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**REGIONAL**

**EBRD and Global Environment Facility**

**Promoting accelerated uptake of environmental  
technologies and promotion of best practices for improved  
water, chemicals and waste management in the  
Black Sea Basin**

**Project Document**

*30 May 2019*

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## Abbreviations and acronyms

APMR	Annual Portfolio Monitoring Report
BAT	Best Available Techniques
BEAST	Black Sea Eutrophication Integrated Assessment Tool
BOD	Biological Oxygen Demand
BREFs	Best Available Techniques Reference Documents
BSC	Black Sea Commission
BSIMAP	Black Sea Integrated monitoring and Assessment Programme
BS SAPIR	Strategic Action Plan for Environmental Protection and Rehabilitation of the Black Sea
CAP	Common Agricultural Policy
CoO	Countries of Operation
CRM	Concept Review Memorandum
CSO	Civil Society Organisations
CSRF	Country Strategy Result Framework
CW	Chemicals and Waste
DIN	dissolved inorganic nitrogen
DON	dissolved organic nitrogen
E2C2	Energy Efficiency and Climate Change, unit of the EBRD
EMBLAS	Environmental Monitoring in the Black Sea
EPR	Extended Producer Responsibility
ESAP	Environment and Social Action Plans
ESD	Environmental and Sustainability Department
ESP	Environmental and Social Policy
EU	European Union
EUR	The official Currency of the EU
FINTECC	Finance and Technology Transfer Centre for Climate Change
FRM	Final Review Memorandum
GAP	Gender Action Plan
GDP	Gross Domestic Product
GEF	Global Environment Facility
GET	Green Economy Transition
HW	Hazardous waste
ICEP	Index of Coastal Eutrophication
ICZM	Integrated Coastal Zone Management
IEO	Independent Evaluation Office
IFI	International Financial Institutions
IPPC	Integrated Pollution Prevention and Control
IW	International Waters
IW:LEARN	International Waters Learning Exchange and Resource Network
MDBs	Multilateral Development Banks
MPF	Mid-sized Projects Facility
NDEP	Northern Dimension Environmental Partnership
NES	National Environment Strategy
NIP	National Implementation Plan
NOW	Near Zero Waste, program of the EBRD
OGC	Office of General Council
PCB	Polychlorinated biphenyls
PE	Population Equivalent
PFD	Programme Framework Document
PMT	Project Management Team
PN	Particulate nitrogen

POP	Persistent Organic Pollutant
PPP	Public Private Partnership
RO	Resident Office
SEI	Sustainable Energy Initiative
SIG	Sustainable Infrastructure Group
SMEs	Small and Medium Enterprises
SoE	State of the Environment of the Black Sea
SPP	Stakeholder Participation Programme
SRI	Sustainable Resource Initiative
STAP	Scientific and Technical Advisory Panel
TC	Technical Cooperation
TN	Total Nitrogen
TNA	Technology Needs Assessment
TOR	Terms of reference
TP	Total Phosphorous
TPI	Technology Penetration Index
UN	United Nations
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar
VC	Verification Consultant
WB	World Bank
WEEE	Waste Electrical and Electronic Equipment
WEF	World Economic Forum
WWTP	Waste Water Treatment Plant

## Executive summary

<b>Summary:</b> The “ <i>Promoting accelerated uptake of environmental technologies and promotion of best practices for improved water, chemicals, and waste management in the Black Sea basin</i> ” project (henceforth the “Project”) supports investments and supporting actions to improve the management of harmful chemicals and waste in the Black Sea basin.	
<b>Project Name</b>	Promoting accelerated uptake of environmental technologies and promotion of best practices for improved water, chemicals and waste management in the Black Sea basin.
<b>Countries</b>	Belarus, Georgia, Ukraine
<b>Implementer</b>	EBRD (with support from relevant ministries)
<b>Funding</b>	<ul style="list-style-type: none"> <li>• GEF Funding: USD 5.9m (USD 1.1m TA, USD 4.8m investment grant)</li> <li>• EBRD Co-Financing USD 27m (USD 1m in-kind, USD 1m grant, USD 25 loans)</li> </ul>
<b>Project Description</b>	<p><b>Key Issue:</b> Within Belarus, Georgia and Ukraine there are major point and non-point sources of pollution that lead to high levels of nutrient pollution of waterways leading to the Black Sea.</p> <p><b>Project Aim:</b> The project will support investments addressing land-based and water based pollution, improve systems for water management in coastal hotspots, water and pollution management in the Black Sea basin, and will aim to improve management of harmful chemicals and waste with particular focus on private sector operations in the participating countries.</p> <p><b>Approach:</b> The Project adopts a regional approach to facilitate the accelerated uptake of environmental technologies and practices for (i) reduction in point and non-point water pollution; (ii) improvement in water and waste management; and (iii) elimination, prevention and improved management of harmful chemicals (specifically POPs).</p> <p><b>Key Barriers Addressed:</b> The Project addresses multiple barriers to the uptake of BATs to mitigate water and chemical (in particular POPs) pollution entering the Black Sea basin. Namely: weak environmental standards; inadequate regulatory and incentive frameworks; issues related to access to quality and affordable water services; limited awareness; limited financial and investment policies to address water supply and sanitation; and lack of financial resources to extend or maintain the infrastructure.</p>
<b>Key Outcome</b>	Reduced pollution levels and enhanced water based pollution control in the Black Sea
<b>Project Activities</b>	<p><b>Component 1: Targeted policy dialogue and stakeholder engagements</b> [USD 235,000 from the GEF for TA]</p> <ul style="list-style-type: none"> <li>• Output 1.1 Dialogue takes place on policy and regulation</li> <li>• Output 1.2. Increased engagement of stakeholders for the adoption of BATs in water and POPs sectors</li> </ul> <p><b>Component 2: Implementation support</b> [USD 715,000 from the GEF for TA]</p> <ul style="list-style-type: none"> <li>• Output 2.1. Investment support provided during implementation</li> </ul> <p><b>Component 3: Financing to support accelerated deployment of environmental practices and technologies</b> [USD 4,683,105 from the GEF for Investment]</p> <ul style="list-style-type: none"> <li>• Output 3.1. Water reuse, pre- treatment and treatment within municipal and industrial sectors</li> <li>• Output 3.2. Improved water management and nutrient pollution control through implementation of BATs</li> <li>• Output 3.3. Implementation of POPs and hazardous waste BATs</li> </ul> <p><b>Component 4: Knowledge management, and monitoring and evaluation</b> [USD 150,000 from the GEF for TA]</p> <ul style="list-style-type: none"> <li>• Output 4.1. Knowledge management systems in place and linked to relevant regional organizations to promote technology uptake</li> <li>• Output 4.2. Monitoring and Evaluation</li> </ul>

## 1 CONTEXT

### 1.1 Overview of the EBRD region

#### 1.1.1 Background

1. Many of EBRD's Countries of Operation (CoO) began their transition carrying the communist era's legacy of widespread environmental neglect and wasteful resource use. Despite significant capital stock transformation and associated improvements during the past 25 years, environmental standards remain generally poor. Market failures to internalise and monetise the cost of environmental damage have exacerbated this situation. Accordingly, there is a need for fast and material changes in an economic space where markets are currently weak or non-existent.
2. Like other aspects of transition, the shift to an environmentally sustainable economy is centred on the transformation of markets, behaviours, products and processes, deployment of technologies and new skills. The region has taken important steps to reduce environmental degradation with noticeable results in terms of improved urban air quality, the phase-out of ozone-depleting substances, a larger use of energy efficiency and renewable energy sources, improved water management, and increased coverage of protected areas.
3. From a water perspective, the EBRD region has some of the most water stressed countries in the world. The average water stress measure for the EBRD region as a whole is 21% whereas the EU average is around 15%. Factors impeding progress include inadequate regulatory and incentive frameworks (low tariffs, insufficient collection of water services payments), low awareness across a wide range of stakeholders and lack of financial resources to extend or maintain the infrastructure. Coherent financial and investment policies to address water supply and sanitation are often lacking, as are resources to sustain infrastructure at the local level and maintain existing centralised systems. In many countries, more than 30% of water is lost in transfers from supply sources to consumers (e.g. open water canals). Access to quality and affordable water services is also an issue as an increasing number of persons are not able to afford the price of water at full cost recovery, especially if costs charged include wastewater collection and treatment.
4. All of the predominant countries that are pollution sources for the Black Sea are EBRD CoO, including those participating in the Project – Belarus, Georgia and Ukraine. Within these countries, there are major point and non-point sources of pollution that lead to high levels of nutrient pollution of waterways leading to the Black Sea. This pollution can often be linked to the structures of socialist-era industry, agriculture, water and waste systems wherein environmental protection and resource efficiency were not fully considered. Further, the collapse of economic systems has led to a structural lack of environmental enforcement, management and financing of pollution reduction. These structural deficiencies continue today in most of these countries, leading to significant ongoing pollution. Though there are some trends towards pollution reduction, there are also significant ongoing risks that the pollution reduction measures are not sufficient to meet the challenge.
5. On the whole, the EBRD's region of operations continues to face significant environmental and resource efficiency challenges. While a number of countries experienced a significant improvement in materials consumption and resource productivity since 1995, resource productivity in the EBRD region of operations, in purchasing power parity terms, remains half of that in the EU-15. There are compelling reasons for EBRD CoO to improve productivity and decrease their resource intensity as there is a strong positive correlation between material intensity, including use of chemicals and generation of waste, and international competitiveness.

### 1.1.2 EBRD track record in addressing global environmental concerns

6. The promotion of environmentally-sound and sustainable development in investment and technical cooperation activities has been intrinsic to the EBRD's mandate since its founding. The EBRD has actively contributed to the United Nations' sustainable development agenda and programme through the Rio, Johannesburg and Rio +20 processes. The commitment to sustainable development is embedded in the EBRD's constitutive documents and operations, including in the Environmental and Social Policy (ESP) of the Bank, and in its sector strategies. In line with the ESP, the Bank has developed advanced operational approaches to scale-up its sustainable energy activity under the Sustainable Energy Initiative (SEI) and developed its activity in water and materials efficiency under its Sustainable Resource Initiative (SRI). The EBRD's Green Economy Transition (GET) approach, launched in 2015, puts the focus on green financing by investing in projects that bring environmental benefits. Energy efficiency, sustainable resource use, resilience to climate change and environmental protection are central features of the modern, competitive economies the EBRD was set up to promote. To date, the EBRD has signed €30 billion in green investments, financed over 1,600 green projects and reduced over 100 million tonnes of carbon emissions each year. The EBRD will increase green financing to 40 per cent of its annual business volume by 2020.
7. This increase is to be achieved by, among other activities, scaling up current operations and expanding the range of environmental interventions to be financed by the Bank, such as activities in pollution prevention and control, environmental remediation, sustainable agriculture and clean manufacturing. The Bank will aim to build on its track record and experience from already established programmes such as the Finance and Technology Transfer Centre for Climate Change (FINTECC, financed by the GEF) or Near Zero Waste (NOW, co-financed by the CTF) to address barriers to deployment of best available techniques (BAT), and to accelerate the uptake of advanced environmental technologies.
8. Improving the quality of water supplies and sanitation facilities, safeguarding of water sources, their distribution and associated environmental protection are key elements of the EBRD's work in municipal and environmental services sector. Urban population growth, industrialisation and the effects of climate change are creating new challenges. Improving water supply and sanitation in urban areas requires major investments, supported by sound policies and effective, accountable institutions. The EBRD also addresses environmental and social issues and improves the financial and budgetary sustainability of the municipal sector by focusing on certain goals including: (i) increasing the number of people with access to affordable, drinkable tap water, (ii) decreasing water losses from water supply systems, (iii) decreasing the amount of untreated sewage discharged into watercourses, (iv) increasing energy efficiency in the water and wastewater sector, and (v) improving the regulatory and enforcement capacity of public sector bodies. The EBRD aims to achieve long-term sustainability through the application of market-based approaches and instruments, creating sustainable urban infrastructure and services, attaining environmental and social sustainability, achieving financial and budgetary sustainability, and gradually transitioning towards an energy efficient, low carbon and climate resilient economy.
9. Investments in the waste sector have supported improved waste management through interventions across the entire waste management value chain, from the creation of integrated waste management systems and the rehabilitation or remediation of existing landfills to the construction of new landfills in accordance with EU Waste Directives and the acquisition of new waste management infrastructure.
10. Water and waste impacts are not only achieved through improved water, wastewater and waste infrastructure, but across sectors including industries and agribusinesses. Since 2013, green investment in water, wastewater and waste has accounted for €4 billion across 217 projects.
11. The role of donors is critical to the success of municipal and environmental infrastructure investments across the region. Technical cooperation grant funds promote project implementation and institution-building, while investment grants are provided in specific regions to address both affordability constraints by reducing the need for extensive tariff increases and to accelerate



adoption of high environmental standards. In addition, the EBRD also addresses water and waste water management opportunities in the corporate sector.

## **1.2 Overview of the Black Sea Basin**

12. The Black Sea basin, home to 160 million people, is burdened by excessive loads of nutrients and hazardous substances, including Persistent Organic Pollutants (POPs) from the coastal countries and the rivers that enter it, leading to the sea's eutrophication and other negative impacts on marine biology. Pollution inputs and other factors have radically changed Black Sea ecosystems beginning around 1960, and seriously threaten biodiversity and the use of the sea for fishing and recreation.
13. Inputs of insufficiently treated sewage result in the presence of microbiological contaminants, which constitute a threat to public health and, in some cases, pose a barrier to the development of sustainable tourism and aquaculture. An estimated 70 per cent of the Black Sea's surface water contains pathogenic bacteria.
14. With six littoral countries and a further ten countries present in its drainage basin, the Black Sea and the surrounding basin is recognised as facing a significant global environmental challenge. The Black Sea is highly sensitive to anthropogenic impacts due to the huge catchment area (around 2 million km<sup>2</sup>, five times the surface of the Black Sea itself) and almost landlocked nature. Together, these challenges led to the signing of several multilateral instruments, notably the Convention on the Protection of the Black Sea Against Pollution in 1992 and the Convention on Co-operation for the Protection and Sustainable Use of the Danube River in 1994. These multilateral governance arrangements reinforce the Black Sea basin's status as a global environmental issue.
15. The Project focuses on improving water and land-based pollution from water, chemicals and waste entering the Black Sea basin through catchment and river systems as well as coastal activity, from three countries in the region: Belarus, Georgia and Ukraine (see Figure 1). These countries have a combined population of nearly 60 million people (43.95 million of those from the Ukraine), and are responsible for significant pollution of the Black Sea basin. Annex H provides more information on Belarus, Georgia and Ukraine country contexts, and Annex F and G respectively for associated water, and chemicals and waste status and impacts.



*Figure 1. Black Sea Project target countries*

### 1.3 International Waters

16. The region faces a problem of water pollution due to industrial point-source pollution – including wastewater treatment plants (WWTPs) – and non-point source pollution from agricultural activities and non-treated municipal water wastes<sup>1</sup>. In particular, the presence of excessive nutrient loads lead to the sea's eutrophication, resulting in algal blooms that block the penetration of sunlight, while also depleting the oxygen level in the benthic zone due to decomposition of algae biomass. Consequently, nutrient enrichment leads to significant loss of marine flora and fauna and other species that depend on them. Figure 2 shows recent updates from the Black Sea Commission resulting from the Black Sea Eutrophication Integrated Assessment Tool (BEAST). The red colour represents a bad condition of water quality, yellow is for moderate and green is for good water quality. It is clear that coastal area of Romania and Ukraine have the worst water quality concerning eutrophication – with Georgia also having moderately bad quality.
17. Regarding the status of the eutrophication levels, Luminate et al. (2015) conducted research concerning the pollution status of the Black Sea region and noted that climate factors and anthropogenic impacts, which are more pronounced in coastal and shelf waters, could easily result in quality shifting to one extreme state (poor or high). Further, this study, neglecting the atmospheric deposition and other diffuse sources, identified as main pathways of nutrients to the Western Black Sea being riverine inputs, direct discharges from coastal point sources and excess nutrients stored in bottom sediments that can enter into water.
18. Eutrophication caused by nutrient disposal is one of the key drivers of the Black Sea pollution. According to Borysova et al (2015), the main anthropogenic sources of nutrient pollution are agriculture 80% and wastewater 15%. Pollution is heavily driven by agriculture, a major non-point source activity in the Black Sea region. According to Higgins et al. (2014) the Danube River is responsible for 70% of the nutrient pollution of the northwestern shelf of the Black Sea, which is the most polluted part. Agriculture remains a major activity and source of income in the lower Danube countries. The scale and significance of this is apparent when acknowledging that EU nations in the Black Sea catchment received a total of almost EUR 32 billion paid through the Common Agricultural Policy (CAP) between 2008 and 2010. Figure 3 shows the main land-based hot spots and river run-off points in the Black Sea. The major point source of nutrient pollution is waste water, though several industrial sites are also major sources of pollution.

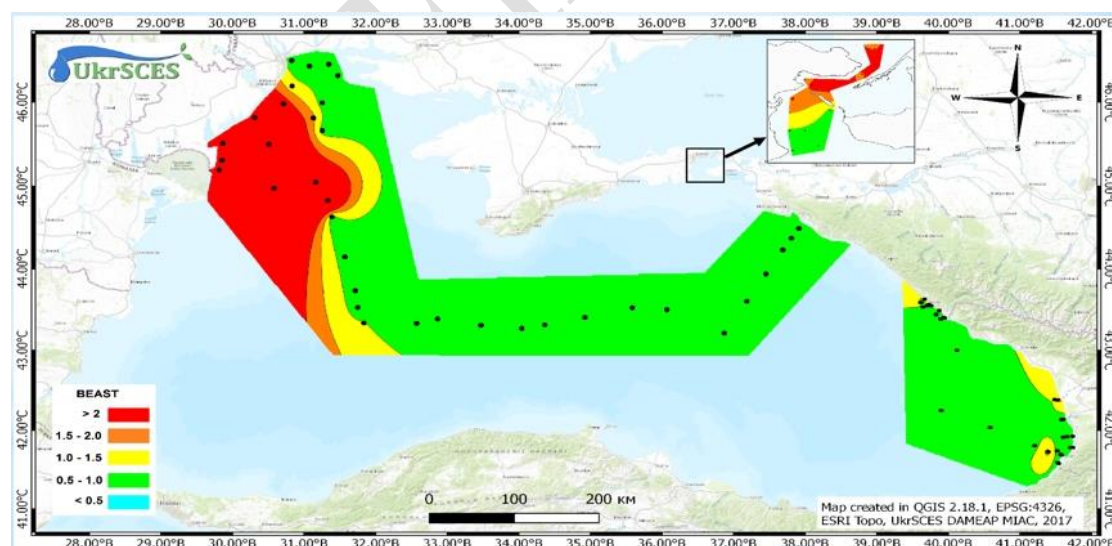


Figure 2. Black Sea Eutrophication Integrated Assessment Tool (BEAST) – water quality

<sup>1</sup> See Annex F for additional information on major sources within each country targeted by the Project. Many of the point-sources of pollution are described in the report by project Hot Black Sea (2015) Black Sea Hot Spots Verification and Update – available at <http://bs-hotspots.eu/Documents/Deliverables/HS%20Lists%20Update%20Report%20Final.pdf>

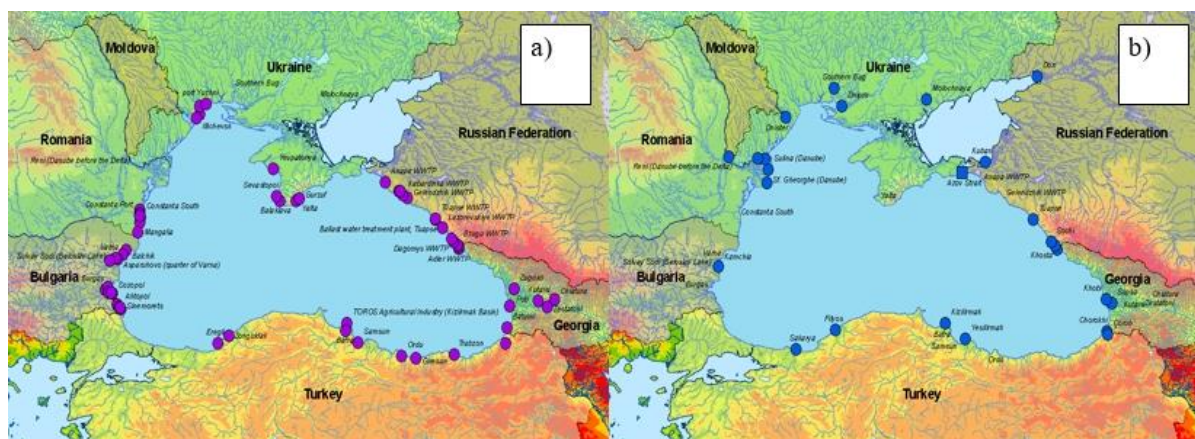


Figure 3. Main land based sources of Black Sea basin pollution (a) “hot spots”, (b) river run-off

Source: *Environmental Monitoring in the Black Sea (February 2017) “Eutrophication - nutrients levels, land-based sources in GE, RF, UA and the Black Sea eutrophication integrated assessment – results of application of the BEAST”*

19. The key impact of excessive nutrient pollution is a reduction in the available oxygen, causing hypoxia. The presence of large amounts of nutrients and organic matter lead to eutrophication evidenced by algal blooms, causing an imbalance in the ecosystem mainly through a reduction in oxygen and an increase in acidity. Algal blooms can be very damaging to the marine ecosystem and lead to fish kills. According to O’Higgins et al<sup>2</sup>, eutrophication leads to the collapse of the larger, higher value species.
20. The Black Sea ecosystem continues to be threatened through local pressures resulting from the coastal zone and through more indirect pressures from activities based inland (such as nutrient pollution pressures and in-land point pollution sources) but reaching marine waters via rivers entering the Black Sea. In particular: (i) from the west via the Danube river, which passes through Bosnia and Herzegovina and Serbia and enters the Black Sea, (ii) from the north-west via the Dniester and Cogilnik Rivers which pass through Moldova and Ukraine, and (iii) from the north via the Dnieper river which passes through Belarus and Ukraine. Impacts from these discharges are far reaching, for example, in Georgia this pollution is reported to be causing large-scale microbiological and other contamination, damaging the country's tourism industry, and posing significant human health risks (resulting in illnesses such as diarrhoea and hepatitis A) to those living in coastal areas<sup>3</sup>. These pressures on water quality can be divided into three major categories:
  - i. Municipal wastewater discharge which is untreated in many municipalities and only partially treated in others
  - ii. Industrial discharge from factories, plants and other operations that either do not treat their waste streams or do not implement BATs
  - iii. Agricultural and forestry run-off and emissions related mostly to fertilizer and pesticide usage.
21. The population of the Black Sea region has doubled since 1970, and the population connected to the sewage system has likewise increased significantly. This is associated with substantial increases in Total Nitrogen (TN) and Total Phosphorous (TP) inputs to watersheds from human waste and detergents in the South Black Sea region and a slight increase in the North Black Sea region over the period of 1970 and 2000. Overall, there is a significant increase in the total nitrogen and phosphorus dissolved in the Black Sea.

<sup>2</sup> O’Higgins, T., Farmer, A., Daskalov, G., Knudsen, S., Mee, L. (2014) “Achieving good environmental status in the Black Sea: scale mismatches in environmental management”. *Ecology and Society* 19(3): 54

<sup>3</sup> see UNEP (2014) [“Black Sea in Pollution Crisis: Georgian Communities Take Action](#)

22. With GDP projected to continue to increase from 2000 to 2050, per capita GDP has been increasing fastest in the North Black Sea basins<sup>4</sup>. This will likely lead to a continued high level of dissolved nitrogen and phosphorus in the Black Sea and in particular relatively high potentials for coastal eutrophication from rivers draining into the North Black Sea and the Azov Sea. While currently there is a little eutrophication in the South Black Sea, this may change in future because of the projected increases in nutrient inputs from rivers that are difficult to control.
23. Figure 4 shows the modelled export of dissolved inorganic (DIN) (Row 1), dissolved organic (DON) (Row 2) and particulate (PN) (Row 3) nitrogen by rivers that drain to coastal waters of the three Black Sea regions: the North Black Sea, the Azov Sea and the South Black Sea and nitrogen sources. DIN, DON and PN export are calculated for the past (1970 and 2000) and future (2030 and 2050) and expressed in kton per year.

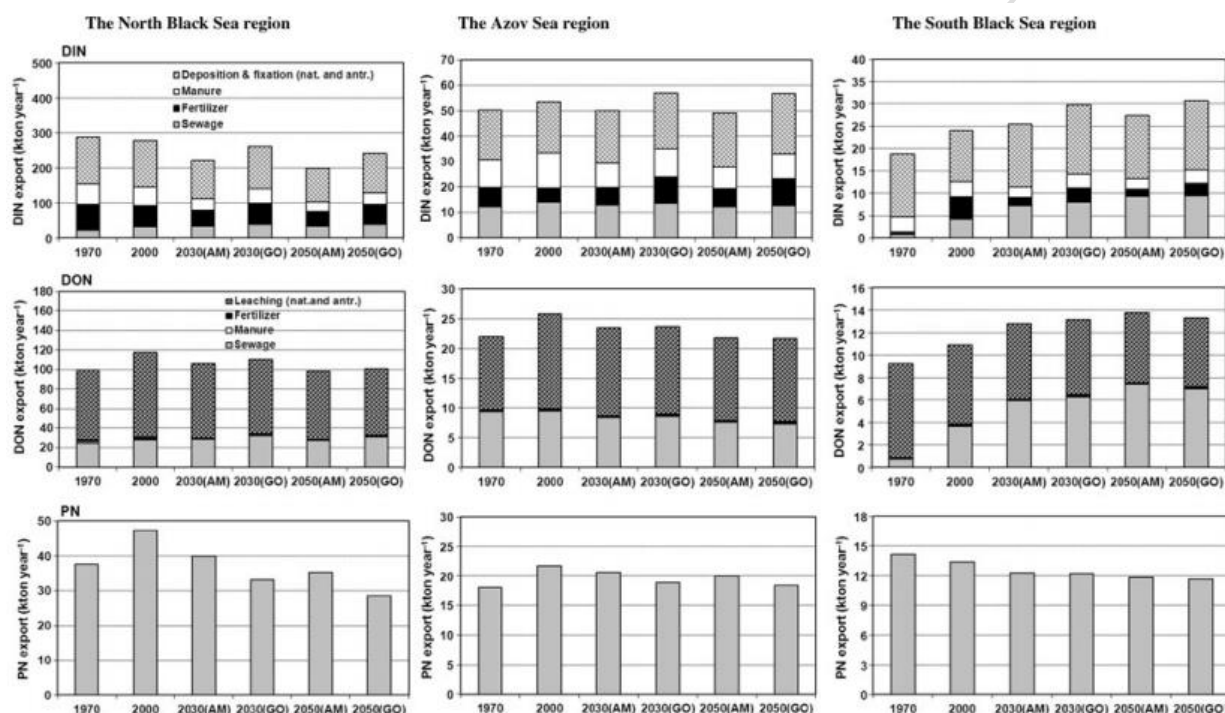


Figure 4. Model results of water quality from the three Black Sea regions: the North Black Sea, the Azov Sea and the South Black Sea

#### 1.4 Chemicals and Waste

24. Linked to the issues of water pollution outlined above, there are significant issues with chemicals in the form of POPs and heavy metals, and pollution related to e-waste generation and disposal. As noted in the National Implementation Plans (NIPs) for the Stockholm Convention in the participating countries, there are major issues related to solid waste management that cut across all three countries, mainly: systems are limited and disorganized, there is a failure to apply appropriate protocols for chemical waste management, and cases of uncontrolled combustion processes (i.e. open burning) are not uncommon. Related to chemicals, this is particularly problematic with regard to:

<sup>4</sup> The Global Orchestration scenario, is oriented on the economy but neglects the environment, and predicts the most rapid growth of GDP coupled with an increase in urbanization across the Black Sea region (The Global Orchestration scenario depicts a globally-connected society in which policy reforms that focus on global trade and economic liberalization are used to reshape economies and governance, emphasizing the creation of markets that allow equal participation and provide equal access to goods and services.).



- Plastics (PVC especially) which are often burned and can lead to emissions of POPs<sup>5</sup>
  - Disposal of e-waste – of which there is estimated to be over 350,000 tonnes per year in total over the three countries targeted by the Project<sup>6</sup>. The management of this waste is not generally carried out in a systematic or appropriate manner in the region. E-waste can contain POPs (especially PCBs) and a host of other chemicals<sup>7</sup>.
25. The level of supply chain management and sound management of chemicals in the operation of companies still lags behind EU standards. There are a number of POPs present or produced as by-products of industrial activities in each country which will require investment to eliminate, prevent, or dispose of properly. These have predominantly been identified via NIPs for the Stockholm Convention. There are also significant stocks of POPs containing materials that need to be properly stored, disposed of, or recycled.
26. Based on the inventories from the NIPs, it is estimated that there are over 13,000 tonnes of POPs or POP-containing materials in the countries of the Project. The review of NIPs highlighted, however, that private sector engagement in the issues of POPs is limited and there is limited information on emissions of chemical wastes in many industries.
27. The eligible countries have banned import, export and use of pesticides listed in the Stockholm Convention; however the existing stocks are often kept in sub-standard facilities, often in storehouses of agricultural entities. While the targeted countries never produced PCBs, these chemicals have been used extensively in electrical equipment and their phase-out is ongoing (and PCBs are still in use especially in the electricity distribution systems), however the phased out equipment is often stored in substandard conditions resulting in leakages.
28. One of the key issues related to POPs, both dealing with existing POPs and production of unintended POPs, is solid waste management (SWM). This is largely ineffective, lacking adequate quality and size of infrastructure, leading to increased levels of harmful chemicals in the environment. This issue is consistently a problem across all of the countries of this Project, in particular with regards to recycling of plastics (PVC especially) and disposal of e-waste. It is not uncommon for toxic chemicals to be burned in open fires – resulting in the release of toxins into the environment. Existing waste management infrastructure in the targeted countries is largely insufficient to cover the country's needs and lags behind its EU neighbours. Along with the countries' growing demand for goods, the level of waste generation is increasing resulting in significant waste management challenges.
29. At the same time, some industrial processes result in unintended POPs. Ferrous and non-ferrous metal production and power/heat production from coal are also important sources in the target countries.
30. The result of these pollution sources is that there are relatively high contamination levels of some pesticide, heavy metals and PCBs, which are present at specific sites in the Black Sea and surrounding basin, with illegal dumping/discharges (particularly of agrochemicals) being recognised as a particular problem. The historically poor enforcement of discharge standards, and a failure to consider the Black Sea itself as a receiving water body for discharges to rivers, are considered to be a principal underlying reason for the status of pollution in the Black Sea.
31. The majority of the wastewater-based pollution originates from the Dnieper Basin. The Dnieper Basin is a multi-sectoral region of natural and socio-economic importance. Not only does it contain natural resources of social value (e.g. water, land and forest resources) but it is also a valuable asset for a number of stakeholders including commercial, industrial and governmental organisations (e.g. industries, land users, water users, governmental bodies, regulatory and control authorities etc.). It sustains major urban centres and a large number of small and medium-size

<sup>5</sup> The incineration of PVC can lead to the emission of POPs – see <http://www.pvc.org/en/p/pvc-incineration-dioxins>. Annex I also provides detail about sources of unintended POPs in the various countries targeted by the Project. One of the main sources is the burning of waste.

