

Andrevlje, Serbia, 27.06.-29.06.2017.



Natural Resource Management in the SEE countries: Assessment and Recommendations

Ratko Ristić, Nada Dragović



1. Key issues regarding the management of the natural resources

Key issues in natural resource management in the SEE countries/territories

SEE countries are in various stages of EU membership negotiation and cooperation.

Natural resources are placed at a central stage. New challenges arising: biomass use for bioenergy and biofuels, material substitution of non-renewables, the provision and marketing of ecosystem services, and a sustainable approach towards food security, climate resilience, resource use etc.

The major trends:

1. Under-development of the forest-based and natural resource sector

- The SEE countries/territories are rich in forest resources, yet they are much limited to the primary production, lacking development in secondary and tertiary economic cycles.
- Investments in technology, infrastructure, and capacities shall help development of the sector.

2. Uncontrolled land use to be tamed

- Uncontrolled settlement and building activities have major impacts on soil loss and water management. On the other hand, the assets of natural resources cannot not be harvested if rural areas decline.

3. Ecosystem services bear great potential

- a clearer understanding on marketing ecosystem services can serve for rural development,
- the enforcement of entrepreneurship and investment to develop a healthy system of ecosystem goods.

4. Business environment to be strengthened

- Managing and utilizing natural resources strongly relies on business initiatives, investment, and improving both production and marketing infrastructure to compete.
- Tradition and modernity must create a common bond in delivering high-class wood products, non-timber forest products, or services that can be associated with tourism in rural areas.

5. Private land owners to be activated

- Land disconnected with their owners in the wake of the privatization and restitution process is a major source of uncontrolled natural resource management.

6. Resilience is an integral concept to natural resource use

- A sustainable understanding of natural resource use in a changing world needs to take respect and response to both regional and global trends.
- Effective erosion control, water management, adaptive forest management, and forest fire prevention are among the key features in this understanding.

7. Institutional framework needs an integrative and coordinative boost

- the institutional setup of natural resource use has to go beyond its administrative arrangements, which can be diagnosed a central weakness in the region.
- Scattered, sectorally isolated responsibilities will not overcome multi-sector issues such as rural development, watershed management or ecosystem services provision.
- reinforcement of intra-regional cooperation and exchange alongside alliances with the EU and EU countries, and programmes can support this goal.

8. Capacities and education are worth investing

- Education and capacity-building are under-developed in the region. Natural resource use expertise needs to be more than an appendix to the countries' future strategies.
- If capacity-building is not enhanced properly, there is the impending danger of brain loss of the best minds leaving the region.

Methodology

The main objectives of the whole report were:

- assessing the current situation and trends of natural resources, management, governance including the identification of gaps in the national contexts;
- assessing the national compliance with the EU aquis communautaire including the identification of gaps;
- comparing national results to be able to give political guidance;
- identifying key issues and challenges that need policy intervention and formulation of policy recommendations.

The analytical approach pursued was based on three functionalities:

- screening and comparing natural resources, their management and governance in each of the six countries/territories;
- evaluating the current state of compliance with EU regulations and strategies; and
- identifying gaps, key issues and challenges that need policy intervention

2. Status of the Forest, Soil and Water Resources in SEE

- The cross-country overview is based on the understanding of natural resources policies in the SEE countries/territories, while also accounting for the limitations imposed by data availability and quality. The chapter focuses on the comparative analysis of natural resources characteristics in the region.

Status of the Forest Resources in SEE

Table 1. Size of forest area

Vegetation form	Albania	BiH	Macedo- nia*	Kosovo	Serbia	Monte- negro
	ha					
1. High forest	452,240	1.652.400	255.484	73,000	796,000	371,285
2. Coppice forest	336,815	1.252.200	546.179	408,000	1,456,400	355,840
1+2. All forests	789,055	2.904.600	801.663	7,800	2,252,400	727,125
3. Shrubbery	252,336	130.600	18.972	481,000	n/a	-
4. Barren	167,613	187.200	256.802	7,000	92,000	-
3+4. Shrubbery and barren	419,949	317.800	275.774	21,540	92,000	-
5. Other forest areas	29,400	9.100	14.459	28,540	382,400	99,657
FAO forest (1+2+3+5)	1,070,791	3.035.700	1.091.896	42,003	2,634,800	-
6. All forest and forest land	1,238,404	3.231.500	1.091.896	551,543	2,634,800	826 782

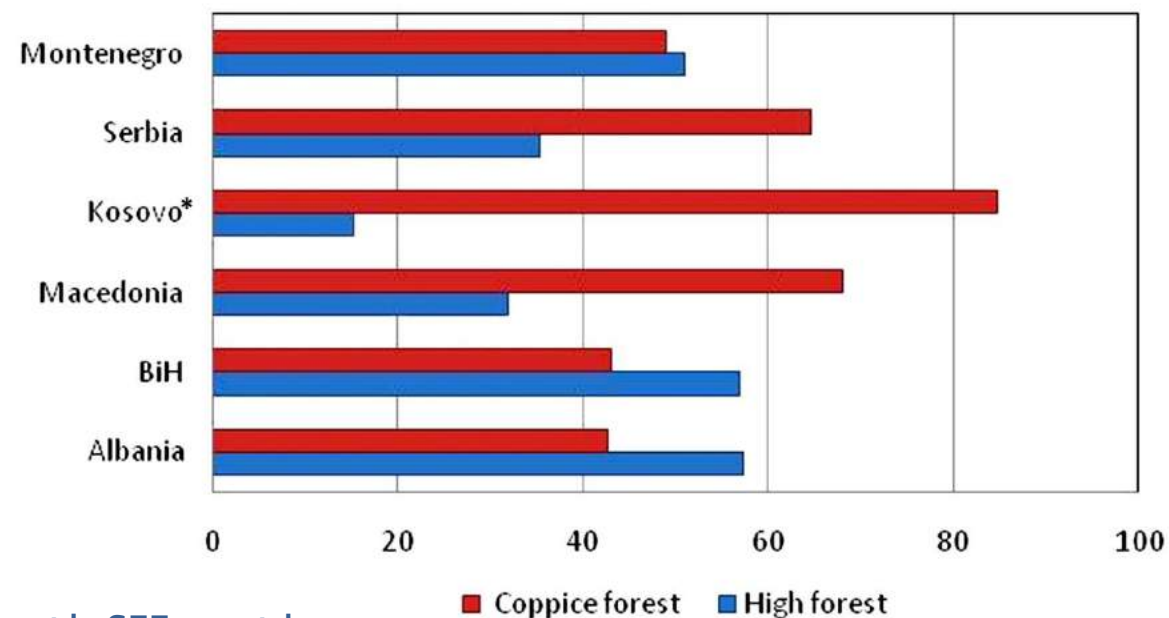
Source: National reports (Part B)

The total area covered by forests and forest land in the SEE countries/territories have been established within the National Forest Inventory.

