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Why hydropower in southeast Europe is a risky investment

save the blue heart of europe

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Preparatory works at the site of the Skavica hydropower plant, Albania

Photo: Andrey Ralev

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Summary

Hydropower, together with coal, has traditionally played a major role in the power systems of southeast Europe,[1] with particularly high shares in Albania, Montenegro and Croatia.[2] And today, southeast European governments, utilities and energy experts are keen to build even more hydropower.

In the last two decades, hundreds of 'small' hydropower plants under 10 megawatts (MW) have been built across the region, often in protected areas or other highly sensitive habitats, but attempts to build greenfield hydropower plants of larger than 10 MW have been much less successful, with only Albania and Slovenia managing to do so.

Yet project developers continue to push plans for new large hydropower projects, diverting resources and effort from developing quicker and more economic alternatives. Bosnia and Herzegovina is particularly ambitious, despite its failure to complete a single greenfield[3] large hydropower plant in the last decade.

This briefing explains the risks behind hydropower projects in southeast Europe and shows that it will only get harder to build them in the future, due to climate vulnerability, the region's unique biodiversity, legal issues, public resistance and financing issues. It also recommends lower-risk investments that can help the region move towards a more environmentally, socially and economically sustainable energy system.

In an annex, it also highlights nine cases from across the region of particularly high-risk hydropower plants:

- Skavica, Albania
- Bistrica B-1, B-2, B-3, Bosnia and Herzegovina
- Buk Bijela / Upper Drina, Bosnia and Herzegovina
- Dabar / Upper Horizons, Bosnia and Herzegovina
- Ulog and Upper Neretva, Bosnia and Herzegovina
- Janjići, Bosnia and Herzegovina
- Yadenitsa, Bulgaria
- Kosinj/Senj II, Croatia
- Komarnica, Montenegro

[1] *There is no standard definition of southeast Europe. For the purposes of this briefing it refers to Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Kosovo, Montenegro, North Macedonia, Serbia and Slovenia.*

[2] *Author's calculation based on data from International Energy Agency Data and Statistics, 2010-2020, except for Montenegro 2020 statistics, which were not available on the IEA website. These were taken from Government of Montenegro, Predlog odluke o Energetskom bilansu Crne Gore za 2022. godinu, 2 December 2021.*

[3] *The Bočac 2 plant started operating in 2018 and was built largely on existing infrastructure.*

Introduction

Hydropower has traditionally played a major role in many of the power systems of southeast Europe,[4] with particularly high shares in some Western Balkan countries.[5] Together with coal, hydropower has formed the backbone of electricity generation in the region for many decades. In the 2010-2020 period it provided on average around one-third of electricity in the Western Balkans.[6] As can be seen on the graphs in Annex II, most Western Balkan countries are particularly reliant on these two sources even compared to nearby EU countries.

Albania is almost 100 per cent hydropower-dependent for domestic generation, Montenegro around 50 per cent, and Bosnia and Herzegovina depends on hydropower for around a third of its electricity generation.[7] In North Macedonia, hydropower makes up just under a quarter of domestically generated electricity and in Serbia around 28 per cent.[8] Kosovo uses the least hydropower in the Western Balkans – it made up only around three per cent of domestic generation between 2010 and 2020.

As for the southeast European EU members, Croatia is dependent on hydropower for around half of its domestic electricity generation[9] and Slovenia for just under a third.[10] Bulgaria is much less reliant, with hydropower making up around 10 per cent of generation.[11]

It is therefore unsurprising that when the need to develop renewable energy entered the political agenda at the EU level in the late 1990s and early 2000s, southeast European governments, utilities and energy experts mainly understood this as an opportunity to build more hydropower. It is an energy source they are familiar with, estimates from previous decades indicate massive unrealised potential, and they have a plethora of ambitious but unrealised projects in their filing cabinets ready to dust off and relaunch.

Parts of the region are often claimed by governments and hydropower companies to have very high and largely untapped hydropower potential. For example, a 2019 Albanian government brochure claimed that only 35.4 per cent of the country's hydropower potential had been used so far.[12] Yet these are usually based on decades-old estimates from a time when rainfall was more predictable, people hardly dared to oppose expropriation, and little was known about the region's astonishing biodiversity.

In the last 15 to 20 years, hundreds of 'small' hydropower plants under 10 MW have been built across the region, wreaking environmental havoc on rivers and streams, often in protected areas or other highly sensitive habitats. These have largely been driven by feed-in tariff schemes[13] and as these are phased out in most of the countries,[14] the level of interest in such projects has started to fall.

Attempts to build greenfield hydropower plants of larger than 10 MW have been much less successful, with only Albania and Slovenia managing to do so.

Albania has added more than 600 MW of large hydropower since 2010[15] and Slovenia[16] has also managed to build several plants. Other countries in southeast Europe have built only smaller plants that contribute little to the overall electricity supply.

In the decade up to 2010, Bosnia and Herzegovina built two large greenfield plants and Bulgaria and Croatia built one each,[17] but the latter two have been far from successful, as will be explained below.

[4] *There is no standard definition of southeast Europe. For the purposes of this briefing it refers to Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Kosovo, Montenegro, North Macedonia, Serbia and Slovenia*

[5] *The Western Balkans comprises Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia.*

[6] *Author's calculation based on data from International Energy Agency Data and Statistics, 2010-2020. At the time of writing in late June 2022, IEA data for 2021 was not yet available.*

[7] *Author's calculation based on data from International Energy Agency Data and Statistics, 2010-2020, except for Montenegro 2020 statistics, which were not available on the IEA website. These were taken from Government of Montenegro, Predlog odluke o Energetskom bilansu Crne Gore za 2022. godinu, 2 December 2021.*

[8] *Ibid.*

[9] *Not including the Krško nuclear power plant which is half-owned by Croatia but located in Slovenia. The electricity generated by the plant is counted as imports.*

[10] *Total generation including the Krško nuclear power plant – even though Croatia receives half of the electricity, the generation is counted in Slovenia.*

[11] *Author's calculation based on data from International Energy Agency Data and Statistics, 2010-2020, except for Montenegro 2020 statistics, which were not available on the IEA website. These were taken from Government of Montenegro, Predlog odluke o Energetskom bilansu Crne Gore za 2022. godinu.*

[12] *Albanian National Agency of Natural Resources, Hydro-Energetic Potential of Albania, May 2019.*

[13] *CEE Bankwatch Network, Western Balkans hydropower: Who pays, who profits?, September 2019.*

[14] *For an overview of the situation in the Western Balkans, see CEE Bankwatch Network, Cutting hydropower subsidies – how are the Western Balkans doing?, February 2022.*

[15] *More information about hydropower plants in Albania can be found in Energy Regulatory Agency, Annual Report 2020, 2021, and Raport Vjetor Gjendja e Sektorit të Energjisë dhe Veprimtaria e ERE-s gjatë Vitit 2021, 2022. Almost all the plants over 10 MW except the ones owned by KESH and Kurum have been built since 2010.*

[16] *The Plave 2, Doblar 2 and Avče plants started operating on the river Soča in the 2000s while the Boštanj, Arto-Blanca, Krško and Brežice hydropower plants on the lower Sava have started operating since 2010. For more information, see the Soške elektrarne and Hidroelektrarne na Spodnji Savi websites.*

[17] *Peć Mlini, 30.6 MW and Mostarsko Blato, 60 MW, Bosnia and Herzegovina; Tsankov Kamak, 80 MW, Bulgaria ; Lešće, 42 MW, Croatia. Peć Mlini was completed in 2004 and the others in 2010.*

Irrespective of the low success rate, project developers continue to push plans for new large hydropower projects across the region, diverting resources and effort from developing quicker and more economic alternatives.

Bosnia and Herzegovina is particularly ambitious, despite its failure to complete a single greenfield[18] large hydropower plant in the last decade.

Examples of planned plants over 10 MW across the region include the following:

Country	Notable planned projects	River	Installed capacity
Albania	Skavica Lekaj/Shala cascade (3 plants)	Drin Shala	210 MW[19] Total 83.45 MW[20]
Bosnia and Herzegovina	Bistrica B-1, B-2 and B-3 Buk Bijela, Foča, Paunci Gornji Horizonti: Dabar, Nevesinje, Bileća Ulog Janjići	Bistrica Upper Drina Various rivers Neretva Bosna	Total 34 MW[21] 93 MW, 44 MW and 43 MW 160 MW, 60 MW, 32 MW 35 MW 15.75 MW
Bulgaria	Yadenitsa	Yadenitsa	Chaira pumped storage expansion
Croatia	Kosinj/Senj II	Lika/Gacka	412 MW
Kosovo	Drini	White Drin	250 MW[22]
Montenegro	Komarnica	Komarnica	172 MW
North Macedonia	Cebren/Orlov Kamen Vardar cascade (up to 12 plants)	Crna Reka Vardar	458 MW[23] 338 MW maximum
Serbia	Bistrica pumped storage Đerdap III pumped storage	Uvac Danube	628 MW[24] 2400 MW
Slovenia	Mokrice	Sava	28 MW

This briefing explains the risks behind hydropower projects in southeast Europe and shows that it will only get harder to build them in the future, due to climate vulnerability, the region's unique biodiversity, legal issues, public resistance and financing issues.

It includes project profiles of nine particularly high-risk projects in an annex, and recommends lower-risk investments that can help the region move towards a more environmentally, socially and economically sustainable energy system.

[18] *The Bočac 2 plant started operating in 2018 and was built largely on existing infrastructure.*

[19] *Different versions of the project have been proposed but the contract signed with Bechtel for project preparation was for 2010. Bechtel, Bechtel Signs Contract with Albanian Government for Skavica Hydro Project, 6 July 2021.*

[20] *For more details, see GR Albania, Feasibility studies for HPP Constructions on Shala River, accessed 23 June 2022, and Alice Taylor, 'Three Hydropowers in Theth National Park and Shala River Receive Backing from China', Exit.al, 4 January 2022.*

[21] *HE Bistrica company website, accessed 23 June 2022.*

[22] *Rather little information is available about this project but it is mentioned in the Energy Regulatory Office, Annual Report 2021, March 2022.*

[23] *Various versions exist – this one is taken from Elektrani na Severna Makedonija, Capital Projects, May 2022.*

[24] *Elektroprivreda Srbije, Nova HE za budućnost, accessed 21 June 2022. Some sources state 157 MW but this presumably refers to pumping versus generation modes.*

Risks for hydropower in southeast Europe

Hydrology and climate change vulnerability

A crucial factor that does not seem to be properly taken into account by governments and utility companies pushing new greenfield hydropower projects is climate change and the increasing climate vulnerability of the hydropower sector.

Very little information is available regarding future projections of hydropower's vulnerability to climate change in southeast Europe. A 2014 World Bank study summarised the situation as follows:

> *The available scientific studies suggest that across the Balkans water availability over the summer months is expected to decrease considerably by the end of the century. In the northern parts of the Balkans, however, spring and winter riverine flood risk is expected to increase. Results from a global study show severe decreases in annual discharge in the Western Balkans of more than 45 percent in a 4°C world.*[25]

Yet already we can see significant production variations in some countries which are highly dependent on hydropower. The most dependent in the region are Albania, Bosnia and Herzegovina, Croatia and Montenegro. As shown in Figure 1 below, since 2010, in the years with the lowest precipitation, hydropower generation has only been around half the levels of the years with the highest precipitation - and even less in Montenegro. This makes it extremely difficult for utilities to plan their energy generation and sales (see also below), as they never know when they will need to resort to expensive electricity imports.

Moreover, despite the fact that Albania has added around 600 MW in large plants and several more hundred megawatts of smaller plants,[26] average hydropower generation barely increased between 2010 and 2020.

In Bosnia and Herzegovina, Croatia and Montenegro, which added only small hydropower plants, generation even decreased.

[25] *World Bank, Turn Down the Heat: Confronting the New Climate Normal, Washington, DC: World Bank, 2014, 189.*

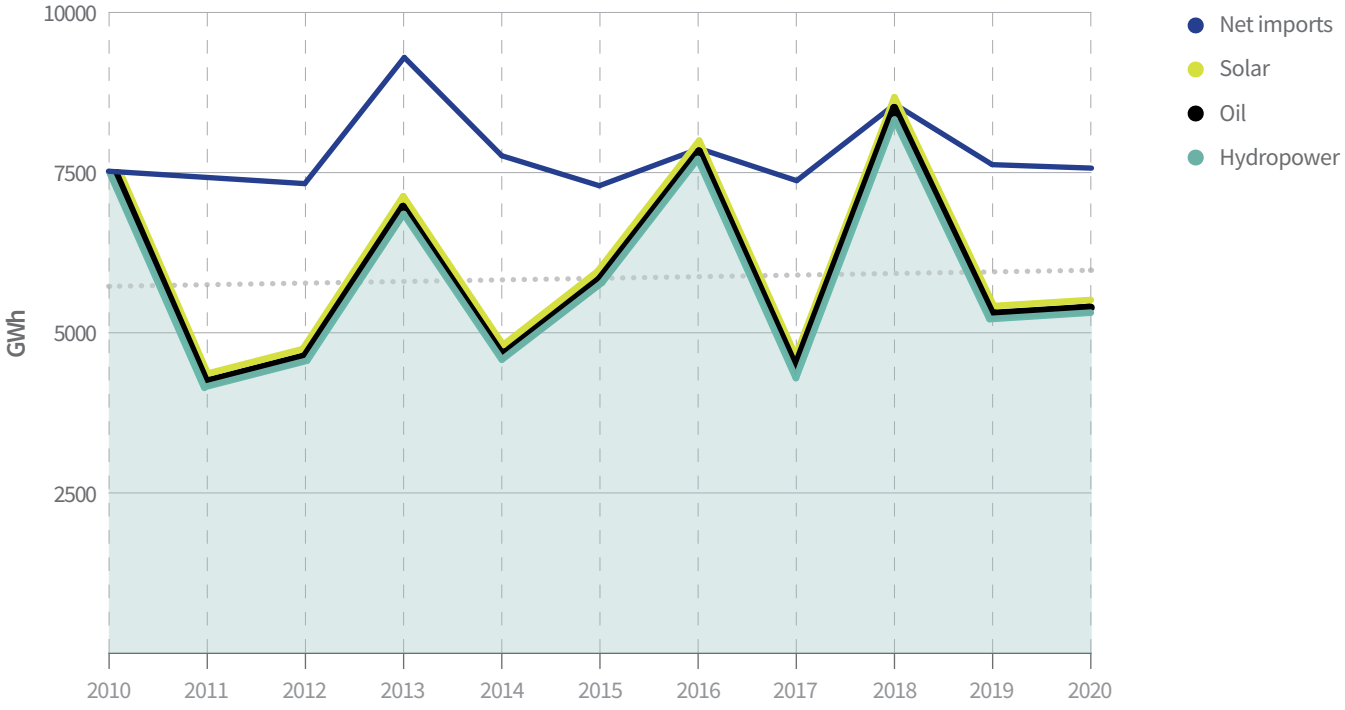
[26] *More information about hydropower plants in Albania can be found in the Energy Regulatory Agency, Annual Report 2020, 2021, and Raport Vjetor Gjendja e Sektorit të Energjisë dhe Veprimtaria e ERE-s gjatë Vitit 2021, 2022. Almost all the plants over 10 MW except the ones owned by KESH and Kurum have been built since 2010.*

