourable premises for the achievement of the national program for obtaining ecologically clean products and, at the same time, will improve living conditions, significantly reducing the risk factors for human health and the environment.

The quality of surface water in the Lower Prut region. The Water Framework Directive 2000/60 / EC (WFD) establishes a legal framework for the protection, conservation and improvement of the status of all waters and protected areas, the prevention of deterioration and the long-term sustainability of the sustainable use of water resources.

Thus, according to the "lowest score" principle, the ecological and chemical status of *Danube River* corresponds to the III-rd quality class, this meaning that it is polluted moderately according to the concentrations of petroleum products and phenols. Also, the presence of organic substances in Danube River's is confirmed by the high value of COD, which during the last 2013-2015 on average constituted 13.78 mgO/l (fig. 8). From priority substances have been analyzed: heavy metals, organochlorine pesticides and polyaromatic hydrocarbons. Some of these were periodically detected in small quantities not exceeding the limit of the first quality class in accordance with the Regulation on Environmental Requirements for Surface Waters, HG 890 of 22.11.2013. At the same time, these concentrations of organochlorine pesticides and polyaromatic hydrocarbons do not exceed the MAC¹ in accordance with Directive 2013/39/EU.

The water of tributaries of Prut River in the Lower Danube region is highly polluted and corresponds to the V-th quality class according to the physico-chemical parameters. If the "lowest score" principle is being applied, then according to biological quality elements the water of these streams is highly polluted, especially with saprophytes. Priority substances were analyzed for heavy metals in all Prut tributaries, organochlorine pesticides and polyaromatic hydrocarbons in Larga and Valea Galmage rivers. Some of them (aldrin, benzo (b) fluoranthene, benzo (a) anthracene, benzo (k) fluoranthene, cryzene, fluoranthene, naphthalene, pyrene) were detected periodically in small amounts which do not exceed the first class quality in accordance with Regulation on environmental quality requirements for surface waters, HG 890 of 22.11.2013. At the same time, these concentrations of organochlorine pesticides and polyaromatic hydrocarbons do not exceed the MAC in accordance with Directive 2013/39 / EU and only benzo(b)fluoranthene in Valea Galmage River, in the sample taken on 25.06.2015, reaches MAC (0.022 µg/l) established according to the same Directive. Since the southern region of Moldova is known as a region with mineralized groundwater, in the assessment of the quality of rivers in this part of the country were excluded from the final conclusion the parameters of mineralization, which are considered natural background. However, even so, the quality of Cahul river corresponds to the IV-th water quality class (very polluted), according to COD concentration, which

denotes an organic water load.

The environmental status of Manta lakes complex corresponds to IV-th quality class, meaning polluted, according to hydrobiological elements and physico-chemical parameters. Priority substances were detected in time only in very small quantities, which indicates that the chemical status of the lake water is good and achieves the environmental objectives according to DCA.

Following the investigations of Beleu Lake and its affluent and effluent huts it was found that, in general, the water quality corresponds to the third class, exception is the section on the north- western side, the former Redeco oil company, currently Valiexchimp, where water quality according to physicochemical parameters gets worse and oxygen saturation decreases. The chemical status of the lake is good because there have been detected in the meantime very small amounts of organochlorine pesticides, polyaromatic hydrocarbons and heavy metals (fig. 9