The highest percentage covered by forest and forest land of 69% has Montenegro, followed by Bosnia and Hercegovina with 63%, while the lowest percentage of territory under forest and forest land has Serbia-29.1%.

Analysis of data on areas under high and coppice forests indicates a large share of coppice forest. A larger area under coppice forests has Serbia, Macedonia, and Kosovo*, where the Kosovo* has the highest percentage of coppice forest compared to the high forests (high forest covered only 15% of the forest area). The share of the coppice forest is smaller in Albania and BH, which have almost the same share of high forest and coppice forest (57: 43%).

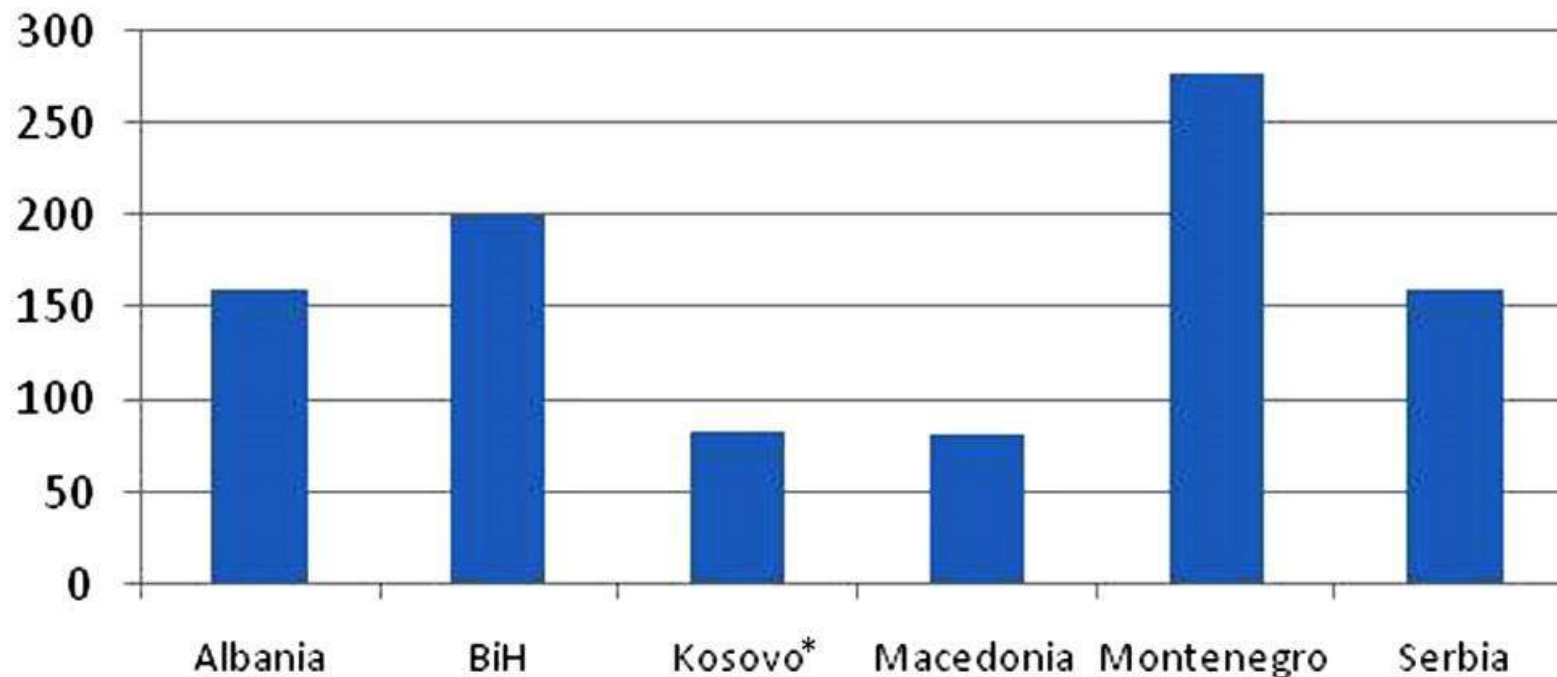
Figure 2. The share of high forest and coppice forest



Growing stock, increment, and felling and carbon stock

- According to the national reports, the highest average amount of timber per hectare has Montenegro (276.8 m³/ha), and then Bosnia and Herzegovina (201 m³/ha). Albania and Serbia have approximately the same timber volume per hectare (around 161m³/ha), while the lowest value has Macedonia and Kosovo* (around 83m³/ha).

Figure 3. Growing stock (m³/ha)



Source: National reports (Part B)

- Average values of annual felling are not provided by all countries/territories, due to the lack of official information. Data regarding the amount of wood harvested per hectare are missing. Displayed data has a values that range from $385 \cdot 10^3 \text{ m}^3$ per year in Albania to $5.718 \cdot 10^3 \text{ m}^3$ in BIH.
- In the most SEE countries, there is no relevant data on the amount of carbon stock. In Albania, the data about the amount of carbon produced by the forest is missing. Bosnia and Herzegovina have only preliminary data published by FAO FRA in 2010, but the report did not specify the estimated values. Macedonia also has no information about the carbon stock of Macedonia forests. According to the data from the national report, Kosovo* has carbon stock of 6,142,173 t CO₂, Serbia about 120.2 mill metric t C total (average per ha – 53,4 t), while Montenegro has 1,253,738.73 t carbon in increment.

Forest types and ownership by management regime

- The territory of the region is dominated by the broadleaves forest, with the highest presence in Montenegro and Kosovo*, as much as 91 and 93% compared to the coniferous forest. The most common species in this area are beech and oak, while beech in Serbia is more present in public forests, while oak is present more in private forests. In Bosnia and Herzegovina, this species is the most present in high and coppice forests, in both public as well as private forests. In Macedonia, the most common species is oak with 31.3% and beech with 23.60%. From softwood, the most common species are black pine, white bark pine, Australian pine etc.

