



# Western Balkans regional issues related to Water, Energy and Food

*Background document for the Implications of global megatrends in the Western Balkans region: Scoping workshop, Ljubljana 10-11 April 2017*

## 1. Introduction

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This paper provides an overview of trends and issues related to water, energy and food in the Western Balkans. It is based on a review of 70 documents identified through a literature search for reports and studies covering the environment, water, energy and/or food in the Western Balkans region. Existing studies and reports included those published by national and European public institutions, NGOs and international organisations and research projects / academic studies. A list of all documents identified and reviewed is included in Annex 1.

The focus of this paper on issues considered to be directly related to water, energy and food reflects the emphasis of the European Topic Centre on Inland, Coastal and Marine Waters (ETC/ICM) project ‘*Water Use in the Western Balkans: regional outlooks and global megatrends*’ (project reference EEA/PAN/16/002) on water in relation to energy and food trade-offs: nexus approach. For more information on the project see the separate document: *Project overview: Water Use in the Western Balkans: regional outlooks and global megatrends*<sup>1</sup>.

Clearly the Western Balkans region faces a number of other direct and indirect environmental, social and economic issues such as air quality, socio-economic development, ecosystem management, which will also have implications for the domain of water-energy-food. Though recognised, these are not further explored in this paper to ensure that the number of issues identified remains manageable. Trade-offs between issues and trends in other domains can be discussed and explored during the scoping workshop, in Ljubljana 10-11 April 2017.

## 2. Water management issues

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Western Balkans regional issues for water management identified through the review include:

- **Insufficient wastewater management**

The overall status of wastewater treatment in the region is considered unsatisfactory as there is a clear problem of inadequate management of waste water discharge. According to a report on core set of West Balkan environmental indicators (EEA, Zoi Environment Network, 2012) wastewater treatment in the region has slowly improved, connecting approximately 12% of the population to a treatment plant, however this is considerably lower than the connectivity elsewhere in Europe (in general more than 80% of the population). Some of the underlying issues include deteriorating and insufficient infrastructure and lack of training and education of maintenance workers (OHCHR, n.d). In recent years there has

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<sup>1</sup> Available from: <http://forum.eionet.europa.eu/eea-west-balkans-cooperation-interest-group/library/etc-inland-coastal-and-marine-waters-activities-wb/2016-2017-west-balkan-project-gmt/2017-1st-workshop-gmt-west-balkan-region-1/background-documents>



however been an increase in investment in the waste water treatment infrastructure in the region (SOER, 2015).

- **Water security**

At present regional water resources are abundant for much of the year, and water scarcity is a problem mainly during summer months in southern and coastal areas of the region (EEA, 2010). However regional climate change impacts are expected to affect water security, in particular due to changes in precipitation, and increased likelihood of droughts. A UNEP synthesis report indicates a decreasing amount of precipitation in the region over the last 50 years, with Albania, and FYR Macedonia displaying the clearest downward trend (UNEP, 2015). There is also expected to be a decrease in annual river discharge in some areas of Western Balkans, due to observed changes in precipitation (UNEP 2011). For some countries in the region, such as Serbia, this may significantly affect water security due to a significant proportion of their freshwater resources coming from transboundary sources (Eurostat, 2015). In contrast with water scarcity and droughts, an already observed likelihood of floods will increase, shaping an overall picture of changed water security in the region. The effects of floods are pronounced by regional topography, climate of relatively abundant precipitation and other physical characteristics, as well as by issues of governance, organisation of civil protection and disaster relief services.

- **Ground water contamination and reserves**

Typically uncontrolled landfills, inadequate management of waste water discharge and agricultural run-off can lead to groundwater contamination, and these issues have been observed in Western Balkans (World Bank, 2013; UNEP, 2015). However, information on the status of groundwater in the region is limited. Among the risks for groundwater quality and reserves is the absence of groundwater monitoring or public availability of monitoring results thereof, thus the lack of information on bacteriological contamination and status of groundwater reserves, and low cooperation in management of cross-border aquifers where combining the available data and management practices would yield positive results.

