Nexus Mapping Study for South-East Europe: Report for Albania

Background Study for the SEE2020 Region Nexus Policy Dialogue Process

December 2018

Global Water Partnership Mediterranean

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

gef IW LEARN

Umwelt Bundesamt

Austrian Development Agency

Background

The Study was prepared in the framework of the following projects:

i. "*Water-Food-Energy-Environment Nexus Policy Dialogue Process in South East Europe*" funded through the Advisory Assistance Programme of the German Environment Agency in cooperation with the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety;
ii. GEF IW:LEARN Activity 2.3: *Supporting Regional Cooperation on Shared Water Resources through Dialogue*, and
iii. "*Promoting the Sustainable Management of Natural Resources in Southeastern Europe, through the use of the Nexus approach*" funded by the Austrian Development Agency.

The Study was drafted by "Fresh-thoughts Consulting GmbH" contracted by GWP-Med, with contributions by GWP-Med staff members. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of GWP-Med or the donor organisations.

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Table 1: Version history

Version	Date	Changes included	Goes to
0a	4 May 2018	Draft by Alban Doko	FT
0b	4 May 2018	Content review (Guido Schmidt)	Alban Doko
0brev1	11 May 2018	Second draft by Alban Doko	FT
1	11 May 2018	QAed draft report (Guido Schmidt)	FT-MIM
1a	14 May 2018º	Formatting review (Michaela Matauschek)	GWP-Med
1b	13 Dec 2018	Third draft by Alban Doko	FT
1c	13 Dec 2018	Final QA (Guido Schmidt)	Alban Doko
1d	15 Dec 2018	Fourth draft by Alban Doko	FT
1e	16 Dec 2018	Final QA (Guido Schmidt)	GWP-Med

1. Introduction

This Economy Report focuses on Albania as a part of SEE2020 Region (including The Former Yugoslav Republic of Macedonia, Bosnia and Herzegovina, Kosovo* [1], Montenegro and Serbia, within its wider geographic context). It is aimed as the conceptual and technical background to support and inform the Nexus Policy Dialogue process, ongoing since 2013 in SEE under the 'Petersberg Phase II / Athens Declaration Process' and Global Environment Facility's (GEF) programme "International Waters: Learning Exchange and Resources Network" (IW:LEARN) in cooperation with the Regional Cooperation Council (RCC).

Albania is characterized by the following features:

	Albania
Size (km^2)	28,748
Population (million inhabitants)	3.0
Economic growth (NomGDP EUR/capita)	3537
Water renewable resources (million m^3/yr)	39,220
Water abstractions (million m^3/yr)	15,100
Energy production (Mtoe/yr)	2.1
Energy imports (Mtoe/yr)	0.3
Energy efficiency (Mtoe/yr/capita)	1.32
Agricultural land (% of total)	28
Forest land (% of total)	60
Protected areas (% of total)	17.74

Table 1: Overview on key Nexus sectors in Albania[1].

1.1. Purpose of the study – Context

This Nexus Study is prepared in the framework of the following projects:

- "Water-Food-Energy-Environment Nexus Policy Dialogue Process in South East Europe" funded through the Advisory Assistance Programme of the German Environment Agency in cooperation with the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety.
- GEF IW:LEARN Activity 2.3: Supporting Regional Cooperation on Shared Water Resources through Dialogue

[1] * This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence

- "Promoting the Sustainable Management of Natural Resources in Southeastern Europe, through the use of the Nexus approach" funded by the Austrian Development Agency.

This Study will be used as the conceptual and technical background to support and inform the activities of the three Projects above as well as the Nexus Policy Dialogue process, who have the following objectives:

- Supporting the discussion for the preparation of a regional water, food, energy, environment Nexus Strategy/Roadmap under the SEE2020, describing steps and actions for the introduction of Nexus approach considerations in the basin/aquifer management frameworks at national and transboundary levels as means towards sustainable management of water, land, energy and environment.
- Facilitation of the discussions among the SEE2020 economies for the possibility of a Regional Integral Water Management Framework Agreement (RIWMFA) comprising among others of regional means and tools to assist in addressing challenges related to transboundary water resources management (TWRM).
- Fostering cross-fertilisation of institutions and practitioners at regional and national levels.

The specific objectives of the Study are the following:

- Identification of the level of integration of management of natural resources related to Nexus (i.e. water, energy, food and ecosystems).
- Identification of interlinkages and potential benefits, trade-offs and conflicts among Nexus sectors (water, energy, food and ecosystems).
- Brief assessment of the level and status of cooperation for the management of transboundary basins in the SEE2020 region.

1.2. Methodology for the development of the study

The overall work is divided in four main tasks, which have been developed in a sequenced way, certainly overlapping in time, between 2017 and 2018. They are indicated in the following schema:

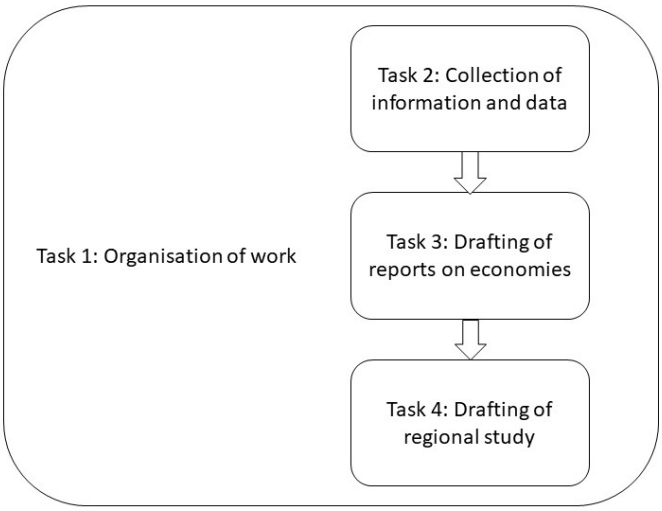

Figure 1: Schema of work developed for the study.

Based on the objectives established, data and information were gathered, which was carried out both at the regional level and at the level of the economies. The study includes in the Annex a list of literature, information sources, datasets and interviews.

For the Study, experts used several tools: desk research (relevant strategic documents, plans, programs; regional transboundary documents; statistical data for the economy; updated legislation; signed agreements regarding relevant nexus sectors; ratified conventions); contacting relevant institutions regarding missing data for some issues; and own knowledge and past experience.

2. Nexus Assessment for Albania

Albania shares a border with Greece to the south/southeast, The Former Yugoslavian republic of Macedonia to the east, Kosovo* to the northeast, and Montenegro to the northwest. Western Albania lies along the Adriatic and Ionian Sea coastlines. Albania's primary seaport is Durres, which handles 90% of its maritime cargo.

Albania situated in the southwestern region of the Balkan Peninsula, Albania is predominantly mountainous but flat along its coastline with the Adriatic Sea. Climate is Mild, temperate; cool, wet winters; dry, hot summers. Area is 28,748 sq. km. Major cities are Capital—Tirana, Durres, Shkoder, and Vlore. Population (2016) is 3047987 and population growth rate (2003 est.) is -0.4%.

Albania is located in south-western part of Balkans peninsula, Southeast Europe. Characterized by distinct mountainous landscape, the average altitude of Albania is 700 meters above the sea. Based on the structure, composition and shape of the landscape, four physical-geographic zones are distinguished: Alps, Central Mountainous Region, Southern Mountainous Region and Western Lowland. The highest peaks are those in the Alps and the Eastern Mountains (Korabi 2751 m) and the lowest peaks are located in the western coast

area. The landscape is intersected by the valleys of Vjosa, Devoll, Osum, Shkumbin, Erzen, Mat and Drin rivers, eastward and westward, which enable the connection of Adriatic Sea with the internal part of the country and the Balkans.

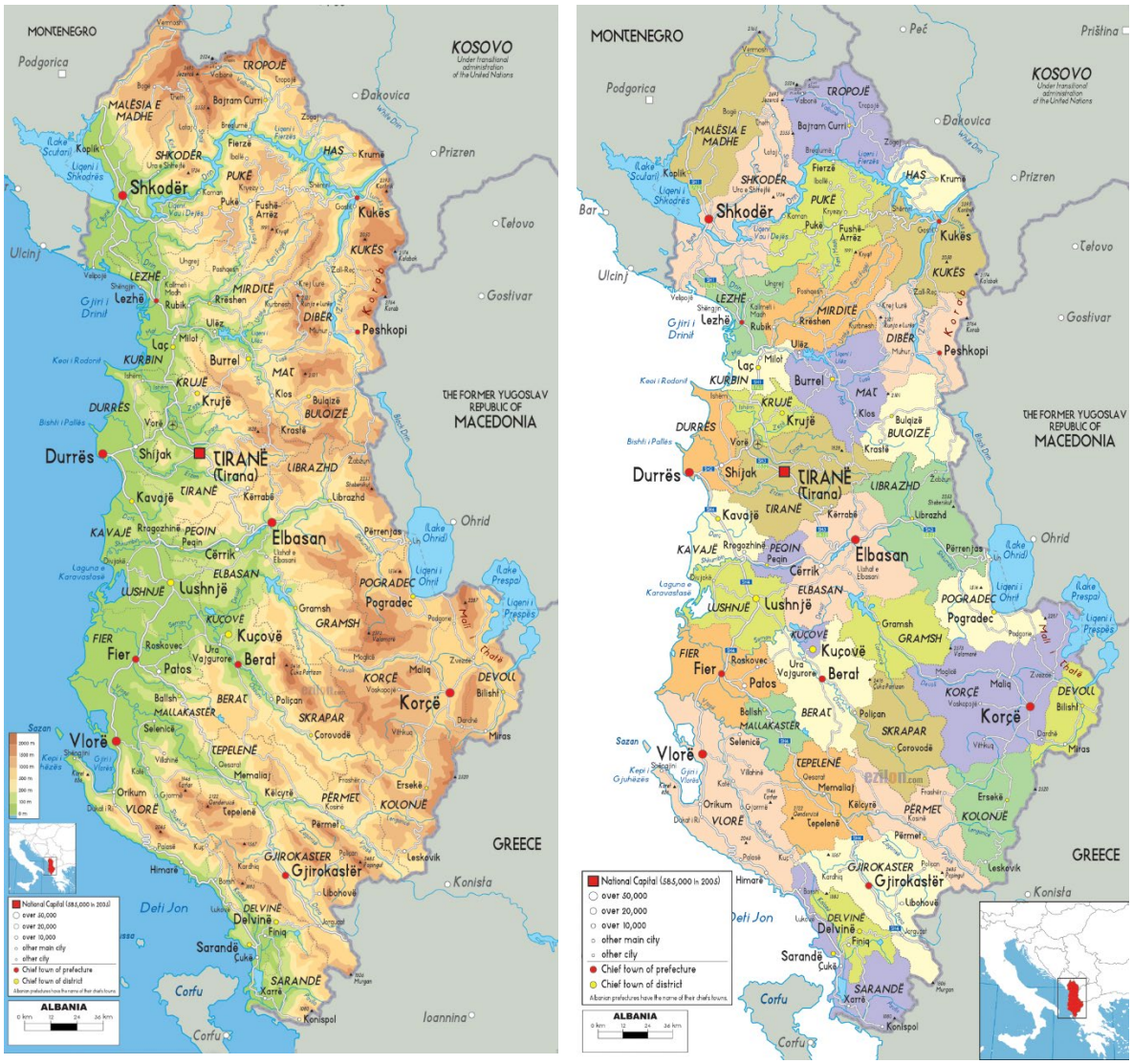

Figure 2: Albania Physical and Political Map

The following key features can be listed to describe Albania's government:

- Type: Parliamentary democracy.
- Branches: Executive--President (chief of state), Prime Minister (head of government), Council of Ministers (cabinet). Legislative--140-seat unicameral People's Assembly or Kuvendi Popullor elected by regional proportional vote; all members serve 4-year terms. Judicial--Constitutional Court, High Court, multiple district and appeals courts.
- Suffrage: Universal at age 18.
- Political parties: Main--Democratic Party of Albania (DP); Albanian Socialist Party (SP); Socialist Movement for Integration (LSI).

- Others--Albanian Republican Party (PR); Demo- Christian Party (PDK); Union for Human Rights Party (PBDNJ); New Democracy Party (PDR); Social Democratic Party (PSD); Social Democracy Party (PDS).

2.1. Key data and trends

2.1.1. Economy

The main features of the economy are the following:

- Real GDP: 10.611 Billion EUR, Employment rate (Albanian Institute of Statistics) is 43.4% (as 2017).
- Natural resources: Oil, gas, coal, iron, copper and chrome ores.

Much of Albania's economic activity is dependent on the utilization of water resources. Over 90 percent of energy production is from hydropower plants, while agriculture is critically dependent on irrigation. However, the inadequate and poorly maintained infrastructure in each of the water-using sectors and the absence of institutional coordination has resulted in the lack of water supplies becoming a key constraint to many economic activities and to satisfying basic social needs.[2]

However, the lack of adequate monitoring systems, the rapid changes in economic activities, and the continuous movements in population make it difficult to assess the use of water resources.

Available data suggests that irrigation and mining rely mostly on surface water, while households and industry on groundwater from aquifers. Domestic water demand is increasing not only because of population growth but also because of the increase in the level of water losses, estimated to be greater than 50 percent in all cities.

The overall economic development of Albania shows a steady increase since 2003 in terms of nominal GDP and nominal GDP/inhabitant.

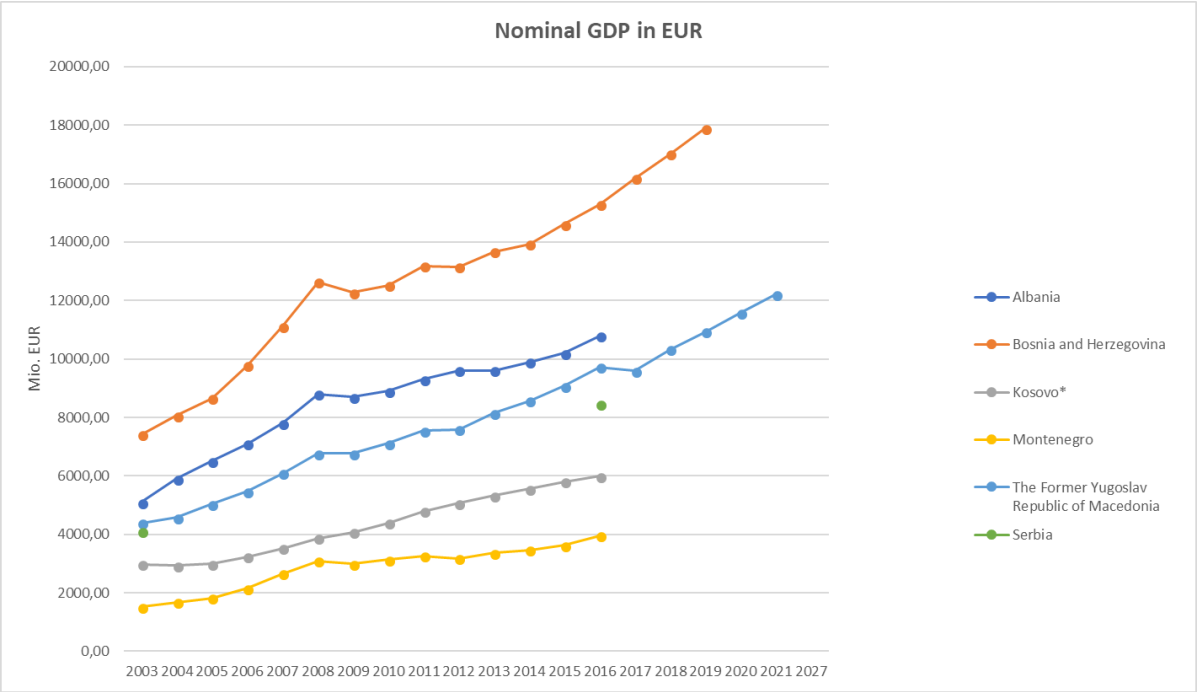

Figure 3: Nominal GDP per inhabitant/yr[3].

In terms of the main economic sectors, the primary sector is still very relevant in Albania whilst of decreasing relevance in terms of economic weight and employment. The secondary sector is slightly increasing, whilst it does not show upwards or downwards trends in the other economies. The tertiary sector is declining.

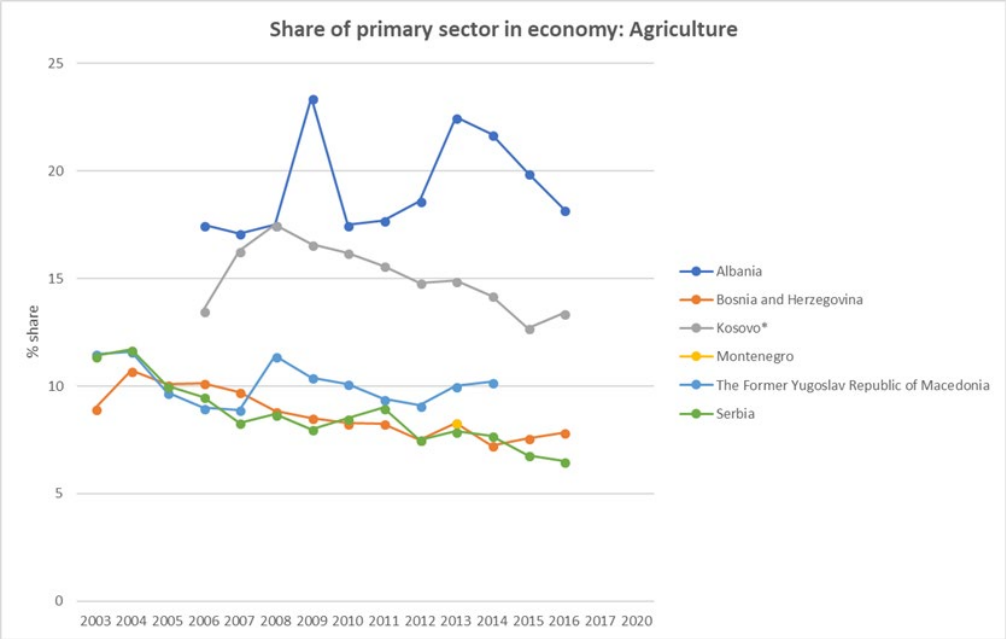

Figure 4: Share of primary sector in economy: Agriculture

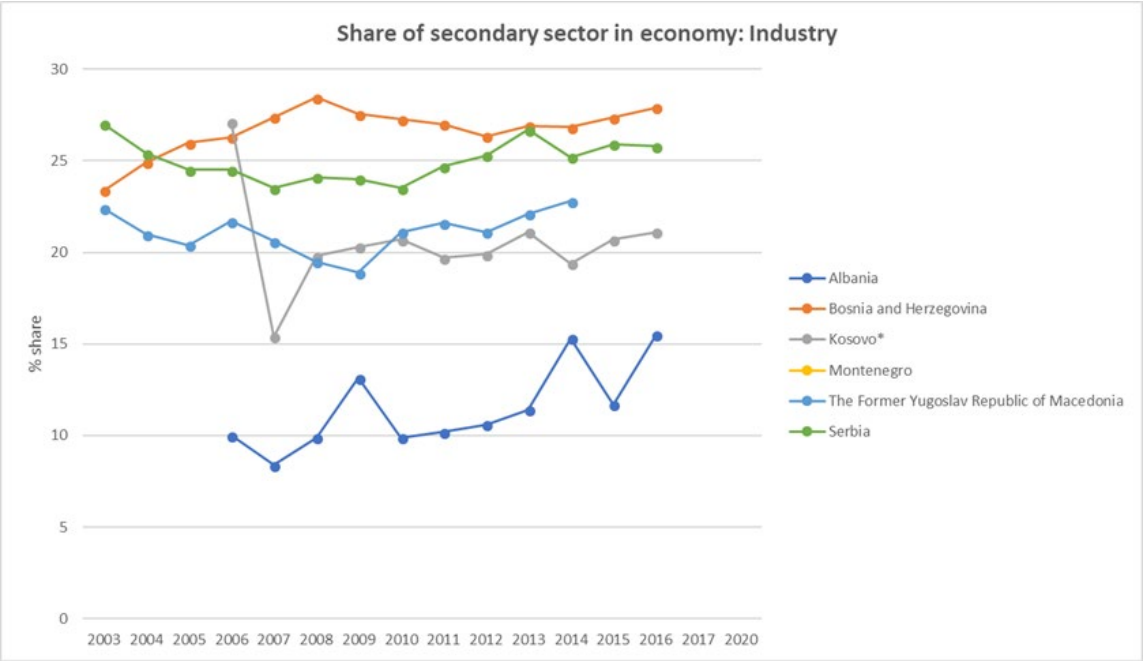

Figure 5 Share of secondary sector in economy: Industry

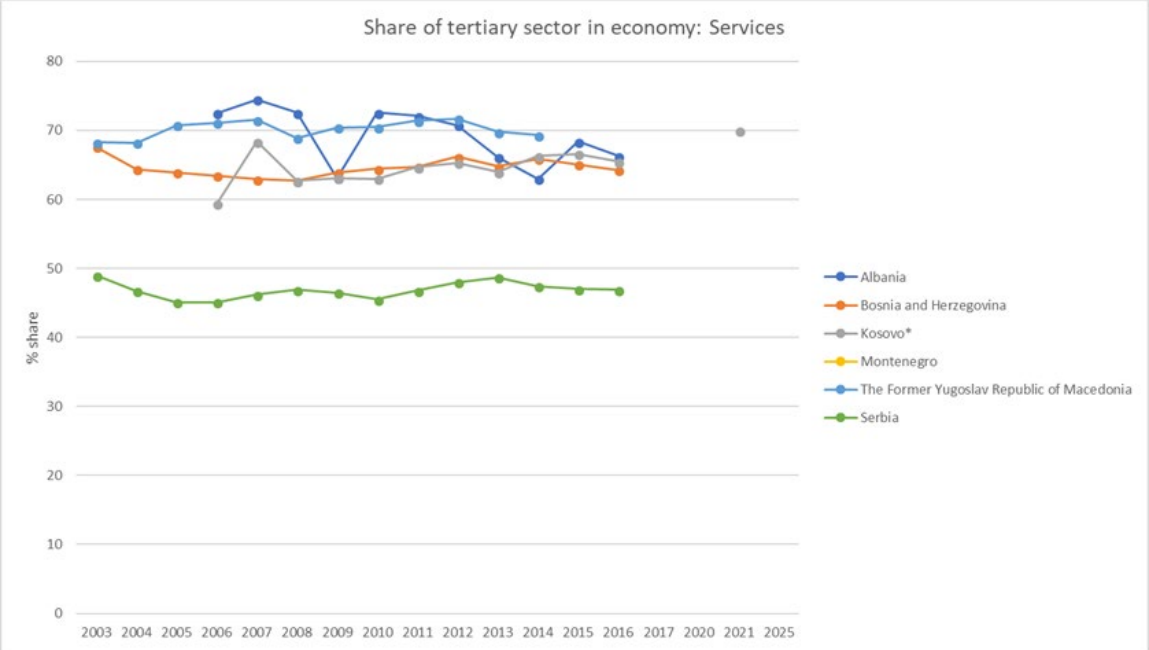

Figure 6 Share of tertiary sector in economy: Services

The employment rate in Albania shows rather an erratic trend, but overall increases.