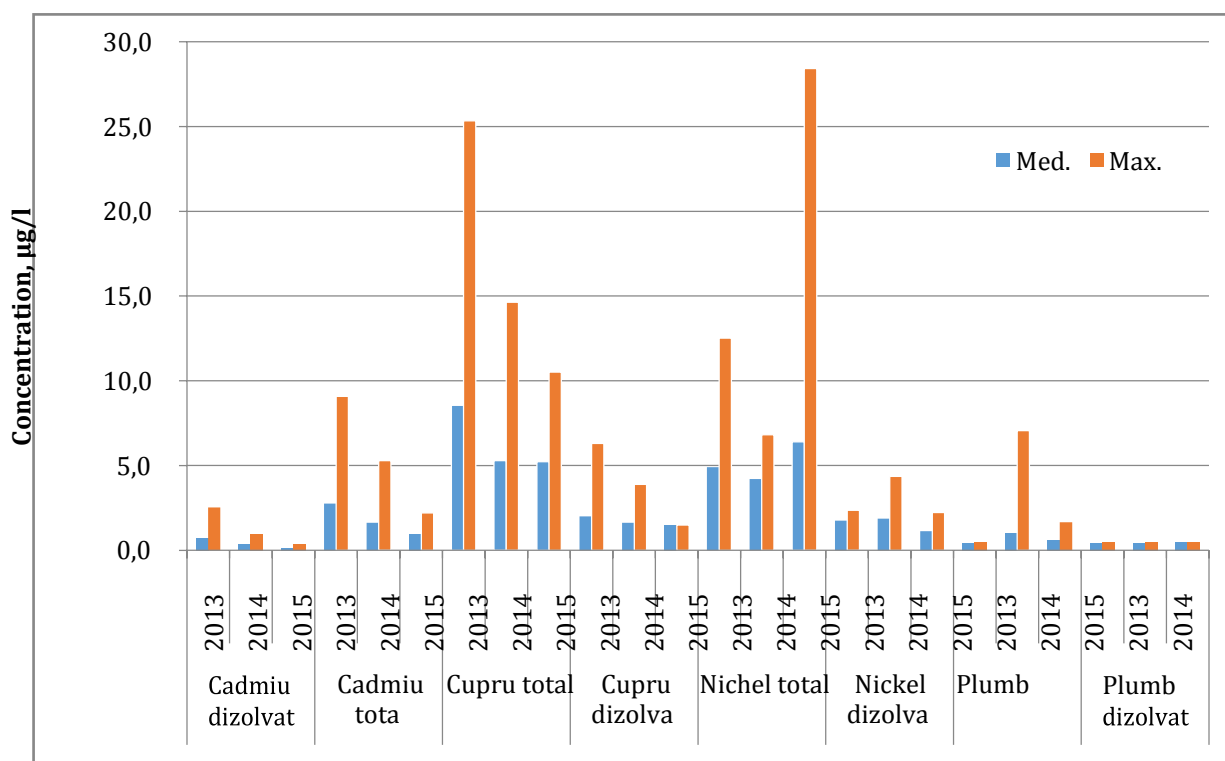


Figure 9. Variation in the concentration of heavy metals investigated in Prut River, Giurgiulesti station, during 2013-2015

As a result of the investigations carried out on the soil in the "Lower Prut" Scientific Reserve, it is characterized by:

- ✓ low humus content;

- ✓ the mobile potassium content ranges from moderate to optimal, and mobile phosphorus is considered high;
- ✓ the pH reaction is moderately acidic, slightly alkaline and moderately alkaline;
- ✓ polychlorinated biphenyls (PCBs) and organochlorinated pesticides (POC) have not been detected or have been found in small amounts not exceeding CMA;
- ✓ there is, however, pollution with benzo(a)pyrene in a concentration of 0.14 mg/kg (7·CMA) to 0.17 mg/kg (8.6 · CMA)
(source: http://meteo.md/monitor/anuare/2013/anuarsol_2013.pdf).

List of key stakeholders and institutions with focus on waste management in Prut Basin/Cahul District/Moldova

In 2012, the inter-sectoral collaboration between stakeholders and institutions in the field of waste management started in the framework of the Transnational Co-operation Program in Central and Eastern Europe for the implementation of the project "Convention for the management of waste for inland navigation on the Danube (CO-WANDA)". Moldova was represented as an associate member of the South Development Agency through the Environment Pollution Prevention Office, which became a partner of this project, implemented with the financial support of the European Neighborhood and Partnership Instrument, which ensured the creation of a national platform development and preparation of the regional waste management agreement. Nine countries collaborate in this project, sharing the common idea of how to develop and improve a sustainable system, the consortium being guided by Via Donau - Austrian Waterway Company, with knowledge in the field of inland navigation, environmental protection and pollution prevention, port management, traffic engineering, telematics, regional development and foreign affairs.

The Ministry of Agriculture, Regional Development and Environment (MADRM), which includes the Ministry of Environment, represent the competent authority, empowered to develop and promote state policy, including legislative and normative code on waste management. The problem of waste management in the Republic of Moldova has emerged as an area since the transition period towards the market economy and, in particular, starting with the emergence of the wide spectrum of current consumer goods, including packaging.

On December 9, 2013, the intersectoral collaboration between stakeholders and the Ministry of Environment which presented to the community and local public authorities The National Waste Management Strategy for the period 2013-2027, approved by GD no.248 of 10.04.2013. From all interested parties, international development partners have been particularly interested in the development and implementation of public policies, including environmental protection and, in particular, waste management. The South Regional Development Agency also showed a strong interest in the management of waste in the region, because it manages the project "Technical and Institutional Assistance in Solid Waste Treatment in the Southern Region of Moldova", a project funded by the

Czech Development Agency. The main partners of the project are the Ministry of Agriculture, Regional Development and Environment and the South Regional Development Agency.

Stakeholders and institutions in the Prut basin, Cahul district, focused on a feasibility study on the solid waste treatment system in two subregions of the South Region: Leova, Cahul, Cimislia and Basarabeasca, Causeni, Stefan Voda. The stakeholders, jointly with the donors, have signed a Memorandum of Understanding to support Cahul District in Regional Development Support Projects with the German International Cooperation Agency (GIZ), the Ministry of Regional Development and Construction (MDRC), Cahul District Council and community halls of Cahul city and Roșu village.