According to the studies of EFI, Schmitthusen, Hirsch “Private forest ownership in Europe” and other, in Europe, around 49.6% of the forests are privately owned and approximately 50.4% is state-owned. The structure differs in the countries.

In SEE countries that are the subject of these project, forests are predominantly owned by the state. The highest percentage of the forest in state ownership has Albania (97%), and the lowest Montenegro (52,3%). A high percentage of forests in the state ownership has Macedonia (89.1%) and Bosnia and Herzegovina (80.7%).

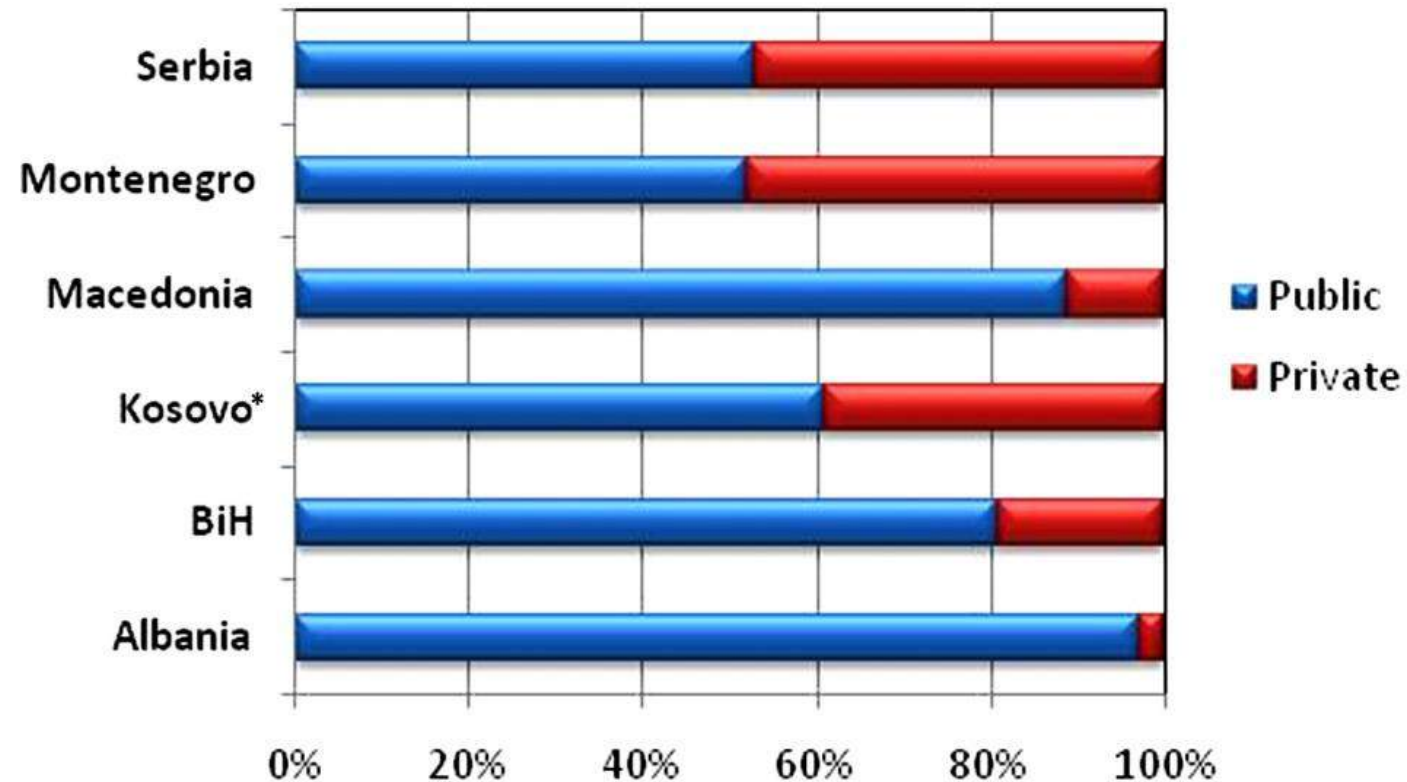


Figure 5: The forest land ownership structure in regional countries

Forest health and damages

- Based on the review of the damages caused in the forests of the region it can be concluded that the greatest threat to the forests in the period of 2011-2015 was caused by human-made, natural disasters and plant disasters. The greatest damages from the plant disasters had Montenegro and Kosovo* (14.5% of the growing stock was affected by damages). In Albania and Macedonia, the greatest damage in forests are caused by human made, while in Bosnia and Herzegovina in the previous period, damages to forests are mainly caused by forest fires. Serbia is characterized by damage to the areas under forests caused as a result of natural disasters occurred primarily in 2014 when major flooding occurred, as well as due to ice-break and wind damage to forest.

Forest damages in regional countries/territories in the last five years

	Albania	Bosnia and Herzegovina	Kosovo*	Macedonia	Montenegro	Serbia
Total for period 2011 to 2015 (1,000 m ³)						
Human made	43.574	531	600	114.157	20.457	95.530
Damages by insects	-	252	909	4.758	3.979	48.781
Natural disasters	-	430	258	26.471	-	1,664.701
Damages by plant diseases	-	29	1.119	-	235.868	41.448
Damages by forest fires	8.400	1.162	459	35.291	-	105.287
Other (define)	-	-	34.665	-	10.932	4.728

Source: National reports (Part B)

Status of water resources in SEE

- Hydrographically, SEE countries/territories belong to the Black Sea (Serbia, Kosovo*, BiH, Montenegro, Macedonia) Adriatic Sea (BiH, Montenegro, Albania, Kosovo*) and Aegean Sea (Macedonia, Kosovo*) basins. Water is discharged from the area of 207.831 km².

country	Annual precipitation mm	Specific annual runoff l/sec/km ²
Albania	1.485	30
BiH	1.250	23.4
Kosovo*	650	11
Macedonia	758	7.8
Montenegro	1.815	44
Serbia	734	5.7

Flood management

Mountain hazard related to water (torrent, landslide)

- The main factors increasing the flooding risk, besides topographic and land characteristics, are heavy precipitations, removal of forest cover, uncontrolled urbanization, the reduced discharge capacity of regulated river sections (deposition of sediment and garbage; overgrowing by shrubs and trees).
- During catastrophic torrential floods in BIH and Serbia, in May 2014, 76 lives were lost, 2.6 million people were endangered, and about 12.000 km² were flooded with material damage higher than 3 billion EUR.
- During a torrential event in Macedonia, near Skoplje, in August 2016, 22 people died, 450.000 were affected in 10 municipalities, with material damage higher than 100 million EUR. Dominant hazard in Montenegro is also torrential floods and erosion processes, with damages higher than 60 million EURs, in the period 2010-2016. Torrential floods are also frequent in Albania and Kosovo*.