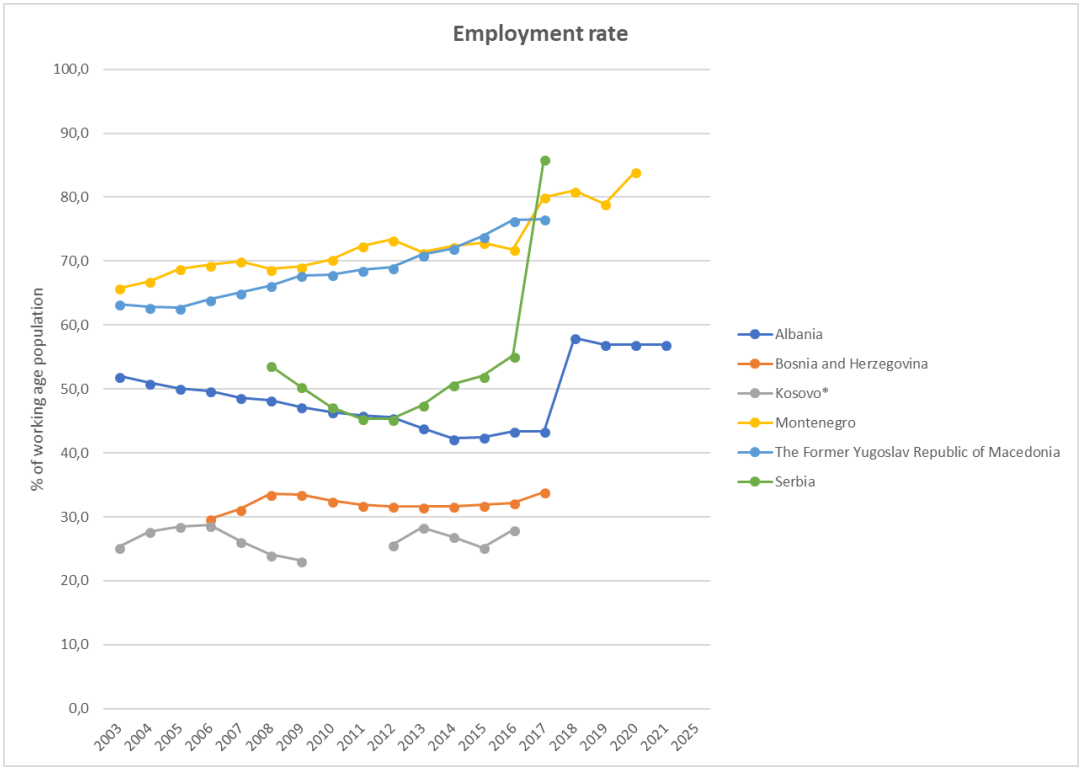

Figure 7: Employment rate

The Gini index represents the (in) equality of wealth distribution, and reflects how Albania is slightly improving.

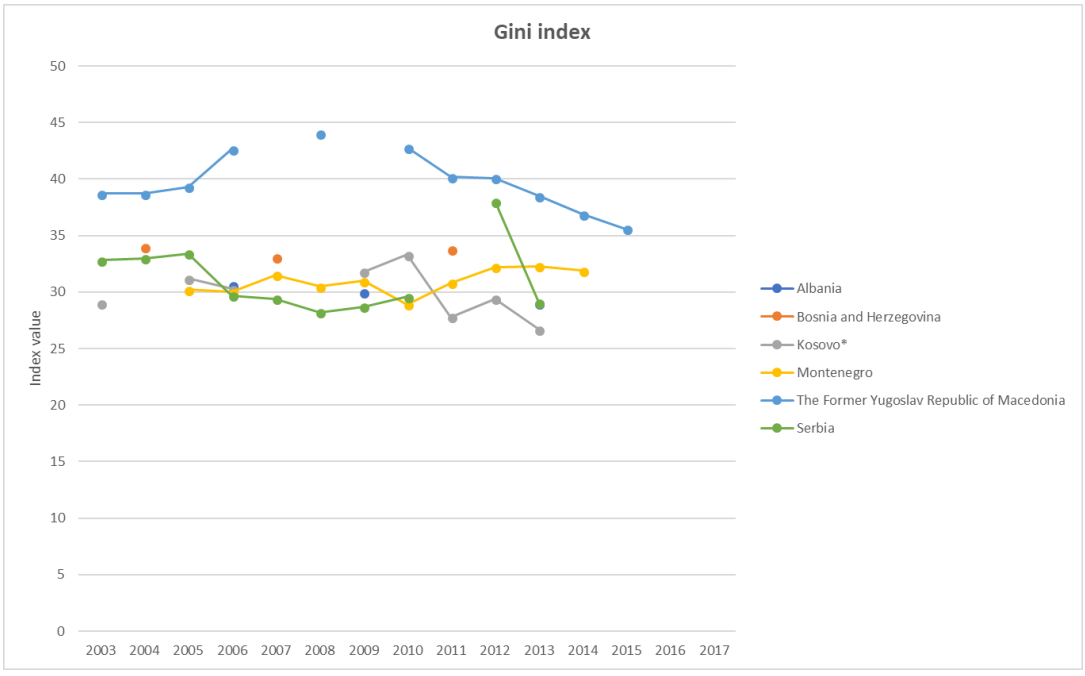

Figure 8: Gini Index

In terms of the Imports and Exports between Albania and SEE region the values in percentage are lower. Export in term of percentage is higher than Import.

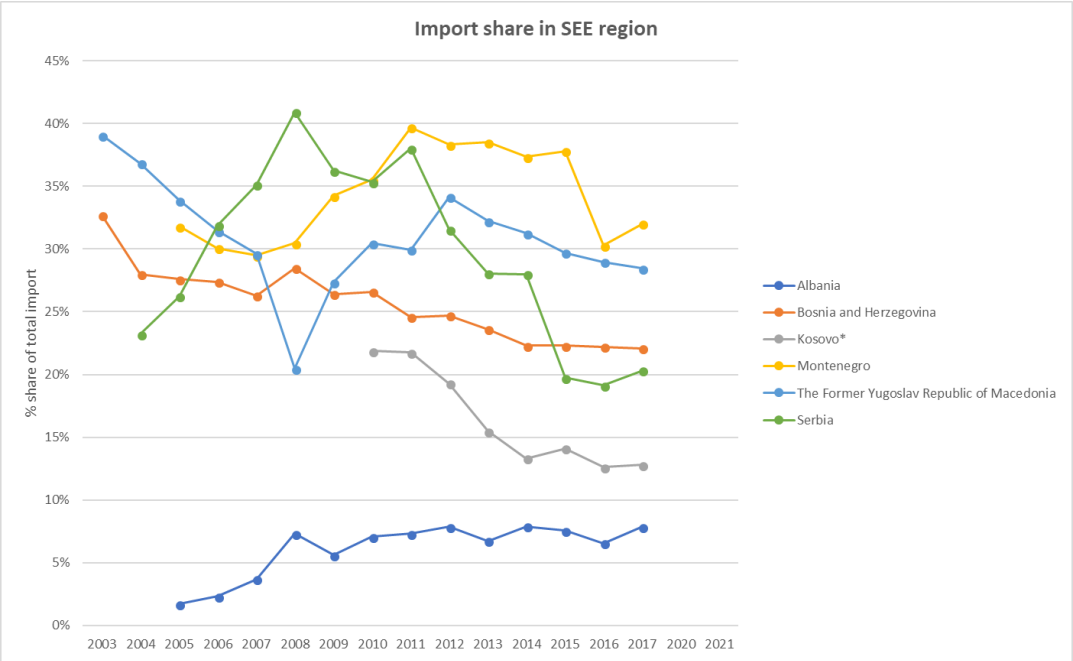

Figure 9: Import share of Albania in SEE region

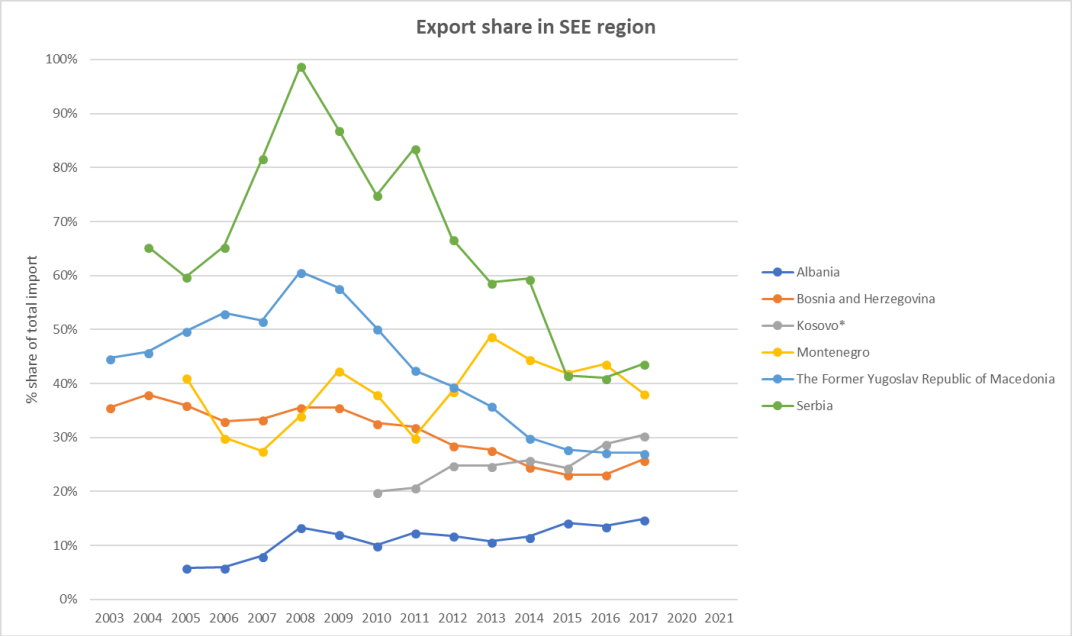

Figure 10: Export share of Albania in SEE region

2.1.2. Water Sector

Albania is a rich country according to water amount, with eight rivers, three lakes. The total amount of water is 41700 million m3/year, from which 65% of waters comes from inside country and 30% from underground waters.

Major consumers of water are: Agriculture, Industry and Population. In case of agriculture water is used for irrigation also for animals, aquacultures but irrigation take major part of water. In industry major part of water is used by hydropower. In sector of urban consumption water is consumed by population.

In table below are presented the amounts of water available in Albania, water consumption in 2016 and predicted one in 2027.

Table 2 Water Balance in Albania

Years	2016		2027	
Flows Inside Albania	$27.11x10^9$ m^3/year		$25.89x10^9$ m^3/year	
Flows Outside Albania	$14.59x10^9$ m^3/year		$13.93x10^9$ m^3/year	
Total amount of water	$41.7x10^9$ m^3/year		$39.82x10^9$ m^3/year	
Underground Waters	$9.04 x10^9$ m^3/year		$8.63x10^9$ m^3/year	
Water Demand				
	Gross Value	percentage		
In Agriculture	$0.74x10^9$ m^3/year	1.8%	$1.1x10^9$ m^3/year	2.8%
In Industry	$14x10^9$ m^3/year	33.5%	$19.2x10^9$ m^3/year	48.2%
Water for Population	$0.36x10^9$ m^3/year	0.9%	$0.29x10^9$ m^3/year	0.7%
Total Demand	$15.1x10^9$ m^3/year	36.2%	$20.59x10^9$ m^3/year	51.7%
Balance	$26.6x10^9$ m^3/year		$19.23x10^9$ m^3/year	

In terms of water exploitation, Albania shows high Indexes, with currently 36.2% and planned (for 2027) 51.7%. These Indexes show a stressed situation at current stage (between 20 and 40%) and a "severely stressed" situation for 2027[4] (beyond 40%).

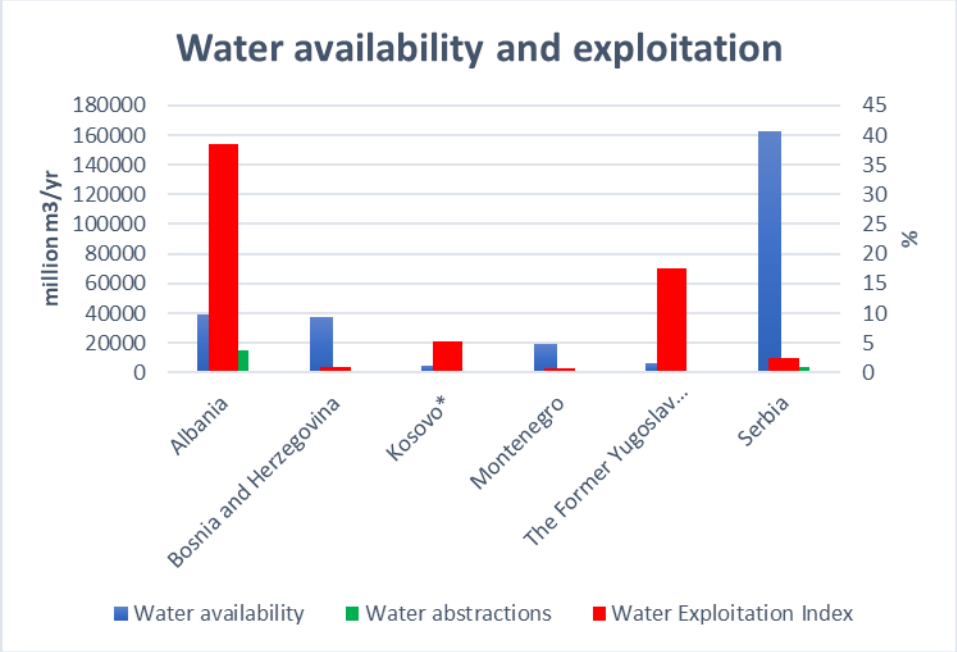

Figure 11: Water availability and abstraction (in million m^3/yr) and Water Exploitation Index (in %), latest year available[5].

Albania face pressure from water consumption, as shown by the river basin related Water Exploitation Index +.

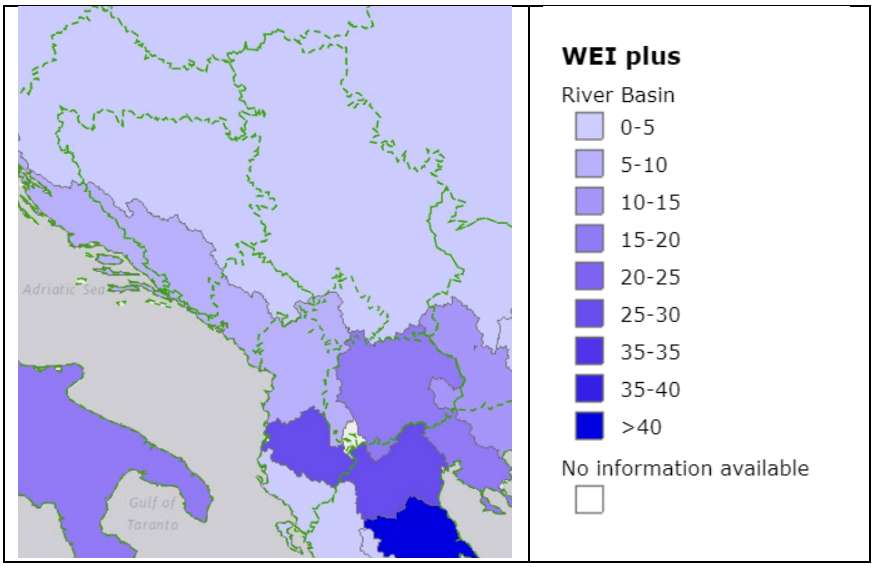

Figure 12: WEI + (January 2012)[6].

Irrigation is an important water consumer in Albania (2006: 39.69%).

2.1.2.1. Water Pollution

There are high levels of water losses, as well as risks of pollution and quality deterioration.

The main sources of water pollution are discharge of untreated wastewater from urban settlements, as well as from industries with obsolete technology and by the extensive use of chemical fertilisers and pesticides in agriculture. The uncontrolled dumping of urban waste on the banks of rivers exacerbates the problem of the quality of surface water. This high pollution load in surface water is leading to a deterioration of groundwater quality and especially concerns low-lying areas, where most of the population lives and most industrial and agricultural activities take place.

In the rural areas, waste is not collected at all and dumped uncontrolled. There is a lack of safe places for manure storage on farm and sewage systems in many settlements, which poses risk not only to environment, but also to human health.

A comprehensive database of information on nitrogen levels and pesticides in lakes and groundwater is not yet available. National legislation and action plans for legislative approximation to the Water Framework Directive and the Nitrates and Urban Waste Water Directives have been adopted.

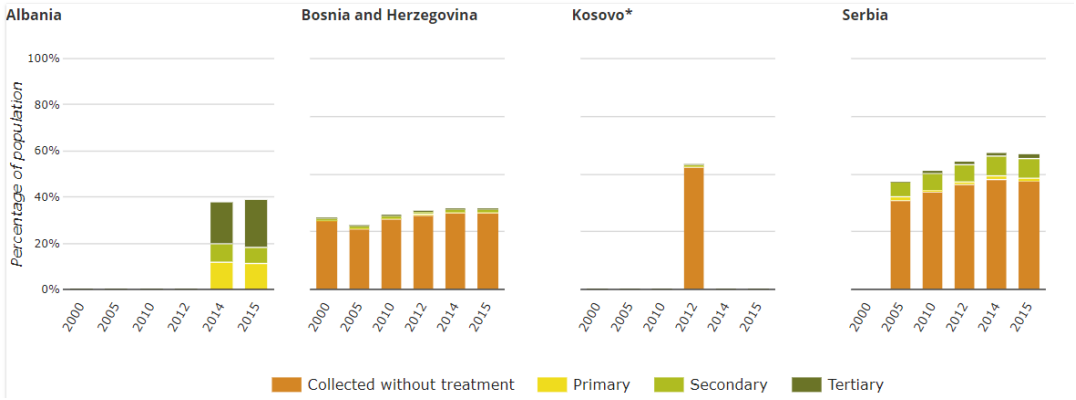

Figure 13: Changes in urban waste water treatment in the Western Balkans[7].

In general, drinking water and sanitation are safely managed for a large proportion of the population, ranging in 2015 about 91% in Albania regarding drinking water and from 98% regarding sanitation[8], and reflecting in general static figures. region, Albania is the economy with the lowest (<80%) access ratio to drinking water services 'when needed', reflecting constraints in access[9].

2.1.3. Energy Sector

Production of electricity in Albania is based on hydropower production about 98%, so Albania is a country dependent on water availability.