The upper Drina where the Buk Bijela hydropower plant would be built

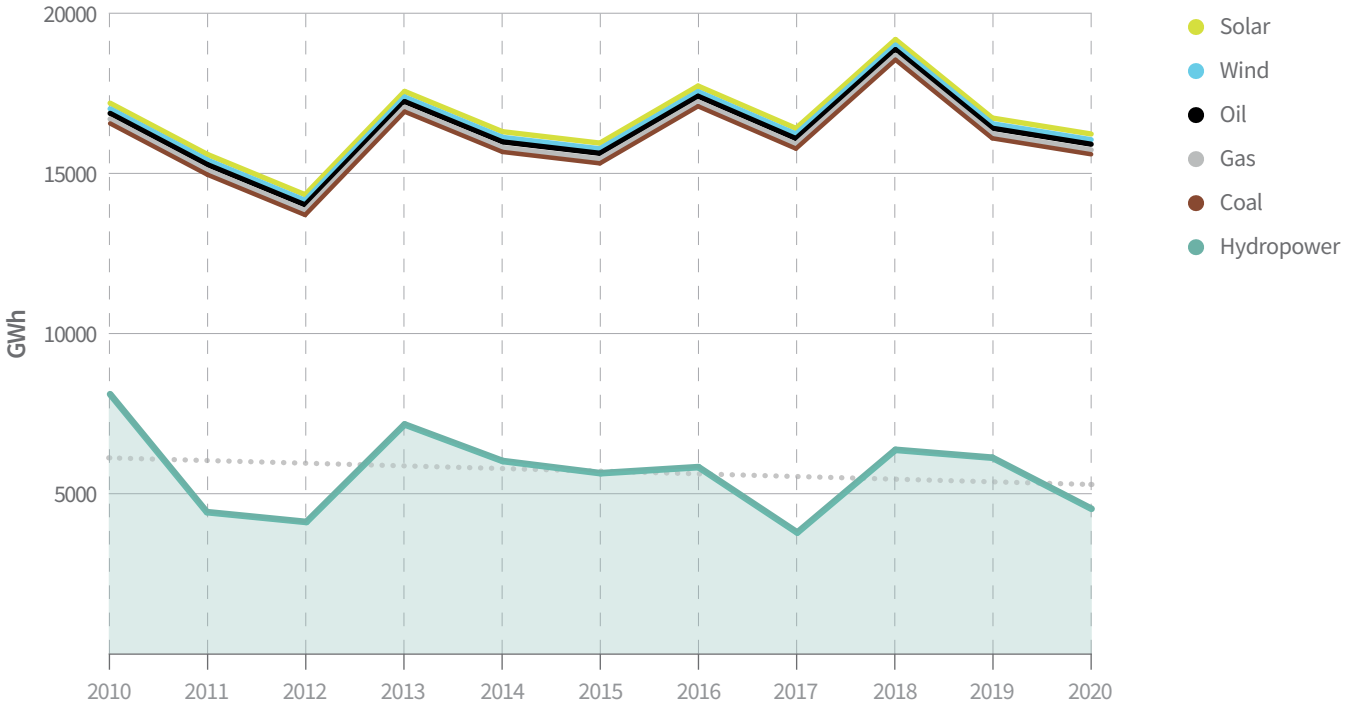
Photo credit: Andrey Ralev

Figure 1: *Hydropower variation 2010-2020, Albania, Bosnia and Herzegovina, Croatia and Montenegro*

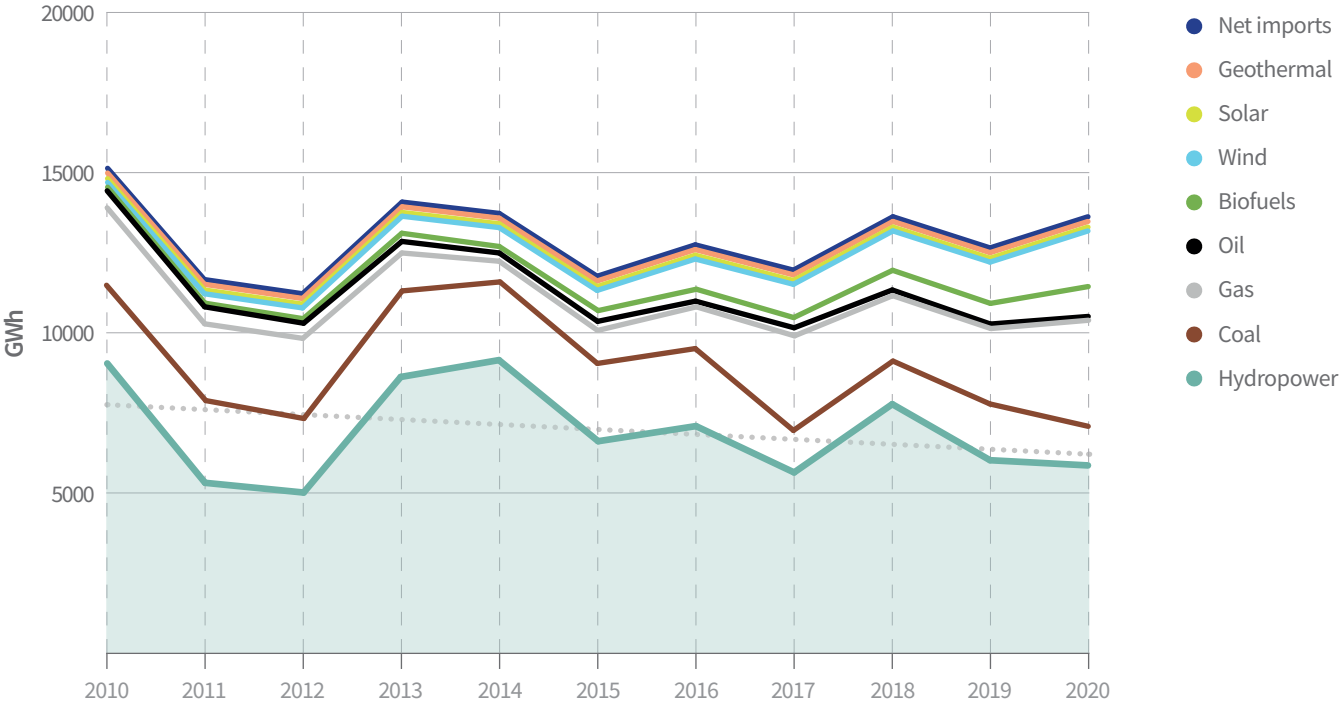
Albania



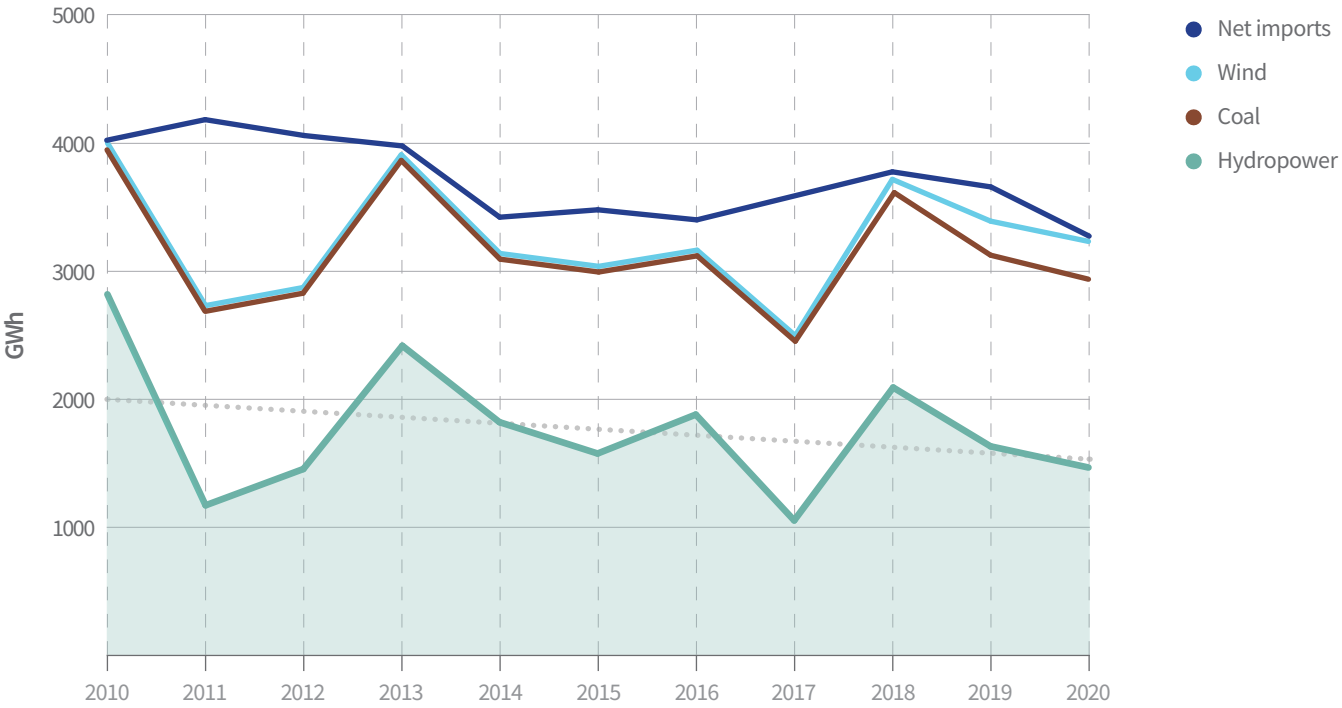
Bosnia and Herzegovina



Croatia



Montenegro



Source: Data from International Energy Agency Data and Statistics, 2010-2020, except for Montenegro 2020 statistics, which were not available on the IEA website. These were taken from Government of Montenegro, Predlog odluke o Energetskom bilansu Crne Gore za 2022. godinu, 2 December 2021.

Only time will tell whether this average trend will continue. IEA data is not yet available for 2021 at the time of writing, in late June 2022. However, late 2021 and early 2022 was very dry and an energy crisis struck the Western Balkans as several coal plant outages and coal shortages coincided with low precipitation.

Albania declared an energy emergency in October 2021[27] and in March 2022 halted generation at 11 out of 13 of state-owned company KESH's hydropower plants due to drought.[28] North Macedonia entered the winter with its hydropower reservoirs at historical lows as well, which exacerbated the energy crisis caused largely by issues with its coal plants as well as high gas prices.[29] In April 2022 it was also reported that Serbia's reservoirs were at their lowest in five years.[30]

Only Albania appears to have – to some extent, and rather belatedly – realised the risks of being so dependent on hydropower. In recent years it has tried to encourage the development of solar and wind to diversify its renewable energy supply. Yet even now, like all the other countries covered in this briefing, it is still planning to build new greenfield hydropower plants.

Our experience shows that hydropower project promoters in the region are generally not taking the threat of climate change seriously. For example, environmental impact assessment (EIA) studies for hydropower plants regularly use rainfall and hydrological data from the decades before 1990, without including updated data from the last decade or two. Examples include Buk Bijela, as well as the series of plants planned on the upper Neretva in Bosnia and Herzegovina.[31] They also usually fail to analyse the impact of climate change on the planned projects, both in terms of drought and increased extreme weather events.

A further risk is the lack of cumulative impact assessments. Interactions between different activities that impact on e.g. water supply should be identified at the plans and programmes stage, through a strategic environmental assessment (SEA).

However, although the SEA Directive has been obligatory for plans and programmes relating to energy under the Energy Community Treaty since 31 March 2018,[32] they have rarely been carried out in the region so far, partly because many plans and strategies pre-date this legislation. Even where they have been carried out, they have generally only rubber-stamped pre-existing plans rather than making a genuine attempt to assess impacts.

EIAs also need to identify cumulative impacts, but again, they rarely do. Even when they include a section called 'cumulative impacts', it rarely distinguishes between the individual impact of the project in question and the impacts together with other projects, e.g. in the same river basin.[33] This means that other hydropower projects, agriculture or industrial activities may compete for the same decreasing water supply without this cumulative impact ever being assessed.

All of the above clearly heightens the risk that water supply for hydropower projects may be lower in reality than expected. This is likely to result in lower electricity generation and lower income than planned, endangering the feasibility of greenfield hydropower projects. It also increases the risk of structural damage by flooding and/or property destruction downstream.

27 *Igor Todorović, 'Albania declares energy emergency as response to energy crisis', Balkan Green Energy News, 11 October 2021.*

28 *Fatos Bytyci, 'Albania dims lights as drought, price spike spark energy crisis', Reuters, 21 March 2022.*

29 *Natasha Veljanovska, Recent Developments, Energy and Water Services Regulatory Commission, Presentation at Energy Community Regulatory Board meeting, 13 April 2022.*

30 *Igor Todorović, 'Serbia's EPS delaying, reconsidering reconstruction of coal plant units', Balkan Green Energy News, 27 April 2022.*

31 *For example, see the environmental impact assessment studies for Buk Bijela and the Upper Neretva cascade in Bosnia and Herzegovina: ИНСТИТУТ ЗА ГРАЂЕВИНАРСТВО „ИГ" БАЊА ЛУКА, СТУДИЈА УТИЦАЈА НА ЖИВОТНУ СРЕДИНУ ЗА ХЕ БУК БИЈЕЛА ДОПУЊЕНА ВЕРЗИЈА, November 2012 and „Пројект" а.д. Бања Лука, СТУДИЈА О ПРОЦЈЕНИ УТИЦАЈА НА ЖИВОТНУ СРЕДИНУ ПРОЈЕКТА ХЕС „ГОРЊА НЕРЕТВА" ФАЗА II (МХЕ „Гребенац-Крупац", МХЕ „Трновица", МХЕ „Плачикус" и ХЕ „Улошки Бук") - коначна, November 2016.*

32 *Energy Community Secretariat, Energy Community Acquis, last accessed 1 July 2022.*

33 *For example, see the environmental impact assessment studies for Buk Bijela and Foča in Bosnia and Herzegovina: ИНСТИТУТ ЗА ГРАЂЕВИНАРСТВО „ИГ" БАЊА ЛУКА, СТУДИЈА УТИЦАЈА НА ЖИВОТНУ СРЕДИНУ ЗА ХЕ БУК БИЈЕЛА ДОПУЊЕНА ВЕРЗИЈА and „Пројект" а.д. Бања Лука and НУ ИНСТИТУТ ЗАШТИТЕ, ЕКОЛОГИЈЕ И ИНФОРМАТИКЕ БАЊА ЛУКА, Допуњена Студија о процјени утицаја на животну средину.*

Biodiversity and the limits of mitigation measures

The rivers in southeast Europe are the most valuable and intact rivers in Europe. They also harbour Europe's highest concentration of endemic fish species.[34] From the amazing sinking rivers of the Dinaric karst,[35] to some of the world's deepest and wildest canyons,[36] to the last remaining European free-flowing large rivers,[37] they are the hotspot for the continent's freshwater biodiversity.[38]

Most of the new hydropower projects are planned in protected areas or areas particularly worthy of protection and their construction would most likely violate international conventions such as the Bern Convention on the Conservation of European Wildlife and Natural Habitats, EU legislation (Habitats, Birds and Water Framework directives) or national legislation. If all hydropower facilities that are planned in the Balkans are built, it is predicted that 49 freshwater fish species will be threatened by extinction, including 18 endemic species.[39]

None of the Western Balkan countries has up-to-date river basin management plans for all rivers, and many rivers are not covered by such plans at all. They also have not yet legally protected Emerald / Natura 2000 Network sites within their national legislation. Nevertheless, in recent years there is much improved knowledge of the most valuable rivers and the mechanisms to protect them from hydropower. The public has managed to effectively stop many projects in biodiversity-rich areas (see below).

In the last few years, legislative changes in many countries have made it even more difficult for investors to move forward with damaging projects. Bulgaria, in its Water Act, has prohibited the construction of new plants in Natura 2000 sites, and Western Balkan countries have transposed at least to some extent the EU nature legislation, and will have to complete this process in the coming years. The Ombla hydropower plant in Croatia is an example of a project which was halted after its Appropriate Assessment was carried out. The responsible Ministry found that significant negative impacts could not be ruled out and that mitigation measures could not be guaranteed to be effective.[40]

The myth of mitigation of biodiversity impacts by hydropower has also largely fallen apart. Scientific studies have shown that even the most sophisticated fish pass cannot mitigate the impacts of dams on fish species as more than half of the individuals die or cannot use the facility.[41] The only way to fully restore biodiversity is to remove the dam.

Stocking of fish as a compensation measure in most cases causes additional problems for biodiversity rather than solving them. There is at least 60 years of scientific literature demonstrating not only the failure of stocking programmes in substituting wild stocks of fish, but also a series of negative effects ranging from the introduction of non-native species or diseases to disruption of native genetic gene pools and natural selection.[42]

Residual 'E-flows' in most countries are fixed at 10 per cent of the annual average flow of the river or are planned without any scientific reasoning, which *de facto* leads to a dead river beneath the intake. And last but not least, authorities in southeast Europe don't have the capacity or will to control all the hydropower plants, many of which are built in remote areas. This might sound like an advantage to unscrupulous project developers, but in fact it is a major risk as it has resulted in public outrage against the whole hydropower sector.

Geological risks

Many greenfield hydropower plants in the region entail high geological risks, either due to the complex karst terrain, with its myriad underground water flows, which are not completely understood, or because of seismic activity or landslides.

