Balkan Green Foundation

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HYDROPOWER PLANTS IN KOSOVO

THE PROBLEMS AND THEIR REAL POTENTIAL

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Hydropower Plants in Kosovo – The problems and their real potential

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Balkan Green Foundation (BGF) is a regional initiative established to advocate and promote sustainable development in the Western Balkans, specifically concentrating on a number of key topics such as sustainable economic development, environmental protection, energy development, and climate change. BGF works to advance sustainable development practices as ways to ensure and maximize opportunities for everybody through policy advocacy and project development in Kosovo and the region.

The Institute for Development Policy (INDEP) is a think tank and an advocacy centre that provides independent research-based policy solutions. Established in 2011 as an association of policy analysts, researchers and civil society activists, INDEP focuses on development policies, providing a comprehensive vision for Euro-Atlantic integration. In Kosovo, where it is based, the institute has a special focus on strengthening democratic governance and plays the role of public policy watchdog.

Photo in the front page: ERO and Organization “Gjethi”.

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Abbreviations

KEPA – Kosovo Environmental Protection Agency

KAS – Kosovo Agency of Statistics

EU – European Union

RES – Renewable Energy Sources

OGK – Official Gazette of Kosovo

HPP – Hydropower Plant

SHPP – Small Hydropower Plant

KEDS – Kosovo Energy Distribution Services

KEK – Kosovo Energy Corporation

KOSTT – Kosovo Transmission, System and Market Operator

MESP – Ministry of Environment and Spatial Planning

MW – Megawatt

MWh – Megawatt hour

MED – Ministry of Economic Development

ERO – Energy Regulatory Office

1. Overview

In Kosovo, in terms of policy-making and strategy formulation, it is envisaged to use natural resources on a maximum scale for the generation of electricity in order to approximate targets of 25% from renewable sources within the Energy Treaty Community. According to the Energy Strategy of Kosovo, by 2020, the plan is to install 240 MW generating capacity from HPPs.[1]

Kosovo is not a country of great hydropower potential, mainly for geographical reasons related to the topographic aspect - the relief is mainly in the shape of a plateau characterized by relatively mild terrain and low precipitation. In the Western Balkans region, Kosovo is the poorest country in terms of available water resources - 1,600 cubic meters of water per capita.[2] Albania has about 13,000 cubic meters of water per capita[3], while Northern Macedonia has about 3,000.

Most of the existing small and planned hydropower plants are located within areas of special natural importance such as national parks, strict nature reserves, special protected zones, and areas with numerous relict and endemic features of flora, vegetation, fauna, natural, plant and animal habitats. This poses a great risk that these areas will be permanently damaged and the country's natural landscapes and water resources will be degraded, as in the case of hydropower plants in the Decan Gorge.

Also of particular concern are certain cases where an inter-ministerial council is formed to favour specific projects with the executive power to change certain zones from Zone 1 to Zone 3. Construction of hydropower plants in Zone 3 is allowed, while in Zone 1 and 2 it is not allowed. This option of zoning change is unfair and needs to be legally regulated. Such competence for defining zones and zoning maps should belong exclusively to experts and should not be politicized and politically influenced, and moreover no construction of hydropower plants in national parks should be allowed.

This document aims to analyse the overall situation of the hydropower sector in Kosovo, the real potential of these projects, impacts, and their main problems as well. Moreover, this document mentions briefly the existing hydropower plants, the ones planned to be constructed, their

[1] Ministry of Economic Development (2017), Energy Strategy 2017-2026, Prishtina, pg. 15. Source: https://mzhe-ks.net/repository/docs/Strategjia_e_energjise_2017-26_-.pdf

[2] MESP – KEPA (2015). Report on the State of Water in the Republic of Kosovo, Prishtina, pg. 11. Source: http://ammk-rks.net/repository/docs/Raporti_i_ujrave_i_2015_shqip_(2).pdf

[3] PASURITË UJORE SHQIPTARE (ALBANIAN WATER ASSETS), Source: http://37.139.119.36:81/publikime_shkencore/ALB-RIVERS-WEB-PDF/009-28-Kreu1-Ujerat-Shqiptare.pdf

problems and the real impact on the environment and concerns of local communities regarding these constructions.

This research concludes that hydropower plants have problems and negative impacts mainly on these domains: (1) social [social conflicts and protests], (2) political [conflicts of interest, distortion of political will, subsidies to hydropower plants], (3) economical [irrigation and drinking water, tourism, energy balance, and agricultural land degradation], and (4) environmental [causes destruction and modification of natural habitats, soil erosion, damage to forests and nature, drying up of rivers, water pollution due to construction works, and environmental pollution during maintenance].

2. Introduction - General situation

According to the Energy Strategy 2017-2026, hydropower plants will occupy a significant share of energy generated from RES. Most of the hydropower plants, planned to be constructed in Kosovo, fall mainly in special natural and protected zones where the hydro potential is greater. Implementation of these projects can cause numerous environmental problems, i.e. damage to the environmental image and negative impacts on the flora and fauna, which are already endangered. These projects may also cause major problems to change of river flow, their drying, erosion, deforestation, water contamination with oil and inert elements, the disappearance of rivers and streams in pipelines for kilometres and disregard for the biological minimum which is set at about 30% of normal water flow, especially during summer.

Kosovo is a member of the Energy Community Treaty and consequently has obligations and liabilities it must fulfil and implement. Kosovo is obliged to have 25% of its energy resources generated by renewable energy sources (RES) by 2020. Administrative Instruction no. 01/2003 on Renewable Energy Targets sets an ambitious target of 29%.[4] In fact, this plan is very ambitious and impossible to achieve. It is estimated that so far the share of RES is well below that level (KAS considers that it is below 15% of the total energy consumed in the country, considering wood for heating or biomass as a renewable resource as well (see figure 1).

The rate of 25% of RES in the total share of energy, required by the Energy Community Treaty is unachievable. Consequently, Progress Report on Kosovo (2018) by the European Commission mainly cites bureaucratic delays and various licensing as a lack of an effective bureaucratic/administrative mechanism. This report also mentions the lack of progress in protecting the environment in general, but also the water.[5] In order to achieve these commitments, even on paper, (25-29% of RES by 2020), Kosovo authorities have decided to allow the construction

[4] MED (2013), *National Renewable Energy Action Plan* (NREAP) 2011-2020. Source: http://www.kryeministri-ks.net/repository/docs/PLANI_KOMBETAR_I_VEPRIMIT_PER_BURIMET_E_RIPERTERITSHME_TE_ENERGJISE_(PKVBRE)_2011-2020.pdf

[5] *European Commission (2018), 2017 Kosovo Report*. Source: http://www.mei-ks.net/repository/docs/kosovo_report_2018_shqip.pdf

of new water capacities in every corner of the country. Within the 25% RES target, hydropower plants (240 MW), wind energy (150 MW), solar energy (10 MW) and biomass/biogas (14 MW) are expected to be a priority. It is worth noting that Kosovo has significant solar potential with an average of 278 sunny days and 2000 sunny hours per year.

The decision of the Ministry of Environment and Spatial Planning (MESP) to continue with a general moratorium on the construction of new hydropower plants in the country without a proper analysis of the water capacities that Kosovo possesses, is positive. This has resulted in zero applications to ERO to be equipped with preliminary authorizations for new hydropower plants. MED has also allocated the capacity reserved from hydropower to wind, precisely due to environmental and social problems that these plants entail.

3. Situation and regulation of the hydropower sector

According to KOSTT, Kosovo has a total of 95.7 MW of hydropower installed in both the transmission and distribution networks.[6] In addition to these, another 20 small hydropower plants (SHPP) with a total of 78.8 MW are expected to be added. The majority of these constructions are planned to be located in, or near national parks, mainly in the Sharr Mountains (see Figure 1 on the next page).[7] In case these projects are managed to be implemented, Kosovo will have 174.5 MW capacity of installed hydropower.