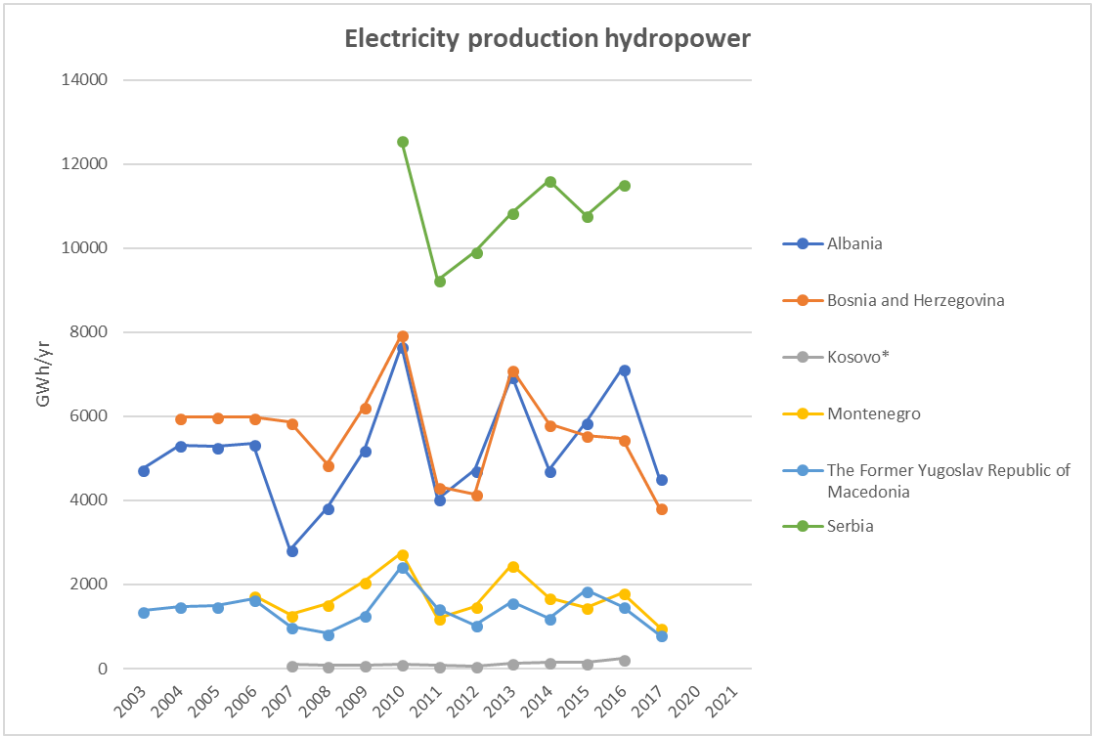

Figure 14: Electricity production by hydropower (GWh/yr)

Albania has lower import share in the region (Figure 15).

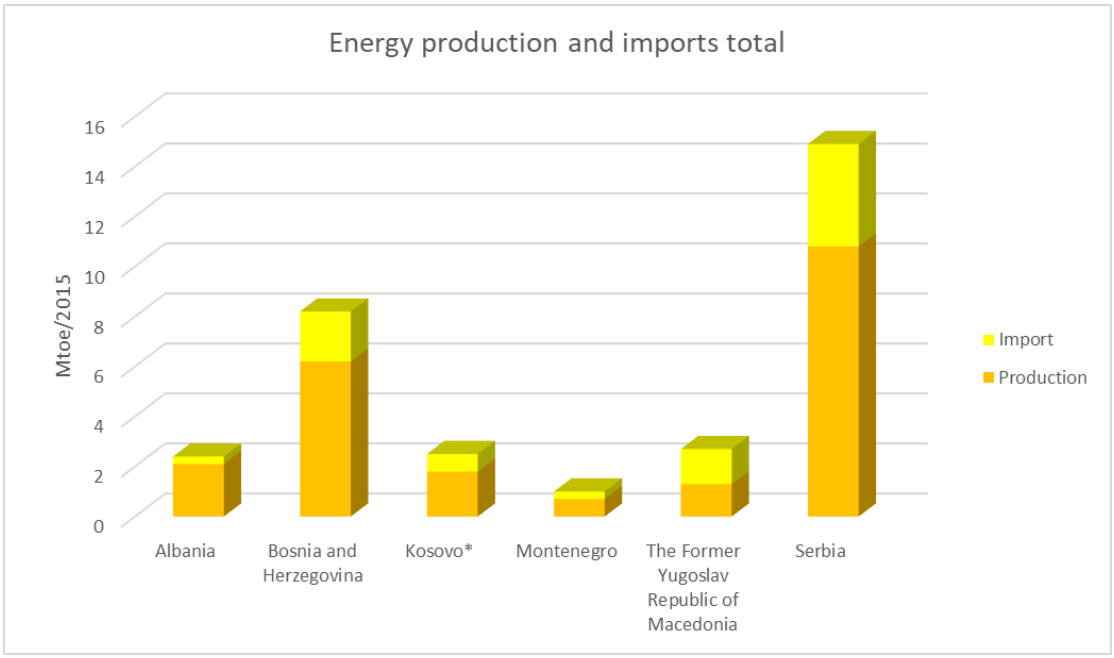

Figure 15: Energy production and imports of the SEE2020 economies in 2015[10].

The installed capacity in 2016 is 2011 MW, energy consumption in these year is 7135.91 GWh/year, consumption 7094.06, import 1826.75, export 1868.61 as we can see this is good year according to energy production.

The losses in the energy transmission are about 35-45 %, which is to high value this is reflected in Figure 17 which shows that the energy demand is 45% lower than energy consumption.

Major consumer of energy is sector of Transport 40.43% then housholds26.06, industry 16.32% and agriculture 8.68%.

In graphics below are presented the energy demand also the balance of energy from year 2003 up to year 2016, with a steady growth.

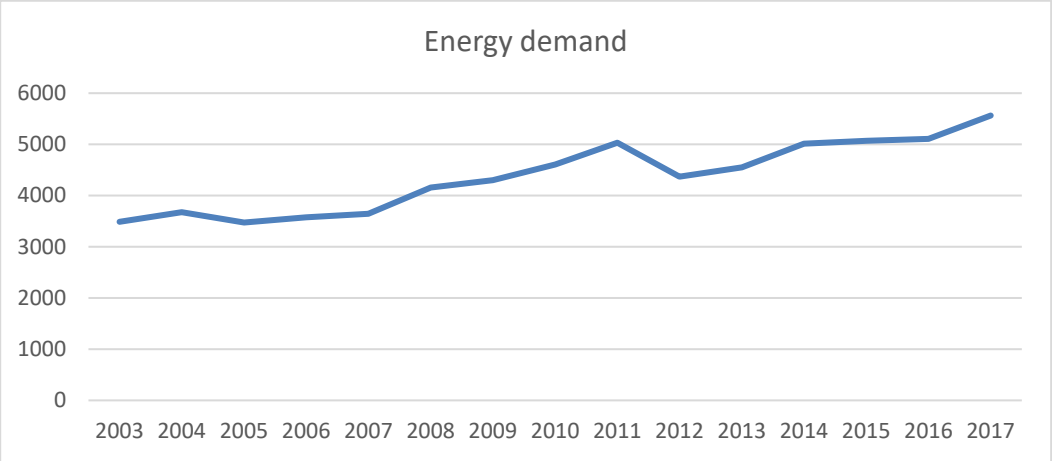

Figure 16 Energy Demand in GWh/yr

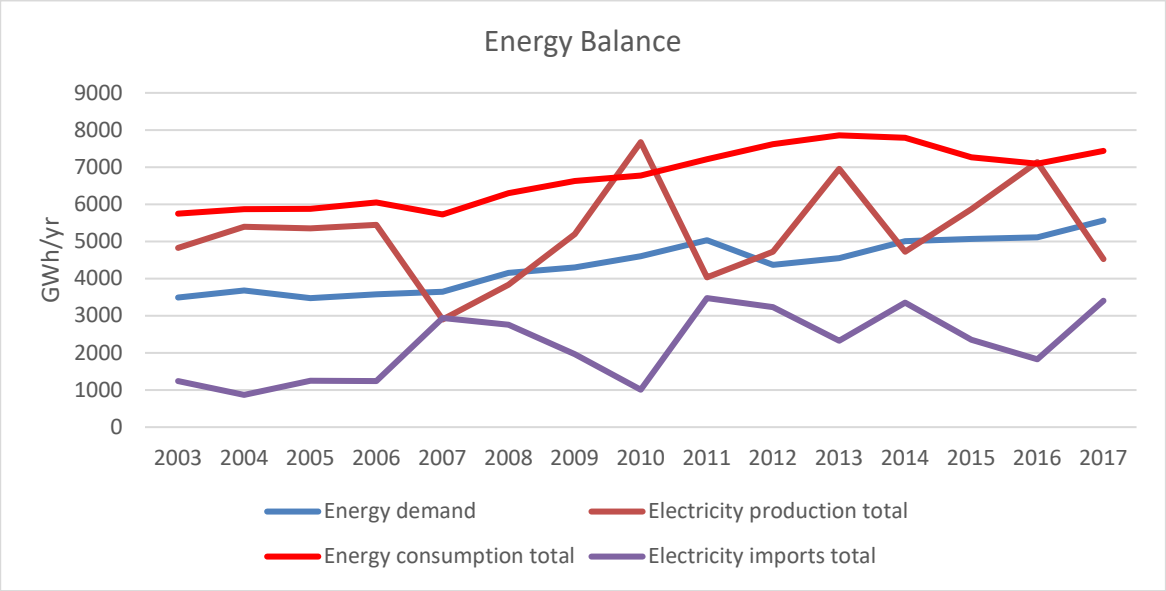

Figure 17 Energy Balance

As Albania is dependent from water for energy production, the Governmental action is also focused on other renewable energy sectors like wind, solar and biomass to diversify the energy generation and to decrease dependence from energy generated from water sources. For these the government has made the legislation for developing these energy plants. More data about can be founded in National Strategy of Energy 2013-2020.

This strategy predicts a trend of energy generation and consumption which is presented in table below.

Table 3 Energy Balance Prediction

Factors	**2006**	**2020**	**2030**	**Annual Growth (%)**	**Total Growth (%)**
Primary Energy (Ktoe)	2215	3481	4550	3.0%	105.5%
Final Energy (Ktoe)	1826	3252	4206	3.5%	130.3%
Installed Capacity (MW)	1.492	2915	3484	2.8%	92.3%
Import (Ktoe)	1017	2068	2793	4.3%	174.5%
Emission CO2 (Kt)	3796	6478	8977	3.7%	136.5%

Albania has the lowest energy consumption per capita and economic growth in the region, even bearing in mind the losses in the energy transmission which are about 35-45%.

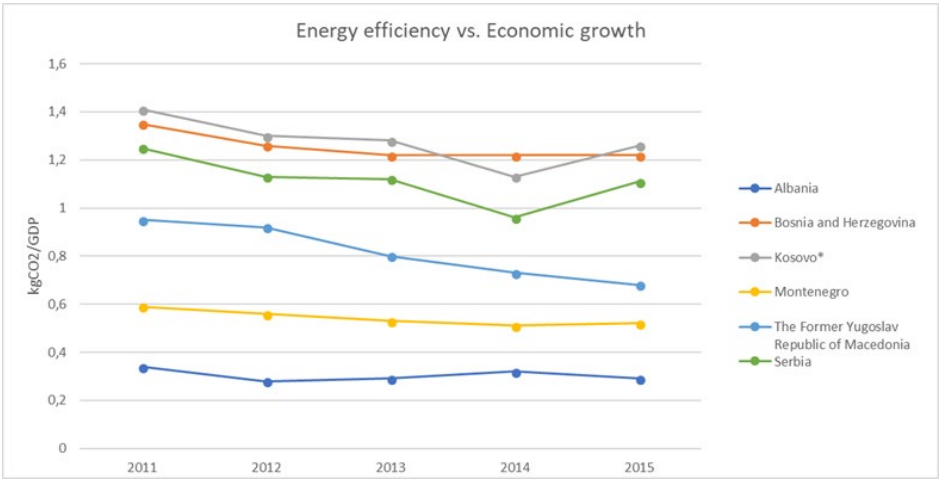

Figure 18: Evolution of energy efficiency compared to economic growth

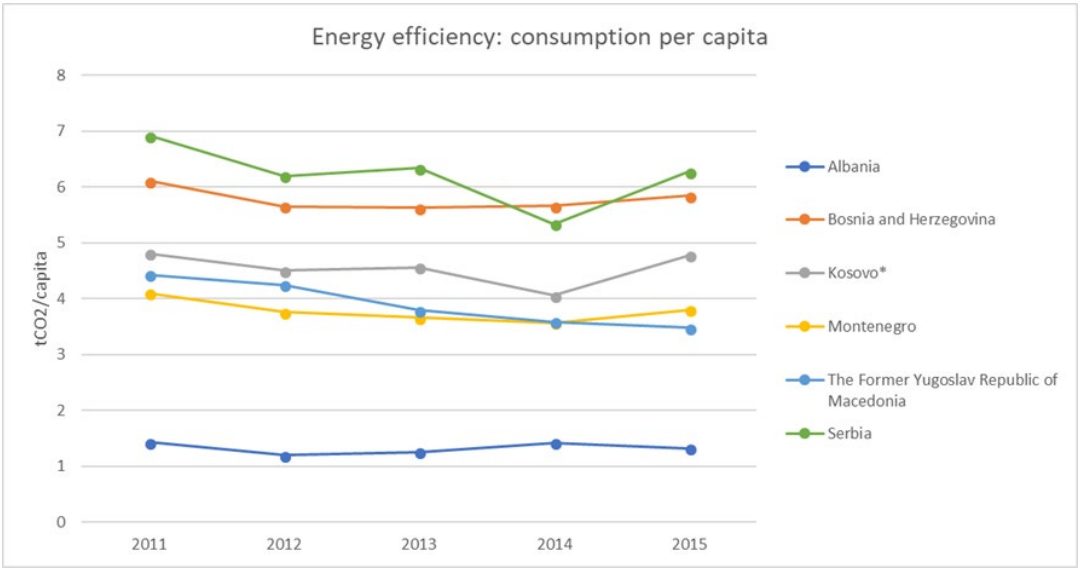

Figure 19: Energy efficiency in Albania: energy consumption per capita (tCO2)

Hydropower is one of the main sources to produce electricity in Albania the production reflects the dependency on rainfalls and runoff, thus is internally variable.

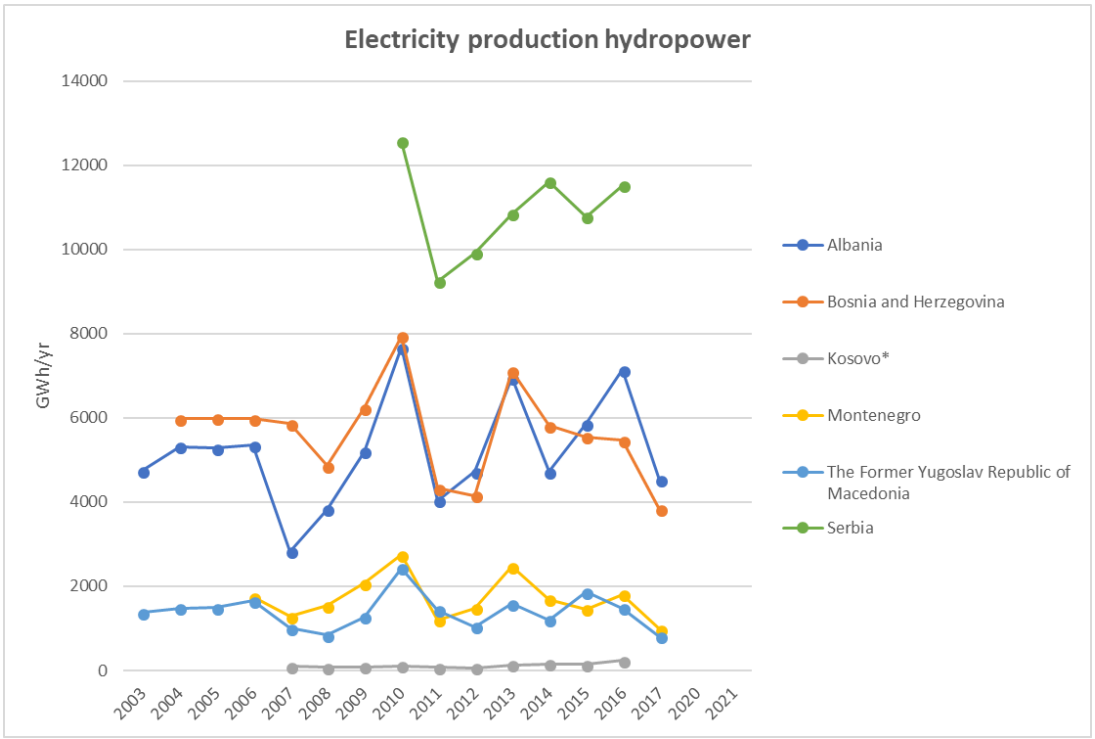

Figure 20: Electricity production by hydropower (GWh/yr)[11].

In the past years, the speed of construction of new hydropower plants is increasing, and the Albania is a hotspot of construction.

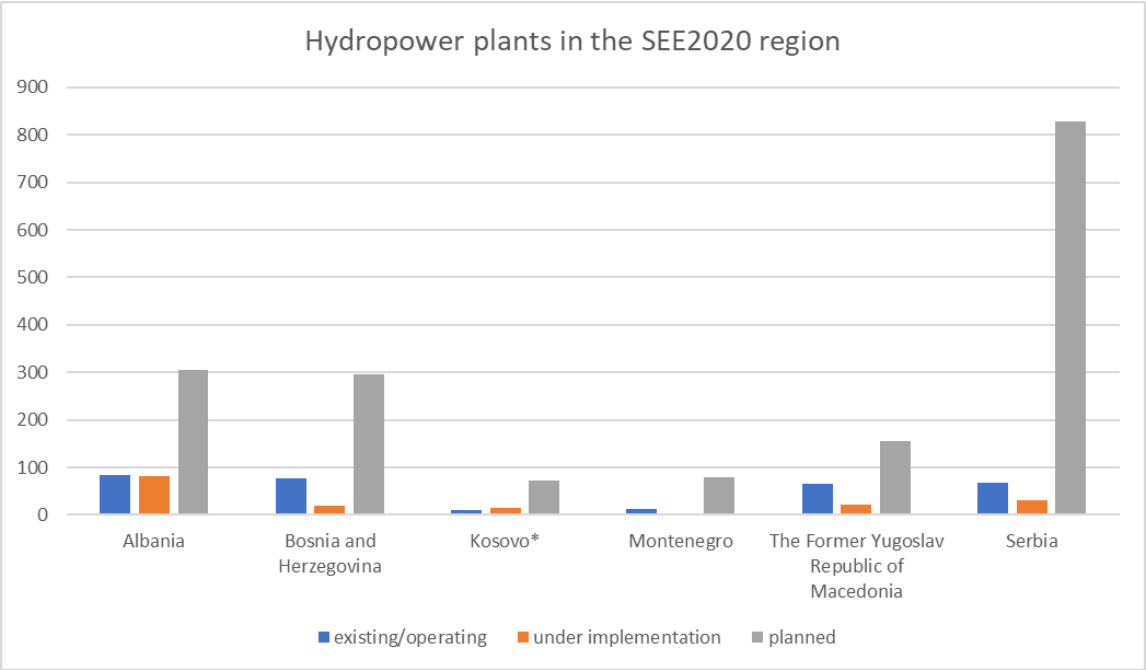

Figure 21: Hydropower plants in Albania and the SEE2020 region[12].

Regarding future projections, it also relevant that power production in the SEE2020 region will be affected by climate change, with relatively higher impacts on hydropower in Albania. Energy balance will be affected by decreased river discharge and increased summer energy consumption[13].

Residential buildings are the largest single consumer of energy in Albania. Energy is used mainly for heating, though use of electricity for air conditioning and appliances is growing. Thus, household energy consumption will play an important role in shaping environmental impacts, in particular those arising from energy production.

Many households use inefficient electric heaters. Fuel wood and coal is also widely used for heating, usually by poorer households in both urban and rural areas: these fuels contribute to both indoor and local air pollution. Unregulated cutting of fuel wood can contribute to deforestation and biodiversity loss[14]. The main sources for domestic heating is the following:

- Albania: 54% electricity, 37% wood and 9% liquified petroleum gas[15].

2.1.4. Food Sector

Albania is *predominately a mountain country* with nearly two-thirds of its territory located in hilly mountainous areas. Eight regions with total population of about 1 million people are located entirely or predominantly in the mountain areas.

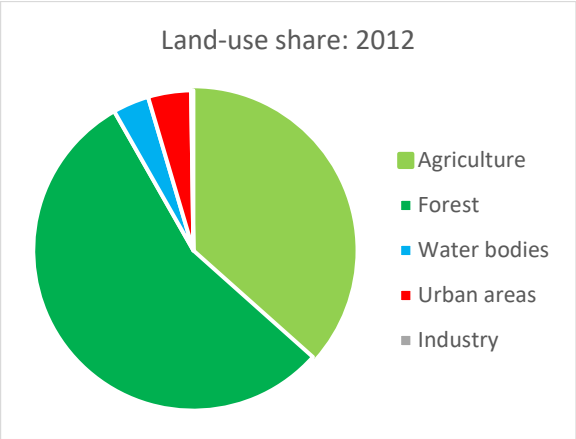

Figure 22 Land use share 2012

Albania has about 24.2% of area arable land, 36.2% forests, 2.4% water bodies, 2.85 5 urban areas and 0.15% industrial areas.