The cooperation between the local public authorities in Cahul district was equally efficient for the provision of WSS services, which contributed to the signing of 3 preliminary co-operation agreements in the WSS sector between the Cahul town and 3 LPA (Rosu, Manta and Crihana Veche), it was designated Regional Operator of WSS Services in Cahul District and launched on the basis of the contract of incorporation signed by 4 LPA.

In addition to infrastructure investments, German support is contributing to the southern area of the country by adjusting, also, local plans and programs on these sectors, enhancing community co-operation for joint service provision, capacity building for service operators, information and public awareness, especially in the field of waste management and cross-border water protection.

Local Public Authorities of I-st Level from the district, helps to identify the opportunities for regionalization of local public services in the WSS sector, participates in the elaboration of concrete action plans and provides the necessary information for the accomplished activities, participates in the strategic planning activities for the development of the public service, takes measures to develop the capacities of the officials responsible for the monitoring and quality control of the service.

Cahul District Council establishes partnerships between LPAs in the district to improve public service management and configures the appropriate support structure / team to carry out all of the above-mentioned responsibilities of the district administration with a clear distribution of responsibilities for waste management.

South Regional Development Agency monitors the operability of the Implementation Plan of Waste Management, facilitates effective dialogue and communication between LPAs and central public authorities' representatives with a view to identifying optimal solutions for the modernization of local public services in the WSS sector for Cahul District, organizes periodic consultations between interested parties to identify problems in the process in order to elaborate and implement measures for the modernization of public services and to participate in attracting project investments, as well as facilitating the co-financing process on the project, if necessary.

The results of the study carried out in localities of Cahul District/ Republic of Moldova regarding policies, practices, networks and cooperation initiative in the field of environmental protection with a view to reducing waste in rivers and marine litter in the Black Sea region

One of the priority environmental problems for the localities of Cahul district in the Republic of Moldova is the waste. Accumulation of the waste problem is generated by the faulty mode in which they are managed. The waste ramps are not properly constructed and arranged, they do not have isolation and protection systems and the burial works are not done in time and according to the efficient technologies. Inappropriate management of ramps generates soil and groundwater contamination, contributes to the emission of gases with unfavorable effects on health of population and environment.

The evaluation of the legal framework revealed that in the chapter on the regulation of solid household waste, it contains several shortcomings, gaps, imperfections of the norms of law, they are unclear or even outdated. Thus, in the event of imbalance, inconsistency and instability of the legal rules, there is a risk of unilateral, derogatory and inappropriate interpretation and application of the legislation.

The current system for the regulation and management of solid waste collection and disposal in Cahul district localities, Republic of Moldova, is not effective and does not minimize the negative effects on the environment following the disposal of waste. Significant changes are required in regulating these activities and in organizing the system to improve its efficiency and effectiveness. The problems identified, together with the recommendations for improvement, are set out in this study.

These being mentioned, determine the necessity of reviewing and re-evaluating the legislative and normative framework in the field, in order to eliminate the discrepancies between the norms of law and the existing irregularities, to exclude the presence of the outdated rules, in compliance with the current environmental protection requirements and the community legislation, drafting or amending the legislation.

European Community's best practices recommend the development of a strategy and programs on waste management and how to optimize waste disposal sites. For example, landfills can be constructed for several localities in the Cahul district, so each locality would save from building and maintaining its own deposit, which can be quite expensive. There is no general strategy in the Republic of Moldova for optimizing the use of waste disposal sites. Each locality is in the position to develop its own waste disposal plans and practices, which creates inefficiencies in the waste management system.

The current EU waste policy is based on a concept known as the waste hierarchy. This means that, ideally, waste formation should be prevented, and what cannot be prevented is to be reused, recycled and exploited as much as possible with the least use of landfills. Waste landfills are the worst option for the environment, as it means a loss of resources and would determine future impact for the health of

population. Under European directives, thematic strategies represent a new approach to environmental policy, while national ones provide for the development of the waste management strategy.

The action of the National Waste Program has expired, with no state strategy in place.

Although the National Waste Program envisaged waste minimization measures, their maximum inclusion in the economic circuit (processing, use) and their environmentally-friendly placement in the environment, stipulating the deadlines for the realization, it was found that they were not fully realized, as a reason serving the objective and subjective factors: lack of procedures and methodologies for realization; non-financial coverage; institutional changes in governance structures; redistribution of skills, etc.

No formal assessments of the needs of the Cahul District as well as of the country have been carried out at this time regarding the current situation and the remedial possibilities. Not enough resources have been allocated in the given field, the only sources being allocated by the financial means of the National Ecological Fund (henceforth - FEN). Analyzing the situation regarding the existence of waste ramps, as set out in the annual report of the State Ecological Inspectorate, it was found that in some localities there is more than one landfill, without taking into account the stylized waste dumps.