The old project of HPP Zhur with 295 MW installed power, in various strategies and plans developed by the Ministry of Economic Development, is counterproductive and gives an exaggerated image as Kosovo has great hydropower potential, but the truth is that this hydropower plant would operate only during peak hours i.e. 4-6 hours, and entails international problems as it affects the flow of rivers outside the borders of the country. In terms of feasibility, the return on investment would take about 50 years and about 3 kilowatt-hours of energy during the low tariff would be needed to be lost in order for one kilowatt-hour of energy gained during the peak hours (high tariff).[8]

Balkan Green Foundation has requested that the old project of HPP Zhur be removed from all plans and strategy papers because that project, besides having major problems in itself, both in terms of economic feasibility and political rationality, has major environmental consequences and the amount of electricity produced does not justify the investment. Also another concern is licensing and authorization for building new capacities where investors see these as a simple business and do not consider other modalities such as the environment, the interests of the community, biodiversity, etc.

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[6] KOSTT (2018), *Installed Electricity Capacity in Kosovo*. Source: http://www.kostt.com/website/index.php?option=com_content&view=article&id=841&lang=sq

[7] ERO (2018), *Register of Applicants for Authorization*. Source: http://ero-ks.org/2018/Autorizimet_Licencat/12_11%202018%20Regjistri%20i%20Aplikuesve%20p%C3%ABr%20Autorizim%20dhe%20Pranim%20ne%20Skemen%20Mbeshtetese.pdf

[8] MED (2008) Review of HPP Zhur Feasibility Study. Source: https://mzhe-ks.net/repository/docs/hpp_zhur_part5_summary_Shqip.pdf

Kosovo may be involved as a shareholder in an investment in the HPP of Skavica in Albania, which is expected to have 200 MW installed power, and will have a balancing role for the electricity system of Kosovo and Albania, a project which may also be co-financed by the European Union.[9]

Balkan Green Foundation and INDEP considers that the unplanned and uncontrolled exploitation of hydropower reserves is harmful to the environment and society, creates long-term consequences and is not sustainable because it does not comply with international standards, criteria for protecting the river streams and consequently it causes damage to fauna, flora and entails negative impacts on the lives of local communities. There is also a lack of compliance with criteria for the protection of national parks and other areas of special interest from long-term interventions.

3.1 Types of hydropower plants in Kosovo

The existing hydropower plants in Kosovo are mainly hydropower plants without accumulating lakes and big reservoirs, except for HPP Ujman. The vast majority are small hydropower plants (run-off river) that utilize water streams and long pipelines. Most of the hydropower plants, due to the unlevelled terrain and greater downfall potential, are mainly located in mountainous areas and extend to national parks such as Sharri and that of Bjeshket e Nemuna.

Hydropower is generated through the fall of water (potential energy conversion) into mechanical (kinetic) energy through turbines, which then activate generators inside buildings called hydropower plants, where performance check areas - transformers, etc. are located as well.[10]

Kosovo is not a country of great hydropower potential, mainly due to geographical reasons related to the topographic aspect – the general relief of the country is mainly in the shape of a plateau characterized by relatively mild terrain. Another important factor is the geographical position of our country, i.e. it lies at a distance from the sea and in between it is separated by the Albanian Alps, where a large quantity of the humidity in the air in the form of precipitation coming from the sea is barred. These geological and hydrological, conditions, combined with the geographical position affect our country and results in low hydropower potential. Kosovo is the source of rivers, such as for: Drini i Bardhë, Sitnica, Lepenci and as such represents a low base of water flow. The Ibri river is the only one that flows into Montenegro and goes through Kosovo, and possesses the largest hydropower plant in the country.

It is estimated that 1,600 cubic meters of water are available per capita within a year, or a total flow of 121.2 cubic meters per second.[11] Compared to Albania (which is among the richest countries in the

[9] Economy (2018) Lluka and Minxhozi discuss about HPP Skavica. Source: http://www.ekonomia-ks.com/sq/energjetike/lluka-dhe-minxhozi-bisedojne-per-hidrocentralin-skavica
[10] Energy.gov (2019), *How Hydropower Works*. Source: https://www.energy.gov/eere/water/how-hydropower-works
[11] Ministry of Environment and Spatial Planning - KEPA (2015), *Report on the State of Water in the Republic of Kosovo*, Source: http://ammk-rks.net/repository/docs/Raporti_i_ujrave_i_2015_shqip_(2).pdf

world as far as water is concerned), Albania has 13,000 cubic meters of water.[12] Compared to regional countries such as North Macedonia, Kosovo still has low water levels per cubic meter - North Macedonia has about 3,000 cubic meters of water.

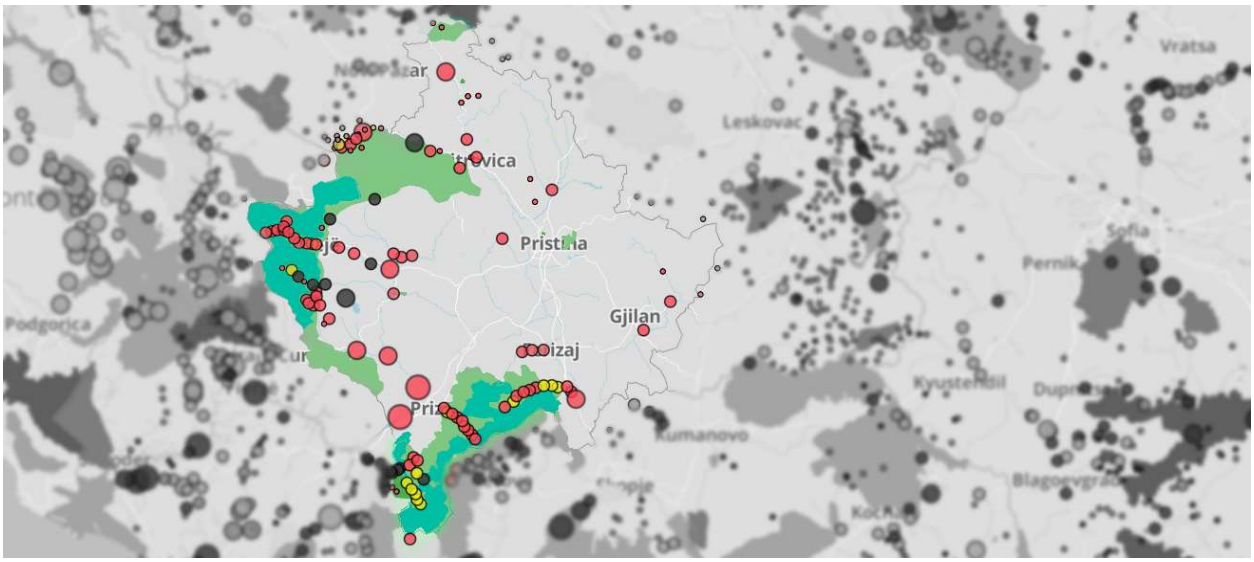

Figure 1. Hydropower plants within national parks and other areas of particular natural importance.[13]

According to KOSTT, there are currently 13 hydropower plants in Kosovo with an installed capacity of 95.7 MW, where their generation level (operational capacity) is usually around 33%.[14] The main hydropower plants of the country are: Ujmani (35 MW), Lumbardhi 1 (8 MW) and Lumbardhi 2 (7 MW), HPP Deçani (9.5 MW), HPP Belaja (7.5 MW), HPP Brodi 1 & 2 (4.7 MW + 1MW), HPP Albaniku 2 (4 MW), HPP Restelica 1 & 2 (2.4 MW), HPP Dikanci (3 MW), etc[15]. Radavci is one of the oldest hydropower plants in the country built in 1934 and is still operational. During the renovation of this hydropower plant, the generating power increased from 0.35 MW to 0.8 MW.[16] Such efficiency can potentially be achieved in other existing hydropower plants by upgrading their technology, as many of them still use out-dated technology.