<sup>6</sup> Annexes E and K provide country-level detail on e-waste.

<sup>7</sup> see <http://ewasteguide.info/hazardous-substances>

towns. The Dnieper River extends into the territories of three Eastern European countries, the Russian Federation, the Republic of Belarus and Ukraine. It is the third largest European transboundary watercourse after the Danube and the Volga, draining a basin of 511,000 km<sup>2</sup>.

32. Water quality in the region is affected by pollution entering the Dnieper River with numerous agricultural, industrial and municipal wastewater discharges. It is also affected by the nature of the region itself, where large-scale industrial and agro-industrial operations are concentrated. Regular monitoring data indicates that admissible limits for a range of pollutants have been consistently exceeded, thereby greatly affecting the overall sanitary situation in the Dnieper Basin.

## 2 BASELINE

### 2.1 *Baseline Scenario*

33. Recently there have been extensive management conventions, commissions and action plans that aim to ensure the sustainable and equitable use of the Black Sea and Black Sea basin. These initiatives encompass multiple water, chemicals and waste management objectives, and include:
- The Convention on the Protection of the Black Sea Against Pollution (adopted in 1992) and its Protocols, and its implementing agency, the Black Sea Commission
  - The Strategic Action Plan for the Environmental Protection and Rehabilitation of the Black Sea (adopted in 2009)
  - The Danube River Protection Convention and its implementing agency, the International Commission for the Protection of the Danube River
  - The Danube River Basin Management Plan (Update 2015).
34. As part of these initiatives, international Secretariats deal with international water management in the region. Agreed programmes of work exist, notably under the Danube River Basin Management Plan, however in that case implementation (and therefore financing) is the responsibility of national governments.
35. The baseline analysis confirmed that aggregate waste water treatment capacity in the targeted countries is insufficient to appropriately treat water before being released into the river system. Diffuse sources are predominantly agricultural operations resulting in the emission of nitrogen compounds, but also organic substances (including phenols) and heavy metals, and contribute substantially to the eutrophication. Country contributions to nitrogen and phosphorus run-off in the Black Sea basin are detailed in Annex H of this document.
36. All countries included in the Project have reported the use and/or storage of significant quantities of POPs, POPs pesticides, unintentionally produced POPs, DDT and PCBs. These quantities vary in terms of location and size. While each country has prepared a NIP for the Stockholm Convention covering the identification, management and disposal of POPs, implementation of the plans is subject to adequate mobilization of financial resources. To date, there are insufficient investment-driven initiatives which address the specific sources of the pollution. Country specific details of waste inventories are provided in the Annex C of this document.
37. Ukraine and Georgia are currently at some point in the process of application to become EU Member States – which involves the implementation of the EU *acquis communautaire* related to – among other aspects – water pollution and POPs pollution. Some of the specific EU Directives and regulations that are to be implemented include:
- EC Persistent Organic Pollutants (POPs) Regulation No. 850/2004 of 29 April 2004
  - The Marine Strategy Framework Directive ([Directive 2008/56/EC](#))
  - The Water Framework Directive ([Directive 2000/60/EC](#))
  - Urban Waste Water Treatment Directive ([Directive 91/271/EEC](#))

- Integrated Pollution Prevention and Control Directive ([Directive 2008/1/EC](#))
  - Waste Electrical and Electronic Equipment Directive (WEEE) (Directive 2012/19/EC).
38. While these developments are welcome, the full implementation of the directives is typically lengthy, with countries often asking for derogation, resulting in a substantial delay in relevant investments and pollution reductions. Further, fully addressing the EU Directives, meeting international obligations and addressing pollution problems requires significant investment from the private sector (and municipally owned companies) and are unlikely to be realized without intervention from international financial institutions (IFIs) like the EBRD in conjunction with donor resources such as from the GEF.
39. Some participating countries have pollution taxes in place and other enforcement mechanisms that provide a financial incentive for pollution reduction (notably Ukraine<sup>8</sup>); however these are often insufficient to overcome the barriers. As noted by the International Commission for the Protection of the Danube River, in general, the funding of water pollution-related measures in non-EU member state countries is more difficult than for those countries that have the legal obligation to fulfil the Water Framework Directive, among other directives. The Project will therefore aim to support accelerated compliance by EU candidate countries with the relevant directives, bridging the gap between the current situation and full implementation of the directives.
40. The Project will complement ongoing implementation activities in the targeted countries by other stakeholders. Of the 19 on-going activities identified in the participating countries related to development of the legislative framework, development of capacity, and investments in pollution reductions:
- 7 investments reduce nutrient pollution
  - 1 relates to enabling transboundary water resource management cooperation but not linked to investment
  - 9 investments meet specific reduction targets for POPs
  - 2 relate to enabling activities/policy development dealing with POPs.
41. These activities build on an extensive track record of investments by the GEF in the Black Sea/Danube area over two decades, including The Danube River Basin Regional Project Phase 1 & 2 (UNDP), the Black Sea Ecosystem Recovery Project Phase 1 & 2 (UNDP/UN Environment), and the Investment Fund for Nutrient Reduction (WB). A full list of on-going implementation activities by country is provided in Annex G. The objectives and results of notable projects targeting the basin are summarised in Table 1.
42. Despite these extensive investments in the region to date, investment requirements for dealing with international waters far surpass those planned within the existing projects, and the quantities of POPs being addressed are not sufficient to meet countries' needs.
43. An integrated approach to addressing the identified barriers is intended to promote durable and longer-term outcomes beyond the initial time period of this project by demonstrating the economic benefits of environmental investments in the region and improving the local environment for investment in environmental technologies and practices. During project preparation, the EBRD consulted with key GEF partners involved in past nutrient reduction efforts in the Danube and Black Sea basins, including UNDP and the World Bank. This dialogue also helped inform the selection of investments eligible to participate and how the funding via the financing mechanisms would be accessed.
44. Brief country context is provided in the following section, including baseline and current status, with more detailed information in Annex H.

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<sup>8</sup> Ukraine and Georgia's systems are described here: [http://www.bs-hotspots.eu/Documents/Deliverables/Economic\\_Instruments%20in%20the%20BS%20region.pdf](http://www.bs-hotspots.eu/Documents/Deliverables/Economic_Instruments%20in%20the%20BS%20region.pdf)

*Table 1. Objectives and results of recent investments targeting nutrient and chemical pollution in the Black Sea basin region*

Project title	Period	Objective	Results
Danube River Basin Regional Project Phase 1 and 2	(1991 – 1996 and 1997 - 1999)	To contribute to the creation of the framework for a long-term solution to the problem of pollution of the Danube River Basin. The project had four main objectives in order to facilitate the formulation of a Danube Action Program: collecting pollution emission data and creating regional data network, identifying policy and legal options, and feasibility studies for local and international funding.	The terminal evaluation of the project highlighted the achievements made in several aspects of transboundary water management in the Danube River Basin, including a marginal cost assessment, durable project outcomes, improved data quality, a revised Strategic Action Plan and a financing proposal. It was recommended that the project draw more heavily on experience gained through the first phase of the project to inform the design of future interventions.
Black Sea Ecosystem Recovery Project Phase 1 and 2	2001 – 2003 and 2004 – 2007	To support participating countries in the development of national policies and legislation and the definition of priority actions to avoid that discharge of nitrogen and phosphorus to the Black Sea exceed those levels as observed in 1997. This will require countries to adopt strategies and measures that permit economic development while ensuring the rehabilitation of coastal and marine ecosystems through pollution control and reduction of nutrients and hazardous substances. At the end of the Project Tranche II, it is expected that the institutional mechanism of the Black Sea Commission is reinforced and fully operational ensuring cooperation between all Black Sea countries to efficiently implement joint policies and actions and operate common management and control mechanisms.	The terminal evaluation of the project highlighted several positive outcomes of the project, including improved understanding of the status of the Black Sea ecosystem, involvement of NGOs and enhanced capabilities, the establishment of monitoring and information systems, and improved public awareness and appreciation for Black Sea issues. On the other hand, it noted that in areas which relied on government decision-making, such as the establishment of a land based activities protocol, a negotiated fisheries agreement and coastal zone management strategies, progress was significantly less than expected at project inception as countries were not fully committed to the delivery of the project's outputs.
Investment Fund for Nutrient Reduction	2001-2015	The World Bank-GEF Investment Fund (IF) was the investment arm of the GEF Strategic Partnership on the Black Sea/Danube Basin. The Fund constituted a proposed envelope of US\$70 million to partially grant-finance investment projects in the Black Sea/Danube Basin that aimed at nutrient reduction. Eligible areas of intervention for support under the Fund included investments to remediate and mitigate nutrient pollution in municipalities, industry and agriculture, as well as policy and legal reform and capacity building for enhanced monitoring and enforcement.	Ten World Bank Group projects supported by the Investment Fund for Nutrient Reduction financed by GEF since 2002 have been successful in piloting measures to reduce nutrient loads entering the Black Sea and Danube Basin. The projects in Bosnia and Herzegovina, Bulgaria, Croatia, Moldova, Romania, Serbia and Turkey supported, among others: <ul style="list-style-type: none"> <li>• introduction of innovative low-cost wastewater treatment methods (BiH, Moldova);</li> <li>• promoting wetlands as environmentally and economically valuable investments benefiting populations (e.g. Bulgaria);</li> </ul>



Project title	Period	Objective	Results
			<ul style="list-style-type: none"> <li>restoring degraded land and reducing soil erosion (e.g. Moldova), introducing waste segregation and water quality monitoring (Romania);</li> <li>constructing manure management facilities and promoting organic farming (e.g. Turkey).<sup>9</sup></li> </ul>
Developing the Implementation of the Black Sea Strategic Action Plan	1996-2000	To strengthen and create regional capacities for managing the Black Sea ecosystem; to develop and implement an appropriate policy and legal framework for the assessment, control and prevention of pollution and the maintenance and enhancement of biodiversity, and to facilitate the preparation of sound environmental investments. Activities are funded with associated contributions from the European Union's PHARE and TACIS programmes as well as bilateral contributions from Canada, the Netherlands, Switzerland and France.	The terminal evaluation of the project highlighted several positive outcomes of the project, including successful help to countries to develop the national SAP and adopted a basin-wide approach for co-ordination of activities for Black Sea protection, however for <i>Preparing the Technical Implementation of the Black Sea Strategic Action Plan</i> the review of outputs show the project executed only six minor ones; two outputs were not executed and ten others were financed by other donors and executed by the Activity Centers. Further, the project published one issue of a 16-page Black Sea Newsletter in seven languages.
Control of Eutrophication, Hazardous Substances and Related Measures for Rehabilitating the Black Sea Ecosystem: Phase 1 and Tranche 2	2001-2007	To support participating countries in the development of national policies and legislation and the definition of priority actions to avoid that discharge of nitrogen and phosphorus to the Black Sea exceed those levels as observed in 1997. This will require countries to adopt strategies and measures that permit economic development while ensuring the rehabilitation of coastal and marine ecosystems through pollution control and reduction of nutrients and hazardous substances. At the end of the Project Tranche II, it is expected that the institutional mechanism of the Black Sea Commission is reinforced and fully operational ensuring cooperation between all Black Sea countries to efficiently implement joint policies and actions and operate common management and control mechanisms.	The terminal evaluation of the project highlighted several positive outcomes of the project, including establishment of a land based activities protocol, a negotiated fisheries agreement, and coastal zone management strategies and overall in making progress in expanding knowledge, awareness and support for ecosystems protection in the Black Sea region.

<sup>9</sup> From: World Bank, Black Sea Danube Basin Partnership, <http://www.worldbank.org/en/region/eca/brief/black-sea-danube-basin-partnership>

### 2.1.1 Belarus

45. Wastewater treatment has been recognised as the major issue in Belarus regarding the pollution of the Black Sea. The Belarus wastewater infrastructure is ageing and oversized with clear need for rehabilitation. Most municipal WWTPs built in the 1970s and 1980s were not designed to remove nutrients, nitrogen and phosphorus. Over the last decade, many wastewater treatment facilities have been rehabilitated and new plants for treating wastewater built; nevertheless, a sizable share of wastewater facilities is still not functioning efficiently and in need of more effort and investment for their rehabilitation. The current rate of replacement does not seem sufficient.
46. In 2014, the total volume of discharged wastewater was estimated at 1,011 million m<sup>3</sup>, of which 931 million m<sup>3</sup> went to surface water bodies and 80 million m<sup>3</sup> to filtration fields, wastewater retention ponds and eventually to groundwater. Majority of wastewater originated from the industry sector. Large industries often have their own wastewater treatment facilities on-site, but many others discharge their wastewater into municipal sewerage systems. Although industrial wastewater is to be treated to certain standards on the site before being discharged into the sewerage system, industrial effluents are frequently disposed of either not satisfactorily treated or without pre-treatment.
47. The EBRD has conducted several feasibility studies for the pipeline projects described in Annex C. Findings of the studies highlighted very old and obsolete infrastructure of Belarussian WWTPs. Further, the quality of the effluent was barely satisfying the water quality standards. This indicates urgent need for the rehabilitation of WWTPs to increase the water efficiency and overall quality of effluent while at the same time mitigate inevitable deterioration of the infrastructure which may cause increased pollution of the Black Sea.
48. In Belarus, the Ministry of Natural Resources and Environmental Protection is in charge of implementation of consolidated state policy on environmental protection and rational use of natural resources. Belarus has relatively well-developed legislation in place, it has taken appropriate steps to refine its legislation in order to integrate environmental considerations more efficiently into water policies. The 2014 Water Code, adopted in place of the 1998 Code, represents a major stride towards making Belarus's legislation more compatible with the EU legal setting in the water sector. The new Water Code, in force since May 2015, is the principal legal act for pursuing state policy for sustainable development, and protection and rehabilitation of the country's surface water and groundwater resources. Further, Belarus has developed Water Strategy of the Republic of Belarus by 2020. Relevant legislation is considered to be very complex with substantial lack in its enforcement.

### 2.1.2 Ukraine

49. Of the countries participating in this Project, Ukraine is by far the biggest contributor to the eutrophication of the Black Sea due to the significant load of nutrients originating from the Ukrainian agriculture and industry. Ukraine is a massive global agricultural producer, and is a significant corn producer in Europe. As such, Ukraine puts a substantial pressure on the environment, especially to the Black Sea. Overall, agriculture has been noted as a major non-point source of pollution with 88% of those river basins being cultivated land. Agriculture (in particular linked with irrigation) is defined as inducing local severe pressure in terms of pollution. Approximately 80 million tonnes of soil with the content of 120,000 tons of nitrogen and 80,000 tonnes of phosphorous is being washed out annually. On the slopes 20% of nitrogen, 25% of phosphorous and 10-70% potassium are wasted out of fertilizers<sup>10</sup>. Additional point sources of pollution are primarily WWTPs<sup>11</sup>. Approximately 8 billion m<sup>3</sup> of waste water per year is

<sup>10</sup> See <http://www.ais.unwater.org/ais/aiscm/getprojectdoc.php?docid=85>

<sup>11</sup> See <http://www.bs-hotspots.eu/Documents/Deliverables/HS%20Lists%20Update%20Report%20Final.pdf>

discharged into surface waters and 26% of water supply and sewerage networks are in an emergency state<sup>12</sup>.

50. To address its environmental challenges, Ukraine prepared its National Environment Strategy 2020 (NES), which was adopted by the Parliament in 2010. Ukraine is Party to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (ratified in 1976), Convention on the Protection of the Black Sea against Pollution (ratified in 1994), Convention on the Protection and Use of Transboundary Watercourses and International Lakes (ratified in 1999) and Danube River Protection Convention (2002). For the fulfilment of these international treaties, the parliament of Ukraine adopted its key legislation for the protection of water resources and water management—the Water Code—first adopted in 1995 and updated in January 2015.
51. Overall, there are six major water related EU directives, which are being implemented in Ukraine: Framework Water Directive, Directive on Drinking Water, Floods Management Directive; Nitrates Directive, Urban Waste Water Treatment Directive and the Marine Strategy Framework Directive.

### 2.1.3 Georgia

52. In Georgia, the primary sources of pollution are municipal wastes from cities and settlements, industrial wastes (such as oil terminals, mining operations, metal factories) and wastes from hospitals, recreation, and other health centres<sup>13</sup>. As of 2013, there were four operating wastewater treatment plants which process approximately 717,100 m<sup>3</sup> total per day. However, the plants are typically 10-25 years old and most are not maintained. None of the existing plants is actually providing biological treatment since the technical facilities are out of order<sup>14</sup>.
53. E-waste in Georgia is estimated at 21,000 tonnes (4.6 kg per inhabitant<sup>15</sup>). Plastics waste is estimated to be 43,000 tonnes per year<sup>16</sup>. The waste management system in Georgia, particularly for hazardous waste such as the e-waste stream, is very under-developed – likely leading to significant pollution both and outside of landfills<sup>17</sup>. According to the research carried out by LTD Tbiliservice Group in Tbilisi Waste Polygon in 2014, only 0.1% of e-waste ends up in landfill, with the vast majority illegally dumped or abandoned on properties.
54. Georgia has adopted the Waste Management Code, which was adopted on 26 December 2014 and came into force in January 2015. Before that, the waste related issues were regulated by a number of legal acts and, to some extent, by international conventions. The new Law seeks to create a legal and regulatory framework that supports waste prevention and reuse, as well as environmentally sound waste management processes including collection, transport, recovery (recycling, composting, etc.) and disposal. In parallel, a National Waste Management Strategy (2016-2030) and a National Waste Management Action Plan (2016-2020) were adopted in April 2016. The Action Plan sets the deadline of 2025 for establishing a Hazardous Waste management system. Further, under the Strategy and Action Plan, national minimum target for collecting the Hazardous Waste has been set at 50 per cent by 2020, 75 per cent by 2025, and 100 per cent by 2030. Currently Hazardous Waste is still disposed at the non-hazardous (household) waste landfills, as there still are no landfills for hazardous or inert waste, including construction waste, and only few landfills have separate cells for specific waste, like asbestos waste. A systematic data collection system on waste generated, collected, transported and treated and a subsequent national database is not in place.

<sup>12</sup> See <https://www.nwp.nl/sites/default/files/aquatherm-invitation.pdf>

<sup>13</sup> <http://www.bs-hotspots.eu/Documents/Deliverables/HS%20Lists%20Update%20Report%20Final.pdf>

<sup>14</sup> See <http://www.nispa.org/files/GE-report.pdf>

<sup>15</sup> [http://www.step-initiative.org/Overview\\_Georgia.html](http://www.step-initiative.org/Overview_Georgia.html)

<sup>16</sup> Based on [http://www.atlas.d-waste.com/index.php?view=country\\_report&country\\_id=80](http://www.atlas.d-waste.com/index.php?view=country_report&country_id=80)

<sup>17</sup> See for example: [http://apps.unep.org/redirect.php?file=/publications/pmtdocuments/-Georgia\\_Country\\_Report\\_EEA-2011GEORGIA\\_COUNTRYREPORT\\_2011.pdf.pdf](http://apps.unep.org/redirect.php?file=/publications/pmtdocuments/-Georgia_Country_Report_EEA-2011GEORGIA_COUNTRYREPORT_2011.pdf.pdf)

### 2.1.4 Associated Baseline Projects

55. The following summarizes relevant regional baseline projects. Country specific baseline projects are noted in Annex H.
56. **EMBLAS Plus** builds on the results of the previous EMBLAS and EMBLAS-II projects to improve protection of the Black Sea environment through technical assistance focused on marine data collection and local small-scale actions targeted at reduction of pollution by marine litter, public awareness raising and education. The project works with key partners from research/scientific and educational institutions, and civil society organisations. The overall objective of the project is to help improve protection of the Black Sea environment through improvement in availability and sharing of marine environmental data from the national and joint regional monitoring programmes, support joint actions to reduce river and marine litter in the Black Sea basin, and raise awareness on the key environmental issues and increase public involvement in the protection of the Black Sea.
57. The **Black Sea Integrated Monitoring and Assessment Programme (BSIMAP)** is an integral part of the monitoring and assessment programs of the Contracting Parties to the Bucharest Convention. BSIMAP aims at provisioning of sound and scientific data and information flow for the Contracting Parties underpinning State of the Environment of the Black Sea (SoE) and Implementation of the Strategic Action Plan for Environmental Protection and Rehabilitation of the Black Sea (BS SAPIR). It also contributes to, inter alia, information sharing and decision making for Contracting Parties.
58. Launched in 2007, the **Black Sea Synergy Initiative** focuses political attention at the regional level and invigorates ongoing cooperation processes. In so doing, it takes account of the range of EU policies and programmes applicable to the EU's differentiated relations with the countries of the region. Its primary objective is to further cooperation within the Black Sea region and between the region as a whole and the EU. The Synergy is intended as a flexible framework that will ensure greater coherence and policy guidance. It envisages a bottom-up project development approach aimed at building on concrete deliverables in the environment, maritime affairs, fisheries, maritime transport, energy, education, civil society, cross border cooperation and research fields.

## 2.2 Consistency with National Priorities

59. Specific national strategies, plans, and reports which are applicable for this Project include the NIPs for the reduction of POPs<sup>18</sup> as well as other environmental strategies as summarized in Table 2.

*Table 2. Summary of relevant national priorities*

Country	National Strategy/plan/report	How this project is consistent with these documents
Belarus	Environmental Strategy for the years 2014-2023	Strategy describes measures for water safety improvement and water distribution
	The National Plan of the Republic of Belarus for the Implementation of its Obligations under the Stockholm Convention on POPs for the period of 2007–2010 and until 2028 (published in 2006) as well as the 2011-2015 National Implementation Plan of the Republic of Belarus under the Stockholm Convention on Persistent Organic Pollutants	National Plan describes a number of measures for dealing with POPs, including: <ul style="list-style-type: none"><li>- environmentally sound storage and disposal of the existing wastes containing persistent organic pollutants and</li><li>- the identification, assessment and clean-up of POPs contaminated sites and remediation of the affected environment.</li></ul> Also notes that external financing is necessary for a number of activities to dispose of/ phase out POPs.

<sup>18</sup> Available here: <http://chm.pops.int/Implementation/NIPs/NIPTransmission/tabid/253/Default.aspx>

Country	National Strategy/plan/report	How this project is consistent with these documents
	General legal framework	A number of laws and regulations are in place dealing with water pollution, air pollution, and chemicals (including banning the import and use of certain pesticides, etc.)
	Water Strategy of the Republic of Belarus by 2020	The Strategy outlines the main issues and sets the goals in the area of water management and protection which have to be addressed taking into consideration the next stage of the socioeconomic development of Belarus.
Georgia	Persistent Organic Pollutants National Implementation Plan of Georgia	The NIP identifies the following main areas to address: 1. Pesticides (obsolete pesticide stocks). 2. PCBs (polychlorinated biphenyls). 3. Furans and dioxins (by-products). It also identifies a need for waste management improvement in particular.
	National Waste Management Strategy (2016-2030)	The Action Plan sets the deadline of 2025 for establishing a HW management system. Further, under the Strategy and Action Plan, national minimum target for collecting the HW has been set at 50 per cent by 2020, 75 per cent by 2025, and 100 per cent by 2030.
	National Waste Management Action Plan (2016-2020)	
Ukraine	Strategy of national ecological policy of Ukraine until 2020	The strategy contains a section related to protection of the waters
	The National Implementation Plan for the Stockholm Convention on POPs (2007)	Describes policy and investment actions to be taken to limit POPs in new production and destroy stockpiles – calling for international investments.

### 2.3 Barriers

60. The Black Sea basin faces multiple challenges related to pollution from inadequate water, waste, and chemicals management. Processes that result in the production, consumption and storage of chemicals and waste occur in many countries in the basin, in multiple economic sectors. This creates challenges for designing effective interventions that meet multiple water, waste and chemical management objectives while being tailored to the economic, technical and operational characteristics of the countries and sectors targeted. The EBRD has been working with the private and municipal sector in the targeted countries since its establishment, with a specific focus on promoting environmental sustainability and best practice. The EBRD's experience shows that there are substantial challenges being faced by corporate and municipal sector in the targeted countries in terms of sound water resource management, chemicals and waste management and elimination of hazardous waste.
61. Environmental goods and services are particularly exposed to different forms of market failures, in comparison with other categories of goods and services available to societies. In the absence of correct market signals, private agents will be deterred to invest in certain area where returns are low. Innovation suffers from other market failures such as network, early mover, and capital market failures. These need to be overcome to allow transition to happen. Also, governments will generally be reluctant to approve and enforce an environmental regulation until they are convinced of the practical, technical and economic benefits.
62. Regarding water and waste water management, local financial products are not tailored to accommodate projects in which environmental outcomes are a predominant objective. In addition, current and anticipated regulatory obligations provide insufficient incentive for municipal and private sector actors to invest in environmental technologies. These challenges are compounded by a lack of awareness of compliance obligations, best alternative technologies and best

environmental practices, and a lack of capacity to assess the feasibility of such technologies/practices.

63. The development of NIPs under the Stockholm Convention has encouraged the identification and prioritization of specific chemicals management and waste management needs. However, it has at the same time highlighted gaps in capacity, institutional frameworks, information exchange and the mobilization of finance. Particularly, there a lack of involvement of the private sector related to information exchange – with many industries lacking systematic tracking of POPs. While funding for the preparation of NIPs has been widespread amongst implementing countries, funding for implementation is not as advanced which necessitates private sector involvement.
64. The fragmentation of international responses (e.g. Basel, Rotterdam, Stockholm and Minamata Conventions and the Montreal Protocol) to inter-related pollutant management issues has been acknowledged and presents challenges for countries to implement an efficient, integrated and fully-financed response. At a national level, regulatory frameworks to address the issues are underdeveloped and fail to implement effective instruments to dis-incentivize pollution. Furthermore, issues of capacity to access financing are as prevalent as the availability of adequate financing. While it is recognised that leveraging additional funding from the private sector is essential to meet the costs of implementation of the Stockholm Convention in developing countries, private sector involvement to date in adopting water, waste and chemical management best available practices has been limited.
65. As noted in the Danube Declaration of 2016, due to targeted interventions in the past nine years the total nitrogen and phosphorus emissions to the Black sea have decreased. The loads to the Black Sea have declined considerably but are still higher than those of the early 1960s. Consistent with the objectives of the International Commission for the Protection of the Black Sea, additional investments are needed to recover the ecosystem to conditions similar to those observed in the 1960s.
66. The barriers to investment in water, waste and chemicals technologies and management introduction in the target countries are summarised in Table 3.

*Table 3. Barriers to investment in improved water, waste and chemicals technologies and management practices in target countries*

<b>Barrier category</b>	<b>Barrier description</b>
Policy and regulatory	<p><b><i>Uncertainty in the current and future legal and regulatory environment:</i></b> The current regulatory environment does not provide the full incentives for environmental technology investments. This is particularly the case related to nutrient, as there are limited policies to deal with pollution using financial tools e.g. via pollution permits, required fees. Uncertainties about the upcoming EU regulations and directives to be implemented during EU accession talks do not provide sufficient incentive to businesses to invest.</p> <p><b><i>Lack of adequate regulatory framework that incentivizes uptake of water, waste and chemicals BAT:</i></b> Current and anticipated regulatory obligations do not provide sufficient incentive for municipal and private sector actors to invest in environmental technologies.</p>
Awareness	<p><b><i>Awareness of international waters issues, POPs, impacts of discharge to the Black Sea, and impacts on the global environment:</i></b> Many involved with water treatment, discharge and use, and users and handlers to POPs are simply not aware that their actions, processes and products contribute to global environmental issues. Detailed inventories for all the equipment suspected of PCBs contamination, for example, are being progressively developed (in the course of NIP updates or as a part of specific projects) but are not yet available in all the project countries. Other issues, in particular POPs and the emerging global issue of e-waste in particular, are not well known or understood thereby making proactive initiatives difficult to initiate and take hold.</p>

Barrier category	Barrier description
Capacity and technical	<p><b>Weak technical capacity to identify and implement BATs projects:</b> There is generally a lack of technical capacity regarding water, waste and chemicals technologies, their costs and benefits, and how to implement projects that treat and reduce water pollution, and that manage harmful chemicals in the targeted countries. This is further compounded by a lack of capacity to assess the need for and the benefits of these BATs. In terms of nutrient pollution, current practices commonly include inappropriate use of fertilisers and inefficient irrigation techniques. Related capacity and technical barriers to adoption of alternatives include: (i) resistance to change from established and entrenched natural resource management practices; (ii) lack of understanding about the roles and responsibilities of all stakeholders in the water supply chain; (iii) lack of knowledge and understanding of the causes and wider consequences of soil and nutrient run-off. The overall lack of capacity distorts the view of the viability of projects, which therefore may be seen as inherently risky or incommensurate financial returns. There is therefore a lack of “first movers” in the market willing to take the risk and invest. At the same time, entities require operational, corporate and financial improvements to secure sustainability.</p> <p><b>Underdeveloped supply chains with limited competition:</b> Underdeveloped supply chains with limited availability of technology solutions and limited market for engineering / maintenance service providers. In terms of POPs, advanced environmental technologies and practices have not achieved significant penetration to date.</p> <p><b>High perceived implementation risk:</b> Some of the practices and technologies – particularly those related to resource efficiency and handling of hazardous materials and waste – are considered innovative, and are perceived as having higher implementation risks than more proven or established practices and technologies. Together with the lack of demonstration projects in the participating countries, in terms of specific technical solutions there is often a limited availability of technology solutions.</p>
Financial	<p><b>Limited availability of suitable financial products:</b> Conventional finance sources such as those provided by local FIs are often unsuitable for water and waste water management and hazardous waste projects. Local financial products are not tailored to accommodate projects in which environmental outcomes are a predominant objective. Local FIs usually lack the technical expertise to appraise environmental technology projects.</p> <p><b>Affordability:</b> The introduction of innovative and advanced (and in most cases more capital intensive technologies) is hindered by affordability considerations. For municipalities, in particular, access to suitable financial products is a limiting factor. Costs are transferred to the final user of the services such as the general public or businesses, which is often the case in municipal and general infrastructure sector investments.</p> <p><b>Higher investment costs to install BATs:</b> Technology projects are usually capital-intensive investments with high up-front costs. In addition, BATs usually face higher investment costs compared to the baseline technologies.</p> <p><b>Weak incentives:</b> Environmental technology investments are not prioritized as they are perceived to have no or little impact on cash flow. The resulting improved environmental performance is therefore not recognized as part of the competitive advantage of companies. In some countries, the absence of regulatory drivers there is a lack of financial incentives to promptly implement environmental technologies with performance beyond regulatory requirements. This is widespread related to POPs and relevant for nutrient pollution where enforcement of pollution fee systems is either non-existent or insufficiently enforced.</p> <p><b>Transaction costs:</b> Lack of adequate familiarity of public and private sector with performance of environmental technologies and processes results in high transaction costs, including the lack of experience with preparing projects to adopt BAT. Additional costs can arise from feasibility studies, laboratory testing or temporary installation of monitoring equipment, implementation support, needs for process shut down to install relevant technologies or deploy relevant practices.</p>

Barrier category	Barrier description
Knowledge	<p><b><i>Lack of cross-sectoral cooperation and partnerships:</i></b> Lack of established communication channels within and between sectors, across national boundaries, and between institutions undermines the development and consolidation of regional knowledge and regionally appropriate best practices. The dispersed nature of non-point agricultural pollution means that disseminating best-practice approaches to controlling water pollution is hindered by a lack of continuous and effective knowledge-exchange forums and opportunities.</p> <p><b><i>Lack of sustainable knowledge transfer practices embedded in local institutions:</i></b> Knowledge is not transferred effectively and through sustainable models to key stakeholders. There is no concerted effort to articulate and share lessons and promote uptake nationally and regionally.</p>

### 3 PROJECT DESIGN

67. The Project supports investments and supporting actions to improve the management of harmful chemicals and waste in the Black Sea basin. The Project addresses multiple barriers to the uptake of BATs to mitigate water and chemical pollution, in particular POPs, entering the Black Sea basin from catchment and coastal areas.
68. The Project adopts a regional approach to facilitate the accelerated uptake of environmental technologies and practices for (i) reduction in point and non-point water pollution; (ii) improvement in water and waste management; and (iii) elimination, prevention and improved management of harmful chemicals (specifically POPs).
69. The Project addresses multiple barriers as described in the barrier analysis by providing:
  - policy and strategy support to a broad range of stakeholders to complement and improve the success of planned investments
  - technical assistance and capacity building
  - financing needed to introduce scalable and replicable pollution reduction solutions
  - awareness support and essential knowledge dissemination of best practices.
70. The EBRD's involvement in addressing issues in wastewater treatment and POPs management within the targeted areas is crucial. As presented in the baseline overview, there is a significant need to reduce the amount of untreated wastewater entering into water sources that are either directly discharged or eventually end up in the Black Sea, and providing resources for technical assistance and financing to support and accelerate the management of POPs. The EBRD has extensive experience in investments undertaken across its CoOs, including in the participating countries.

