



**Pollution in the Western Balkans  
State of the Art and Current Challenges - An Overview**



MINISTERIAL CONFERENCE

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TO POLLUTION  
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& SOUTHERN  
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## Disclaimer

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## Abbreviations and acronyms

<b>CO<sub>2</sub></b>	Carbon dioxide
<b>Drin Corda</b>	Memorandum of Understanding for the Management of the Extended Transboundary Drin Basin
<b>EEA</b>	European Environment Agency
<b>EIA</b>	Environmental Impact Assessment
<b>EMS</b>	Environmental Management System
<b>ENVSEC</b>	Environment and Security Initiative
<b>EU</b>	European Union
<b>GDP</b>	Gross domestic product
<b>GEF</b>	Global Environment Facility
<b>IFI</b>	International financial institution
<b>ISO</b>	International Organization for Standardization
<b>IUCN</b>	International Union for Conservation of Nature
<b>LRTAP</b>	Convention on Long-range Transboundary Air Pollution
<b>KfW</b>	German Development Bank
<b>MAP</b>	Mediterranean Action Plan
<b>MEA</b>	Multilateral Environmental Agreement
<b>NGO</b>	Non-Governmental Organisation
<b>OECD</b>	Organisation for Economic Cooperation and Development
<b>PM 2,5</b>	Particulate matter with diameter of less than 2.5 micrometers
<b>PM 10</b>	Particulate matter with diameter of less than 10 micrometers
<b>SEE</b>	South East Europe
<b>SEPA</b>	Serbian Environmental Agency
<b>SDGs</b>	Sustainable Development Goals
<b>UN</b>	United Nations
<b>UNCED</b>	United Nations Conference on Environment and Development
<b>UN Environment</b>	United Nations Environment Programme
<b>UNDP</b>	United Nations Development Programme
<b>WHO</b>	World Health Organisation
<b>WRA</b>	Water Regulatory Authority

## Executive summary and introduction

The countries of the Western Balkans share a common recent history of conflicts and instability, followed by a transition process possibly leading towards EU membership sometime in the future. They share high quality environmental and natural resources such as high level of biodiversity compared to the rest of Europe, characteristic landscapes, mountains, forests, lakes and rivers, coast and marine environment. But they also share problems related to environmental pollution that are threatening the health of their people, causing damage to the economy and threatening the loss of resources for the future.

Due to the specific recent history of the region, the environmental policies and their implementation leading to decrease in pollution have also developed in a specific way. Not much was done about the environment in the decade of civil conflicts and instability between 1991 and 2000. After this, significant international support from the European Union, the United States and other donor countries has been provided to environmental institutions and non-governmental organisations, to develop policies and legislation, with the aim to achieve compliance with the EU legislation and international environmental conventions and standards. But the results in terms of actual pollution reduction are still limited:

- Cities of the Western Balkans rank among the worst in Europe in terms of air pollution<sup>1</sup>;
- While safe drinking water is secured for most of the population, only a small share of urban waste water is treated before being discharged to the rivers and the sea;
- The attractive Adriatic Sea and its coastline are polluted by plastic waste and other pollutants coming from the rivers and from coastal cities;
- Uncontrolled dumping of waste is still prevalent, with modern waste collection, recycling and sanitary landfills in early stages of development;
- Multiple hotspots of pollution (contaminated soil, chemicals) remain a concern in the region.

Although some of the pollution problems are severe, examples of good practices and innovative solutions to pollution are emerging across the region.

This paper has been prepared as a background for the Ministerial Conference “Innovative Solutions to Pollution in South East and Southern Europe” taking place on 4-5 December 2018 in Belgrade, Serbia. It tries to provide a summary of the main pollution challenges in the Western Balkans, the status of response and recommendations on priority actions to be taken in the short and mid-term.

<sup>1</sup>Tetovo, Tuzla, Pljevlja, Skopje, Bitola, Veles, Sarajevo, Tirana

The document is based on research done by the author, who has been active in the environmental policy in the region since the early nineties, including setting-up the **South Eastern European Regional Environmental Reconstruction Programme** in 1999 (Regional Environmental Center for Central and Eastern Europe, 2000), leading the preparation of the UNDP report **Environmental Policy in South East Europe** presented at the sixth Ministerial Conference "Environment for Europe" in Belgrade in 2007 (Stritih et al., 2007) providing the independent environmental policy assessment for the OECD report **Competitiveness in South East Europe: A Policy Outlook 2018** (Organisation for Economic Co-operation and Development, 2018), and working on other environmental projects in the region.



CHAPTER 1

MAIN  
POLLUTION-RELATED  
CHALLENGES IN THE  
WESTERN BALKANS

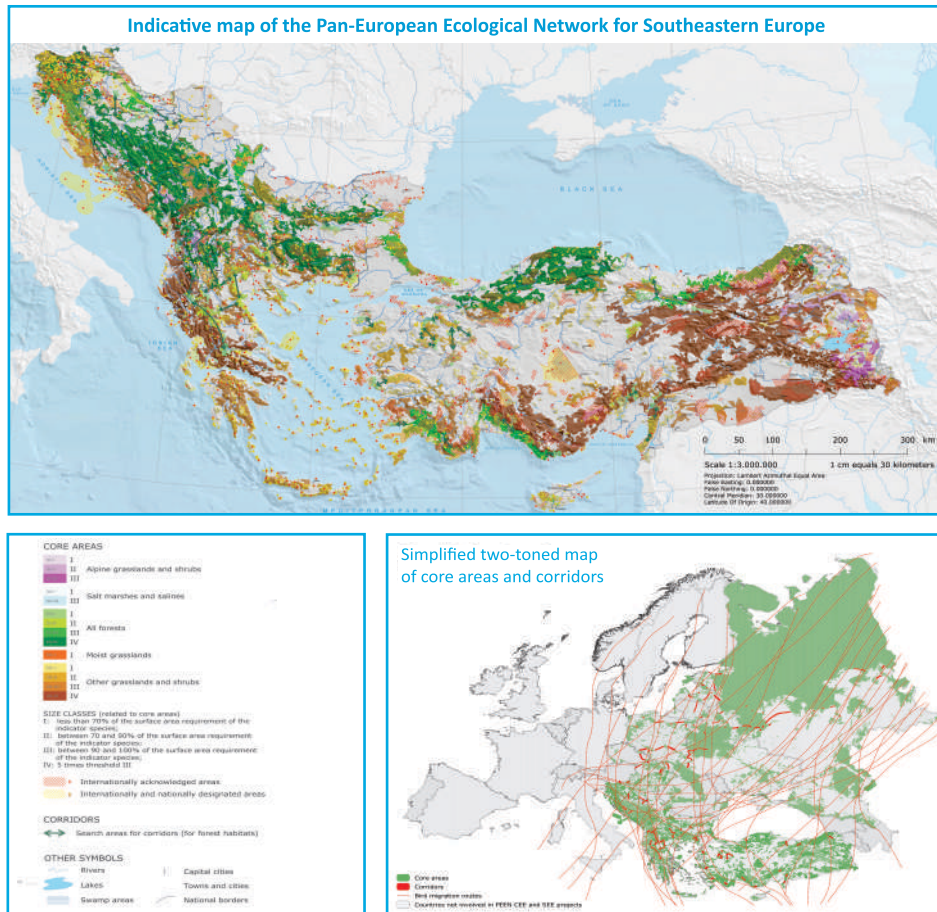


## Chapter 1

# Main pollution-related challenges in the Western Balkans

The Western Balkans with their preserved mountains, forests, grasslands, natural rivers, lakes and coastline, represent one of the core areas of the ecological network of Europe, an area of outstanding diversity and beauty of nature. The region's nature and general quality of environment provide an opportunity for a relatively high quality of life even considering the social and economic situation. Because of its natural beauty and rich cultural heritage, the Western Balkans are also becoming more interesting as tourist destination, providing an important economic opportunity in the present and for the future. The link between the quality of environment and tourism is also recognised by several countries of the region having established joint ministries of environment and tourism.

Map 1: Indicative map of the ecological network of South Eastern Europe, showing an important core area in the Western Balkans. (Biró, Bouwma, & Grobelnik, 2006)



However, the countries of the Western Balkans also share a common recent history of conflict and instability with severe human, social and economic consequences that are still felt today. Due to this specific history, the environmental policies and their implementation also developed in a specific way compared to the rest of Europe.