[12] Stanners et Bourdeau (1995), *Albanian Water Resources*, Source: http://37.139.119.36:81/publikime_shkencore/ALB-RIVERS-WEB-PDF/009-28-Kreu1-Ujerat-Shqiptare.pdf
[13] Riverwatch (2018), *Balkan Rivers Map*. Source: http://riverwatch.eu/en/balkanrivers/map
[14] ERO (2017*). Annual Balance of Electricity and Thermal Energy for 2017*. Source: http://ero-ks.org/2017/Sektoret/Bilanci%20Vjetor%20i%20Energjis%C3%AB%20Elektrike%20dhe%20Termike%20p%C3%ABr%20vitin%202017.pdf
33% is the number resulting from the calculation of installed capacity in relation to total production.
[15] KOSTT (2018), *Installed Electricity Capacities in Kosovo, (Capacity of Generation Units, Mid-Term Planning Sector, p. 2)*. Source: http://www.kostt.com/website/index.php?option=com_content&view=article&id=1001&Itemid=555&lang=sq
[16] Ministry of Economic Development (2017), Energy Strategy 2017-2026, Source: https://mzhe-ks.net/repository/docs/Strategjia_e_energjise_2017-26_-.pdf

As shown in the following illustration, Kosovo covers a minimal amount of its electricity needs by hydro sources. According to KAS data, only 1% of the total energy sources used derives from hydropower.

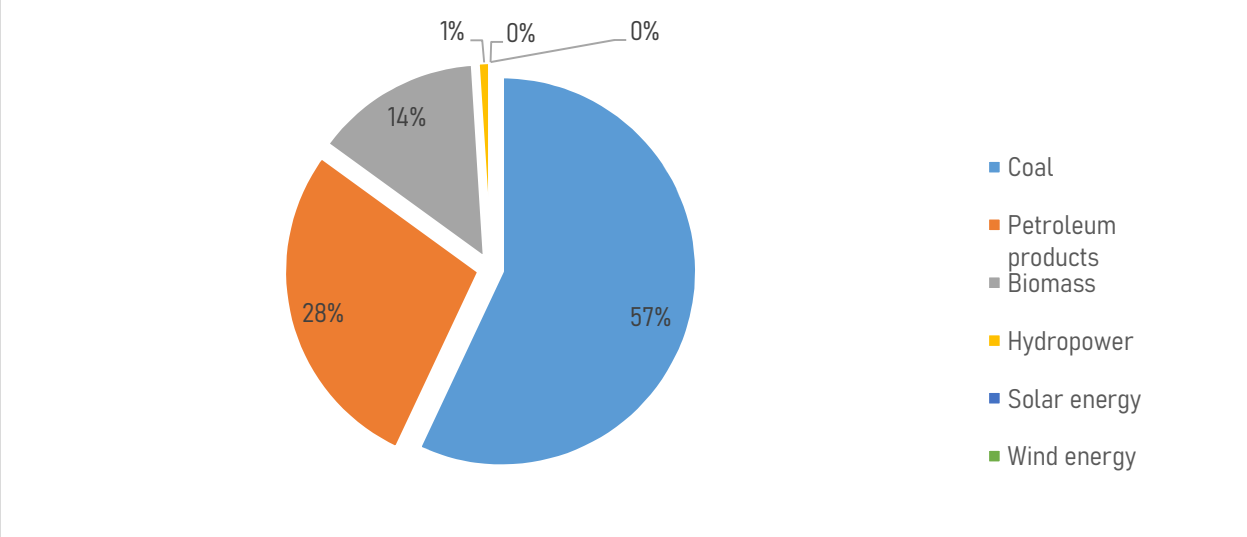

Figure 2. Share of primary energy sources - 2017.[17]

3.2 Stakeholders and legal framework

The main institutional stakeholders related to the operation of hydropower plants (but also other RES) are: Ministry of Economic Development (MED), Energy Regulatory Office (ERO), Ministry of Environment and Spatial Planning (MESP), Kosovo Forest Agency, KOSTT, KEDS, Kosovo Electricity Corporation (KEK), and Municipalities (those in charge of regulating the institution - business - citizen triangle). Moreover, see Annex 7.2 listing the institutions and stakeholders involved in the process of obtaining a permit for a new HPP.

Kosovo has a developed legal framework in regulating the scope of electricity and water generation. Hydropower (part of RES) is regulated by the following laws and Administrative Instructions: Law no. 05/L-081 on Energy; Law no. 05/L-084 on the Energy Regulator; Law no. 05/L-085 on Electricity; Law no. 04/L-016 on Energy Efficiency, as well as the following laws:

- Law no. 04/L-147 on Waters of Kosovo (OGK/No. 10/29 April 2013).
- Law no. 04/L-144 on Allocation for use and exchange of immovable property of the Municipality (OGK/No. 35/17 December 2012).
- Law no. 04/L-110 on Construction (OGK/ No. 18/ 03 July 2013).
- Law no. 03/L-214 on Environmental Impact Assessment (OGK/ No. 83/29 October 2010).

[17] Kosovo Agency of Statistics (2018), *Annual Energy Balance in the Republic of Kosovo 2017*. Source: http://ask.rks-gov.net/media/4142/balanca-e-energjis%C3%AB-2017.pdf

- Law no. 03/L-025 on Environmental Protection (OGK/ No. 06 April 2009).
- Law no. 04/L-060 on Waste (OGK/ No. 17/29 June 2012).
- Law no. 2004/29 on Kosovo Forests (OGK/ No. 34; 01 August 2008).
- Law no. 03/L-043 on Integrated Prevention Pollution Control and Annexes (OGK/ no. 52; 08 May 2009).
- Administrative Instruction no. 7/2017 on Environmental Permits.
- Administrative Instruction no. 01/2017 for the Release of Municipal Environmental Permit.
- Draft Administrative Instruction no. 09/2017 on the establishment one stop shop for renewable energy resources.
- Administrative Instruction no. 06/2017 on Utilization and Support of Energy Generation from renewable sources (which does not provide technical generation efficiency measures for hydropower plants, although those measures are required for other RES)[18]
- Administrative Instruction no. 05/2017 on Renewable Energy Source Target.

3.3 Hydropower plans and strategies in Kosovo

The strategic basis and actionplans in relation to hydropower plants envisage making maximum use of natural resources in the production of electricity in order to approximate targets under the Energy Treaty Community for 25% generation from renewable sources by 2020. The Energy Strategy foresees the installation of hydropower generation capacity of 240 MW by 2020 in Kosovo. These plans and strategies do not coincide with the reality on the ground and the damages coming from these plants have resulted in the failure of many of these projects. This is especially due to the opposition of municipal institutions to these constructions, which do not realize the concrete benefits thereof for their citizens.

The Energy Strategy for 2017-2026 requires that hydropower plants be an important component of RES in Kosovo's medium-term energy future.[19] Kosovo also has a National Water Strategy 2015-2034 serving as a masterplan for water resources development and management by MESP, which foresees the protection and rational use of these resources.[20] Unfortunately, the Energy Strategy and MED's decision to allow the construction of this large number of hydropower plants will adversely affect water resources, making Kosovo one of the countries with the highest water utilization rates in the region.