#### 3.1 Project Alternative Scenario

71. The Project is designed to contribute to achieving the objectives of the GEF International Waters and Chemicals and Waste focal areas by reducing the flow of polluted waste water, and chemicals and hazardous waste from point and non-point sources in Belarus, Georgia and Ukraine. To achieve a sustainable change with significant replication potential, the Project will support policy dialogue alongside robust stakeholder engagement; and uptake of BATs will be supported by technical assistance, concessional finance and knowledge management.
72. The geographic focus of the Project will be on Belarus, Georgia and Ukraine, all of which form part of the Black Sea drainage basin that contributes significantly to overall pollution. Ukraine and Georgia are littoral countries of the Black Sea, while Belarus covers 24% of the Dnieper basin, which passes through Belarus and Ukraine before discharging into the Black Sea.
73. The baseline analysis, supported by stakeholder consultations, identified a lack of capacity in targeted countries to appropriately treat water prior to its release into waterways. For that reason,



the Project will aim at comprehensive policy dialogue and technical support for key stakeholders to promote and accelerate the implementation of BATs. All countries covered by the Project lack appropriate regulations relevant for the scope of the project and the baseline analysis noted relevant EU directives and regulations that could be transposed, which is particularly significant for Georgia and Ukraine given their application to join the EU. Further, all participating countries are lacking clear incentives to reduce wastewater and hazardous waste levels. Therefore, the Project will, through stakeholder engagement activities, identify policy and regulatory needs with the aim of strengthening the enabling environment. The dialogue will be accompanied with specific awareness raising activities and with the development of sound water, chemicals and waste management BATs.

74. During the full project preparation, opportunities to deploy BATs related to International Waters and Chemicals and Waste, in particular POPs, were explored, and analysis and feasibility studies were undertaken to identify specific investment opportunities. The Project's approach to identifying these opportunities ensures that several factors are considered including:

- (i) innovative sub-projects act as pilots for scale-up and replication of environmental initiatives related to waters, and chemicals and wastes within the region
- (ii) a range of sub-projects are supported to ensure that different case studies can be developed and learning accelerated
- (iii) pipeline of investments are at a suitable level of readiness to implement during the Project's lifetime
- (iv) strong rationale and need for concessional finance that is well articulated
- (v) avoid overlap and seek synergies with what other stakeholders are implementing to ensure efficiency.

As noted in the baseline analysis, Belarus has a pressing issue related to rehabilitation of WWTPs, Ukraine is a substantial nutrient polluter due to the extent of its agriculture, and both Georgia and Ukraine struggle with industrial waste, often containing POPs.

75. The EBRD has developed advanced operational approaches to scale-up GET investments, which target 40% of the Bank's total annual investments. The Project leverages the EBRD's experience in promoting sustainable energy technologies and private sector engagement to accelerate adoption of advanced environmental technologies and practices, and to provide a platform for sharing knowledge and bringing together relevant key stakeholders. In particular, the Project will leverage the EBRD's expertise in designing and implementing investment programmes, and will apply specific approaches deemed suitable to the participating countries, such as:

- Development of a regional investment programme, based on the model of FINTECC, which aims to accelerate the adoption of environmental technologies
- Implementation of investment projects across sectors such as municipal wastewater treatment, water-intensive industrial sectors, agribusiness and municipal infrastructure systems in their upgrade in water management and wastewater treatment capacity and chemicals and waste reduction
- Support of individual high impact investment projects, typically in the infrastructure, industrial or agribusiness sector focusing on wastewater treatment and recycling (as linked to water pollution).

76. From a financial perspective, the Project will complement the largely public-sector investments supported by projects such as the Investment Fund for Nutrient Reduction by using private sector and sub-sovereign delivery channels such as municipalities and utilities. Building on the extensive knowledge exchange and national regulatory frameworks that previous projects have developed, the Project will focus on catalysing local markets for environmental technologies and practices by addressing barriers experienced by these borrowers. To address the investment gap in water and POPs pollution described above, there is a critical need to enhance the role of the municipal and

private sector in the area of water, chemicals and waste management. A key focus of this Project will therefore be to enhance access to finance to support the implementation of water management measures in the Black Sea basin area, which is currently hindered by the administrative complexity of applying for and managing funds, lack of access to finance/appropriate financial instruments, misalignment of financing and planning processes, and missing capacity for the implementation of investments.

77. The Project seeks cooperation with various stakeholders, in particular the Black Sea Commission. The Project will ensure consistency with the Black Sea Strategic Action Plan priorities and work programmes, in particular by maintaining engagement with the Black Sea Commission Secretariat and its existing stakeholder engagement mechanisms, and drawing on Black Sea Commission information exchange platforms such as the Black Sea Information System. The Project will also ensure alignment with ongoing GEF projects and initiatives, including the GEF-funded, UN Environment-led MedProgramme and its Child Project led by the EBRD.

### 3.2 Project Objective and Outcomes

78. **Project Objective:** The Project will support investments addressing land-based and water based pollution, improve systems for water management in coastal hotspots, water and pollution management in the Black Sea drainage basin, and will aim to improve management of harmful chemicals and waste operations in the participating countries.
79. The project has one expected Project-level outcome: “Pollution reduced through investments in land and water based pollution control in the Black Sea basin”.

*Project objective:* The project will support investments addressing land-based and water-based pollution, improve systems for water management in coastal hotspots, water and pollution management in the Black Sea drainage basin, and will aim to improve management of harmful chemicals and waste operations in the participating countries.

Approach	Combine Technical Assistance and Investment to Private Sector, Governments and Local Institutions			
Outcome	Pollution reduced through investments in land and water based pollution control in the Black Sea basin			
Component	1: Targeted policy dialogue and stakeholder engagement	2: Implementation support	3: Financing to support accelerated deployment of environmental practices and technologies	4: Knowledge management and Monitoring and Evaluation
Outputs	1.1. Dialogue takes place on policy and regulation 1.2. Increased engagement of stakeholders for the adoption of BATs in water and POPs sectors	2.1. Implementation assistance provided for investments	3.1. Water reuse, pre-treatment and treatment within municipal and industrial sectors 3.2. Improved water management and nutrient pollution control through implementation of BATs 3.3. Implementation of POPs and hazardous waste BATs	4.1. Knowledge management systems in place and linked to relevant regional organizations to promote technology uptake 4.2. Monitoring and Evaluation
Financing Type	TA	TA	Investment	TA
Total budget	\$0.685m	1.565m	\$29.933m	\$0.300m
GEF Funding	\$235,000	\$715,000	\$4,683,105	\$150,000
EBRD Co-Finance	\$450,000	\$850,000	\$25,250,000	\$150,000

Figure 5. Project overview

### 3.3 Project Components and Outputs

80. The Project consists of four components addressing:

**Component 1:** Targeted policy dialogue and stakeholder engagement

**Component 2:** Implementation support

**Component 3:** Financing to support accelerated deployment of environmental practices and technologies

**Component 4:** Knowledge management and Monitoring and Evaluation.

Components 1, 2 and 4 consist of technical assistance, and Component 3 consists of investment. The components are described in more detail below.

#### Component 1: Targeted policy dialogue and stakeholder engagement

*(USD 250,000 from GEF for TA; USD 200,000 EBRD in-kind contribution and USD 250,000 grants))*

81. Component 1 focuses on policy dialogue to enable the uptake of BATs through supporting the development of relevant policies and associated guidelines related to water, chemicals and waste management in the Black Sea basin. This Component will also promote and accelerate awareness of the application of water and chemicals and waste BATs and guidelines. Two outputs are anticipated: (1.1) dialogue takes place on policy and regulation; (1.2) increased engagement of stakeholders to support the adoption of BATs in waste water and POPs-related sector.

##### *Output 1.1. Dialogue takes place on policy and regulation*

82. This Output addresses specific policy and regulatory gaps through facilitated dialogue that will (a) identify existing critical regulations linked to water, chemicals and waste; (b) propose options to address specific gaps; and (c) consider the role and possibilities of strengthening policy and regulation through enabling uptake of BATs and supportive guidelines.

83. This Output will cover engagement on policy and regulation in specifically related to opportunities to further reduce point and non-point pollution in the Black Sea basin as a consequence of the current water, and chemicals and waste management practices within the catchments.

84. As part of the stakeholder engagement activities, it is necessary to ensure equal opportunity and representation in line with EBRD and GEF policy.

85. Tentative activities include:

- Critical analysis of upcoming legislative and larger regulatory setting for the support of reduced land and water based pollution, specifically water, and chemicals and waste pollution. Development of options that address specific policy and regulatory gaps.
- Development of guidelines to support sound water, chemicals and waste management approaches in the Black Sea basin. Two guidelines will be developed and ready for implementation to address critical on the ground needs in pollution reduction, tentatively (i) water pollution prevention guideline and /or WWTP sludge management guideline and (ii) e-waste guidelines for solid waste management including for the municipal waste management sector (to ensure and support alignment with the EU Directive on WEEE).

##### *Output 1.2. Increased engagement of stakeholders to support the adoption of BATs in water and POP sectors*

86. Output 1.2 addresses engagement including awareness barriers associated with the adoption of BATs in water and POP sectors through increasing outreach and stakeholder support in participating countries. Outreach will be made to stakeholders within participating countries, on the sources and regional hotspots of land and water based pollution from current water, chemicals and waste practice, in addition to the possible range of solutions (including lessons learned and documented in Component 4).

87. Tentative activities include:

- Develop and provide awareness-enhancing information to increase stakeholder understanding, support and buy-in to pollution mitigation of water and POPs, through BATs. Sectoral focus may include, for example, municipal waste water treatment works; industrial onsite water efficiency, reuse and pre-treatment; nutrient load management at specific point source hotspots; and POPs collection, recovery and safe disposal.
- Information may be disbursed through events may be supported under Component 4 (e.g. interactive information and technology roadshows; display of digital material sharing application of new environmental technologies and practices; presentations by experts).

## **Component 2: Implementation support**

*(USD 715,000 from GEF for TA; USD 100,000 EBRD in-kind and USD 750,000 grant contributions)*

88. Component 2, with one output planned, seeks to provide technical assistance to ensure that the pipeline investments addressing water pollution and POPs are delivered effectively, and the project sponsors have the ability to manage the projects, and ensure their ongoing sustainable operation.

### *Output 2.1. Technical assistance provided during implementation*

89. EBRD's experience has shown the necessity of combining technical assistance and capacity building with investments to ensure their effective implementation and overall cost-effectiveness. The EBRD has significant experience in delivering technical assistance during the implementation of investment projects, and has developed a wide range of tools for implementation support.

90. Component 2 will support the implementation of the investment component (Component 3) via targeted technical assistance focused on bridging technical gaps between recommendations, project financing, implementation, and management of water resources, wastewater, and POPs. Specific deliverables of this Component are envisaged to include targeted investment cycle support provided for reduction of water pollution and POPs. Technical assistance assignments will be implemented through the engagement of specialised consultants supported by the EBRD's sector specialists.

91. Tentative activities, eligible for support from the GEF, will focus on provision of technical assistance for:

(a) project implementation support, particularly in the municipal sector, that may include, for example: assistance in environmental and social (E&S) aspects – including support in the development of Environment and Social Action Plans (ESAP); identification of gender market distortions (if any) and assistance supporting client to remedy procurement weaknesses regarding a non-level playing field for tenderers.

(b) environmental technology audits to identify specific technology investment opportunities; assessment of sector best practices and selection of BATs.

(c) social support programme development (especially related to waste water initiatives), including reviewing of the affordability constraints in the participating city relevant to municipal utility services as well as its practical implementation and assess whether vulnerable users are adequately supported; review the waste water company's know-how in identifying vulnerable users and its capacity to implement the welfare measures that are within its control<sup>19</sup>; and recommend improvements to support low income customers.

(d) support for design and implementation of a stakeholder participation programme (SPP).

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<sup>19</sup> The revision should include gender dimensions, especially when assessing the existing social support mechanism for low income customers and when assessing how the company makes use of it in terms of knowledge of its vulnerable customer base and its financial support needs.

(e) development of performance indicators; development of monitoring, reporting and verification plans for the enterprises; assistance in sustainability performance measurement and reporting.

**Component 3: Financing to support accelerated deployment of environmental practices and technologies**

*(USD 4,683,105 from GEF in grants; USD 25,000,000 EBRD loans and USD 250,000 in-kind contributions)*

92. The countries participating in this Project face common financial barriers of limited availability of suitable financial products, weak incentives, high transaction costs and lack in appropriate overall affordability related to international waters, and chemicals and waste investments. In response, this Component targets the adoption of environmentally sound BATs by providing investments that will achieve environmental impacts during the project lifetime while providing demonstrations and promoting scale-up in the region.
93. The GEF funds will be provided as investment grants blended with EBRD concessional loans. At least USD 25 million in investments are targeted to be mobilized for projects that address wastewater-related pollution reduction, and avoid or reduce POPs, resulting in investment projects implementing BATs addressing wastewater and POPs pollution.
94. The financing mechanism will be structured based on the EBRD's extensive experience in financing technology modernization and innovation, developing market-based mechanisms for the provision of services, leveraging private sector finance, and promoting the introduction of BAT.
95. The Project will focus on investments supporting demonstration and transfer of effective, innovative and environmentally safe technologies and practices. Therefore, the investments to be supported by the Project will meet criteria similar to those defined in other EBRD-led GEF-funded projects (such as FINTECC) including: quantified physical impact of the investment (water saved, water treated, POPs reduced, etc.); compliance of the sub-project with introduction of BATs; and potential to act as a pilot to promote a demonstration effect and replication potential of the supported BATs, among other criteria.
96. All of the investments supported under the Project will observe the principles of transition, sound banking and additionality as applied consistently across all EBRD investments. All EBRD investments are subject to a rigorous Transition Impact assessment, underpinned by a transparent and robust methodology for ensuring that EBRD investments are consistent with the Bank's mandate to foster the transition towards open market-oriented economies and to promote private and entrepreneurial initiative. As such, all EBRD investments are designed to avoid introducing distortions by positively influencing the structure and extent of markets, strengthening institutions and policies that support markets and promoting market-based behaviour patterns, skills and innovation. As is EBRD's consistent practice, the Project will adhere to relevant safeguards thereby ensuring that the Project overall and the individual sub-projects do not act as a market distorting mechanism. Activities under this Component will be coordinated to the extent feasible with relevant regional organisations such as the Black Sea Commission.
97. Table 4 summarizes the indicative pipeline of sub-projects that are suitable for inclusion in the Project. The de-identified information is provided so as not to prejudice negotiations with clients, and actual information has been used where available. The wastewater and irrigation sub-projects discharge either into the Dnieper River or the Lower Dniester.
98. Annex C provides additional detail on the tentative sub-projects, including on their estimated GEBs and financing. As this information is largely confidential, this Annex is provided with restricted access.

Table 4. Summary of indicative pipeline, including description, relevance to Black Sea, funding sources and requirements, and potential GEBs

	General Sub-Project Title	Short description	GEF FA	Sources Total (USD)	EBRD finance (USD)	GEF TC (USD)	GEF Capital Grant (USD)		% GEF	GEBs
							IW	C&W		
1a	Water Sector Framework: sub-project 1	Refurbishment and extension of the existing WWTP and improved pumping of wastewater from a factory. To reduce the heavy pollution load from industrial wastewater, the sub-project will include improved monitoring of industrial discharges by the utility and reduced pollution load of any wastewater being discharged untreated into the river.	IW	6,660,000	4,440,000	200,000	591,553	0	9%	5,840,000 m <sup>3</sup> / year treated water
1b	Water Sector Framework: sub-project 2	Construction of a new WWTP to increase the level of treated wastewater to the river and reduce the discharge of untreated wastewater from industrial users or leakage from septic tanks into the environment. The sub-project will ensure limited nutrient leakage and flood proofing of the system. There is a strong need for pre-treatment of industrial wastewater before it is being discharged into the municipal system. The sub-project will include the engagement of respective industry and measures for capacity building on improved water management practices as well as explore the opportunity for investments in pre-treatment technologies for industrial wastewater.	IW	4,440,000	3,330,000		591,553	0	13%	1,825,000 m <sup>3</sup> / year treated water
2	Agriculture Irrigation Project	The sub-project will pilot the reconstruction / restoration of the irrigation system, which will involve the reconstruction of the channel system to reduce uncontrolled agricultural runoff and improve irrigation efficiency. The sub-project will also reconstruct the main pump station, water distribution centre and ensure the installation of an automated control/accounting of electricity use and dispatch control system.	IW	25,000,000	24,250,000	200,000	500,000	0	2%	4,800,000 m <sup>3</sup> /year recycled / saved water
3	Hazardous Waste Project	The sub-project focuses on hazardous waste (HW) management infrastructure and may include (i) the construction of an EU compliant HW landfill(s), waste collection points and transfer stations. To improve environmental standards, the sub-project will also help to establish and ensure the financial sustainability of the HW management system. Examples of HW targeted include asbestos, chemicals, batteries, solvents, pesticides, oils (except edible ones), equipment containing ozone depleting substances, hazardous waste containers. The specific POPs content in respective hazardous waste will be assessed during due diligence, in particular with regard to handling of transformer/capacitor recycling, potential e-waste handling and related POPs reduction interventions.	C&W	15,000,000	13,500,000	250,000	0	1,250,000	8%	300 tons POPs associated with hazardous waste management and landfilling

	General Sub-Project Title	Short description	GEF FA	Sources Total (USD)	EBRD finance (USD)	GEF TC (USD)	GEF Capital Grant (USD)		% GEF	GEBs
4	Solid Waste Management Infrastructure Project with, e-waste element	The sub-projects will result in the creation of modern integrated SWM system (now nearly all the MSW collected is landfilled, without prior treatment or sorting. Activities may include installation of underground containers for collection of pre-separated waste; introduction of HW collection system by a specialized vehicle.	C&W	10,000,000	15,000,000			1,500,000	15%	POPs associated with e-waste handling (TBD)
5	Chemical Industry: Waste Logistics	Industrial eco-cleaning services are growing and there is increasing environmental hazard from leakage of untreated wastewater from cleaning processes. Sub-project will involve the construction and acquisition of cleaning equipment for new eco tank cleaning stations (ETCS) to meet growing demand as well as the modernisation, and expansion of the existing ETCS. The sub-project offers a safe and environmentally responsible cleaning and chemicals/wastes handling services to local and international industrial customers operating in the area. During due diligence, the specific impact of the treatment technology, discharge of effluents including presence of POPs, safe handling of chemicals, traffic management at and around the cleaning stations, and the expected compliance with national and BAT requirements will be assessed.	C&W / IW	2,664,000	1,554,000	100,000	0	350,000	13%	m3/ year treated water (TBD)  POPs associated with hazardous waste/toxic chemicals handling (TBD)
	<b>TOTAL</b>			<b>61,100,000</b>	<b>60,520,000</b>	<b>750,000</b>	<b>1,683,105</b>	<b>3,100,000</b>		

### *Output 3.1. Water reuse, pre- treatment and treatment within municipal and industrial sectors*

99. The participating countries face significant issues related to water pollution due to industrial point-source pollution including WWTPs and non-treated municipal water waste. Old and obsolete municipal and industrial water treatment facilities need robust reconstruction and upgrading to prevent further and possible additional pollution originating from these facilities. This Output will focus on rehabilitation of WWTPs, targeting only WWTPs that discharge into the Black Sea catchment area.
100. The Project will build on the EBRD's Sustainable Infrastructure Group (SIG) investment track record and support investments to rehabilitate or upgrade existing wastewater treatment plants, expand wastewater collection networks and increase the capacity of wastewater treatment.
- Possible technologies for the treatment of wastewater involve any process and/or disposal system, which, after discharge, allows the receiving waters to meet the relevant quality objectives defined in the appropriate legislative framework. Eligible investments will also include those which reduce pollution and those which avoid potential pollution. Within the EU, this legislative framework is comprised of Directive 91/271/EEC (related to urban wastewater) and Directive 2010/75/EU (related to industrial wastewater) on industrial emissions and the relevant provisions of these directives. There are a variety of different types of technologies which could meet these criteria. These are outlined as a broad range of categories: process-integrated techniques; wastewater pre-treatment; final wastewater treatment; sludge handling and disposal.
101. The tentative pipeline investments and their environmental benefits are presented in Annex C.

### *Output 3.2. Improved water management and nutrient pollution control*

102. This Output will support investments related to water management from agricultural activities. Significant agricultural production present the most severe issue in regard to Black Sea pollution: eutrophication caused by nutrient disposal is one of the key drivers of the Black Sea pollution, and agriculture is the main anthropogenic source of nutrient pollution<sup>20</sup>. During the stakeholder consultations process conducted as the part of the full project preparation, key stakeholders reiterated the importance of addressing agriculture-related pollution.
103. The Project's targeted investment in improved water management and nutrient pollution control involves infrastructure rehabilitation, in particular in the agricultural sector. The Project will address the rehabilitation of an old and inefficient large irrigation system by supporting the implementation of BAT mainly related to reduction of nutrient pollution and the introduction of sound environmental nutrient management.
104. The technologies to be supported will be in line with BAT as identified in relevant databases and lists of technologies (e.g. the EU BREFs developed as a supplement to the Integrated Pollution Prevention and Control (IPPC) Directive). In cases where no recognised internal or external sources exist, the responsibility for establishing eligibility will be shared by the relevant department of the Bank (E2C2, EPG, ESD and the relevant Banking teams).
105. The tentative pipeline investments and their environmental benefits are presented in Annex C.

### *Output 3.3. Implementation of BATs to address POPs and hazardous waste*

106. Investments under this Output will lead to the environmentally sound management of hazardous waste; and decrease POPs in particular related to e-waste via a transition to environmentally sound waste management.

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<sup>20</sup> accounting for 80% of nutrient pollution, compared to 15% for wastewater according to Borysova et al (2015)



107. Ultimately, Project activities should lead to a reduction of land-based pollutants to the Black Sea through the disposal and avoidance of their release into the environment of POPs in line with the Chemicals and Waste focal area objective CW 1-1 to “strengthen the sound management of industrial chemicals and their waste through better control, and reduction and/or elimination”. The POPs investments are considered innovative, as during project development few examples of such pilots exist in the region that focus on hazardous waste management or on addressing e-waste as it pertains to solid waste management and POPs. As this is the first time that e-waste POPs are being addressed, the Project is deliberately trying diverse approaches with provision of technical support (demonstration of alternatives, support to modifying production processes), using procurement as a lever for change. The technologies to be supported will be in line with BATs in relevant databases and lists of technologies.
108. The tentative pipeline investments and their environmental benefits are presented in Annex C.

#### **Component 4: Knowledge management and Monitoring and Evaluation**

*(USD 150,000 requested from GEF as TA; USD 150,000 EBRD in-kind contribution)*

109. Component 4 supports knowledge sharing to accelerate the promotion of Components 1 to 3 through networking, exchange and visibility activities. Two Outputs are planned: (a) knowledge management systems in place and linked with relevant regional organizations and projects to promote technology uptake; and (b) monitoring and evaluating the Project, through collection of results via monitoring exercises and associated reporting. This supports systems of accountability and transparency, in addition to furthering opportunities for Project stakeholder engagement.

*Output 4.1. Knowledge management systems in place and linked to relevant regional organizations to promote technology uptake*

110. The Project approach, and environmental technology and practice results, will be shared as part of a knowledge management system, through existing platforms, e.g. FINTECC and the GEF’s International Waters Learning Exchange and Resource Network (IW:LEARN)<sup>21</sup>; regional organizations e.g. BSC; and other relevant projects e.g. GEF-UNEP ‘Towards an International Nutrient Management System’ and others noted in Annex G. Beneficiaries and audiences are numerous and many non-direct however, in general, knowledge sharing may include: stakeholders within Belarus, Georgia and Ukraine (public sector, industry sector, NGOs, academic researchers), policy makers, industry associations, partner projects, general public, EBRD donors, other Black Sea countries in the region, similar shared basin/ sea/catchment projects globally.
111. The type of knowledge covered by this Output seeks to promote BAT uptake as a preventative and mitigation solution towards improved water, chemical and waste management. Linked closely to awareness activities under Component 1, the ultimate objective is to generate information and consciousness, encourage transboundary cooperation, scale up needed investments and raise general awareness about the benefits arising from good governance and management of natural resources. This may lead to fostering a broader culture of learning, cooperation and environmental sustainability in the region.
112. Tentative activities include:
- Case Study preparation: Case studies will be developed, either at the level of the investment, and/or on relevant themes with content showcasing the projects and lessons learned. The case studies will demonstrate impact, best practices, and investment of successful environmental technologies and practice success stories. Case Studies will largely be developed for dissemination and downloading from Internet-based knowledge management platforms such as the BSC or FINTECC, however may be published upon demand and distributed in hardcopy through relevant venues or associations.

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<sup>21</sup> In alignment with GEF requirements, 1% Project budget is allocated towards IW:LEARN initiative.

- Generation of web-ready information: Web-ready information will be prepared to share the Project approach, updates, environmental technologies or practices introduced, outputs, and outcomes and lessons. This information will be distributed through knowledge platforms, communication and media channels of organizations such as the BSC and specifically through IW:LEARN's Learning and Exchange Service Centre.
- Development of a collaborative network of stakeholders equipping them with necessary information and communication opportunities and leveraging Project results with intended beneficiaries and audiences. Effort will be made to use existing networks and structures to ensure efficiency.
- Presentation at IW:LEARN event: Event participation by a Project representative will share and accelerate promotion of the Project's results, support synergies between industry associations in countries and across the region, , network, possibly forge collaborations beyond the timeline of the Project, and develop relationships with sub-projects/clients and existing networks with the purpose to spread replicable information.

#### *Output 4.2. Monitoring and Evaluation*

113. Annual reviews, a Mid-Term Review (MTR), and Terminal Evaluation (TE) will provide the basis for a system of accountability to EBRD managers and to the GEF. Results will be tracked against the Project Results Framework (see Annex A). The Monitoring and Evaluation activities will be carried out in alignment with GEF standards and made useful for internal EBRD reporting. Annual reports and periodic reports on implementation of the Project and key indicators of progress made will be prepared and distributed to key stakeholders and agencies.
114. The MTR will be carried out near the mid-term of the project and have two basic objectives: (i) to assess the results and impacts, both intended and otherwise, of the Project (accountability function), and (ii) to determine whether there are lessons to be learned from past experience to make future operations better, thereby contributing to 'institutional memory' (lessons learned or quality management orientation). Additionally, the MTR will be useful in identifying areas where improvements could be made, and to improve the effectiveness of results and impacts.
115. The TE will be conducted three to six months prior to the end of the project and has similar basic objectives as the MTR. The TE will look at the impact and sustainability of results, including the contribution to the capacity development and the achievement of global environmental benefits goals. This evaluation will also provide recommendations for follow-up activities.

### **3.4 Project Financing**

116. The Project is financed by the GEF Trust Fund under the International Waters, and Chemicals and Waste focal areas and by the EBRD, as described in the following sections. The total project funding is USD 32,933,105, combining GEF and EBRD co-financing and excluding fees. Table 5 provides the breakdown of financing by project components and sources, as well as the type of financing.