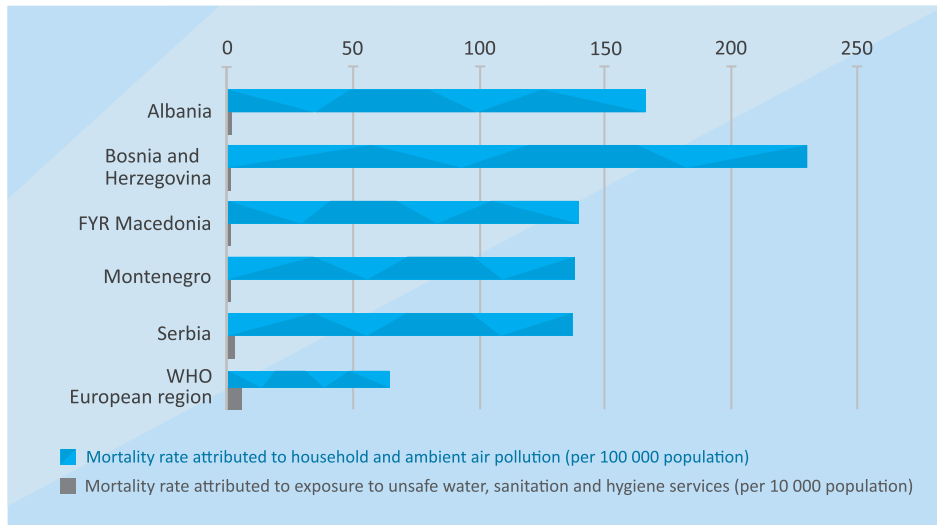
In this section we ask the following questions:

“How successful are the countries in effectively preserving the environmental resources and quality that are the basis for their economic development and quality of life today and in the future?”

“How successful are the countries in solving the shared problems related to environmental pollution threatening the health of their people?”

A quick snapshot of the pollution challenges in the Western Balkans may be provided by Figure 1, showing the annual mortality rates due to environmental causes compared to the rest of Europe. The mortality rate due to air pollution is more than double or even triple the European average, while the mortality rate due to water related causes is three orders of magnitude lower than mortality due to air pollution and significantly lower than in the rest of Europe.

Figure 1: Mortality rates attributed to environmental causes (water and sanitation, air pollution) in SEE countries compared to the European region of WHO. (Dalglish et al., 2017)



This shows that while countries of the Western Balkans have more or less achieved the objective of securing safe water and sanitation, helped by the relatively abundant freshwater resources of the region, air pollution is a serious problem affecting the population, societies and the economies of the region. In the following sections we try to provide an overview of the progress in reducing pollution and the challenges remaining in the different sectors of environmental policy.

## 1.1 Environmental institutions and policy development

Relevant SDG targets		
	16.6	Develop effective, accountable and transparent institutions at all levels
	16.7	Ensure responsive, inclusive, participatory and representative decision-making at all levels

As the world gathered in Rio de Janeiro, Brazil, for the United Nations Conference on Environment and Development (UNCED) in 1992 and moved towards implementing the sustainable development agenda, not much was done in the Western Balkans due to conflicts and instability between 1991 and 2000. After the end of this period, all the countries in South-Eastern Europe expressed their desire to become members of the European Union. The Regional Environmental Reconstruction Programme that was agreed among all the countries of the region and the EU Commission in 2000 focused on strengthening the environmental institutions and policies as the first step towards improving the environmental situation. The countries of the Western Balkans also started fulfilling their global responsibilities towards the environment by starting implementation or signing up to the global and European Multilateral Environmental Agreements (MEAs). The status of the ratification of the key environmental conventions and protocols is presented in Table 1 on the next page.

Over the last two decades, significant technical and financial support has been provided by the European Union, the United States, other donor countries and international organisations to environmental institutions, development of policies and harmonisation of legislation and strengthening of civil society, with the aim to achieve compliance with the EU legislation and international environmental agreements.

All the countries of the region are now at various stages of the association and stabilisation process with the European Union, and their institutional, policy and legal framework is increasingly aligned with that of the EU (European Commission, 2018). To achieve this, environmental institutions have undergone significant development. All countries now have environmental ministries, environmental protection agencies and other institutions dealing with environmental protection at various levels.

The complex EU environmental legislation has been transposed into the laws of the countries, including instruments such as environmental impact assessment, strategic environmental assessment, integrated permitting, pollution monitoring and reporting, access to information and public participation. Numerous policy documents have been developed to implement international obligations and good practices, usually with the support of donors and international organisations. These policies are complemented with extensive action plans that largely remain just on paper due to lack of financial resources and institutional capacity both within the authorities, in the business sector, and the civil society.

The lack of resources may be linked to the absence of implementation of the "polluter pays" principle in practice. It is enshrined in legislation, but the current design of taxes and charges does not reflect it sufficiently. Most countries collect excise taxes on fuels, but there is no consistent price on carbon emissions through taxes on activities such as coal mining or an explicit carbon tax. All countries have introduced some environmental charges and taxes, but they are mainly set at levels too low to incentivise change in production and consumption behaviours. The tariffs on electricity, water supply and sanitation and waste collection are too low to achieve cost-recovery or incentivise sustainable consumption.

**Table 1: Status of ratification of key global and European conventions and protocols**

Convention/protocol	Year of ratification					
	Albania	Bosnia and Herzegovina	Kosovo*	FYR Macedonia	Montenegro	Serbia
United Nations Framework Convention on Climate Change 1992	1994	2000		1998	2006	2001
Paris Agreement 2015	2016	2017		2018	2006	2017
Convention on Biological Diversity 1992	1994	2002		1997		2002
Vienna Convention for the Protection of the Ozone Layer 1985	1999	1993		1994	2006	2001
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal 1989	1999	2001		1997	2006	2000
Stockholm Convention on Persistent Organic Pollutants 2001	2004	2010		2004	2011	2009
Minamata Convention on Mercury 2013						
Convention on Long-range Transboundary Air Pollution 1979	2005	1993		1997	2006	2001
Treaty Establishing the Energy Community 2005	2006	2006	2006	2006	2007	2006
Convention on Environmental Impact Assessment in a Transboundary Context 1991	1991	2009		1999	2009	2007
Convention on the Protection and Use of Transboundary Watercourses and International Lakes 1992	1994	2009		2015	2014	2010
Protocol on Water and Health 1999	2002	2011				2013
Convention on the Transboundary Effects of Industrial Accidents 1992	1994	2013		2010	2009	2009
Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters 1998	2001	2008		1999	2009	2009
Protocol on Strategic Environmental Assessment 2003	2005	2017		2013	2009	2010
Kyiv Protocol on Pollutant Release and Transfer Registers 2003	2009			2010	2017	2011
Framework Convention on the Protection and Sustainable Development of the Carpathians 2003						2004

Sources: United Nations Treaty Collection, <https://treaties.un.org>, IUCN Environmental Law Centre <https://www.ecolex.org> Carpathian Convention <http://www.carpathianconvention.org/status-of-signature-and-ratification.html>

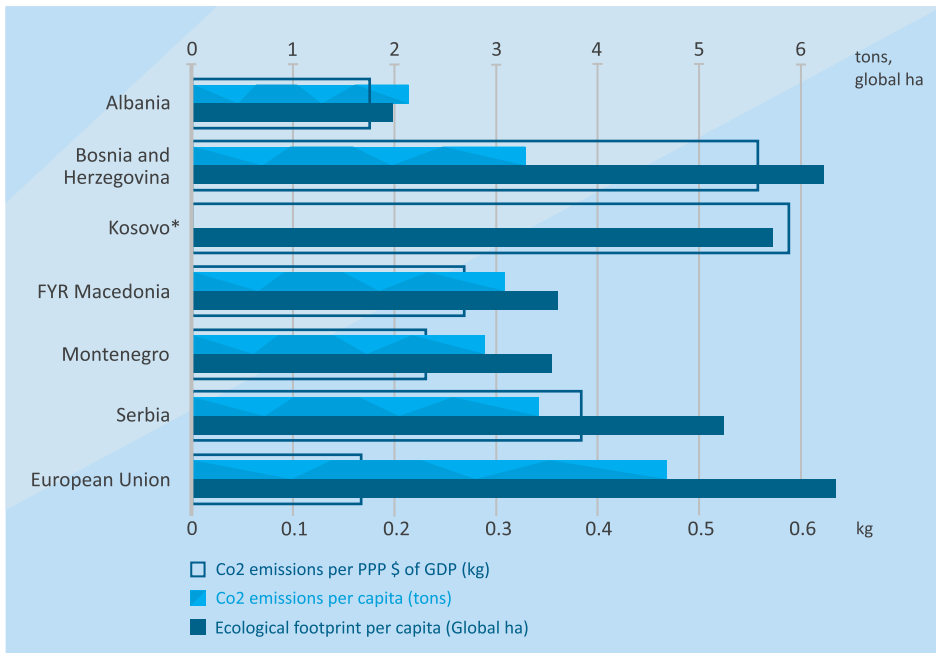
\*This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence

## 1.2 Environmental awareness and civil society

Relevant SDG targets		
 <p><b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION</p>	12.8	By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature
 <p><b>16</b> PEACE, JUSTICE AND STRONG INSTITUTIONS</p>	16.10	Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements

The Western Balkans have a significantly lower ecological footprint per capita than the countries of the European Union. Despite the use of coal, Bosnia and Herzegovina, Kosovo\* and Serbia have similar or lower CO<sub>2</sub> emissions per capita compared to the EU, while the rest have much lower per capita emissions. The situation is opposite in CO<sub>2</sub> emissions per unit of GDP: here only Albania, due to large share of renewable energy, is comparable to the EU, while other countries from the region are much less efficient in generating GDP with their level of emissions.