The Albanian agricultural sector has been steadily growing. The annual growth rate is about 1.0%, depending mainly on weather conditions. In the last four years, the sector has been growing at a higher rate than the rest of the economy.

Albania has a very high trade deficit in agri-food products. The value of imports was 6.7 times higher than the value of exports in 2014 and is decreased in 2017 3.57. In the period 2005-2017, the agri-food exports have registered a very high growth of 88%, though from a very low base. The trade deficit in agri-food products increased by 35%, but in the last four years the deficit growth was low.

The competitiveness of the agricultural sector is influenced negatively by the small size of agricultural holdings. There is a positive trend of farm consolidation. Farm size has increased. The segment of commercially oriented, viable farms has been growing. Yet, Albanian farming is predominantly subsistence-oriented and most of the agricultural products are destined for home consumption. There is a lack of traditions and limited willingness for co-operation between farmers. The number of producer groups and co-operatives is small despite efforts to encourage co-operation of farmers in supply and marketing activities.

As shown in figure 6 food production in Albania has no change or the change is very small.

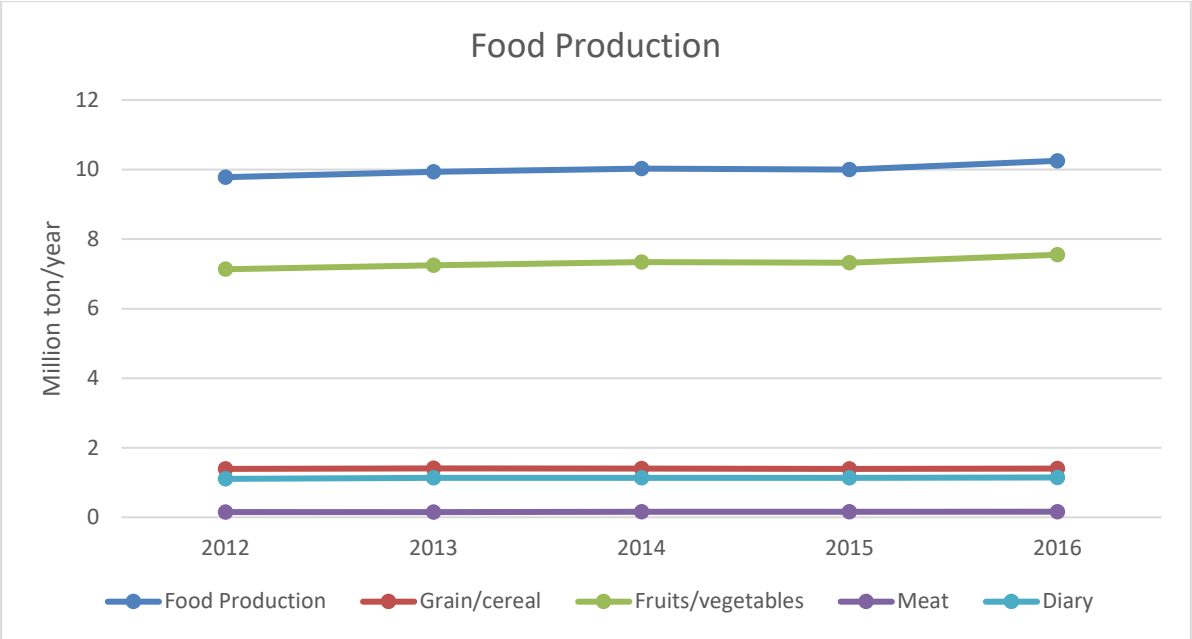

Figure 23 Food Production

Agriculture, after the energy sector, is the largest sector using water *(*mainly surface water*)*.

About 20% of the total precipitation falls in the summer, which makes *irrigation* during summer and drainage and flood protection in winter indispensable.

Existing infrastructure for irrigation, drainage and flood protection is built to enable the irrigation of about 360,000 ha, guaranteeing drainage to 280,000 ha. For irrigation, 560 million m3 of water from 626 irrigation reservoirs and 450 million m3 water from rivers are used, while use of underground waters for irrigation is limited. Farmers have irrigation access to about 200,000 ha and are provided with drainage for area of about 230,000 ha from the surface of potentially drainable 280,000 ha.

2.1.5. Ecosystem and Biodiversity

Albania has rich biological and landscape diversity. There are around 3200 species of vascular plants and about 800 vertebrate species. Of the vascular plants, 27 are endemic and 180 subendemic, more than 300 sorts are aromatic and medicinal plants, which comprise an important natural economic resource, not totally exploited yet. Coastal lagoons and large lakes inside the country are important for wintering migratory birds. About 70 waterfowl and water bird species with a total population of 180,000 individuals are seen during the winter in Albania each year, and the country is also an important crossroad for the migration of birds, bats, and insects. The high forests maintain communities of large mammals, such as wolf, bear, lynx, and wild goat, and birds.

There are some 91 globally threatened species, among which: Dalmatian Pelican (*Pelecanus cripus*), Pygmy Cormorant (*Phalacrocorax pygmeus*), and the Sturgeon (*Acipenser sturio*) for which Albania is a country of particularity critical importance.

The primary reason for habitat loss and degradation is deforestation in high mountain areas and desertification of arable land. The conversion of agricultural arable land for housing construction also leads to habitat degradation.

Negative impacts on biodiversity have been identified in the coastal area – major contributing factors being the excessive flooding of large areas and erosion, discharge of untreated waste waters in rivers and illegal hunting. Another significant negative impact on biodiversity is related to concessions approved by governments within areas with protection status. Large investments seem to be not well set up according to best available techniques or best practices, thus increasing the footprint to the biodiversity environment where important role on such negative impact has been due to management key role and executive works.

A Nexus-specific conflict refers to the existing and planned hydropower development, which threaten freshwater ecosystems, in particular (non-regulated, free-flowing) rivers and lakes. Out of the rivers, Albania retains the most outstanding examples of free-flowing rivers, with important fish diversity.

The protected area is about 575,747ha. The proportion of protected are against total territory has increased from 5.9% in 2003 to 14.9 in 2008, 19.4% in 2013, and a target for 2020 was to reach 20%, which is achieved since 2014 and is over than 20%.

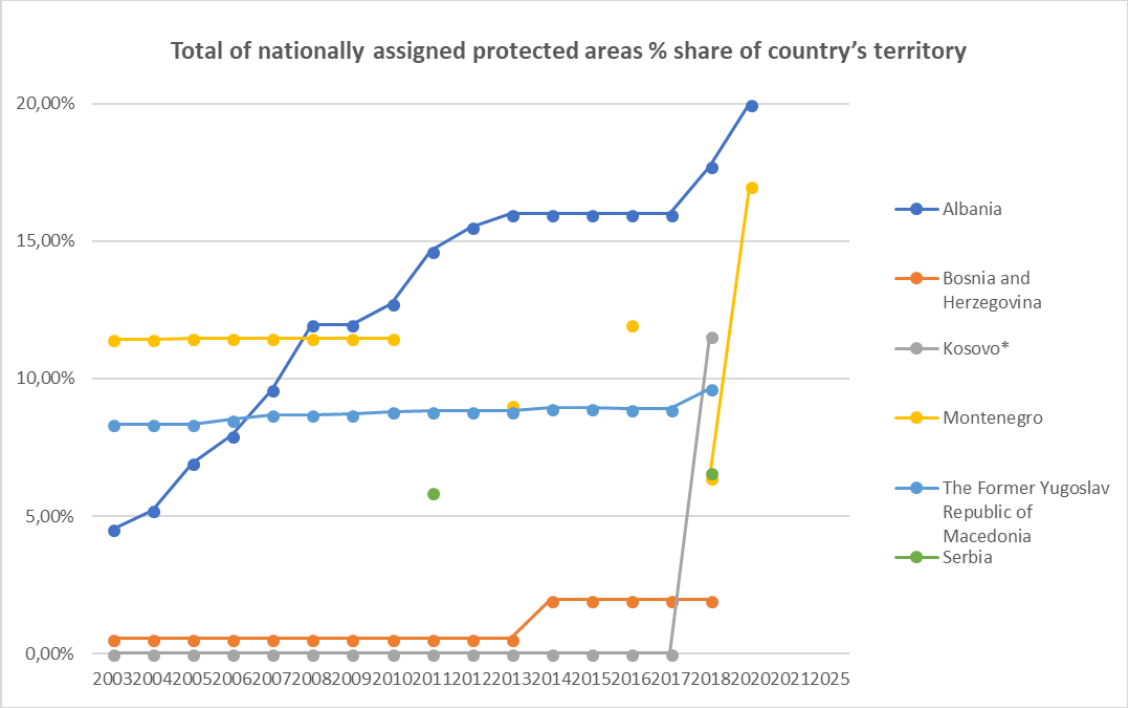

Figure 24: Protected areas as a share of the territory[16].

Overall by Albania has (17.74% of territory protected areas in 2018)[17]. Albania has experienced a significant increase of its protected areas between 2003 and 2013.

Albania reports the following causes for biodiversity loss: water pollution, insufficient water quantity, especially during dry periods, erosion, construction of hydro-powers plants, gravel extraction from river beds and forest fires[18].

In the last years, efforts have been made to strengthen nature protection legislation and to build capacity for the management of protected areas.

With the support of EU and other donors' projects, management plans of priority protected areas have been elaborated. In the beginning of 2015, National Agency of Protected Areas was established, with a General Directorate in Tirana and 12 regional Directorates. However, law enforcement remains weak and management practices of protected areas are not in line with EU standards. The performance of administration is constrained by insufficient human resources and funding, lack of basic equipment and infrastructure. Further strengthening of the management of protected areas is expected as a result of implementation IPA 2013 project, which will support strengthening of the capacity to design and implement protected areas management plans and elaborating of a preliminary list of potential NATURA 2000 sites for Albania.

The main risks for *land abandonment* in Albania relate to: hilly relief of the country, remoteness and low population density in some parts of the country, poor soil quality, flood and soil erosion, as well as structure of farming system, land ownership and land market development. Recent studies estimate the share of land abandonment to be at around 12-13% of agricultural land.

Table 4 Protected Areas

Category of Protected Area	No	Ha
Strict natural reserve/scientific reserve	2	4800
National Park	15	210501
Nature Monument	750	3470
Managed natural reserve/natural park	22	122974
Protected landscape	5	95846
Protected area of managed resources/protected area with multiple use	4	18245
Total	798	455855

2.1.6. Institutional setting

2.1.6.1. Water

The Ministries being responsible for the management of water resources in the respective sectors are: Ministry of Tourism and Environment, Ministry of Agriculture and Rural Development, Ministry of Infrastructure and Energy, Ministry of Health, Ministry of Finance. Being under the authority of these institutions, a number of agencies and institutions, which

are using, exploiting and monitoring the various water resources, are operating.

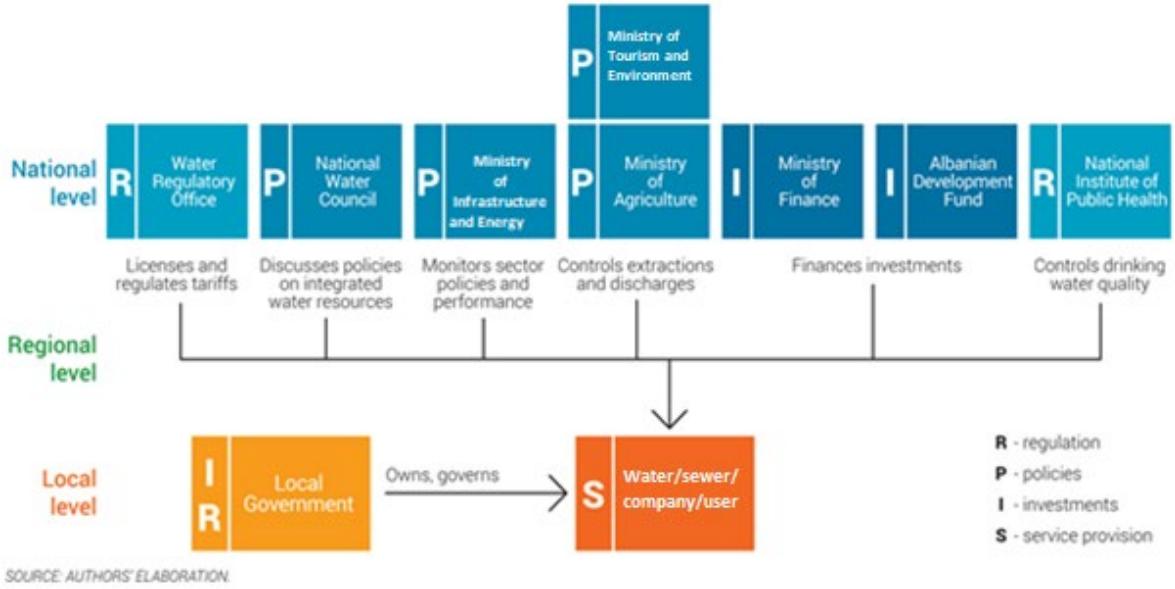

Figure 25 Water Services Sector Organization

Ministry of Tourism and Environment is the principal responsible institution to draw up and implement policies, strategies, national plans and legislation for the protection of territory, culture heritage and environmental values. Protection from pollution; rational exploitation of water resources; improvement of aquatic environment; protection of lagoons, parks and natural resources.

The Ministry of Transport and Infrastructure, which is the ministry responsible for the development and implementation of strategies and policies for the energy, industry and infrastructure sector. The General Directorate of Water Supply and Sewerage is the only specialized technical institution of the water supply and sewerage sector that has authority to coordinate and monitor the activities of water operators across the whole country. The General Directorate also coordinates the allocation of subsidies and investments through the Ministry of Finance.

Water Resource Management Agency.

Competences of this agency are:

a) Develops and implements policies, strategies, plans, programs and projects aimed at managing integrated water resources, quantitative and qualitative conservation, and further consolidation of them;

b) Enforce the provisions of international agreements and conventions on water resources and those cross-border, of which the Albania is also party;

c) Carries out the functions of the Technical Secretariat of the National Water Council;

d) Proposes to the National Water Council the concession of water resources;

d) Proposes to the National Water Council the issuance of permits and authorizations for the use of water and discharges, when the activity is performed outside the boundary of a single basin;

f) Drafts the national inventory of water resources, both quantitatively and qualitatively;

e) Designs and follows the implementation of water basin management plans;

h) Designs and follows the implementation of the Trans boundary water management plans;

f) Is responsible for the economic activity of water resources;

g) Requests from public bodies and institutions, agencies and public entities information, technical data, analysis or technical-consultative support that serve the needs of management and management of water resources;

h) Encourages the participation of water users in the management and management of water resources;

i) Promote research and research on the development of technical news related to the use, detection, use, storage, handling, protection, administration and efficient use of resources water;

j) In cooperation with scientific research institutions, determines the fields of research and study on water resources, as well as relevant funds for them;

k) Coordinates and controls the work of local water management bodies;

l) Rejects the decisions of the Water Basin Council in court.

The Ministry of Agriculture and Rural Administration and the General Directorate of Water and Soil Administration.

The Water Regulatory Authority, which is an independent regulator reporting, by law, directly to the Parliament of Albania. It issues water intake and wastewater licenses to operators, and sets water and sewerage tariffs, prices, and charges for bulk and retail services. The commission is composed of five members who are appointed by the Council of Ministers. The chair is appointed for a mandated five-year term from the establishment of the commission, and the other members are appointed for a four-year term. No member is entitled to serve on the commission for more than two full terms.

Ministry of Finance and Economic Development, Trade, Entrepreneurship is responsible for the overall development strategy of the country's economic development and which is responsible for financing capital investments in the sector.

The Albanian Development Fund is responsible for the allocation of investment funds in rural areas and to not licensed companies.

The Institute of Public Health/Ministry of Health, which is responsible for water quality monitoring (surface water, drinking water, wastewater) and for intervention in case of accidental water pollution.

NEA (National Environmental Agency under the supervision of Ministry of Environment) is responsible for monitoring quality and quantity of water resources. Also, it has supervision to the work of relevant institutes on monitoring activities, being the main beneficiary of the data provided by these institutes. Alongside NEA, various institutions are involved in monitoring water resources as follows:

IGSEWE (Institute of Geological Science Energy, Water and Environment under the supervision of Polytechnic University of Tirana), conducts the assessment of surface water quality for rivers, lakes, underground and marine water and the monitoring of rainfall, temperature and other hydrometeorological parameters;

IPH (Institute of Public Health under the responsibility of Ministry of Health) is responsible for monitoring drinking water.

River basin authorities and state institutions

At local level Water Resources Management are organized within six administrative river basins (Drini, Mati, Ishmi–Erzeni, Shkumbini, Semani and Vjosa). Based on this approach the following institutions are the one responsible for implementing issues of water resource management at local level:

- 6 river basin councils (RBCs), headed by prefects of the regions, act as the administrative body; each is responsible for the protection, development, distribution and operation of water resources within its own basin boundaries;
- 6 river basin agencies (RBAs) act as executive and technical bodies of the RBCs under the supervision of the GDWA (General Directorate of Water Administration); they are responsible for on-site inspection of all activities in terms of water resource usage; however, they have little authority to enforce legal and regulatory procedures, resulting in poor coordination of local sectors in water resources management;
- 4 Directories for Irrigation and Drainage.
- 12 REAs (Regional Environmental Agencies) are responsible for the permitting (permit C category) and monitoring activities behalf of environmental legislation.

General description: As function, all proposals for investment and development which use water, respectively submit technical-legal-economical proposal to RBAs, for preliminary information, further such process is leaded by respective ministry (field of activity defines under which ministry is permitted such activity), as a final step The National Secretariat for Water based to technical description of proposed activity approves using the water source.

2.1.6.2. Energy Sector

The Ministries and Agencies being responsible for the Energy sector are:

Ministry of Infrastructure and Energy (MIE). National Agency of Natural Resources, State Technical and Industrial Inspectorate, Energy Regulatory Entity (ERE), Ministry of Economic Development, Trade, Entrepreneurship and Tourism, National Licensing Centre (NLC), Agency for Treatment of Concessions (ATC), National Territory Council (NTC), National Agency of Territorial Planning (NATP), Ministry of Tourism and Environment (MoTE), National Environmental Agency (NEA).