Table 5. Breakdown of project components and sources of financing

Project Component	in USD			
	GEF project financing	Type of financing	EBRD financing	Type of co-financing
Component 1: Targeted policy dialogue and stakeholder engagement	235,000	TA	450,000	In-kind, grants
Component 2: Implementation support	715,000	TA	850,000	In-kind, grants
Component 3: Financing to support accelerated deployment of environmental practices and technologies	4,683,105	INV	25,250,000	Loan, in-kind
Component 4: Knowledge management and Monitoring and Evaluation	150,000	TA	150,000	In-kind
Project management	150,000		300,000	In-kind
<b>TOTAL:</b>	<b>5,933,105</b>		<b>27,000,000</b>	

### 3.4.1 EBRD financing

117. The EBRD will provide the following financing, which will co-finance the GEF funding:

- USD 25,000,000 for direct financing of water and POPs investments. There will also be leveraged co-financing from public and private sector project sponsors as a result of the investments. This additional co-financing has not been included in the official co-financing targeted as it would be secured during Project implementation.
- USD 1,000,000 grant funding through the EBRD's Technical Cooperation Fund Programme
- USD 1,000,000 in-kind that includes staff costs associated with Project-linked activities and includes the overall cost of EBRD staff directly working on the development, implementation and promotion of the Project, including: (i) additional work required by bankers to develop transactions with international waters and POPs impacts (engagement with the clients and further development and internal approval of the technology aspect of the transactions); (ii) costs for staff and operations supporting the Project (legal support, fund management, processes, internal approval processes and establishment of internal Project structure, application of financing mechanism criteria and monitoring of the project); (iii) activities associated with external promotion such as sourcing information for marketing materials, collecting relevant information from sub-projects to be disseminated, and participation in external events to promote the Project.

### 3.4.2 Cost effectiveness

118. The cost effectiveness of the approaches used in this Project stems from the substantial co-financing and investment contributions from public and private sector, and by the market-oriented approach used. The GEF contribution of USD 5,933,105 will leverage an additional USD 27,000,000 in investment and technical assistance from EBRD, plus additional equity financing; representing a minimum leverage of 1:4.55.

119. Cost effectiveness will be ensured at each stage of implementation by the adoption of tender-based procurement for all activities, and within investments, and through the policy dialogue and knowledge management activities (Components 1 and 4), which will facilitate the implementation of harmonized approaches and reduce duplication of efforts, thus maximizing the impact of investments. In addition, the multifocal nature of the project will maximize the impact of GEF

resources that, if invested through separate initiatives, could result in the delivery of more limited environmental benefits.

### **3.5 Incrementality and Additionality**

120. The Project is entirely additional; without the provision of GEF funds in the form of the financing types requested, the barriers identified in section 2.3 would not be overcome. In the baseline scenario there is a material risk of delay in investments and adoption of relevant technologies with GEBs, and reduced leverage of private capital mobilization for new technologies.
121. In the absence of transformational and rapid change in awareness and visibility, knowledge of BATs to address the environmental issues will remain low. This will be further compounded by the continued lack of financial and specialist capacity for businesses to undertake feasibility studies to better understand the opportunities and risks of deploying innovative environmental technologies and practices.
122. Global and multilateral regulatory frameworks will continue to evolve, however implementation of water management and environmental technology frameworks will continue to be hindered by insufficient regulatory incentives to promote compliance. Without strong regulatory incentives (or threats of future incentives), companies and public sector agencies will continue to face challenges in mobilizing the necessary funds to meet EU and international standards. These challenges apply to the achievement of water and POPs reduction objectives.
123. Further, without GEF support, the existing waste treatment facilities will further deteriorate thereby increase the waste load to the Black Sea. GEF funds are required to mobilise investment in BATs. In particular, without GEF funds it is not possible to ensure efficient technology transfer and its replication throughout participating countries and the region.
124. Nutrient and POPs pollution is exacerbated by continued use of conventional practices. The GEF funds will ensure capacity building and implementation of BATs and thereby reduction in waste load into the water ways. Without GEF funds it is highly unlikely that capacity on BATs implementation would occur.
125. The Project will accelerate transformation of the market, disseminating relevant information and increasing awareness and absorption capacity of businesses for deployment of relevant technologies and risks associated with being 'late-adopters' of technologies with global environmental benefits. The Project will also aim to support deployment of technologies which would otherwise be viewed as too risky due to lack of demonstration projects in the region.
126. Ultimately, the GEF's support will be critical in ensuring large-scale investments in pollution reduction due to two main factors:
- (i) Increased awareness and understanding among stakeholders of the environmental and financial aspects of pollution control will allow for more effective governance (by national and municipal authorities) and decision-making by investing entities (by industries and municipalities). Active identification of potential project investments will also be critical for this understanding – as will sharing of information between countries.
  - (ii) Investment will be critical for implementation of the promoted technologies and techniques. Without incentives, activities would be implemented with technologies and techniques that lag behind best international practice, resulting in companies being locked into resource inefficiencies and higher levels of pollution.

### **3.6 Global Environmental Benefits**

127. This Project is expected to have a positive environmental impact on the Black Sea basin. It will lead to the upgrade of wastewater and irrigation systems discharging directly or indirectly

into the Black Sea. The Project will also eliminate or reduce POPs, preventing their release into the environment.

128. Table 6 summarizes the anticipated GEBs from the Project. Annex C provides details on the tentative pipeline's GEBs and their calculations.

*Table 6. Summary of GEBs*

<b>Focal Area</b>	<b>Indicative pipeline sub-project</b>	<b>Indicative GEBs</b>
International Waters	Water Sector Framework: sub-project 1 and 2	1.8 to 7.6 million m <sup>3</sup> /year treated water (per sub-project)
	Agricultural Irrigation Project	4.8 million m <sup>3</sup> /year recycled / reduced water
Chemicals and Waste	Hazardous Waste Project	300 tons POPs associated with hazardous waste management and landfilling
	Solid Waste Management Infrastructure Project with, e-waste element	annual amount of e-waste recovered, utilised, recycled and/or disposed of appropriately (in EU-compliant disposal facility) – TBD
Multi-focal Area	Chemical Industry: Waste Logistics	reduction in discharge of untreated wastewater (m <sup>3</sup> /year) – TBD; tons POPs or TEQs to be determined

129. Regarding POPs calculations in particular, while there is no guidance or accepted methodology from the Stockholm Convention and the GEF on calculating the contribution of prevention of POPs toward global targets, the Project has estimated the reduction in Annex C. The total tonnes of POPs is considered a conservative but achievable figure comprising avoidance due to hazardous waste management and disposing of e-waste. With support of PPG resources, work is continuing on development of an approach and calculations for e-waste related POPs GEBs and will be included as part of the e-waste management guidelines developed under Component 1. In addition, the estimated reduction of POPs related to the waste logistics sub-project focused on the chemicals industry is being developed.

130. The project will also realize additional GEBs related to climate change mitigation, with an anticipated 16,000 tonnes of CO<sub>2</sub>eq reduced per year associated with the water sector framework sub-projects.

### ***3.7 Innovativeness, Sustainability and Potential for Scaling-up***

#### **3.7.1 Innovation**

131. The introduction of BATs related to water, chemicals and waste management in Belarus, Georgia and Ukraine to improve the Black Sea basin is core to the Project's objective and design. The Project will focus on introducing and accelerating investment in BATs with the intent to demonstrate how new investments support the reduction of land and water based pollution entering the Black Sea basin.

132. In identifying project opportunities, innovations will be selected to cover a range of categories addressing water and chemicals pollution entering the Black Sea basin:

- Under Component 1, these include identifying context specific policy and regulatory gaps with key stakeholders and to overcome these gaps through development of innovative guidelines supportive of BAT uptake e.g. water management or sludge management guideline.

- Under Component 2, innovations are focused on provision of technical assistance that create an enabling environment for sound technology uptake and implementation of best practice that facilitate pollution mitigation. This may include assistance in identifying context specific infrastructure and operation of that infrastructure, e.g. wastewater treatment facility or irrigation systems management.
  - Under Component 3, these may include but are not limited to: process-integrated techniques; recovery of pollutants at source; collection, handling and management systems for chemicals and waste including e-waste streams; and wastewater pre-treatment and final wastewater treatment.
  - Under Component 4, these include knowledge sharing to raise understanding via innovative case studies.
133. Overall, participating private sector companies and public sector utilities will expect to decrease their environmental footprint, increase resource use efficiency, meet or surpass local policy regulations, and showcase uptake of innovative BATs with sharing of results to external and global audiences.

### **3.7.2 Sustainability**

134. To ensure sustainable impact, the Project is closely aligned with national priorities, in particular: Water Strategy of the Republic of Belarus by 2020, Persistent Organic Pollutants National Implementation Plan of Georgia, Georgia's National Waste Management Strategy (2016-2030), Georgia's National Waste Management Action Plan (2016-2020), and the Strategy of national ecological policy of Ukraine until 2020. Policy gaps that hinder investment in BATs for water and chemicals and waste pollution will also be identified and addressed, thereby strengthening existing policy.
135. The Project will also ensure sustainability by actively coordinating with ongoing initiatives, governmental and where appropriate, regional programs including 'Towards and International Nutrient Management System'; 'EMBLAS-Plus'; 'Black Sea Integrated Monitoring and Assessment Programme'; 'Black Sea Synergy; and shared basin projects through 'IW:Learn'.
136. By incorporating approaches and lessons learned into existing initiatives, especially those with low visibility, it is possible to better engage local economic actors and gain traction for investments mitigating water and chemicals pollution. Sustainable impacts will result from where investment has occurred, both at Project sites and indirectly through scaling up to other sites on a country-by-country basis.
137. The Project will improve the sustainability of the water, chemicals and waste management within the private and public sector by adding value in the form of innovative BATs. Increased water, chemicals and waste treatment and pollution prevention will improve the Black Sea basin water quality and lifeforms it supports, in addition to associated socio-economic benefits. This will undoubtedly lead to a sustainable change.
138. These investments are long-term commitments that are sustainable investments leading to sustainable change with lasting impacts. For example, in implementing Component 3, investment in infrastructure or systems architecture, such as a water efficient irrigation system, or a chemicals collection and management system, is a sizeable investment leading to fundamental change in pollution loads to the Black Sea basin.

### **3.7.3 Scaling-up**

139. A focus on scaling-up is embedded in the Project's design, which fundamentally seeks transformation through supporting the uptake of BATs in the three target countries. In providing

clear guidance through Component 1, scale can be achieved better aligning BATs with context specific water, chemical and waste pollution needs.

140. Component 2 provides technical assistance to competently operate and apply infrastructure, equipment, methods and practice which is critical to scalability. The provision of technical assistance within the three target countries will allow the development of technical skills that could support scaling up BATs implementation (e.g., government or industry investment in activities may result from the EBRDs initial investment leading to greater knowledge in combating water and chemical pollution) as will development of specific methodologies, practices or technologies (e.g. drip irrigation combatting agricultural run-off may appeal to the broader agricultural sector and be scaled through farming cooperatives or industry groups).
141. Scaling-up is also a result of replicability of BAT solutions applied. For example, retrofitting or refurbishing a degraded waste water facility is highly replicable for any private and/or public organisations lacking current resources for new builds. Scaling a retrofit offers a good solution to pollution mitigation and fit-for purpose investment on implementation, as supported by Component 3.
142. To support scaling up, through Component 4, the Project invests in knowledge management and will actively encourage the sharing of information and best practices across sectors, in addition to the development of user-friendly case studies and event participation. These case studies and other web-ready Project related material will support visibility and promotional opportunities, and be made available during and after the Project ends, both online and with a regional entity to ensure availability post-Project.

## 4 RATIONALE FOR THE BANK'S INVOLVEMENT

### 4.1 Fit with the EBRD

143. **Operational principles:** The EBRD shapes its strategy and operations around innovative ways of providing financing and reducing risk, in a manner sensitive to the different stages of transition towards establishing a market economy of each country. For each of its CoO, the EBRD prepares five-year cycle “country strategies” that take into consideration the six Transition Qualities.<sup>22</sup> The EBRD’s new broader transition concept argues that a well-functioning market economy should be more than just a set of markets; it should be competitive, inclusive, well-governed, environmentally friendly, resilient and integrated. Linked with these six Transition Qualities, the country strategies set out priorities for the Bank’s operations for the duration of the strategy. The priorities are determined based on country diagnostics and set together by the economists, political counsellors, EBRD’s country offices and consulted with the relevant government officials.
144. **Country strategies:** The country strategies of Belarus, Georgia and Ukraine outline the strategic directions and relevant priorities on the environment (summarized in Table 7).

*Table 7. EBRD country strategy objectives for the countries involved in the Project*

Country	Approved	Strategic Directions
Belarus	approved by the Board of Directors on 7 September 2016	<ul style="list-style-type: none"> <li>• Improve efficiency, quality and sustainability of infrastructure and utilities the Bank’s involvement in the Municipal and Environmental Infrastructure will promote better quality and efficiency of essential municipal services, improve public health and reduce watercourse pollution.</li> <li>• Support utility companies’ institutional strengthening leading to improved operational and environmental sustainability.</li> <li>• Improve the environment and energy efficiency in the EU Eastern</li> </ul>

<sup>22</sup> <https://www.ebrd.com/our-values/transition.htm>

Country	Approved	Strategic Directions
		Partnership countries
<b>Georgia</b>	approved by the Board of Directors on 14 December 2016	<ul style="list-style-type: none"> <li>• Support institutional and technical measures leading to the efficient use of water resources alongside upgrades of infrastructure, equipment and practices in sensitive sectors such as power generation, agribusiness and water-related services including irrigation.</li> <li>• Support implementation of EU directives related to waste management and emissions in manufacturing and services, as well as on municipal and</li> <li>• Environmental infrastructure projects. Implementation of these EU directives is expected to present some challenges and technical cooperation will have to be considered to assist Georgia at project or national level through capacity building and institutional strengthening.</li> </ul>
<b>Ukraine</b>	approved by the Board of Directors on 3 October 2018	<ul style="list-style-type: none"> <li>• Work with existing and new clients to monitor environmental and social performance TC support is needed to improve ambient environment and industrial pollution monitoring standards and practices.</li> <li>• Support development and implementation of the sustainable management and biodiversity conservation practices in agriculture, forestry and irrigation projects.</li> </ul>

145. **EBRD approach to green financing.** The Project is aligned with the GET approach of the EBRD, which was launched in 2015 to put investments that bring environmental benefits at the heart of its mandate – going beyond climate change to address a wider range of environmental issues. Preserving and improving the environment are central features of a modern, well-functioning market economy and therefore key goals of the transition process. One of the GET mandates' objectives is to support investments whose primary purpose is the prevention of pollution or remediation of damage to ecosystems. This includes bringing new technologies and practices into the market by increasing the uptake of advanced solutions that have a potential to mitigate the forms of environmental degradation caused by land-based pollution.
146. **EBRD experience in green technology transfer.** The EBRD is a major player in green technology transfer in the region through its FINTECC Programme. FINTECC has already achieved great success in leveraging GEF and EBRD Special Shareholder Fund resources to result in investments in numerous innovative climate technologies in its target countries: so far, a total investment of about USD 640 million has been mobilised with around USD 10 million of grants, resulting in 130,000 tons of CO<sub>2</sub> reduced annually. Climate technologies supported include energy, water and material efficient technologies across the corporate sector (industry, agriculture and the built environment). Complementary to this, FINTECC has supported various policy dialogue activities and capacity building efforts for experts in the targeted countries.
147. **Environment & Social Safeguarding:** The EBRD takes a proactive and integrated approach to safeguards by assessing the environmental and social impacts of projects invested in, and works with partners to achieve good international standards. During an investment's inception the EBRD scopes, identifies and develops mitigation approaches and management plans, as required and appropriate. The E&S management plan forms the basis of EBRD's E&S risk assessment & safeguarding mechanism to ensure best practice considerations are mainstreamed within the project.



## 4.2 Risks

148. Table 8 summarizes risks, including climate change, potential social and environmental risks that might prevent achievement of the Project objectives, and the proposed measures to address these risks during project implementation.

*Table 8. Risks, ratings and mitigations*

Risks	Rating		Description	Mitigation approach
	Probability	Impact		
Macro-economic and political risk	Medium	High	<p>Political (low government commitment) and macroeconomic (instability in participating countries) risk can impact the technology transfer policy environment and, in a more severe case, national priorities and market conditions. In the three project countries the macroeconomic and political risks are assessed as 'medium'.</p> <p>From a macroeconomic standpoint assuming political continuity, the countries are expected to grow steadily in the coming years with EBRD's forecasts of 1.8% for 2020 for Belarus, 3.0% for Ukraine and 4.5% for Georgia.</p>	The Project will address this risk by ensuring that investments are made based on sound financial criteria. It will also work in the policy context to help to ensure government support for the sector. Since the project activities cover three countries, this to some extent mitigates the risk of a single-country approach. Additionally, within the countries, it is expected that sub-national counterparts will be involved in investment decisions and – where appropriate – policy development.
Regional cooperation risk	Low	Low	The Project requires input from a range of stakeholders to reach its targets, and is therefore dependent on cooperation, and support of the Project and its activities. The Project has been designed to ensure that, while the impacts and knowledge management are regional, the proposed investments do not cross country borders. This reduces the risk probability and impact significantly.	The project team will monitor this factor and adjust regional activities related to knowledge sharing as necessary.
Technology risk	Low	High	This risk relates to inappropriate technologies being chosen and / or implemented, or that the technologies could fail during implementation. The risk is considered low, since only BATs will be eligible for financing. If there were a technology failure the impact would be high. This risk is linked to the barrier on capacity for planning and implementation of projects.	While the technologies are expected to be innovative for the region and target countries, the EBRD will only invest in technologies which are mature in the markets in more advanced countries. Technical assistance will be provided throughout the Project to ensure appropriate implementation of technologic solutions.
Financial risk	Low	Medium	This is a low-level risk that will be mitigated by conditionalities of the EBRD's financing mechanism and technical support as a component	As an IFI, the EBRD operates extensive risk assessments of all its transactions covering, credit,

Risks	Rating		Description	Mitigation approach
	Probability	Impact		
			of Project implementation. Impact is a medium level since in many cases the project impacts would still be delivered despite poor financial performance.	economic, environmental, implementation, legal, market, technological and integrity risks. All investment projects that will be financed through this Project will be subject to standard EBRD approval procedures.
Climate change risk	Medium	Medium	<p>The primary potential climate risks are in the water sector and include:</p> <ul style="list-style-type: none"> <li>• Lack of water availability which could lead to problems in wastewater treatment / effluent management.</li> <li>• Flooding and other extreme climatic events which could overwhelm wastewater and irrigation infrastructure.</li> </ul> <p>Waste management systems (solid waste, hazardous waste) and their collection and handling systems may also be impacted.</p>	The Project will integrate climate risks within the investments supported under the Project. The investments will be identified and developed with the consideration of climate risks, and will therefore respond to potential climate change impacts. Further, the increased reuse of water may be considered a climate resilience measure.
Environmental risk	Medium	Medium	Addressing environmental risk from pollution is one of the main drivers of the Project. Environmental risks such as high rainfall events, droughts, etc. (which are somewhat linked to climate risk) could also potentially pose a risk to the investments that will be delivered (see above).	As with climate risk, the investments will take into account various environmental risks as part of the ESAPs developed.
Implementation Risk	Medium	High	This risk relates to both technological risk and capacity barriers. The risk involves inappropriate implementation / O&M of specific technical solutions either from the management side of the companies involved or from the technical implementation side.	Project implementation risk will be mitigated by the EBRD's extensive experience in the Region and close working relationships with in-country partners. This will include ongoing technical assistance to companies implementing projects supported by the Project to ensure that technologies and practices are implemented and monitored effectively.

### 4.3 Socio-economic Benefits

149. The Project will deliver a range of social and environmental benefits associated with reduced land-based and water-based pollution, via water and pollution management (chemicals and waste)

in the Black Sea basin. Among these benefits are improved quality of seawater, reduced human health risks, restored freshwater resources, habitats and ecosystems and the aquatic flora and fauna they support, in addition to the possibility of increased industrial and recreational fishing, and increased tourism opportunities.

150. It is expected that the implementation of BATs will lead to Black Sea basin water quality and visual quality enhancements, in addition to river quality improvements further up-stream and up-catchment, where environmentally sound technology or practices have been adopted, thereby improving a wider area of the region.
151. Local skills and technical ability is another socio-economic benefit resulting from the provision by the EBRD of technical assistance for the uptake of context specific BATs in the three target countries.
152. Additionally, the Project will deliver associated benefits with improved resilience to the expected impacts of climate change – notably as relates to water availability (via resource and efficiency gains through increased reuse of water resources). The assessment of potential impacts of climate changes in the Black Sea basin revealed water stress in some areas, with those facing the prospect of reduced rainfall leading to water shortages, rising temperatures, rising sea level and coastal erosion changes, largely due to anthropogenic pressure on the basin environment. Where possible, the Project will identify and actively integrate climate change risks within the environmental investments and technological developments to mitigate negative impacts of climate change, reduce basin vulnerability, and improve the resilience of economy and local businesses.
153. The Project is anticipated to produce, where possible, other co-benefits consistent with the EBRD’s mandate to support transition. This includes acknowledging gender differences and improvements starting with tracking Project participation by gender. Collection of this type of social data provides input for transition towards equal opportunity.

#### **4.4 Gender**

154. Gender inclusion and responsiveness in the EBRD projects has become increasingly important as a means of transitioning towards improved representation, equal opportunity and project sustainability. A gender landscape study examining the three target countries, in addition to a Gender Action Plan (GAP) focused on the Project design, is provided in Annex D. The analysis examines how differences in gender norms, roles, activities, needs and power structure affects women and men in the target countries and discusses implications for the Project design. High level results show all countries differ in their extent of gender inclusiveness and equality<sup>23</sup>. All countries, however, have programs and initiatives in place to address the gender gap and, along with EBRD’s commitment to its “Strategy for the Promotion of Gender Equality 2016 – 2020,” will ensure that the Project is closer aligned to gender equality.
155. EBRD’s Gender Strategy is supported by a clear theory of change focused on ‘Equality of Economic Opportunity’, and points to three key objectives of:
  - Increased access to finance and business support for women-led businesses;
  - Increased access to employment and opportunities and skills for women; and
  - Improved access to services.
156. These objectives are essentially addressing deep-rooted structural barriers denying women in particular: participation in, contribution to, and receiving enhanced benefits of, the local economy. EBRD applies these three objectives to the Black Sea basin water chemicals and waste Project, by tracking gender across the Project components as described in the GAP (Annex D), taking into

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<sup>23</sup> For example, Belarus has a high level of women’s economic and political participation, Georgia’s ranking in the World Economic Forum Global Gender Gap Index has steadily deteriorated over the past 10 years now occupying 99<sup>th</sup> place out of 149 countries, and gender asymmetry is highly apparent in the Ukraine as shown by various gender indicators.

account local context and opportunity. The EBRD considers gender issues as key, and considers tracking participation by gender as a first step towards improvement in gender discrimination.

## 5 PROJECT MANAGEMENT, AND MONITORING AND EVALUATION

### 5.1 Project Management Structure

157. The Project's implementation structure, presented in Figure 6, will be integrated into the existing structures of the Bank, which has an ongoing management team for the climate and resilience funds.
158. **Project Leaders** – The Project will be led by the banking teams in the regional office (RO) in Ukraine as well as local offices in Belarus and Georgia, and supported by the banking teams located in EBRD's headquarters (specifically the SIG) and by the Energy Efficiency and Climate Change (E2C2) team. Responsibilities of the Project Leaders include the origination of investment projects, management of the internal approval process, management of the consultants and their work (including leading the procurement of consultants, with support of Project Management Team), and oversight on the overall Project implementation, as well as the monitoring and reporting of the progress.
159. The Environmental and Sustainability Department (ESD) and the Gender team, both located in headquarters, will also support the activities and advise on reporting.
160. **Project Management Team (PMT)** – The PMT will be composed of a project manager with additional sectoral experts mobilised as appropriate for the implementation of the Project Components. Those experts will be selected based on their experience in supporting and implementing environmental projects and policy dialogue initiatives related to coastal and marine pollution, environmental technologies and sustainable water resources management. The responsibilities of the PMT include primarily providing input into the ToR for Consultants, participation in consultant selection, assistance in the review of the content and quality of outputs provided by consultants, assistance to consultants with identifying key stakeholders and participation in key meetings in the Region. The PMT will also engage with and draw on other units within the EBRD if the need arises – such as experts from Legal Transition Team, Communication Department, and others. The Project Team will meet at Project kick-off and then liaise regularly and as and when needed.
161. **Investment Project Management** – Investment projects will be generated by bankers located in Belarus, Georgia and Ukraine, with technical support from E2C2 experts and through the work of consultants. The verification of investments will be done by international consultants and reported back to EBRD for review upon implementation of the investments. The Project Leader will continuously monitor the pipeline of projects. Individual investment projects will have a separate team structure created to comply with EBRD internal approval procedures. These teams will involve experts from Credit, Environment and Sustainability Department, Economics, Policy and Governance (EPG) department, Legal Department, Banking, etc.
162. **Coordination with external stakeholders** – Coordination with public institutions and non-governmental initiatives focusing on environmental technologies and land-based pollution of coastal areas will involve continued communication and networking with all relevant stakeholders, bilateral counterparts and international agencies working on environmental technology transfer. The EBRD will ensure full coordination with existing initiatives in the Region in order to leverage their resources and support the key outputs of the Project. The EBRD will work closely with the BSC that is acting on the mandate of the Black Sea countries (Bulgaria, Georgia, Romania, Russian Federation, Turkey and Ukraine) which signed and ratified the Convention on the Protection of the Black Sea Against Pollution, the Commission implements the provisions of the Convention and the Black Sea Strategic Action Plan.

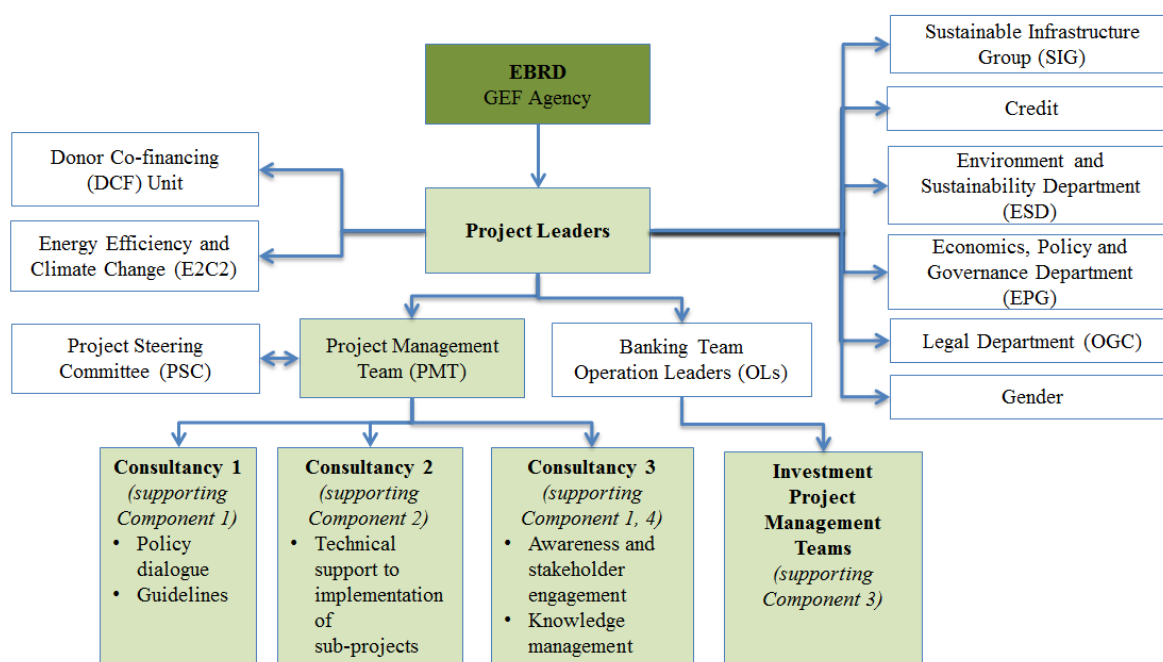


Figure 6. EBRD's Project implementation structure

163. **Project Steering Committee** – A Project Steering Committee (PSC) will be established to support the project. The primary roles of the PSC are: (1) to provide input to the execution of the Project; (2) to ensure good coordination among participating agencies and other organizations; (3) to promote the project within participating countries, including the financing programme and other aspects of the Project; and (4) to ensure that key stakeholders are kept informed of the Project's results.
164. The PSC will meet on an annual basis. PSC members may be called upon on an ad hoc basis to provide input. The PSC will be led by the EBRD and will include representatives from relevant national government and other relevant organisations.

## 5.2 Consultancies

165. The Project will be implemented in combination with a series of consultancies. Due to the specificity of tasks to be undertaken, the Project activities will be either delivered by a consortium of companies or will be split into distinct tasks.
166. At least three consultancies are anticipated focused on delivering: (1) policy dialogue and development of guidelines; (2) sub-project implementation support; and (3) stakeholder awareness and knowledge management support.
167. In addition, the EBRD may consider cooperating with other partners for some elements of project execution, in line with specific needs as they emerge consistent with enabling high quality project and investment delivery. While specific needs and associated roles are subject to emerging needs of the Project's investments, the EBRD may enter into more formalised strategic alliances such as through a Memorandum of Understanding or Framework Agreement to enable exploitation of synergy effects related to effectively supporting the specialized nature of the Chemicals and Waste, and International Waters activities. With establishing such partnerships, the Project will also look for opportunities for cost savings and efficiencies. The EBRD will maintain supervisory and monitoring responsibilities overall Project activities regardless of the specialized agencies that could be brought in, to support execution.

### 5.3 Stakeholder Engagement

168. Key stakeholder groups will be actively engaged during Project implementation. Project stakeholders that have already been engaged during Project design are summarized in Annex I. In addition, a detailed Stakeholder Engagement Plan outlining relevant roles and consultations during the project implementation.
169. **National and local public sector entities** – Engagement with relevant national governments and national and local public sector entities is considered critical for scaling-up investments in BATs mitigating pollution entering the basin. This will include each country's GEF focal points who will be engaged at a programmatic level. The EBRD has already established links with governments in its CoOs, and will continue to foster these relationships through policy dialogue related to the Project.
170. **Private sector** – The private sector is a key category of stakeholder from whom participation and benefits will be secured. Private enterprises will play a key role in developing and implementing projects, and will benefit directly from financing. The private sector values the EBRD's role in technology transfer and water, chemical and waste investments, and looks to continue to partner in the areas of other environmental techniques. The EBRD is committed to continuing the building up of private and public-private partnerships to promote the adoption of BAT.
171. **Publicly owned enterprises** – One of the key potential beneficiaries of the Project will be publicly owned enterprises such as WWTPs, water distribution companies, solid and hazardous waste management entities. As with private sector enterprises, these publicly owned enterprises (either municipally-owned or otherwise) will play a key role in developing and implementing projects, and will benefit directly both from investment and technical cooperation activities in the project.
172. **Other Black Sea Programme implementing agencies / international organisations** – The Project will actively engage with regional and other international implementing agencies coordinating well-established Black Sea basin programmes and projects. Opportunities for leveraging results through data and information sharing, and awareness raising of whole of basin impacts, are critical to Project success and replication. Other GEF programming in the basin is also critical to engage with, along with partnering entities such as UN Environment, the World Bank, UNDP and UNIDO.
173. **Research institutions, regional thematic experts and institutes** – During Project development and implementation relevant expert stakeholders from academia, private research and other thematic experts will be consulted, asked to comment and possibly provide their technical, policy and regional expertise.
174. **NGOs, civil society and local communities** – The Project seeks to raise awareness of environmental techniques and their role in addressing land-based and water based pollution in the region. The Project information resources will be accessible to NGOs, civil society and local communities, including women's group, in the region and beyond. As such, the resources generated will benefit from as well as enhance the expertise of these groups to address the challenges of water pollution, and chemical and waste in the Black Sea basin.
175. **Public institutions and non-governmental initiatives on environmental techniques** – The EBRD will coordinate and network with European institutions, bilateral counterparts and international agencies working on environmental technology transfer. The EBRD will ensure coordination with existing initiatives in the Region to leverage their resources, support the key outputs of the Project, and ensure efficiency and effectiveness.