Figure 2: CO<sub>2</sub> emissions per capita, CO<sub>2</sub> emissions per unit of GDP and ecological footprint per capita of the Western Balkans countries compared to EU. Sources: World Bank Development Indicators, Global Footprint Network



\*This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence

These indicators show that on average, citizens in the Western Balkans cause less pollution compared to the citizens in the EU, but the economic situation in the Western Balkans is such that even less income is generated compared to pollution generated. Or in other words, the level of pollution and resource use in the Western Balkans is lower than in the EU, but the living standard is even lower. Taking this into account, it is not surprising that the primary objective of the national governments and the population in general has been to catch up with the living standard in the European Union, not paying much attention to the impact on the environment or consequences to the human health. Even worse, the relatively good condition of the natural environment with high level of biodiversity, abundance of forests, grasslands, mountains, rivers and other natural resources have been considered as an opportunity to generate additional economic growth through their use and exploitation.



With the economic development resulting in an ongoing increase of GDP, also the negative consequences of consumer society, with rapid urbanisation, increasing ownership of obsolete second-hand cars imported from Western Europe and rapid increase in consumption of packaged goods are becoming visible. But the policy-makers have mostly assumed that the process of transposition and subsequent compliance with the EU Acquis Communautaire will automatically deliver environmental improvement. And the public seems to have accepted increasing pollution as a necessary by product of progress.

Efforts have been invested by the governments and NGOs into environmental awareness raising, so the public is widely aware of the importance of natural resources. But people have trouble practicing more sustainable behaviour due to lack of adequate services (e.g. incomplete waste collection and lack of recycling) or due to lack of financial resources (e.g. buying second hand cars or not investing in insulation and energy efficiency of buildings). Lack of public services is sometimes also quoted as an excuse for harmful practices such as littering.

Environmental NGOs have been growing in the region since the mid-nineties, some started by concerned scientists and others by young internationally educated environmental professionals. Most NGOs still depend on international funding for their work and survival. This is one of the reasons that many have been more oriented towards implementing environmental projects than towards advocacy. The NGOs have significantly contributed to capacity-building, policy development and awareness raising. Through project work, the professional capacity of the environmental NGOs has at times even been higher than the capacity of the governmental institutions, especial of local authorities.

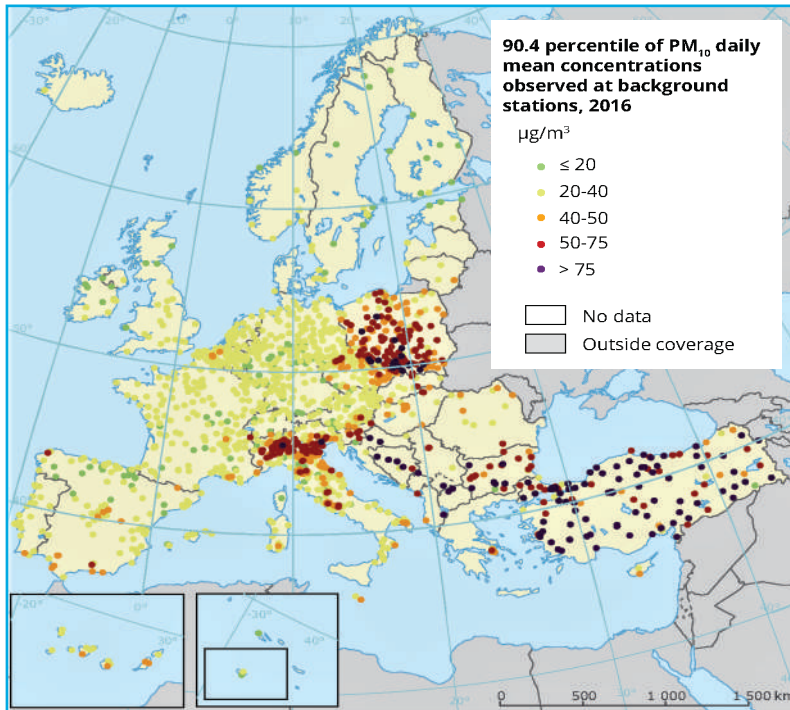
In recent years, the advocacy work of NGOs and NGO networks in the region has intensified, as some of the policy issues such as urban air pollution, investment into coal and hydro power plants and urbanisation are becoming more prominent, require domestic policy related decision-making and cannot be expected to be resolved by EU accession or donor support alone.

### 1.3 Air pollution

Relevant SDG targets		
<b>3</b> GOOD HEALTH AND WELL-BEING 	3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination
<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES 	11.6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

In 2016, the Western Balkans countries shared the top of the list of European Environment Agency (EEA) member countries with highest air pollution with fine particles PM<sub>2,5</sub> only with Poland, with annual concentrations close to, or above annual limit value set by EU legislation. Albania was ranked 13. The map below shows the monitoring stations in relation to the EU PM<sub>10</sub> daily limit value, allowing 35 exceedances of the 50 µg/m<sup>3</sup> thresholds over 1 year. Dots in the last two-colour categories indicate stations with exceedances of this daily limit value. It shows that apart from selected places in Turkey and Poland, the cities and towns of the Western Balkans are among the worst in terms of air quality in Europe.

Map 2: Air pollution with PM<sub>10</sub> in the cities of Europe. Source EEA

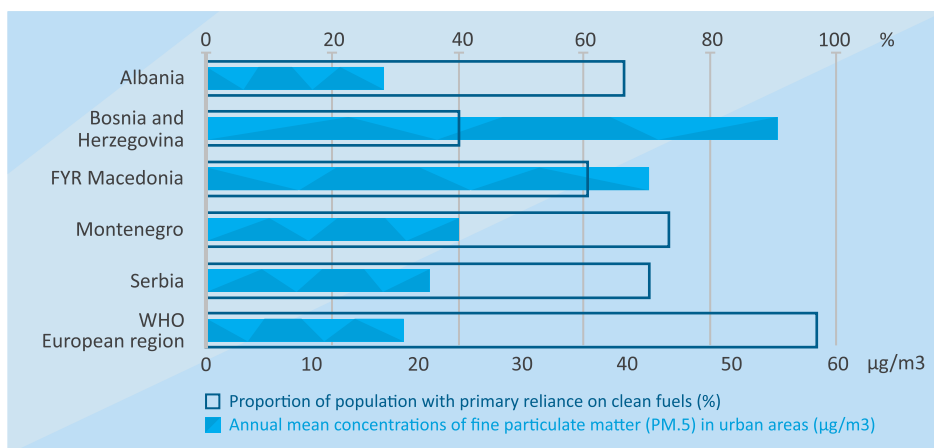




Poor air quality causes diseases, high mortality and significant economic damage to the region. According to the World Health Organization, the country with highest level of air pollution is Bosnia and Herzegovina, and according to UN Environment the economic cost of air pollution in Bosnia and Herzegovina is equivalent to 21,5 % of GDP (WHO Regional Office for Europe & OECD, 2015).

As the quality of information on air pollution and its accessibility improved in recent years, and citizens have become more aware about the trends in air pollution, protests regarding air quality have been organised in cities such as Pristina, Sarajevo, Skopje and others since the winter of 2015. Some emergency measures, such as car bans in urban areas have also been introduced during the worst pollution episodes. But air quality remains the deadliest pollution problem in the Western Balkans.