Flood risk management plans

- Preparation of flood risk management plans (FRMP) is a necessary measure for effective flood protection and sustainable spatial planning, but it is still in an initial stage in the SEE region.
- A preliminary flood risk assessment is prepared for the whole territory of the Republic of Serbia and contains: maps of the river basin areas in the proper scale; a description of the history of floods; assessment of potentially harmful consequences of future floods. BiH prescribed a methodology for their preparation, while in Macedonia the first flood risk management plan is in preparation. Numerous municipalities in Macedonia and Serbia have prepared Operational Plans for Flood protection. A preliminary Flood Risk Assessment was not developed in Albania so far, however there are some ongoing activities. Municipalities and RBA in Kosovo* are in charge for preparing operational plans.
- Some of the main issues for preliminary flood risk assessment are water monitoring and modelling, which did not reach the necessary level in the region (insufficient number of measuring stations, especially on watersheds smaller than 50 km²) so far.
- Early warning systems were established just at a few watercourses in the region.

Flood protection

Outstanding river training works have been undertaken in the SEE region (sections of rivers the Danube, Sava, Pčinja, Crni Drim, Ibar, Beli Drim, Bregalnica, Bosna, Trebišnjica, Vardar, Južna Morava, Morača, etc.). Numerous large dams with reservoirs were built for flood protection, with a retention volume of 100-800 millions of m³.

Generally flood protection in the region is still not at satisfactory level and shows a weak institutional support and organization.

Water quality

Classification of the ecological state of water bodies

- In BiH entities, FBiH 4 classes of water bodies are determined, in RS 5 classes of water bodies (based on two groups of criteria, environmental and chemical status), in accordance to local regulations.
- Classification of 499 water bodies in Serbia is performed in accordance to EU-WFD characterization, in 5 classes.
- Currently there is no monitoring and classification of water bodies in Montenegro in accordance with EU-WFD directive, but only a programme of systematic examination of water quality and quantity.
- The ecological status of surface bodies in Macedonia hasn't been defined yet, except in some regions, where the classification of the ecological status was done in accordance to the WFD methodology. Albania applies water quality assessments using EU-WFD characterization.
- Kosovo* uses UNECE Water Quality Classification standards and still has not water quality classification based on the EU WFD standards.

A map of the monitoring network

- In BiH, the water quality monitoring is systematically carried out at 58 river measuring points,
- Serbia has 140 measuring points, which provide data for the Serbian Water Quality Index,
- in Montenegro is performed on surface and ground waters at 44 sampling locations at rivers and 11 sampling locations at lakes.
- In the main rivers in Albania the water quality monitoring is realized in 34 stations, while the lake monitoring is done in 7 stations, the maritime water monitoring is done in 10 stations, while the ground water monitoring is realized in 41 stations and
- Kosovo* has a monitoring network for surface water, which consists of 54 stations, not covering groundwater quality monitoring.

Surface water

- Large water bodies in Serbia such as the rivers Danube, Tisa, Sava and Drina satisfy the criteria for the quality class II (good). The condition of surface water quality in Serbia is relatively good, facing the fact that less than 10% of waste water is purified in an adequate manner.
- The surface water quality report (2015) of Montenegro states that rivers in the Adriatic Basin mainly show a good quality, while in the Danube River Basin some rivers don't have a good status, due to pollution.
- Water quality measurements in Albania shows that very good and good quality were observed at 41.2% of all monitoring stations, moderate at 35.3%, and poor and bad status at 23.5%.
- Results of physical-chemical data monitoring in the last five years in Kosovo* show that the quality of water is good, except on the sections through settlements due to inflow of municipal and industrial wastewater.

Groundwater

- According to the results of the analysis in Serbia, 34 water bodies (23%) are at risk or possibly at risk, while for 119 water bodies (around 77%) can be considered that they are not or probably not at risk. Monitoring of underground water in Montenegro is not in accordance with EU Water Framework Directive and analyzed samples show moderate to good quality status. Groundwater in Albania mainly have good physical-chemical properties, with higher concentrations for certain indicators in some wells. Also, some aquifers are classified as areas of high salinity. Macedonia and Kosovo* don't have systematic monitoring of groundwater quality, except for some projects and research activities.

Waste water treatment and reuse

Untreated municipal and industrial wastewater is a key source of pollution of the surface and groundwater in the SEE region.

Seven plants for wastewater treatment are functional in BiH: six in FBiH and one in RS (they cover 3% of population in FBiH, and 1.43% in RS). In Serbia only 5-10% of the wastewater is processed and just 20% of the municipalities have facilities for purification. Almost 50% of total population in Macedonia is not connected to the public sewage system. Currently around 25% of total population in Montenegro is connected to the sewerage systems. Currently, Albania has 7 wastewater treatment plants, and another one is under construction. About 50% of Albanian population is connected to sewage systems, mostly in urban areas. Kosovo* has one urban wastewater treatment plant with a capacity of about 8.000 equivalent population and some small rural treatment facilities.

Water demand

Water supply

- The main hydrological feature in SEE countries/territories is the spatial and temporal unequal water distribution and significant lack of water resources in certain areas (parts of Serbia, Kosovo*, Macedonia).
- Water supply coverage in Albania amounts to about 80.5% in the period 2012-2015, 70% in Kosovo*, 89% in Macedonia, 80% in Serbia, 60% in Montenegro. The urban population in the SEE region has a much higher level of availability to public water supply systems than rural population. Average water losses are very high in the SEE region, up to 60% in Montenegro and 55% in Kosovo*.

Water scarcity and droughts

- The problem of droughts is evident in the SEE region and affects the agricultural production, water supply, as well as some associated phenomenon (forest fires, plant diseases). Severe droughts have caused enormous damages to the agriculture in BIH and Serbia, in 2000, 2003, 2007 and 2011. Huge areas in the central part of Macedonia, with average annual precipitation <500 mm, are extremely endangered by droughts and process of desertification as well as the southeastern parts of Serbia. Estimated damage on crop production in Montenegro (2011), due to droughts, amounted to 30-60% of expected yield.