- **Water quality, contamination and degradation of water resources**

A regional study on security implications of future water use in Western Balkans summarises the status of freshwater quality as *'in general being low mainly due to relatively high nutrient concentrations in the rivers'* (TC Vode, 2014). The literature highlights multiple drivers causing deterioration in freshwater quality, including: climate change (JRC, 2015), industrial contamination (EEA & ETC/CCA, 2013), insufficient waste water discharge management (EEA, 2015; Eurostat, 2015), agricultural activities (JRC, 2014; UNEP, 2015; World Bank, 2003; Hristov, J. 2014) and deteriorating water supply infrastructure (OHCHR, n.d; World Bank, 2003).

- **Water demand**

The implications of climate change in the region are expected to increase water demand in water scarce regions as a result of spatially and temporally uneven water supply (Adelphi, 2013). Water use in agriculture is expected to increase as crops will require more water due to hotter, drier, longer summers (UNDP, 2013, Custovic et al. 2012) leading to an increase in number and size of irrigated areas (KEPA, 2015). Overexploitation of water resources has been identified as significant pressure from the electricity generation sector (JRC, 2014), and such pressures are likely to exponentially increase in the near future.



- **Transboundary water cooperation**

Transboundary water management is considered sometimes to be weak with low political prioritization, insufficient institutional capacity, limited information exchange and joint monitoring (UNEP, 2015; GIWEH, 2011; GEF TWAP, 2016). In some cases, lingering bilateral conflicts and territorial disputes constitute some of the main factors (Djordjevic et al. 2012). Non-transparent ideologically charged agendas of local or national governments sometimes affect implementation of water management on political grounds (TC Vode, 2017). Some good practices of transboundary environmental (including water) management indicate positive steps in recent decade.

### **3. Energy management issues**

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Western Balkans regional issues for energy management identified through the review include:

- **Energy demand and resource availability**

Regional forecasts suggest uncertain changes in energy demand: overall energy demand is expected to increase (Politis et.al 2016); demand in energy for cooling is projected to rise; and energy for heating to decline (UNEP, 2011; EEA & ETC/CCA, 2013). Electricity demand is characterised by seasonal and weather related peaks. As demand surpasses generation capacities most countries in the region are net importers of energy products, mainly gas, oil and oil products as well, in some cases, electricity (e.g. Kosovo, Albania) (Balkan Green Foundation, 2016).

As noted, while water is abundant in the region, there are large differences in the region and water scarcity is an issue in the southern countries, particularly in summer months (EEA, 2010a). Water availability affects thermal power production and efficiency often resulting in blackouts due to the high dependence of these power plants on cooling water (UNEP, 2011; UNEP, 2015; Golušin et al., 2013). Insufficient water flow for hydro power plants has also resulted in energy blackouts in the region, notably in Albania (Golušin et al., 2013) due to water being the only major used energy source of the country. Climate change is expected to lead to increasingly erratic river discharges, creating significant challenges in energy production for the hydropower sector (UNDP, 2014a). As water becomes scarce, competition is seen to be growing between the energy and agricultural sectors (FAO, 2014).

- **Inadequate energy infrastructure and its maintenance**

Typically energy infrastructure in the region dates from the 1960s and 1970s. There is an urgent need for its widespread rehabilitation and replacement (i.e. high investment needs for generation and transmission capacities) as no significant investments in new capacity have taken place since the early 1990's (UNEP, 2015; UNDP 2016a; Golušin et al., 2013).

The energy intensity (an indicator of energy efficiency) of the Western Balkans is high. This can be attributed to three main factors: the degraded state of the energy infrastructure; high energy losses during transformation, transmission and distribution; and inefficiency in the end-use sector (Politis et al., 2016; Energy Community, 2009).

Climate change is expected to have a negative impact on energy production and transmission in the region. It poses risks to power transmission network functions, and is likely to reduce efficiency or alter



structural integrity, especially for older, poorly maintained facilities. Increased flooding and other extreme weather events is associated with higher energy infrastructure maintenance costs (UNEP, 2015).