**Figure 3: Annual mean concentrations of PM<sub>2,5</sub> and access of population to clean fuels compared between the Western Balkans countries and the entire WHO European Region (Dalglish et al., 2017)**



There are several reasons for poor air quality in the region. Except Albania, all the countries rely heavily on domestic coal for production of electricity. Coal, and to an extent wood, is also used as fuel for home heating and a large proportion (30 to 60 %) of households rely on these for heating. Buildings are in most cases not energy efficient, which means that more fuel is needed for heating, causing more pollution. From the nineties, the problem has been exacerbated by the breakdown of public utilities, such as district heating, leading to widespread use of firewood and coal also for the heating in the apartment blocks in the cities. Local pollution from home heating affects all sizes of settlements, from villages to cities such as Sarajevo, Skopje and Tetovo.

An additional main source of air pollution is transport, especially in larger urban centres. Cities in the region have been growing rapidly and the concentration of cars has increased accordingly. Vehicles from before 1990 can still be seen on the streets and most “new” vehicles are imported as second-hand cars from the European Union, meaning that their technical standards and performances in terms of pollution are very poor. Countries of the region were some of the last to ban lead in petrol and the quality of fuels remains a concern, while the public transport suffers from under-investment.

Significant level of background (long range) air pollution is generated by the thermal power plants, located in coal mining regions such as Central Bosnia, Kolubara, Bitola, Kosovo Polje and Pljevlja. Most of the power plants are slow in implementing pollution control measures such as flue gas desulphurisation and even the operation and maintenance of electrostatic filters for particles is not consistent. All countries from the region, with the exception of Albania, are planning to build new coal power plants, even if their economic and environmental justification is under question.

Industry contributes to air pollution to a lesser extent, as many plants don't operate anymore or have introduced modern technologies. But in some industrial towns such as Smederevo, Veles, Zenica, and Elbasan industrial air pollution remains a concern. All these factors contribute to severe air pollution, especially during winter time in towns and cities located in closed valleys. The EU Air Quality Directive has been mostly transposed, and the Long-range Transboundary Air Pollution (LRTAP) Convention ratified, but the implementation and enforcement of measures against air pollution has been slow. There have been several attempts to monitor air quality in the cities (such as by the US Embassies in Pristina and Sarajevo), but the national air monitoring systems are not yet well developed and the information on air pollution remains insufficient.


There has been little significant action to reduce the air pollution so far, as the low-cost of imported cars, low-cost of fuels and the maintenance of the coal industry remain high on the list of political priorities. One of the main obstacles to tackle local air pollution is the lack for cooperation between the national and local authorities and between different sectors of the government.

This means that a significant opportunity for green development benefiting the human health, economy, air quality and climate change mitigation is being missed. Improved insulation of buildings, introduction of district heating and developing public transport, urban car free zones, improved technical standards for vehicles and fuels, and other related measures can simultaneously reduce the consumption of fuels (CO<sub>2</sub> emissions), improve air quality and reduce its negative impact on health, save money by energy savings and provide new business and job opportunities.

#### **Local action for energy efficiency in Bosnia and Herzegovina**

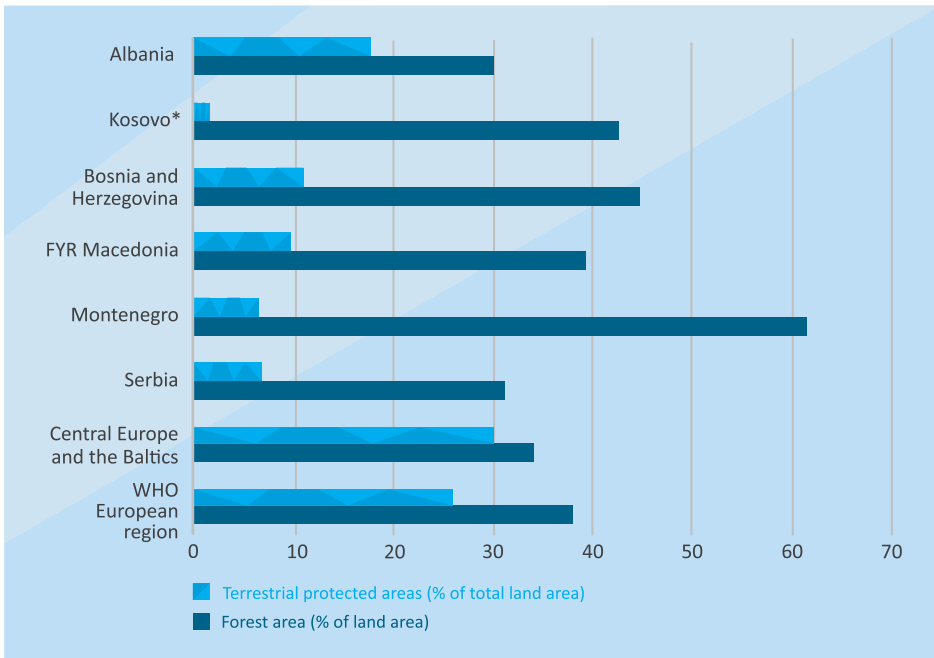
Buildings in Bosnia and Herzegovina are responsible for 57% of energy consumption, leading to most of the carbon emissions as well local air pollution. Therefore, all the national strategies as well as several donors have focused on improving energy efficiency in buildings as one of the key tasks to reduce overall emissions, improve air quality and also reduce poverty by reducing energy costs. In the complex context of the government institutions, local communities have taken the initiative by developing 37 Local Environmental Action Plans and five Sustainable Energy Action Plans, as well as investing in energy efficiency and renewable energy in 28 public buildings. Environmental Protection and Energy Efficiency Fund of the Republic of Srpska and Environmental Protection Fund of the Federation of Bosnia and Herzegovina are providing financing for energy efficiency projects in all types of buildings, matching their funding with the support provided by UNDP, GIZ and other donors. At the same time public public-private partnerships for district heating and energy efficiency are being tested in several municipalities.

## 1.4 Land and soil pollution

Relevant SDG targets	
 <p><b>15.3</b></p>	By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world
<p><b>15.5</b></p>	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species
<p><b>15.10</b></p>	Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems

The Western Balkans have a much higher share of natural and semi-natural areas compared to the more industrialised countries of Europe. Since 1990, in most areas the agriculture has been less intensive in terms of use of fertilisers and pesticides. The civil conflict and instability have accelerated the process of land abandonment leading towards forest succession. Except Albania and Serbia, all countries have a higher share of forests in their territory than the average in Europe Union, but they are lagging behind in terms of terrestrial protected areas.

**Figure 4: Share of forests and terrestrial protected areas as % of territory comparing the Western Balkans countries with EU and the Central Europe and the Baltics.** Sources: World Bank Development Indicators



\*This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence

All Western Balkan countries have introduced legislation for sustainable forest management and biodiversity conservation, but the success of implementation is mixed. Forest-rich countries such as Montenegro, Bosnia and Herzegovina and Serbia have a long tradition of sustainable, close to nature forest management. They are exporting timber and wood products to the neighbouring countries and the European market, while increasing both the forest area and the standing volume of the forests. The balance of forest growth and logging is more precarious in Kosovo\* and the Former Yugoslav Republic of Macedonia which have traditionally had lower standing volume in the forests and higher consumption of timber and firewood than the domestic supply. It is unsustainable in Albania, where significant forest destruction has taken place in the nineties, the standing volume of forests is low, and logging driven by domestic consumption may still not be balanced with regrowth. The Federation of Bosnia and Herzegovina has had no Forest Law for several years, while Albania implemented a 10-year moratorium on forest timber exploitation for business purposes beginning in 2016 to prevent further excessive logging, disbanded the national forestry agency and authorised local authorities with forest management.

Even though the biodiversity of the Western Balkans is very high compared to the rest of Europe, only Albania, at least in terms of designation, is on track to achieve the Aichi target of 17% share of protected areas. Other countries still have a long way to go to achieve this target or the level of protected areas in the rest of Europe. Conservation of important species and habitats under EU Natura 2000 is also still in early stages in all countries. Moreover, funding of biodiversity conservation in the region is insufficient to achieve the internationally agreed conservation objectives. In many cases protected area administrations are forced to generate the necessary revenues themselves, such as with entrance fees and tourism services in Montenegro, or with forest exploitation in the Former Yugoslav Republic of Macedonia and Bosnia and Herzegovina.

In the recent years, intensive agriculture is picking-up again in the fertile plains of the region, often linked with regulated or unregulated irrigation. Soil and ground water in these areas may be under risk of pollution by nutrients and pesticides. On the other hand, attempts are being made at organic agricultural production in line with EU regulations. Non-certified organic production is quite prevalent in meat, dairy products and fruit. It is based on the trust of consumers, buying products directly from the producers, that the production is “clean”. Certified organic production has difficulties to establish itself, as the local markets are not yet willing to accept the added cost of certification and the producers are not keen to accept additional controls.