Irrigations

The SEE region has strong potential for irrigation on huge surfaces (more than 2 million hectares), but effective irrigation is performed on a much smaller area. Many existing irrigation systems are not in use due to inadequate maintenance, indifference of owners and users and lack of financial sources.

Status of soil resources in SEE

- A soil information system was not established in most SEE countries/territories (except Macedonia, 2015).
- Most countries in the region have digitized soil map for the whole territory, and some of them have a digital soil map only for the small part of the territory. A new soil classification system of BiH as well as into the FAO classification and all information is now available in GIS format. The soil classification system in Serbia is based on the genetic principles and does not correspond to the World Reference Base for Soil Resources (WRB) criteria.
- In Albania, classification of soil was done according to the USDA soil taxonomy, while in the other SEE countries/territories soils were classified according to the FAO soil classification compliant with World Reference Base for Soil Resources (WRB) criteria.

Soil degradation

- The main processes connected with soil loss and soil degradation in the SEE countries/territories are as follows: degradation of soil physical properties, chemical (salinisation, acidification, nutrient depletion), biological degradation and soil loss (due to soil erosion and landslides).
- In the South East Europe, soil is threatened by degradation processes of which the most present are erosion processes of different intensity. Water erosion is dominant in the whole area. To determine the loss of land in EU countries, different methods are used, such as USLE, RUSLE, PESERA, and others. Some states, (mostly SEE countries/territories: Serbia, Montenegro, Macedonia, Kosovo*) for assessing the state of erosion and for calculation the soil loss use the Potential erosion model developed by Gavrilović (Gavrilović, 1972) as the basic model for assessing the intensity of soil erosion.

Soil erosion in some regional countries/territories

Country/territory	Total average annual erosion (mil m ³)	Specific annual erosion (m ³ ·km ⁻²)	% territory under I, II and III categories by Gavrilović
Kosovo*	-	-	55,5%
Macedonia	17.0	685	36,65%
Serbia	37.3	422	35,55%
BiH	16,5	323	-

Source: National reports (Part B)

- In the national report of Montenegro, only a descriptive assessment of soil erosion is provided as well as a map that was done according to Gavrilović, where 5 category of erosion is defined, but there is no information regarding the percentage distribution of categories. Data regarding the soil loss are also missing.
- 14% of Albanian territory has high erosion rates (12-60 ton/ha/year), 12% average erosion rates (3-12 ton/ha/year). At a national scale, every year 8-24 ton/ha of soil is eroded and discharged to the sea or filling up reservoirs (including hydropower plants reservoirs) highly reducing their capacity.
- The total average amount of sediment, created on the territory of BiH per year is $16.52 \cdot 10^6$ m³, or 323 m³/km². The new Erosion Map of RS was designed in two phases (restructuring of erosion map and innovation of erosion map) during 2011. The "Strategy for Agricultural Land Management" of FBH defines that it is necessary to plan and build at least ten measuring stations for soil erosion, but also theoretical methods such as the USLE method to predict the intensity of erosion in the area of FBH, and making maps of erosion and landslides.

Soil monitoring

- A functional system for soil monitoring in countries SEE, however, has not yet been established.
- Reporting systems of soil quality monitoring in BiH are in process of being established in accordance with EEA indicators and EIONET requirements.
- In Montenegro for example exist two types of soil monitoring: the monitoring of soil contamination by hazardous substances and the monitoring of soil quality.
- Kosovo* has not yet developed a soil monitoring system and therefore there is a lack of data on the quality of the soil.
- No soil monitoring system does exist in Macedonia. Characteristics of soil profiles in this country analyzed in the past are presented in the soil information system. The National Environment Agency of Albania is conducting some monitoring on soil erosion and soil contamination at specific hot spots. The Serbian Environmental Protection Agency is responsible for professional activities related to the data collection and production of indicators related to soil erosion and the content of organic carbon in the soil.

All countries/territories used CORINE database to determine the land cover use. In the reports, for each country/territory is provided the trends in land use change. There is a trend of **decreasing agricultural areas and forest areas in reports from regional countries/territories (????)**.

Land cover use the Third level classification of the CORINE database (2000-2012)

	Albania	BiH	Kosovo*	Macedonia	Montenegro	Serbia
Forestry	37	39	57	40	45	29
Pasture	15	8,3	-	25	-	13
Agriculture	24	22,1	40	26	37	46
Other land	24	30,6	3	9	18	12

Source: National reports (Part B)

Management of contaminated sites

In most SEE countries investigation and monitoring of contaminated sites is performed. Contaminated sites in Albania are according to the project defined as hot spot areas, while the number of contaminated sites being monitoring is different in countries. The highest number of contaminated sites (422) is monitoring in Serbia, but in other countries this number ranges from 91 (Bosnia and Herzegovina), 110 (Kosovo*), and large number of landfills in Macedonia. A particular problem in BiH represents a landmine and other residual explosive materials contamination.

3. Socio Economic Aspects of Natural Resource Use

Employment in the forest sector

One of the socio-economic indicators for forestry development is the number of employees.

- In SEE countries, the number of employed persons ranges from 395 (Montenegro) to 9.238 (BiH).
- The total number of employees in Kosovo* was 3.293 (in 2015), in Macedonia 2.232, and in Serbia 7.636.
- In all SEE countries the largest number of employees is in the field of wood processing and furniture production industry.

Income structure and revenues of state forest companies

- The main income of the forest sector in Albania consists of sales of timber, non-timber forest products (NTFP), hunting permits and leasing of territories. Total revenues of forestry activities in 2013 and 2014 are approximately 2.000.000 EUR.
- In RS and FBiH, the primary product of public forest companies is wood. Negative financial results both in the FBiH and RS are reported in 2014. Total revenues in the forest sector in Serbia were approximately $75.11 \cdot 10^6$ EUR yearly in the period 2013-2015.
- The revenues from non-wood products in 2015 in Serbia was only 943.664 EUR, while in the FBiH for the same period it was 7.143.416 EUR.
- The main revenues realised in the forestry sector in Kosovo* have been provided from the rent of forest land, the sale of standing trees (stumpage tree value) and fee collection for technical and extension services. Total revenues were 1.331.700 EUR in the observed period, while in 2014 gross loss was – 268.981 EUR.
- In Montenegro, total revenues in forest sector were 4.569.300 EUR yearly in the observed period, while in 2013 and 2015 were expressed as a gross loss.