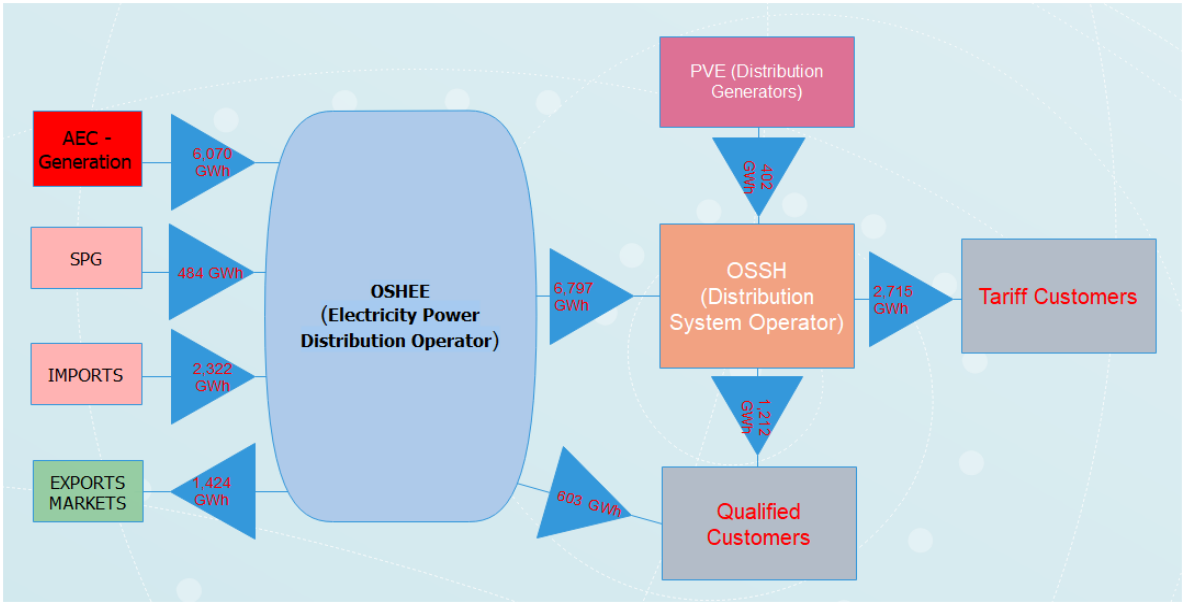

Figure 26 Structure of Production, Transmission and Distribution of Energy

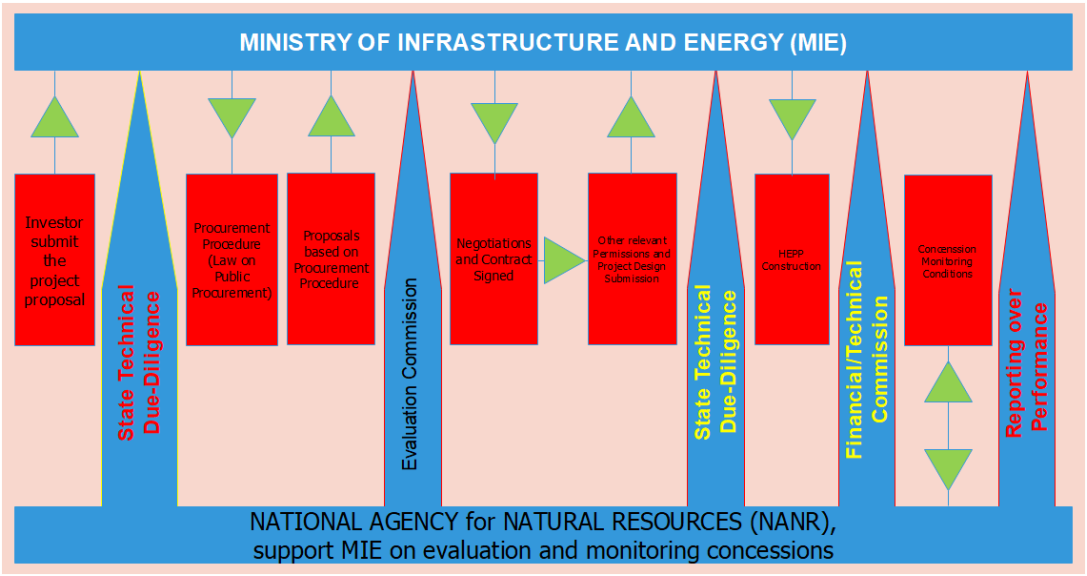

Figure 27 Process of giving the Concession and Monitoring

Ministry of Infrastructure and Energy (MIE) is fully responsible for the electricity sector. MIE is the responsible institution for the development of energy policies and mid-term and long-

term strategies for the energy sector. MIE is also responsible for the assessment and revision of the requirements for the rights to concession for the construction of hydropower plants and for the authorizations of other types of technology for the energy production from renewable resources such as wind, biomass, solar resources etc. The mission of the ministry in energy sector is to promote a solid, sustainable economic development through:

The mission of the ministry in the sector of energy is to promote a rapid and sustainable economic development through:

- Preparation, periodical review and update of the National Strategy on Electrical Power; Promotion of energy efficiency and renewable resources, including small hydropower plants;
- Forecast of the demand for various energy resources;
- Promotion of private local or foreign investments in the sector of energy, building an attractive legal climate for these investments;
- Development of market reforms in the power sector to meet the national objectives for the integration in EU and development of a rational electricity market;
- Formulation of the adequate legal framework;
- Preparation for the privatization of state energy companies.

National Agency of Natural Resources, with the scope of its work focusing on the development and supervision of rational use of natural resources, based on governmental policies and monitoring of the phase after their use in mining, hydrocarbons and energy. National Agency of Natural Resources has a number of responsibilities under the law for RES as the body responsible for RES development.

State Technical and Industrial Inspectorate is an institution responsible for ensuring the safety of persons for goods placed on the market. The inspectorate has the authority to oversee the safety of electrical equipment and installations, including the safety of power generation facilities, transmission and distribution of electricity.

Energy Regulatory Entity (ERE) is an independent public body responsible for the regulation of activities in the sectors of electricity and natural gas. ERE is the body responsible for issuing licenses to carry out activities of generation, transmission, distribution, supply and trade of electricity. It is responsible for the approval of the grid that provides to all electricity producers a connection and access to transmission and distribution networks. ERE has also the authority to adopt promotional tariffs (feed-in) to all eligible producers of renewable sources, including fees, and standard agreement for the purchase of energy applied to the priority RES producer.

A key responsibility given to ERE is the development and adoption of rules of the electricity market and monitoring of the energy market.

Ministry of Finance and Economic Development, Trade, Entrepreneurship is responsible for the overall development strategy of the country's economic development and which is responsible for financing capital investments in the sector.

National Licensing Centre (NLC) is a public institution established by law and under the subordination of the Ministry of Economic Development, Trade, Entrepreneurship and Tourism. The mission of the National Licensing Centre is to facilitate licensing procedures, authorizations and permits issued by public authorities. NLC is designed to function as a "one-stop centre" (one-stop shop) for all licenses, authorizations and permits issued by public authorities.

Agency for Treatment of Concessions (ATC) is a unit established in conformity with the law on concessions and is under the subordination of the Ministry of Economic Development, Trade, Entrepreneurship and Tourism. ATC mission is to support the Contracting Authority to evaluate and negotiate the concessions in all fields of concessions, including the construction of hydropower plants.

National Territory Council (NTC) is the decision-making body responsible for the adoption of national territorial planning instruments under provisions of law. NTC is a collegial body attached to the Council of Ministers. The National Territory Council (NTC) has the following powers:

- decides on the approval, approval with changes, postponement for subsequent review or non-approval of the national territorial planning instruments; [29]
- decides on the approval of the identification of national importance of a territorial planning related issue;
- revises and adopts the compliance of the local instrument with the applicable planning instruments;
- urges the development of national territorial and local plans from the relevant planning authorities and ensures they comply with technical and procedural standards defined by law.
- approves construction projects on main development projects, including the construction of new power plants.

2.1.6.3. Agriculture Sector

The Ministries and Agencies being responsible for the Food sector are:

The Ministry of Agriculture and Rural Administration and the General Directorate of Water Administration which is responsible for issuing the permits related to water use and public assets (irrigation infrastructure), land use, farming cultivation, livestock farming.

2.1.6.4. Ecosystem & Biodiversity

Ministry of Tourism and Environment (MoTE) is fully responsible for the environmental protection, specifically for air, waste, chemicals, climate changes and of forests, protected areas and biodiversity.

The Ministry is responsible for drawing up and implement policies, strategies, national plans and legislation for protection of aquatic resources from pollution; rational exploitation of water resources; improvement of aquatic environment; protection of inland water surface, temporary water surface, marine water, ground water and their status. The MoTE is higher level of competencies for approving the strategic environmental assessments for any territorial or sector-based plan approved under the Law on planning and development of the territory "as per the approval of EIA in-depth reports for any previous impact through special projects within the territorial plans. MoTE is responsible for policies related to climate change and focal point for the Albanian government for the UNFCCC and Kyoto Protocol. MoTE also exercises the powers of the national authority for Clean Development Mechanism projects defined under the Kyoto Protocol in Albania. The ministry through National Environmental Agency is responsible for issuing environmental permits (Permits A and B Categories), monitoring environmental legislation enforcement and compliance, and controlling permitted activities.

National Environmental Agency (NEA) is an institution under the subordination of the Ministry of Environment, which is responsible for reviewing the environmental impact assessment process for projects under law no. 10 440, dated 7.7.2011 "On environmental impact assessment", as amended, and for reviewing environmental permit applications. Further, this Agency is responsible for environmental monitoring. The National Environment Agency is a central public institution under the authority of the Minister, who exercises its jurisdiction throughout the territory of Albania, through the NEA headquarters and regional branches in the regions, which are the Regional Environmental Directorates.

In support of the Prime Minister's Order No.55 dated 13.02.2014, has been approved the structure and organization of the National Environment Agency and the Regional Environmental Directorates, which are subordinate to NEA.

National Agency for Protected Areas (NAPA), is the central public institution that rules and administrates the conservation and manages the activity of all environmental protected zones in Albania territory.

2.1.7. Legislation

Law no. 107/2014, dated 31.07.2014"On territory planning and development", as amended, is the key legislation governing the territory planning and development in Albania, with the aim to define the general principles, rules and procedures, including the responsibilities and powers of the central and local government institutions for territory planning and

development. The law on territory planning and development specifies the institutions for bodies responsible for territory planning,

2.1.7.1. Water Sector

Albania's 1996 Law on Water Resources (No. 8093) (Water Law) is the primary legislation governing the country's inland, maritime, surface, and groundwater and is intended to ensure the protection, development, and sustainable use of the country's water and provide for its proper distribution. The Water Law addresses water rights, water use, and governance of water resources. A new law on water management has been drafted and was being circulated internally for review in 2010.

The '1999 Law on Irrigation and Drainage (No. 8518) established the structure for Water User Associations (WUAs), which are private groups that manage water irrigation infrastructure at and below the secondary canal level. Federations of WUAs manage the primary canal networks. The government maintains ownership of the infrastructure.

The Law on Organization and Functioning of Local Government (No. 8652) (2000) transferred responsibility of water supply and management of water utilities to local government (communes and municipalities).

The 2008 Law on the Regulatory Framework in the Sector of Water Supply and Waste Water Administration (No. 9915) and 2009 Ministerial Order No. 66 provide authority for the establishment of an inter-ministerial working group for the evaluation of projects and issues related to drinking water supply and sewage sector in Albania. The working group is led by the Minister of Public Works.

The old law on "Water Reserve" no. 8093, date 21.03.1996[19], however for the time being in force provided a comprehensive legal framework for the management of Albanian's water resources within Albania's borders with the exception of medicinal, mineral and thermal waters, it did not fully comply with the European legislation. It was considered as the first attempt to introduce a sound and sustainable water management system according to EU principles and directives, by regulating conservation, development and utilization of water reserves; their protection from pollutions, and establishment of a distinct system of permits, authorizations and concessions for different kinds of water use; and introduction of the concept of financial exemptions for persons who reduce their water consumption or discharges into water.

Apart from these, the old law did not take in consideration the following considerations: (i) Definition of the state body that establishes, manages and updates the Registry of Water Resources, which archives all authorisations, permits and concessions for usage of water resources; (ii) Monitoring of inland marine, surface and underground water sources and protected areas; (iii) Management of inland marine water sources and natural resources, of curative waters, minerals, thermo-mineral and geothermal water sources; (iv) Possibility of issuing laws for the approximation of legislation as, mainly for monitoring the quality of

surface water or groundwater, which requires the involvement of several state bodies; (v) Forecast sanctions for the one who infringe the law, mainly to polluters of curative waters, minerals, thermo-mineral and geothermal water sources.

In Law No. 6/2018 "On Integrated of Water Resources"[20] – The aim of the law focuses on: (i) environmental protection and improvement of water, surface water, either temporary or permanent, internal sea waters, territorial waters, exclusive economic zones, continental shelf, transboundary waters, groundwater, and their status; (ii) security, protection, development and rational utilization of water resources; (iii) equitable distribution of water resources, by using goals and direction their effective administration; (iv) protection of water resources from pollution, overuse and consumption on actual needs; (v) determination of the institutional framework, at national and local level, for the implementation of a national policy for the administration and management of water resources for the good of the community and social and economic interests of the country.

Law No. 9115, dated 24.07.2003, on "Environmental Treatment of Polluted Water" –a specify legal act that states the need for treatment of polluted water before it is discharged into the sea, preventing in this way pollution of transitional waters. The purpose of the law stated in its first article "*is to protect the environment and human health from the negative impact of polluted waters by setting rules for environmental treatment of such waters and defining binding obligations upon subjects who discharge polluted waters in the environment*". The law has power on polluted urban waters, polluted industrial waters, according to specific industries; waters resulting from irrigation of the land; and polluted waters of any kind. The law and terminologies used in the law are in line with the legal international documents (different international Conventions) and EU Directives.

Given the provision of the lattes law, there was approved a **DCM no.177, date 31.03.2005** "**On Permitted norms for liquid discharges and criteria for environmental zoning of rivers or sea waters**", aiming to prevent, decrease and avoid rivers and sea waters pollution caused by hazardous wastes. The DCM defined measurable and controlled discharges coming from the water treatment plant, in line with EU norms, representing a useful contribution to the national legal framework regarding water protection. In this regard, another important element to practical application of this decision was the fact that it defines criteria for environmental zoning of waters (river and sea), divining them into sensitive and less sensitive waters, followed by special discharging regulations and norms for each case.

Law No. 9103, dated 10.07.2003, on "The Protection of Transboundary Lakes" – this law is specifically focused on water environment and applicable to the following: a) the Albanian part of Shkodra lake; b) the Albanian part of Ohrid lake; c) the Albanian part of Prespa lakes. It aims the environmental protection of transboundary lakes in their natural state, by providing the appropriate conditions (through promoting useful activities in compliance with the requirements of the sustainable development principle) for the development of life and ecosystems in these lakes, and also stopping activities that may threaten them. In addition,

unique ecosystems with international values, as the transboundary lakes, had been proclaimed as protected areas by Decision of Council of Ministers.

2.1.7.2. Energy Sector

Relevant applicable legislation in the energy sector

Law no. 43/2015, dated 30.04.2015 "On power sector" sets out the main principles for the energy sector development, including RES power plants and the transmission and distribution networks. Law transposes the EU Directive 2009/72 on electricity and repealing the previous law on electricity (Law no. 40/2015, dated 22.05.2003).

This law also includes the requirements and criteria for granting a license to carry out an activity in energy sector. The law also includes a number of specific provisions regulating the construction of a direct line or of a commercial interconnection line.

The Albanian Government and ERE are reviewing bylaws, with the aim of meeting the requirements of the new law on energy sector, including a number of bylaws provided below.

DCM no.1701, dated 12.12.2008 "On approval of the regulation for procedures of granting permits/authorizations for the construction of new power generation plants/facilities not subject to concession" sets out the necessary procedures and documents for application, evaluation and granting of an authorization for building a new power generation capacity that is still not subject to concession.

ERE decision no. 108, dated 9.09.2008 "On approval of the regulation for procedures of licensing and granting, changing and/or revoking a license", as amended. This decision sets out the procedures and requirements for granting a license to carry out any activities in energy sector.

Law no.125/2013, dated 25.04.2013 "On concessions and public-private partnership" establishes the legal framework for all concessions. The purpose of this law is to build a favourable framework to promote and facilitate the implementation of concessionary projects, increase transparency, justice, effectiveness, long-term stability for the development of infrastructure-related projects and public services, including the concessions for construction of hydropower plants.

Law no.111/2012, dated 15.11.2012 "On integrated management of water resources", establishing the legal framework for the use of local water resources, including their use for power generation.

DCM no. 575, dated 10.07.2013 "On approval of evaluation rules and award of concessions/public-private partnership" defines the detailed procedures and requirements for the evaluation and award of an applicable concession for hydropower plants.

DCM no. 416, dated 13.05.2015 "On approval of the general and special conditions, accompanying documents, term of validity, application forms for authorization and permit, procedures for the revision of decision-making process and forms of authorization of permit for the use of water resources", which defines the specific conditions and procedures for reviewing and decision-making to grant an authorization or permit of use of water resources, including the use of water for construction of hydropower plants.

ERE Decision no. 123, dated 24.10.2008, "On approval of the code of transmission network operation", as amended, which defines the planning and connection procedures for the development of transmission system.

ERE Decision no. 100, dated 26.08.2008, "On approval of the power distribution code", as amended, which defines the planning and connection procedures for the development of distribution system.

ERE Decision no. 9, dated 21.02.2007, "On rules and procedures of the certification of energy production from renewable resources", which defines specific rules and procedures for granting warranties of origin and green certificates for the power generated from renewable resources.

Law no. 8734, dated 1.2.2001 "On guaranteeing work safety of electrical equipment and installations".

DCM no. 646, dated 12.12.2002 "On approval of technical standards and conditions of design and implementation in the fields of industry and energy, to acquire the status of "Technical rules", which are binding for application"

DCM no. 529, dated 15.08.2007 "On approval of criteria and procedures of application and approval of construction permits of commercial interconnection lines".

Law no.138/2013, dated 2.05.2013 "On renewable energy resources" with special provisions for the connection of RES operating plants to the transmission and/or distribution network.

Law no. 9876, dated 14.02.2008 "On production, transport and trade of bio-fuels and other renewable fuels for transport", as amended, sets out the legal framework for granting permits for the production, wholesale and retail of bio-fuels and other renewable fuels, for the purpose of transport.

2.1.7.3. Agriculture Sector

Law on Irrigation and Drainage 1999

Law on Usage and Exploitation of Arable Uncultivated Land 2004

Law on Plant Protection Service 2005

Law on Protection of Arable Land 2004

Law "On Agriculture" Nr. 9817, date 22.10.2007

In Law 9817/2007 "On Agriculture and Rural Development", there are no restrictions or limitations applied to foreign equity ownership. A special fund is granted by the Ministry of Agriculture to the companies that apply to participate in the "Programme for Agriculture and Rural Development". Under the Albanian legislation, foreign individuals or a foreign incorporated company cannot acquire directly the ownership title over the land, unless the investment value is three times the value of the land.

Law on Usage of Chemical Fertilizers 2011

Law on Establishment and Operation of Soil Administration and Protection Structures 2010

Law on aquaculture 2016

Law on Fishing 2012

Law on Hunting 2010, amended in 2013

Law on "Declaring a moratorium on stop hunting in the Albania" 2016

Law no. 10006, dated 23 October 2008, “On the protection of wild fauna”

Law on Forest and Forest Service

Law on Pastures and Meadows

2.1.7.4. Environment & Biodiversity

A brief overview of the laws currently in force is presented below:

Law No. 8934, dated 05.09.2002 “On environmental protection” this law will be repealed once Law 10431 dated 09.06.2011 enters into force in November 2013;

Law No. 8990, dated 23.01.2003 “On environmental impact assessment,” amended by Law no. 10050, dated 24.12.2008 (and Law No.10440/11 which enters into force in January 2013). This law is further described in Section 3.5;

Law No. 9700, dated 26.03.2007 “On environmental protection from transboundary impacts;”

Law No. 9478, dated 16.02.2006 “On the accession of Albania to decisions II/14 and III/7, amendments of Espoo for Environmental Impact Assessment in the transboundary context;"

Law No. 8897, dated 16.05.2002 “On air protection” as amended by Law No. 10266, dated 15.04.2010;

Law No. 9424, dated 06.10.2005 “On the ratification of the strategic environmental assessment protocol;”

Law No. 9010, dated 13.2.2003 "For environmental administration of solid wastes" as amended by Law No. 10137, dated 11.05.2009 "On Some Changes in Legislation in Force for Licences, Permits and Authorisations in Albania;"

Law No. 9115, dated 24.07.2003 "On the administration of polluted waters" (amended by Law No. 10448/11 "On Environmental Permits" which will enter into force in January 2013);

Law No. 8906, dated 06.06.2002 "On protected areas" as amended by Law No. 9868, dated 04.02.2008;

Law No. 9048, dated 07.04.2003 "On Cultural Heritage;" as amended by Law No. 9592, dated 27.07.2006; Law No. 9882, dated 28.02.2008; and Law No. 10137, dated 11.05.2009

"On Some Changes in Legislation in Force for Licences, Permits and Authorisations in Albania;"

DCM No. 676, dated 20.12.2002 "On declaring the Albanian Nature Monuments as Protection Zones;"

Law No. 8756, dated 26.03.2001 "On civil emergencies" as amended by Law No. 10137, dated 11.05.2009 "On Some Changes in Legislation in Force for Licenses, Permits and Authorisations in Albania;"

Law No. 8093, dated 21.03.1996 "On water reserves" as amended by Law No.8375 dated 15.07.1998; Law No. 8605, dated 20.04.2000; Law No. 8736, dated 01.02.2001;

The Ministry of Tourism and Environment, (MoTE), with technical assistance from the EU and under the CARDS 2006 project, has recently drafted four environmental laws.

Law No. 10448, dated 14.07.2011 "On Environmental Permits" (into force since January 2013, 18 months after being officially published on 05.08.2011 in the Official Gazette). This law applies the regulatory provisions of Directive 2008/1/EC, "On integrated pollution prevention and control" and the provisions of Directive No. 80/2001 "On some restrictions on air emissions of certain pollutants from large combustion plants." Once in force, it will have a profound impact on most of the current national environmental laws across a wide spectrum.

Law No. 10431, dated 09.06.2011 "On Environmental Protection" (into force in November 2013, 18 months after being officially published on 30.06.2011 in the Official Gazette). Once this law enters into force, Law No. 8934, dated 05.09.2002 will be repealed.

This draft sets out principles, requirements, responsibilities, rules and procedures to ensure a higher level of environmental protection and includes dispositions for environmental impact assessment as a tool for environmental protection, aiming to identify and define the possible direct and indirect effects on the environment mainly to prevent these effects and

to make changes to the National Environmental Agency (former Environmental and Forest Agency);

Law No. 10440, dated 07.07.2011 "On Environmental Impact Assessment" (into force in January 2013, 18 months after being officially published on 01.08.2011 in the Official Gazette). This law aims to protect the environment through prevention, minimisation and compensation of damages from proposed projects which may cause direct or indirect significant adverse impacts on the environment due to their size, nature or location before the projects are approved. Further, the draft law defines the guidelines for the environmental impact assessment, the parties that must be involved and the obligation of environmental authorities to make all existing information for the compilation of EIA reports available to project developers. A special provision has been anticipated for Specially Protected Areas where development of projects will not be allowed, with exemptions for some particular cases. Provisions for transboundary impacts are also part of this new law;

Law No. 10463, dated 22.09.2011 "On Integrated Waste Management." This law provides classification of wastes, waste management procedures including monitoring and control measures. It also describes the conditions that shall be included in environmental permits.