Within the matrix of forests, mountains and high biodiversity, there are also several hotspots with degraded land and heavily polluted soil. These are mainly associated with past or still active mining and industrial sites (metallurgy, chemicals).

\*This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence

The conflicts also had an impact on the land and soil pollution, including large areas covered by land mines in Bosnia and Herzegovina and use of depleted uranium ordinance during the war in 1999. An overview of the most important sites is presented in map 3 below. In the last two decades, these sites have been the focus of the Environment and Security initiative (ENVSEC) started by UN Environment in 1999 in cooperation with other international organisations (Peck & Zinke, 2006).

**Map 3: Hazardous industrial sites and mining hotspots in the Western balkans.** Source: GRID Arendal - Philippe Rekacewicz, Stephane Kluser, Matthias Beilstein, Ieva Rucevska, Cecile Marin, Otto Simonett <http://www.grida.no/resources/6841>



In this framework pollution hotspots were identified, and several pilot actions were taken in terms of remediation. Regulatory frameworks, and the capacity to manage these hotspots were also developed. Moreover, eleven priority sites in all countries of the Western Balkans were tackled by a regional UNDP project between 2007 and 2010 (source UNDP), demonstrating a wide variety of pollution problems and possible solutions.



### Contaminated sites cadastre in Serbia

In 2010 Government of the Republic of Serbia adopted the Regulation on the program for systematic monitoring of soil quality, indicators for evaluation of soil degradation and methodology for preparation of remediation program. In 2018 the government also adopted the Regulation on Limit Values for Polluting, Harmful and Dangerous Substances in the Soil. The Regulation establishes the limit and remediation values of hazardous and harmful substances in soil and groundwater. Over the last years, 709 potentially contaminated sites in the territory of Serbia were identified and recorded in the cadastre. 52 of these sites have already been remediated, 41 are being remediated, 103 are under investigation and 478 are still in need of investigation. Between 2016 and 2017 UN Environment, in cooperation with the Serbian Environmental Protection Agency (SEPA) and in the framework of a GEF-funded project, conducted field missions and soil sampling at 32 priority sites. Based on these surveys and experiences, the pollution hotspots and contaminated sites represent a long-term concern with a risk of high impact on the human health and resource productivity. Out of the 32 sites surveyed, 4 locations need to be remediated according to the gathered information and investigation. For most of the remaining location, detailed investigation of the contamination extent is needed. It is expected that the next step forward will be the development of remediation projects for priority sites.

Some of the sites are being managed and rehabilitated by their current operators in line with the polluter (or its legal successor) pays principle, while the responsibility and schedule of rehabilitation for those where the liable polluter no longer exists remains with the public authorities. Regulatory framework, institutional capacity and expertise and adequate resources are required in all countries to continue to monitor, control and remediate these hotspots in the future.

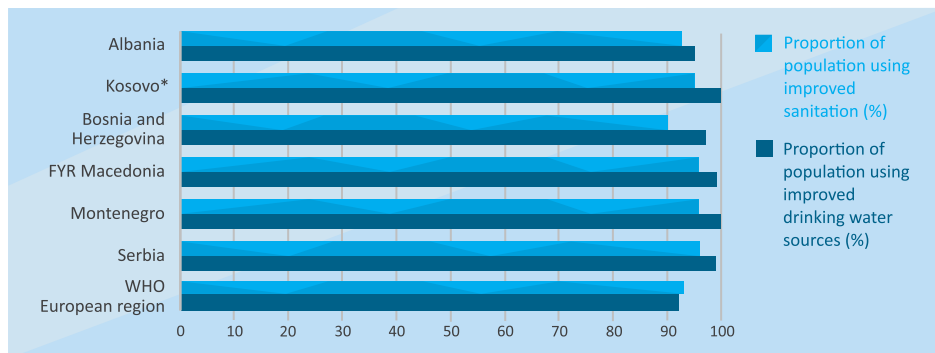
<sup>2</sup>UN Environment/GEF project “Enhanced Cross-Sectoral Land Management through Land Use Pressure Reduction and Planning”

## 1.5 Freshwater pollution

Relevant SDG targets		
 <p><b>3</b> GOOD HEALTH AND WELL-BEING</p>	3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination
 <p><b>6</b> CLEAN WATER AND SANITATION</p>	6.1	By 2030, achieve universal and equitable access to safe and affordable drinking water for all
	6.2	By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
	6.5	By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
	6.6	By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

Over 90 % of citizens of the Western Balkans have access to safe drinking water comparable to the rest of Europe, which is one of the key assets for their quality of life and health. Improvement of water supply systems have been a priority of all national governments and local authorities. National and donor resources have invested into securing the basic supply with drinking water, even if problems of groundwater pollutions in some regions, like Vojvodina in Serbia, persist and the pollution of surface water threatens drinking water supply in other regions.

Figure 5: Share of population with access to drinking water and to sanitation. Source: World health statistics 2017: monitoring health for the SDGs, Sustainable Development Goals. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO.



\*This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence

Success in securing drinking water supply is linked to a large extent to the wealth of freshwater in terms of ground water, rivers and lakes in the region, enabling local supply of quality water in most communities. The freshwater ecosystems have also been the recipients of waste water. Even if most households are connected to sewer systems, only a small number of waste water treatment plants are operational. Quality waste water collection and treatment represents the highest infrastructure cost item of compliance with the EU environmental rules and even though significant funds have already been invested, only limited effect is visible yet. This means that the rivers, lakes and the sea close to urban areas are exposed to pollution and eutrophication.

#### **Independent water tariff regulator in Albania**

The Water Regulatory Authority (WRA) was established to define the methodology for calculating the retail and wholesale tariffs of water for public consumption, wastewater disposal and treatment in accordance with the main purpose for the sector is to achieve full cost recovery. The goal is to cover the immediate operation and maintenance costs, while the total cost coverage is more distant target. Tariff policy followed by the WRA includes a gradual increase of tariffs in the coming years, conditionally that the service providers achieve an improved level of service performance.

The economic and technical sustainability of water supply, sanitation and treatment services depend on the municipal utility user fees. So far, these fees have been too low to recover the full cost of water supply and management, even with the increased levels of investment in new infrastructure leading to higher depreciation and maintenance costs. This is the reason why the waste water infrastructure is built slowly despite donor support, and why the maintenance of existing infrastructure and services remains a challenge. To secure sustainable funding for water and sanitation services, Albania and Kosovo\* have made a good first step in entrusting water tariff-setting responsibilities to independent water regulators and gradually increasing tariff levels. The Former Yugoslav Republic of Macedonia has also transferred competence for water tariff regulation to an independent body, its Energy Regulatory Commission.

Although the region produces a significant amount of electricity in its hydropower plants (most of Albanian electricity supply comes from hydropower), the rivers and lakes of the Western Balkans are in a much more natural status than rivers in the rest of Europe. But these river ecosystems are seriously threatened.

Unregulated dumping of solid waste is still wide spread on the river banks and in smaller streams. Plastic waste is then carried along the rivers and into the sea, causing pollution and degradation of attractiveness of rivers for recreation. Extraction of gravel from river beds is poorly regulated and affects almost all the accessible gravel beds to at least some extent. In addition to pollution and habitat destruction, illegal fishing, including the use of explosives and electricity seriously threatens the fish species, some of them rare and endemic.