Public and international funding and investments

- During the period 2010-2014 the state budget in Albania has invested 3.693.000 EUR in afforestation measures and about 1.168.000 EUR in forest thinning activities. The most important project related to forests is the Environmental Services Project (ESP) with an overall value of approximately 17.000.000 EUR.
- In BiH, the main foreign investors in the forest sector are the World Bank, FAO, and EU. State budget in the forest sector in BiH has invested approximately 10 million EUR (afforestation, management plan, etc.).
- The Government of Kosovo* has allocated 900,000.00 EUR per year for forests, from which 350,000.00 EUR regarding afforestation of forest areas, and 550,000.00 EUR for the development of management plan.
- The larger international funding countries and organisation of the Kosovo* forest sector were: Finland, Sweden, Norway, FAO, EU- Twinning, CNVP of Nederland, EU – countries, GIZ, USA.... With international support during 2010- 2015 an amount of 9,799, 778 EUR was received.
- Currently, there is no international funding in forestry in Montenegro.
- The public funding in the forestry sector in Serbia is mainly oriented towards road and harvesting, amounts around a 6.58 million EUR, International investments in the forest sector in Serbia were in the last period, approximately 4.000.000 EUR.

Forest products and services

- The main forest product in Albania is wood for sale and it is the major contributor to the forest service revenues (889,000 EUR in 2014).
- In BiH wood and wood products are still the main sources of income. The value of main marketed goods in 2015 for wood and wood products was 175.297.658 EUR and for NWFP 8.087.080 EUR.
- In Macedonia services that are coming from forests are not evaluated... The value of marketed goods – mushrooms is about 1.900.000 EUR, from herbal - medical spices approximately 1.300.000 EUR.
- The main forest product in Montenegro is wood (sale amounts to 89.645 m³) and values of marketed goods for 2015 reached 9.979.000 EUR. According to a rough estimation of the annual income for the rural population from NWFPs it amounts to around 5.000.000 EUR.
- A significant income for people in rural areas in Serbia are marketed goods, including NWFP: game and game products (trophies, meat, other animal products and game shots) as provide e.g. a value of more than 16.500.000 EUR for 2010. Mushrooms, berries, herbs and other plant parts are second most important and their value amounts to almost 13.700.000 EUR.

Contribution of the forest sector to the GDP

- The contribution of the forest sector to the GDP is not calculated separately in Albania.
- In BiH, the national GDP is constantly growing in a period of 2000 to 2015, while forestry, logging and related services, contribution to the GDP is not following that trend.
- In Kosovo* 2.5-3.5% of the GDP is achieved by the forestry sector (REC, 2009).
- In the Republic of Macedonia, the share of the forest industry (primary and secondary wood processing, furniture, paper, and pulp) to the GDP is estimated at 2.5 and 3%.
- According to the rough estimate, the share of forestry and wood industry in GDP in Montenegro is somewhat less than 2%.
- In Serbia, contribution of forestry in 2015 was 0.24% of GDP, and with the inclusion of forest industry, the contribution went up to 2.6%.

Trade balance

- Albania is importing most of its wood supply apart from firewood. The harvesting ban affects all commercial forest harvesting activities.
- In BiH, the main driver for the development of the wood processing industry is definitely export to foreign markets. In 2011 it was reported growth to 511.479.000 EUR while exports were reported to 381.225.000 EUR.
- In Kosovo*, the import is much higher than the export for all wood products.
- In Macedonia, the biggest part of the import comes from plywood, coniferous lumber, carpentry, and parquet.
- In Montenegro, the forest export in the period 2010 -2015 increased from 16.54 to 30.030.000 EUR, while the import recorded a slight decline of approximately 3.3%.
- Trade balance in the forestry sector in Serbia clearly shows that only in the 2014 and 2015 export exceeded import.

Illegal logging

- In Albania, the official statistics on illegal logging shows a decreasing trend. According to government statistics, the total volume of illegal logging is about 15% of annual felling.
- Illegal logging has been recognized as a serious problem for the BiH forest sector. The amount of illegally harvested wood in BiH has been estimated to be 1.2 million m³ (WWF, 2008).
- In Kosovo*, illegal logging is identified as a problem in 40% of public forest land and 29% of private forestlands.
- In Montenegro, two types of illegal logging can be distinguished: poverty driven illegal logging and commercial illegal logging. Officially Recorded Illegal Logging in State Forests from 2002-2015 was 58.714 m³.
- In Macedonia, the volume of illegally logged wood presumably ranges from 25% to 30% due to unfavourable social and economic conditions, an insufficient number of forestry policemen and inefficient administration.
- In Serbia, illegal logging mainly appears in depopulated rural areas, where punishments for illegal activities in the forestry sector are very low.

Flood management

- Torrential floods are the most frequent catastrophic events that occur in the SEE countries/territories, with serious risks for people and their activities.
- These natural hazards have caused the death of more than 400 people in the last 65 years and material damage estimated at more than 27 billion EURs.
- In the last 15 years, the frequency of occurrence and destructivity of torrential floods indicate that it is necessary to achieve a higher degree of coordination among different activities related to the problems of erosion control and torrential floods.
- In addition, it is necessary to provide stable sources of funding, with long-term investments as the only way to achieve prevention and minimize risks.

Final provisions: institutional environment of natural resource management

The institutional arrangements:

- are essential for an effective and coordinated management of natural resources
- comprise the circles of policy formulation and implementation, but also the realities of administration and shared or scattered responsibilities regarding natural resource governance and management.

The main problem in all SEE countries is fragmented responsibility on natural resources.

Coordinated governance of natural resources is both essential for maintain the environmental assets and ecosystem services in SEE countries/territories to maintain the opportunities for rural development and creating economic niches as discussed earlier, but also to reach a closer proximity to EU legislation, policies and provisions as outlined in the following chapter.

4. Overview of the EU policies for management of the Forestry, Water and Soil Resources

EU Forest related policies and instruments

- **Forest policy** in the European Union is governed by the *EU Forest Strategy*, which was published in 2013. The strategy aims at balancing forest functions and the provision of ecosystem services now and in the future, as well as to provide a basis for a competitive forest-based sector. In 2015 a Multi-annual Implementation Plan of the new EU Forest Strategy was published by the European Commission. It contains a larger number of actions in order to implement the new EU forest Strategy for the time period 2015-2020.

