



# The Untapped Potential of Biomass in the Western Balkans

The Western Balkans are endowed with great biomass resources that could massively improve energy efficiency and lower dependence on imported fossil fuels, but this form of indigenous energy remains only partially exploited.

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Forested river valley  
Source: UNECE/FAO

## A Strained Energy Arena

Western Balkans are endowed with an enormous availability of natural resources, but remain significantly dependent on imported energy which are largely subsidized. Energy imports account for 44% of total energy use and costing over 3 billion euros. The electricity sector is largely dominated by coal, predominantly the highly polluting lignite, except for Albania which relies almost entirely on hydropower for electricity generation.

A report by the International Renewable Energy Agency (IRENA) shows that in contrast to the EU's long-term decarbonization strategy, Western Balkan countries are planning a significant expansion of new coal and lignite plants of up to 6 GW, which is considered the only means to guarantee energy security at reasonable costs.

Due to the lack of investments and maintenance in ageing infrastructure,

the region is experiencing significant electricity shortages and cuts, especially during peak times in winter. In fact, during these months, the load on the already strained electricity networks is further increased by the use of electricity also for heating purposes.

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## Bombastic Biomass Potential

Forests are one of the most important natural resources in the Western Balkans. The Food and Agriculture Organization's 'Global Forest Resource Assessment 2015' shows that forests in the region are well-stocked and growing (both in volume and in area) and are efficiently and professionally managed. Forest coverage is very similar in the region: Bosnia and Herzegovina (BiH), Croatia, FYRM and Serbia having comparable levels of forests, while Montenegro is far much richer in forests, despite being far smaller than the other countries (Figure 1). State forests are mainly Forest Stewardship Council (FSC) certified, such as in Croatia and Serbia where 80% and 45% of the respective total forest area is certified. Reported annual wood use runs between 40-60% of annual growth.

Forests play an important environmental role that is crucial for the wellbeing of populations in the region, such as fighting climate change, conserving biological diversity, protecting soils or preserving water resources. And forests provide great opportunities for the sustainable development of the energy sector. The biomass sector now supplies 4-9% of total primary energy in the Western Balkans, offering significant amounts of raw

Forest Coverage		
Country	1000 ha	% of Land Area
Albania	722.00	28.2
Bosnia and Herzegovina	2,185.00	42.8
Croatia	1,922.00	34.3
Montenegro	827.00	61.5
Serbia	2,720.00	31.1
FYR of Macedonia	998.00	39.6

Figure 1: Forest area in the Western Balkans- 2015  
Source: Data extrapolated from the 'Global Forests Resource Assessment 2015- Desk Reference' FAO

wood materials suitable and available for energy production, such as wood residues, wood waste and bark. However, despite the availability of large biomass resources, biomass production in the region remains unexploited due to 3 key factors:

1. Biomass is not embedded into sector policy and national market structures. The market-based support scheme of feed-in-tariffs (FITs) is largely implemented in the region for renewables, including biomass in theory, but due to limited competition in the energy markets and to the low level of support, investments in biomass do not

appear economically viable and attractive, especially when compared to the low prices of oil and natural gas. Similarly, national market structures are generally not designed to include the consumption of biomass energy. This is because of a lack of supportive initiatives and overall awareness about using of biomass for heating. For example: processed wood-based fuels (pellets, briquettes, chips) from countries such as Serbia and Croatia are mainly exported to neighbouring European markets, such as Italy and Switzerland, instead of being consumed locally, where oil-run boilers are still preferred.

## Energy Biomass

**2.** Most of the energy utilities and forest resources are state-owned. Western Balkan states, like others, are generally reluctant to invest in the development of biomass production-based projects. Similarly, the few private forest owners are unwilling to cooperate among themselves even if a collaboration would be beneficial given the very small-sized plots they possess (usually < 1 hectare). This is particularly evident in the Former Yugoslav Republic of Macedonia (FYRM), where 90% of forest area is publicly and centrally managed (Figure 2) and not run with a long-term perspective of economic growth and sector innovation. As a result, improvements in forest management and especially in its derived energy services are not implemented with required efficiency, or not implemented at all due to insufficient financial allocations from state budgets and no participation from the private sector.

**3.** Most of the power and heat generation facilities are old, inefficient and highly polluting. While low-quality wood has been traditionally treated as waste, 84% of wood energy in the Western Balkans is used as firewood. This now represents the main source of energy in households, where it is

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used inefficiently and far from being integrated into modern energy systems. The use of traditional biomass in the heating sector and inefficient district heating systems are still predominant and a key barrier to the improvement of energy use in buildings and households.