[18]MED (2017) *AI No.06/2017.* Source: http://mzhe-ks.net/repository/docs/U_A_(MZHE)_NR_062017_PROMOVIMIN_E_SHFRYT%C3%8BZIMIT_T%C3%8B_ENERGJIS%C3%8B__NGA_BURIMET_E__RIP%C3%8BRT%C3%8BRITSHME.pdf

[19] Ministry of Economic Development (2016), *Energy Strategy 2017-2026*, Source: https://mzhe-ks.net/repository/docs/Strategjia_e_energjise_2017-26_-.pdf

[20] Ministry of Environment and Spatial Plannin (2016), *Action Plan for the Climate Change Strategy,* Source: http://mmph-rks.org/repository/docs/Plani_i_Veprimit_per_Strategjine_per_Ndryshime_Klimatike_575795_301792.pdf

Table 1. Technical potential of hydropower plants in Western Balkans countries – 2016.[21]

Country	Total technical potential (TTP)	Utilized technical potential (UTP)		Additional technical potential (ATP)	Share in ATP
	(GWh)	(GWh)	(%)	(GWh)	(%)
Albania	10,273	5,940	58	4,333	10
Bosnia and Herzegovina	24,351	6,535	27	17,816	39
North Macedonia	9,786	1,443	15	8,343	18
Kosovo	423	203	48	220	1
Montenegro	6,648	2,000	30	4,648	10
Serbia	20,489	10,507	51	9,982	22
Total	**71,971**	**26,629**	**37**	**45,342**	**100**

Table 1 shows the utilized technical potential (UTP), additional (remaining) technical potential (ATP) and total technical potential (TTP) by country. The technical potential of hydropower plants is defined as the annual energy that can be generated using current technology, regardless of economic and other constraints. By the end of 2016, Kosovo had utilized 48% of the technical potential of hydropower plants, ranking third behind Albania and Serbia. According to the World Bank, "Kosovo is water scarce, much more so than all its neighbours, and it also has among the lowest level of water resources development and storage. This makes Kosovo very vulnerable to climate shock."[22]

Considering that the water resources are overused in our country, the increase of hydropower plants will increase their utilization even more and may further affect the sustainability of the water supply for drinking, irrigation or other needs. Former Minister of Environment and Spatial Planning, Albena Reshitaj, had promised to suspend further construction permits as authorizations for constructing hydropower plants to date have been given based on the results of the water assessment in 1984.[23]

Table 2. RES indicative targets by 2020 (expressed in MW).[24]

	2013	2014	2015	2016	2017	2018	2019	2020
Photovoltaic energy		3	4	6	7	8	9	10
Wind	1.35	31.35	70	90	110	130	140	150
New small hydropower plants		60	140	150	160	180	200	240
Biomass		2	4	6	8	10	12	14
Total	**1.35**	**96.35**	**218**	**252**	**285**	**328**	**361**	**414**

[21] Western Balkans Investment Framework (2017), *Regional Strategy for Sustainable Hydropower in the Western Balkans (Final Report: Draft V3)*. Source: https://www.wbif.eu/content/stream/Sites/website/library/WBEC-REG-ENE-01-Final-Report-05.12a.pdf
[22] World Bank (2018*), Kosovo Water Security Outlook Report*. Source: http://pubdocs.worldbank.org/en/496071548849630510/Kosovo-Water-Security-Outlook-Report.pdf
[23] Prishtina Insight (2018), *The fight for Kosovo's vanishing rivers*. Source: https://prishtinainsight.com/the-fight-for-kosovos-vanishing-rivers-mag
[24] ERO (2016), *Decision – Feed-in tariffs*. Source: http://ero-ks.org/2016/Vendimet/V_810_2016.pdf

The main plan governing the scope of hydropower plants is the draft (revised) National Renewable Energy Action Plan (NREAP).[25] Table 2 explains MED plans for RES capacities by 2020. This table shows that primary importance will be given to small HPPs compared to other RES sources. Kosovo's plan and its strategic base for the construction of new small hydropower plants is ambitious and greatly stresses the overall water situation in Kosovo.

3.4 Issued permits/monitoring actors and authorizations for HPP construction

The main actor in the country for issuing licenses and authorizations is the Energy Regulatory Office.[26] All entities interested in developing new generation capacities, even for their own needs, are obliged to apply/notify ERO of such initiatives. The ERO, as a regulatory authority, is also mandated to monitor and implement new capacity building agreements and periodically conduct site visits to monitor the progress of processes/investment.

Table 3. Summary of authorizations for construction/operation and admission to the support scheme (feed-in tariffs).[27]

	No. of applications	**Capacity (MW)**
Final authorizations in operation	6	31.3
Final authorizations	19	75.5
Preliminary authorizations	0	0
Pending applications	1	3.3
Total [28]	**26**	**110**

As shown in the table above, out of the new applications for hydropower plants, around 31.3 MW or 6 installations in production have final authorization. Final authorizations that are expected to come into operation soon cover a capacity of 75.5 MW, no applications have been granted preliminary authorization, while 1 application involving a capacity of 3.3 MW is in the application process. After the finalization of these authorizations, Kosovo will have an additional 124 MW of hydropower with about 30% operating capacity during summer-winter variations.

Feed-in tariffs: One of the main factors driving investment in hydropower is the availability of feed-in tariffs that provide and guarantee investors safe returns and profit for up to 12 years. The purpose of this policy is to promote the development of renewable energy, although historically Kosovo has supported more hydropower projects than wind or solar ones. Kosovo still regulates tariffs for consumers - and as such, their setting is regulated by legislation. Due to the non-

[25] Official Gazette of the Republic of Kosovo (2017), *Administrative Instruction (MED) No. 05/2017: Renewable Energy Source Targets 2018-2020.* Source: https://gzk.rks-gov.net/ActDetail.aspx?ActID=14893

[26] For illustration, the link below provides all the steps, permits and consents necessary to construct a (small) RES generation unit: http://ero-ks.org/2017/Autorizimet_Licencat/Aplikacioni%20per%20Autorizim%20-Gjenerator%20te%20VEGJEL.PDF

[27] ERO (2018), *Registry of Applications for Construction of New Generation Capacities and Admission to the RES Support Scheme.* Source: http://ero-ks.org/2018/Autorizimet_Licencat/12_11%202018%20Regjistri%20i%20Aplikuesve%20p%C3%ABr%20Autorizim%20dhe%20Pranim%20ne%20Skemen%20Mbeshtetese.pdf

[28] For more details, see the list of authorizations/licenses issued by the ERO. Retrieved from the ERO: http://ero-ks.org/2018/Autorizimet_Licencat/15_03_2018_Regjistri_i_Aplikuesve_per_Autorizim.pdf

liberalization of the market, consumers do not receive the best possible price but the one regulated by ERO. In fact, customers bear the feed-in tariff costs through a specific payment for the services of the system operators.

Table 4. Feed-in tariffs approved by the ERO on 19 May 2016.[29 & 30]

Solar energy	€ 136.4 per MWh
Hydropower	€ 67.47 per MWh
Biomass	€ 71.30 per MWh
Wind energy	€ 85 per MWh

The eligibility limit for admission of new hydropower plants to the support scheme is 10 MW. Opportunities for large HPPs are limited and may have environmental implications. The support scheme provides a fixed price of 67.47 EUR per MWh over a period of up to 12 years.[31]

3.5 European standards and norms

Kosovo is still at an early stage of implementing the environmental standards required by the European Union. Domestic institutions are mainly focused on transposing and completing European directives into the domestic law, strengthening the institutional and strategic framework and increasing the budget dedicated to the environment.[32]

Two European Directives are related to hydropower indirectly, the Renewable Energy Directive 2009/28/EC and the Water Framework Directive 2000/60/EC, which should be specified in respect of hydropower plants as they are in conflict.[33] Kosovo is not a member of any of the environmental protection mechanisms such as: the Bern Convention, the Aarhus Convention or the *Natura 2000* Convention. Changing the natural flow of water is the basic problem of small hydropower plants. It is therefore of utmost importance to have a strict minimum reserved stream monitoring in order to ensure the protection and existence of ecological and natural habitats.

Kosovo Progress Reports explicitly mention that all hydropower plants must comply with the EU environmental legal framework. They also point out that Kosovo has problems with the capacity of the energy distribution network whereto RES could be connected. Kosovo has pledged to reach the target of energy generation from RES of 29.47% by 2020, although the progress report states that

[29] RES LEGAL Europe (2019) *Kosovo Feed-in Tariff*. Retrieved from: http://www.res-legal.eu/search-by-country/kosovo/single/s/res-e/t/promotion/aid/feed-in-tariff-13/lastp/427/
[30] ERO (2016), *Feed-in Tariff Decision No. VI*. Retrieved from: http://ero-ks.org/2016/Vendimet/V_810_2016_eng.pdf
[31] Ministry of Economic Development (2016), *Energy Strategy 2017-2026*, Retrieved from: https://mzhe-ks.net/repository/docs/Strategjia_e_energjise_2017-26_-.pdf
[32] European Environment Agency (2015), *Kosovo* country briefing - The European Environment — State and Outlook 2015*. Retrieved from: https://www.eea.europa.eu/soer-2015/countries/kosovo
[33] European Commission (2010), *Hydropower and Environment*. Retrieved from: https://ec.europa.eu/energy/intelligent/projects/sites/iee-projects/files/projects/documents/sherpa_report_on_environmental_integration.pdf

even the mandatory target of 25% is difficult to achieve. Bureaucratic delays and the need for obtaining different permits due to the lack of an effective bureaucratic/administrative mechanism are cited as reasons for this.[34]

The progress report also refers to the problem of HPP construction in protected zones, stressing that the fight against illegal construction in protected zones needs to be effectively implemented. Planning infrastructure investments such as hydropower plants, tourism and the industry sector should ensure that the obligations of nature protection are complied with. This is especially important for protected zones and zones of high natural value that could potentially become protected zones under *Natura 2000*.