\*This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence



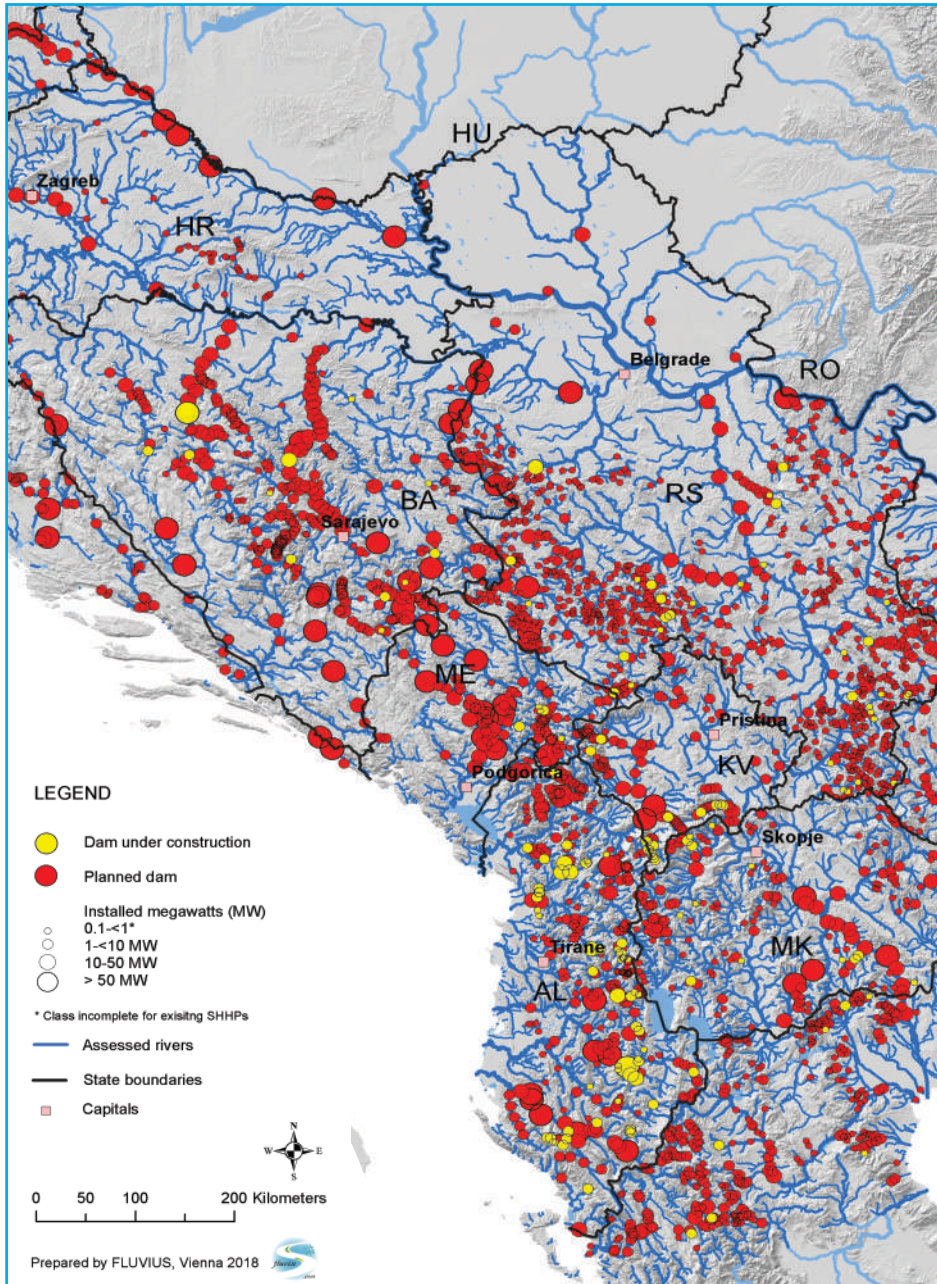
But the most significant threat to the integrity of the freshwater ecosystems is the planned and ongoing construction of hydropower plants. In addition to the existing powerplants, the countries of the Western Balkans have issued concessions for hydropower construction on almost all rivers and streams, including rivers in National Parks such as Radika in the Former Yugoslav Republic of Macedonia. These concessions are being justified as support to increase of renewable energy but have not considered the cumulative and transboundary effects of all the dams and diversions on the biodiversity, the water regime and other ecosystem services provided by the rivers.

Map 4: Hydro morphological assessment of rivers in the South Eastern Europe. (Riverwatch & Euronatur, 2018)



The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations

Map 5: Hydropower plants under construction and planned in the South Eastern Europe. (Riverwatch & Euronatur, 2018)



The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations

Only a small number of planned hydro power plants are under construction, one of the reasons being their poor economic justification and inability of owners to attract financing. Projects that already started show a lack of respect for due permitting process, including public participation and adequate Environmental Impact Assessment (EIA). This has led to several conflicts between investors and affected local inhabitants and several court cases. In view of this, the plans for hydropower development should be reconsidered, considering the objectives of biodiversity conservation, sustainable development of local communities and integrated river basin management. In order to offer a more sustainable alternative, the NGOs Riverwatch and EuroNatur have just published an Eco-Masterplan for Balkan Rivers as part of the “Save the Blue Heart of Europe” campaign (Riverwatch & Euronatur, 2018).

River basin management approach to the management of freshwater ecosystems is being introduced across the region, with Bosnia and Herzegovina having adopted River basin management plans for all its catchments in 2016 and the countries of the Sava (Sava river Convention) and Drin (DrinCorda) River basins collaborating on the conservation and management of the waters in these catchments.

## 1.6 Marine and coastal pollution

Relevant SDG targets	
	<p><b>14.1</b> By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution</p> <p><b>14.5</b> By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information</p>

Albania and Montenegro share the south eastern coast of the Adriatic and the Ionian Sea and Bosnia and Herzegovina has access to the Adriatic Sea at Neum. These coasts are attracting more and more tourists from the region and other parts of the world and tourism is becoming an important source of revenue for the three countries. Fishing has been an important economic activity for the coastal communities and mariculture has been developing in the recent years.

The last twenty years have seen a rapid development in the coastal zones both in terms of urbanisation and tourism. This development has not been followed by appropriate infrastructure and services, which have resulted in pollution of the sea and the coastline by urban waste water and solid waste. The rivers are bringing a significant amount of illegally dumped solid waste into the sea, resulting in heavy pollution of beaches along the entire eastern coast of the Adriatic Sea. Poor urban planning, resulting in substandard tourist experience and beaches polluted by plastic represent a serious obstacle to future development of higher quality tourism, that the high quality of natural environment would warrant.

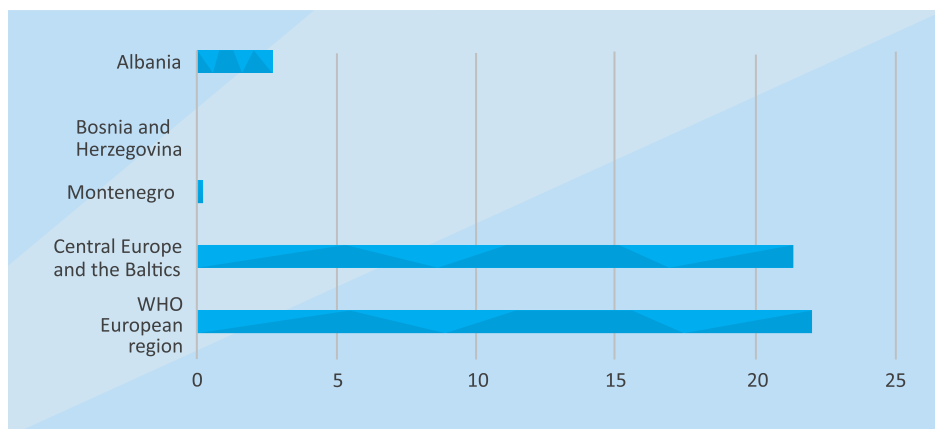
### Investment in water and sanitation on the coast of Montenegro

During the nineties, tourism in Montenegro plummeted. Many hotels were used to house refugees. In summer, guests complained about not having enough water. In some places, the smell of sewage was extremely unpleasant because of the ailing sewage system. A functioning water supply and sewage disposal system on Montenegro's coast was needed as a basic requirement for the country's sustainable development. Since 2001, KfW Development Bank has been providing support to improve the water supply in the coastal communities of Herceg Novi, Kotor, Tivat, Bar and Ulcinj, as well as in Cetinje.

In 2005 company Vodacom was established by the Government of Montenegro and the municipalities of Bar, Kotor, Tivat, Budva and Herceg Novi as the Project Executing Agency for implementation of a multi-phase German Financial Cooperation Programme entitled: Water Supply and Sanitation Adriatic Coast. Later Ulcinj also became member. With the investment projects, Montenegro has reduced its water losses, increased the security of supply on the coast and improved the water quality. Since 2008, KfW has also invested in improving the sewage system and the construction of new sewage treatment plants. This has contributed to maintaining or improving sea water quality in a period of rapid growth of seaside tourism after 2005, especially in the vulnerable enclosed bay of Kotor.




None of the three countries is close to the Aichi target of 10% of their territorial waters being protected as marine or coastal protected areas. More effort is needed in this respect to secure the marine biodiversity conservation, including the maintenance and recovery of the fish stocks.

Figure 6: Share of marine protected areas as % of territorial waters in 2017 comparing the three Western Balkans riparian countries with EU and the Central Europe and the Baltics. Source: World Bank: World Development Indicators



A new environmental concern is off-shore drilling for oil and gas in both Albania and Montenegro. Several concessions for drilling have been granted or are in the process of being granted. If not implemented properly, oil and gas drilling may cause additional pollution and degradation of the marine environment and thus threaten the developing tourism industry. Concerns about environmental safety of off-shore oil have been raised in the public. This means that adequate marine protected areas should be established before concessions for drilling are granted, proper environmental assessment procedures are required during planning and strict controls during operation of any oil or gas drilling operations.