- **Governance and institutional capacity**

Studies have suggested that there is insufficient legislation and institutional capacity for implementing Energy Efficiency measures and Renewable Energy Sources (RES) deployment in the region (KEPA, 2015; Softič et al., 2012; Karakosta et al. 2012). At the same time the energy sector in the Western Balkans region has been associated with allegations of corruption (Balkan Green Foundation, 2016; UNDP 2016b).

The relative lack of legislative harmonisation may represent a particular issue in the context of a high concentration of new dams in southern Balkan countries: these may be built in a context of limited formal transboundary cooperation. A number of water infrastructure projects are planned or ongoing without adequate institutional arrangements (GEF TWAP, 2016), with involvement of foreign corporate investors or international organisations.

Liberalising energy market: the electricity sector in the region is characterised by dominant state owned utilities, with public service obligations and regulated prices. As a result, domestic consumers have enjoyed free or heavily subsidised energy for decades, thus liberalising energy markets and investing in RES may impose significant political costs (Lindstrom, 2011). Cooperation between governmental/public services and private investors was limited in the past and is not well developed at present, resulting in relationships of limited transparency.

- **Lack of diversity in energy supply sources**

In many parts of the region, power generation is dominated by either fossil fuel sources (notably through coal power plants) or by hydropower generation (Politis et al. 2016; Softič et al. 2012). The lack of diversify in energy supply sources, especially in countries that are highly dependent on hydrology, means exposure to a higher risk to climate change and possible water scarcity in summer periods.

Natural gas has a marginal role in power generation, however, implementation of major gas projects are expected soon (Balkan Green Foundation, 2016). Except hydropower, other RES are at a relatively early stage of development (Politis et al. 2016): they are less exploited, with relatively few incentives and regulations for their full exploitation (Karakosta, 2012).

## 4. Food issues

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Western Balkans regional issues for food identified through the review include:

- **Land use and availability**

Regionally, much agricultural land has been abandoned and the proportion of land used for agriculture has been decreasing in recent years. Another ongoing land-use change trend has been the, at times unplanned, sprawl of many urban and coastal areas (EEA, 2010a; TC Vode, 2014). The most pressing land-use issues related to food is considered to be the conversion of agricultural land to land for development (World Bank, 2013). A further issue is the inaccessibility of land due to landmines, reducing the amount of available agricultural land, or agricultural land abandonment due to conflicts and socio-economic



changes of 1990s, with extensive overgrowing of land (particularly Bosnia & Herzegovina (TC Vode, 2014; UNDP, 2016)).

- **Agricultural productivity**

Much agricultural production in the region is based on relatively intensive farming (Sida's Helpdesk for Environment and Climate Change, 2012) with the share of organic farming in agricultural area being quite low, although increasing (EEA, 2012). Crop yields are expected to decline as result of climate change impacts such as: increased temperatures and heatwaves; and reduced total precipitation and droughts; changes in precipitation leading to flooding and landslides / erosion (Custovic et al. 2012; UNEP, 2015; UNDP 2013; UNDP 2014a). Pests, diseases and fire risk are also likely to increase due to climate change resulting in crop damage in the region (EEA & ETC/CCA, 2013). Reduced crop yields are expected to lead to food security issues, for example, increased food prices (UNDP, 2014a).

- **Soil**

Land use change, increased rainfall intensity and extended drought periods have caused soil erosion in the form of landslides, desertification and loss of topsoil (UNDP, 2014b; UNEP, 2015). In Montenegro and Serbia, the excessive cutting of trees in mountainous areas has been among the main causes of increased erosion (UNEP, 2015).

Soil quality is affected by contamination from inadequate communal and industrial waste management, illegal landfills and lack of recycling (World Bank, 2013).

Other issues concerning soil quality include decreasing organic carbon in arable land (EEA, 2015), soils becoming in general drier; change of properties and processes in soils leading to accelerated erosion, landslides and desertification (UNEP, 2015).

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## Annex 1: List of all documents reviewed

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