4. General problems and concrete impacts of new hydropower plants

A problematic fact is that 62% (48 of 77) of existing and planned small hydropower plants are located within zones of particular natural importance, such as national parks, strict nature reserves, special protected zones, and zones with numerous relict and endemic features of flora, vegetation, fauna, natural, plant and animal habitats, etc. This poses a great risk that these zones will be permanently damaged and the country's natural landscapes and water resources will be degraded.

In May 2018, the Ministry of Environment and Spatial Planning took a decision to impose a moratorium on the construction of hydropower plants in the country until the completion of a new assessment of ground and surface water. A full review of permits for new HPPs will also be undertaken. This was done in order to assess the overall state of the sector and to protect nature.[35] This initiative represents a positive step since an updated groundwater assessment would replace the assessment carried out in 1984, which was used to authorize the construction of hydropower plants to date.

Based on Kosovo's strategies and plans for new hydropower plants, some of the planned SHPPs are in strictly protected zones. Construction of these hydropower plants near areas of special natural importance (Zone 1) is a punishable ecological crime[36] and damages the sustainability of national parks and seriously damages the biodiversity of these areas, and in particular, it adversely affects the fauna and potentially the tourism of that country. Zoning is a process that determines the

[34] European Commission (2016), *Kosovo Report 2016*, Source: https://eeas.europa.eu/sites/eeas/files/20161109_kosovo_report_2016_alb.pdf
[35] Economy (2018), *Minister Reshitaj promises to terminate all new licenses for hydropower plants. (Ministrja Reshitaj premton të nderprejë të gjitha lejet e reja për hidrocentrale).* Source: http://www.ekonomia-ks.com/sq/energjetike/ministrja-reshitaj-premton-te-nderpreje-te-gjitha-lejet-e-reja-per-hidrocentrale
[36] Official Gazette (2019), Criminal Code of the Republic of Kosovo. Source: https://gzk.rks-gov.net/ActDetail.aspx?ActID=2834

ecological value of the zone; the First Zone and the Second Zone do not allow the construction of hydropower plants.[37]

A big problem with the constructions of these hydropower plants is that they lack transparency, environmental standards, and there is the possibility of being manipulated with different permissions. Changing the destination of the zoning map, from Zone 1, or Zone 2 to Zone 3, is done in order to benefit from these capacities and incentive fees. Public debates are also lacking, and the demands and concerns of residents or even local authorities are not taken into account, on the other hand, they have nowhere to complain and consequently, social conflicts also arise.

The Balkan Green Foundation and INDEP considers that hydropower plants have mainly these problems and negative impacts:

Social as they can consequently cause:

Social Conflicts/Protests: – Residents' objections due to expropriation, loss of access to water, potential weakening of tourism etc. A large part of the rural population uses groundwater for drinking, but also for irrigation.

> During February 2019, the Inter-ministerial Committee for Strategic Investments said that the proposals submitted by Kelkos Energy met the technical criteria for being considered as strategic investment projects. This decision resulted in an outburst of reactions from local government and environmental activists who stood together against the construction of hydropower plants on the Lumbardhi River in Peja. There have been protests in the town of Peja on this issue, with hundreds of citizens rallying to oppose the construction of the hydropower plant in that area. The Prime Minister of Kosovo, Ramush Haradinaj, has announced that he demanded immediate termination of procedures for the construction of hydropower plants in Lumbardhi River in Peja.

Political as it can affect:

Conflict of interest/Distortion of political will: – The connection between businesses and politicians, especially in obtaining licenses and authorizations for the construction and operation of these HPPs. There are cases when certain stakeholders put pressure on the local and central level to allow investments in HPPs in protected zones or elsewhere. There are times when the local community is ignored and its will is distorted by irresponsible individuals or stakeholders.[38]

[37] This separation is made in compliance with the Laws on the National Parks "Bjeshket e Nemuna" and "Sharri" which require that the park areas have 4 zones which differ according to their protection regime. They are: 1. the first area - strict protection; 2. the second area - active management; 3. the third area - sustainable use; 4. the buffer zone - outside the park, 50 meters from the park border.

[38] Insajderi (2016), *Hydropower plant of Shaip Muja's brother's receives the support of the PDK in Kacanik* (*Hidrocentrali i Vëllait të Shaip Mujës merr Mbështetjen e Kaçanikut të PDK-së*) Source: https://insajderi.com/hulumtime/hidrocentrali-vellait-te-shaip-mujes-merr-mbeshtetjen-e-kacanikut-te-pdk-se/

In an effort to meet the European Union's objectives for alternative energy production, Kosovo authorities have mobilized in issuing licenses for the construction of hydropower plants. One of the beneficiaries is the brother of Shaip Muja, a former MP of PDK. "Afa Energy" Company, where Fatmir Muja is a stakeholder, is facing opposition from residents and non-governmental organizations in Kacanik, who consider the construction of the hydropower plant in the Lepenc River Basin as harmful.

Subsidization of hydropower plants – Taxing the entire population that pays for electricity through feed-in tariffs for these projects that may harm the environment and tourism and from which some private companies benefit.

According to the law, hydropower plants constructed by Kelkos Energy still do not have approval to produce electricity as they have not completed their environmental impact study, but as it can be seen, this does not stop Kelkos. They not only produce electricity illegally, but they do it in the most degrading way possible.

Economic as it affects:

Irrigation and drinking water – Irrigation for agricultural needs may be damaged due to the diversion of the water flow. Construction of HPPs can cause contamination of drinking water with polluting materials and reduction of groundwater level.

Tourism – Gastronomic, rural tourism, water recreation activities, mountain tourism/hiking, etc., can also be affected due to the change of landscape and the change in the natural flow of rivers.

Energy balance – The electricity produced varies with summer/winter, having major implications and making these HPPs not provide continuous and stable electricity.

Degradation of agricultural lands: – Erosion, lack of irrigation water, expropriation, reduction of ground and surface water levels.

Environmental as they can affect: [39]

Destruction and modification of natural habitats – Works for the construction of these facilities have negative impacts on the natural environment of many living beings, which are damaged both during construction and during operation/maintenance and which undergo a major and often irreparable change (example - motor oils or oils for cooling the hydropower plant turbine rotor).

Kelkos Energy violated the contract with Kosovo exactly during the construction of hydropower plants, since it did not protect the small streams that run near the river, which was required by law. During discussions between officials of Decan municipality about this issue, they unofficially confirmed this, but the contract was never made public.

[39] Prishtina Insight (2018) *An open letter to Haradinaj on the degradation of nature in the Decan canyon*. Marrë nga: https://prishtinainsight.com/an-open-letter-to-haradinaj-on-the-degradation-of-nature-in-the-decan-canyon/

Soil erosion – Due to various constructions, pipeline installations, hydropower plants construction and opening of new roads.

> On the pretext that it is constructing water wheel in Zall i Rupes, Kelkos Energy destroyed the rare characteristics of the wild river that was one of the last of its kind in the Balkans. Since the river bed was gravelly, Kelkos robbed tons of gravel and left behind only holes filled with water that endanger the lives of passersby and mountain dwellers living and working there. When the gravel of the excavated space was no longer needed, Kelkos came to the conclusion that the Zall i Rupes was apparently not good terrain for the construction of a water wheel, which should have been known during the proposal phase.