## **6 MONITORING AND REPORTING**

176. Monitoring and reporting plan for the Project meets the requirements of both the EBRD and the GEF.

### **6.1 EBRD Monitoring**

177. The EBRD uses a Results Based Management approach by following the country strategy result frameworks (CSRFs). CSRFs are explicit and expect clear and measurable indicators of the transition results from the Bank's activities in the target country during the strategy period. Indicators that are relevant to the Project will be incorporated into the CSRF reporting.
178. The Project Leaders will use the Project Results Framework (see Annex A) as a guide for ensuring that the Project activities lead to reaching the targets.
179. Monitoring and verification of the results is key to determining the success of the Project. Participating stakeholders in the Project (including borrowers) will provide information on uptake of BATs, and report on wastewater reuse and POP management.
180. Monitoring and evaluation results will be summarized in reports covering the overall progress of the Project and that of individual investment projects. The Project Leaders will be responsible for preparing regular progress reports with full support of, and in agreement with, the participating companies and other beneficiaries.

### **6.2 GEF Monitoring and Reporting**

#### **6.2.1 Annual review and PIR**

181. Progress against the targets in the Project Results Framework will be reviewed and reported to the GEF consistent with GEF requirements as part of the EBRD's contribution to the Annual Portfolio Monitoring Report (APMR), and include the requirements of Annex 1.4 of GEF/C.39/09.
182. The Project Implementation Report (PIR) will be prepared to monitor progress made annually according to GEF's reporting period (1 July to 30 June of every year). The PIR includes, but is not limited to, reporting on the following:
- Information on the Project status
  - Rating of Project performance including information on progress towards achievement of environmental objectives (impacts) and implementation progress (outputs delivered)
  - Risk rating / assessment
  - GEF core indicators.

#### **6.2.2 Mid-Term Review and Terminal Evaluation**

183. Reviews of the Project will include a Mid-term Review (MTR) and a Terminal Evaluation (TE) held near the end of the Project's lifetime, and follow the requirements of the GEF project and programme cycle policy (C.52.Inf\_06). These reviews will be in addition to the regular annual reporting requirements of the GEF and the monitoring cycle of the EBRD. The MTR and TE activities for the Project are included in the Project's Component 4.
184. The Project's MTR and TE will be carried out by an independent party at the appropriate time and have two basic objectives: (i) to assess the results and impacts, both intended and otherwise, of the Project (accountability function), and (ii) to determine whether there are lessons to be learned from past experience to make future operations better, thereby contributing to 'institutional memory' (lessons learned or quality management orientation).

185. The MTR will identify areas where improvements could be made and to improve the effectiveness of results and impacts. The review and evaluation will provide the basis for a system of accountability to managers and to the GEF.
186. The Project will undergo a TE in accordance with GEF guidelines.<sup>24</sup> The TE is “expected to provide a comprehensive and systematic account of the performance of a completed project by assessing its design, implementation, and achievement of objectives.”
187. The EBRD will ensure that the TE is conducted within six months before or after project completion; ensure that project evaluation team members are independent, unbiased, and free of conflicts of interest; facilitate the engagement of the GEF operational focal points in conducting the terminal evaluation; actively seek and address feedback of relevant stakeholders to prepare terminal evaluation’s terms of reference and its final report. The EBRD will submit the TE report to the GEF Independent Evaluation Office (IEO) in accordance with GEF Evaluation Policy.

### **6.3 Monitoring and Evaluation Budget**

188. The monitoring and evaluation activities will be financed by co-financing and agency fees, with US\$80,000 budgeted from the GEF TF funding for contracting external evaluation contractors. Costs associated with data collection will be included in the staff costs for team members in the day-to-day execution of their tasks and will be reported on during the course of the Project.
189. Monitoring and verification of the results is key to determining the success of the Project’s financing Programme. The entire Programme will be monitored, and inputs from participating stakeholders in the Project (including borrowers) will be required to provide information on water savings and water with reduced pollution loads, and POPs eliminated and other benefits achieved under the Project as part of the agreement that will be signed prior to their access to the Project. The in-depth technical assistance provided to companies and municipalities as part of the project will establish baseline information regarding pollution loads, access to waste-water facilities, and water recycling for specific locations, municipalities, and industries involved in the project.
190. Monitoring and evaluation will take place with reports summarizing the overall progress and that of individual investment projects that receive financing. These reports will be available for official use.

*Table 9. Indicative monitoring and evaluation plan*

Type of Monitoring and Evaluation activity	Responsible Parties	Budget from GEF (USD)	Time frame
Measurement of Means of Verification for Project Progress and Performance	Oversight by Project consultants and EBRD	0	
Semi Annual Project progress reports	OL	0	Every six months
Annual Project Report and Project Implementation Report	EBRD	0	Annual
Mid-term Review and External Evaluation	EBRD	35,000	At the mid and end of point of the project
Terminal Evaluation and Report	EBRD (independent consultant)	45,000	At the end of the project
Lessons learned	EBRD	0	Yearly
Visits to field sites (EBRD staff travel costs are not covered by GEF Project budgets)	EBRD	0	Yearly
<b>TOTAL COST</b>		<b>80,000</b>	

<sup>24</sup> <http://www.gefief.org/sites/default/files/ieo/evaluations/files/gef-guidelines-te-fsp-2017.pdf>



## Annex A: Project Results Framework

Impact / outcome / output	Objectively Verifiable Indicators	Baseline (Start of Project)	Target (End of Project)	Means of Verification	Assumptions
<b>Impact</b>					
<i>Project Objective:</i> The project will support investments tackling land-based and water based pollution, improve systems for water management in coastal hotspots, water and pollution management in the Black Sea drainage basin, and will aim to improve management of harmful chemicals and waste with particular focus on private sector operations in the eligible countries.	Upgraded private/public wastewater systems discharging directly or indirectly into coastal hotspots	0 – all impact indicators are incremental	2	EBRD project / investment reports and feasibility studies; Basel documentation	Investments take place and practices are put in place to deliver expected results  Investments deliver expected (designed) results
	Additional cubic meters of water recycled per year in private/public systems	0	4.8 million m <sup>3</sup>		
	Additional cubic meters of wastewater treated per year in private/public systems	0	1.8 to 7.6 million m <sup>3</sup> /year treated water (per sub-project)		
	Tonnes of POPs eliminated or prevented (tonnes of toxic equivalent tTEQ)	0	300		
	Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment	0	Total 314,000 53% male; 47% female		
<b>Outcomes</b>					
Pollution reduced through investments in land and water based pollution control in the Black Sea	Pollution reduced through relevant BATs (techniques and practices)	0 – all funding within the project will be incremental	At least 3 investments using BATs to reduce water pollution and eliminate / prevent POPs have been made	Project reports including: EBRD financial reports, annual and quarterly project progress reports, verification of investments, project appraisals.	Public and private sector is interested in investments in pollution management BATs  Project sponsors decide to invest in applicable technologies

Impact / outcome / output	Objectively Verifiable Indicators	Baseline (Start of Project)	Target (End of Project)	Means of Verification	Assumptions
<b>Component 1: Targeted policy dialogue and stakeholder engagement</b>					
Output 1.1. Dialogue takes place on policy and regulation	Number of stakeholders engaged (number of females tracked by percentage)	0 – incremental	100	Project monitoring reports (semi-annual and annual)	Governments and key stakeholders are interested in undertaking policy dialogue activities and consider addressing identified gaps
	Guidelines for implementation of sound water, chemicals and waste management	No guidelines exist	Guidelines developed (at least 2)	Developed guidelines	
Output 1.2. Increased engagement of stakeholders for the adoption of BATs in water and POPs sectors	Number awareness outputs developed to increase understanding of pollution reduction practices and technologies of key stakeholders in selected sectors	0	3	Reports (semi-annual and annual); developed awareness materials	
<b>Component 2: Implementation support</b>					
Output 2.1. Technical assistance provided during implementation	Number of investments supported during implementation	0	6	Project monitoring reports (semi-annual and annual)	Relevant public and private market players are interested in investing in BATs
<b>Component 3: Financing to support accelerated deployment of environmental practices and technologies</b>					
Output 3.1. Water reuse, pre-treatment and treatment within municipal and industrial sectors	Volume of investments in public and private sector (number of male and females employees in organizations securing investment are tracked by percentage)	No dedicated financial tools and instruments are existent	At least 25 million USD invested	Project reports	
Output 3.2. Improved water management and nutrient pollution control through implementation of BATs					
Output 3.3. Implementation of POPs and hazardous waste BATs					

<b>Component 4: Knowledge management and Monitoring and Evaluation</b>					
Output 4.1. Knowledge management systems in place and linked to relevant regional organizations to promote technology uptake	Case Studies developed and disseminated (number of female and male beneficiaries is tracked)	0	6 Case Studies developed; 600 copies disseminated in the region	Copies of case studies, records of downloads or physical copies disseminated	Relevant stakeholders are interested in investments and exchange of information
	Availability of web-based information (number of female and male beneficiaries is tracked)	Information gaps	Web-based information available	Online information made available (on Black Sea Commission website and IW: LEARN Learning exchange service centre), along with information on the number of unique users	
	A presentation of lessons learned at the IW: LEARN event (number of female and male participants/beneficiaries is tracked)	No relevant lessons learned are existent	Project results disseminated at the IW: LEARN event	Event report	
Output 4.2. Monitoring and Evaluation	Project Impact, Outcome and Output data collected, Mid-term and Terminal Evaluation completed	Not carried out	Mid-term review and independent terminal evaluation carried out	Mid-term review report and terminal evaluation report	MRV is effectively undertaken

## **Annex B: EBRD procedures for approval of investments**

### *Project pre-screening, identification and appraisal*

The investments benefiting from the Project's concessional finance support (sub-projects) will be fully streamlined into the existing operational model of the Green Economy Transition (GET) Approach of the EBRD.

Any sub-projects supported will also follow the three key guiding principles applied by the EBRD across its transactions: (i) sound banking principles, (ii) transition impact, and (iii) additionality.

### *Internal procedures and resources*

The Project will be reviewed by respective internal committees and subsequently approved by the Board to ensure compliance of the Project with all relevant internal producers and consistency with overall EBRD approach. Individual projects associated with the Project will follow the standard Bank approval procedures. The final review/ Board document will contain a reference to the capital grant and technical assistance from the Project.

Each Project OL accessing the Project will be supported by the PMT. The Project will be managed by the Project Management Team (PMT) (led by the "Project OL") consisting of people from E2C2 and others.

### *Project Cycle*

The sub-project Cycle will consist of the following steps:

- Step 1: Initial discussion between the EBRD and the Client and initial review of the investment plan.
- Step 2: The Bank communicates terms of potential financing.
- Step 3: The EBRD and the Client discuss opportunities for technical assistance and financial incentives linked to the investment plan.
- Step 4: The EBRD completes its due diligence and approves the financing together with associated technical assistance and incentives.
- Step 5: Technical assistance is released to assist with the feasibility assessments and implementation.
- Step 6: The client implements the investment plan.
- Step 7: Verification is undertaken and the EBRD pays the incentive upon achievement of a milestone (e.g. commissioning, implementation, down payment)\*.
- Step 8: The client reports on the improvements achieved.

\* Note that for some clients (in particular for state-owned enterprises and municipal clients) it may be necessary to include the incentive payment as part of the financing rather than release the incentive grant at a later stage.

### *Verification*

The EBRD Project Team or an international consultant will undertake a verification audit of the installation. The work of the international consultant will be desk based and it will cover the review of the following documentation

- "As built" project documentation with contracts and invoices prepared by technology supplier and/or the installer and including "as-built" drawings, general schemes, technical description, technical specifications of equipment and receipts of all costs incurred in connection with an Eligible Project (in English)
- Commissioning Protocol, signed by the technology supplier or installation company (if different) and technical supervisor of the Recipient (with translation in English, if applicable)
- Start-up test protocol, signed by the installer (with translation in English, if applicable)
- A photographic report

- Any required permit or operational certificate (related e.g., to operation of electrical equipment) as required in accordance to national regulations on health and safety (with translation into English, if applicable).
- The contractor's invoice(s), indicating the Issuer's confirmation that the goods, works or services have been satisfactorily delivered.

The Consultants will also verify the actual eligible costs. These will be capped at the level estimated during project preparation. The EBRD Project Team will also verify the actual eligible costs.

*Monitoring and Results Framework*

The impact of technologies together with qualitative improvement of the systems and their operation overall will be examined based on a pre-agreed set of indicators. These indicators will be compared with the baseline.

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**Annex C: Pipeline investments and Global Environmental Benefits Analysis -  
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See Annex provided under separate cover.

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## Annex D: Gender Analysis and Gender Action Plan

### I. Gender context by target country

#### Belarus

Belarus has a high level of women's economic and political participation. In the latest Global Gender Gap Index<sup>25</sup>, Belarus was ranked 28th out of 144 countries and the country performed against the highest score for closing the gender gap in economic opportunities. Overall, Belarus has a high level of female human development indicators. Women have a higher life expectancy, with an average of 76 years whereas men can expect an average of 64 years<sup>26</sup>. At the level of tertiary education, more women than men are enrolled in universities, and a high share of firms have female ownership.

The Women, Business and the Law database, compiled by the World Bank, shows countries' progress to understand how women's employment and entrepreneurship are affected by legal discrimination and it provides data covering six areas: accessing institutions, using property, getting a job, providing incentives to work, building credit, and going to court. In 2019, Belarus scored 78.75 out of 100, above the global average of 74.71. Belarus made a commitment to ratify several international documents in order to achieve gender equality. These include the UN Convention on the Elimination of All Forms of Discrimination against Women, which makes achieving gender equality by 2015 a prerequisite for 192 UN Member States. Based on this convention, three years ago Belarusian government adopted a National Action Plan to Ensure Gender Equality for 2011-2015. Further, the Unit on Population, Family and Gender Policy of the Ministry of Labour and Social Protection has the objective of promoting gender equality, by monitoring the status of women, promoting gender awareness and by ensuring that the country adhere with international conventions. Under the Council of Ministers, the National Council on Gender Policy has an advisory and coordinating role to promote the development and implementation of the gender policy in Belarus.

Belarus has entered the top countries with more prominent women's participation in decision-making. Today 34% of deputies in the Belarusian parliament are female<sup>27</sup>. Women are also well represented in business: they create and manage a quarter of all companies, and 63% of individual entrepreneurs in Belarus are women as well. Belarus' legislation protects women's equal rights to own and manage property<sup>28</sup> and does not discriminate against women in regard to access to financial services. However, accessing credit is a barrier for both women and men in Belarus.

Even though women are better educated than men, with a large gender gap in university enrolment, they still face disadvantages in the labour market. Women are more likely to be white-collar workers but they are 2.5 times less likely to be managers, and the gender wage gap has increased from 19% in 2001 to 25% in 2017<sup>29</sup>. Despite gender-neutral laws, stereotypes and discriminatory practices are still present, resulting in women being worse off than men in economic opportunities and earnings<sup>30</sup>. Even though the legal right for equal remuneration for equal work is established, the average salary of a Belarusian woman is currently at 80% of the average salary of a Belarusian man<sup>31</sup>).

<sup>25</sup> The Global Gender Gap Report 2018. Available at [here](http://www3.weforum.org/docs/WEF_GGGR_2018.pdf) [http://www3.weforum.org/docs/WEF\\_GGGR\\_2018.pdf](http://www3.weforum.org/docs/WEF_GGGR_2018.pdf)

<sup>26</sup> Belarus : <https://www.who.int/gho/countries/blr.pdf>

<sup>27</sup> <https://data.ipu.org/>

<sup>28</sup> CEDAW (2010). Consideration of reports submitted by States parties under article 18 of the Convention on the Elimination of All Forms of Discrimination against Women Seventh periodic report of States parties Belarus', CEDAW/C/BLR/7, CEDAW, New York.

<sup>29</sup> <https://blogs.worldbank.org/europeandcentralasia/has-belarus-really-succeeded-pursuing-gender-equality>

<sup>30</sup> The World Bank (2014). Belarus: Country Gender Profile 2014. Poverty Reduction and Economic Management Unit Europe and Central Asia Region. Available [there](http://documents.worldbank.org/curated/en/518041468201598756/pdf/763250ESW0P1320r0Assessment0020140.pdf): <http://documents.worldbank.org/curated/en/518041468201598756/pdf/763250ESW0P1320r0Assessment0020140.pdf>

<sup>31</sup> [https://odb-office.eu/expertise\\_/gender/what-are-gender-rights-and-opportunities-belarus](https://odb-office.eu/expertise_/gender/what-are-gender-rights-and-opportunities-belarus)

Domestic violence is a major issue in Belarus, particularly for uneducated women. However, Belarus has recently introduced laws on domestic violence<sup>32</sup> following a heightened focus on gender-based violence after the Beijing Platform for Action.

*Relevant baseline projects:*

- The **Women in Business programme**, which is implemented by the European Bank for Reconstruction and Development (EBRD) and supported by the EU and other donors<sup>33</sup>, offers a toolbox of services to promote women's entrepreneurship, including financing through local partner financial institutions, technical assistance for participating financial institutions and business advice for female entrepreneurs.
- **Strengthening Inclusive Local Governance in the Republic of Belarus** (UNDP/DANIDA) focuses on the incorporation of transparency, accountability and human rights-based approaches in local governance policies and practices through capacity development and practical pilot solutions at the local level. New approaches to public finances management, including gender budgeting, are promoted under the project.

## Georgia

Over the past 10 years, Georgia's ranking in the World Economic Forum Global Gender Gap Index has steadily deteriorated and now occupies the 99<sup>th</sup> place out of 149 countries. Georgia scores among the lowest five countries for gender equality within the Eastern Europe and Central Asia region, just above Tajikistan and Hungary. Women and men face considerable differences in status, societal roles and access to resources in Georgia. Most of the critical issues facing Georgia, such as economic insecurity and a population of internally displaced persons, equally affect men and women, however women are positioned in an even more disadvantaged position in both the private and public sphere.

At the policy level, Georgia has progressed towards gender equality but challenges remain regarding implementation and impact on the ground. The Women, Business and the Law (WB, 2019) assesses Georgia with a score of 79.38 out of 100. In 2010 Georgia adopted the Law on Gender Equality, followed by the National Action Plan on a State Gender Equality Policy. The purpose was to create a more comprehensive system of initiatives and laws and policies that are not discriminatory towards women. Recently Georgia introduced sexual harassment laws protecting women at work, however it did not provide criminal penalties or civil remedies in cases where these laws are violated. In the last years, Georgia also introduced a law to prohibit the dismissal of pregnant workers.

Significant differences persist in the perception of roles and status of men and women and they are influenced by a patriarchal culture. These gender stereotypes prevent women from participating in planning and decision-making processes at all levels of public life, and women are usually less informed than men and rarely participate in local community meetings or training activities<sup>34</sup>.

Despite equal rights and duties in matters relating guardianship of children as per the civil law, men are usually seen as head of the household and are in charge of decision-making and customary and religious laws often regulate households' roles and decisions<sup>35</sup>. These traditional roles in regard to households' responsibilities and decision-making hinder women's equal access to opportunities. For example, it is customary for men to be given preference in property inheritance, and sons most often inherit property from parents<sup>36</sup>. Child marriage of girls is a well-established practice in Georgia and it is motivated by various religious, ethnic and regional factors. As of 2017, the age of marriage has been legally approved to be 18 for both men and women.

<sup>32</sup> The World Bank (2019). Women, Business and the Law database. Available [at here](https://openknowledge.worldbank.org/bitstream/handle/10986/31327/WBL2019.pdf?sequence=4&isAllowed=y)  
<https://openknowledge.worldbank.org/bitstream/handle/10986/31327/WBL2019.pdf?sequence=4&isAllowed=y>

<sup>33</sup> The Programme is funded by the EBRD, the European Union, Sweden and the EBRD Small Business Impact Fund (Italy, Japan, Korea, Luxembourg, Sweden, Switzerland, Taipei China and the USA)

<sup>34</sup> UN Women (2018). Gender assessment of agriculture and local development systems in Georgia (2018), Tbilisi.

<sup>35</sup> Social Institutions & Gender Index (2019) Georgia – OECD <https://oe.cd/ds/GIDDB2019>

<sup>36</sup> UNDP (2013). Public Perceptions on Gender Equality in Politics and Businesses. Tbilisi.  
[http://www.ge.undp.org/content/dam/georgia/docs/publications/GE\\_UNDP\\_Gender\\_%20Research\\_ENG.pdf](http://www.ge.undp.org/content/dam/georgia/docs/publications/GE_UNDP_Gender_%20Research_ENG.pdf)



Gender segregation is present in a number of labour spheres: women dominate sectors such as healthcare, social services and teaching, while others such as energy, information and construction is dominated by men. Similarly to other countries in the region, women are more likely to own micro-businesses, followed by small and medium businesses and least likely to own large businesses.<sup>37</sup> Overall, 40.8% of Georgian firms have at least one female owner, however women are in the top manager position in only 19.7% of firms. Women are largely underrepresented in decision-making roles in the financial sector, and according to an USAID report (2010)<sup>38</sup>, these imbalances may have an impact on the design and implementation of lending policies. Overall the business climate is not favourable in Georgia, and both women and men have difficulties in accessing finance, particularly due to the fact the high levels of collaterals are required to access loans. Women, who are often excluded from accessing inheritance, are even more disadvantaged in this regard.

#### *Relevant baseline projects:*

- The EBRD's **Women in Business programme** provides support to women-led businesses and works with local banks to adapt their services to better serve women clients.
- **UN Joint Programme for Gender Equality in Georgia:** The Programme for Gender Equality is focused on enhancing political and economic empowerment of women through: policy advice to mainstream gender equality to the national legislation; strengthening national systems by promoting coordination and implementation of policies and plans; strengthening public advocacy by working with civil society and local communities to enhance the capacities of rights-holders and mobilize participatory advocacy platform

## **Ukraine**

Gender asymmetry is apparent in the Ukraine and has a direct impact on delivering opportunities and benefits to women and men, and the wider community. At a global level in 2019, the OECD assigned the Ukraine a 'low' rating on the 'Social Institutions & Gender Index' (SIGI), followed by a ranking of 28 out of 40<sup>39</sup> European nations, signifying poor performance on gender equality. SIGI is based on assessment of: discrimination in the family, restricted physical integrity, restricted access to productive and financial resources, and restricted civil liberties. Similarly, the Gender Inequality Index (GII)<sup>40</sup>, which measures the human development cost of gender disparity across health, education and economic status, ranks the Ukraine 88 out of 160 countries. The higher the ranking the larger the gender gap – in this case the Ukraine is performing poorly on gender equality.

The agricultural sector in the Ukraine provides employment for 17% of the population and is by far the largest employer of females - 19.4%<sup>41</sup> of the paid female workforce. The Strategy for Agriculture and Rural Development (2015-2020) includes measures to be implemented for women such as the promotion of opportunities for young people and women in running family farms or support to rural women's economic empowerment<sup>42</sup>. The lowest employer of the female workforce is Government at 4.7%. Looking at Government specifically, women comprise 12.1% of Parliament; 12.5 % of Cabinet of Ministers and 16.7% of senior governmental officials at the highest level<sup>43</sup>. The low representation at the political level is an outcome of barriers that women face in accessing decision-making positions due to patriarchal attitudes, lack of awareness and insufficient capacity building<sup>44</sup>. On average, women in the Ukraine secure 45% less pension than men and live 12 years longer, while in terms of education

<sup>37</sup> USAID (2010). Gender assessment in Georgia 2010. Available

[https://reliefweb.int/sites/reliefweb.int/files/resources/EFD28F4AE04074D94925775A00081927-Full\\_Report.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/EFD28F4AE04074D94925775A00081927-Full_Report.pdf)

<sup>38</sup> Ibid

<sup>39</sup> <https://www.genderindex.org/ranking/>

<sup>40</sup> <http://hdr.undp.org/en/content/gender-inequality-index-gii>

<sup>41</sup>

[https://forum2016.iamo.de/microsites/forum2016.iamo.de/fileadmin/presentationen/B3\\_Kutsmus\\_The\\_Effects\\_of\\_Large-Scale\\_Farming\\_on\\_Gender\\_Equality\\_in\\_Rural\\_Areas\\_The\\_Case\\_of\\_Ukraine\\_IAMO\\_Forum\\_2016.pdf](https://forum2016.iamo.de/microsites/forum2016.iamo.de/fileadmin/presentationen/B3_Kutsmus_The_Effects_of_Large-Scale_Farming_on_Gender_Equality_in_Rural_Areas_The_Case_of_Ukraine_IAMO_Forum_2016.pdf)

<sup>42</sup> Food and Agriculture Organisation of the United Nations □FAO□ (2016), *Country Programming Framework for Ukraine*, [www.fao.org/3/a-bp567e.pdf](http://www.fao.org/3/a-bp567e.pdf)

<sup>43</sup> <http://un.org.ua/en/resident-coordinator-system/gender-equality>

<sup>44</sup> Committee on the Elimination of Discrimination against Women (CEDAW) (2017), *Concluding Observations on the Eighth Periodic Report of Ukraine*, CEDAW/C/UKR/CO/8, United Nations

are five times more likely to select careers in humanities as opposed to mathematics or the sciences<sup>45</sup>. Recent progress has been made as Ukraine has introduced pension reforms so that women can now retire at the same age as men with full pension benefits. The gender wage gap in the Ukraine comprised 25% in 2016 and 21% in 2017 and reached 40% in some economic activities<sup>46</sup>.

In addition, CEDAW Committee<sup>47</sup> pointed out that patriarchal attitudes and discriminatory stereotypes concerning the roles and responsibilities of women and men in the family persist in Ukraine, impacting women's access to resources and their participation in public and private life.

*Relevant baseline projects:*

- **Gender-Responsive Budgeting (GRB) Project<sup>48</sup>:** was launched around 2013 and is a national mechanism for ensuring gender equality in Ukraine and the importance of supporting the implementation of GRB at the state level. The main principle of the implementation of modern policies is gender mainstreaming, where a gender perspective is included in all areas and at all levels. A tool like gender-responsive budgeting ensures such integration. The initiative is supported by representatives from Ukraine's oblasts (regions), who are leading gender budget reforms at the local level. The initiative is supported by Sweden and works with the national (in particular, Ministries of Finance; Regional Development, Construction, Housing, and Communal Services; and Social Policy), and local levels in GRB. A Memorandum of understanding was signed with the University of Fiscal Service. The University will offer GRB as a subject as part of its Public Financial Management courses and bridges an important step in bringing GRB into the education process, leading to a positive impact on policy-makers of the future. In preparation of the implementation of this agreement, twenty-two University lecturers were offered extensive GRB training and submitted scientific papers on GRB, followed by certification as GRB instructors.
- **The Congress and the Association of Ukrainian Cities (AUC)<sup>49</sup>:** on 14-15 March 2019 in Kyiv, Ukraine, a round table was held on "Gender Equality and Open Government for Stronger Local Democracy". This saw 50 Ukrainian local elected representatives and public officials as well as representatives of the Parliament and the Government of Ukraine discuss approaches for accelerating gender equality and driving change through open government and gender-sensitive policymaking. Ukrainian and international participants identified gender budgeting, fighting stereotypes and misconceptions, as well as collecting gender-disaggregated data as the main priorities for the realisation of gender equality action plans at local level, which should be complemented with the implementation of open government mechanisms. The Congress and the AUC will continue supporting Ukrainian local authorities in the implementation of gender equality, exploring the links with open government and accompanying them in the implementation of the UN Sustainable Development Goals 5 (Gender Equality) and 16 (Peace, justice and strong institutions) and the commitments to the Fourth National Action Plan of the Open Government Partnership.

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<sup>45</sup> [https://www.academia.edu/4212389/Gender\\_Problems\\_in\\_Ukraine](https://www.academia.edu/4212389/Gender_Problems_in_Ukraine)

<sup>46</sup> <http://un.org.ua/en/resident-coordinator-system/gender-equality>

<sup>47</sup> Committee on the Elimination of Discrimination against Women (CEDAW) (2017), *Concluding Observations on the Eighth Periodic Report of Ukraine*, CEDAW/C/UKR/CO/8, United Nations

<sup>48</sup> <https://www.niras.com/development-consulting/news/five-years-of-gender-responsive-budgeting-success-in-ukraine/>

<sup>49</sup> <https://www.coe.int/en/web/congress/-/ukrainian-local-authorities-join-efforts-to-advance-gender-equality>

## **II. Gender-responsive project design**

The delivery of inclusive and gender-responsive environmental results constitutes the priority for all implementing GEF agencies, including the EBRD. The GEF approved a reinforced policy in November 2017 at the 53rd Council Meeting, shifting the focus from a ‘gender-aware, do no harm’ approach to a ‘gender-responsive, do good’ approach and the UN Environment clearly recognises the role of equality as a ‘driver of sustainable environment development’. Similarly, gender equality is considered key in the EBRD’s activities to advance sustainable growth in its CoOs and one of the Bank’s guiding principles and core values. In December 2015, the Bank adopted its first ever Strategy for the Promotion of Gender Equality (2016-2020) to guide its work on mainstreaming gender across the Bank’s operations by 2020 and contribute to the creation of an enabling environment that can address the constraints gender inequality places on a sustainable transition.

Under this Project significant opportunities arise to promote women’s access to economic opportunities, in line with GEF’s policy and the EBRD’s Strategy on the Promotion of Gender Equality. To address gender gaps in the countries where it invests, the EBRD identifies appropriate actions under its investments and, where relevant, undertakes policy dialogue to address barriers women face in accessing economic opportunities. Under this Project, the EBRD will support its clients to incorporate gender considerations into the design, implementation and monitoring and evaluation of their activities. This will be achieved by identifying training and capacity needs and delivering staff training to clients and counterparts, ensuring stakeholder engagement is gender-sensitive, and promoting equal opportunities policies and practices across EBRD clients’ operations.