[34] *Jörg Freyhof and Emma Brooks, European Red List of Freshwater Fishes, Luxembourg: Publications Office of the European Union, 2011.*

[35] *For example, Trebišnjica and Bregava in Bosnia and Herzegovina and Dobra in Croatia.*

[36] *For example, Komarnica and Tara in Montenegro and Rakitnica in Bosnia and Herzegovina.*

[37] *For example, the Vjosa in Albania, as well as stretches of the Danube in Romania and Bulgaria and Sava in Croatia, Bosnia and Herzegovina and Serbia.*

[38] *For more information see https://balkanrivers.net/en/campaign*

[39] *Steven Weiss et al., Endangered Fish Species in Balkan Rivers: their distributions and threats from hydropower development, Riverwatch and EuroNatur, 2018.*

[40] *Ministarstvo gospodarstva i održivog razvoja, Hidroelektrana Ombla, accessed 22 June 2022.*

[41] *Kim Birnie-Gauvin et al., 'Moving beyond fitting fish into equations: Progressing the fish passage debate in the Anthropocene', Aquatic Conservation Marine and Freshwater Ecosystems 29, no. 7 (2018); Olle Calles, Simon Karlsson, Mats Hebrand and Claudio Comoglio, 'Evaluating technical improvements for downstream migrating diadromous fish at a hydroelectric plant', Ecological Engineering 48 (2012): 30-37; and Michael Schwimm, Kim Aarestrup, Henrik Baktoft and Anders Koed, 'Survival of migrating sea trout (Salmo trutta) smolts during their passage of an artificial lake in a Danish lowland stream', River Resources and Applications 33, no. 4 (2017): 558-566.*

[42] *Steven Weiss and Stefan Schmutz, 'Performance of Hatchery-Reared Brown Trout and Their Effects on Wild Fish in Two Small Austrian Streams', Transactions of the American Fisheries Society, 128 (1999): 302-316.*

The **Tsankov Kamak** hydropower plant on the river Vacha in Bulgaria has been severely affected by water losses from its reservoir, and in 2017 was revealed to be operating no more than 45 to 50 days per year,[43] reflecting the project promoter's failure to properly assess this risk. The **Lešće** hydropower plant on the river Dobra in Croatia has also had unforeseen impacts, eroding land parcels downstream – leading to damages claims against the project promoter, Hrvatska Elektroprivreda (HEP d.d.), and changing underground water flows. These appear to have led to the forming of several new lakes in the hamlet of Špehari and are suspected to have also impacted the flow of the Kupa and Mrežnica rivers, both protected in the Natura 2000 network.[44] It did not help that the EIA for the project was carried out in 1986 and was not updated before the project was built during the 2000s. The assessment was therefore far from meeting the legal standards in force at the time the plant was built.[45]

The construction phase, too, can entail serious geological risks, as shown by the **Ulog** hydropower plant, currently under construction on the upper Neretva in Bosnia and Herzegovina. Work on the plant started for the first time in 2013, but in July of that year, two fatal incidents took place due to landslides.[46] After this, the works were put on hold while more research was done, but in 2017 the project was redesigned with the dam slightly further downstream. It remains to be seen whether the new design will be any safer.

People living downstream fear that the operational phase of the plant will also put them in danger as the location where the plant is being built is where a landslide in 1934 caused the biggest floods in the history of Konjic.[47] According to local people, the landslide blocked the Neretva, which then burst through, sending a massive wave downstream.

Geological risks were also part of the reason for opposition to the **Ombla** hydropower plant in Croatia, which was supposed to be built in a cave near Dubrovnik. The Environmental Impact Assessment, approved in 1999, did not adequately cover this issue, so when the project was resurrected after 2010 and became controversial, the then Minister responsible for environment commissioned four experts to provide their opinion on the study and the project. Three out of four gave highly negative assessments and concluded that the study could not guarantee that the plant would be seismically safe, that it would not negatively affect Dubrovnik's drinking water, that it would not have transboundary impacts on groundwater, or that its feasibility would not be affected by groundwater changes caused by activities in neighbouring Bosnia and Herzegovina.[48]

Unfortunately, several hydropower plants are still planned whose geological risks have not been properly assessed, including **Dabar** in Bosnia and Herzegovina, **Skavica** in Albania and **Yadenitsa** in Bulgaria. More details can be found in the case studies in Annex 1.

Legal risks and public resistance

Public participation in decision-making is not widely practised in southeast Europe. Wide sections of the public see no possibility to influence decision-making and avoid getting involved at any level, while the authorities rarely seek public input beyond the absolute legally prescribed minimum, and tend to dismiss proposals or critical comments from the public.

In many cases the authorities do not even apply the legally required public participation procedures. For example, they fail to oblige the developer to undergo an EIA procedure despite the likelihood of significant impacts – especially for smaller plants; rely on old EIAs to avoid organising new public consultations (e.g. **Buk Bijela** and **Foča** in Bosnia and Herzegovina[49]) or fail to ensure that public consultations were actually public and really take place (**Dragobia** and **Cerem** in the Valbona National Park, Albania[50]). As a result, local people often start to mobilise against hydropower projects only at the moment when the diggers arrive and works start.

[43] *See for example Vevesti.bg, '100 години ще трябват, за да се изплати „Цанков камък"', Vevesti.bg, 11 August 2017; Publics.bg, 'Bulgaria's Power Incumbent Started Repair Works on Tsankov Kamak HPP', Publics.bg, 21 July 2017.*

[44] *Mario Pušić, 'VIDEO: 'U SELU NAM JE NASTALO ŠEST NOVIH JEZERA!' Jedina hidroelektrana puštena u promet otkad je RH postala država pretvorila život lokalcima u pakao', Jutarnji List, 1 October 2019.*

[45] *Zelena akcija, Zbog loše i stare studije utjecaja na okoliš velike štete od HE Lešće, 21 February 2012.*

[46] *FENA, 'U odronu kamenja poginuo radnik Prijedorputeva', Klix.ba, 9 July 2013; RTVBN, 'Zbog pogibije dva radnika zabranjen rad Prijedorputevima', RTVBN, 9 July 2013.*

[47] *Sarajevska Sehara, 'Neretva umire, a Konjic šuti/ Katastrofalne fotografije Gornje Neretve na lokalitetu izgradnje HE Ulog', Sarajevska Sehara, 24 July 2021.*

[48] *Buka, 'Tajne recenzije o HE Ombla!', Buka, 27 June 2012.*

[49] *In May 2020, civil society organisations from Montenegro and Bosnia and Herzegovina submitted a complaint to the Implementation Committee. In December 2020 this was superseded by a complaint by the Montenegrin government. As of June 2022, the case is still under consideration.*

[50] *WWF Adria, Despite the High Court's Decision, Construction of Hydropower Plants Continues in the Valbona National Park, 24 September 2021.*

This may seem advantageous for project developers, but in fact it can – and often does – backfire badly. Significant funds may be spent on preparing a project, only to face community protests, lawsuits and blockades at a late stage. Many people in the region rely directly on the rivers for their livelihoods, whether for their animals to drink from; to irrigate their land; or for fishing, tourism or drinking water, and the construction of hydropower plants represents a serious incursion into rural communities which are usually left to their own devices.

No other environmental issue has attracted so much public opposition across southeast Europe as hydropower. This has sometimes been successful in stopping projects before the stage of physical confrontation, for example in several cases on the **Vrbas**,[51] **Una**[52] and **Neretva**[53] (Konjic) in Bosnia and Herzegovina, in the **Mavrovo National Park** in North Macedonia[54] and on the Vjosa in Albania.[55] Resistance in what is now Montenegro also stopped the construction of a larger version of the **Buk Bijela** dam in Bosnia and Herzegovina back in the 1970s and again in 2004 and 2005.[56]

But often it has gone further than that. People have faced arrests, lawsuits, fines and violence from the police or private security to defend the region's rivers, and have often been successful, for example at the rivers **Željeznica**, **Kruščica**[57] and **Neretvica**[58] in Bosnia and Herzegovina, in the **Stara Planina**[59] area of Serbia, the **Bukovica**[60] and **Bare Kraljske**[61] cases in Montenegro and the **Lumbardhi** case in Kosovo (see below).

The authorities often follow a risky approach with the permitting process in general. They show excessive flexibility in applying environmental and planning law to hydropower and other energy sector projects. This initially brings advantages to investors, but also constitutes a high risk, as the more poorly the rules are applied, the easier it is for local communities and environmental watchdog organisations to take legal action.

Although courts in the region lack expertise on environmental law – and often also independence – non-governmental organisations regularly win court cases due to the blatant nature of the breaches, often sending EIA or other permitting procedures back to the beginning.

Such cases are most frequent with smaller hydropower plants but also include larger plants such as the cancellation of an extended environmental permit for **Buk Bijela** in Bosnia and Herzegovina in 2019,[62] **Poçem** on the Vjosa in Albania,[63] **Boskov Most** in North Macedonia,[64] and **Mokrice** in Slovenia.[65] In a landmark case, in 2021 a small hydropower plant on the **Elovitsa** river in Bulgaria even had to be removed due to legal irregularities,[66] and we expect more such cases in the future.

In 2020, Kelkos Energy, a subsidiary of Austria's Kelag International, was forced to take three hydropower plants on the **Lumbardhi river** in Kosovo offline pending a final court decision, after it failed to comply with the environmental conditions set for the construction and operation of the plants.[67] Moreover, although the investor appealed and was allowed to operate the plants again for a short time, in October 2021 the Supreme Court confirmed that the plants must be taken offline again.[68]

Instead of dedicating its efforts to resolving the issues, Kelkos decided to target the activists who had exposed its wrongdoing and sought EUR 100,000 from Shpresa Loshaj and EUR 10,000 from Adriatik Gacaferi. After widespread public outcry, the cases were finally dropped in October 2021,[69] representing a backfiring of the strategy. As of mid-July 2022 the final court decision on the plants' operation is still pending and they are still offline.

Non-governmental organisations have also submitted several complaints on hydropower to the Energy Community Treaty under its dispute settlement mechanism.

[51] *Several attempts to build greenfield plants in various locations have been stopped. See for example Friends of the Earth Europe, Victory against big hydro in Bosnia and Herzegovina, 9 October 2015; Svetlana Jovanović, 'Banja Luka rejects initiative to build new hydropower plant on Vrbas river,' Balkan Green Energy News, 22 November 2018; Aarhus Centre Sarajevo, Spas za Vrbas - Velika pobjeda građana Donjeg Vakufa!, 24 July 2021.*

[52] *RiverWatch, Hydropower plants in Una National Park halted, 27 July 2015.*

[53] *Zeleni Neretva, Rijeka bez povratka - Ekologija i politike velikih brana, Heinrich Boell Stiftung, March 2011.*

[54] *Euronatur/Front 21/42, Bern Convention: Macedonian government requested to halt construction of hydropower plants in national park, 12 November 2017.*

[55] *EcoAlbania, EuroNatur, Patagonia, RiverWatch, Albanian Government signs commitment to establish a Vjosa Wild River National Park, Save the Blue Heart of Europe, 13 June 2022.*

[56] *Dejan Peruničić, 'Potop Tare zaustavljen prije tačno deset godina,' Vijesti, 14 December 2014.*

[57] *Pippa Gallop, A tale of two communities successfully resisting the Balkan hydropower tsunami, CEE Bankwatch Network, July 2018.*

[58] *Devin Murphy, After protests, and as the result of an ongoing legal battle, two small hydropower electric plants on the Neretvica River are cancelled, Re:wild, 18 August 2021.*

[59] *Ljubomir Filipov, 'Staroplaninci zadovoljni Prostornim planom bez MHE na ovoj planini,' Južne vesti, 22 July 2020; Pirotske vesti, Usvojen najvažniji urbanistički dokument – Prostorni plan grada Pirota, 23 April 2021.*

[60] *WWF Adria, Six Rivers Saved in Montenegro! Winning the Fight to Preserve Europe's Last Free-Flowing Rivers, 21 October 2019.*

[61] *Dragana Šćepanović, 'Kraljske Bare: Počelo uklanjanje cijevi namijenjenih gradnji mHE,' Vijesti, 7 June 2022.*

[62] *CEE Bankwatch Network, Bosnia-Herzegovina: Environmental permit for Buk Bijela hydropower plant cancelled, 30 May 2019.*

[63] *RiverWatch and EuroNatur, Albanian Court stops dam project on the Vjosa, Save the Blue Heart of Europe, 5 March 2017.*

[64] *Igor Todorović, 'Court blocks hydropower project Boškov most,' Balkan Green Energy News, 13 May, 2016.*

[65] *Društvo za preučevanje rib Slovenije (DPRS), HE Mokrice: Sodišče potrdilo nedopustno prakso MOP, 15 November 2021.*

[66] *Perangua, First dam removal in Bulgaria! 11 March 2021.*

[67] *Riverwatch, Austrian Kelag forced to take three hydropower plants in Kosovo off the power grid, 15 October, 2020.*

[68] *Vladimir Spasić, Kosovo Supreme Court: Kelag's three small hydropower plants must be shut down, Balkan Green Energy News, 19 October 2021.*

[69] *Perparim Isufi, 'Energy Company Drops Lawsuits Against Kosovo Environment Activists,' Balkan Insight, October 2021.*

The mechanism resembles the European Community's infringement procedure, but without providing for a judicial decision in the last instance. The Energy Community Secretariat has opened a case regarding the environmental impact assessment of a planned hydropower plant on the Vjosa River in **Poçem** in Albania[70] and registered cases on the lack of proper implementation of the EIA Directive (2011/92/EU) for the **Gornja Neretva** hydropower system on the Neretva, Igaščica and Grebenac rivers in Bosnia and Herzegovina,[71] the EIA procedure for the **Buk Bijela** and **Foča** plants in Bosnia and Herzegovina[72] and on environmental impact assessment of hydropower plants in Serbia.[73]

Given the small size of many of the countries in the region, and the number of shared river basins, transboundary impacts can be a significant issue for hydropower projects, too.

The refusal of the Republika Srpska entity of Bosnia and Herzegovina to carry out a new EIA and transboundary consultation for the **Buk Bijela** and **Foča** plants has resulted in a case at the Espoo Convention Implementation Committee,[74] which has yet to be resolved. It also resulted in the case mentioned above at the Energy Community Secretariat.[75] In 2019, the start of construction of small hydropower plants on the river **Cijevna/Cem** in Albania also resulted in a complaint by Montenegro to the Espoo Convention Implementation Committee, which is also still ongoing.[76]

The **Dabar** hydropower plant and the whole Upper Horizons complex are also expected to have serious transboundary impacts on the Neretva delta in Croatia, speeding up the salination of one of Croatia's most important agricultural areas,[77] while a series of plants planned on the **Vardar** in North Macedonia is likely to impact Greece as well.[78]

In Bosnia and Herzegovina, trans-entity impacts also bring additional risks. The **upper Drina** plants, Ulog and **Dabar/Upper Horizons** are all situated in Republika Srpska but likely to have very serious impacts on the downstream areas in the Federation of Bosnia and Herzegovina. The Upper Horizons complex is expected to severely diminish or stop the flow of the outstanding Buna and Bunica rivers as well as decrease the flow of the Bregava and Neretva and lessen water flow to the Hutovo Blato Ramsar Site.

Republika Srpska's refusal to consult the state-level institutions before issuing a concession for the upper Drina projects – even though they are on a river that forms part of Bosnia and Herzegovina's international border – has resulted in a case at the constitutional court.[79]

A combination of determined public resistance and legal action is therefore one of the most serious risks for hydropower projects in southeast Europe, which has again and again stopped or seriously delayed projects.