Law No. 9837, dated 03.12.2007; Law No. 10137, dated 11.05.2009 "On Some Changes in Legislation in Force for Licences, Permits and Authorisations in Albania";

Law No. 8905, dated 06.06.2002 "On protection of marine environment from pollution and harm" as amended by Law No. 10137, dated 11.05.2009 "On Some Changes in Legislation in Force for Licenses, Permits and Authorisations in Albania;"

Law No. 9115, dated 24.07.2003 "On Environmental Treatment of Waste Waters" as amended by Law No. 10448, dated 14.07.2011 "On Environmental Permits" (which has entered into force in January 2013),

Law No. 9251, dated 08.07.2004 "Marine Code of Albania;"

Law No. 9055, dated 24.04.2003 "On the accession of Albania to the United

Nations Convention on the Law of the Sea (UNCLOS);"

Law No. 9537, dated 18.5.2006 "On the Management of Hazardous Waste" as amended by

Law No. 10137, dated 11.05.2009; and Law No. 9890, dated 20.03.2008;

Law No. 9385, dated 04.05.2005 "On forests and forest service" as amended by Law No. 9533, dated 15.05.2006; Law No. 9791, dated 23.07.2007;

Law No. 9989, dated 15.09.2008 and Law No. 10137, dated 11.05.2009 "On Some Changes in Legislation in Force for Licences, Permits and Authorisations in Albania."

This framework is expected to be amended by a new law currently in draft;

Law No. 9548, dated 01.06.2006 “For the accession of Albania to the protocol 'On the records of discharge and transfer of contaminants'

Law No. 8672, dated 26.10 2000 “On ratification of Aarhus convention.” “On the public right for environmental information, its participation in decision making and to address the court on environmental issues;”

Law No. 9774, dated 12.07.2007 “On the evaluation and management of environmental noise;”

Law No. 9587, dated 20.07. 2006 “On Biodiversity Protection;”

Law No. 9379, dated 28.04.2005 “On Energy Efficiency;”

Law No. 9244, dated 17.06.2004 “On Protection of Agricultural Land;” and

Law No.10062, dated 29.01.2009 “On the accession of Albania to the protocol on the control of emissions of nitrogen oxides or their transboundary flows, of 1979 Convention on transboundary air pollution in long distance.”

2.1.8. Policies and strategic documents

The sector analysis presents the identification of key Nexus sector issues, achievements and their challenges. The fields associated with these pillars are analysed in terms of the legal framework, institutional, human and financial resources and information system.

Also, another major challenge to be taken into account are changes occurring within implementation of administrative-territorial reform.

2.1.8.1. Water Sector

National Strategy for Integrated Management of Water Resources 2017 – 2027

National Water Resource Management Strategy, 2017-2027 (NWRMS)[21] is the framework document of water management for the development of plans and other strategic documents in the field of territorial planning, environmental protection, biological diversity and landscaping, agriculture, forestry, fishing, transport, tourism, public health and other documents relevant.

Integrated Water Resources Management (IWRM)[22] is defined as "a process that promotes co-ordinated development and management of water, soil and resources to maximize the economic and social well - being, in equally and without compromising the sustainability of lifeline ecosystems ".

Integrated Water Resources Management (IWRM) in the country will be achieved through creating a legal, economic, institutional, technical and social framework by being based on European environmental legislation and IWRM principles.

National Sectorial Program of Water 2014-2020

This program aims to ensure the coordination of the financing planning process in Albania water sector, coming from the central government, from the support of development partners as well co-ordination with local government units for programming investment in the sector.

All these steps will precede the drafting of the MTBP as one of the key processes for concrete implementation of the program, given the complexity of the sector water, including areas, issues and different institutions. Functioning of the mechanism institutional and enforcement of governance measures will guarantee efficiency and will create synergies between these levels.

The sectorial approach implemented for the water sector is of particular importance identifying investment needs from the central government, local government, opportunities for investments by development partners and the private sector, oriented towards achieving the objectives for the next thirteen years. Clear assignment of responsibilities at the vertical and horizontal, and monitoring of this program, would guarantee its successful implementation.

Achieving targets referring to timely alignment is divided into mid - term goals and long term by harmonizing them with the following documents:

- Goals up to 2020, which coincide with the length of the NSDI and the majority of drafted strategies;
- Objectives up to 2027, which coincide with the third cycle preparation plan basin management in accordance with the Water Framework Directive;
- Objectives up to 2030, which are consistent with Sustainable Development Goals United Nations (UN Sustainable Development Goals - 2030 Agenda).

Table 5 Data for Financing of Water Sector

Budged of the programs for water sector							000 ALL
Institutions	**Budged program**	**Approved budged**		**Planed budged**			**Total**
		Budged 2015	**Budged 2016**	**Budged 2017**	**Budged 2018**	**Budged 2019**	
MIE	Water supply and sewage system	11659079	12972691	8996000	10770780	11268378	55666928
	Support for Natural resources	488633	457744	308500	308500	277339	1840716
	Support for Energy	96961	489345	441120	336922	337254	1701602
MoARD	Irrigation and Drainage	2624599	4505140	2376753	2199750	1630161	13336403
	Water administration	34842	96100	312657	122600	122537	688736

	Fishing support	485042	369474	191600	199650	250547	1496313
MoTE	Environmental protection	1191234	2613274	2486803	2280492	2138859	10710662
MIA	Civil emergency	1483082	637856	203000	414740	366387	3105065
ADF	Development program	5985298	4247162	8550000	10240000	10362000	39384460
Total		24048770	26388786	23866433	26873434	26753462	127930885

2.1.8.2. Energy Sector

National Action Plan for Renewable Energy Resources in Albania 2015-2020

General National Objective The year 2009 will be the starting point in the National Objective for ERE. In this year the EGFC was 2,104 ktoe and ERE percentage in consumption terms was 31.2%. Implementing the approach determined in the Directive, pursuant to technologies, the basic data are provided for ERE promotion. Renewable energy for ERE-T transport sector: In order for the ERE consumption National Objective of 38% to be accomplished in 2020, the consumption of 3% for the Albanian territory of EGFC has been predicted.

Otherwise, the mixture up to the measure of 10% in the volume of fuels of the renewable burning materials (FAME[23]), consumed in the Transport sector, has been predicted. This amount is equal with at least 75 ktoe FAME for the transport sector in 2020. This amount of the renewable part in biofuels takes into consideration the increase with 60 ktoe in 2020 compared to 2014.

Renewable energy for heating and cooling sector ERE-H&C: in order for the ERE consumption National Objective of 38% to be accomplished in 2020, it is necessary that the consumption of 10% of EGFC in the Albanian territory, which has to be consumed in the Heating and Cooling system, ERE-H&C, is consumed. This amount means an additional increase of the heat with at least 800 GWh/year in 2020 or an annual consumption of ERE-H&C of 2/9 ktoe heat from wood/industrial/waste and heating pumps biomass. Renewable energy for energy sector, ERE-E: In order for ERE consumption National Objective of 38% in 2020, it is necessary that the amount of 29% of EGFC, used in energy sector, ERE-E, in the Albanian territory is consumed. This amount means an additional increase of at least 270 ktoe (3,140 GWh) until 2020. Also, this means an average increase of energy generators from renewable resources in the amount of 830 MW (20-35% capacity factor) which are proposed to be divided according to the summarizing table:

	ERE additional technology 2015 - 2020	Quantity ktoe	Generation GWh	Installation MW
1. ERE - E	**SHPP up to 10 MW (SHPP)**	200	2,326	750
	Eolic (Wind)	30	233	30
	Photovoltaic (PV)	40	582	50
	Total 1	270 ktoe	3,140	830

	% in EGFC	25%		
2. ERE - H&C	**Biomass**	52	800th	-
	Total 2	52 ktoe		
	% in EGFC	10%		
3. ERE - T	**Biofuel FAME**	75		-
	Total 3	75 ktoe		
	% in EGFC	3%		
ERE	Total 1+2+3	397 ktoe from the total 1,017 ktoe		
	% in EGFC	38%		

Figure 28: Summarizing table of ERE for Heating/Cooling, Transport and Energy which will be added to the Final Gross Energy Consumption in Albania after 2015 until 2020.

2.1.8.3. Agriculture

Rural Development Programme 2014-2020

The Inter-Sectoral Strategy for Agriculture and Rural Development in Albania for the period 2014-2020 (ISARD) 45 defines the following vision for the agriculture and rural development:

'Efficient, innovative and viable agri-food sector capable to sustain the competitive pressure and meeting the requirements of the EU market through a sustainable utilisation of resources, and Viable rural areas providing economic activities and employment opportunities, social inclusion and quality of life to rural residents'.

The ISARD provides for interventions in three policy areas:

- Rural development policy;
- National support schemes for farmers, development of rural infrastructure and ensuring equal opportunities;
- Institutional development, implementation and enforcement of EU regulatory requirements.

The rural development policy has four priorities for the period 2014-2020:

1. Enhancing farm viability and competitiveness of agriculture and food-processing, while progressively aligning with Union standards.

This will be achieved by facilitating the restructuring of the agricultural sector, improving land use and strengthening market orientation and participation with a particular focus on:

- Developing the economically viable part of the primary sector and the agro-processing sector through improvements of production facilities and methods, product quality and meeting EU standards;
- Agricultural sectors with potential for developing competitive quality products;

- Optimizing the use of agricultural resources by promoting and enhancing cooperation and associations for the efficient use and management of agricultural land and resources.

2. Restoring, preserving and enhancing ecosystems dependent on agriculture and forestry

The objective is to achieve sustainable management of natural resources and climate action by forest and water resource management, and introduction of agricultural production method protecting the environment and mitigating and adapting to climate change. The intention is to gradually introduce EU policies and approaches for management of natural resources and climate action with a specific focus on sustainable use of land, forest and water resources and waste management in the short term.

3. Balanced territorial development of rural areas promoting social inclusion, poverty reduction and balanced economic development in rural areas.

The objective is to achieve a balanced territorial development of rural areas by fostering diversification of economic activities, job creation and social inclusion, and improving living conditions in rural areas. The focus will be on facilitating diversification of economic activities and creation of jobs and new small businesses, improvement of local services, village renewal, rural infrastructure, and enhancing accessibility to use modern information and communication systems as well as o capacity building for development of bottom up approaches and local participation in planning the development at local level by developing Local Action Groups.

4. Transfer of knowledge and innovation in agriculture, forestry and rural areas

The objective is to enhance the abilities of all main actors in rural areas to contribute to the development of a viable agricultural sector and viable rural communities by:

- Fostering innovation and knowledge transfer to the agricultural sector and rural areas by developing advisory services and agricultural technology transfer centres;
- Fostering lifelong learning through vocational training and skills acquisition in rural areas;
- Strengthening the links between agriculture, aquaculture, forestry, research and innovation by fostering cooperation among actors.

2.1.8.4. Environment & Biodiversity

Document of Strategic Policies for the Protection of Biodiversity in Albania, December 2015

The National Strategy on Biodiversity and its action plans are the key instruments for the implementation of the Convention (CBD) at the national level. The Convention requires from the member states to draft a national Strategy on Biodiversity (or any other equivalent instrument) and asks them to make sure that this strategy is an integral part of the planning

and activities of all the sectors whose activities may have a (favourable or adverse) impact on biodiversity.

Measures undertaken for the implementation of the Convention

Conservation “In situ” increases the surface and management of the network of protected areas; Research and studies related to biodiversity, in particular in some project areas through the monitoring program; Legal framework, where the law on Protected Areas, and the law on protection of biodiversity are the main achievements; Institutional reforms such as: the establishment of the Ministry of Environment, and its structures; Information and awareness raising, including strengthening of civil society organizations etc.

Albania has adhered into two Protocols of the Conventions of the Biological Diversity:

- The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits through Law no. 113/2012, 22.11.2012;
- The Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety, adhered to by Law no. 112/2013, of 22.11.2012;

Adherence instruments were deposited by the Ministry of Foreign Affairs to the Secretariat of CBD on January 29, 2013.

Main achievements through the implementation of the SAPB in Albania include:

Legislation: Finalizing the legal framework through determining the legal steps on the Law “On protection of biodiversity", and adoption of law "On some additions and amendments to law” On protected areas", 2008. Adoption of several pieces of important legislation in the area of environmental protection and sustainable development, and their harmonization with the relevant EU Directives.

In-situ conservation: The surface of protected areas from 2005 to date has grown to 16.61%, which is a figure close to the EU average, where the protected areas reach 17% of the territory.

Action plans for different types of habitats: there are currently Action plans in place for 6 types of specific habitats. The following strategic documents have been translated into action plans:

- Action plan for Protection of Brown Bear (*Ursus arctos*);
- Action plan for Protection of the Eurasian lynx (*Lynx lynx*);
- Action plan for Protection of *Phalacrocorax pygmeus*
- Action plan for protection of Cetacea;
- Action plan for Protection of *Posidonia oceanica*;
- Action plan for protection of the sea turtle and its natural habitat (drafted in cooperation with MEDASSET) and adopted in November 2013;

Preparations for Natura 2000: Drafting an IPA framework project (2013) for kick-starting the process of Natura 2000 in Albania. The project includes the implementation of Protected Areas Management Plans in Albania, establishment of capacities and improving the existing infrastructure of protected areas, which will be the bases for the future of Natura 2000 in the country.

Reporting at the CBD, its Protocols and work programs:

- Fifth National Report of Albania for CBD was finalized in June 2014;
- Third National Report of Albania to the Cartagena Protocol on Biosafety was submitted in December 2015;

The second National Work Program for Protected areas to CBD was finalized in June 2012.

Strategic Evaluation of Environment, March 2016

Strategic Environmental Assessment (SEA) is one of the key instruments for integrating environmental issues and principles of sustainable development in strategic planning and decision-making. It is a globally recognized participatory planning tool used to analyse and incorporate environmental issues into proposed policies, plans and programs. Strategic Environmental Assessment can be understood as "a systematic process that foresees and evaluates possible environmental effects when designing a plan or program, with a view to addressing these effects appropriately at the earliest stages of decision-making".

The SEA legal framework necessarily includes the Albanian Law on SEA, while, to be coherent, the international legal framework has not been left behind. The relevant legal references are given below:

- Law no. 91/2013 "On Strategic Environmental Assessment"
- Directive 2001/42 / EC of the European Commission
- The SEA Protocol drafted and approved in the Espoo Convention (UNECE)

Objectives

Based on the analysis of:

- the obligations specified in the ratified conventions and the respective EU directives as well as in the strategic documents of Albania,
- Existing environmental conditions, and
- potential environmental impacts that may be caused by the activities envisaged in the Plan

the SEA report defines the most important environmental and environmental objectives as well as identifies and analyses the potential impacts.

2.1.9. Establishment of coordination bodies or instruments

In general, Albania has an established administrative system where several authorities share the competencies for the specific Nexus sectors, with one 'line' authority leading initiatives. At the highest level, this is usually a Ministry, with a number of agencies and institutions in supporting roles. Some cases are:

> The Agency for Water Resources of the Albanian Water Council has been established with the Water Council and has been the executive body of the NWC since 1996. By decision no. 775 dated 28.10.1996 the Council of Ministers decided to establish the Water Council as the central decision-making body for the management of water reserves. Also, with this decision, the Technical Secretariat was established as the executive body of the NWC.
>
> The Albanian Government, after 2014, developed a new approach to sector coordination. Thus, by decision no. 230 dated 23.04.2014 "On the composition and manner of organization and functioning of the Technical Secretariat of the Water Council" changed the structure and organization of the Secretariat, recently renamed as Agency for Water Resources. It is a public legal institution with headquarters in the Prime Minister.
>
> Subsequently, by decision of NWC no. 1 dated 09.07.2014, the internal regulation on the organization and functioning of the Water Council Technical Secretariat was also approved. Based on this regulation, the Secretariat has as its object the design and establishment of the integrated water system as well as monitoring and guaranteeing the efficient functioning of integrated management of this system.

Box 1: Albania's Water Secretariat

The economies usually lack Nexus coordination bodies and instruments, which could manage trade-offs and promote synergies. In some administrative set-ups, coordination bodies have been identified, which address some of the Nexus sectors:

- Albania: The Water Secretariat – recently renamed as "Agency for Water Resources" - is the main inter-institutional body responsible for drafting policies and plans for integrated water resources management, acting under the law 6/2018. It is chaired by the Prime Minister of Albania and composed of seven main stakeholder ministries. River Basin Councils headed by prefects of the regions, act as the administrative bodies; each is responsible for the protection, development, distribution and operation of water resources within its own basin boundaries. Furthermore, an "Inter-ministerial Working Group on Climate Change" aims to coordinate different energy/emission related policies, which also affect water and agriculture.

Specific coordination action has furthermore been in place for the set-up of strategies and plans, such as the either the drafting of the Sava River Basin Management Plan or the economies' Rural Development Programmes, though it is unclear how strong the integration of the different Nexus sectors has been and how it has focused on synergies beyond negotiations/trade-offs. Policy development via regulation, strategies or plans is characterised by:

- More or less formal cooperation, which does however not necessarily translate into policy integration;
- Isolated efforts;
- Lack of common targets;
- Overlapping responsibilities and competing objectives among local and central governments.

The following overview can be provided:

	Albania
Nexus coordination body	no
Coordination between some Nexus sectors	no
Multi-sector Water Council	yes
Consultative Council for Agriculture and Rural Development	no
Climate change coordination body	yes
Nexus coordination instruments	no
One authority for several Nexus sectors	no
Recent new administrative structures	no
Recent new distribution of competences	no

Table 6: Overview on the administrative setup and coordination instruments for the Nexus in Albania.

The capacities of management authorities are limited, in terms of human resources as well as regarding data and information. This has been detected during the data collection in the frame of this study and is also reported by other sources[24].

2.1.10. Nexus-related initiatives

The following Nexus-related projects have been carried out in Albania with the support from international donors:

Table 7 Overview on the current Nexus-related initiatives at the regional level, indicating the Nexus elements are being addressed and which Nexus-relevant key policies the initiative has been active

Institution	Start/End	Nexus-related initiative	Nexus sectors and topics				
			Water	Energy	Food	Ecosystems	Institutional support
GIZ	2008-15	Open regional fund – Energy Efficiency	x	x			x
UNDP-GEF/GIZ	?-2012	Integrated ecosystem in the Lake Prespa	x		x	x	x
GIZ	?	Protection and sustainable use of biodiversity in the territory of Lakes Ohrid, Prespa and Shkodra	x		x	x	x

2.1.11. Climate change adaptation

Albania has been a party to the United Nations Framework Convention on Climate Change (UNFCCC) since 1994 and acceded to the Kyoto Protocol in 2005. Albania ratified the Paris Agreement in 2016 on the occasion of the United Nations High-Level Event on Entry into Force of the Paris Agreement on Climate Change, being one of the countries that contributed to surpassing the threshold for the entry into force of the Paris Agreement.

Albania presented its Third National Communication on Climate Change to the Secretariat of the UNFCCC in October 2016, which was developed by the Ministry of Environment with the support of UNDP and GEF. The Third National Communication includes a GHG inventory for the period 2000–2009, with 2005 as the base year. Albania's coastal areas and water resources, ecosystems, agriculture, energy and tourism are identified as the sectors most vulnerable to climate change. Several priority measures related to GHG reduction and adaptation to climate change are identified in the Third National Communication.

The Government committed to reduce CO2 emissions in the period 2016–2030 by 11.5 per cent compared with the baseline scenario. The reduction of CO2 emissions is also identified under the NSDI-II strategic objective on reaction towards climate change.

An **Inter-ministerial Working Group on Climate Change** coordinates the work of line ministries on climate change. It is headed by the Deputy Minister of Environment at the

political level and supported by nominated technical focal points in each institution. For the implementation of the INDC, work is being coordinated in order to ensure coherence among the targets identified in the INDC, the National Action Plan on Energy Efficiency, the National Action Plan for Renewable Energy, the draft national strategy on energy and relevant legislation on energy and climate change. In view of implementation of the Paris Agreement, Albania is currently preparing a climate change strategy and a plan on mitigation of GHG emissions, under the IBECA project, and a national adaptation plan, with the support of GIZ and UNDP. The Ministry of Environment expects these documents to be adopted by December 2017. The climate change strategy will aim to be consistent with GHG emission pathways defined in the INDC and to promote sustainable economic growth, by streamlining climate change across sectoral strategic planning.

It will also aim to strengthen the awareness and capacity of relevant institutions and inter-institutional cooperation to address climate change issues. It also foresees the establishment of a monitoring, reporting and verification system of GHGs in line with EU requirements, which the NSDI-II also recognizes as needed. A first proposal of a DCM on establishing a mechanism for monitoring and reporting to the national competent authority on GHG emissions and other information relevant to climate change was discussed in July 2016 and is expected to be approved by July 2018. The central part of the plan on mitigation of GHG emissions will be the implementation of the INDC. The national adaptation plan will establish an implementation framework, by defining overarching objectives and targets as well as 15 priority actions. The national adaptation plan is also expected to address the mainstreaming of adaptation into relevant sectoral policies. It will

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First National Communication (2002) and Second National Communication (2009). The second communication focuses on the Drini River Cascade area. Preparation of a Third National Communication began in 2014.