Although it was envisaged that the MADRM should elaborate the general scheme for the location of landfills and production landfills, it was not defined yet. The unavailability of national planning waste management tools has influenced the capacity of local authorities to effectively monitor and supervise waste management activities at LPAA level. Thus, responsibility for LPAA cannot be ensured in the absence of quantifiable objectives and operational plans.

Recommendations for LPAA - local public administration authorities of the Cahul district of Moldova:

- 1) To update and elaborate the new local waste management strategy based on evaluation of the current situation in the district and republic, jointly with other public administration bodies with attributions in the field, determining the priority regions, identifying the sources of financing for its implementation etc.;
- 2) To draw up and implement a training action plan (measures, responsibilities, deadlines) for LPAA regarding waste management field;
- 3) To determine the methodology for the development of local waste management plans / programs;
- 4) To establish tasks and modalities for monitoring of the implementation of plans at local level;
- 5) To determine the types of deposits required to be created on the territory of the district according to the types of waste formed;

- 6) To determine procedures for landfill management, including the exhaustive regulation of the actions, the necessary documents, etc., starting with the stage of selecting and assigning land for waste disposal, taking into account the types of waste to be deposited, as well as establishing the requirements design and construction;
- 7) Jointly with MADRM to determine how to authorize the operation (exploitation) of landfills;
- 8) Jointly with MADRM to establish procedures for the registration of storage sites, to organize their subsequent records for the purpose of their monitoring;
- 9) To develop an action plan for reducing the volume of waste for final disposal and reducing the types of waste allowed for storage;
- 10) Jointly with MADRM to develop the methodology for setting payments to cover waste collection and storage costs, including the accumulation of means for closure and post- treatment activities of the waste deposits.

Recommendations for cooperation between MADRM and LPAA of Cahul District

- 11) To develop procedures for the determination of norms in the field, including the establishment of acceptable storage norms and limits, including the restrictions on the types of waste deposited in accordance with the relevant European directives;
- 12) To determine the institutional framework for the organization of sanitation services of localities;
- 13) To establish the methodology for the elaboration of the local sanitation programs of the localities;
- 14) To evaluate the financial resources needed to strengthen sanitation services and identify possible sources for their financing;
- 15) To determine and regulate the conditions (possibilities) of separate waste collection and transmission for processing;
- 16) To determine, in territorial aspect (localities, objectives), waste management priorities, which need to be supported from the financial means of FEN;
- 17) To develop and approve standardized forms (content and form) of environmental and sanitary approvals, valid for all types of projects, including also the conformity of the documents presented with the building norms;
- 18) To attract qualified specialists in the field for verifying the documents submitted at the request of the means of the FEN, including the responsibility of the environmental and sanitary authorities to issue the opinions for the construction of the objectives with environmental impact;
- 19) To ensure the supervision of the project implementation, by making visits to the territory and drawing up the necessary documents;
- 20) To ensure the compliance of the landfill construction works by requesting the State Construction Inspection and Ecological Expertise, both at the early stages of the ramp construction projects and after their completion.

Recommendations for cooperation between Ministry of Health and LPAs of Cahul District

- 21) To elaborate regulations on performing sanitary-epidemiological surveillance in the field of solid waste management, coordinating them with MADRM;
- 22) To establish concrete measures, with the identification of the financial sources, regarding the support of the public healthcare institutions in the field of medical waste treatment;
- 23) To establish the methodology and periodicity of carrying out the supervision of the waste disposal sites by the sanitary-epidemiological service;
- 24) To supervise and verify procedures for the management of medical waste and its separation from solid household waste;
- 25) To elaborate and approve the classification of waste resulting from the activity of medical institutions on the territory of Cahul District, as well as the plan of measures for management of medical, food and household waste.

ⁱ <https://beltandroad.hktdc.com>

ⁱⁱ UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE ENVIRONMENTAL
PERFORMANCE REVIEWS BULGARIA, UNITED NATIONS 2017

ⁱⁱⁱ Seasonal dynamics of marine litter along the Bulgarian Black Sea coast, June 2017. A. Simeonova, R. Chuturkova

The surveys have been elaborated in the frame of MARLENA Project, MARLENA – Marine and River Litter Elimination New Approach, financed under the first call for proposals for the ENI Cross-Border Cooperation Program in the Black Sea Basin and for EMS BSB-139 Project and aims at investigating the cooperation, local governance strategies and legislation in local waste management in 5 target regions in Turkey, Bulgaria, Romania, Moldova, Ukraine.

The full content of the reports in national languages are published in project platform:

<http://marlenablacksea.eu/>