Financing and geopolitical risks

A decade ago, the European Bank for Reconstruction and Development (EBRD) was planning to finance two large hydropower projects in the region – **Ombla and Boskov Most** – while the World Bank was considering the **Lukovo Pole** project.[80] The World Bank's Multilateral Investment Guarantee Agency also issued a guarantee for the **Ashta** plant in Albania[81] – the only one of the four projects mentioned here that has actually been built. In addition, tens of small hydropower projects were built with support from the international financial institutions, often through secretive intermediaries.[82]

The situation has now completely changed. To the best of our knowledge, the EBRD and European Investment Bank (EIB) are no longer considering financing any hydropower projects in the region, including small ones, and in early 2022 the EIB considerably tightened its biodiversity rules,[83] which would make it even more difficult for greenfield hydropower to get financing. Germany's KfW also dropped financing for the **Janjići** plant on the river Bosna in Bosnia and Herzegovina in early 2022.[84]

[70] *Energy Community, Case ECS 03/19, last accessed 11 July 2022.*

[71] *Energy Community, Case ECS 13/20, last accessed 11 July 2022.*

[72] *Energy Community, Case ECS 25/21, last accessed 11 July 2022.*

[73] *Energy Community, Case ECS 07/20, last accessed 11 July 2022.*

[74] *In May 2020, civil society organisations from Montenegro and Bosnia and Herzegovina submitted a complaint to the Implementation Committee. In December 2020 this was superseded by a complaint by the Montenegrin government. As of June 2022, the case is still under consideration.*

[75] *Energy Community, Case ECS 25/21.*

[76] *United Nations Economic Commission for Europe, Case EIA/IC/S/7 Albania, last accessed 12 July 2022.*

[77] *Ante Sunjić, 'Republika Srpska angažirala Kineze za gradnju HE Dabar, dolina Neretve ostaje bez dvije milijarde kubika slatke vode!', Dubrovački Vjesnik, 7 January 2022.*

[78] *Government of North Macedonia, Strategic environmental assessment report of the Draft Strategy for energy development in the Republic of North Macedonia until 2040 - Non technical summary, UK/MK Reform Assistance to North Macedonia, December 2019, 10.*

[79] *In December 2020, 24 parliamentarians from the House of Representatives in the state-level Parliament of Bosnia and Herzegovina announced they had submitted a request to the Bosnia and Herzegovina Constitutional Court. On 16 July 2021, the Constitutional Court made a partial decision, finding that a dispute regarding the decision by Republika Srpska to issue the concessions exists, and ordering the Commission for Concessions of Bosnia and Herzegovina to resolve the matter within three months. However, due to issues regarding the composition of the Commission, as of June 2022 the issue is still pending.*

[80] *World Bank, World Bank Statement on Proposed Lukovo Pole Hydropower Project, 24 January 2014.*

[81] *Multilateral Investment Guarantee Agency, Ashta Hydropower, accessed 1 July 2022.*

[82] *Igor Vejnović and Pippa Gallop, Financing for hydropower in protected areas in Southeast Europe: 2018 update, CEE Bankwatch Network, EuroNatur, RiverWatch, March 2018, and Andrey Ralev, Pippa Gallop, Anna Roggenbuck, Public Money vs. Pristine Rivers, CEE Bankwatch Network and Save the Blue Heart of Europe Campaign, October 2021.*

[83] *European Investment Bank, Environmental and Social Standards, 3 February 2022.*

[84] *CEE Bankwatch Network, Aarhus Centre Sarajevo, Eko-Forum Zenica, RiverWatch, Major blow to Bosnia hydropower project as Germany's KfW drops financing plans, CEE Bankwatch Network, 28 January 2022.*

As shown in the case studies in Annex I, **most large, high-risk hydropower plants in the region so far have no financing confirmed**.

The US International Development Finance Corporation (DFC) is reportedly considering financing for the **Skavica** hydropower plant in Albania,[85] but this should not be considered final unless the loan is signed and disbursed. The project carries high corruption risks due to the signing of a project development agreement with Bechtel,[86] apparently without any tender process,[87] and the project appears to be categorically prohibited by its Environmental and Social Policy (see Annex I).

Chinese state banks have been suggested as financiers for several of the projects examined, but so far have only signed a loan contract for the Dabar plant in Bosnia and Herzegovina.[88]

The Bistrica B1-B3 projects in Bosnia and Herzegovina also involve a Chinese contractor – China National Aero-technology International Engineering Corp (AVIC-ENG)[89] – but so far no financing. AVIC-ENG has also expressed interest in building the Buk Bijela, Foča and Paunci projects[90] but to the best of our knowledge, no contract has yet been signed.

According to the Republika Srpska Concession Commission, talks between Energy Financing Team (EFT) and the China Development Bank on financing the **Ulog** hydropower plant on the upper Neretva failed – despite the involvement of Sinohydro as a contractor – and EFT is now spending its own funds on this extremely high-risk project.[91]

It is therefore not clear whether Chinese financing for hydropower in the region will increase or not. Despite several southeast European countries having friendly relationships with China, this goodwill may not last forever.

The China Road and Bridge Corporation (CRBC) has largely squandered its chance to remain in favour in Montenegro by persistently damaging the UNESCO-protected **river Tara** during construction works on the **Bar-Boljare highway**.[92]

In Serbia, pollution from a Chinese-owned copper mine in **Bor** and a steel mill in **Smederevo**,[93] as well as allegations of human rights abuses of Vietnamese workers employed to build the controversial **Linglong tyre factory** in Zrenjanin,[94] are testing the public's patience towards both its own government and Chinese companies. Overly generous conditions for Chinese companies coupled with the circumvention of procurement procedures[95] are further stoking public concern.

In Bosnia and Herzegovina, the Federation of BiH's government is trying to figure out what to do with its Chinese-financed **Tuzla 7** coal project after the Chinese contractor admitted it was no longer able to supply the planned technology after US energy giant GE pulled out as equipment supplier.[96]

With geopolitical differences between the EU and China now further widening over Russia's invasion of Ukraine,[97] the future of China's infrastructure financing in southeast Europe is unclear.

[85] *Exit News, Albania to Build New HPP with US Loans, Exit News, 5 October 2021.*

[86] *Bechtel, Bechtel Signs Contract with Albanian Government for Skavica Hydro Project, 6 July 2021.*

[87] *Bechtel has a controversial history in the Balkans for its involvement in a number of unsuccessful and/or overpriced projects, usually awarded without tender processes. See for example, Matthew Brunwasser, 'Steamrolled: A Special Investigation into the Diplomacy of Doing Business Abroad', Foreign Policy, January 2015; Marian Chiriac, 'Romania Cancels Highway Contract With Bechtel', Balkan Insight, 30 May 2013; Sinisa Jakov Marusic, 'Graft Warnings in North Macedoniaover 'Hypocritical' Highway Plan', Balkan Insight, 21 July 2021.*

[88] *Daria Sito-Sucic, 'Bosnia's HE Dabar seals deal with China's Exim bank for 160 MW hydropower plant', Reuters/Nasdaq, 5 January 2022.*

[89] *Balkan Green Energy News, 'Republic of Srpska breaks ground on three hydropower plants on Bistrica river', Balkan Green Energy News, 29 December 2021.*

[90] *Vladimir Spasić, 'China's AVIC offers to finance, build HPP Buk Bijela, 4 small hydropower plants', Balkan Green Energy News, 24 July 2019.*

[91] *Republika Srpska Komisija za koncesija, Izvještaj o radu i financijski izvještaj za 2019. godinu, April 2020, 61.*

[92] *Igor Todorović, 'Environmentalists alert UNESCO of 'ecocide' of Tara river in Montenegro', Balkan Green Energy News, 3 August 2020.*

[93] *Sebastian Shehadi, '"My laundry turns yellow outside": How Chinese investment is polluting a Serbian town', Investment Monitor, 13 September 2021, updated 21 April 2022.*

[94] *United Nations Human Rights Office of the High Commissioner, Mandates of the Special Rapporteur on trafficking in persons, especially women and children; the Working Group on the c of human rights and transnational corporations and other business enterprises; the Special Rapporteur on the human rights of migrants; and the Special Rapporteur on contemporary forms of slavery, including its causes and consequences Ref.: UA SRB 1/2022, 18 January 2022.*

[95] *Just Finance International and Renewables and Environmental Regulatory Institute, Legal Memo on Chinese investments in Serbia Shows Weakened Rule of Law, Leading to Forced Labour and Human Rights Abuses, 13 June 2022.*

[96] *CEE Bankwatch Network, Tuzla 7 lignite power plant, Bosnia and Herzegovina, updated January 2022.*

[97] *Including political agreement between the EU Council and EU Parliament on new rules on foreign takeovers subsidies reached on 30 June 2022, which are largely seen as being aimed at China. Foo Yun Chee, EU agrees to curb takeovers by state-backed foreign firms, Reuters, 30 June 2022.*

Conclusions: if not hydropower, what to do instead?

Southeast European countries vary in their technical hydropower potential, but most of them are at a stage where adding hydropower capacity will either not help to aid energy security due to existing over-dependence (Albania, Bosnia and Herzegovina, Croatia, Montenegro) or they have very little economic potential left (Bulgaria, Kosovo). If they nevertheless decide to move forward with these projects, they will find it very difficult, due to public opposition, legal challenges and difficulty in financing.

The countries are all at very different stages of their energy transitions but what they all have in common is that their sustainable solar and wind potential has not yet been utilised, nor has their energy efficiency potential.

This too must be done with care, as a wind farm or solar farm in the wrong place can also cause damage, as Bulgaria has already found out with its notorious Kaliakra wind farms which landed it in the European Court of Justice.[98] Croatia too is subject to an ongoing EU infringement procedure for failure to properly apply the Habitats Directive during wind farm development.[99] Still, these technologies offer much greater potential than hydropower does nowadays, and require minimum renewable energy incentives due to a drop in costs in recent years.

Priority should be given to building renewable installations on artificial and built surfaces, such as rooftops, transport infrastructure areas, parking areas, waste sites, industrial sites, mines, artificial inland water bodies and degraded land not usable for agriculture.

In addition to the power sector, all the countries could use solar thermal, heat pumps and heat storage to a much greater extent, including in their district heating systems. Geothermal is also worth exploring in cases where it does not emit high levels of greenhouse gases.[100]

In order to promote public acceptance of the energy transition and the efficient use of energy close to where it is generated, household and community renewable energy projects should always be given high priority for technical assistance and funding.

98 *Judgement of the Court (Third Chamber) of 14 January 2016. European Commission v Republic of Bulgaria. Case C-141/14.*

99 *European Commission, European Commission at work, last accessed 1 July 2022.*

100 *Thráinn Fridriksson, Almudena Mateos Merino, A. Yasemin Orucu, Pierre Audinet, Greenhouse Gas Emissions from Geothermal Power Production, Proceedings, 42nd Workshop on Geothermal Reservoir Engineering Stanford University, Stanford, California, 13-15 February 2017.*

Annex 1: Project profiles of high-risk hydropower projects in southeast Europe

This annex provides an overview of nine high-risk hydropower projects from across the region, based on the authors' current knowledge.

This does not imply any type of ranking or comparison with other projects not mentioned, which may be equally or even more problematic.

Skavica hydropower plant, Albania

Project promoter: **KESH**

Installed capacity: **210 MW**

Lead contractor: **Bechtel, US – at least for project preparation**

Financing: **None confirmed – possibly US International Development Finance Corporation (DFC)**

River: **Black Drin**

Protected areas/species: **Balkan lynx (critically endangered), alder-willow riparian forest**

Other key risks: **Expropriation, corruption, local opposition, geological**

Albania is almost 100 per cent hydropower-dependent for electricity. Its annual electricity generation has fluctuated massively in recent years, leading to high imports in all but the very wettest years.

It is the only country in the Western Balkans where several large new hydropower plants have been built in recent years, and for several years its renewables incentives scheme only supported hydropower, not solar or wind.

The government has for several years recognised that it needs to diversify its electricity generation and has held auctions for solar and wind capacity, but as of July 2022 only relatively small projects have been built, with a 140 MW solar plant now reportedly starting construction.[101]

However, the government and state-owned power utility KESH are still pushing the construction of yet more hydropower in the form of the 210 MW Skavica hydropower plant on the river Black Drin, upstream of the existing hydropower plants there.

[101] *Igor Todorović, 'Voltalia breaks ground in Albania for biggest solar park in Western Balkans', Balkan Green Energy News, 1 July 2022.*

In July 2021, seemingly without any tender procedure, a preliminary contract was signed with US construction giant Bechtel to carry out a technical investigation, build access roads for construction and carry out an environmental and social impact assessment for the project.[102] Bechtel has gained notoriety in the region for its involvement in a number of unsuccessful and/or overpriced projects, usually awarded without tender processes.[103]

This raises risks of possible corruption and doubts about the value for money of the project and the meaningfulness of the forthcoming environmental impact assessment. If deals for the project have already been arranged behind closed doors, then the environmental impact assessment is bound to come up with the 'right' answer, irrespective of its actual findings.

Local people have already organised protests against the planned plant.[104] According to information from the Municipality of Dibër,[105] approximately 20,000 people and 2,636 houses would be impacted by the reservoir. The impacts would include inundating most of the houses, as well as flooding agricultural land, pastures and forests that are crucial for the local communities and changing the local microclimate. It is not clear whether such figures are final, as the environmental and social impact assessment does not yet appear to be public, but it is clear that Skavica would be one of the hydropower projects built in Europe in the last 30 years with the highest social impacts. Local and international NGOs fear that the dam would impact the biocorridor between Albania and North Macedonia of the critically endangered Balkan lynx (*Lynx lynx balcanicus*) whose global population is estimated at around 30 individuals.[106] Additionally, probably the most extensive riparian forest in Albania, with great potential for carbon sequestration, would be flooded, thus making the project very dubious from a climate change point of view.

102 *Bechtel, Bechtel Signs Contract with Albanian Government for Skavica Hydro Project, 6 July 2021.*

103 *See for example Matthew Brunwasser, 'Steamrolled: A Special Investigation into the Diplomacy of Doing Business Abroad'; Marian Chiriac, 'Romania Cancels Highway Contract With Bechtel'; Sinisa Jakov Marusic, 'Graft Warnings in North Macedonia over 'Hypocritical' Highway Plan'.*

104 *Exit News, Albanians Protest US-Albanian Hydropower Plant in Skavica, Exit News, 12 November 2021.*

105 *Response from the municipality of Dibër to an access to information request, 10 June 2022.*

106 *IUCN Red List, Balkan lynx, 2015.*

Part of the Black Drin river threatened by the Skavica plant

Photo credit: Andrey Ralev

The US International Development Finance Corporation (DFC) is reportedly considering financing for Skavica,[107] but this should not be considered final unless the loan is signed and disbursed. Due to its likely impacts on the Balkan lynx and the need for resettlement, the project appears to be categorically prohibited by the DFC's Environmental and Social Policy, Annex B:

> *Construction of dams that significantly and irreversibly: (a) disrupt natural ecosystems upstream or downstream of the dam; or (b) alter natural hydrology; or (c) inundate large land areas; or (d) impact biodiversity; or (e) displace large numbers of inhabitants (5,000 persons or more); or(f) impact local inhabitants' ability to earn a livelihood.*[108]

The Albanian government also requested funds for the project as a Flagship under the EU Economic and Investment Plan.[109] The Skavica hydropower plant has already had one round of EU assistance cancelled,[110] so it is not clear why more funds were requested. The European Commission has confirmed that none of the greenfield hydropower projects proposed have been endorsed for funding within the Western Balkans Investment Framework (WBIF).[111]

Overall, despite the Albanian government's confident statements about the project in the media, it is at a very early stage of development and entails several very high risks that may well prevent its construction. As of July 2022, preparatory work is ongoing with access roads being built at the proposed dam site. According to local workers, there are already changes in the project due to geological risks – the Skavica dam area is a pristine canyon with enormous limestone cliffs and cave systems.

107 *Exit News, Albania to Build New HPP with US Loans.*

108 *US International Development Finance Corporation, Environmental and Social Policy and Procedures - Appendix B – Categorical Prohibitions, January 2020.*

109 *List of projects nominated by governments provided by the European Commission on 28 February 2022, in response to an information request from CEE Bankwatch Network.*

110 *Western Balkans Investment Framework, Skavica Hydro Power Plant, accessed 12 July 2022.*

111 *DG NEAR, Response to CEE Bankwatch Network, 20 June 2022.*

Part of the area that would be flooded by the Skavica hydropower plant

Photo credit: Andrey Ralev

Bistrica B-1, B-2, B-3, Bosnia and Herzegovina

Project promoter: **Hidroelektrane Bistrica d.o.o, a subsidiary of Elektroprivreda Republike Srpske**

Installed capacity: **Total 34 MW: B-1 10.7 MW; B-2 7.2 MW; B-3 16.2 MW**[112]

Lead contractor: **China National Aero-Technology International Engineering Corporation (AVIC-ENG)**

Financing: **Own capital; potential bond issue; EUR 15.3 million Unicredit Banja Luka loan**[113]

River: **Bistrica, a tributary of the Drina near Foča**

Protected areas/species: **Bistrica canyon (designated for protection); Species: Stone crayfish, brown bear, lynx**

Other key risks: **Local opposition, old hydrological data, poor quality EIAs, no cumulative assessment**

Anyone who has travelled the road from Sarajevo to Foča cannot fail to have admired the Bistrica canyon. In other countries, it would be a protected area with streams of tourists, but here it is yet another site where a series of three hydropower plants are planned.