Damage to forests and nature – This also happens directly during the construction phase but may also occur during operation/maintenance, where the biodiversity of that zone is affected and impacted by the presence of people in their natural habitat.

> As a condition for the construction approval, Kelkos Energy had to construct a park in Decan with an investment of one million Euros. The park that was constructed looks more like a surface covered in rocks and cement which is not worth even 1 per cent of the promised budget.

Drying of rivers – This happens due to the redirection of water flow in hydropower plants pipes, as a result, entire parts of rivers can be completely dried up, and part of these flows pass completely beneath the surface of the earth, which has a catastrophic impact on biodiversity. It also directly affects the natural erosion of those areas, especially from heavy rains and winds.

> The law requires that there always needs to be a minimum of 30 per cent of the water on the riverbed. Yet, according to reports from residents, Kelkos left the riverbed bare, running 100 per cent of the water through pipes, which results in the destruction of biodiversity and the river.

Water pollution due to works – Surface water can be polluted by the works, whereas groundwater by motor oils or by turbulence, directly affecting living beings in these habitats.

Environmental pollution during maintenance: – Impedes the life of fauna during day-to-day maintenance of HPPs (i.e. arrival and departure of workers).

4.1 Case Study: the National Park "Bjeshket e Nemuna" - Lumbardhi Cascade

Since 2012, Bjeshket e Nemuna has been officially a national park and a special protected zone by law. Despite this, the institutions of the government of Kosovo plan to construct a large number of HPPs, a total of 21 new ones only within the National Park "Bjeshket e Nemuna". The hydropower plant of Belaja, Decan and Lumbardhi 1 & 2 with a total of 31 MW installed are currently located in this park.

Most of the hydropower plants planned to be constructed will be exactly in these zones or pretty close to them, which will cause numerous problems and interference, especially for the fauna. The situation will worsen especially in the Lumbardhi River in Peja, where a number of hydropower plants are planned, which are mainly in the protected Zone 1 of the park. The situation is also bad in the Lumbardhi River in Decan, where there are already several hydropower plants operating and increasing their numbers will aggravate the situation even further.

Recent investments in the valley of Lumbardhi of Decan by the Austrian company Kelkos Energy have resulted in numerous environmental problems, with incomplete and failed projects that have overshadowed investments in the entire hydropower sector. This case has prompted the Municipality of Decan to take legal action threatening to sue the company in question and the MESP itself for not respecting the biological minimum.[40]

Some of the most beautiful areas and mountains in Kosovo are at risk of being irreversibly destroyed by brutal intervention with the aim of generating electricity from water, in the context of increasing the level of renewable energy. "Residents of the city of Decan are alarmed by the very rapid growth of development projects that endanger rivers and mountains from environmental degradation but also have a direct effect on the lives of the population there".[41]

Thus, the Municipality of Decan and that of Peja have taken a stand to categorically stop new hydropower plants constructions in Lumbardhi of Decan and that of Peja, where these projects are seen as a degradation of nature and as significantly impeding tourism development and and are in conflict with municipal development plans and projects and have a negative impact on tourism.[42] Only certain groups of interest are benefiting from these projects, not the citizens of Decan or Peja and therefore it was decided not to issue construction permits for small or large hydropower plants in those areas, despite being granted permission by other central level institutions.

Thus, despite all national concerns and widespread social debate against the construction of hydropower plants in special zones and the imposition of a temporary moratorium on the construction of new hydropower plants by MESP until the establishment of a new study on the state of waters in Kosovo, the Inter-Ministerial Committee for Strategic Investments has given the green light to continue these projects.[43] Consequently, the investor Kelkos Energy who is the same investor in the Decani Gorge, instead of being prevented for the numerous violations committed there but also because of the loss of license, was rewarded with the continuation of a project worth 97 million euros that will do irreparable damage to the Lumbardhi Gorge in Peja.

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[40] Municipality of Decan (2018), *Press and electronic media release* (*Komunikatë për mediat e shkruara dhe elektronike)*. Source: https://kk.rks-gov.net/decan/news/komunikate-per-mendiat-e-shkruara-dhe-elektronike/

[41] Kallxo.com (2018), *The suffering of the Decani Gorge from hydropower plants (Vuajtja e Grykës së Deçanit nga hidrocentralet)*. Source: https://kallxo.com/vuajtja-e-grykes-se-decanit-nga-hidrocentralet-foto

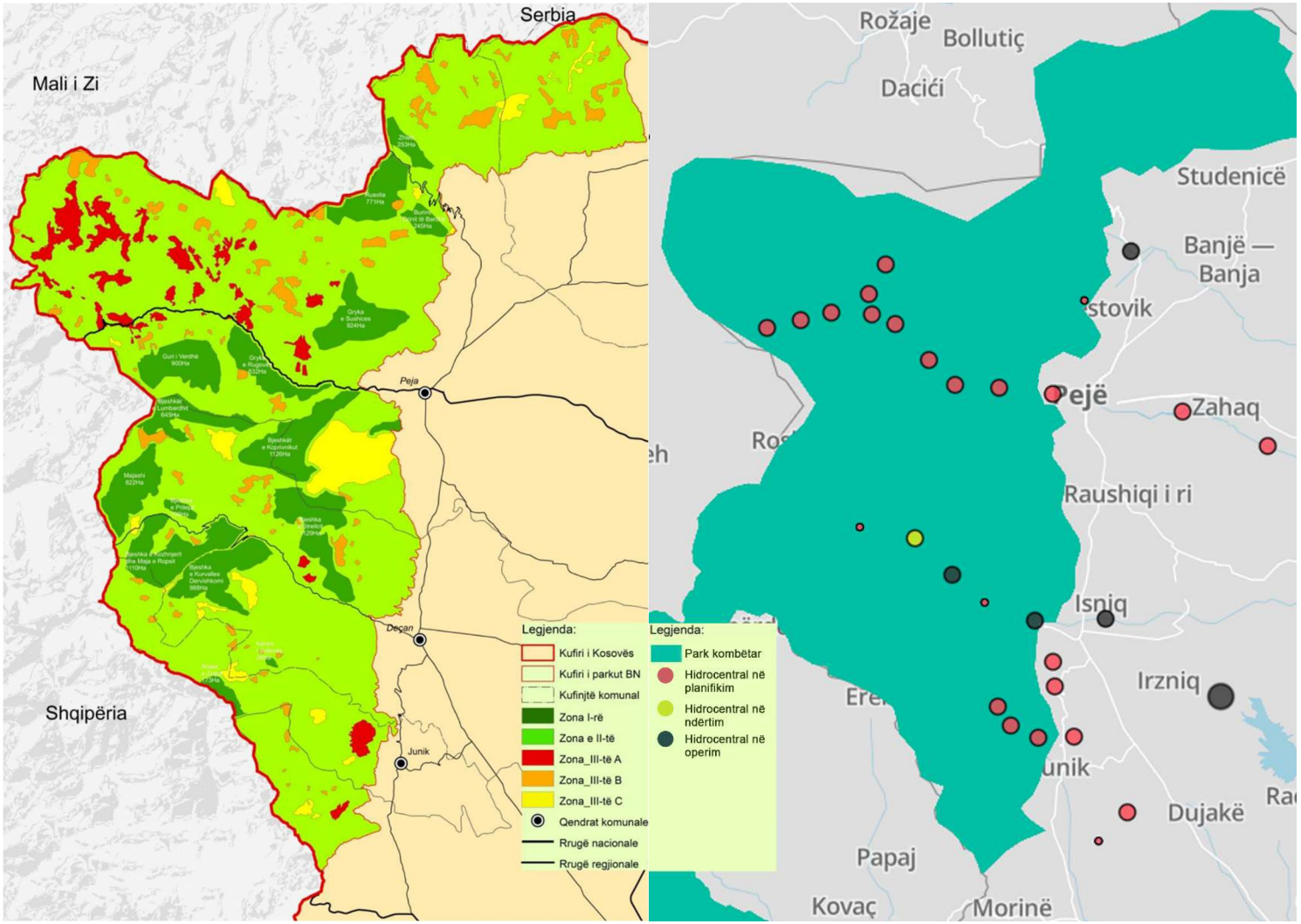
[42] Gazetaexpress (2016) *Mayor of Peja, against the construction of hydropower plants in Rugova (Kryetari i Pejës, kundër ndërtimit të hidrocentraleve në Rugovë)*. Source: https://www.gazetaexpress.com/lajme/kryetari-i-pejes-kunder-ndertimit-te-hidrocentraleve-ne-rugove-265288/?archive=1