Agriculture and Rural development /IPARD

- Starting from the agricultural and rural development policies, the **Common Agricultural Policy (CAP)** is most important for forests in the European Union since a large number of subsidies are distributed based on this legislation. Currently the CAP 2014-2020 pursues three long-term objectives: sustainable management of natural resources and climate action, a balanced territorial development and a viable food production.
- During the Agenda 2000 reform the CAP was structured along Pillar 1, “Market and Income Support Measures” and Pillar 2, “Rural Development”. The second pillar mainly grants direct funding for forests.
- The **Instrument for Pre-accession Assistance (IPA)** is meant to support acceding countries through financial and technical means to perform economic and political reforms. Currently for the time period 2014-2020 IPA II is operative. Among its beneficiaries are Albania, Bosnia and Herzegovina, Macedonia, Kosovo*, Montenegro, Serbia and Turkey.

Trade

- Since illegal logging creates a substantial problem for trade in wood products, the European Union promotes the integration of the notion of sustainable development also in international trade. Therefore, it has created the EU Action Plan for Forest Law Enforcement, Governance and Trade (**FLEGT Action Plan**) in order to prevent the import of illegal wood and related products into the EU.
- To complement the FLEGT Action Plan, the **EU Timber Regulation** (Regulation 995/2010) came into effect in 2013. According to this regulation, wood importers and traders are obliged to know the source of any wood or forest product, which they are buying to be able to ensure legal compliance when entering the EU market.

Plant health and propagating material

- With regards to the EU plant health legislation Council Directive 91/414/EEC, Council Directive 2000/29/EC, Council Directive 1999/105/EC, and Regulation (EC) 396/2005 were the most important ones (Pelli et al. 2012) in the past.
- The Forest Reproductive Material Directive 99/105 and eleven other directives on plant reproductive material were suggested to be merged in 2013. However, according to Bouillon et al. (2015) the European Commission is expected to not include after all the forest reproductive material directive into this package, but according to them related control activities will without much doubt be integrated into Regulation 882/2004.

Phytosanitary measures

- The EU phytosanitary policy lays down rules for internal trade in the Union and the introduction of products from third countries to safeguard public health.
- Principally the candidate countries are required to implement the related EU legislation as well as put all required administration in place to avoid the import of pests and diseases.

Natura 2000

- The Natura 2000 network is composed by the Birds Directive 2009/147/EC and the Habitats Directive 92/43/EEC. Both are among the most important EU legislation for nature protection. Candidate countries as well as member states are required to propose Natura 2000 sites for protection.

Others

- Older legislation as regards air pollution and forest fire prevention as well as control are not in force anymore. The Forest Focus Regulation 2152/2003 has replaced them, but run out in 2006. The EU Solidarity fund still offers financial means to deal with damage caused by disasters.

EU Water related policies and instruments

The **Water Framework Directive** 2000/60/EC (WFD) was adopted in the year 2000 and is complemented by other, more specific EU laws. For example:

- the Floods Directive 2007/60/EC,
- the Groundwater Directive 2006/118/EC,
- the Bathing Water Directive 2006/7/EC,
- the Drinking Water Directive 98/83/EC,
- the Urban Wastewater Treatment Directive 91/271/EEC, and
- the Nitrates Directive 91/676/EEC.

Since flood risks, but also water scarcity and droughts occur more often, the EU Floods Directive 2007/60/EC required member states to prepare flood risk assessments for all its river basins as well as flood hazard maps. The first management cycle for the WFD ended 2015. The next one will end in 2021 respectively 2027 for meeting all remaining policy objectives.

EU Soil related policies and instruments

- In the year 2006 the European Commission adopted its Soil Thematic Strategy (COM 2006/231) that included also a proposal for a Soil Framework Directive. However the member states did not agree to this legislation and in April 2014 the Commission decided to withdraw its proposal. In the seventh Environmental Action Programme it is clearly stated that sustainable management of soil is equally important as its protection and the remediation of contaminated sites.
- In 2012 the European Commission reported on the implementation of its Soil Thematic Strategy (COM 2012/46).

Meeting EU requirements in the SEE countries/territories

- With regards to **EU forest-related** legislation all SEE countries/territories aim at implementing required provisions:

- Currently Albania, Macedonia, Montenegro and Serbia are official candidate countries who applied for EU accession, while Bosnia and Herzegovina and Kosovo* are potential candidate countries. This said the candidate countries have to comply with EU legislation and rules, while potential candidate countries also aim at approximating their legislation and policies.

Country/territory	EU forest – related legislation
Albania	-EUTR Regulation 995/2010 - NATURA 2000
Bosnia and Herzegovina	-EUTR Action Plan for BiH was developed in March 2013 -NATURA 2000 -Phytosanitary aspects in forestry -forest reproductive material
Kosovo*	- Natura 2000
Macedonia	- Rural Development Regulation /IPARD - EU Timber Regulation - EU Habitats and Birds Directives - sanitary and phytosanitary measures
Montenegro	- EUTR, Regulation 995/2010 - veterinary and phytosanitary policy. - Council Directive 1999/105/EC on the marketing of forest reproductive material. - Natura 2000
Serbia	-EUTR and FLEGT forest reproductive material regulation, - sanitary and phytosanitary measures - Natura 2000

With regards to the implementation of the **EU water legislation** SEE countries/territories have taken the following measures:

Country/territory	EU water legislation
Albania	<ul style="list-style-type: none"> - Water Framework Directive - Floods Directive
Bosnia and Herzegovina	<ul style="list-style-type: none"> - Water Framework Directive - Urban Waste Water Treatment Directive - Drinking Water Directive - Floods Directive
Kosovo*	<ul style="list-style-type: none"> - Water Framework Directive - Drinking water directive - Directive for polluted urban waters - Nitrate directive - Floods Directive
Macedonia	Several EU Directives (EU-Water Framework Directive, Directive 1976/160/EC, Directive 91/676/EC, Directive 98/83/EC, Directive 98/83/EC etc.)
Montenegro	<ul style="list-style-type: none"> - Chapter 27-Environment and Climate Change - Water Framework Directive
Serbia	<ul style="list-style-type: none"> - Water Framework Directive - Floods Directive

With regards to the **protection and management of soil** the following activities have been implemented in the SEE countries/territories:

Country/territory	
Albania	EU Soil Thematic Strategy
Bosnia and Herzegovina	<ul style="list-style-type: none"> - Directive no. 1210/90, 933/1999 and 1641/03 and recommendations from the EEA and the EIONET. - EU Soil Thematic Strategy. - EU nitrates directive (Dir. 91/676/EEC)
Kosovo*	- EU Soil Thematic Strategy
Macedonia	- Up to now there are various “related to” but the most relevant national document is National Action Plan to Combat Land degradation and desertification that is in final phase
Montenegro	- No national legislation exists to date that aims at implementing EU soil objectives
Serbia	<ul style="list-style-type: none"> - Law of Soil Protection (EU Soil Thematic Strategy) - European Pollutant Release and Transfer Register (E-PRTR) 166/2006 / EEC; Directive on Integrated Pollution Prevention and Control 19 96/61/EEC, 2008/1/EEC; Regulations of the European Agency for Environmental Protection (EEA) - Technical guidelines for the collection of soil erosion and soil organic carbon data for Europe through EIONET, 2010 (European Commission, Directorate General JRC).