After successive owners of Hidroelektrane Bistrica d.o.o failed to build the plants, in 2019, an Elektroprivreda Republike Srpske subsidiary, HE na Drini, bought the project company. At the same time, government representatives were negotiating with China's AVIC-ENG to build the plants. In December 2019 an agreement was signed, which was presented at the time as an 'initial agreement'.[114] However, it was later referred to as a 'contract' in HE na Drini's business plan for 2021 to 2023,[115] raising questions about what exactly was signed and whether there was any tender procedure.

In December 2021, it was reported that works had started at the Bistrica site; however, the on-site notice announcing the works cited construction permits that had expired years ago and the plants had not been subject to an EIA, thus construction could not be legal.[116] As had happened earlier in 2021 with the nearby Buk Bijela dam, preparatory works[117] were being carried out before funding was even secured for the project and were pumped up for the media.

Indeed, the main source of financing for the dams – estimated to cost around EUR 100 million – is still not completely clear as of early July 2022. In 2019 the Industrial and Commercial Bank of China (ICBC) was named as a potential lender,[118] but nothing seems to have come of this. In late 2021 it was reported that Elektroprivreda Republike Srpske would issue bonds on the Vienna Stock Exchange,[119] but as of early July 2022 this does not seem to have happened yet.

In early 2022 it was reported that HE na Drini would inject additional share capital into Hidroelektrane Bistrica d.o.o., despite the opposition of minority shareholders, and that two calls for partial financing had failed to secure any offers.[120] What has been confirmed is a EUR 15.3 million loan from the local Unicredit subsidiary in Banja Luka,[121] which would cover only a small part of the project.

[112] *HE Bistrica company website, accessed 23 June 2022.*

[113] *Igor Todorović, 'UniCredit to partly finance Bistrica hydropower project in BiH', Balkan Green Energy News, 18 April 2022.*

[114] *Igor Todorović, 'China inks first deal for three HPPs in Srpska in BiH worth EUR 100 million', Balkan Green Energy News, 6 December 2019.*

[115] *HE na Drini, Konsolidovani plan poslovanja za period 2021.-2023. godina, January 2021.*

[116] *Center for Environment, Kamen temeljac za HE na Bistrici postavljen bez važećih dozvola, 29 December 2021.*

[117] *A look at the on-site notice shows the works are preparatory. See Capital.ba, Kinezi grade hidrocentrale u RS bez potrebnih dozvola i mimo zakona, Capital.ba, 7 June 2022.*

[118] *Igor Todorović, China inks first deal for three HPPs in Srpska in BiH worth EUR 100 million.*

[119] *Vladimir Spasić, 'ERS power utility gets nod to issue bonds on Vienna Stock Exchange', Balkan Green Energy News, 2 December 2021.*

[120] *Dejan Tovilović, 'HE "Bistrica": Nema novca za gradnju, traži se dokapitalizacija od 56 miliona', Capital.ba, 19 January 2022.*

[121] *Igor Todorović, 'UniCredit to partly finance Bistrica hydropower project in BiH', Balkan Green Energy News, 18 April 2022.*

The river Bistrica near Foča

Photo: Adobe Stock

It was only in March 2022 that EIAs were finally published for public consultation.[122] Despite the three hydropower plants all clearly belonging to one project on one river, three different studies were published. Local people, having seen what other hydropower plants had done to nearby rivers, were highly critical of the plans. The studies were of poor quality, not even mentioning protected species like the stone crayfish, and presenting old water flow data only going up to 2006.[123]

It remains to be seen whether the Bistrica projects will ever go ahead. But one thing is for sure – having seen what has happened at other locations where hydropower plants were built, local people are no longer ready to blindly accept any project that comes their way.

122 *Ministry of Spatial Planning, Construction and Ecology of Republika Srpska, Obavještenje o javnom uvidu u nacrte studija uticaja na životnu sredinu za projekat izgradnje hidroelektrana „B-3", „B-2a" i „B-1" na rijeci Bistrici, 23 March 2022.*

123 *Center for Environment, Na javnoj raspravi u Foči građani poručili da ne žele hidroelektrane na Bistrici!, 11 April 2022.*

Buk Bijela, Foča and Paunci, Bosnia and Herzegovina

Project promoter: **HES Gornja Drina d.o.o., 49 per cent owned by Elektroprivreda Republike Srpske and 51 per cent by Elektroprivreda Srbije**[124]

Installed capacity: **Buk Bijela: 93 MW; Foča: 44 MW; and Paunci: 43 MW**

Lead contractor: **None confirmed – possibly China National Aero-Technology International Engineering Corporation (AVIC-ENG)**

Financing: **None yet**

River: **Upper Drina**

Protected areas/species: **Likely impacts on the UNESCO-protected river Tara, part of Durmitor National Park in Montenegro; impacts on endangered Huchen (Danube Salmon). The planned Natura 2000 site Maglić-Volujak-Zelengora includes part of the planned reservoir area.**

Other key risks: **Legal, transboundary, outdated hydrological data**

The Buk Bijela hydropower plant is planned by the public utility Elektroprivreda Republike Srpske (ERS) a few kilometres downstream from the Montenegrin border where the rivers Tara and Piva join to form the river Drina. Its reservoir would reach several kilometres upstream, touching the Montenegrin border.

As Buk Bijela is expected to be a peaking plant, the Foča and Paunci plants are planned further downstream to partly mitigate the impacts of the water level changes.

A memorandum on construction of the plants was signed with China National Aero-Technology International Engineering Corporation (AVIC-ENG) in July 2017.[125]

A larger version of the Buk Bijela project has been disputed since the 1970s due to its impacts on the protected Tara canyon in Montenegro, a UNESCO World Heritage site and part of the Durmitor National Park. The newer, smaller version would still impact Montenegro, because it would block fish migration from the narrow Tara canyon to spawning grounds downstream.

The river Drina and its tributaries such as the Tara constitute the most significant habitat in the world for the endangered[126] Danube salmon (*Hucho hucho*) in terms of habitat length. Over the last 100 years *Hucho hucho* has undergone a massive decline. It is now found only in a few of southeast Europe's cleanest rivers. This fish is highly sensitive to low oxygen and moderate levels of pollution and is a good indicator for river health.[127]

The IUCN states that the main threat to the species is the flow regulation from hydropower dams which impact Hucho hucho, its prey, habitat and pollution.[128] A 2015 study concluded that there must be no hydropower development, including micro-hydropower, in rivers holding self-sustaining populations of Danube salmon.[129]

Hucho hucho is protected under Annex III of the Bern Convention and Annex II of the European Union Habitats Directive[130] as a species of community interest whose conservation requires the designation of special areas of conservation.[131] If the river was in the EU, the project would be unlikely to be allowed to go ahead, either under the Habitats Directive or the Water Framework Directive.

124 *Public Enterprise Elektroprivreda Srbije Beograd, Financial Statements For The Year Ended 31 December 2020 And Independent Auditor's Report, June 2021.*

125 *Balkan Green Energy News, Memorandum of cooperation on construction of HPP Buk Bijela signed, Balkan Green Energy News, 10 July 2017.*

126 *IUCN Red List, Danube salmon, 2008.*

127 *Jörg Freyhof et al., The Huchen Hucho hucho in the Balkan region - Distribution and future impacts by hydropower development, Euronatur and RiverWatch, March 2015.*

128 *IUCN Red List, Danube salmon.*

129 *Freyhof et al., The Huchen Hucho hucho in the Balkan region - Distribution and future impacts by hydropower development.*

130 *Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.*

131 *Council of Europe, Convention on the Conservation of European Wildlife and Natural Habitats, Appendix III – Protected Fauna Species, Bern, 1979.*

The upper Drina projects are subject to several ongoing legal cases. Environmental impact assessments were carried out for the Buk Bijela and Foča plants between 2011 and 2013, and so are outdated by now. They were of extremely poor quality, failing to specify exactly which species are present at the site, using old hydrological data, failing to assess the cumulative impacts of the three dam projects, and claiming that Buk Bijela would not affect Montenegro without offering any evidence.

Yet the Republika Srpska authorities have not required updates to the studies. Partly as a result of this, the environmental permits for the Buk Bijela and Foča projects are subject to legal disputes.

In December 2019 a new environmental permit was issued for Buk Bijela;[132] however, no new environmental impact assessment was carried out, despite a request from Montenegro. The decision not to require a new environmental assessment is being challenged in court by the Aarhus Centre in Bosnia and Herzegovina and as of July 2022 the Republika Srpska Supreme Court is examining the case.

In June 2021 several NGOs submitted a complaint to the Energy Community Secretariat due to the Republika Srpska authorities' failure to require new environmental assessments for the projects and due to the fact that the existing ones are not in line with the EU Environmental Impact Assessment Directive. The complaint is under examination, but a recent World Bank report[133] has implicitly confirmed several of the claims made and found a number of deficiencies in the environmental impact assessments.

In 2019 Montenegro expressed interest in taking part in transboundary consultations based on a new environmental impact assessment, but Republika Srpska did not require a new assessment. In May 2020, civil society organisations from Montenegro and Bosnia and Herzegovina submitted a complaint to the Implementation Committee of the Espoo Convention on Environmental Impact Assessment in a Transboundary Context.[134] In December 2020 this was superseded by a complaint by the Montenegrin government.[135] As of July 2022, the case is still under consideration.

In December 2020, 24 parliamentarians from the House of Representatives in the state-level Parliament of Bosnia and Herzegovina announced they had submitted a request to the Bosnia and Herzegovina Constitutional Court to examine the Republika Srpska government's decisions to issue concessions for Buk Bijela, Foča and Paunci.[136]

They claimed the decisions breached the Bosnia and Herzegovina constitution, as they prevented the state-level institutions from being able to manage state property – in this case a river forming part of the country's boundary. They also argued that previous decisions of the Constitutional Court had been breached, which found riverbeds and river water to be 'public goods' which are state property.

In July 2021 the Constitutional Court made a partial decision,[137] finding that a dispute regarding the decision by Republika Srpska to issue the concessions exists, and ordering the Commission for Concessions of Bosnia and Herzegovina to resolve the matter within three months. However, due to issues regarding the composition of the Commission,[138] the issue is still pending as of early July 2022.

No evidence has been published on the economic costs and benefits of the upper Drina projects, nor their financial feasibility. A World Bank report published in late 2021 identified numerous issues in the design and feasibility assessment for the Buk Bijela and Foča projects, including a relatively high Levelised Cost of Energy (LCOE) for the Buk Bijela plant. It recommended that the design of the project and the feasibility study of the two plants be updated.[139]

In May 2021 a supposed 'groundbreaking' ceremony was held for Buk Bijela, but this was largely a bluff.[140] The plants do not have financing, nor construction permits, and face significant opposition from various parties.

132 *Ministry for Spatial Planning, Construction and Ecology of Republika Srpska, Decision no 15.04-96-79/19, 18 December 2019.*

133 *World Bank, Technical Assistance on Integrated Water and Hydropower Development in the Drina River Basin Overall Summary (English), World Bank Group, December 2021.*

134 *UNECE, EIA/IC/INFO/33, Implementation Committee - Correspondence as a result of information provided to the Committee from other sources.*

135 *Montenegro Ministry of Sustainable Development and Tourism, Submission by Montenegro having concerns about the compliance of the (sic) Bosnia and Herzegovina with its obligations under the Convention on Environmental Impact Assessment in a Transboundary Context - Espoo and the Protocol on Strategic Environmental Assessment (SEA) in respect of the activity of construction of the hydropower plant Buk-Bijela on the Drina river, December 2020.*

136 *Parlamentarna skupština Bosne i Hercegovine, Saopćenje dvadeset i četiri poslanika Predstavničkog doma Parlamentarne skupštine BiH povodom podnošenja Zahtjeva Ustavnom sudu BiH radi rješavanja spora sa entitetom Republika Srpska, 28 December 2020.*

137 *Constitutional Court of Bosnia and Herzegovina, Djelomična odluka o dopustivosti i meritumu, predmet U-16/20, 16 July 2021*

138 *Tina Jelin-Dizdar, 'Sud BiH osporio sastav: Komisije za koncesije ne može donositi odluke', N1, 15 February 2022.*

139 *World Bank, Technical Assistance on Integrated Water and Hydropower Development in the Drina River Basin Overall Summary (English).*

140 *Pippa Gallop, Drina dam "groundbreaking" event met by scepticism and protests, CEE Bankwatch Network, 17 May 2021.*

The upper Drina where the Buk Bijela hydropower plant would be built

Photo credit: Dobrica Mitrović

Dabar/Upper Horizons, Bosnia and Herzegovina

Project promoter: **Hidroelektrana Dabar d.o.o., a subsidiary of Elektroprivreda Republike Srpske**

Installed capacity: **160 MW**

Lead contractor: **China Energy Gezhouba Group**

Financing: **EUR 180 million loan from China Exim Bank**[141]

River: **Zalomka, with impacts on Neretva, Buna, Bunica, Bregava**

Protected areas: **Numerous, including Hutovo Blato Ramsar site, Delta Neretve Natura 2000 site, Buna and Bunica springs**

Other key risks: **Impacts on key karst rivers in the Federation of Bosnia and Herzegovina, transboundary impacts on Croatia**

The 160 MW Dabar hydropower plant is part of the massive Upper Horizons scheme, first conceived in the middle of the 20th century. It would involve a series of tunnels and dams moving water from the Neretva basin to the Trebišnjica basin. The largest dam, and the first to be built, would be Dabar, with an installed capacity of 160 MW, followed by Nevesinje (60 MW) and Bileća (32 MW).

The potential impacts from the project are hotly debated and may be extremely far-reaching. It is likely they are not all understood due to the complexity of the karst underground. First, the project would decrease the flow of the river Neretva, whose delta in Croatia is already suffering from salination. As an important agricultural area, this in itself is a massive impact.[142]

However, the project would also involve closing a large sinkhole in the Nevesinjsko karst field, which may endanger the water flow to the iconic Buna, Bunica and Bregava rivers that are of absolutely crucial importance to towns like Blagaj and Stolac as well as being home to protected species.[143]

An EIA was carried out for the Dabar hydropower plant in 2012, but the Upper Horizons scheme as a whole has never been subject to either a strategic environmental assessment or an EIA, nor will the Dabar EIA have taken into account the increasingly erratic rainfall and hydropower production that have characterised the last few years.

The project has faced strong public opposition in both the Federation of Bosnia and Herzegovina (FBiH) and Croatia, and the FBiH government launched a court case against the EIA approval in 2012.[144] Since the relevant court was in Banja Luka, it unsurprisingly ruled in favour of the Republika Srpska authorities.[145]

Although a tunnel has already been built, for some time the project did not seem to be moving forward, and the strong public outcry from earlier years seemed to abate. However, the announcement in January 2022 that a financing contract had been signed with the China Exim Bank saw renewed pledges to stop the project from the ruling SDA party in the Federation of Bosnia and Herzegovina.[146] Given the likely seriousness of the impacts of the Upper Horizons complex, public opposition to the project – and corresponding political opposition – in FBiH and Croatia is expected to increase rather than decrease in the future.