The following outputs integrate gender tracking:

### **Output 1.1 Dialogue takes place on policy and regulation**

The EBRD engages in policy dialogue with relevant stakeholders at national and regional levels as appropriate and in line with the anticipated pipeline. Stakeholder engagement under this Output will be gender-sensitive, ensuring adequate information dissemination among all, including modifying “standard” approach in terms of the format of the consultations (timing/location/ language) as and when needed to ensure that both men and women end users are reached through the appropriate communications channels.

### **Output 1.2 Increased engagement of stakeholders for the adoption of BATs in water and POP sectors**

The Project will increase awareness by providing information to and engaging with stakeholders, on the sources and land and water-based pollution from current water, chemicals and waste practice, in addition to the possible range of solutions. These materials aim at building an increased awareness, understanding, support and buy-in to pollution mitigation of water and POPs, through BATs.

### **Output 2.1. Implementation of technical assistance provided for investments**

The EBRD will deliver technical assistance through a set of activities that support the implementation of investments (funded and implemented under Component 3).

- Development and Implementation of Project-level Gender Action Plans aimed at addressing gender issues at the project level and contributing to the broader programme objectives and outcomes. This will build on concerted efforts from different actors at the project-level to ensure both men and women stakeholders are engaged, capacity and consensus are mobilized, and resources are used to target beneficiaries to leverage both socioeconomic and environmental co-benefits. To provide some examples, potential gender activities at the project level could include:
  - Design and implementation of trainings for women in the project areas on issues of reuse of treated wastewater on their acceptance of reusing the treated wastewater (given this would take into consideration women’s household responsibilities, recognise their traditional knowledge and role regarding sustainable water management); and

- Provide training on wastewater (and in certain cases sanitation) management and sustainable urban agriculture practices, in case of project areas characterised by a rapid increase in urban population, land scarcity and the challenge of urban food security that points to the need of urban agriculture alternatives, with associated pressure on water supply.

### **Output 3.1, 3.2 and 3.3: Financing to support accelerated deployment of BATs**

Under this component, it is expected that at least USD 25 million in investments will be mobilized for wastewater pollution reduction as well as for avoided and reduced POPs contamination, resulting in at investment projects implementing BATs. Eligible organizations securing financing from the EBRD will commit to:

- Demonstrate that the company follows the EBRD gender equality policy for banking projects
- Report on the % of employees which are women (tracking).

### **Output 4.1. Knowledge management systems in place and linked to relevant regional organizations to promote technology uptake**

As part of the knowledge management system, the Project's results will be shared through multiple channels and with a wide range of stakeholders. In particular, case studies will be developed that focus on demonstrated impact, best practices and investment in BATs. These case studies will have a gender component and will be disseminated in a way to engage with women's groups, as well as women-led businesses. The overall purpose of the knowledge management activities will be to capture the embedment of gender equality and empowerment into the Project, and to disseminate successful practices to audiences of men and women, stimulating further engagement and project support.

Stakeholders' awareness-raising and capacity building will aim to address gender issues in the context of chemicals and waste management. Gender aspects will be integrated in educational activities and outreach efforts on chemicals safety, risks and management of chemicals and wastewater. These will feed into the broader programme's knowledge management and program coordination strategy (Component 4.1), taking stock of the gender differences across countries in the region. Networking, advocacy and learning opportunities will be delivered to client staff and other stakeholders (in room or on line, or via workshops), including through the dissemination of knowledge products, both internally and externally. A special case study will be developed highlighting lessons and best practice examples in the area of gender-responsive service delivery and/or the equal opportunities and HR management.

In addition, Component 4 involves the dissemination of knowledge through channels such as the IW: LEARN. For all activities under Component 4, recipient of knowledge and Project representatives who will attend events will be tracked to understand gender of beneficiaries.

### **Output 4.2. Monitoring and Evaluation**

The Monitoring and Evaluation activities will be carried out in alignment with GEF and EBRD standards.

For the GEF, sex-disaggregated data will be collected to assess the impact and sustainability of results, tracked against the Project Results Framework.

### III. Gender Action Plan

Project Outcomes / Outputs / Activities	Indicators and Targets	How gender is incorporated / addressed	Timeline	Responsibilities	Associated budget
<b>Component 1: Targeted policy dialogue and stakeholder engagement</b>					
Output 1.2. Increased engagement of stakeholders for the adoption of BATs in water and POPs sectors	Number of awareness materials (3) to increase understanding of pollution reduction practices and technologies of key stakeholders in selected sectors  (% of women beneficiaries tracked)	In developing awareness materials, previously developed gender assessments and guidelines will be consulted for implementation of sound water, chemicals and waste management. Materials will be tested with various recipient groups to determine acceptability and impact. Within the ToRs for consultants engaged for Outcome 1 and 4, it will be required for them to keep track of beneficiaries (e.g. downloads from internet will request information on gender)	Within the timeline of implementation of specific technical assistance packages.	EBRD Project Team and any consultants engaged for technical assistance will be responsible for ensuring compliance with the aspects described.	The budget for this activity should be covered within the technical assistance packages
<b>Component 2: Implementation support</b>					
Output 2.1. Investment support provided during implementation	# of investments / businesses supported with TA  (tracking % of female and male receiving TA)  Gender Action Plans developed  Up to 20% of the investments in the Programme introduce a gender component in the area of access to employment.  Number and % of	Within the ToRs for consultants engaged for this Output, it will be required for them to track how gender is included in the TA. For investments in infrastructure, identification of gender market distortions (if any) and assistance supporting client to remedy procurement weaknesses regarding a non-level playing field for tenderers. For technical assistance in the corporate sector gender actions plans	Within the timeline of implementation of specific technical assistance packages.	EBRD Project Team and any consultants engaged for technical assistance will be responsible for ensuring compliance with the aspects described. Sub-project sponsors will be responsible for providing information as requested and for presenting / adopting gender equality policies	The budget for this activity should be covered within the technical assistance packages

Project Outcomes / Outputs / Activities	Indicators and Targets	How gender is incorporated / addressed	Timeline	Responsibilities	Associated budget
	<p>women and men (employees as well as future recruits of the service provider companies) benefiting from capacity building and training opportunities provided by the Programme.</p> <p>Number and % of people trained is women (to be benchmarked against the baseline).</p> <p>Evidence of improved HR policies and practices with respect to gender (e.g. gender action plans approved and implemented by the service providers; improved/new HR policies and practices).</p> <p>Improved gender balance in the workforce of the service providers, both in absolute terms and across positions including high skilled roles that are male – dominated such as drivers and technical maintenance (% - to be benchmarked against baseline).</p>	will be developed.			
<b>Component 3: Financing to support accelerated deployment of environmental practices and technologies</b>					
Output 3.1. Water reuse, pre-	Volume of investments in	Within agreements	To be verified before the	EBRD Project Team and any	The budget for this

Project Outcomes / Outputs / Activities	Indicators and Targets	How gender is incorporated / addressed	Timeline	Responsibilities	Associated budget
treatment and treatment within municipal and industrial sectors  Output 3.2. Improved water management and nutrient pollution control through implementation of BATs  Output 3.3. Implementation of POPs and hazardous waste BATs	public and private sector (25 million USD)  (tracking % of female and male employees for eligible organizations securing investment)	for provision of financing, it will be required for them to: - Demonstrate that the company follows the EBRD gender equality policy for banking projects  - Report on the % of employees which are women - Provide information about benefits of the investments associated with gender/inclusion	completion of financing transactions	consultants engaged for technical assistance will be responsible for ensuring compliance with the aspects described. Sub-project sponsors will be responsible for providing information as requested and for presenting / adopting gender equality policies	activity should be covered within the investment package
<b>Component 4: Knowledge management and Monitoring and Evaluation</b>					
Output 4.1. Knowledge management systems in place and linked to relevant regional organizations to promote technology uptake.	Case Studies developed and disseminated (tracking of % of women for download and dissemination)	Case studies to have a gender component and to be disseminated targeting environmental CBOs that engage with women's groups, as well as women-led businesses.	Throughout Project implementation	Project team	The budget for this activity should be covered within the technical assistance packages
	A presentation of lessons learned at the IW: LEARN event.  Number and % of women and men attending the event	Within the ToRs for partners engaged for this Output, it will be required for them to track the number participants. The event report includes details about presenters and attendances.	Within the timeline of implementation of knowledge management activities	Project team	The budget for this activity should be covered within the technical assistance packages
Output 4.2. Monitoring and Evaluation	Project Impact, Outcome and Output data collected, Mid-term and Terminal Evaluation completed. Collection of sex-disaggregated data	Within the ToRs for consultants engaged for this Output, it will be required for them to collect sex-disaggregated data.  At least one social/gender expert to be included as part of the consultants' team.	At MTR and Final Evaluation	Project team	The budget for this activity should be covered within the M&E budget



## **Annex E: POPs and other waste sources, and mitigation and reduction measures**

Recent estimates of the quantity, uses and locations of notable pollutants in each country targeted by the Project are described below.

### **Belarus**

- Existing stocks include 3811 tonnes of POPs pesticides buried in 6 landfills; another 2800 tonnes of POP pesticides in storehouses. The storage conditions for obsolete pesticides do not always correspond to the modern environmental norms – non-repackaged and repackaged pesticides may be stored together, spills of pesticides are not always cleaned on the spot. At present, repackaging of pesticides kept in the storehouses is almost completed. In the private sector, 762 enterprises owning PCB-containing equipment or waste have been identified. These enterprises belong to 27 ministries and concerns. The predominance of PCB-containing equipment is electrical equipment and prone to leakage – with 1564 tonnes of PCBs.
- In 2004, unintentional POPs (u-POP) releases were estimated at 141.9 g TEQ. The predominant sources are waste incineration (47.6%), Ferrous and Non-Ferrous Metal Production (27.6%), and power and heat generation (11.7%).<sup>50</sup>
- E-waste in Belarus in 2014 was estimated at 72,000 tonnes (7.7 kg per inhabitant).<sup>51</sup> Its disposal is regulated when produced by businesses, but among the general population, e-waste is generally simply put in with other waste streams and can cause pollution into the environment.<sup>52</sup> Total municipal solid waste is estimated at 3,757,000 tonnes per year<sup>53</sup>.

### **Georgia**

- Existing stocks include 3057 tonnes of pesticides including 2700 at one site; potentially 20,000 pieces of electrical equipment with PCBs.
- Most (80%) of unintended POPs of dioxin/furan emissions are estimated to mostly result from uncontrolled combustion processes (uncontrolled/spontaneous combustion of wastes and wildfires) – a majority of which are taking place at the landfills.<sup>54</sup>
- E-waste in Georgia is estimated at 21,000 tonnes (4.6 kg per inhabitant)<sup>55</sup>. Plastics waste is estimated to be 43,000 tonnes per year.<sup>56</sup> The system of management is very under-developed – likely leading to significant pollution both at landfills and outside of them.<sup>57</sup>

### **Ukraine**

- In 2019, existing stocks of POPs pesticides including 1750 tonnes of DDT stored in various locations (mostly in Odessa Oblast). There are up to 12,765 contaminated and potentially contaminated sites in the country. It is estimated that there are 250 tonnes of PCB containing oils with almost 4,000 tonnes of electrical equipment containing PCBs (1002 transformers and 102,032 capacitors) though this data is preliminary as companies do not have information on POPs which they possess nor do they carry out systematic registration.
- U-POPs emissions were estimated at 1,451 g TEQ in 2002 – dominated by Ferrous and non-ferrous metal production (82.4%) and incineration of solid municipal wastes (10.8%) – wherein there are a number of incineration plants in Ukraine.<sup>58</sup>

<sup>50</sup> [http://www.popsbelarus.by/en/pops\\_rb\\_en/pops\\_inventory\\_data.html](http://www.popsbelarus.by/en/pops_rb_en/pops_inventory_data.html)

<sup>51</sup> [http://www.step-initiative.org/Overview\\_Belarus.html](http://www.step-initiative.org/Overview_Belarus.html)

<sup>52</sup> See <http://ipen.org/sites/default/files/documents/CES%20E-waste%20Report%20English%20Summary%20EN.pdf>

<sup>53</sup> [http://www.atlas.d-waste.com/index.php?view=country\\_report&country\\_id=49](http://www.atlas.d-waste.com/index.php?view=country_report&country_id=49)

<sup>54</sup> Government of Georgia (2012) Persistent Organic Pollutants National Implementation Plan of Georgia

<sup>55</sup> [http://www.step-initiative.org/Overview\\_Georgia.html](http://www.step-initiative.org/Overview_Georgia.html)

<sup>56</sup> Based on [http://www.atlas.d-waste.com/index.php?view=country\\_report&country\\_id=80](http://www.atlas.d-waste.com/index.php?view=country_report&country_id=80)

<sup>57</sup> See for example: [http://apps.unep.org/redirect.php?file=/publications/pmtdocuments/-Georgia\\_Country\\_Report\\_EEA-2011GEORGIA\\_COUNTRYREPORT\\_2011.pdf.pdf](http://apps.unep.org/redirect.php?file=/publications/pmtdocuments/-Georgia_Country_Report_EEA-2011GEORGIA_COUNTRYREPORT_2011.pdf.pdf)



- E-waste in Ukraine was estimated at 258,000 tonnes in 2014 (5.7 kg per inhabitant).<sup>59</sup> Plastic waste is estimated at 768,000 tonnes per year.<sup>60</sup> Current waste management practices in Ukraine are resource-inefficient and result in negative environmental impacts.<sup>61</sup>

### **Tentative mitigation and reduction measures**

Measures to reduce these pollutants could include, for example:

- Phasing out equipment in electricity supply and distribution which include PCBs (POPs) and replacing with non-POP utilising equipment
- Improvement of processes for cement, iron, steel, and non-ferrous metal production to reduce unintended POPs
- Improved processes in waste oil refineries
- Solid waste management systems – especially for pesticides and other POPs containing materials
- Land remediation especially in urban / semi-urban areas where land remediation can add value to the land and allow it to be utilised for other development purposes (e.g. real estate).

<sup>58</sup> Ministry of Environmental Protection of Ukraine (2007) The National Implementation Plan for the Stockholm Convention on POPs

<sup>59</sup> [http://www.step-initiative.org/Overview\\_Ukraine.html](http://www.step-initiative.org/Overview_Ukraine.html)

<sup>60</sup> Based on [http://www.atlas.d-waste.com/index.php?view=country\\_report&country\\_id=172](http://www.atlas.d-waste.com/index.php?view=country_report&country_id=172)

<sup>61</sup> See [here](#)

<http://www.ifc.org/wps/wcm/connect/31b3d8004bc75c31b99dff1be6561834/PublicationUkraineMSW2012en.pdf?MOD=AJPERES>

## **Annex F: Water pollution, and mitigation and reduction measures**

Among the countries that will be involved in this Project, there are a wide variety of industries and economic activities contributing to the water pollution problem. The issues in the littoral countries of the Black Sea are summarized below.

### **Belarus**

- Belarus covers 24% of the Dnieper river basin before it enters Ukraine. Due to the issues with waste water treatment capacity and wastewater discharges from industry, there is a substantial negative impact on the quality of water sources. Also, the run-off from agricultural areas has a local and severe impact in the Belarusian part of the river basin. Main pollutants are nutrients (nitrogen compounds), organic substances (including phenols) and heavy metals.
- Most municipal wastewater is treated – in 2011 only 3.8 million m<sup>3</sup> discharged which is insufficiently treated out of a total of 462 million m<sup>3</sup> collected in wastewater systems (compared to 651 million m<sup>3</sup> injected into the distribution network (See [here](#)).

### **Georgia**

- In Georgia the primary sources of pollution are municipal wastes from cities and settlements, industrial wastes (such as oil terminals, mining operations, metal factories) and wastes from hospitals, recreation, and other health centres.<sup>62</sup> As of 2013, there were 4 operating wastewater treatment plants which process approximately 717,100 m<sup>3</sup> total per day. However, the plants are typically 10-25 years old and most are not maintained. None of the existing plants is actually providing biological treatment since the technical facilities are out of order.<sup>63</sup>

### **Ukraine**

- In Ukraine, agriculture has been noted as a major non-point source of pollution with 88% of those river basins being cultivated land. Agriculture (in particular linked with irrigation) is defined as inducing local severe pressure in terms of pollution. Approximately 80 million tonnes of soil with the content of 120,000 tons of nitrogen and 80,000 tonnes of phosphorous is being washed out annually. On the slopes 20% of nitrogen, 25% of phosphorous and 10-70% potassium are wasted out of fertilizers.<sup>64</sup> Additional point sources of pollution are primarily waste water treatment plants.<sup>65</sup> Approximately 8 billion m<sup>3</sup> of waste water per year is discharged into surface waters and 26% of water supply and sewerage networks are in an emergency state.<sup>66</sup>

## **Tentative mitigation and reduction measures**

Nutrient reduction can be achieved through investments such as:

- Improvements in agricultural production processes – including improved fertilisation methods, improved land management (and crop rotations), improved irrigation management, etc.
- Wastewater treatment – from industrial sources of pollution as well as municipal water systems
- Improved fertiliser production to reduce emissions from the production process

<sup>62</sup> See <http://www.bs-hotspots.eu/Documents/Deliverables/HS%20Lists%20Update%20Report%20Final.pdf>

<sup>63</sup> See <http://www.nispa.org/files/GE-report.pdf>

<sup>64</sup> See <http://www.ais.unwater.org/ais/aism/getprojectdoc.php?docid=85>

<sup>65</sup> See <http://www.bs-hotspots.eu/Documents/Deliverables/HS%20Lists%20Update%20Report%20Final.pdf>

<sup>66</sup> See <https://www.nwp.nl/sites/default/files/aquatherm-invitation.pdf>

## Annex G: Relevant on-going projects in participating Countries

Country	Activity	Implementing organization(s)	Main objectives
Belarus	Northern Dimension Environmental Partnership (NDEP), see <a href="#">here</a>	Organization funded by EU, Partner Governments and IFIs	NDEP provides grants which complement loans provided by IFIs and these in turn can leverage further local and international funding. Within Belarus, funding focuses on the Baltic and Barents seas – so not the focus of this GEF project.
	GEF-6 POPs Legacy and Sustainable Chemicals Management	UNDP/GEF	The project aims to build capacity and destroy 1,000 tonnes of PCB stockpiles, accelerate the phasing out of 2,100 tonnes of PCB equipment, and destroy 3,000 tonnes of Obsolete Pesticides.
Belarus, Ukraine	Regional Demonstration Project for Coordinated Management of ODS and POPs Disposal in Ukraine, Belarus, Kazakhstan and Armenia	UNIDO/GEF with ministries for environment protection in targeted countries	<p>The project will demonstrate environmentally sound collection and destruction of Persistent Organic Pollutants (POPs) stocks and Ozone Depleting Substances (ODS) – assisting in complying with the Stockholm Convention and the Montreal Protocol It will introduce regulatory reforms in (among others) Belarus and Ukraine and strengthen national capacity in identifying, assessing, managing, and treating such wastes in an environmentally sustainable manner.</p> <p>The project aims to reduce POPs by 450 tonnes over the course of the project (in total over the 4 countries).</p>
Georgia	Drinking Water Safety Plan (WSP) for Oni Water Supply System, Republic of Georgia (see <a href="#">here</a> )	USAID with local municipality	The objective of the WSP is to ensure the safety of drinking water by applying good water supply practices, which include: i) prevention of contamination of the source water; ii) treatment of the water to reduce or remove contamination and meet water quality targets; and iii) prevention of re-contamination during storage, distribution and handling of drinking water.
	Financing for the Urban Water Supply and Sanitation Sector in Georgia Strategy (see <a href="#">here</a> )	OECD/EAP	In this project, the OECD/EAP Task Force secretariat cooperated with the Georgian Government to assess the financial implications of achieving the Millennium Development Goals (MDGs); to help the Government of Georgia to set realistic targets for the rehabilitation and development of urban water supply and sanitation infrastructure and services; and to identify options to bridge the financial gap between the expenditure needed for achieving policy objectives and the financing available.
	Disposal of POPs Pesticides and Initial Steps for Containment of Dumped POPs Pesticides	UNDP/ Ministry of Environmental Protection and Natural Resources	The project's objective is to enhance environmental quality and avoid human impacts by ensuring minimization of POPs pesticide releases in Georgia
	Technical Assistance for the Improvement of Waste Management Systems in Georgia	EU	Overall goal of the project is to assist Georgia in the development of a waste management system, considering the requirements of the EU-Georgia Association Agreement and best international practices.

Country	Activity	Implementing organization(s)	Main objectives
	Capacity-building and support of measures towards implementation of integrated waste management system in Georgia with a focus on hazardous and biodegradable waste management	SIDA	The overall objective of the project is to support Georgia in creation and implementation of waste management system which corresponds to the norms and levels accepted by EU and by this improve general living environment in Georgia.
	Georgia Solid Waste Management Project – Stakeholder Participation Programme and Assistance to Develop Municipal Waste Management Plans and Implement the ESAP	EBRD	The objectives of the project are to: <ul style="list-style-type: none"> <li>- Enhance public ownership and awareness of waste management, increasing public participation.</li> <li>- Provide expertise required to implement the ESAP, comply with EBRD Environmental and Social Performance Requirements and to keep EBRD updated on progress of ESAP implementation.</li> <li>- Support the Municipalities to prepare Municipal Waste Management Plans.</li> </ul>
	Demonstrating and Scaling Up Sustainable Alternatives to DDT for the control of vector borne diseases in Southern Caucasus and Central Asia	UNEP/GEF	The project aims to – among other things - eliminate 200 tonnes of DDT in Georgia (as well as in Tajikistan and Kyrgyzstan) and is currently under implementation.
	PCB-free electricity distribution in Georgia	UNIDO/Ministry of Environment and Natural Resources Protection	This GEF-funded project will focus on elimination of PCBs in the electricity system in Georgia.
	The EU twinning project Strengthening the administrative capacities of the Ministry of Environmental Protection and Agriculture of Georgia for approximation and implementation of the EU environmental 'acquis' in the fields of industrial pollution and industrial hazards.	EU Delegation to Georgia Ministry of Environmental Protection and Agriculture of Georgia (MEPA)	Assist the Ministry of Environment Protection and Agriculture (MEPA), to harmonize its legislation and organizational structure on industrial pollution (IED: Industrial Pollution EU-Directive) and industrial hazards (SEVESO III EU-Directive).  Develop a system for environmental integrated permitting and inspection.  Install an online application to prevent and coordinate industrial major accident hazards.
Ukraine	Enabling Transboundary Cooperation and Integrated Water Resources Management in the Dniester River Basin	UNDP, UNECE, OSCE (GEF-funded) – with national entities	Integrated water resources management in the Dniester river basin to strengthen sustainable development, through the update of the TDA, development and endorsement of the SAP and initiation of its implementation. The project is also linked to another of other sub-projects.
Belarus	Global Project on the Implementation of PRTRs as a Tool for POPs Reporting, Dissemination and Awareness Raising for Belarus, Cambodia, Ecuador, Kazakhstan, Moldova and Peru	UNEP (GEF-funded) – with national entities	The project focuses on implementing information collection/reporting methodologies and tools for POPs. It does not have investments in POP reduction within its scope.
Ukraine	UNIDO project on water management on water management in Ukraine	UNIDO with the Ministry of Environmental Protection of Ukraine	This project focuses on the sustainable application of WMC, in order to increase the efficiency of the national industry and to reduce risks to humans and the environment. The project aims to provide services to the private and public sector, create local capacity, co-ordinate the

Country	Activity	Implementing organization(s)	Main objectives
			different international efforts, and contribute to the establishment of the legal basis for water management.
	Environmentally Sound Management and Final Disposal of PCBs	UNIDO/GEF	The project plans to replace and dispose of 3,000 tonnes of PCB oil, PCB containing equipment and wastes – along with other capacity building/project identification activities.

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## **Annex H: Country Profiles**

### ***Belarus***

Belarus covers 24% of the Dnieper river basin before it enters Ukraine. Due to the issues with waste water treatment capacity and wastewater discharges from industry, there is a substantial negative impact on the quality of water sources. Also, the run-off from agricultural areas has a local and severe impact in the Belarusian part of the river basin. Main pollutants are nutrients (nitrogen compounds), organic substances (including phenols) and heavy metals. Most municipal wastewater is treated – in 2011 only 3.8 million m<sup>3</sup> discharged which is insufficiently treated out of a total of 462 million m<sup>3</sup> collected in wastewater systems (compared to 651 million m<sup>3</sup> injected into the distribution network (See [here](#))).

The water and wastewater sector in Belarus show a solid but ageing and oversized infrastructure, which urgently requires modernization. The infrastructure is rather old and in dilapidated condition due to lack of maintenance over the past two decades. The current rate of replacement as the networks age does not seem sufficient to reverse their overall deterioration. Water demand has almost halved since 1991, along with a decrease in industrial output and the spread of water metering. Investment planning is not geared towards the stimulation of efficiency. Existing infrastructure design and sizing norms often lead to excessive investment and operating costs. Investments are often identified without any reference to a master plan and appraised without the clear and transparent procedures required to guarantee the efficiency of capital investments. Infrastructure renewal is often planned without any updated assessment of current needs, perpetuating infrastructure overcapacity.

The Ministry of Natural Resources and Environmental Protection is in charge of implementation of consolidated state policy on environmental protection and rational use of natural resources. It is also responsible for implementation of state policy on the use and protection of subsoils and on hydrometeorological activity. As the key governmental body in the field, the Ministry coordinates the activities on environmental protection and rational use of natural resources of other republican authorities and local executive and administrative bodies.

The territorial bodies of the Ministry are the Minsk City Committee of Natural Resources and Environmental Protection, six oblast committees of natural resources and environmental protection and 120 town and rayon inspection units (often joint town and rayon inspection units) of natural resources and environmental protection.

All subordinated organizations are state owned, such as The State Institution “Republican Centre for Analytical Control in the Field of Environmental Protection”, the State Institution “Republican Centre on Hydrometeorology, Control of Radioactive Pollution and Environmental Monitoring”.

### **1. Wastewater**

#### **1.1. Legislation and policy**

Although Belarus has relatively well-developed legislation in place, it has taken appropriate steps to refine its legislation in order to integrate environmental considerations more efficiently into water policies. The 2014 Water Code, adopted in place of the 1998 Code, represents a major stride towards making Belarus’s legislation more compatible with the EU legal setting in the water sector.

The new Water Code, in force since May 2015, is the principal legal act for pursuing state policy for sustainable development, and protection and rehabilitation of the country’s surface water and groundwater resources.

Belarus puts particular effort into harmonizing its water-related legislation with EU legal acts, which is among the goals of the Water Strategy until 2020. There are a number of recently adopted technical regulatory legal acts that follow the relevant EU regulations but need to be made applicable for the

conditions of Belarus through implementing various administrative, technical, capacity-building and other measures. The main challenge now is effective enforcement of the updated legislation.

The State Programme on Water Supply and Sanitation “Clean Water” for 2011–2015, the implementation of which is coordinated by the Ministry of Housing and Utilities, is aimed at expanding population coverage with supply of good quality potable water and sanitation services.

## **1.2. Urban Wastewater**

### **Existing situation**

In 2014, the total volume of discharged wastewater was estimated at 1,011 million m<sup>3</sup>, of which 931 million m<sup>3</sup> went to surface water bodies and 80 million m<sup>3</sup> to filtration fields, wastewater retention ponds and eventually to groundwater.

Around 33% of the wastewater disposed into surface waters required no treatment, 66.6 per cent was treated in compliance with appropriate regulations and norms, and 0.4 per cent, 3.4 million m<sup>3</sup>, was not adequately treated to the allowable standards. Thus, progress was made in reducing the discharge of untreated or inadequately treated wastewater by threefold since 2005.

In the Upper Dnieper basin, on the territory of Belarus, there are 163 water users (including industries) that discharge wastewater into water bodies. Over 90% of the wastewater in the basin is produced by 23 companies. The largest is the Minsk wastewater treatment plant, which treats wastewater from almost the whole of Minsk’s population and almost all the city’s enterprises. One of the biggest problems is inadequate cleaning due to inefficient facilities or their absence in many areas (mainly towns, see [http://documents.rec.org/publications/4\\_Belarus\\_Ukraine\\_ENG.pdf](http://documents.rec.org/publications/4_Belarus_Ukraine_ENG.pdf)).

There is a decreasing trend in the discharge of oil products, ammonium ion, nitrite ion and sulfate ion, but the disposal of suspended solids and several metals has increased.

### ***Opportunities for WWT and reduction of pollution***

The wastewater infrastructure is solid, but ageing and oversized. Most municipal WWTPs built in the 1970s and 1980s were not designed to remove nutrients, nitrogen and phosphorus. Over the last decade, many wastewater treatment facilities have been rehabilitated and new plants for treating wastewater built; nevertheless, a sizable share of wastewater facilities is still not functioning efficiently and in need of more effort and investment for their rehabilitation. The current rate of replacement does not seem sufficient.

## **1.3. Industrial Wastewater**

### **Existing situation**

In Belarus, manufacturing is the most important sector and accounts for 88 percent of total production. The biggest segments within manufacturing are: food beverages and tobacco (around 27 percent); coke and refined petroleum products (19 percent); chemicals (13 percent); machinery and equipment (8 percent); and metallurgy (7 percent).<sup>67</sup>

The industrial sector is among leading polluters of the water resources, by its discharges. Industrial water use decreased by 8 per cent, from 441 million m<sup>3</sup> in 2005 to 406 million m<sup>3</sup> in 2014. The general requirements for disposing of industrial effluents into municipal sewerage systems are contained in the Rules for using communal water supply and sewerage systems adopted by 1995 Order of the Ministry of Housing and Utilities No. 128. These Rules are currently under revision with a view to prompting industries to treat their wastewater on-site to the specific standards before discharging it into the sewerage system.<sup>68</sup>

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<sup>67</sup> <https://tradingeconomics.com/belarus/industrial-production>

<sup>68</sup> [https://www.unece.org/fileadmin/DAM/env/epr/epr\\_studies/ECE.CEP.178\\_Eng.pdf](https://www.unece.org/fileadmin/DAM/env/epr/epr_studies/ECE.CEP.178_Eng.pdf)

## ***Opportunities for industrial WWT and reduction of pollution***

Large industries often have their own wastewater treatment facilities on-site, but many others discharge their wastewater into municipal sewerage systems. Although industrial wastewater is to be treated to certain standards on the site before being discharged into the sewerage system, industrial effluents are frequently disposed of either not satisfactorily treated or without pretreatment.