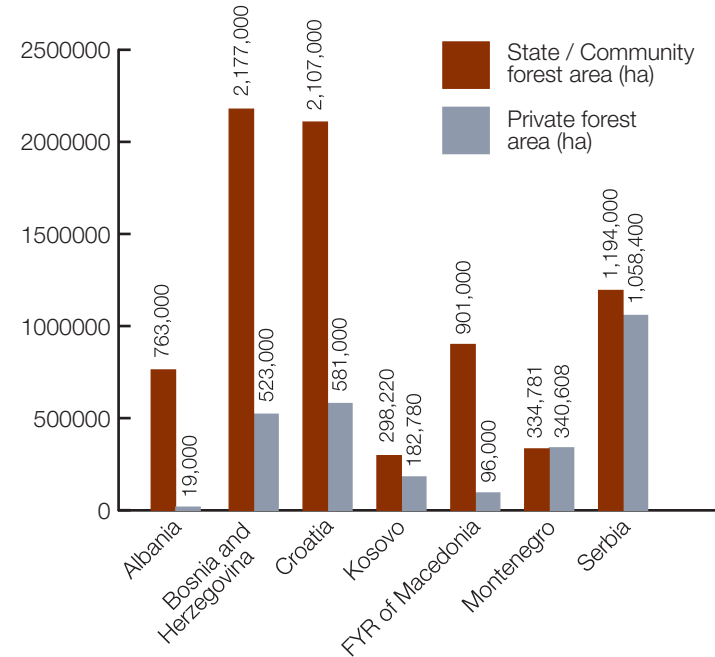


Figure 2: Share of state/private forests in the Western Balkans, 2015

Source: 'Biomass in the Western Balkans: Why don't we use our wood biomass potential?' V. Milijic, April 29, 2015



Wood residues at sawmill, Sawmill Vektra Jakic , Pljevlja, Montenegro source: UNECE/FAO

## 5 Key Elements to Develop Biomass in the Western Balkans

### 1. Reliable financial mechanisms

The development of local demand requires reliable finance models. The most common support for renewable power (including biomass) in the region is feed-in tariffs (FITs). However, the absence of clear, enforceable secondary legislation – resulting in complicated permitting, licensing procedures and rules for grid connection – has hampered any investment. In this context, Power Purchase Agreements (PPAs) are an important tool for financing renewable power projects. As highlighted by IRENA, this is particularly evident for biomass, as they can help to secure both the biomass supply chain and power offtake.

### 2. A bottom-up approach

Similarly, there is a strong need to create local project ownership. There are numerous international initiatives providing external support to the development of biomass projects, but a bottom-up approach would be much more beneficial, as it would entail the creation of a critical mass among municipalities and local authorities. This type of direct participation approach creates sustainability effects by focusing on the local target groups and driving improvements at all levels for the environment, society and business.

### 3. More training and awareness

The potential of biomass energy is not politically recognized despite its significant importance in the region. As a result, countries are not in the position to offer adequate training to develop the required skills and knowledge in the biomass sector at national levels. Expertise is often missing at all levels of the biomass chain. Biomass logistics

and trade centres based on wood represent an innovative business model aiming at developing domestic woody biomass value chains as a renewable source of energy. A successful example in the region is the EU-funded Horizon 2020 BioRES Project that includes Serbia, Croatia and Bulgaria. These centres aim at boosting investments in biomass production by demonstrating modern technologies for wood biomass production to forestry and energy stakeholders. This is being promoted and achieved through trainings, study tours and workshops, building up a network of qualified wood biomass laboratories among the participating countries and especially encouraging research and development with a strong collaboration among research institutions and other stakeholders and key actors in the field.

### 4. Improved forest management

Centralised forest management is making the energy and forestry sectors' stagnating and hindering any potential improvement. Privatisation of forests and rural forest communities could be effectively used as a vehicle to relieve state-owned management organisations which are sometimes not well equipped to perform all functions.

### 5. Greater regional cooperation

There is a clear need for regional cooperation and networking exchanges for biomass energy to gain traction in the Western Balkans. Countries share a long legacy of widespread environmental neglect and wasteful use of energy derived from a shared past with inherited practices and experiences from ex-Yugoslavia. Similarly, in their transition they also share the common development paths and dynamics of the region, especially in the context of the Energy Community Secretariat and EU membership processes.

To maximise the forest sector's contribution to climate change mitigation, the best strategy is to combine sustainable forest management with a steady flow of wood for energy. Among other renewables, biomass is the most promising for the majority of Western Balkans countries. Its mobilization can provide large employment generation schemes and can be

linked to ecosystem conservation, improved industrial competitiveness, regional development and the growth of a strong export industry. 

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