[43] Ministry of Trade and Industry (2019), *Two more investors have met the technical criteria, they are planning to invest 225 million euros*. Source: https://mti.rks-gov.net/Page.aspx?id=1,%203,758

This project, which envisages the construction of about 5 small hydropower plants, and a large hydropower plant of about 40 MW[44] and with a pipeline extension of 25 KM, will have major consequences for the sustainable development of the Rugova and Peja Gorge, will negatively affect tourism, will make irreparable ecological damage, therefore, it is also actively being opposed by the Rugova and Peja communities.[45] Thus, the Prime Minister of Kosovo, Ramush Haradinaj, has openly stated that this project will be stopped and reviewed and that it will not be allowed to act against the legitimate interests of Rugovans, all after the organized protests and others called.

[44] ERO (2016). *V_796_2016*. Source: http://ero-ks.org/2016/Vendimet/V_796_2016.pdf
[45] Green Kosovo (2019), *Peja Municipality Mayor is Against the Building of Hydropower Plants in the Stream of Lumbardhi*. Source: http://greenkosovo.com/peja-municipality-mayor-is-against-the-building-of-hydropower-plants-in-the-stream-of-lumbardhi

Figure 3. National Park "Bjeshkët e Nemuna": Zoning under MESP (on the left) and existing and planned hydropower plants (on the right).



Source: MESP (2015) & Riverwatch (2018)

As can be seen from the comparison of these two maps in Figure 3, these hydropower plants fall into important and sensitive zones of biodiversity. These are Special Zones protected by law, where interference and modification of that space is not permitted.[46] Of concern is the fact that in certain cases an inter-ministerial council is established which has the executive power to change certain zones from the **First Zone** to the **Third Zone**. Construction of hydropower plants is allowed in Zone 3. In Zones 1 and 2 this is not possible. Such a possibility is unfair and must be regulated legally. Such competence of defining zones and zoning maps should be exclusively experts' responsibility and there should be no politicization and political influence on it, and moreover, they should not be constructed in national parks.

Also of concern is the planning of the intervention in the area of Junik where several hydropower plants have been planned to be constructed, and where all that area is of rare natural beauty and of great biodiversity value.

4.2 Case Study: the National Park "Sharri" - Lepenc Cascade

The National Park of "Bjeshket e Sharrit" has been a national park since 1986. This area includes the largest number of hydropower plants planned to be constructed there and that have been constructed in recent years with an increased work dynamics, with a total of 32 projects planned (Source: Riverwatch). One of the most powerful rivers in terms of hydropower intended to be used for Kosovo's economy was Lepenci in the Iber-Lepenci hydro system, but it was never completed. This was a project aimed at irrigating land and using water for industrial purposes. It is in this river that several hydropower plants are being constructed and the most important one is the Lumbardhi 3 hydropower plant with a capacity of about 10 MW. Most applications in ERO for new hydropower plants that are on the list of final authorizations are located right in this park and in the Lepenc River Basin.

Similar to the National Park "Bjeshket e Nemuna", problems have also been identified in the basin of this river where many hydropower plants are planned to be constructed. The organization "Gjethi", in their study "*The rationale for the construction of new hydropower plants in the Lepenc River Basin, and why it should not be continued with their construction*", gives strong arguments for environmental destruction and mentions environmental degradation, the unilateral economic benefits of different operators and mentions the social, economic losses from these constructions that are associated with changing river flows by thrusting them into pipes and damaging the ecosystem as a whole.

Among other things, it also mentions problems with water supply for the residents of the municipalities of Hani i Elezit and Kacanik, who already have problems with water supply. Adverse effects also result from the failure to implement the legal framework and standards during the

[46] Official Gazette (2008), *LAW NO. 03/L-039 ON SPECIAL PROTECTIVE ZONES*. Source: https://gzk.rks-gov.net/ActDocumentDetail.aspx?ActID=2529

construction phase and making these plants functional which have a direct effect on the quality of water. Also worth mentioning is the abuse of the will of the citizens through false representation and the power of stakeholders.[47]

Rivers have dried up in Brezovica and in many other places due to change in water flow from SHPP. There are reported problems, especially in the Sharr Mountains in Dragash and in the area of Gora, where there have been drying and diversion of rivers and consequently conflicts and civic resistance from local residents who have opposed the construction of hydropower plants almost everywhere. The Municipality of Prizren, due to numerous environmental and social problems, has stopped the construction of hydropower plants.[48]

5. Conclusion

Renewable energy is the future of Kosovo's energy system. As such, its proper use is crucial to ensure that the energy transition is in the function of protecting the environment and enhancing the quality of the life of its citizens. Allowing the development of such a large number of hydropower plants in protected zones and ecological networks is unacceptable: planning as such is unrealistic and carries long-term consequences and unnecessary environmental implications. Kosovo is scarce in water, much scarce than all its neighbours, and also has the lowest level of development and conservation of water resources. The remaining small amount of water used for drinking, irrigation and industrial purposes should not be used by Kosovo for generating a token amount of electricity which has only about 30% operating capacity compared to the installed power capacity.

Economically, these hydropower plants would not be very profitable nor would they be able to form an important base of electricity production - this directly related to the water permit (consent) that is valid from October to May, i.e. at the time when there is precipitation, a phenomenon that is also being affected by global warming and climate change. This, among other things, makes these hydropower plants uncompetitive compared to other alternative sources of energy.

It is also important that Kosovo complies with European norms and standards and consequently respects those protected zones that may in the future advance to zones regulated by European directives prohibiting the construction of hydropower plants such as potential zones to be part of the Natura 2000 list. A significant problem and a serious concern relates to strict zones which by political decisions are modified from Zone 1, 2 to Zone 3, in order to enable the construction of these hydropower plants.

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[47] EPO "Gjethi" (2017), The rationale for the construction of new hydropower plants in the Lepenc River Basin, and why it should not be continued with their construction (*Arsyeshmëria e ndërtimit të hidrocentraleve të vogla në Pellgun e Lumit Lepenc dhe pse nuk duhet vazhduar me ndërtimin e tyre)*. Source: https://www.linkedin.com/pulse/arsyeshm%25C3%25ABria-e-nd%25C3%25ABrtimit-t%25C3%25AB-hidrocentraleve-vogla-n%25C3%25AB-pellgun-stagova/?fbclid=IwAR2wgcXbc7o2tcwtPi_xLeq6Mo46Mv5T0iHe7OfZzqu4ZV_0vdHX8d_Ycmc

[48] KOHA (2018), *Moratorium për ndërtimin e hidrocentraleve të vogla në Luginë të Lumbardhit të Prizrenit*. Source: https://www.koha.net/kosove/119198/moratorium-per-ndertimin-e-hidrocentraleve-te-vogla-ne-lugine-te-lumbardhit-te-prizrenit

Kosovo has no real basis to accommodate such a proposed number of new hydropower plants, which would be largely built in the national parks of Sharr and Bjeshkët e Nemuna (48 of them planned) the biodiversity of which would be damaged and their tourist and general value would decrease. There is no economic activity without an impact on the environment and the deployment of all these hydropower plants (the majority of new projects) would constitute an ecological crime and a degradation of our natural values. National parks must remain intact and free from these intrusions, as they represent monumental natural heritage for future generations, places of relaxation and inspiration, and as such no one has the right to deny this to them.