[141] *Daria Sito-Sucic, 'Bosnia's HE Dabar seals deal with China's Exim bank for 160 MW hydropower plant'.*

[142] *WWF Adria, Loša energetska politika uništava deltu Neretve, 24 July 2012.*

[143] *Faktor.ba, Hoće li izgradnja HE Dabar na Trebišnjici ugroziti Neretvu i njene pritoke, zašto RS odbija saradnju sa FBiH, Faktor.ba, 7 January 2022.*

[144] *Federal Ministry for Environment and Tourism, Problematika Gornjih horizonata i izgradnje HE „Dabar" u RS-u se rješava putem suda, 12 September 2012.*

[145] *Nezavisne Novine/SRNA, "Dabar" ne ugrožava životnu sredinu, Nezavisne novine, 6 November 2014.*

[146] *Dnevni Avaz, SDA: Vlada RS izgradnjom HE "Dabar" ugrožava cijeli ekosistem Hercegovine, poduzet ćemo sve da to spriječimo, Dnevni Avaz, 7 January 2022.*

The stunning Bregava river is threatened by the Upper Horizons complex

Photo: Adobe Stock

Ulog and Upper Neretva, Bosnia and Herzegovina

Project promoter: **EFT - HE Ulog d.o.o, a subsidiary of the EFT Group**

Installed capacity: **35 MW**

Lead contractor: **Sinohydro, China**

Financing: **Reportedly, EFT's own funds – talks with China Development Bank were unsuccessful**[147]

River: **Upper Neretva**

Protected areas: **Gornji tok Neretve Emerald Site**

Other key risks: **Geological – landslides**

The EFT Group's 35 MW Ulog plant, with a 53-metre high dam, is currently being built by China's Sinohydro. A series of seven smaller plants is also planned further upstream by local company Marvel d.o.o. and will turn most of the upper course of the river – a section of about 38 kilometres – into a series of dams, pipes and reservoirs.

Work on the Ulog plant started for the first time in 2013, but in July that year, two fatal incidents took place and works stopped. On 4 July, a worker from the Prijedorputevi company was killed by a rock breaking off a cliff face while building access roads. Only four days later on 8 July, another worker from the same company was also killed by a rockslide, and another worker taken to hospital.[148] After this, the works were put on hold while more research was done, but in 2017 the project was redesigned with the dam slightly further downstream. It remains to be seen whether the new design will be any safer.

People living downstream fear that the operational phase of the plant will also put them in danger, as the location where the plant is being built is where a landslide in 1934 caused the biggest floods in the history of Konjic.[149] According to local people, the landslide blocked the Neretva, which then burst through, sending a massive wave downstream.

The Ulog project is also subject to international legal challenges under the Bern Convention and Energy Community Treaty, as the Bosnia and Herzegovina authorities[150] failed to protect the upper Neretva – part of the Convention's Emerald Network[151] – by permitting hydropower development along its entire length.

Although the EIA studies for the Ulog project and the other Upper Neretva hydropower projects identified several significant species such as otters and crayfish being present, the government of the Republika Srpska Entity concluded, without any evidence, that these projects would not have a negative impact on the environment and could be implemented.

It is also not clear whether the Ulog plant will be used for peak electricity generation and if so, what the downstream impacts of major daily variations in water level will be. Considering the rich biodiversity downstream above Konjic, including marble trout, the endangered soft-mouthed trout, crayfish, kingfishers and bee-eaters, this is a major concern.

Despite being under construction, the project remains very high-risk and public opposition, particularly from the downstream Federation of Bosnia and Herzegovina, is expected to increase rather than decrease.

[147] *Republika Srpska Komisija za koncesija, Izvještaj o radu i finansijski izvještaj za 2019. godinu, April 2020, 61.*

[148] *FENA, U odronu kamenja poginuo radnik Prijedorputeva; RTVBN, Zbog pogibije dva radnika zabranjen rad Prijedorputevima.*

[149] *Sarajevska Sehara, Neretva umire, a Konjic šuti/ Katastrofalne fotografije Gornje Neretve na lokalitetu izgradnje HE Ulog.*

[150] *In practice, the Republika Srpska authorities are responsible for this section of the upper Neretva, however it is Bosnia and Herzegovina which is the signatory of international treaties.*

[151] *The Emerald Network is an ecological network consisting of natural areas of special interest for protection, located in the member states of the Bern Convention. Due to its uniqueness, the upper course of the Neretva River had already been put forward for protection within this network in 2005.*

Part of the Neretva that would be flooded by the Ulog hydropower plant

Photo credit: Amel Emrić

Janjići, Bosnia and Herzegovina

Project promoter: **Elektroprivreda Bosne i Hercegovine (EPBiH)**

Installed capacity: **15.75 MW**

Lead contractor: **None so far**

Financing: **None (KfW withdrew in early 2022)**[152]

River: **Bosna**

Protected areas/species: **Proposed as Natura 2000 in 2015 study;**[153] **Danube Salmon, Sava bleak and other protected species present**[154]

Other key risks: **Local opposition, legal challenges**

The 15.75 Janjići hydropower plant is one of several planned on the river Bosna – the largest river that is completely within Bosnia and Herzegovina.

From its source in the outskirts of Sarajevo, it flows north for 271 kilometres to its mouth in the river Sava. It is also one of the few large Balkan rivers with no hydropower plants or major dams, despite some plans being around for decades.

The river has a reputation as being highly polluted, but there have been improvements since some heavy industries closed in the 1990s war.

A 2021 survey of local anglers found that the river's upper stretches are home to at least 34 fish species, several of which are protected. The endangered Huchen or Danube salmon (*Hucho hucho*), recently-described Sava bleak (*Alburnus Sava*), asp (*Aspius aspius*), Danube barbel (*Barbus balcanicus*), Vladykov's lamprey (*Eudontomyzon vladykovi*), and Balkan loach (*Cobitis elongata*) are all found in the river stretch where the Janjići plant is to be built, as are otters, crayfish and beavers.[155]

In 2014 a EUR 30 million loan agreement between KfW and public utility Elektroprivreda Bosne i Hercegovine (EPBiH) was signed for the Janjići plant.[156] In 2016 an environmental impact assessment was carried out and an environmental permit issued.[157] Locals opposed the plans and submitted a petition against the plant.[158]

For several years little seemed to happen, until in December 2020 the Zenica City Council took a decision that the construction of the Janjići hydropower plant is in the public interest on the basis of signatures from local community leaders that were given without first holding a public consultation[159] – in breach of Article 66 of the Statute of the City of Zenica.[160] NGO Eko Forum Zenica and local parish councils collected more than the required 1,500 signatures for a citizen's initiative to overturn the decision in just a few days,[161] but the initiative was rejected by the city council.[162]

In early 2022, KfW confirmed that it was dropping financing for the project,[163] leaving it without financing and with scant prospects for going ahead. Nevertheless, EPBiH has not given up and in March 2022 the Federal Ministry for Environment decided that neither the Janjići plant nor the Vranduk plant planned just a few kilometres downstream needed a new EIA study. This decision was challenged in court by NGOs in April 2022, further increasing the legal uncertainty around the project.

[152] *CEE Bankwatch Network, Aarhus Centre Sarajevo, Eko-Forum Zenica, RiverWatch, Major blow to Bosnia hydropower project as Germany's KfW drops financing plans.*

[153] *Đorđije Milanović and Aleksander Golob, Projekat „Podrška provođenju Direktive o staništima i Direktive o pticama u Bosni i Hercegovini", Bulletin of the Forestry Faculty, University of Banja Luka, no. 22, 2015.*

[154] *Andrey Ralev, The river Bosna – a neglected gem of Bosnia and Herzegovina, CEE Bankwatch Network, 22 March 2022.*

[155] *Ibid.*

[156] *Elektroprivreda BIH, Annual Report 2014, May 2015.*

[157] *Eko Forum Zenica, Okolinske dozvole, accessed 1 July 2022.*

[158] *S. Stević, Mještani Janjića, Gorice, Putovića i Drivuše protiv izgradnje mHE Janjići, Zenicainfo.ba, 27 December 2020.*

[159] *Eko Forum Zenica, 1.563 potpisa za spas Janjićkih slapova, 6 April 2021.*

[160] *Statute of the City of Zenica, Official Gazette of the City of Zenica, No. 6/14, 5/15*

[161] *Eko Forum Zenica, 1.563 potpisa za spas Janjićkih slapova, 6 April 2021.*

[162] *Eko Forum Zenica, Gradsko vijeće Zenica "ne tres in idem", 3 June 2021.*

[163] *Aarhus Centre Sarajevo, CEE Bankwatch Network, Eko Forum Zenica, RiverWatch, Major blow to Bosnia hydropower project as Germany's KfW drops financing plans.*

The river Bosna near the planned Janjići hydropower plant.

Photo credit: Dobrica Mitrović

Yadenitsa, Bulgaria

Project promoter: **National Electric Company (NEK EAD)**

Installed capacity: **None per se - would increase the reservoir capacity of Chaira pumped storage plant**

Lead contractor: **None yet**

Financing: **None yet (Connecting Europe Facility financing only for project preparation)**

River: **Yadenitsa**

Protected areas: **Nilska Rila proposed Natura 2000 site**

Other key risks: **Geological risks, public opposition**

Promoted as an important investment project by the National Electric Company (NEK EAD),[164] the Yadenitsa dam in Bulgaria is planned to increase the amount of water that the existing Chaira pumped storage plant can pump up to the Belmeken reservoir.

This is planned by connecting the existing Chaira reservoir and a new Yadenitsa reservoir with a reversible 6,730-metre-long pressure tunnel.

The dam was declared a project of national importance in 2012 and for several years featured in the European Commission's list of Projects of Common Interest (PCIs).[165] As a result, the preparatory works were co-financed by the EU Innovation and Networks Executive Agency (INEA).[166] However, the 5th PCI list stated that the project, no. 3.23, is no longer considered a PCI.[167]

On 15 June 2022, at one of its last sessions before resignation, the Bulgarian Council of Ministers approved 55 pieces of state property to be transferred to NEK EAD for the construction of the dam and reservoir. The government plans to build the dam in the next six years. Before Russia's full-scale invasion of Ukraine, the cost of the dam was estimated at EUR 220 million.[168]

The project is more than risky. Water from the new reservoir and tunnel may well be lost in the multiple tectonic cracks in the area, just as at the Tsankov Kamak dam. The dam wall is planned to be built just above the Yadenitsa seismic fault between the Rila and Rhodope Mountains, posing a threat to the people who live downstream, as the National Institute of Geophysics, Geodesy and Geography confirmed in 2017.[169] Earthquakes can result in damage or failures for dam structures, while dams with large reservoirs can also induce earthquakes.[170]

Additionally, the project would have a significant impact on the Niska Rila Natura 2000 site,[171] officially proposed in 2019. The impacts of additional water extraction and construction in the riverbed have not been assessed yet and a new appropriate assessment with the Natura 2000 site would need to be done, opening the project to legal risks.

Niska Rila was the last proposed Natura 2000 site and its Standard Data Form has still not been updated, which means that many species and habitats are not listed at all in order to hide possible impacts of the dam.

[164] *NEK EAD, Yadenitsa project, accessed 1 July 2022*

[165] *European Commission, Key cross border infrastructure projects, accessed 22 June 2022.*

[166] *Connecting Europe Facility, Innovation and Networks Executive Agency, Hydro-pumped storage in Bulgaria - Yadenitsa, last updated April 2021.*

[167] *European Commission, Key cross border infrastructure projects, accessed 22 June 2022.*

[168] *Vladislava Peeva, 'до 6 години повец чаира ще-се равнява на ядрен блок', Mediapool.bg, 23 June 2022.*

[169] *Letter from the National Institute of Geophysics, Geodesy and Geography to the Ministry for Environment and Water, 7 July 2017.*

[170] *Hasan Tosun, Earthquakes and dams, in Abbas Moustafa, Ed., Earthquake Engineering - From Engineering Seismology to Optimal Seismic Design of Engineering Structures, IntechOpen, 20 May 2015.*

[171] *Natura 2000 Standard Data Form, BG0000636 Niska Rila, accessed 1 July 2022.*

The Yadenitsa dam would increase the capacity of the Chaira pumped storage plant

Photo credit: Anton Lefterov

The economic benefits of the project are also very doubtful. In order for the Yadenitsa dam to operate, all four generator units of the Chaira plant need to be operational, which has not been the case for many years. Moreover, in March 2022, during the testing of one of the two rehabilitated turbine units at Chaira plant, the facility was destroyed by the force of the water.[172]

The unit had just been renovated via a EUR 37 million project mainly financed by the Kozloduy International Decommissioning Support Fund (KIDSF), administered by the EBRD.[173] Shortly after, on 4 May, the last working unit crashed and the 864 MW plant completely stopped working, with monthly losses for Bulgaria estimated at EUR 25 million.[174] It is not clear when or how this damage will be repaired.

This extremely high-risk project for human safety and nature would most probably not work as planned. The fact that it is promoted by the same National Electric Company which proved incapable of rehabilitating two old turbines is a recipe for disaster.

172 *Ivaylo Stanchev, 'Тежка авария в ПАВЕЦ "Чаира" блокира централата за месеци', Capital.bg, 23 March 2022.*

173 *European Bank for Reconstruction and Development, Rehabilitation of Belmeken – Sestrimo – Chaira Hydro Complex and Rehabilitation of Vacha-1 HPP 110kv Switchyard and HPP Systems of Integrated Control, Procurement notice, 6 January 2017.*

174 *Ivaylo Stanchev, 'След поредна авария ПАВЕЦ "Чаира" е спряла напълно', Capital.bg, 4 May 2022.*

Residents of Kosinj protest against expropriation

Photo credit: Zelena akcija

Kosinj/Senj II, Croatia

Project promoter: **Hrvatska Elektroprivreda (HEP)**

Installed capacity: **412 MW**

Lead contractor: **None yet**

Financing: **None yet**

River: **Lika/Gacka**

Protected areas: **HR2001012 - Ličko polje Natura 2000 area (Special Area of Conservation),**[175] **also protected as HR1000021 Lička krška polja (Special Protection Area)**

Other key risks: **Expropriation, public opposition**

The Senj II/Kosinj hydropower complex would extend the existing Senj hydropower complex, built in the 1960s in the Lika region. The existing complex consists of the Senj (216 MW) and Sklope (22.5 MW) hydropower plants.[176] Although it would add 412 MW in installed capacity, it would mostly operate in peaking mode and generate a maximum of 320 gigawatt hours (GWh) annually.[177]

[175] *Elektroprojekt, HES Kosinj, Studija o utjecaju na okoliš HES Kosinj, SUO sa glavnom ocjenom prihvatljivosti za ekološku mrežu, 2016.*

[176] *Hrvatska Elektroprivreda, Hidroenergetski sustav Senj 2, accessed 1 July 2022.*

[177] *According to Hrvatska Elektroprivreda, Hidroenergetski sustav Senj 2, accessed 1 July 2022. However, the government's decision to declare the project 'strategic' gives an even lower figure – 230 GWh – and the Environmental Impact Assessment says up to 273 GWh.*

The construction of three dams (Kosinj, Sedlo, Bakovac) is planned, as well as tunnels and canals that would divert the waters of the Bakovca stream to the Lika river. This requires over six kilometres of 'injection curtains', which involves pumping over 75,000 tonnes of cement[178] into sensitive underground ecosystems in order to ensure that the reservoir actually holds water in this porous, karst terrain. The project area partly overlaps with the NATURA 2000 ecological network as well.

Although the Croatian government has declared it a 'strategic project',[179] HEP has never publicly disclosed any information on the project's economic feasibility, nor on its financing.

The construction of the 1,155-hectare reservoir will completely submerge the settlements of Gornji Kosinj and Mlakva, and their population will be displaced. The project is opposed by a significant number of local residents who have been held hostage by this project for 40 years. During this time they have not been able to carry out any long-term planning or obtain building permits for building/expanding houses or rebuilding infrastructure.

Residents demonstrating in Zagreb have stated that they will not let HEP take away their property, while lawyers assisting them have highlighted irregularities in the process.[180]

The last straw for many was when the 'exhumation' of graveyards was crudely carried out by diggers in 2021 without even consulting the local church authorities, resulting in protests.[181]

Despite HEP's grand announcements in 2020[182] that the project's construction had begun, this was largely a bluff. Preparatory works are ongoing but the main project still has no financing and is likely to become increasingly embroiled in legal issues around the resettlement.