## **2. POPs**

### **2.1. Legislation and policy<sup>69</sup>**

The legislative framework of the Republic of Belarus addressing the issues of safe chemicals use including POPs is largely influenced by the international agreements regulating the relations in this field. In particular, the Republic of Belarus is a Party to the following international agreements:

- a. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (accession by Decree of the President of the Republic of Belarus of 16 September 1999 No. 541);
- b. Convention on Long-Range Transboundary Air Pollution (ratified by Decree of the Presidium of the Supreme Council of the Republic of Belarus of 14 May 1980);
- c. the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (approved by Decree of the President of the Republic of Belarus of 14 December 1999 No. 726);
- d. the Convention on Transboundary Impact of Industrial Accidents (accession by the Law of the Republic of Belarus of 30 April 2003).

Belarus acceded to the Stockholm Convention on Persistent Organic Pollutants (the Convention) in February 2004 in accordance with Decree of the President of the Republic of Belarus of 23 December 2006 No. 594. Since that time, the country has directed its efforts to undertaking the appropriate measures for prevention of the negative impact of Persistent Organic Pollutants (POPs) on human health and the environment. The first National Implementation Plan (NIP) under the Stockholm Convention on Persistent Organic Pollutants for the period 2007–2010 and for the period until 2028 was approved in 2007 by Decree of the President No. 271.

### **2.2. Existing situation<sup>70</sup>**

The analysis of the responses and the findings of the project experts during field visits have allowed to collect the following information about the quality and quantity of the existing stockpiles of pesticides classified as POPs on the territory of the Republic of Belarus:

1. As of 1 November 2005, 6,558 tons of the obsolete pesticides were stored in storehouses and landfills including 718 tons of DDT, which is listed in the Stockholm Convention. Any other POPs-containing pesticides listed in the Stockholm Convention have not been identified on the territory of Belarus within the current inventory.
2. 2,733 tons of unidentified mixtures and 25 tons of unidentified liquids, which can be regarded as potential POPs are stored at storehouses and in landfills.
3. At present pesticides classified as POPs are not used for disinfection, disinsectization and deratization in Belarus.

Pesticides classified as POPs, unidentified mixtures and unidentified liquids are stored mainly at the storehouses of the agricultural enterprises of “Belagroservice”, “Selkhozkhimiya”, state inspectorate on plants protection, collective and state-run farms, hothouses and agricultural cooperatives. DDT is

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<sup>69</sup> The National Plan of the Republic of Belarus for the Implementation of its Obligations under the Stockholm Convention on Persistent Organic Pollutants for the period of 2007–2010 and until 2028

<sup>70</sup> The National Plan of the Republic of Belarus for the Implementation of its Obligations under the Stockholm Convention on Persistent Organic Pollutants for the period of 2007–2010 and until 2028



stored at the storehouses of the Brest, the Vitebsk and the Grodno regions; unidentified liquids – at the storehouses of the Vitebsk, the Minsk and the Mogilev regions and unidentified mixtures – at the storehouses in all regions of the country except the Gomel region. There are no stockpiles of the obsolete pesticides classified as POPs, unidentified mixtures and unidentified liquids on the territory of the Gomel region because between 1999 and 2004 they were collected and transported by the regional station for crop protection to the Communal Unitary Enterprise (CUE) “Facility for processing and burial of hazardous industrial wastes of the Gomel region”.

Obsolete pesticides landfill		Total amount of buried pesticides (tons)	POPs pesticides content (tons)
Region	District		
Brest	Brest district, Village Gershony	122	About 20
Vitebsk	Postavy	100	no data
	Gorodok	411	no data
	Verkhnedvinsk	455	More than 20
Gomel	Petrikov	More than 1,400	More than 150
Grodno	Slonim	892	More than 400
	Mstislavl	530	More than 90

762 enterprises in Belarus own PCB-containing equipment. These enterprises are dispersed on the whole territory of the country. The largest amounts of PCBs were identified in Minsk and the Minsk region – total of 514.3 tons (32.9 % of all PCBs in Belarus) and the Mogilev region – 384.4 tons (24.6 %). In the Gomel region 213.5 tons of PCBs were identified, in the Vitebsk region – 192.3 tons, in the Brest region – 143.5 tons, and in the Grodno region – 115.8 tons.

The PCB-containing transformers and capacitors are distributed rather unevenly on the territory of Belarus. The predominant type of PCB-containing equipment in the Minsk region (including the city of Minsk), Mogilev and Vitebsk regions is the transformer. The transformers make up 75 % of the whole amount of PCBs in the Mogilev region. In the Gomel, Brest and Grodno regions the largest amount of PCBs is concentrated in capacitors. At that, the PCBs contained in capacitors constitute 97 % of the total amount of PCBs in the Grodno region.

Key reference: The National Plan of the Republic of Belarus for the Implementation of its Obligations under the Stockholm Convention on Persistent Organic Pollutants for the period of 2007–2010 and until 2028.

### 2.3. Opportunities for reduction and destruction of POPs

NIP defines the strategic directions in the following period till 2028 regarding the opportunities for the management of equipment, materials and wastes containing POPs:

Till 2020:

- Phase out of all POPs-containing capacitors and 60 % of transformers within the territory of the Republic of Belarus;
- Further disposal of wastes containing polychlorinated biphenyls; and
- Clean up and remediation of further sites contaminated by polychlorinated biphenyls.

In period 2021–2028:

a. Completion of removal of POPs-containing equipment from use and disposal of wastes containing polychlorinated biphenyls (by 2025); and

b. Completion of clean up and remediation of sites contaminated by POPs.

#### 2.4. e-waste

E-waste in Belarus is estimated at 72,000 tonnes (7.6 kg per inhabitant)<sup>71</sup>.

### 3. Agricultural pollution

#### 3.1. Existing situation

Agriculture plays an important role in the economics of Belarus with 7.9 % of GDP and 8.1 % of population employed in agricultural sector (Agriculture of Republic of Belarus, 2013). Intensive agricultural production is the major direction of agriculture development in Belarus. It demands significant subsidies and provides negative consequences on environment, including pollution of lands and water, degradation of soils.

There are four main groups of agricultural land-users in Belarus:

- 1) state large scale farms (so called SPK – agricultural production cooperatives),
- 2) private farms,
- 3) homesteads with land up to 1 ha and small summerhouse plots (“datcha”) usually not more than 0.05 ha; in fact they are family farms.

In total, there is 8 726,45 559,7 thousand ha of agricultural land (5 559,7 thousand ha of arable land) in Belarus, including 86.7 % managed by state large scale farms, 1.7 % managed by private farmers, 9.9 % managed as homesteads lands and summerhouse gardens owners (“datcha”). Private farmers produce 1.45 % of total agricultural production, family farmers – 22.11 %.<sup>72</sup>

In the Upper Dnieper basin, on the territory of Belarus, there are many forms of agricultural enterprise, including branches of service industries, private farms, and processing facilities with different forms of ownership. Minsk region is the largest agricultural area in Belarus. Mineral and organic fertilisers and pesticides are washed from fields and livestock farms into streams and rivers, causing organic and nutrient pollution. Agricultural production here includes dairy cattle breeding, poultry farming, and the growing of grains, potatoes, flax and beets. Livestock breeding is one of the most important branches of agriculture in Belarus.

Compared with EU countries such as Denmark and Poland, the livestock intensity in the Dnieper basin in Belarus is low. However, the relative inefficiency of sewage treatment plants at livestock farms, the absence of modern systems and the lack of manure processing increase the risk of contamination of water bodies.<sup>73</sup>

#### 3.2. Opportunities for pollution reduction in agricultural sector

**Belarus** should implement codes of good agricultural practices, review the location of agricultural facilities, and develop wastewater regulations for private farms.<sup>74</sup>

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<sup>71</sup> <https://globalewaste.org/map/>

<sup>72,72</sup> Development of organic agriculture in Belarus: main actors, challenges, barriers and first successes

Practitioners’ Track, IFOAM Organic World Congress 2014, ‘Building Organic Bridges’, 13-15 Oct., Istanbul, Turkey

<sup>73</sup> [http://documents.rec.org/publications/4\\_Belarus\\_Ukraine\\_ENG.pdf](http://documents.rec.org/publications/4_Belarus_Ukraine_ENG.pdf)

<sup>74</sup> [http://documents.rec.org/publications/4\\_UpperDnieper\\_Eng.pdf](http://documents.rec.org/publications/4_UpperDnieper_Eng.pdf)

## Georgia

Focusing on littoral countries, the Strategic Action Plan for the Environmental Protection and Rehabilitation of the Black Sea identifies high amounts of pollution from municipal and industrial operations in Georgia as a key contributor to Black Sea basin pollution. An inventory undertaken revealed there are 3,057 tonnes of pesticides in Georgia, including 2,700 tonnes of pesticide at one site (Lalghuja pesticide burial site). In addition there are 20,000 pieces of electrical equipment with PCBs, estimated to exist in Georgia<sup>75</sup>.

Most (80%) of unintended POPs of dioxin/furan emissions are estimated to mostly result from uncontrolled combustion processes (uncontrolled/spontaneous combustion of wastes and wildfires) – a majority of which are taking place at landfills.<sup>76</sup>

E-waste in Georgia is estimated at 21,000 tonnes (4.6 kg per inhabitant)<sup>77</sup>. Plastics waste is estimated to be 43,000 tonnes per year.<sup>78</sup> The waste management system in Georgia, particularly for hazardous waste such as the e-waste stream, is very under-developed – likely leading to significant pollution both and outside of landfills.<sup>79</sup>

The Ministry of Environment and Natural Resources Protection covers all the rights and responsibilities related to natural resources management and protection. The Ministry includes the central office for water resources management – the Water Resources Management Service, which implements governmental policy in the field of water resources management and protection, assesses plans of environmental impact mitigation in the field of water, establishes and adopts Maximum Admissible Discharges, conducts state inventory of water use, etc.

The National Environmental Agency under the Ministry is responsible for water quality and quantity monitoring.

Other water-related responsibilities are distributed between different state institutions:

1. The Ministry of Labor, Health and Social Affairs of Georgia are responsible for protection of public health. The Ministry develops environmental quality standards, including those for drinking water, surface waters, groundwater and coastal waters.
2. The Ministry of Regional Development and Infrastructure of Georgia is responsible for implementing regional development policy including coordination and support of the development of water supply and sanitation systems. This ministry also supervises the Municipal Development Fund that provides investment for construction and rehabilitation of physical infrastructure of water and wastewater in Municipalities of Georgia.

### 1. Wastewater<sup>80</sup>

#### 1.1. Legislation and policy

Georgia's water-related legislation is inconsistent, contradictory and fragmented throughout the wide range of legal acts. There are more than 15 major laws in Georgia that significantly influence the management of water resources and the associated environmental concerns. However, mainly, water resources management system in Georgia is currently regulated by the Water Law of 1997.

The main legislative change was brought to Georgia's environmental law with the 2004 Tax Code of Georgia and 2005 Law on Licenses and Permits. According to the Tax Code, all taxes for environmental pollution (including for water pollution) were abolished.

<sup>75</sup> Persistent Organic Pollutants National Implementation Plan of Georgia, 2012

<sup>76</sup> Government of Georgia (2012) Persistent Organic Pollutants National Implementation Plan of Georgia

<sup>77</sup> [http://www.step-initiative.org/Overview\\_Georgia.html](http://www.step-initiative.org/Overview_Georgia.html)

<sup>78</sup> Based on [http://www.atlas.d-waste.com/index.php?view=country\\_report&country\\_id=80](http://www.atlas.d-waste.com/index.php?view=country_report&country_id=80)

<sup>79</sup> See for example: [http://apps.unep.org/redirect.php?file=/publications/pmtdocuments/-Georgia\\_Country\\_Report\\_EEA-2011GEORGIA\\_COUNTRYREPORT\\_2011.pdf.pdf](http://apps.unep.org/redirect.php?file=/publications/pmtdocuments/-Georgia_Country_Report_EEA-2011GEORGIA_COUNTRYREPORT_2011.pdf.pdf)

<sup>80</sup> MUNICIPAL WATER AND WASTEWATER SECTOR IN GEORGIA. Status report, 2015. SlovakAid

In general, Georgian legislation is quite silent on wastewater, in the decree of government says that Georgia can use European and foreign standards for wastewater management if they provide better conditions than Georgian regulatory acts. Therefore, the current water resources management lacks consistency, efficiency and integrity with other sectors and therefore needs overall reorganization both with regard to institutional and regulatory aspects.

There is a strong need for reform of the current water legislation and the current system of water resources management. The first step in direction of harmonization of regulatory base in this field is elaboration of draft law “on water resources management”, which aims to comply with the EU water legislation.

## **1.2. Urban Wastewater**

### **Existing situation**

The centralized sewage system exists in 37 towns in Georgia. 78% of the population is connected to sewerage, indicating high network penetration by international standards. The systems are, however, in poor condition. Wastewater treatment facilities are serving 33 towns, with the total daily design capacity of 1.42 million m<sup>3</sup>. There are 19 traditional mechanical/biological treatment plants, with a total design capacity of 1.39 million m<sup>3</sup>/day. Four purely mechanical treatment plants with a design capacity of 0.03 million m<sup>3</sup>/day are available.

### **Opportunities for WWT and reduction of pollution**

Wastewater treatment plants are typically 10-25 years old; some are as yet unfinished, and most are not maintained. None of the existing plants is actually providing biological treatment since the technical facilities are out of order. Power and other resources are also needed. Development and improvement of municipal infrastructure, including water supply and sanitation systems, is one of the objectives of the State Strategy for Regional Development of Georgia for 2010-2017.

## **1.3. Industrial Wastewater**

### **Existing situation**

In Georgia the primary sources of industrial pollution are oil terminals, mining operations and metal factories. Industrial pollution of rivers of Georgia is primary due to the heavy metals. The most toxic from them are: cadmium, copper, lead, zinc, manganese, mercury, etc. They get into water objects with unpurified industrial discharges. The discharges from metallurgical and chemical plants into the river and 100 times exceeds the limited permissible concentrations<sup>81</sup>.

### **Opportunities for industrial WWT and reduction of pollution**

“Tbilsresi” (Tbilisi regional power plant), discharges the wastewater into the river without purification that contained 208t.organic substances, 3t.oil products and 5t.suspended particles.

“Mtkvari-energetika” ltd. toxic releases was flowed into river without purification that contained 0.8t of organic substances, 0.04t of oil products and 15t of suspended particles.

“Tbilaviamsheni” enterprise discharges into the river without purification that contained 1t of organic substances and 6.4t of suspended particles.

The joint-stock company “Madneuli” produces copper concentrate. According to the project the available information, open pit waters are constantly leaking and polluting rivers.

Akhtala mining and smelting enterprise discharge the effluent, which contains ammonium and nitrite nitrogen, phenols and oil products.

The joint-stock company “Energy-invest” doesn't have the wastewater treatment system and is connected with Tbilisi-Rustavi regional purifying station where they are mechanically purified. The major contaminant is ammonia and its concentration exceeds limited permissible concentrations.

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<sup>81</sup> Zurab Lomsadze, Ketevan Makharadze, Rusudan Pirtskhalava. The ecological problems of rivers of Georgia. Journal Annals of Agrarian Science., 2016

## **2. POPs**

### **2.1. Legislation and policy<sup>82</sup>**

Georgia is party to several international treaties regulating the use of chemical substances dangerous for the environment.

These treaties are:

1. The Vienna Convention on the “Protection of the Ozone Layer” (1985) and the Montreal Protocol on “Substances That Deplete the Ozone Layer”. In accordance with these treaties, Georgia is obliged to phase out the production of a number of substances believed to be responsible for ozone depletion
2. The Stockholm Convention on “Persistent Organic Pollutants”. Georgia joined the Convention in 2006. The Convention regulates 12 persistent organic substances of which nine are pesticides (aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, toxaphene), the second group represents industrial chemicals (polychlorinated biphenyls) and the third group is by-products (dioxins and furans), which are generated during different industrial processes. The convention obliges the countries to neutralize-liquidate persistent organic pollutants occurring as wastes, to reduce to the maximum extend the use of POPs in production with the final aim of phasing them out. Also, reduction of by-products emissions into the environment with their final fate.
3. The 1998 Rotterdam Convention on the “Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides”, which regulates the international trade of 47 hazardous chemicals. In brief, the prior notification and consent of the receiving country is required prior to international shipments of the listed substances.

### **2.2. Existing situation**

Pesticides are not manufactured in Georgia. As compared with the Soviet Period, the use of pesticides in agriculture has decreased by 5-6 times. Chlorine containing organic pesticides, mercury containing pesticides, tiazole group pesticides are no longer used in Georgia.

The use of phosphorous organic insecticides has also been significantly reduced. Half of the chemical pesticides are the copper-bearing fungicides.

There are additional requirements regulating pesticides in Georgia. In particular, only pesticides registered by the Food Safety, Veterinary, and Plant Protection Service of Georgia can be produced, imported, or exported.

### **2.3. Opportunities for reduction and destruction of POPs**

An inventory of obsolete pesticides held in the country was conducted in between 2004 and 2006 with the support of UNDP. Over 3,000 tonnes of obsolete pesticides have been identified, the majority of which (up to 2,700 t) are located in the depository of chemical substances at the Iagluja Mountain, and approximately 360 tonnes, in other storage facilities (former Kolkhozes) in different parts of the country. Over 200 of these storage facilities have been studied, and pesticides have been found at 46 of them.

When the inventory was conducted, most of the storage facilities were damaged,

some of which were completely ruined and robbed (the construction materials were stolen). In many cases the residue pesticides were mixed and dumped in the open air without any packing. They were exposed to the elements and were being continually washed into the soil.

During 2006-2009, most of the obsolete pesticides found in these storages sites (Soviet Kolkhozes) have been collected. Over 230 tonnes have been packed in suitable containers and removed for storage at the Iagluja Mountain depository. 600 tonnes of soil polluted with pesticides has been also collected at the former Kolkhozes areas and moved to the Iagluja depository. There are currently only

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<sup>82</sup> NATIONAL REPORT ON THE STATE OF THE ENVIRONMENT OF GEORGIA, 2007-2009

small portions of obsolete pesticides left at different locations within Georgia, which have to be collected and safely stored.

Persistent organic pollutants (polychlorinated biphenyls) are found in Georgia in electrical energy distribution equipment, such as transformers, capacitors, currency- switches etc. There are approximately 1400 or more tonnes of oils polluted with polychlorinated biphenyls being in use in Georgia.

## **2.4. e-waste**

E-waste in Georgia is estimated at 21,000 tonnes (4.6 kg per inhabitant)<sup>83</sup>. E-waste is a source of a variety of materials that can be recovered and brought back into the production cycle. Over 1,000 different chemicals are identified in the e-waste streams, such as: heavy metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and brominated flame retardants, such as polybrominated diphenylethers (PBDEs), plus a number of plastics components.<sup>84</sup>

All manufacturers in Georgia who place a product onto the market will be obliged to reduce negative environmental impact that may follow its production, use, waste recovery or disposal. This will be regulated by the new Waste Management Code that was adopted in Georgia in 2014 and enters into force from 1 December 2019. The Waste Management Code of Georgia introduces the concept of Extended Producer Responsibility (EPR) for specific waste streams.<sup>85</sup>

According to the new Code, manufacturers and legal entities that place products onto the market are responsible for ensuring the reduction of negative environmental impacts that may follow the production and use of the products and their waste recovery or disposal.

Georgian businesses that produce or import a product, which after its use becomes specific waste, will be obliged to manage these specific waste streams. These streams are as follows: packaging waste (plastic, paper/cardboard, wood, metal, glass), waste electrical and electronic equipment (WEEE), end-of-the life tires (ELTs), end-of-the life vehicles (ELVs), used oils, used batteries and accumulators.

## **3. Agricultural pollution<sup>86</sup>**

### **3.1. Existing situation**

Two thirds of Georgia's land area is used for either forestry or agriculture. Agriculture was traditionally the mainstay of the Georgian economy and from an employment perspective it still remains as such, although its contribution to GDP substantially decreased over the last decade.

A decrease in the intensity of agriculture has also resulted in a decrease of its impact on the environment. During the last 20 years, the use of fertilizers and pesticides fell sharply and as a result the general impact on the environment and biodiversity has reduced considerably.

High concentrations of nitrogen of ammonia and in some cases, organic substances in surface waters to some extent arise from pollution by untreated municipal wastewaters and from diffused pollution from agricultural sources. Agricultural pollution poses a potential risk to supplies of drinking water for cities and villages, particularly where well and spring waters are used, such as in western Georgia in particular.

In the late twentieth century, excessive use of agro-chemicals on agricultural lands resulted in the pollution of both surface and ground waters with nitrates and pesticides. Pollution of ground waters was observed at depths of 100-150 m in deep artesian aquifers.

The main point source emissions from the agriculture sector arise from cattle and poultry breeding. The closure of several large-scale cattle and poultry breeding facilities resulted in many smaller scale

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<sup>83</sup> <https://globalewaste.org/map/>

<sup>84</sup> [https://www.who.int/ceh/capacity/eWaste\\_and\\_childrens\\_health\\_DRAFT.pdf?ua=1](https://www.who.int/ceh/capacity/eWaste_and_childrens_health_DRAFT.pdf?ua=1)

<sup>85</sup> <http://georgiatoday.ge/news/14118/Consultations-on-Draft-Technical-Regulations-for-Waste-Management-Held>

<sup>86</sup> NATIONAL REPORT ON THE STATE OF THE ENVIRONMENT OF GEORGIA, 2007-2009

facilities being established. This has distributed the emissions from a small number of sources to a larger number of smaller sources. This has overall reduced the impact of emissions from intensive agriculture facilities as their impact is much more localized due to their scale.

## *Ukraine*

In Ukraine, agriculture has been noted as a major non-point source of pollution with 88% of those river basins being cultivated land. Agriculture (in particular linked with irrigation) is defined as inducing local severe pressure in terms of pollution. Approximately 80 million tonnes of soil with the content of 120,000 tons of nitrogen and 80,000 tonnes of phosphorous is being washed out annually. On the slopes, 20% of nitrogen, 25% of phosphorous and 10-70% potassium are wasted out from fertilizers.<sup>87</sup> Additional point sources of pollution are primarily waste water treatment plants.<sup>88</sup> Approximately 8 billion m<sup>3</sup> of waste water per year is discharged into surface waters and 26% of water supply and sewerage networks are in an emergency state.<sup>89</sup>

Wastewater treatment accounted for 43% of Ukraine's environmental expenditures during 2010-2013, which puts it at highest category of expenditure. This is in addition to the 6% expenditure for the protection and rehabilitation of soil, and of ground and surface waters.<sup>90</sup>

One of the major contributors of sustainable agriculture and pollution reduction is the modernization and reconstruction of the existing irrigation system in Ukraine. The irrigation system in Ukraine is degraded, especially on-farm networks, such as the engineering infrastructure and pumping equipment, and a poor renewal of sprinkling equipment, violations of crop growing technologies, changes in the structure of sown areas, and worsening of the ecological and ameliorative conditions in irrigated lands.<sup>91</sup>

The total amount of necessary investment in the water industry of Ukraine has been estimated by international financial institutions at 7 billion USD. Ukraine needs to reconstruct 35% of outdated water supply and sewerage networks, replace 40% of water supply and canalization equipment, reconstruct 25% of existing water treatment facilities, and install new water purification facilities for 85% of industrial enterprises<sup>92</sup>.

The system of environmental protection inevitably depends on the overall system of public governance existing (and the one that has existed) in the country. The present day environmental governance system in Ukraine has inherited a certain legacy, and faces a number of challenges going forward.<sup>93</sup>

The key agency tasked with environmental management in Ukraine at the central level is the Ministry of Ecology and Natural Resources (MENR) as the main state authority with the key role to develop and ensure implementation of environmental policy. The State Ecological Inspectorate (SEI) agency implements state policy on monitoring and control in the area of environmental protection, rational use, recreation, and protection of natural resources. The State Agency of Water Resources of the MENR implements state policy regarding the management, use (including recreational use) of surface water resources; development of water industry and land reclamation; and maintenance of state waterworks facilities, inter-economic irrigation, and drainage systems.

The first document of environment and sector strategies and plans, which set the general background for national policy and actions for environmental protection and their integration into economic

<sup>87</sup> See <http://www.ais.unwater.org/ais/aiscm/getprojectdoc.php?docid=85>

<sup>88</sup> See <http://www.bs-hotspots.eu/Documents/Deliverables/HS%20Lists%20Update%20Report%20Final.pdf>

<sup>89</sup> See <https://www.nwp.nl/sites/default/files/aquatherm-invitation.pdf>

<sup>90</sup> Water and Wastewater Services in Danube Region. Ukraine Country Note. Danube Water Program 2015.

<sup>91</sup> Mikhail Romashchenko, and Oksana Dekhtiar. IRRIGATION REFORM IN UKRAINE: ORGANIZATIONAL AND LEGAL ASPECTS. 2nd World Irrigation Forum (WIF2) 6-8 November 2016, Chiang Mai, Thailand

<sup>92</sup> <http://www.wwm-expo.com/market/market-reforms-projects>

<sup>93</sup> UKRAINE COUNTRY ENVIRONMENTAL ANALYSIS, JANUARY 2016. The World Bank

reforms in Ukraine, was “Main Directions of the National Policy of Ukraine for Environmental Protection, Natural Resource Use and Environmental Safety” (“Main Directions”). This document was adopted by the Parliament’s decree on March 5, 1998, for the implementation of Article 16 of the Constitution of Ukraine and Law “On Environmental Protection” (1991). The Main Directions document established a foundation for the development of a number of state targeted programs that were adopted during 1999–2012.

## **1. Wastewater**

### **1.1. Legislation and policy**

To address its environmental challenges, Ukraine prepared its National Environment Strategy 2020 (NES), which was adopted by the Parliament in 2010. NES reflects the key environmental challenges facing Ukraine, and assigns priorities to air quality, water and land resources, forests and biodiversity, waste management and biosafety.

NES foresees several provisions and objectives related to water resources:

- Reform of state management system in the area of rationalization of water use through the implementation of integrated water resources management;
- Reconstruction of existing and construction of new municipal wastewater treatment facilities with the goal to reach 15% reduction of water pollution (in the first place, organic matters, nitrogen and phosphorus compounds) by 2020, and reduce the discharge of insufficiently treated wastewater by 20% by 2020;
- Development and realization of measures regarding a reduction of pollution level of landlocked waters and territorial sea in order to restore ecosystems of Black and Azov Seas.

Ukraine is Party to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (ratified in 1976), Convention on the Protection of the Black Sea against Pollution (ratified in 1994), Convention on the Protection and Use of Transboundary Watercourses and International Lakes (ratified in 1999) and Danube River Protection Convention (2002).

For the fulfilment of these international treaties, the parliament of Ukraine adopted its key legislation for the protection of water resources and water management—the Water Code—first adopted in 1995 and update late in January 2015. The Water Code regulates water conservation; rational water use; protection of water resources from pollution, contamination, and depletion; improvement of ecologic conditions of water bodies; and protection of water user's rights.

The Water Code provides a background for the development of state targeted programs, regional programs, water cadastre and various legal acts. It foresees conducting ecological expertize during modernization and building the facilities related to water use; conducting a state recording of water consumption and sewage discharge; conducting standardization in the area of water protection and usage; and implementation of state monitoring of water resources.

### **1.2. Urban Wastewater**

#### **Existing situation**

The access rate to a central wastewater disposal system in Ukraine was around 56 % on average in 2012. In cities the average access was 75 %. The wastewater access rate in rural areas is very low at 8 % on average and demonstrates large regional differences. As well as the central wastewater disposal, a large percentage of the population use cesspits. In 2012, this proportion was 2.4 % in big cities and 21.1 % in small cities and 57.9 % in rural area. In large cities, around 90% of wastewater is mechanically-biologically treated. In smaller cities this method is only carried out in 45 % of facilities. In rural regions wastewater treatment is often limited to mechanical primary treatment.<sup>94</sup>

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<sup>94</sup> Country profile on recycling management and water management in Ukraine. German RETech Partnership. 2018



Wastewater treatment accounted for 43% of Ukraine's environmental expenditures during 2010-2013, which puts it at highest category of expenditure. This is in addition to the 6% expenditure for the protection and rehabilitation of soil, and of ground and surface waters. However, it should be noted that a large proportion (65% nationally) covers operational costs, which may indicate under-investment in key wastewater collection and treatment infrastructure. In 2012, there were 6,856 water-pumping plants in operation and 3,093 sewage treatment plants, of which about 87% need a complete overhaul. In 2012, renovation was carried out on only 1.3% of the required replacements due to financial constraints.<sup>95</sup>

The main causes of surface water pollution is the discharge of contaminated municipal and industrial waste water directly into the water body or through the sewage system; polluted runoff water from built-up areas and farmland; and soil erosion in water recharge areas. Donetsk, Dnipropetrovsk, Luhansk, and Odesa oblasts account for approximately 75% of all discharges into surface waters. Key sectors contributing to discharge of polluted waters are industrial enterprises (894 million cubic meters), followed by housing and the communal sector (538 million cubic meters), and the agricultural sector (71 million cubic meters). Due to the low quality of wastewater treatment, wastewater flow of contaminated surface reservoirs is not reduced.

### Opportunities for WWT and reduction of pollution

The sewage facilities in Ukraine were mainly set up in the 60s and 70s. Many of them were fitted in accordance with modern treatment standards for that time, but no longer fit with the current state of the art and so are in need of renovation. The regional percentages of sewage facilities that are in need of renovation are shown in the following table.

Because of the run-down condition of the entire sewage system, (42,800 km in length), the need for renovation in 2013 was estimated at around 16,000 km (38 %) of the sewage pipelines. As well as this, around 7,650 sewer pumps (33 %) from the pump stock were in need of renovation.

Wastewater treatment plant (city)	Capacity used
Rivne	81%
Sumy	76%
Dnipropetrovsk	75%
Chernihiv	74%
Khmelnyskyi	73%
Kirovohrad	73%
Mykolaiv	72%
Luhansk	70%
Cherkasy	70%
Zaporizhia	70%
Zakarpattia	69%
Donetsk	63%
Ternopil	63%
Volhynia	60%
Ivano-Frankivsk	57%
Kherson	55%
Odessa	51%
Vinnytsia	41%
Kharkiv	39%
Chernivtsi	33%
Poltava	32%
Kiev oblast	32%
Zhytomyr	25%
Lviv	16%

<sup>95</sup> Water and Wastewater Services in Danube Region. Ukraine Country Note. Danube Water Program 2015.