The Ministry of Health's Albanian Strategy for Health System Adaptation into Climate Change (2011) presents an action plan for 2011–2021.

Climate Change Adaptation in the Drini Mati River Delta and Beyond (2013) proposes policy strategies to mainstream climate change adaptation considerations into national, regional and commune-level development planning.

2.1.12. Nexus-related overview of Transboundary basins/ aquifers

Transboundary issues and international cooperation

To ensure a sustainable and integrated management of water resources, considering the transboundary character of surface water and groundwater in Albania territory, clear defined criteria and responsibilities had been the focus of several legal and institutional developments within neighbourhood countries, enabling financial and technical assistance

to be provided for implementation and monitoring according to international standards and procedures. First steps were signed with the approval of DCM no. 635, date 21.11.2001 "On Establishment of a Government Commission for Water Problems with Neighbouring Countries", and strengthen by the following important agreements17 and cooperation signed in years:

- The Memorandum of Understanding with Government of Montenegro, signed on 19.06.2010, serves as the main guideline for the management of the transboundary water resources;
- Cooperation with the Government of Greece began in 2001. In 2008, both countries agreed to approve the inner regulation related to the Vjosa river basin, by signing an agreement for the establishment of Permanent Commission Albanian – Greek for transboundary fresh waters of river Vjosa and Drino and Prespa lakes;
- The Memorandum of Understanding between Government of Albania and Government of The Former Yugoslav Republic of Macedonia "For Protection and Sustainable Development of Ohrid Lake and its water catchment" was signed on 17.06.2004;
- Cooperation with Government of Kosovo* regarding transboundary water issues began in September 2010.

Also, in this regard, several transboundary projects are developed to strengthen sustainable management of transboundary water resources, as the one for Ohrid Lake, funded by the World Bank and implemented by Albania and The Former Yugoslav Republic of Macedonia, where it was developed a basis for the joint management and protection of Ohrid Lake. During project implementation there were developed the following: (i) Integrated land-use "spatial" plan for Prespa and Local Environmental Action Plan for Prespa; (ii) Water Management Plan; (iv) Forests Management Plans; (v)

Then, the Adriatic Sea Partnership (2006-2009) under the lead of the REC addressed all States bordering the Adriatic Sea. The project aimed to increase donor interest and generate further funding and established the Adriatic Sea Partnership as an operative international body to act as a common platform for regional cooperation to protect the Adriatic Sea. Through various international initiatives, the Adriatic countries have begun to make commitments for protection and management of the Adriatic Sea region including: (i) the Contingency Plan for the Adriatic; (ii) the Ballast Water Management Plan; (iii) the Integrated Coastal Zone Management. Another transboundary project addressed the protection and sustainable use of the Dinaric karst aquifer system which is shared by four countries (Albania, Bosnia and Herzegovina, Croatia and Montenegro).

Table 8 Transboundary river basins and aquifers in the SEE region. Source: UNECE, 2011

Transboundary river basins	Aquifers	Economies covered
Drin	Beli Drim/Drini Bardhe (Albania, Kosovo*), Prespa and Ohrid Lakes (Albania, Greece, The Former Republic of Macedonia), Skadar/Shkoder Lake, Dinaric east coast aquifer (Albania, Montenegro)	Albania, Greece, Kosovo*, The Former Republic of Macedonia, Montenegro
Aoos/Vijosa	Nemechka/Vjosa-Pogoni	Albania, Greece

2.1.13. Turning Nexus trade-offs to synergies

In order to avoid trade-offs and foster synergies between the different Nexus policies, regulation, strategies and plans shall promote an early and wide integration of the aspects and concerns of the related Nexus sectors in own developments.

Recent policy developments in the Water and Food/Agriculture sectors show a higher integration of objectives and targets of the other sectors, than Energy or Ecosystems, being the latter focused on ways to minimize the negative impacts of economic development on biodiversity.

	Albania
Water integrates Energy	medium
Water integrates Food/Agriculture	low
Water integrates Ecosystems	medium
Energy integrates Water	low
Energy integrates Food/Agriculture	low
Energy integrates Ecosystems	no
Food/Agriculture integrates Water	high
Food/Agriculture integrates Energy	no
Food/Agriculture integrates Ecosystems	high
Ecosystems integrates Water	low
Ecosystems integrates Energy	no
Ecosystems integrates Food/Agriculture	low

Table 9: Integration of Nexus aspects in recent regulation, strategies or plans for the Nexus in Albania.

Explanation: “high” indicates identification of synergies, “medium“ indicates identification and assessment of conflicts, risks and constraints; “low” indicates inclusion of concerns, needs or supply aspects; and “no” none of the previous (only textual mentioning). Note that a more detailed analysis can lead to a higher scoring.

In Albania, integration is limited. Recent legislative changes include the 2014 Law on Territorial Planning, which aims for overall integrated development; the 2012 Law for Integrated Water Resources which refers e.g. to the use of water for the environment, economy and power generation; the 2015 Renewable Energy Law which refers to hydropower and water resources; and the 2013 Law on Permitting which also addresses water pollution.

The Albanian Water Resource Management Strategy describes in its chapter 1.3.5 the expected climate change effects on water resources. The main sources of information that were used to prepare the table with water used and water that will be used in 2027 are: a) the Master Plan for Water Supply and Sewerage for Albania - January 2013; b) the Third Communication of Albania for the UNFCCC (third draft); and c) Eftimi "Hydrogeological Characteristics of Albania" AQUA mundi (2010), including general information on hydrology and water resources of Albania. The main expected changes are that water resources are expected to decrease by 14% (EVN/Starkraft, 2009) by 2050; the frequency of high-impact flood event will be duplicated, seawater level will raise 1-2 cm by 2025 and 3-15 cm by 2050. However, the determination of the sector-specific impact and the mode of calculation is missing in the Strategy.

Box 2: Albania's Water Resource Management Strategy: how have projections been developed

Regarding strategies and plans, the Water Resource Management Strategy (2017-2027) of the Economy includes references to all other sectors (and includes significantly increasing water demand forecasts, which pose 'severe stress' on the water resources); the Action Plan for Renewable Energy Resources in Albania (2015-2020) includes biofuel production; the Document of Strategic Policies for the Protection of Biodiversity in Albania (2015) asks to be an integral part of the planning and activities of other sectors. The Rural Development Programme (2014-2020) aims towards 'sustainable utilisation of resources and climate action by forest and water resource management' and is the only strategy/plan which refers to contributions to other sectors' policies.

2.1.14. Integration of climate resilience aspects in sector policy, regulation and management

Climate change resilience can be fostered by a varied set of measures addressing aspects like water scarcity, droughts or floods, temperature increase[25], heat waves, plagues and diseases, and ranging from efficiency increases to changes in production or management. Lists of options for action are usually included in the reporting to the UNFCCC.

Overall, climate change resilience has only partially been included in the sector-specific strategies/plans of Albania. This can lead to situations where the sectors are not ready to deal appropriately with climate change.

	Albania
Water	no
Energy	yes
Food/Agriculture	yes
Ecosystems	no

Table 10: Overview on the integration of climate resilience in recent regulation, strategies or plans in Albania.

Explanation: "yes" indicated climate change being integrated; "high" indicates contributions to climate change resilience, "low" indicates recognition of climate change constraints; and "no" none of the previous (only textual mentioning). For some of the documents, a screening assessment whether the considerations are of 'high' or 'low' relevance has been carried out.

A specific coordination body for climate change is in place, in order to ensure coherence among the targets identified in the INDC, the Action Plan on Energy Efficiency, the Action Plan for Renewable Energy, the draft Strategy on Energy and relevant legislation on energy and climate change. The 2015 Law on Renewable Energy refers to hydropower development, and the Action Plan for Renewable Energy Resources in Albania 2015-2020 to biofuel production. The Rural Development Programme 2014-2020 aims at 'sustainable utilisation of resources and climate action by forest and water resource management'. The Strategy 'Climate Change Adaptation in the Drini Mati River Delta and Beyond' (2013) proposes policy strategies to mainstream climate change adaptation considerations into Economy level, regional and community-level development planning.

2.1.15. Integration of resource use efficiency aspects

Resource efficiency is an approach to produce more from less input, use resources in a sustainable way, and manage them more efficiently throughout their life cycle. Circular economy is an approach aiming to keep resources within the economy when products no longer serve their function so that materials can be used again and therefore generate more value (Di Maio et al., 2017); and thereby supports resource use efficiency.

> Improving the efficiency of water use is usually presented as an opportunity for large water savings, particularly in the agricultural sector. The recent modernisation of irrigation practices in Spain highlights the rebound effect of Jevons paradox – the fact that efficiency increase does not translate into reduced consumption - is one of many possible consequences of efficiency improvements (Dumont et al., 2013).
>
> Policies that encourage the adoption of more efficient irrigation technology may be appealing under the premise that they will decrease the amount of applied water required to maintain current crops and yields. However, this ignores the possibility that farmers may adjust their behaviour in response to the change in irrigation efficiency, for example by switching to higher-revenue crops that are more water intensive, or by irrigating previously unirrigated land, resulting in an increase rather than a decrease in water consumption (Sears et al., 2018).

Box 3: Water efficiency, water savings and the Jevons paradox

Resource use efficiency is included in the competencies of the sector administrations in place. However, resource efficiency seems to be so far only relevant for the energy sector, and some minor consideration is given to water use efficiency in irrigation, but not to water reuse, as a component of circular economy. Additionally, energy efficiency initiatives are often secondary when compared with the generation of new renewable energy.

	Albania
Water efficiency	no
Water reuse	no
Renewable energy sources	high
Energy efficiency	low
Land/soil conservation	no
Organic farming	no
Food waste reduction	no

Table 11: Overview on the resource efficiency considerations in recent regulation, strategies or plans in Albania[26].

Under the 'Sustainability Eventually' scenario, the SCENES project proposes significant water abstraction reductions for the electricity and domestic sectors as targets for 2030:

	Albania
Electricity sector	Decrease >50%
Manufacturing sector	Decrease >10%
Irrigation	No/slight change
Domestic	Decrease >50%

Table 12: Percentage change in water abstractions for the Albania[27] as per the 'Sustainability Eventually' scenario under the SCENES project

Albania has adopted a Action Plan on Energy Efficiency. The Action Plan for Renewable Energy, and the 2015 Law on Renewable Energy refer to hydropower development, and the Action Plan for Renewable Energy Resources 2015-2020 to biofuel production.

2.1.16. Consideration of nature-based solutions

Nature-based solutions are defined as "actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits" [28] and include different concepts such as planning approaches (Integrated Water Resources Management) and infrastructure (Green Infrastructure, Natural Water Retention Measures). As climate change, population growth, and increasing consumption of resources create new threats with implications across the Nexus, nature-based solutions provide flexibility that enables adaptive management that is necessary to cope with changing conditions, and is more likely to sustain benefits in the midst of uncertainty and increased variability[29].

Nature-based solutions are not reflected as a priority within the assessed strategies/plans, and are usually not even reflected.

	Albania
Water	no
Energy	no
Food/Agriculture	no
Ecosystems	no

Table 13: Overview on the consideration of nature-based-solutions in recent regulation, strategies or plans in Albania.

2.2. The role of international action

International agreements, decisions or actions can influence the way that SEE2020 economies including Albania address the Nexus. There are three main pathways:

- By ratification of international agreements or conventions and the implementation of corresponding action plans;
- Via the process of EU accession, and the subsequent changes in institutions, regulation, planning, financing and management; and
- By means of projects or initiatives developed with the support or involvement of international bodies.

Regarding the first of the three elements, Albania has ratified a large number of Nexus-relevant agreements and conventions. In the frame of this study, the implementation details have not been assessed.

	Albania
Convention on Environmental Impact Assessment in a Transboundary Context	1997
Protocol on Strategic Environmental Assessment	2005
Multilateral Agreement among the Economies of South-Eastern Europe for implementation of the Convention on Environmental Impact Assessment in a Transboundary Context	2015
Rio Convention on Biological Diversity	1994
Convention on International Trade in Endangered Species of Wild Fauna and Flora	2003
Convention on Conservation of Migratory Species of Wild Animals	2001
Convention on the Conservation of European Wildlife and Natural Habitats	1999
Helsinki Convention on Watercourses and International Lakes	1994
Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat	1996
Aarhus Convention on access to information, public participation in decision-making and access to Justice in environmental matters	2001
Protocol on pollutant release and transfer registers (to the convention on public participation	2009
United Nations Framework Convention on Climate Change	1995
Kyoto Protocol	2005
Energy Community Agreement	2006
WHO Framework Convention on Tobacco Control	2006

Table 14: International multi- or bilateral agreements/conventions undersigned by Albania in the different Nexus fields (indicating the year of ratification/adoption)

The impact of the EU accession process on integration of the Nexus is also relevant and reflected in chapter 2.1.13.

International initiatives have made significant contributions to addressing the Nexus in Albania, and – in some cases - to promote decisions that foster synergies. The following table provides an overview on initiatives identified and shows that these initiatives address usually several of the Nexus sectors, and with a strong aspect of capacity building/institutional set-up. In several of the initiatives, resource efficiency, nature-based solutions and climate change adaptation have been addressed. However, this Study does not aim for a full review of the previous studies, thus uncertainties are marked in Table 15.

Institution	Start/End	Nexus-related initiative	Economies		Nexus sectors					Policies	
			Albania	Water	Energy	Food	Ecosystems	Institutional capacity building	Resource efficiency	Nature-based solutions	Climate resilience
GIZ	2008-15	Open regional fund – Energy Efficiency	x	?	x			x	x		?
UNDP-GEF/GIZ	2006-12	Integrated ecosystem in Management in the trans boundary Prespa Park Region	x	x			x	x		x	?
GIZ	2012-17	Protection and sustainable use of biodiversity in the territory of Lakes Ohrid, Prespa and Shkodra	x	x			x	x		?	?
EU?	2014-20	IPARD	?	?	?	x	?	?	?	?	?
WWF	2009-?	Activities on establishing Natura 2000		?	?	?	x	x	?	?	?
UNDP/GEF	2010-14	DIKTAS: Protection and Sustainable Use of the Dinaric Karst Aquifer System	x	x	x		x	x	x		X

Table 15: Overview on the current Nexus-related initiatives at the regional level

Indicating the economies involved and which Nexus elements are being addressed. The table includes also information on which Nexus-relevant key policies the initiative has been active

2.2.1. Nexus approach in the transboundary water management

The following transboundary basins and aquifers have been identified in the economy and region:

Transboundary river basins	Aquifers	Economies covered
Drin	Beli Drim/Drini Bardhe (Albania, Kosovo*), Prespa and Ohrid Lakes (Albania, Greece, The Former Yugoslav Republic of Macedonia), Skadar/Shkoder Lake, Dinaric east coast aquifer (Albania, Montenegro)	Albania, Greece, Kosovo*, The Former Yugoslav Republic of Macedonia, Montenegro
Aoos/Vijosa	Nemechka/Vjosa-Pogoni (Albania, Greece)	Albania, Greece
Sava	Srem-West Srem/Sava (Croatia, Serbia), Posavina I/Sava, Kupa, Pleševica/ Una (Bosnia and Herzegovina, Croatia), Macva-Semberija (Bosnia and Herzegovina, Serbia), Lim (Montenegro, Serbia), Tara massif (Bosnia and Herzegovina, Serbia)	Albania, Bosnia and Herzegovina, Croatia, Montenegro, Serbia, Slovenia

Table 16: Transboundary river basins and aquifers in Albania[xxx].

Out of the above list of transboundary river basins or aquifers, those that are transboundary within the SEE2020 economies have been further assessed regarding their Nexus-related conflicts, trade-offs and actions to overcome them, taken at the transboundary water management level:

Transboundary river basins or aquifer	Nexus-related challenges	Transboundary actions taken or planned	Nexus addressed
Drin	The significance of the Drin River and its main tributaries in terms of hydropower production is major, and further developments are planned. The alteration of the hydrological characteristics of the Drin, has had an impact in the distribution of sediments, and on ecosystems supported. Biological corridors that facilitate migration have been interrupted. Abstraction of groundwater in Kosovo* and waste disposal, sanitation and sewer leakage in Albania are the main pressure factors on Beli Drim/Drini Bardhe aquifer. Nitrogen, pesticides and pathogens (only locally in Albania) have been recorded. In the Black Drin sub-basin (The Former Yugoslav Republic of Macedonia), there is extensive cattle production. The expected increase in water demand in the Black Drin sub-basin catchment area for drinking water, irrigation and fisheries will result in increased pressure on the system. Whereas agriculture is the main source of nitrogen and phosphorus in the river system as a whole, the source distribution varies geographically. Agricultural as well as industrial pollution of Lake Skadar,	Pogradec (Albania) newly built sewage collection and treatment facilities, which allow treatment of the wastewaters of some 25,000 inhabitants, with further stages planned, are expected to improve the situation. Reduction of pollution from municipal wastewaters has been achieved in The Former Yugoslav Republic of Macedonia's side of the lake, where a sewerage system was constructed. There are plans for the construction of additional systems in the area. The Former Yugoslav Republic of Macedonia and Albania have harmonized procedures for water quality monitoring in the Lake Ohrid and its tributaries[xxxi]. The 2004 Agreement for Lake Ohrid and its Watershed is operational. Regarding Lake Skadar/Shkodar, wastewater collection and treatment facilities have been constructed in Albania and are planned for the reconstruction of existing facilities in Montenegro (Podgorica). The Skadar/Shkoder Lake Commission has developed work since 2009.	Water and Energy addressed in studies and plans, considering nature-based solutions and climate resilience
Korab/Bistra – Stogovo, Jablanica/Golobordo	In The Former Yugoslav Republic of Macedonia, groundwater abstraction for agriculture can affect the discharge of springs (reduced locally), with transboundary impacts related to groundwater quantity. In Albania, local and moderate degradation of ecosystems is an issue related to the quantity of groundwater.	Improvements are needed in The Former Yugoslav Republic of Macedonia for the monitoring of the aquifer and the protection zone system in place. Measures needed in Albania: detailed hydrogeological and vulnerability mapping, delineation of protection zones, wastewater treatment and public awareness campaigns. Enhanced cooperation, setting up of transboundary institutions and creation of a joint programme for quantity and quality monitoring of the sulfur thermo-mineral springs are needed. Data are exchanged.	No

Table 17: Nexus-relevant challenges and corresponding transboundary actions in river basins and aquifers in the SEE region[xxxii].

3. Conclusions

Albania's economic indicators show a steady positive trend since 2003, with slowly reducing patters in terms of GDP, employment and (less) poverty. The economy is not self-sufficient in terms of energy and food production, and imports both; these imports will continue in future as energy consumption increases steadily and agricultural areas are under pressure from urbanisation and flooding. Furthermore, the area preserves a rich biodiversity, with increasing protected areas and numerous endangered species.

Water resources are currently "stressed" due to high exploitation and the official planning will lead to a "severe stress" in 2027, mainly by hydropower, and less by irrigation agriculture. Water quantity and quality are managed by different Ministries, with further agencies being involved. Relevant transboundary coordination activities have taken place between 2000 and 2010, but no new or ongoing significant activities have been identified. Regarding the strategies and measures, the Albanian Water Resource Management Strategy (2017-2027) includes references to all other sectors and includes significantly increasing water demand forecasts; regarding flood risk mitigation, no relevant reference has been found to use Nature-Based Solutions as a tool for addressing these risks whilst assuring integration of other Nexus sectors.

Increased energy production by renewable energies is one of the major action lines of the sector, with (small) hydropower being its main focus. However, the effects on the status of water bodies and on ecosystems/biodiversity are not clearly identified and considered within the strategies, though this issue is of high importance due to the free-flowing rivers remaining in Albania. Energy efficiency appears to play a minor role in Albania's strategy; and the economy is likely to not to achieve the CO2 emission target committed for 2030.

Agricultural area and production is under decline in Albania, due to economic aspects, urban growth and flood risks; however, it is one of the most relevant sectors. The Rural Development Plan provides opportunity to contribute to Water, Ecosystems/biodiversity and Climate change resilience by actions taken within the agricultural sector. Energy aspects do not appear integrated in the existing strategy.

Overall, it is unclear how the competent authorities (and stakeholders) in Albania coordinate policies to ensure a Nexus approach. Coordination bodies are in place for some cross-cutting topics: The Water Resource Management Agency is the main inter-institutional body responsible for drafting policies and plans for integrated water resource management, acting under the law 6/2018. It is chaired by the Prime Minister of Albania and Council of Ministers. River Basin Councils headed by prefects of the regions, act as the administrative body; each is responsible for the protection, development, distribution and operation of water resources within its own basin boundaries. Furthermore, an "Inter-ministerial Working Group on

Climate Change" aims to coordinate different energy/emission related policies, which also affect water and agriculture.