Komarnica, Montenegro

Project promoter: **Elektroprivreda Crne Gore (EPCG)**

Installed capacity: **172 MW**

Lead contractor: **None yet**

Financing: **None yet**

River: **Komarnica**

Protected areas: **Komarnica candidate Emerald Site (ME000000P); Dragišnica and Komarnica Regional Park; potential area for expansion of the Durmitor National Park; three potential Natura 2000 sites: Bukovica Valley and Vojnik Mountain under the Birds Directive and the Komarnica and Pridvorica sites under the Habitats Directive**

Other key risks: **Legal, public opposition**

178 *Elektroprojekt, HES Kosinj, Studija o utjecaju na okoliš HES Kosinj, SUO sa glavnom ocjenom prihvatljivosti za ekološku mrežu, 2016, 44.*

179 *Government of the Republic of Croatia, Odluka o proglašenju projekta »Hidroenergetski sustav Kosinj« strateškim investicijskim projektom Republike Hrvatske, 29 July 2021.*

180 *Zelena akcija, Kosinjani: Odustanite od izvlaštenja, ne damo Kosinjsku dolinu!, 8 April 2022.*

181 *YouTube, Prosvjedi u Gornjem Kosinju protiv izgradnje brane: Odlazak na groblje 30.10.2021., 30 October 2021.*

182 *Snježana Bičak, Počela realizacija dva megaprojekta u Lici: Investicija vrijedna čak 3,4 milijarde kuna, Večernji List, 18 October 2020*

The Komarnica hydropower plant is planned 45 kilometres upstream from the existing 342 MW Piva power plant. It would feature a 171-metre high concrete arch dam and a 17.6-kilometre long reservoir. As a peaking plant, it is expected to generate only 213 GWh of electricity annually, compared to an average of 860 GWh generated by the Piva plant, which also works in peaking mode.

It is unclear why Montenegro, which already generates 40 to 60 per cent of its electricity from hydropower, depending on rain and snowfall, needs yet another hydropower plant, and no evidence of Komarnica's economic viability is available to the public. A system with such a high percentage of hydropower is already highly vulnerable to climate change, as can be seen from its wide annual fluctuation in generation (see Annex 2), and desperately needs diversification of its renewables.

The project would flood part of the Komarnica candidate Emerald Site (ME000000P) and the Dragišnica and Komarnica Regional Park. The area is also part of three potential Natura 2000 sites: Bukovica Valley and Vojnik Mountain under the Birds Directive and the Komarnica and Pridvorica sites under the Habitats Directive. Moreover, the Komarnica river has been identified as a potential area for the expansion of the Durmitor National Park and UNESCO site, but so far has only been awarded a weaker 'Regional Park' status.

The area is home to numerous protected species, including wolves, bears, Balkan chamois, otters, stone crayfish, golden eagles, rock partridges and corncrakes. Yet the full extent of the likely damage by the project is not yet known due to only partial fieldwork having been done. Unique caves and cliffs would be flooded before their biodiversity is even properly researched.

The project's environmental assessment, published in February 2022, reads more like an advertisement brochure than a scientifically grounded study, leaving it open to legal challenges. Indeed, the Montenegrin Ecological Society, KOD and the Nikšić Young Ecologists' Association submitted a complaint to the Bern Convention in April 2022, alleging Montenegro's failure to protect the Komarnica Emerald Site and to properly assess the project's impacts on it.[183]

Montenegro has a duty to protect its candidate Emerald sites under the Bern Convention and must carry out an 'appropriate assessment' for any project which may significantly impact an Emerald site or Natura 2000 site. If it is found that the impact will be significant, the project may not go ahead unless a specific assessment finds it to be a project of 'overriding public interest'. But the Komarnica environmental impact assessment does not include any 'appropriate assessment' at all.

Similarly, projects that would degrade the river's status are not allowed under the EU Water Framework Directive unless they obtain the right to a derogation under Article 4(7) of the Directive. Again, a detailed assessment is needed, which has not been carried out in the case of Komarnica.

Overall, the careless and low-quality environmental assessment so far leaves the project wide open for legal challenges, and public opposition to Komarnica is growing.

The Montenegrin government requested funds for the project as a Flagship under the EU Economic and Investment Plan.[184]

However, the European Commission has confirmed that none of the greenfield hydropower projects proposed have been endorsed for funding within the Western Balkans Investment Framework (WBIF).[185] This also leaves it entirely unclear where the project will be funded from.

[183] *Radio i Televizija Crne Gore, 'Žalba međunarodnoj organizaciji zbog odluke o gradnji hidroelektrane na Komarnici', Radio i Televizija Crne Gore, 14 April 2022.*

[184] *List of projects nominated by governments provided by the European Commission on 28 February 2022, in response to an information request from CEE Bankwatch Network.*

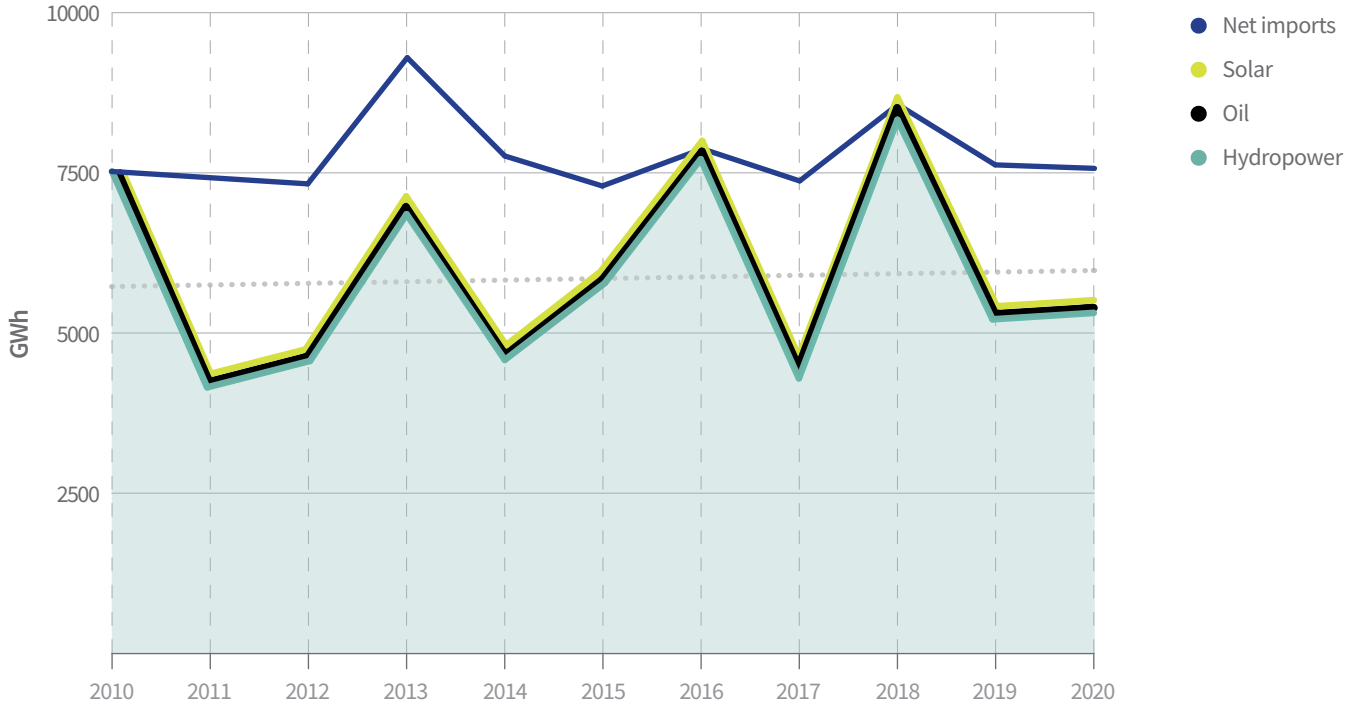
[185] *DG NEAR, Response to CEE Bankwatch Network, 20 June 2022.*