## 1.7 Cross-cutting sources of pollution

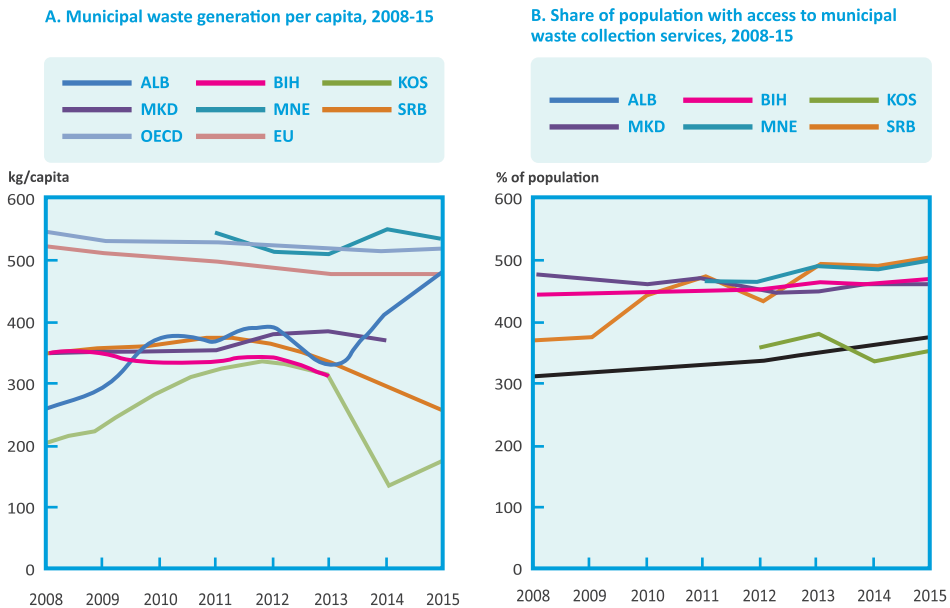
Relevant SDG targets	
 <p><b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE</p>	<p><b>9.2</b> Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries</p>
	<p><b>9.4</b> By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities</p>
 <p><b>11</b> SUSTAINABLE CITIES AND COMMUNITIES</p>	<p><b>11.6</b> By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management</p>
 <p><b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION</p>	<p><b>12.2</b> By 2030, achieve the sustainable management and efficient use of natural resources</p>
	<p><b>12.4</b> By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the</p>
	<p><b>12.5</b> By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse</p>

Solid waste generation per capita in the Western Balkans is lower than in the developed countries or in the European Union average. Only Montenegro has reached a similar level in the recent years. Although all the countries have strategies in place to define responsibilities and objectives related to municipal solid waste management, collection services are still not available to between 20 and 40% of households (Organisation for Economic Co-operation and Development, 2018). There are only a small number of sanitary landfills in operation according to EU standards, but even these are proving to be too expensive to operate based on the level of user fees that inhabitants are able or willing to pay. This leads to widespread unregulated dumping of waste. Recycling of waste is in its infancy, and in some cases dependent on import of waste from the European Union to make it economical. Albania, for example, was forced to limit the import of solid waste for recycling after establishing a legal framework compatible with the EU, as solid waste imports rose dramatically.

The success of solid waste management largely depends on the capacity of local authorities and municipal utilities to develop and implement effective waste collection systems and investments in the necessary infrastructure. Their success is severely limited by the fact that waste disposal tariffs remain too low to cover the costs of municipal waste collection, let alone the costs associated with infrastructure construction and maintenance.

Most projects to construct new municipal solid waste collection and treatment infrastructure are funded by donors and international financial institutions, particularly by the EU, rather than by domestic investment. However, even with investment subsidies, many municipalities have trouble paying for landfilling, as they have trouble raising user fees paid by their inhabitants. Low tariffs and poor waste collection systems are also the main reasons for the limited success of recycling. According to a study produced by UN Environment in 2015, 45% of solid waste in Albania, 40% in Bosnia and Herzegovina and 30% in Montenegro are not managed adequately (UN Environment / MAP, 2015).

Figure 7: Municipal waste generation and collection services access. Source OECD Competitiveness in South East Europe - A Policy Outlook 2018



The consequences of unregulated dumping and burning of waste are widespread, both for municipalities in managing inadequate landfills and by the population in general, through groundwater, soil and air pollution. This is also the reason why the Western Balkan region is a significant source of plastic entering the Mediterranean and the Black sea as plastic waste is dumped in or near rivers and streams. The inadequate management of municipal waste also includes improper practices in managing hazardous waste, such as medical, and of construction waste. Both end up mixed with municipal solid waste in the unregulated dump sites. Although the negative effects on the health of the population are not necessarily visible they are measurable, and the dumping of waste presents a problem for the overall quality of life and for the development of tourism in the region.

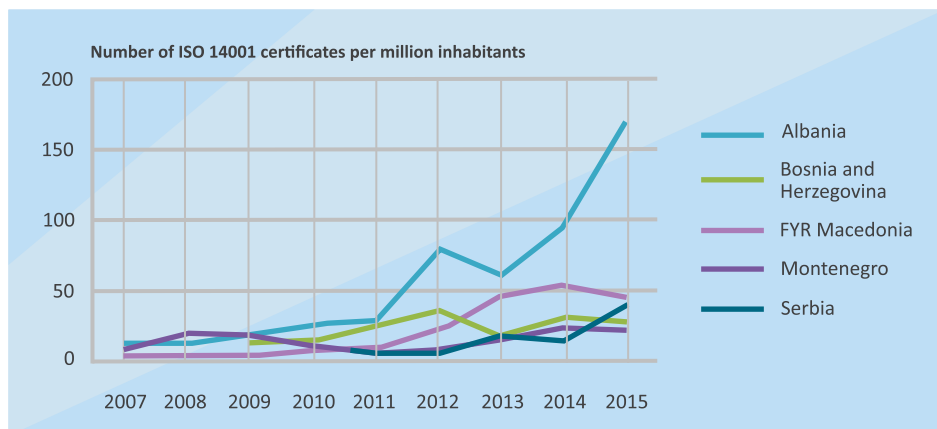
Industry (except thermal power generation) nowadays represents a less significant source of pollution than in the past. One reason for this is that many of the polluting industries from the past have been closed. The other reason is that other major industries have been

privatised and invested in modern, less polluting technologies for regulatory and economic reasons. These industries have also been the leaders in promoting concepts such as cleaner production or circular economy in the region, although with limited support from governments.

Environmental management in industry, including the production of chemicals, relies on two main pillars: the transposition and implementation of EU Directives and on voluntary action by the industry to have access to European and global markets. The national industrial policies and environmental regulators are relatively weak, but the implementation of the Industrial Emissions Directive and the Pollution Release and Transfer Registers is progressing. One of the issues related to industrial pollution is the treatment of the legacy pollution in industrial hotspots, where historic and ongoing pollution should be reduced and prevented by the operators and controlled by the environmental authorities in the framework of integrated permits.

Several companies and organisations, particularly in Serbia, have adopted environmental management standards set by the International Organisation for Standardisation (ISO), the ISO 14001, which sets out criteria for an effective Environmental Management System (EMS). The uptake of ISO 14001 standards has not, however, been universal. Corporate Social Responsibility (CSR) activities have largely been driven by private sector initiatives and organised through networks of participating firms. In some countries, these initiatives have also been supported by government policies.

Figure 8 : Number of ISO 14001 certificates, 2007-15 Source: ISO.





CHAPTER 2

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FORWARD



## 2.1 Conclusions

In the two decades since the end of civil conflicts and instability in the Western Balkans, the countries of the region have made significant progress in environmental policy and management. They have instituted Ministries of the Environment and Environmental Protection Agencies and have to a large extent transposed the EU environmental legislation. This was done with significant support of international donors and the United Nations. They have secured safe drinking water for their population, extended the protected area networks, improved waste management and restructured their industries, significantly reducing their ongoing pollution. However, several major concerns for pollution and sustainable development remain. This includes urban air quality one of the main environmental problems affecting human health, dumping of waste as well as deteriorating river ecosystems through hydropower development and gravel extraction.

It seems that in the context of limited domestic resources dedicated to environmental protection, the political priority was assigned to legal harmonisation with the EU and international obligations to achieve the economic and political integration into wider Europe, and for investment from donors or International Financial Institutions. This has led to some countries in the region losing sight of some of the important environmental problems, such as urban air quality, and some countries preferring to wait for expensive solutions according to highest international standards instead of tackling the problems within the means at hand (in particular with regard to solid waste and waste water). These remaining pollution problems continue to threaten human health, cause damage to the economy (e.g. hampering the development of tourism) and to threaten the deterioration and loss of resources for the future.