5. Recommendations for integrated management of the natural resources in SEE

1. Pathways towards developing the natural resource sector

Important steps in this direction comprise:

- Increase the profitability of forest enterprises: although a strong social component of forest enterprises is acknowledged, they are largely unprofitable.
- Improve the knowledge base for forest, soil and watershed management: modern monitoring instruments are prerequisites for a sustainable management of forest resources.
- Building up new value creation opportunities: exporting raw materials such as round wood or NWFP raw material (e.g. frozen mushrooms) would leave major parts of value creation to outside the region.

2. Towards new approaches of land use planning

Recommendations for land use planning comprise:

- Improve and harmonise spatial planning: inconsistent spatial planning, uncontrolled assignment of land use permits, split responsibilities, low enforcement of rules and regulations and incomplete land restitution create long lasting impacts on the maintenance of proper soil and ecosystem qualities.
- Invest into natural resource management instruments such as forest development plans, flood risk management plans, flood hazard and risk mapping, and soil maps, and harmonized monitoring and inventory systems in general including a harmonised methodology for determining the soil loss at the regional level.
- Clear contaminated and mined sites: the SEE is still heavily contaminated with toxic waste and land mines, which renders major parts of land inaccessible and natural resource threatened and unusable. Priorities have to be given to clear temporal plans how to improve this situation affecting forest, water and soils alike, while seeking international support and regional cooperation.
- Reduce land abandonment: land abandonment is a major source for uncontrolled and unsustainable land and natural resource use. European programmes such as IPARD create to opportunities for support while improving the compliance with the EU acquis communautaire simultaneously.
- Support modern communication technologies and web-access infrastructure in rural areas for an integrated planning of forest, soil, and water resources.

3. Ecosystem services as a role play for integrated natural resource use

This requires:

- Create cross-sectoral platforms for policy- and decision-making: fragmented decision-making does not respond to the integrity of ecosystems and their provided services.
- Investigate new avenues for marketing and payment for ecosystem services: to gain means for fostering ecosystem services income has to be generated both from private and public side (ecosystem services on market basis such eco-tourism, contractual nature protection etc).
- Find a proper zoning of ecosystem services: defining hotspots for specific ecosystem service provision may support proper planning mechanism and directed and efficient funding of target amenities and commodities.

4. Towards new level of business development

Major steps comprise:

- Improve law enforcement and legal security: for any economic activity safeguarding of legal standards, investment security, and legal certainty is fundamental for its happening.
- Develop capacities and strategies for non-primary sectors: the increasing scrutiny on natural resources as major driver of a new economy implies that there are ample opportunities for value creation.
- Create a business-stimulating environment: small and medium enterprises are a very backbone of today's societies.

5. Private land owners in the focus

In order to activate the full potential of private land, the following is recommended:

- Support the organization of private land owners: examples show that a stronger organization of land owners lead to an increasing motivation to manage land properly and according to given standards.
- Increase the amount of actively managed land: only when activating private land owners, it is possible to pursue a guided modus operandi of desired land and natural resource management.
- New forms of communications to be installed: state should not hide behind a top-down order policy but to promote an active exchange with private land owners in order to achieve public policies.

6. Resilience is an integral concept to natural resource use

The following is recommended:

- Take action in climate change adaptation and mitigation: climate change strategies and instruments for proper implementation are more than paper work. Awareness-raising campaigns incentives for management amendment, and the promotion of concrete pathways how forest, soil, and water resources can be maintained in a changing environment.
- Develop clear actions plans: response to climate change and fostering resilience of ecosystems is contrast to reactive measures. It requires clear strategic planning how to reduce soil erosion, and how to prospectively handle extreme events such as floods or forest fires.
- Foster integrated, inter-communicating monitoring systems for forest, soil, and water incl. environmental status.
- Foster investment in water infrastructure and strategies for a higher efficiency of water use.
- Improve science uptake: hesitation against novel evidence in active natural resource management is fiendish to adaptive management approaches.

7. Institutional framework matters

The following may be recommended:

- Streamline policy instruments and management planning of natural resources.
- Strengthen synergies in the administration frameworks of SEE countries and clear, non-competing competences in the field of natural resources.
- Support new modes of participation in the political arena around natural resources in a cross-sectoral manner.
- The benefits of integrated natural resources have to be made visible to convince all involved stakeholders incl. administrations to increase collaboration and exchange.
- Secure functioning of political decision-making and control, and respective law enforcement.
- Support institutional mechanisms for combating illegal logging, and enforcement of a controlling and safeguarding system.
- Prospective action and development of structures for compliance with the EU acquis communautaire can achieve Internal effects in terms of agenda setting, enforcement of policy goals, and positive effects on ecosystem service provision.
- Professional capacities in administration and institutions can substantially support better access to funding and cooperation in business, R&D, administration, capacity building.

8. Last but not least: capacities and education

- Secure and earmark national funding for education and capacity building in integrated natural resource management and develop career models for academics.
- Capacity building for EU standard implementation and information campaigns within the sectors – knowledge transfer.
- Increase capacities in NRM administration to make them fit for new challenges (e.g. climate change, ecosystem services, cross-sectoral cooperation).
- Secure cooperation with regional and international education institutions and funding mechanisms as well as training and life-long learning programmes.
- Invite international know-how in wood-based industries and forest & water management, and establishment of new trainee programmes, and support respective integrated decision-support systems.
- Support new modes of science-policy exchange that guarantee a better uptake of scientific findings into decision-making and planning.
- Awareness-raising in the broader public on the assets of natural resources in SEE countries, the opportunities connoted, but also the immanent threats (e.g. forest fires, soil loss, drinking water quality, flood risk) that require corrective action, but also clarifying on issues such as benefit-sharing.



Thank you for your
attention!