The Komarnica canyon

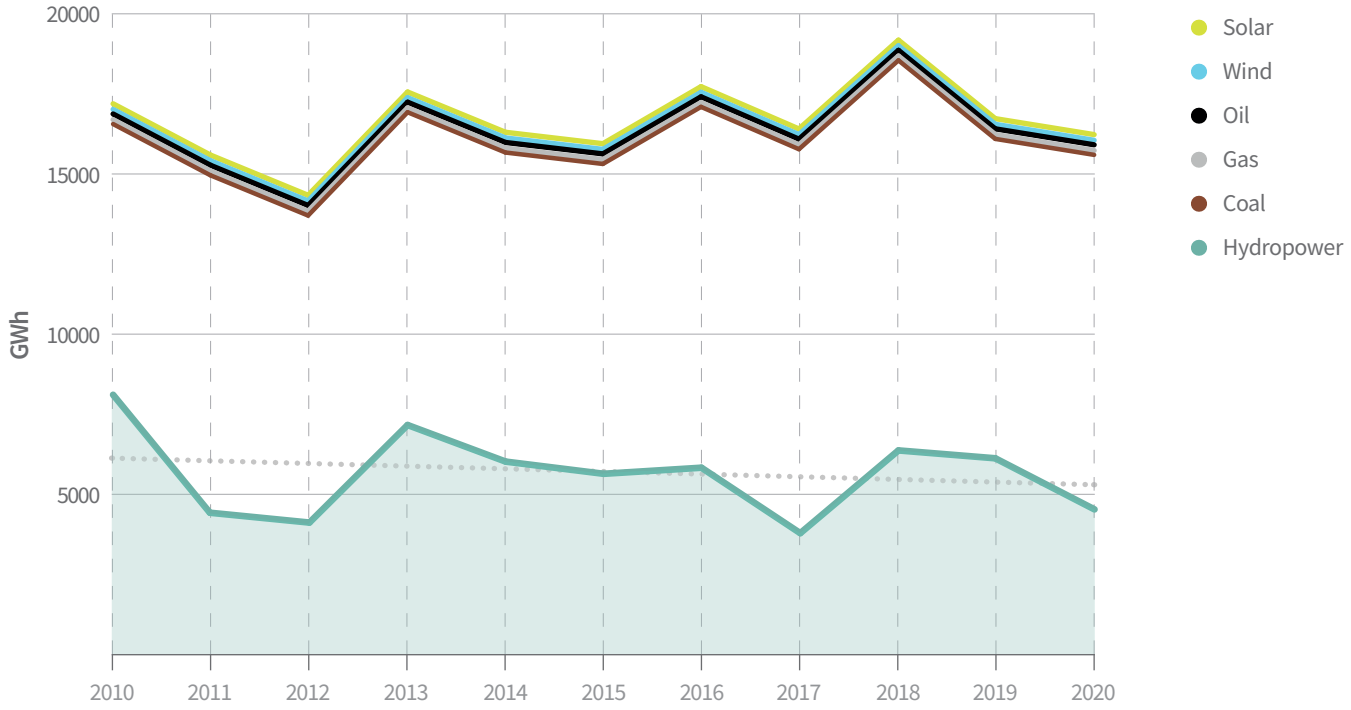
Photo credit: Dobrica Mitrović

Annex 2: Electricity generation by source per country, 2010-2020

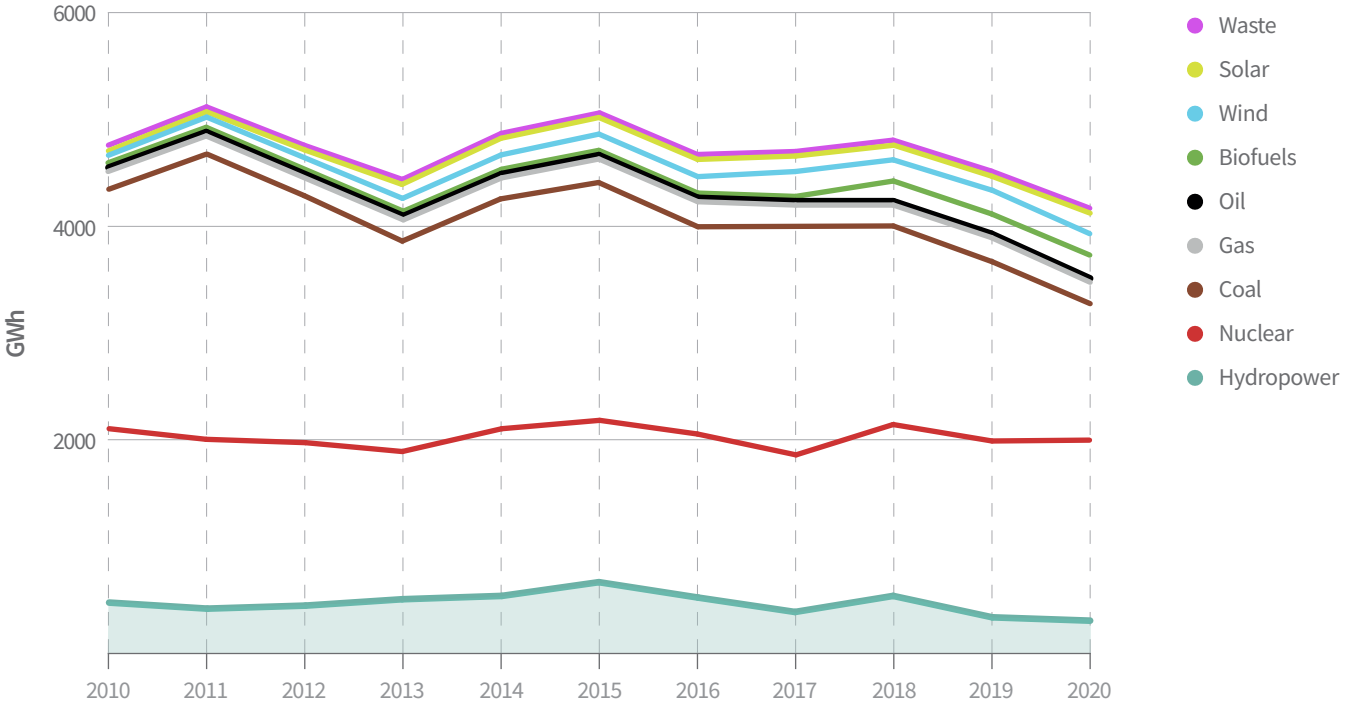
Albania



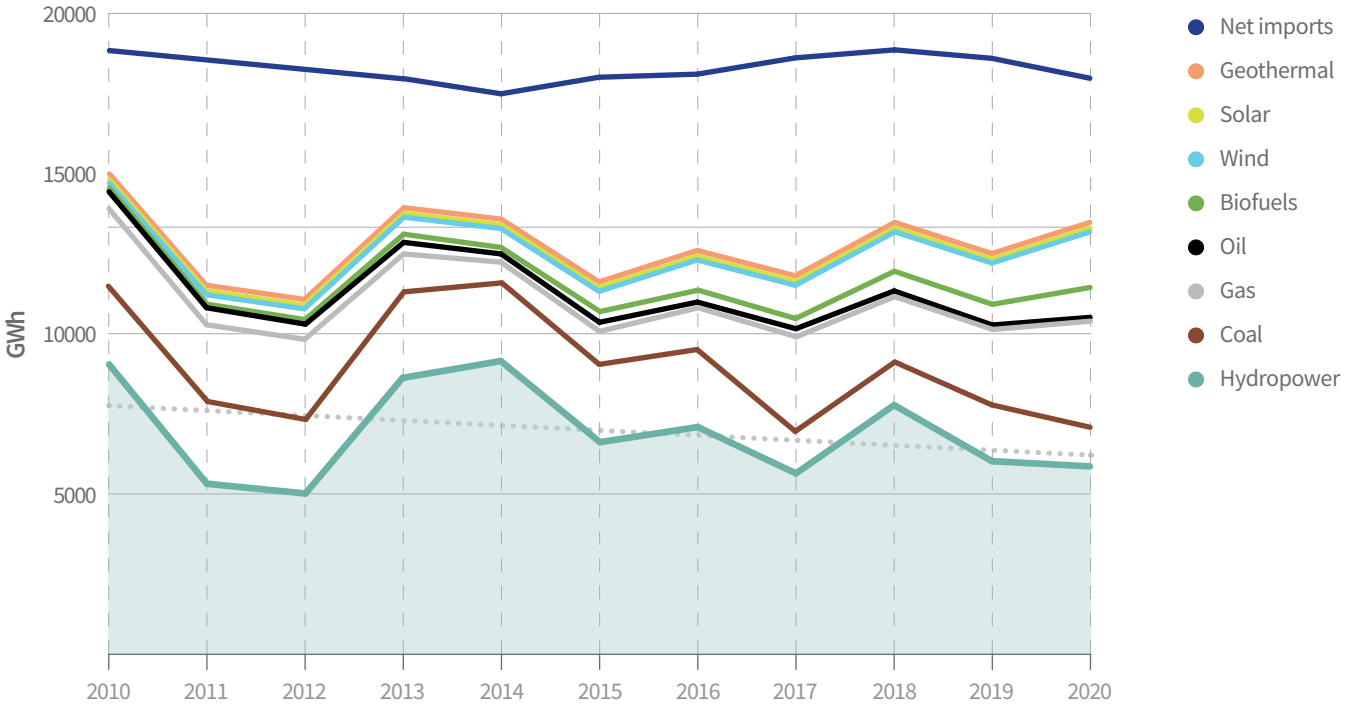
Bosnia and Herzegovina



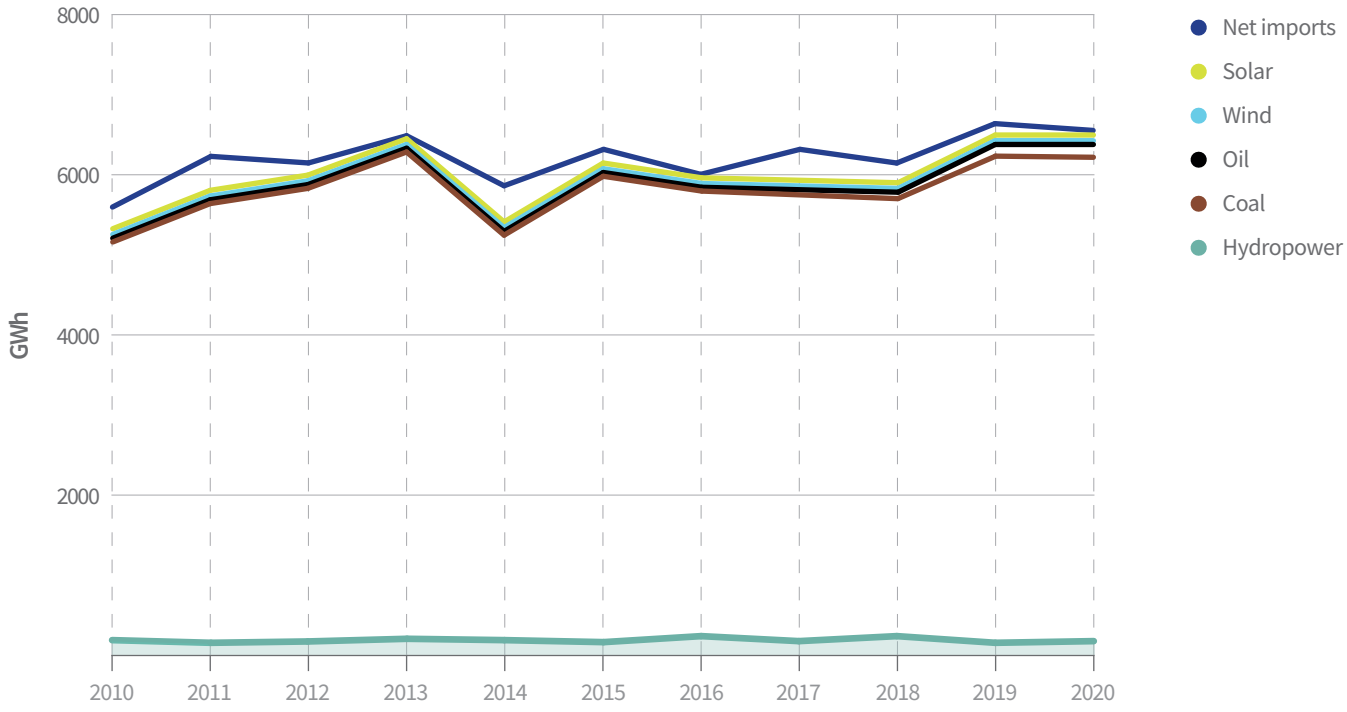
Bulgaria



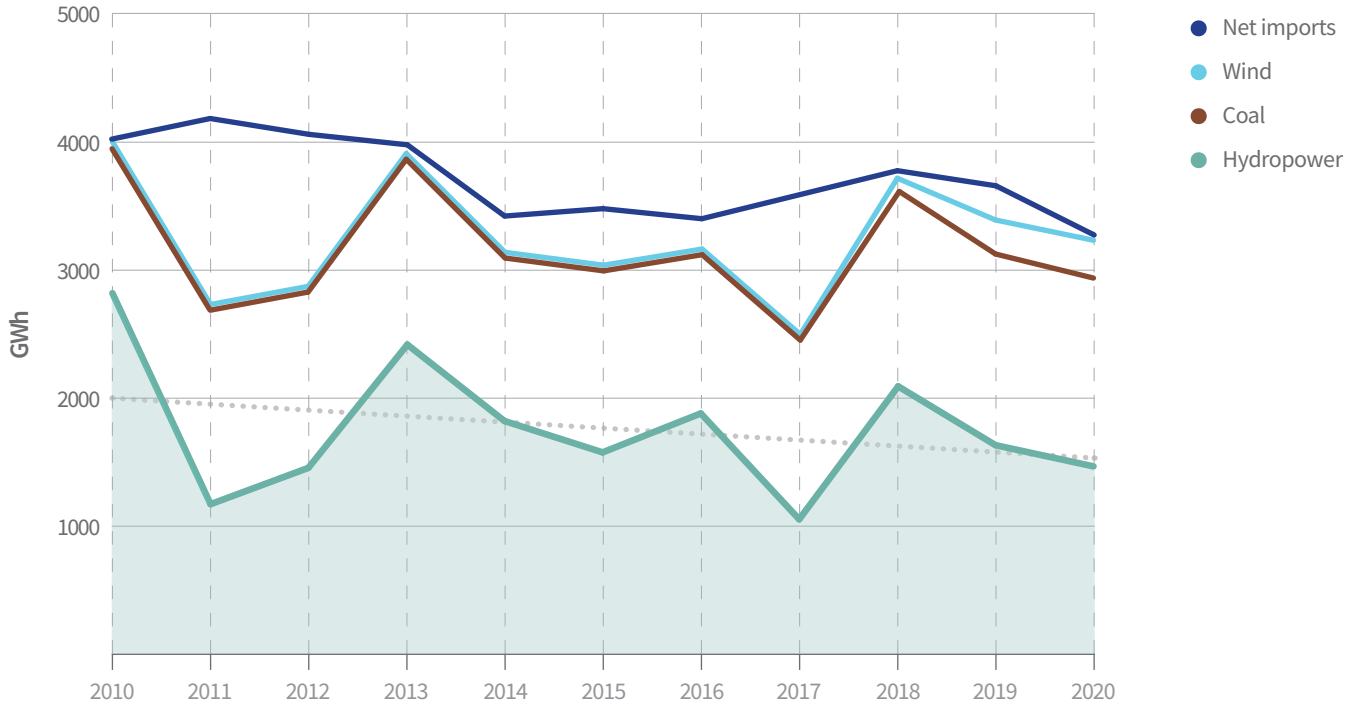
Croatia



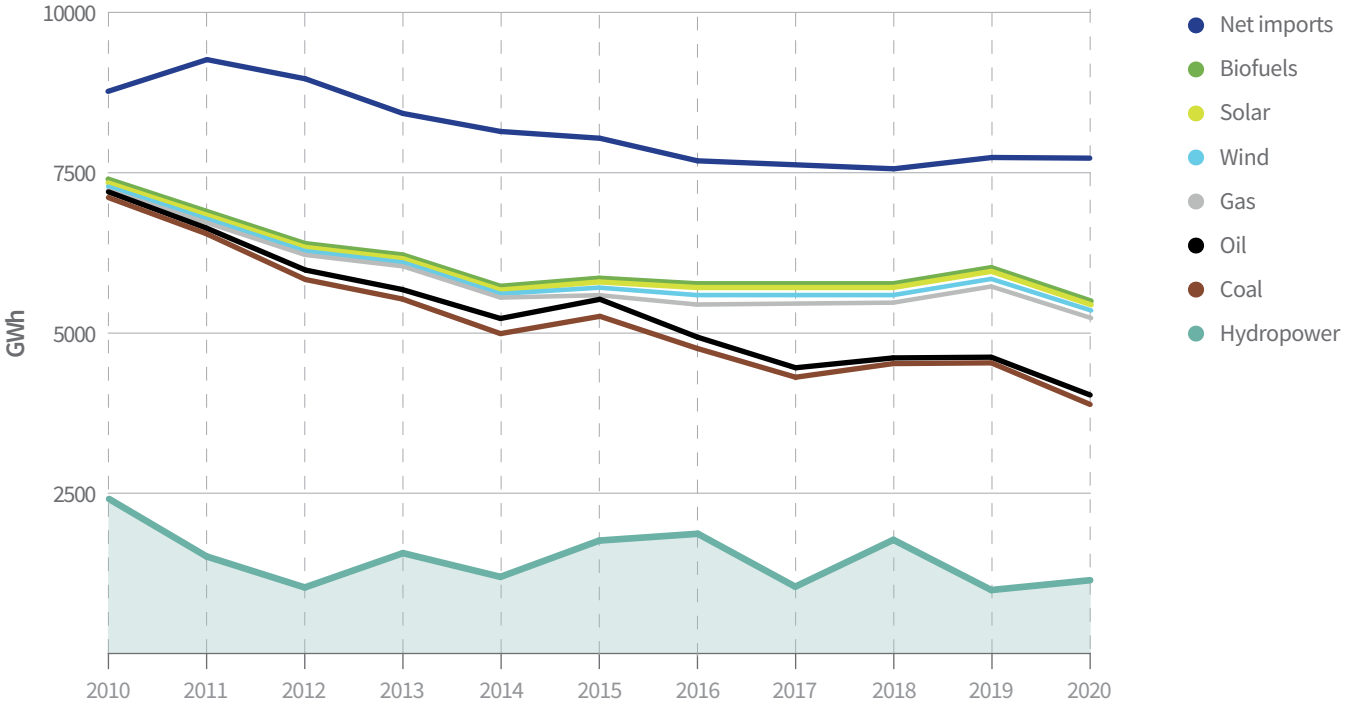
Kosovo



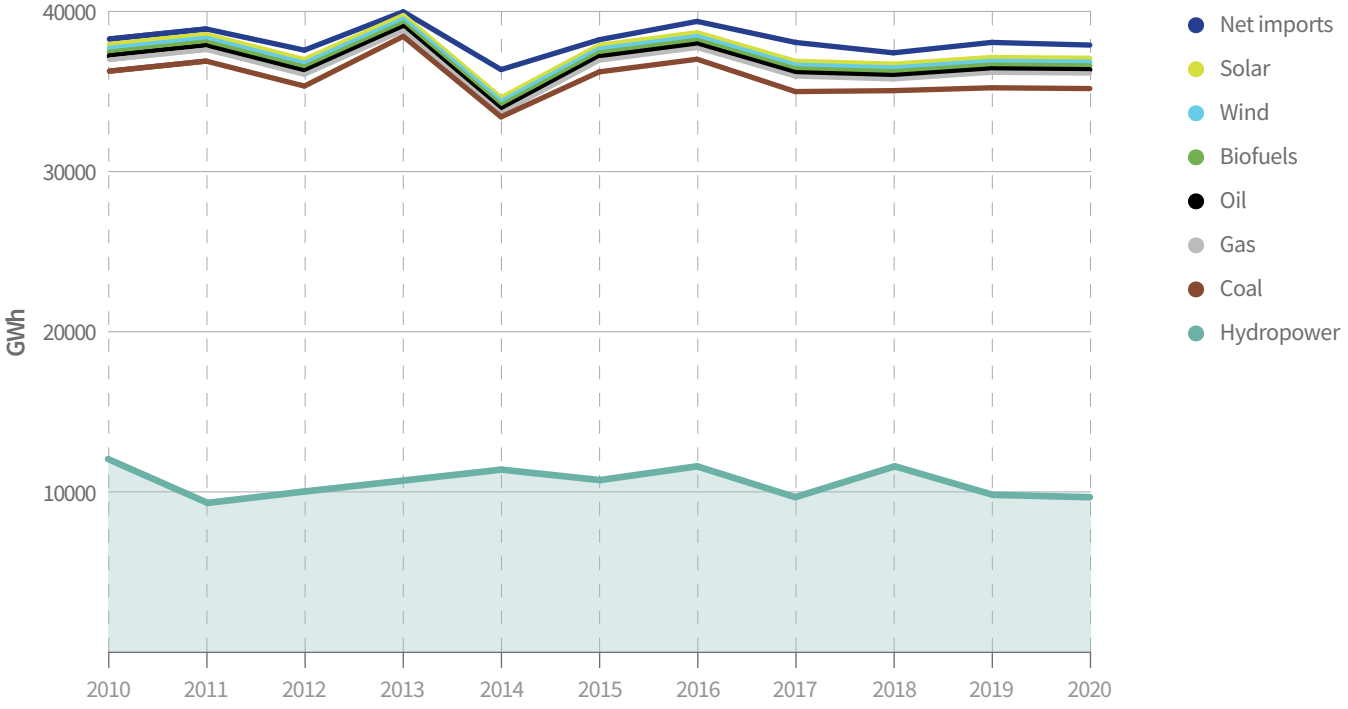
Montenegro



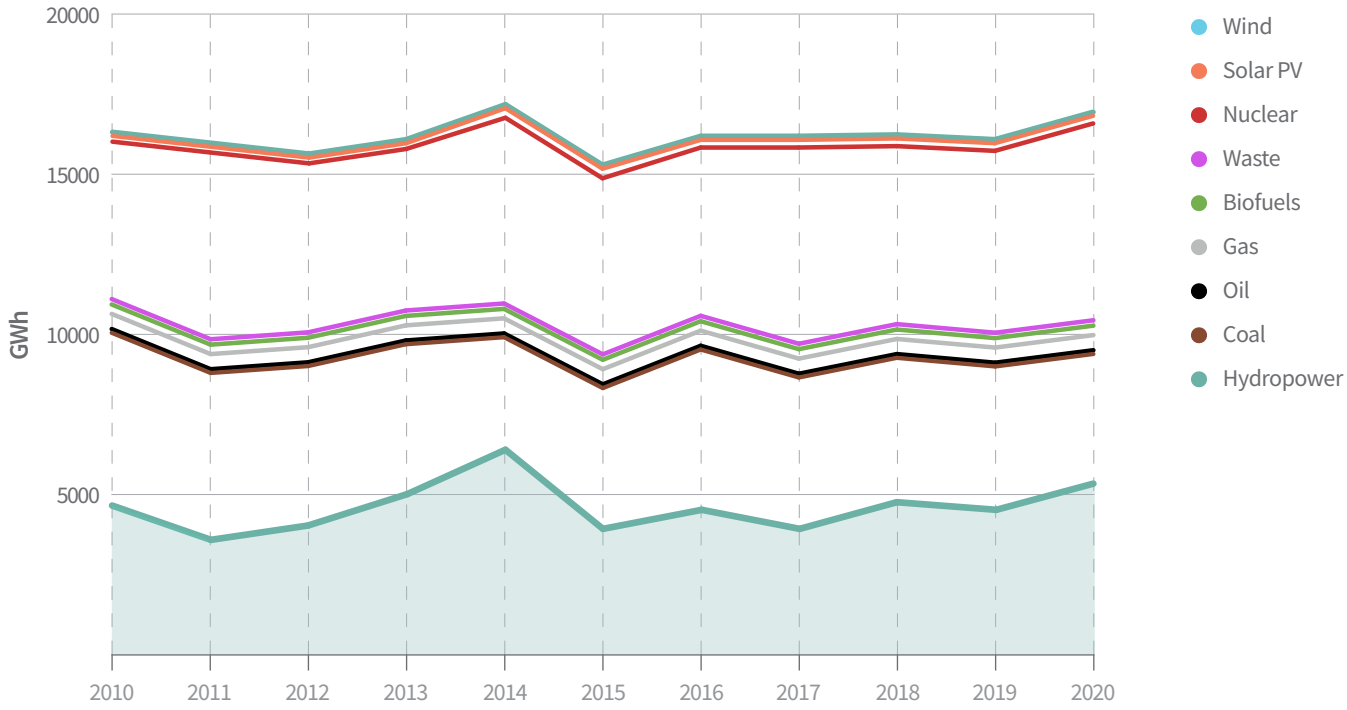
North Macedonia



Serbia



Slovenia



Source: Data from International Energy Agency Data and Statistics, 2010-2020, except for Montenegro 2020 statistics, which were not available on the IEA website. These were taken from Government of Montenegro, Predlog odluke o Energetskom bilansu Crne Gore za 2022. godinu, 2 December 2021.

Dabar - The stunning river Buna is threatened by the Upper Horizons

Photo credit: Andrey Ralev

RiverWatch

EURONATUR

CEE Bankwatch Network