Regarding legislation, the most relevant changes since 2010 address the adaptation to the EU Water Framework Directive, the 2015 regulation to foster renewable energies, and the 2013 Law on Strategic Environmental Assessments. However, the legislative set does not proactively address Nexus conflicts and trade-offs, nor prioritises policies to develop synergies between the Nexus sectors.

Significant further steps are needed in legislation, administrative coordination and the development of strategies and plans as well as related investments to ensure a synergistic approach towards the water-Energy-Food-Ecosystem Nexus.

Main specific Nexus conflicts	Recommendations for Nexus synergies	Implementation
Hydropower development affects nature conservation areas	1. To improve/upgrade the existing power plants (capacity, multi-purpose, generation efficiency) and invest in energy efficiency as the first steps that contribute to sustainability[xxxiii] 2. To designate hydropower "no go" areas, e.g. for nature conservation priority zones[xxxiv] 3. To increase the network of protected areas focusing in particular on the currently underrepresented natural and moderately modified rivers and streams, and on wetlands, as part of establishing representative networks of EU Natura 2000[xxxv] 4. To implement biodiversity mitigation measures[xxxvi] at existing and planned dams 5. To establish ecologically meaningful environmental flows[xxxvii] 6. To increase the deployment of solar and wind generators (which however could result in need for pumped storage hydro plants)[xxxviii]	The total capacity of small power plants that produce energy from water potential is 120,399 MW, wind parks have an installed capacity of 50 MW, and photovoltaic power stations have an installed capacity of 16.713 MW. Energy efficiency is included in different ratified agreements (e.g. Protocol on Energy Efficiency and Related Environmental Aspects, Bosnia and Herzegovina), legislation and plans/strategieshowever, it remains unclear if it is considered as a 'first step'. Regarding environmental flows, an analysis by WWF demonstrated that a small hydropower plant in the Crnojevića River (Montenegro) operating on an e-flow regime would produce 2.4% electricity per annum less than if operating on a biological minimum[xxxix]. Based on represented multidisciplinary researches' results, the team of experts developed the general procedure and methodology for ecologically-acceptable flow assessment in Montenegro which was later transformed into a by-law proposal (2016). The Ramsar Secretariat congratulated the Government of Montenegro for adopting this new forward-looking rulebook, which directly contributes to implementing the goal of the Resolution 12 on ´protecting the water requirements of wetlands for the present and the future´

Main specific Nexus conflicts	Recommendations for Nexus synergies	Implementation
		adopted by the 12th Ramsar Conference[xl]
Water (over)allocation to the different uses, in particular during drought events	7. To draft and implement (transboundary) River Basin Management Plans (Drin, Albania, The Former Yugoslav Republic of Macedonia, Montenegro, Kosovo*)[xli] 8. To draft and implement (transboundary) Drought Management Plans or (as preliminary step) to use hands-on operational (IT) tools for decision-making, coordination and communication before and during drought events 9. To create future projections of water demands depending on socio-economic analysis for the Bilecko Lake and its aquifer (Bosnia and Herzegovina, Montenegro)[xlii] 10. To increase water management flexibility by multipurpose operations of dams[xliii]	Declaration on the management of the extended Drin River Basin, 18th April 2011 Memorandum of Understanding for the Management of the Extended Transboundary Drin Basin (Drin MoU), between Montenegro, Greece, Albania, The Former Yugoslav Republic of Macedonia and Kosovo* (24th November 2011) Pursuant to the Agreement, the Commission has been established, with the aim of jointly understanding and resolving all problems related to the management of international river basins[xliv] To support their cooperation, projects funded by the Global Environmental Facility are being implemented by the Global Water Partnership and Global Water Partnership - Mediterranean in partnership with UNECE. In total the funding for 2016-2019 is US$ 5.5 million. The projects aim to improve the joint analysis and understanding of transboundary issues and have set up pilot projects to demonstrate sustainable development along the river and lakes and contribute to the development and implementation of a Strategic Action Plan decided on by the Riparians[xlv]. Drought Management Centre for South East Europe – DMCSEE has been established in Ljubljana [xlvi] . DMCSEE focuses its work on monitoring and assessing drought and assessing risks and vulnerability connected to drought. The Regional Strategy on Drought Management in the Danube Region is one of the outputs of the ongoing project DriDanube (Drought Risk in the Danube Region) lead by ARSO from Slovenia[xlvii].
Dam operations causing hydro-peaking and subsequent ecosystem deterioration	11. To setup flagship projects (such as reintroduction of sturgeons in the river basin or return of the eel and marble trout to the upper White and Black Drin catchments)[xlviii]	

Main specific Nexus conflicts	Recommendations for Nexus synergies	Implementation
	12. See above (bullet 4)	
Dam operations during floods to reduce downstream impacts	13. To develop Flood Risk Management Plans[xlix] 14. To identify and apply nature-based solutions[l] and green infrastructures (e.g. Natural Water Retention Measures)[li] to reduce flood risks 15. To improve up and downstream communication and coordination	
Pollution of surface and groundwater by pesticides and nutrients, and their treatment (costs)	16. To harmonise transboundary criteria for the establishment and implementation of drinking water protected areas and their safeguard zones[lii] 17. To promote organic farming and agricultural biodiversity[liii] and afforestation	Organic farming considered in Albania RDP and The Former Yugoslav Republic of Macedonia and Kosovo* Climate Change Strategies
Water pollution (caused by urban and industrial developments) and their treatment (costs)	18. To create an inventory of non-point and point sources of pollution (landfills, septic tanks, quarries, wastewater discharges and others) for the (shared Dinaric) aquifers[liv] 19. To improve the information available on the use of hazardous substances and their emissions[lv] 20. To agree on and implement (transboundary) water monitoring programmes[lvi], and to improve the exchange of data 21. To identify permanent and local sources of pollution, investigate systematically groundwater-dependent ecosystems and implement specific protection measures, and establish a proper and transboundary monitoring network for the Cijevna/Cemi karstic aquifer (Montenegro/Albania)[lvii] 22. To agree, regulate and implement EU/transboundary standards for wastewater discharges[lviii] 23. To construct and operate more/all wastewater treatment plants 24. To ban Phosphates' containing laundry detergents by 2012 and dishwasher detergents by 2015 (Phosphate Ban Scenario-Nutrients[lix])	
Land-use intensification and disappearance of certain habitats/ecosystems	25. See above and below (bullets 17 and 28)	

Main specific Nexus conflicts	Recommendations for Nexus synergies	Implementation
Increased energy consumption	26. Install energy-efficient wastewater treatment plants[lx] and water supply systems	
Cross-sector governance, transparency and accountability	27. To improve available datasets and their accessibility[lxi] 28. To systematically employ Strategic Environmental Assessment (SEA) and Environmental Impact Assessments (EIA) to preliminarily assess effects of infrastructure developments (incl. hydropower), including scenario development and SWOT assessments for awareness-raising[lxii] and the informed involvement of stakeholders and the local communities 29. To examine the experience with SEA with the aim of expanding the use of nexus analysis within it[lxiii]. 30. To reconsider the mandates of ministries and intersectoral bodies[lxiv] 31. To analyze and coordinate/integrate the different timeframes and geographic scales for planning in different sectors[lxv]. 32. To improve access to environmental justices (Aarhus convention) 33. To link spatial planning with river basin management and integrate adaptation to climate change[lxvi] 34. To implement more effectively (e.g. protection measures for ecosystems and biodiversity[lxvii]) 35. To aggregate the outcomes of public participation at specific decision-making levels in order to take these into account at more strategic levels[lxviii] 36. To develop broad, open, transparent and efficient platforms for reliable, high-quality data to serve as the foundation for high-quality decision-making[lxix]	

Table 18: Main Nexus conflicts in Albania, and past recommendations to overcome them

4. Annexes

4.1. Acronyms

Table 2: Acronyms

Acronym	
AL	Albania
BHD	Birds and Habitats Directives
BiH	Bosnia and Herzegovina
CAP	Common Agricultural Policy
CCS	Carbon Capture and Storage
DG	Directorate General
EC	European Commission
EEA	European Environmental Agency
EU	European Union
EU ETS	European Emission Trading System
EUR	Euro (currency)
FAO	Food and Agriculture Organization
FD	Floods Directive
FYROM	Former Yugoslavian Republic of Macedonia
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Green House Gas
GWP-Med	Global water Partnership - Mediterranean
HR	Croatia
IWLEARN	International Waters: Learning Exchange and Resources Network
IWRM	Integrated Water Resource Management
kWh	Kilo watt hours
m3	Cubic meter
ME	Montenegro
MS	Member State
OECD	Organisation for Economic Co-operation and Development
RCC	Regional Cooperation Council
REC	Regional Environmental Centre for Central and Eastern Europe
RIWMFA	Regional Integral Water Management Framework Agreement
RS	Serbia
SDG	Sustainable Development Goal
SEE	South East Europe
SEE2020	Regional growth strategy “SEE 2020 – Jobs and Prosperity in European Perspective”, endorsed in Sarajevo (November 2013)
SOER	State of the Environment
ToC	Table of Contents
ToR	Terms of Reference
TWRM	Transboundary water resources management
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nation Framework Convention on Climate Change

WEFE	Water-Energy-Food-Ecosystems (Nexus)
WGE	Working Group on Environment
XK	Kosovo*
yr	Year
RES	Renewable Energy Sources
DCM	Decision of Council of Ministers
EGFC	Energy Gross Final Consumption
NSDI	Strategy for Development and Integration
FAME	Fatty Acid Methyl Ester (Biofuels)
RBC	River Basin Council
RBA	River Basin Agencies
GDWA	Genral Directorate of Water Administration
MoARDWA	(Ministry of Agriculture Rural Development and Water Administration)
MIE	Ministry of Infrastructure and Energy
NLC	Licensing Centre
ATC	Agency for Treatment of Concessions
NTC	Territory Council
NATP	Agency of Territorial Planning
MoTE	Ministry of Tourism and Environment
NEA	Environmental Agency
IGSEWE	Institute of Geological Science Energy, Water and Environment
CDM	Clean Development Mechanism
NAMA	Nationally Appropriate Mitigation Actions

4.2. Glossary

The following terms have been widely used in the document and are explained to ensure a common understanding.

Table 3: Glossary of key terms

Term	Explanation
Nexus	The interaction between policies and management of the different Nexus elements
Nexus approach	The Nexus approach has been introduced in the natural resources management agenda to facilitate the enhancement of water, energy and food security, while preserving ecosystems and their functions, and increasing climate resilience, by reducing trade-offs, shifting towards more sustainable consumption patterns and improving demand management, building synergies and improving governance across sectors
Nexus fields/sectors of focus	Fields or sectors of the Nexus are in this case Water, Energy, Food and Ecosystems. Other institutions or projects work with different combinations of the Nexus fields or sectors
Conflict	The general pattern of groups dealing with disparate ideas[lxx]
Trade-off	A trade-off is a situation that involves losing one quality, aspect or amount of a Nexus element (e.g. water) in return for gaining another quality, aspect or amount of another Nexus element (e.g. energy).[lxxi]
Climate resilience	The capacity for a socio-ecological system to: (1) absorb stresses and maintain function in the face of external stresses imposed upon it by climate change and (2) adapt, reorganize, and evolve into more desirable configurations that improve the sustainability of the system, leaving it better prepared for future climate change impacts[lxxii]

Sustainable consumption patterns	Sustainable consumption relies on certain premises such as (1) Wise use of resources, and minimisation of waste and pollution; (2) Use of renewable resources within their capacity for renewal; (3) Fuller product life-cycles; and (4) Intergenerational and intragenerational equity[lxxiii]
Demand management	In natural resources management, demand management refers to policies to control consumer demand for environmentally sensitive or harmful goods such as water and energy[lxxiv]
Synergies	The creation of a whole that is greater than the simple sum of its parts[lxxv]
Governance	The processes of interaction and decision-making among the actors involved in a collective problem that lead to the creation, reinforcement, or reproduction of social norms and institutions[lxxvi]
Natural resource management	The management of natural resources such as land, water, soil, plants and animals, with a particular focus on how management affects the quality of life for both present and future generations (stewardship)[lxxvii]
Strategic document	These include policy papers, strategies, action or investment plans, communications, key projects or similar initiatives

4.3. Literature references

The following literature has been used to develop the Study:

- Sectorial Program of Water 2014-2020
- Strategy for Integrated Management of Water Resources 2016
- Action Plan for Renewable Energy Resources in Albania 2015-2020
- Rural Development Programme 2014-2020
- Energy Strategy 2013-2020
- Strategic Evaluation of Environment, March 2016
- Document of Strategic Policies for the Protection of Biodiversity in Albania, December 2015
- Statistical Yearbook 210-2017
- Energy Balance-2008-2016 (AKBN)
- Annual Report ERE 2008-2016
- CORINE LANDUSE 2012
- UNECE (2011) Second Assessment of Transboundary Rivers, Lakes and Groundwaters. http://www.unece.org/?id=26343.

4.4. Regional information sources

This Annex includes the information sources identified in Task 2.

Table 4: Regional information sources

Information sources
http://www.stkku.gov.al/
http://www.instat.gov.al

http://akzm.gov.al/index.php?option=com_k2&view=itemlist&layout=category&task=category&id=32&Itemid=435&lang=us
https://data.worldbank.org/indicator/NY.GDP.MKTP.PP.CD?end=2016&locations=AL&start=2003
http://www.fao.org/faostat/en/#data/EL

[1] Sources: latest available data from the economies' statistical sources, complemented with FAO Aquastat, Worldbank, IEA and UNEP-WCMC. Further details are available in the specific chapters of the Study.

[2] http://waterwiki.net/index.php?title=Albania

Sources: Albania: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2016&locations=Albania&start=2003&view=chart; Bosnia and Herzegovina: The projections were carried out on the basis of the official document of the Economic Reform Program of Bosnia and Herzegovina 2017-2019; Kosovo*: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2016&locations=Kosovo*&name_desc=true&start=2003&view=chart; Montenegro: https://www.monstat.org/eng/page.php?id=163&pageid=19; The Former Yugoslav Republic of Macedonia: Serbia: http://data.stat.gov.rs/Home/Result/09020101?languageCode=sr-Cyrl#

[4] Source EEA (2018): Use of freshwater resources; https://www.eea.europa.eu/data-and-maps/indicators/use-of-freshwater-resources-2/assessment-2.

[5] Sources: Statistical data, FAO/Aquastat

[6] Indicating the water consumption proportion of the available water resources. The WEI+ has been calculated as the quarterly average per river basin district. Source: EEA, http://www.eea.europa.eu/data-and-maps/explore-interactive-maps/water-exploitation-index-for-river-1.

[7] Source: EEA, 2017, https://www.eea.europa.eu/data-and-maps/indicators/urban-waste-water-treatment/urban-waste-water-treatment-assessment-4

[8] https://washdata.org/

[9] WHO/UNICEF, 2017, page 25

[10] Source: IEA, 2017

[11] Sources: Albania: Institute of Statistics (INSTAT) http://www.instat.gov.al; Bosnia and Herzegovina: http://www.bhas.ba/tematskibilteni/NUM_00_2017_TB_0_BS.pdf; Kosovo*: Statistical Year Book of Kosovo* – 2017; Montenegro: http://www.mek.gov.me/files/1202471750.pdf, https://www.monstat.org/eng/page.php?id=1314&pageid=39; The Former Yugoslav Republic of Macedonia: http://mepso.com.mk/CMS/Content_Data/Dokumenti/%D0%94%D0%B8%D1%81%D0%BF%D0%B5%D1%87%D0%B5%D1%80%D1%81%D0%Bosnia and Herzegovina%D0%B8%20%D0%B8%D0%B7%D0%B2%D0%B5%D1%88%D1%82%D0%B0%D0%B8/MESECEN%20IZVESTAJ%20ZA%20EPS%2012.2017.pdf

[12] Source: Schwarz, 2017.

[13] Vukovic & Vujadinovic (2018), page 7

[14] EEA, 2010, page 92

[15] Energy Balance 2015, (Tirana 2016), Agency of Natural Resources. Energy Balance 2016, (Tirana 2017), Agency of Natural Resources

[16] Sources: 2018 data taken from UNEP-WCMC, 2018. Montenegro data from https://www.indexmundi.com/montenegro/habitat-protection.html except 2020 data from Economy's Strategy.

[17] UNEP-WCMC, 2018.

[18] Report on Environment Conditions 2017, Albanian Agency of Environment

[19] Repealed after the approval of the new Law no.111/2012, date 15.11.2012 "On integrated management of water resources"

[20] This law is adopted and fully in line with: Directive 2000/60 / EC of the European Parliament and of the Council of 23 October 2000 "Establishing a legal framework for Community actions in the field of water policy. "CELEX number: 32000L0060, Official Journal of the European Union, Series L, No.327, dated 22.12.2000, p.

[21] NWRMS - Water Resource Management Strategy

[22] IWRM - Integrated Water Resources Management

[23] FAME - Fatty Acid Methyl Ester (Biofuels)

[24] E.g. UNECE, 2017a, page 26
[25] Climate change scenarios for The Former Yugoslav Republic of Macedonia and Kosovo* indicate overall increases in air temperature (DrinCorda, 2018)
[26] For some of the documents, a screening assessment whether the considerations are of 'high' or 'low' relevance has been carried out; for others a 'yes' or 'no' is stated
[27] Compared to the base year 2000, under the Sustainability Eventually Scenario. Source: CESR, 2007 quoted in EEA, 2010, page 129.
[28] IUCN, 2018
[29] Ozment, DiFrancesco & Gartner, 2015
[xxx] Source: UNECE, 2011
[xxxi] in the framework of the GEF Lake Ohrid Conservation Project (ended in 2004).
[xxxii] Source: UNECE, 2011, updated
[xxxiii] Euronatur and ECA Watch (Schwarz, 2012) reports; and UNECE, 2017a, page 54
[xxxiv] Recommendations of the 2010 EU Water Directors Statement (Kampa, et al. 2011)
[xxxv] Harmel et al, 2017, p.144 referring to the Drin river
[xxxvi] For example taken from the IEA guidelines for decision-making first published in 2000 and updated in 2010 or the European funded SHERPA project or the South-East-Europe Cooperation Programme, co-funded by the European Regional Development Fund has issued a series of recommendations and handbooks on sustainable management of hydropower as part of the SEE HydroPower Project.
[xxxvii] UNECE, 2017a, page 67
[xxxviii] UNECE, 2017a, page 54
[xxxix] UNECE, 2017a, page 67. Note it is not clear if the regime has been implemented in practice.
[xl] http://www.greenhome.co.me/index.php?IDSP=849&jezik=eng
[xli] Harmel et al, 2017, p.134 referring to the Drin river. UNECE, 2011, p.277 refers to such an approach as "The Petersberg Phase II/Athens Declaration Process (coordinated by Germany, Greece and the World Bank, supported technically and administratively by GWPMed), acting in cooperation with UNECE, GEF and UNDP, facilitates a regional multi-stakeholder dialogue process, aiming to explore possibilities of moving the level of cooperation from the sub-basin to the Drin Basin level."
[xlii] DIKTAS, 2014, p22
[xliii] UNECE, 2017a, page 73
[xliv] WFD-eu.me
[xlv] http://drincorda.iwlearn.org/gef-supported-drin-project
[xlvi] www.dmcsee.org
[xlvii] http://www.interreg-danube.eu/approved-projects/dridanube
[xlviii] Harmel et al, 2017, p.144 referring to the Drin river
[xlix] UNECE, 2017a, page 76
[l] WWAP/UN, 2018
[li] www.nwrm.eu
[lii] DIKTAS, 2014, p.22
[liii] Harmel et al, 2017, p.134
[liv] DIKTAS, 2014, p.22
[lv] UNECE, 2011, referring to the Danube river, p.173
[lvi] DIKTAS, 2014, p.22
[lvii] DIKTAS, 2014, p.20
[lviii] DIKTAS, 2014, p.22
[lix] UNECE, 2011, p.173
[lx] UNECE, 2017a, page 63
[lxi] E.g. UNECE, 2011, p.272: „Numerous measures are needed with regard to Beli Drim/Drini Bardhe aquifer (No. 133); priority should be given to monitoring groundwater quantity and quality, detailed hydrogeological and vulnerability mapping, delineation of protection zones, construction of wastewater treatment facilities as well as to public."
awareness campaigns.
[lxii] E.g. UNECE, 2011, p.272 re Beli Drim/Drini Bardhe aquifer
[lxiii] UNECE, 2017a, page 77
[lxiv] UNECE, 2017a, page 77
[lxv] UNECE, 2017a, page 77

[lxvi] Harmel et al, 2017, p.134
[lxvii] Harmel et al, 2017, p.134
[lxviii] UNECE, 2017a, page 26
[lxix] UNECE, 2017a, page 26
[lxx] Wikipedia
[lxxi] Adapted from Wikipedia
[lxxii] Wikipedia
[lxxiii] Wikipedia
[lxxiv] Wikipedia
[lxxv] Wikipedia
[lxxvi] Wikipedia quoting Hufty, Marc (2011).
[lxxvii] Wikipedia