In view of the progress made and current environmental challenges, a reassessment of the environmental priorities is required. According to the Environmental Action Programme for Central and Eastern Europe agreed in Lucerne in 1993 (Ackerman, 1993), the following criteria should be used for setting priority of environmental problems to be addressed:

- Damage to human health;
- Productivity losses caused by damage or destruction of physical capital and natural resources;
- The deterioration of/ or threat of irreversible damage to biodiversity.

Addressing these problems requires dedicating sufficient institutional capacity, in terms of staff and funding, at the national government, local authority, business and civil society levels. However, it also requires the use of appropriate legal and policy approaches depending on the nature of the problem and the context within each country, including:

- Application of the “Polluter pays principle” in terms of assigning responsibility for costs of pollution control and user charges for environmental services (water, solid waste);
- Economic instruments, such as environmental taxes discouraging polluting consumption (excise tax on fuels) and incentivizing investments into cleaner economic activities;
- Integration of environmental objectives in other sectoral policies, especially into energy and transport policies, and into cooperation with local authorities and the health sector;
- Promoting green technologies which provide win-win solutions, such as energy efficiency, renewable energy sources or electric cars;
- By applying these priorities and approaches the Western Balkans have an opportunity to achieve Green Development by “leap frogging” over some of the developing stages undergone by developed industrialised countries in the past. They may ensure that the current lower level of overall pollution and high level of preservation of natural ecosystems and natural resources become assets for future sustainable development in environmental, economic and societal terms.

Prosperity and peace in the Western Balkans can be built without destroying its environment and threatening the health of its people. Many of the environmental problems are shared and transcend boundaries, and many of the solutions can be shared or need cooperation among the countries in the region. High quality of environment and of life should become part of a common vision of the Western Balkans for the future.

## 2.2 Recommendations

As full EU membership is still years away and most of the EU legislation is already transposed, the countries should **move on to implementation** of pollution prevention, reduction, and control, following the priorities based on human health concerns, productivity losses and risk of irreversible damage. This means that they need to dedicate more of their own resources – institutional and financial, to deal with pollution in the near or mid-term future, not to wait for EU membership to take care of it automatically.

**Urban air pollution** cannot be tackled only with investments into new infrastructure, but also requires changing consumption patterns through energy efficiency of buildings leading to lower use of heating, better technical standards for vehicles and discouraging their use in urban areas, improving public transport etc. As all the countries have already transposed the EU Air Quality Directive, the approach of this directive should be followed

terms of securing adequate air quality monitoring, designation of air quality management zones where air quality is inadequate and developing action plans to improve the air quality involving all relevant stakeholders. Apart from a major impact on improving health and productivity of the population, the actions to improve air quality can also have positive impacts on achieving climate policy objectives in terms of mitigation and adaptation, and can generate new economic opportunities and work places, such as in public transport, district heating or reconstruction of existing buildings. They can also reduce pressure on forests and river ecosystems.

In the case of **solid waste management and waste water treatment**, the steps taken need to be phased correctly, with least cost solutions being implemented first and more expensive solutions implemented as the ability to pay for them increases. Costs of these services need to be covered by the users, which means that the user fees need to be increased gradually, reflecting the ability to pay and the improvement of services provided. In doing so, mechanisms such as independent price regulators should be used to secure fair pricing for the service providers and the consumers while avoiding political interference.

Some problems, such as legacy **contaminated sites** need to be managed in the long term, securing sufficient institutional capacity and resources to identify, monitor and remediate the pollution and associated risks.

In order to achieve the international targets and to preserve the quality of their own environment and natural resources, Western Balkan countries should continue to expand the network of **terrestrial and marine protected areas**. This includes legal designation of different categories of protected areas, dedicating enough resources for their effective management and developing different models to involve local communities, land owners and civil society in their conservation.

Significant opportunities for achieving environmental objectives through **policies and actions of other sectors (energy, transport, health, urban development and industry)** and regional and local authorities are available in the framework of approaches such as green development or circular economy. These actions may simultaneously generate benefits in terms of pollution reduction, climate change adaptation and mitigation, as well as for improving the socio-economic situation of the population. The current plans for construction of new coal and hydro power plants should be reconsidered in view of their environmental impacts and in view of the rapidly changing market and international policy framework, that may render these investments stranded. Solar and wind energy are quickly becoming more economical than coal and hydro power and they offer significant potential in the Western Balkans. However, even before thinking about new electricity generation capacity, the large potential for improved energy efficiency should be exploited.

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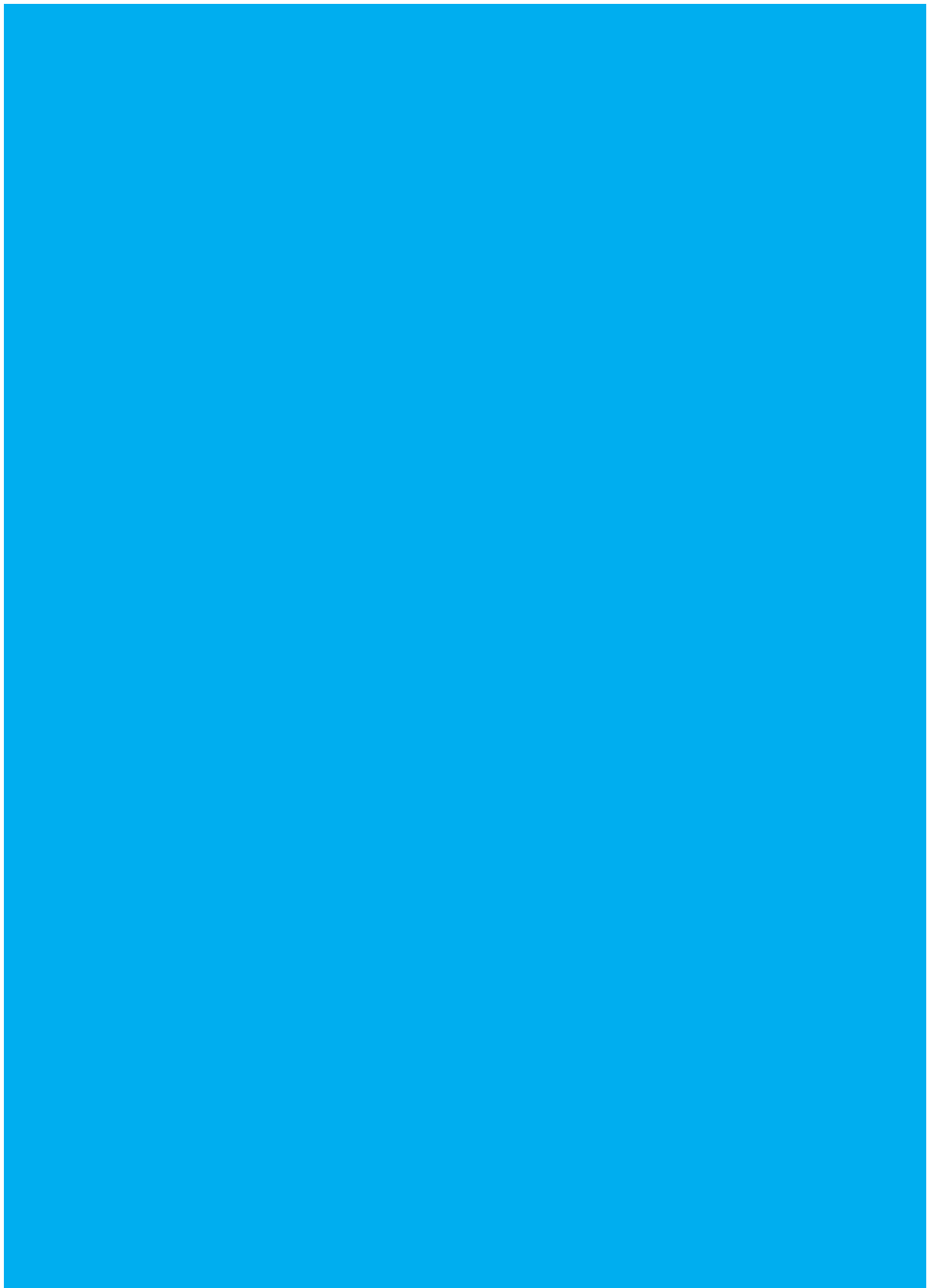
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**INNOVATIVE  
SOLUTIONS  
TO POLLUTION  
IN SOUTH EAST  
& SOUTHERN  
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