The construction of new energy capacities has not been carried out with the righthful planning that would take into account the capacities, environmental impact and needs and attitudes of local institutions and other social actors. This pronounced hitch on planning also manifests itself in the drafting of energy strategies in which the potentials of different technologies are performed without serious study and in which projects such as the Zhur Hydropower Plant with no real perspective for development are included. At the same time, planning lacks expanded discussion regarding specific projects in which citizens could express their requests.

Effective mechanisms of project implementation monitoring are lacking. The Energy Regulatory Office, the Environmental Inspectorate and other mechanisms have failed on ensuring that projects comply with environmental standards and their legal obligations. In the absence of supervisory mechanisms, companies have in many cases abused licenses and failed to comply with contract conditions. This lack of inspections and penalties has resulted in damaged zones and illegal activities and consequently has been accompanied by social problems as well.

There is a conspicuous lack of inter-institutional coordination in terms of setting priorities but also in overseeing project implementation. This lack of coordination is also reflected occasionally in even confrontational attitudes between the Ministry of Economic Development, the Energy Regulatory Office, municipalities and so forth. The lack of inter-institutional coordination has created stagnation in the functioning of institutions and a vacuum in the implementation of a unified country policy.

6. Recommendations

1. Policy-making should focus on the environment in the drafting of strategies and the re-evaluation of the potential of renewable sources for electricity generation in Kosovo. Consequently, the indicative targets should be reviewed by the Ministry of Economic Development and SHPP sources. As a result, projects to construct new water capacities should be strictly prohibited in national parks and nature protected zones. The development of these policies should be fully transparent by including citizens, the community and civil society.

2. Legal mechanisms, in particular legal measures enabling the change of designation of protected zoning areas in national parks should be prohibited. Change of designation from Zone 1 or Zone 2 to Zone 3 shall be prohibited unless the relevant experts determine it as such and the institutions implement it.

3. As the country's energy regulator, ERO should only issue permits when environmental criteria and standards are met and construction of new generators only in sites suitable for hydropower plants is allowed. Consequently, an independent study by specialized agencies should be conducted in order to identify sites suitable for SHPPs which would undergo a professional assessment of environmental impact prior to being granted a license or authorization. Rules and licensing for new projects should be environmentally friendly and in line with community requirements and needs.

4. Reserved river flow shall be strictly monitored by the competent institutions, especially during the summer season, with full compliance to water permit and biological minimum of 30% as determined by administrative instruction.

5. Multiple schemes should be used as a method for minimal environmental impact and efficient utilization of hydro resources. This may be done through maximal utilization of irrigation canals for electricity generation, or the adaption of older mills for power generation to existing systems or lakes for drinking water with large flow/fall rate etc.

6. More monitoring is needed by MESP for hydropower investment operations. The digitalization of the monitoring system, the publication of the results of this monitoring would have a positive impact on the transparency of these projects and would ensure a better performance in relation to the environment. Most operators abide by legal obligations, although Balkan Green Foundation and INDEP considers there is room for improvement in monitoring the work of existing hydropower plants operating in the country.

7. The moratorium imposed by MESP on the prohibition of new hydropower plants construction shall continue until the publication of a detailed and scientific analysis on the real potential and state of waters in Kosovo and this shall serve as a basis of the masterplan regulating the construction of new hydropower plants or of those in the process of planning/construction/operation.

8. Hydropower plants shall not be used for mere business purposes, environmental and European standards shall be taken into account in implementation regarding the construction of hydropower plants as they are lacking. The environment is more important for the sustainable development of Kosovo than the degradation of nature for a few MWh that do not have an impact on meeting the country's high energy demand.

9. RES development state policies shall be oriented to those with lower environmental but higher economic impact that create more jobs and positively affect the economy. Such energy projects with much greater potential in Kosovo shall come from wind and solar sources being an almost unutilized potential of Kosovo. Balkan Green Foundation and INDEP welcomes recent MED proposals for capacity allocation in the support scheme from hydro energy to wind energy.

10. In order for hydropower plants to be sustainable and not create conflicts with local communities, there should be full involvement of relevant actors in these projects that use water and the most cost-effective ways of utilizing water resources should be identified. Finding the most appropriate solutions through effective communication of all parties involved enables understanding between the parties.

11. Greater inter-institutional coordination is needed. The Ministry of Economic Development, the Ministry of Environment and Spatial Planning, the Energy Regulatory Office, municipalities, the inspectorate and other institutional mechanisms should coordinate their policies in order to maximize the positive effects on investment. Inter-institutional coordination is necessary to ensure that drafting and implementation of policies is in line with Kosovo's commitments in the field of renewable energy and environmental protection and their implementation takes into account the socio-economic needs of the population.

7. Annex

7.1 Hydropower plants in the country

Table 1. Hydropower plants in Kosovo, connected to the transmission network. Source: KOSTT, 2018

HPP	Generator	Year of commissioning	Visible Power (MVA)	Installed power (MW)	Neto (MW)
HPP Ujmani	G1	1981	19.5	17.5	16
	G2	1981	19.5	17.5	16
Total of Ujmani			**39**	**35**	**32**
HPP Lumbardhi 1	G1	1957/2005	5.05	4.04	4.00
	G2	1957/2005	5.05	4.04	4.00
HPP Lumbardhi 2	G1		6.38	5.4	5.20
EGU Belaja	G1	2015	5.88	5.29	5.00
	G2	2015	3.11	2.79	2.50
EGU Decani	G1	2015	11.24	6.66	6.50
	G2	2015	5.47	3.15	3.00
HPP - Cascade of Lumbardhi			**42.18**	**31.37**	**30.20**
Total transmission-connected HPPs			**81.18**	**66.37**	**62.20**

Table 2. Kosovo has these hydropower plants directly connected to the distribution network. Source: KOSTT, 2018

HPP	Generator	Year of commissioning	Visible Power (MVA)	Active Power (MW)
HPP Radavci	G1	1934/reconstruction 2010	0.5	0.45
	G2	1934/reconstruction 2010	0.5	0.45
Total of HPP Radavci			**1**	**0.9**
HPP Burimi	G1	1948/reconstruction 2011	0.475	0.427
	G2	1948/reconstruction 2011	0.475	0.427
Total of HPP Burimi			**0.95**	**0.854**
HPP Dikanci	G1	1957/repair phase 1-2010	0.55	0.5
	G2	1957/repair phase 1-2010	0.55	0.5
	G3	February 2013/ New	2.921	2.34
Total of HPP Dikanci			**4.021**	**3.34**
HPP Brodi 2	G1	Fransis turbine type, 2015		2.8
	G2	Pelton turbine type, 2015		2.2
Total of HPP Brodi 2			**0**	**5**
HPP Restelica 1 & 2	G1	Pelton turbine type, 2015		1.2
	G2	Pelton turbine type, 2015		1.2
Total of HPP Restelica 1 & 2			**0**	**2.4**

HPP Hydroline-Albaniku 3	G1	Hitzinger, end of 2015	3.6	3.147
	G2	Hitzinger, 2016	1.4	1.068
Total of HPP Hydroline-Albaniku 3			**5**	**4.215**
Hydropower (Lepenci 3)				4.4
				4.3
				1.3
Group Matkos (HPP Brezovica)				2.1
ECO Energy (HPP Binqa)				0.6
Total HPPs connected to Distribution				**29.409**

7.2 Institutions and actors related to provision with permit for new HPP

1. Kosovo Business Registration Agency
    - Business Registration
2. Ministry of Environment and Spatial Planning
    - Environmental permit
    - Water Use Permit
    - Building permit (for installed capacities with power over 10 MW)
3. Permit from:
    - Kosovo Forest Agency - if construction takes place in the forest
    - Ministry of Culture, Youth and Sports - if construction takes place in an special interest zone
4. Ministry of Infrastructure
    - Permit for connection to existing road infrastructure
5. Municipality
    - Building permit (for installed capacities with power below 10 MW)
    - Land Use Contract
6. KEDS and KesCo
    - Authorization for connection to the power distribution system
    - Contract for the purchase of electricity from the supplier
7. Energy Regulatory Office
    - Licensing for power generation (for installed capacities with power over 5 MW)
    - Power Generation Authorization (for installed capacities with power below 5 MW)