### 1.3. Industrial Wastewater

#### Existing situation

Virtually all major cities exceed the WHO recommended limits – in 22 out of 47 cities the level of industrial pollution was very high or high. The worst situation is in large cities with a heavy concentration of industry – Kryvyi Rih, Dnipro, Kharkov, Zaporozhye, Mariupol, Luhansk, and Donetsk. The sources of industrial pollution are metallurgy, the chemical industry, mining and electricity generation producing the contamination by heavy metals, petroleum hydrocarbons, polycyclic aromatic hydrocarbons, and organochlorine pesticides.

There is widespread pollution with petroleum hydrocarbons in the hot spot areas. The concentrations of petroleum hydrocarbons (C10 – C40) were measured in thirty river sediment samples.

Increased levels of zinc, cadmium, copper, nickel, lead, chromium, and arsenic were found in all hot spot areas. The levels of these pollutants could represent a threat to the environment and human health. The most widespread heavy metal in the hot spots areas is cadmium, followed by zinc<sup>96</sup>.

In 2013 (according to the official data) 45.2 thousand tons of suspended solids, 375.6 tons of petrochemicals, 1006 thousand tons of sulfates, 782.5 thousand tons of nitrites, 253.4 tons of synthetic detergents, 760.5 tons of iron, 7.8 thousand tons of phosphates, etc. were discharged with industrial wastewaters into the surface water bodies. The 881 enterprises discharge wastewaters into the surface water bodies without the adequate treatment, inefficient treatment plants or no treatment.<sup>97</sup>

#### Opportunities for industrial WWT and reduction of pollution

The town of Horlivka, with a population of over 350,000 people (as of 2005), remains one of the largest industrial centres of Donetsk oblast. There are many industrial enterprises concentrated in the town's area, based on coal, chemicals, metallurgy and machine-building. These enterprises used to produce and accumulate significant volumes of aerial, liquid and solid waste, contaminating the lower atmosphere, soil and surface and ground water. As a result, the ecological state of the area is characterized by significant tensions and instability.

Mine workings and toxic waste of the Mykytivsky Mercury Integrated Plant are located in the potentially affected area of mine flooding accompanied by the contamination of mine workings adjacent to the industrial site of the Horlivka Chemical Plant.<sup>98</sup>

### 2. POPs<sup>99</sup>

#### 2.1. Legislation and policy

An effective legal and regulatory framework of managing chemical including POPs and waste has been created in Ukraine. Current legal acts include all the generally accepted norms and principles as to safety requirements, control, and responsibility. However, the development and improvement of the legislative framework as well as organizational structure of the state management framework of environmental protection as a whole and hazardous substances and wastes in particular has not been followed by timely revision and development of additional sub-legal acts. This gap shall be overpowered at initial stages of NIP implementation.

Ministry of Environmental Protection of Ukraine (MEPU) is the main body in the system of central bodies of executive power for the problems of ensuring implementation of the state environmental

<sup>96</sup> Impact of pollution on inhabitants and the environment in five industrial cities in Ukraine, VÁCLAV MACH | PRAGUE–KYIV 2018

<sup>97</sup> S. Boychenko, R. Havryliuk, Ya. Movchan, O. Tarasova, V. Sharavara, S. Savchenko. Water supply and water discharge: challenges and concept of responses – context of climate change and exhaustions of water resources. Conference Paper · January 2015

<sup>98</sup> Ecological Threats in Donbas, Ukraine. Assessment of ecological hazards in Donbas impacted by the armed conflict in eastern Ukraine. The Centre for Humanitarian Dialogue. October 2017

<sup>99</sup> Ministry of Environmental Protection of Ukraine (2007) The National Implementation Plan for the Stockholm Convention on POPs

policy. It is assignee of the Ministry of Environmental and Natural Resources and preserves all the functions concerned with management of POPs directly or indirectly. The State Ecological Inspection, the State Inspection for Protection of the Black Sea, the State Inspection for Protection of the Azov Sea of functioning as constituent parts of the Ministry and are responsible for carrying out inventory of POPs releases and their sources, development and organization of measures for implementation of the Stockholm convention on POPs, and ensuring financing of the measures foreseen by it from internal and external sources. On the other hand, there is no any specialized subdivision in the Ministry at the level of department or section that is responsible for organization and coordination of activity concerned with management of POPs in Ukraine only.

## 2.2. Existing situation and opportunities of POPs reduction

One of the POPs-related urgent problems in Ukraine for the last 30 years has been the disposal of obsolete and prohibited pesticides (OP). A number of government resolutions and regulatory acts on this matter were issued in the former Soviet Union but they have not been fully implemented.

Currently the total amount of OP in Ukraine is over 22 thousand tons most of which are persistent organochlorinated compounds. They are stockpiled in about 5000 storehouses of various forms of property, of which 109 are owned by the state. According to the latest inventory of 2006, the OP amount in every oblast varies from 130 to 2500 tons; while every storage unit has from 0.1 to 500 tons.

The «hot spots» are presented in the following table:

Region	Quantities (kg)
The Autonomous Republic of Crimea	1,180.0
Vinnitsa oblast	1,073.9
Dniepropetrovsk oblast	1,211.0
Zaporizhzhya oblast	1,214.0
Kyiv oblast	1,932.9
Kirovograd oblast	1,210.5
Odesa oblast	1,867.6
Sumy oblast	2,527.7
Kharkiv oblast	1,193.1

Under the former Soviet Union DDT was among the pesticides most widely used in agriculture and medicine in all oblasts of Ukraine from the late fifties to 1990. DDT was manufactured at RADICAL plant in Kiev in 1954-1975. Its DDT (active ingredient) manufacturing capacity was:

1,000 tons per year in 1954-1960

4,000 tons per year in 1960-1970

7,500 tons per year in 1970-1975.

DDT-containing substances manufactured at RADICAL plant were supplied to Ukrainian agricultural sector as well as to the former soviet republics in Central Asia and abroad.

DDT application in medicine was prohibited since 1989 by the Order of the Ministry of Health of the USSR. According to 2006 inventory data, a total of 1,744.2 tons of DDT are stored in various oblasts of Ukraine. The largest amount of DDT (800 tons) is stored in Odesa oblast.

The OP stockpiling situation in Ukraine is becoming very dangerous and requires urgent solution.

From 1973 to 1998 in Kalush town of Ivano-Frankivsk oblast there was manufacturing of carbon tetrachloride (CTC) and perchloroethylene (PCE) with solid waste containing over 90% of hexachlorobenzene (HCB) at a rate of 540 tons per year. As of 2006 the stockpiled amount of the waste made up 11,087.6 tons.

Analysis of PCB data obtained from Ukrainian enterprises proves that the largest amounts of PCBs are used and/or located at the most power consuming enterprises of metallurgic and engineering

sectors

Regarding various types of PCB-containing equipment the hot spots. are:

a) transformers

Donetsk oblast (25%);

Dniepropetrovsk oblast (11%);

Kyiv oblast (11%);

b) capacitors

Zaporizhzhya oblast (18%);

the Autonomous Republic of Crimea (12%);

Dniepropetrovsk oblast (7%);

c) containing PCB liquids

Donetsk oblast (27%);

Dniepropetrovsk oblast (26%);

Kyiv oblast (14%).

As of today, the inventory revealed a total of 1,002 transformers of 27 different models, and 102.032 capacitors of 157 different models as well as 250,048 kg of synthetic liquids of 8 various types.

Each transformer weighs between 490 kg and 12,000 kg while the total weight of liquid dielectric in each one varies from 160 kg to 4,160 kg. The total weight of all transformers is 5,746,540 kg, of which PCB makes up 2,051,160 kg.

The total amount of PCB contained in the equipment and stored at Ukrainian enterprises, as estimated by the preliminary inventory, makes up about 4,240 tons.

It should be noted that experts' estimated the real amounts to be 1.5-3 times larger. These estimates are based on comparison of industrial and economic performance of Ukraine and the Russian Federation as well as data on PCBs and PCB-containing equipment in Russia showing about 10,000 transformers and 500,000 capacitors located there. Total amount of PCBs in Russia amounts up to 35,000 kg.

Therefore, the total amounts of PCBs and PCB-containing equipment currently available in Ukraine may be estimated as follows:

- transformers 1,500-3,000 items;
- PCBs in transformers 3,000-6,000 tons;
- weight of transformers 8,300-16,600 tons;
- capacitors 150,000-200,000 items;
- PCBs in capacitors 2,850-3,800 tons;
- weight of capacitors 9,000-12,000 tons;
- PCBs stockpiled 400-600 tons;
- total amount of PCBs – 6,220-10,540 tons.

Inventory of POPs releases sources from unintentional production for the period of 2002-2004 has been carried out in Ukraine to evaluate gross releases. The evaluation was undertaken based on the recommendations of the EMEP/ Corinair Guide for estimation of releases and their forecast by sources mentioned in the Guide. Guide for inventory of dioxins and furans leakage proposed by the UNEP.

Determination of the amounts of POPs releases is rather costly and is accompanied by a number of obstacles in Ukraine, that's why the inventory was based on the statistical data received from the SSCU (Statistical year-book of Ukraine for 2004). The following types of releases sources have been

considered: incineration of domestic wastes, ferrous and non-ferrous metallurgy, electricity and heat power production, cement, brick, glass, and lime manufacturing, transport, forest fires, cellulose and paper manufacturing etc.

Total annual amounts of PCDDs/PCDFs releases in Ukraine are estimated as 2,516.5 g of TEQ in 1990 and 1,451.4 g of TEQ in 2002, of which ferrous and non-ferrous metallurgy, electricity and heat power production make up 95%.

### **2.3. e-waste**

Waste Electrical and Electronic equipment (WEEE) is one of the fastest growing waste streams in Ukraine<sup>100</sup>. WEEE management in Ukraine is institutionally fragmented which means that different governmental bodies, regional, environment and health authorities, private business have taking independently some of the responsibilities for the WEEE. The coverage and quality of WEEE service provision is differs depending of the region. This information is not collected either by State Statistics Service or Ministry of Ecology as a separate flow. Also there are no legal requirements for data reporting on WEEE for municipal authorities or waste management companies. This waste flow is hidden among solid and probably hazardous waste and currently is not available for assessment. Based on the available information, E-waste in Ukraine was estimated at 258,000 tonnes in 2014 (5.7 kg per inhabitant).<sup>101</sup>

#### **Current status**

Nowadays the restriction of certain hazardous substances in WEEE is regulated by a Resolution of the Cabinet of Ministers "On approval of technical regulations limiting the use of certain hazardous substances in electrical and electronic equipment" of 03.12.2008 number 1057. This Resolution introduces the requirements of Directive 2002/95/EC.

A new Resolution of the Cabinet of Ministers "On approval of technical regulations limiting the use of certain hazardous substances in electrical and electronic equipment" is being developed, with the purpose of introducing the new EU requirements of Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (recast).

At the moment, the management of WEEE in Ukraine is not regulated by law. The only regulating document regarding WEEE is the Order of the Ministry of Regional Development, Construction, Housing and Communal Services of Ukraine "On Approval of guidelines for collection of waste electrical and electronic equipment, which is a part of waste" of 22.01.2013 number 15 was developed for the local authorities. The collection and treatment activities with WEEE currently require licenses under the Waste Management Law and, the Law on licenses and the subsequent sub legislation.

#### **Necessary changes**

Having regard to the fact that currently in Ukraine there is no specific legislation on WEEE in force the achievement of sustainable regulation in this field calls for a number of new provisions to be adopted both in the primary and secondary legislation. Consequently the changes proposed in this Annex are considered as necessary.

In line with the Ukraine–European Union Association Agreement the scope, definitions of key terms and the requirements of the new Ukrainian Law on waste electrical and electronic equipment is proposed to comply with the in line with Directive 2012/19/EU on waste electrical and electronic equipment (WEEE) and best EU practices.

## **3. Agricultural pollution**

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<sup>100</sup> [https://menr.gov.ua/files/docs/dod\\_6\\_spec\\_vydy\\_vidhodiv\\_Eng.docx](https://menr.gov.ua/files/docs/dod_6_spec_vydy_vidhodiv_Eng.docx)

<sup>101</sup> [http://www.step-initiative.org/Overview\\_Ukraine.html](http://www.step-initiative.org/Overview_Ukraine.html)

### 3.1. Existing situation

The agricultural sector is the leading component of the Ukrainian economy, representing 14% of gross value added and 40 percent of exports, which means it has a significant influence on the country's economic and social development. Currently, the agricultural sector is basically the only driver of the Ukrainian economy.

Agriculture has been noted as a major non-point source of pollution with 88% of those river basins being cultivated land. 80 ml. tones of soil with the content of 120 th. tons of nitrogen and 80 th. tons of phosphorous is being washed out annually. On the slopes 20 % of nitrogen, 2-5 % of phosphorous and 10-70 % potassium are dashed out of fertilizers.<sup>102</sup>

### 3.2 Opportunities for pollution reduction in agriculture

One of the major contributors of sustainable agriculture and pollution reduction is the modernization and reconstruction of the existing irrigation system in Ukraine. The irrigation system in Ukraine is degraded, especially of the on-farm networks, such as the engineering infrastructures and pumping equipment, insufficient park of and a poor renewal of the sprinkling equipment, violations of the crop growing technologies, changes in the structure of the sown areas, and worsening of the ecological and ameliorative conditions in the irrigated lands.<sup>103</sup>

The modern watering technologies are chiefly recommended for the modernization and reconstruction of the irrigation systems – first of all, drip irrigation systems and low-pressure sprinkling machines, as well as water and energy saving environment friendly irrigation regimes, water regulation and metering, implementation of seepage control measures in the mains and canals and replacement of the old and inefficient pumping equipment.

While rehabilitating the irrigation, the environmental safety requirements should be met and the specifics of the ecological and ameliorative condition should be taken into account of the irrigated lands, as well as the directivity of the soil processes and regimes, possibility of manifestations of salinization, acidification, alkalization, hydromorphization of lands and the quality of the irrigation water.

The irrigation reform in Ukraine needs to be comprehensive to cover all the elements of the national structure for supply, transportation, distribution and consumption of water resources and based on the world's best practices and include:

- (a) development of the National Strategy of Irrigation Rehabilitation and Development;
- (b) making relevant amendments and supplements to the applicable legislation in force;
- (c) structuring water users into water user associations (WUAs) which further acquire attributes of legal entities or create legal entities to become retail water suppliers;
- (d) institutional reform in the water economy management to initially establish the state-owned joint stock company in order to unbundle the functions of the owner and water supply operator, and establishment of the Water Board as an advisory body initially to further develop into the independent regulator of the sector;
- (e) development and implementation of investment projects for rehabilitation and development of irrigation.

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<sup>102</sup> <http://www.ais.unwater.org/ais/aiscm/getprojectdoc.php?docid=85>

<sup>103</sup> Mikhail Romashchenko, and Oksana Dekhtiar. IRRIGATION REFORM IN UKRAINE: ORGANIZATIONAL AND LEGAL ASPECTS. 2nd World Irrigation Forum (WIF2) 6-8November 2016, Chiang Mai, Thailand

## **Annex I: Stakeholder Engagement Plan**

### **Introduction**

The Stakeholder Engagement Plan (SEP) is designed to ensure effective engagement between various stakeholders throughout the lifecycle of the Black Sea Basin Project.

This SEP is built on a stakeholder assessment process undertaken during the project preparation phase and will incorporate other work that is foreseen during Project implementation regarding mobilizing stakeholder engagement. This Annex is an extract from the larger Stakeholder Engagement Report prepared to inform the Project's design.

The Project will aim to maintain meaningful dialogue with the relevant national and regional authorities and institutions in Belarus, Georgia, and Ukraine, as well as business, NGOs, the scientific sector, key international organizations and local community groups.

### **Regulations and Requirements**

In alignment with the GEF Public Involvement Policy and the GEF Guidelines for the Implementation of the Policy on Stakeholder Engagement, the Stakeholder Engagement Plan seeks to ensure the Project:

- Effectively involves the public to enhance the social, environmental, and financial sustainability of projects
- Takes responsibility for assuring that public involvement rests within the country, normally with the government, project executing agency or agencies and with the support of GEF Partner Agencies
- Designs and implements public involvement activities in a flexible manner, adapting and responding to recipient countries' national and local conditions and to project requirements
- Delivers effective, public involvement activities that are broad-based and sustainable
- Includes the appropriate allocation of resources, throughout the identification, design, implementation, monitoring and evaluation of GEF-Financed Activities, to ensure sustained commitments and actions related to public involvement activities
- Carries out public involvement activities in a transparent and open manner
- Has full monitoring and documentation of public involvement.

### **Objectives**

The objectives of this SEP are:

- To identify stakeholders involved directly or indirectly in the project as well as the nature and extent of their interests.
- To provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement.
- To specify procedures and methodologies for stakeholder consultations and feedback.
- To establish an accessible, transparent and responsive grievance mechanism for the project.

### **Summary of any previous stakeholder engagement activities**

Project preparation has involved several consultations and information sharing with various stakeholders, organizations and actors that are interested in the proposed Project in Belarus, Georgia and Ukraine, and also in the wider Black Sea region and GEF community to receive and incorporate the views of stakeholders for the project.

## Project Stakeholders

The major groups of stakeholders will be regularly informed about the project development. Some of the stakeholders will play advisory role to the project team, and some of stakeholders will be involved into project implementation:

- National government, agencies and Ministries/ regulatory authorities, including Ministries of Environment in Belarus, Georgia, Ukraine, and including GEF focal points
- Private sector (SMEs)
- Private sector (large enterprises)
- Municipalities
- Local, and national environmental CSOs
- Local population
- International organizations
- Financial institutions
- Regional organizations, including the Black Sea Commission

## Stakeholder Engagement Activities

The goal of Stakeholder Engagement Activities is to involve all relevant stakeholders of the Project, including Project-affected groups, and local CSOs, as early as possible in the implementation process and throughout project duration, and to ensure that their views and concerns are made known and taken into account. The plan will also help the project in implementing effective communication channels and working relationships. The Project Team will continue to hold consultations throughout project implementation as deemed necessary.

**Table I.1. Summary of Project Engagement by Stakeholder Group**

Stakeholders	Engagement methods/means	Engagement Activities	Responsible parties	Required Resources
<b>Component 1: Targeted policy dialogue and stakeholders engagement</b>				
<b>National government, agencies and Ministries/ regulatory authorities</b>	Meetings; tele-communication; email updates; possible participation in Regional Project Committee meeting (virtual or in-person)	Gathering baseline-information; receiving proposals on policies improvements; Sharing project progress, invitation to Regional Project Committee meetings, and other key-meetings.	Project team	Staff time communication costs local travel
<b>Black Sea Commission/other regional organizations</b>	Face-to-face meetings; tele-communication; e-mails; possible participation in Project Steering Committee meetings	Proper coordination; sharing best practices	Project team	Staff time communication costs local travel
<b>Private sector (SMEs/large)</b>	Face-to-face meetings, e-mails; participation in Project Steering Committee meetings	Discussing feasibility of establishing Green Industry Clubs, private sector partnerships; Informing about the project progress;	Project team	Staff time; communication costs; local travel
<b>Environmental CSOs</b>	Face-to-face meetings, e-mails; participation in Project Steering	Discussing appropriate awareness-raising strategies; policy dialogue;	Project team	Staff time; communication costs; local travel



Stakeholders	Engagement methods/means	Engagement Activities	Responsible parties	Required Resources
	Committee meetings	Informing about the project progress; capacity-building.		
<b>Local public</b>	Public events; feedback forms; specific public engagement tools depending on community needs.	Awareness-raising and capacity building on water/chemicals management topics (including water pollution, use/emissions of POPs or other chemicals). Activities will include: local media, publications, public events (festivals and etc.), social media.	Project team	Staff time; communication costs; local travel
<b>Municipalities/local authorities</b>	Face-to-face meetings; public events; tele-communication;	Awareness-raising on water/chemicals management topics (including water pollution, use/emissions of POPs or other chemicals).	Project team	Staff time; communication costs; local travel
<b>Component 2: Implementation support</b>				
<b>Black Sea Commission/other regional organizations</b>	Face-to-face meetings; tele-communication; e-mails; participation in Project Steering Committee meetings	Coordinating project activities	Project team	Staff time; communication costs; local travel
<b>Municipalities</b>	Face-to-face meetings; public events; email updates; tele-communication	Discussing the local needs for addressing challenges in water/chemicals management;	Project team	Staff time; communication costs; local travel
<b>Private sector (SMEs)</b>	Face-to-face meetings, e-mails	Discussing pilot activities to be supported within the project (component 3) and financial models	Project team	Staff time; communication costs; local travel
<b>Private sector (large)</b>	Face-to-face meetings, e-mails;	Discussing pilot activities to be supported within the project (component 3) and financial models	Project team	Staff time; communication costs; local travel
<b>Local public</b>	Public events; feedback forms; specific public engagement tools depending on community needs.	Discussing the local needs for addressing challenges in water/chemicals management; Collecting feed-back on pilot activities to be supported within Component 3 of the Project.	Project team	Staff time; communication costs; local travel
<b>Environmental CSOs</b>	Face-to-face	Discussing the local	Project team	Staff time;

Stakeholders	Engagement methods/means	Engagement Activities	Responsible parties	Required Resources
	meetings, e-mails;	needs for addressing challenges in water/chemicals management; Updating about the project progress.		communication costs; local travel
<b>National government, agencies and Ministries/ regulatory authorities</b>	Face-to-face meetings; tele-communication	Sharing project progress, invitation to Project Steering Committee meetings, and other key-meetings	Project team	Staff time; communication costs; local travel
<b>Component 3: Financing to support accelerated deployment of environmental practices and technologies</b>				
<b>Black Sea Commission/other regional organizations</b>	tele-communication; e-mails; participation in Project Steering Committee meetings	Sharing project progress;	Project team	Staff time communication costs
<b>Implementers of project investment activities</b>	Regular project communication; project events.	Sharing project progress, invitation to Project Steering Committee meetings	Project team	Staff time communication costs
<b>Business (SMEs)</b>	Face-to-face meetings, e-mails	Reporting by the implementers	Implementers of project investment activities	Staff time communication costs
<b>Business (large)</b>	Face-to-face meetings, e-mails	Reporting by the implementers	Implementers of project investment activities	Staff time communication costs
<b>Municipalities</b>	Face-to-face meetings, e-mails	Sharing project progress, collecting feed-back on implementation of investment activities.	Project team	Staff time communication costs
<b>National government, agencies and Ministries/ regulatory authorities</b>	Face-to-face meetings, e-mails	Sharing project progress, invitation to Project Steering Committee meetings, and other key-meetings	Project team	Staff time communication costs
<b>Local public</b>	Face-to-face meetings, e-mails	Sharing project progress; collecting feed-back on implementation of project investment activities	Project team	Staff time communication costs
<b>Environmental CSOs</b>	Face-to-face meetings, e-mails	Sharing project progress, invitation to Project Steering Committee meetings, and other key-meetings	Project team	Staff time communication costs
<b>Component 4: Knowledge management and Monitoring and Evaluation</b>				
<b>Black Sea Commission/other regional organizations</b>	Face-to-face meetings, e-mails	Sharing project progress, Monitoring and Evaluation of the project	Project team	Staff time communication costs
<b>Implementers of project investment</b>	Face-to-face meetings, e-mails	Sharing project progress, invitation to	Project team	Staff time communication

Stakeholders	Engagement methods/means	Engagement Activities	Responsible parties	Required Resources
<b>activities</b>		Project Steering Committee meetings Monitoring and Evaluation of the project		costs
<b>Business (SMEs)</b>	Face-to-face meetings, e-mails	Reporting by the implementers; Monitoring and Evaluation of the project	Implementers of project investment activities	Staff time communication costs
<b>Business (large)</b>	Face-to-face meetings, e-mails	Reporting by the implementers; Monitoring and Evaluation of the project	Implementers of project investment activities	Staff time communication costs
<b>Municipalities</b>	Face-to-face meetings, e-mails	Sharing project progress; Monitoring and Evaluation of the project	Project team	Staff time communication costs
<b>National government, agencies and Ministries/ regulatory authorities</b>	Face-to-face meetings, e-mails	Sharing project progress, invitation to Project Steering Committee meetings, and other key-meetings; Monitoring and Evaluation of the project	Project team	Staff time communication costs
<b>Local public</b>	Public events; feedback forms; specific public engagement tools depending on community needs.	Sharing project progress; Monitoring and Evaluation of the project	Project team	Staff time communication costs
<b>Environmental CSOs</b>	Face-to-face meetings, e-mails	Sharing project progress, invitation to Project Steering Committee meetings, and other key-meetings; Monitoring and Evaluation of the project	Project team	Staff time communication costs

### Stakeholder Risks

The risk of poor stakeholder engagement on the Project is deemed low. Section 7 of the main report also focuses on risks and sites lack of regional cooperation as a 'low' rated risk for the Project also. Any risk of poor stakeholder management will be mitigated by the project team who will monitor this factor and adjust regional activities related to knowledge sharing as necessary.

Risk	Level of Risk	Mitigation measures
Low commitment from the governments in Belarus, Georgia and Ukraine	Low/Medium	Political risk is considered low. Consultative process will be used to increase ownership, including involvement in planning, awareness raising and dissemination of results.
Lack of interest among	Low/Medium	This is a key risk to be addressed by the project. The project

Risk	Level of Risk	Mitigation measures
industry in investment		will bring together the key stakeholders in consultative and networking manner during the project implementation, to ensure maximum outreach and involvement. Additionally, in early stage of project implementation the project will liaise with other related International Water and Chemicals & Waste projects to identify priority investments, which are commercially viable, and of sufficient scale for Bank's investment.
Lack of support from local communities/civil society groups for project activities	Low	Consultative process will be used to ensure early engagement with local communities in territories where project investments might occur in order to take into account perspectives of local people.

### Stakeholder Engagement Approach

**Formalised Communications Plan:** A Communications Plan will be prepared and implemented in the first year of project implementation and updated when necessary throughout the Project to clearly disseminate timely and relevant information and to gather feedback regarding the needs and priorities of all stakeholders.

**Social Inclusion:** A socially inclusive consultation process will be adopted where a range of stakeholders, including those identified as vulnerable, are effectively engaged and adequately represented. Consultation methods will vary according to audience and levels of education. These will include awareness raising, campaigns, posters and general information sessions as well as theoretical and applied technical trainings. All sessions and communication modes will be offered in national languages (Russian and Belarussian for Belarus, Ukrainian for Ukraine, and Georgian for Georgia) and follow the customs and norms of communities in each of the countries.

**Transparency and Reporting:** Consultation sessions will be well-documented, identifying attendees (men/women), topics discussed, feedback and issues raised by stakeholder groups, and outcomes or actions resulting from the consultation. Management measures must be completed, disclosed, and discussed with stakeholders prior to implementation of any activities that may cause adverse economic, social and environmental impacts.

**Regional Level Engagement:** the project management team will work with key regional stakeholders, including The Commission on the Protection of the Black Sea Against Pollution, International Commission for the Protection of the Danube River, UNDP, International Water and Chemicals & Waste projects (GEF-funded projects, EBRD-funded projects) in order to co-ordinate project activities, and especially Component 3 - *Financing to support accelerated deployment of environmental practices and technologies*.

**National Level Engagement:** the PMT will build on the stakeholder consultation process that will include the inception workshop, validation workshop and other bi-lateral meetings. A Project kick-off and inception meeting with key stakeholders will take place led by the Project Steering Committee inauguration with members amongst others as: Ministries of Environment for Belarus, Georgia, and Ukraine, The Commission on the Protection of the Black Sea Against Pollution, other governmental, and non-governmental stakeholders.

The kick-off meeting will raise awareness of the Project and establish communication and networking approaches to be used throughout the Project duration. Beyond this Project trainings and promotional activities will take place at a national level to strengthen and showcase the Project and its outcomes.

**Local Site Level Engagement:** the Project Committee will work closely with key project stakeholders such as companies, participating in Component 3 - *Financing to support accelerated deployment of environmental practices and technologies* across the project region, local communities in these territories, local authorities, CSOs, and co-financing institutions. The Project will specifically work

closely with relevant local authorities and civil society organisations to identify ways of raising general awareness on the benefits of sustainable waste water and chemicals management. A general improvement in community knowledge may assist further collaborations and buy-in for demonstrations to be scaled beyond the selected investments.

## **Grievance Mechanism**

As part of all Project-related interactions through consultations and capacity building, all stakeholders will be informed of how to submit a complaint about the Project, how to report anonymously, and how to access the grievance mechanism.

Anonymous reporting can include a public log held at each participating organization and capacity building session, or through anonymous feedback forms. Such feedback should be registered as part of general Project monitoring and evaluation, addressed in Project meetings, and finally integrated into the project as a means to course correction if the Project Team deem this significant and necessary. The Grievance mechanism will take into account the local-level, cultural context and language, local customs, and project conditions and scale. The plaintiff who submitted the grievance, will be invited to a discussion with a trained allocated Project Officer who will apply objective and consistent criteria for assessing the complaint. Following the discussion, the plaintiff should clearly and transparently be told whether or not the complaint is eligible to be processed.

In terms of investment activities, the project will also implement the Project Complaint Mechanism (PCM), which is the EBRD's accountability mechanism. It provides an opportunity for an independent review of complaints from individuals and organizations concerning EBRD-financed projects which are alleged to have caused, or are likely to cause, environmental and/or social harm

The PCM process is governed by the PCM Rules of Procedure, which set out the rules about how a complaint may be filed and how it will be processed. They also set out the requirements relating to timelines, reports, disclosure of and access to information, training, outreach and other issues relevant to the administration of the PCM. The current PCM Rules of Procedure were approved by the EBRD Board of Directors in May 2014 and came into force on 7 November 2014.

The PCM is independent from the EBRD's banking operations and the Environment and Sustainability department. It is administered by a dedicated PCM Officer who is located within the EBRD's Office of the Chief Compliance Officer (OCCO) and is responsible for the overall, day-to-day operations and external relations of the PCM.

Additionally, a roster of independent experts assists the PCM Officer in the process. Their functions include the assessment, together with the PCM Officer, of the eligibility of complaints, the undertaking of Compliance Reviews or Problem-solving Initiatives and follow up monitoring.

When a complaint is received and registered, the PCM Officer will appoint an independent expert from the existing roster. Together with the expert the PCM Officer will assess the eligibility of the complaint and make a decision on whether or not it should proceed to Compliance Review and/or Problem-solving stage or neither.

## **Monitoring and Reporting**

General Monitoring: The project's progress will be reported to the Project Steering Committee at its regular meetings. Updates will also be made available to project stakeholders during various communication approaches outlined in Table I.1, and on the Project/ EBRD web-site (<http://www.ebrd.com>).

Project progress will also be shared directly with key stakeholders such as the Ministries of the Environment of Belarus, Georgia, and Ukraine, and other government agencies in the project territories.