

National Wood Bioenergy Policy in Kosovo



Science

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ABSTRACT

The new economic environment and the situation in the forestry sector emphasize the urgent need for the establishment of efficient systems for a multi-purpose management of forest resources. The rules for use of remains and waste of a plant origin from forestry and processing industry related to the finalization of wood assortments are determined in the New Law on forestry and in the Administrative instructions. The Government of Kosovo will support the development of competitive wood industry, which is capable to benefit from the primary processing (sawmills) and the production of the bio-energy, in creation of a stable market for the wood and creation of financial facilitations for those individuals, private subjects, associations etc, that have capacities to invest in the forestry industry with a special emphasize to the Renewable Energy Sources (RES) in Kosovo. In rural zones, the wood remains an important resource of energy for heating. Due to this reason, the Government is to support the systems and methods that guide the improvement of production and use of forest resources, wood remains etc, those are optimal for energy production. The main activity relating to the forestry development strategy until 2022 is the production of bio-energy and the expected results are that the wood biomass is used in an efficient manner.

INTRODUCTION

This national wood Bio Energy Policy represents an integral component of Kosovo's strategy to further develop its forest sector in a multi-functional and sustainable way, resuming active responsibility to improve the conditions and biodiversity of its forest ecosystems, to improve the competitiveness of the forest and timber industry sector; to improve employment opportunities especially in rural areas and to sustain the national heritage of the Kosovo forest for future generations (Pira, B. et al., 2011).

Kosovo has significant potentials on renewable energy sources, which for the time being are not used (except low scale on hydro-energy). The fact that vast majority of total consumed electrical energy is generated from thermo power plants (average 97.5 %) shows big dependence from this kind of energy (FAO, 2003). On the other hand in recent years in order to meet demands Kosovo is importing electricity from abroad. Therefore this gap could be bridged by renewable energy sources, in order to avoid the reliance on thermo power plants and on import. Energy for heating is mainly depending on firewood, however potential of wood biomass and sustainability are not fully addressed (Bajraktari. A. et al., 2010).

The renewable energy sector, including the wood for energy sub-sector, has the incredibly relevant role of activating a new sustainable energy economy, thereby decreasing the use of fossil fuels, decreasing the emission of greenhouse gasses and pollutant in general, distributing among several stakeholders the benefits of economical revenues of the energy sector and decreasing the international problems linked to the concentration of the fossil energy products in a small number of countries in the world. For that reason the EU countries have assumed commitments to increase the use of renewable energy by year 2020. Monitoring the achievements of all countries is necessary to control the process ant to respect the commitments.

Bioenergy production from biomass is one of alternatives based on natural potential as soil, relieve, climate and potential on plant growth. Exploitation of biomass energy needs to be associated with sustainable natural resource management strategies. One key advantage of biomass energy production is that the developments of new technologies seem likely to bring about more efficient conversion processes in future. That achievement should make energy crops more economically viable. In the longer term, there may be potential for district CHP (combined heat and power) using biomass and/or municipal waste. There may also be some potential for co-firing biomass with lignite, at least at any smaller lignite power

plants that are built (above according Kosovo's Renewable Energy program (Sahiti, N. 2012).

The Government of Kosovo prepared the Kosovo Energy Efficiency Plan 2010-2018 (KEEP). Kosovo set in KEEP an indicative target of 9% reduction of energy consumption until 2018, thus accomplishing an improvement of energy efficiency at approximately 1%-point per year (Sahiti, 2012).

TARGETS

Long-term

The Republic of Kosovo is committed in the achievement of targets for the renewable energy sources at least up to 20% by 2020 in the final gross energy consumption in compliance with the obligations that will be approved soon within the Energy Community Secretariat (ECS) for the contracting parties of Energy Community Treaty (ECT). Upon entering into force of this decision, Kosovo is obliged to draft new mandatory targets part of which is also the consumption of biomass until 2020 (Sahiti, N. 2012).

Midterm

Based on the administrative instruction on annual and 10 years indicative targets (2007-2016) on the renewable energy sources and co-production, Kosovo has foreseen also the consumption of the biomass from the electric and thermal energy that until 2016 is 411.63 ktOE (Kosova Statistic Agency, 2012). The development of the RES sector is expected to be done by the private sector and so far a considerable number of investors have shown their interest to invest on the RES field. In order to respond to the interest of the private investors to invest in the RES field, Ministry of Economic Development (MED) has established a working group to review the compliance of legislation that regulates this field. The working group is expected to identify the potential regulatory, programming and procedural barriers, which should be addressed to be eliminated (MED, 2010).

Short-term

Application and use of GIS technology for providing overview on short rotation plantation, abandoned land and forest roads in e.g. in 2 categories (truck accessibility or tractor) should be implemented and improved.

The new legislation on energy has created a space for the stimulation of investments in BRE including also the production of energy from biomass. Biomass is having an important role as a primary energy in all sectors: heating and cooling, electric energy and transport. But, in the Republic of Kosovo, currently the biomass is used only for the purpose of heating but not for

cooling, for the production of electric energy and transport. As biomass, for the heating needs is used only the fire wood and the wood remains. The Energy Regulatory Office (ERO) based on the competencies given by the Law on Energy regulatory authority No. 03/L-185 and the Authorization Procedure Rule has the authority and the responsibility to issue authorizations for building the new capacities for production of the electric energy. The supporting scheme for the production of the energy from the biomass through incentive tariffs approved by the ERO and the legal obligation of the public suppliers to purchase with a priority the electric power produced from the biomass, are a guarantee that provide a security for the investors.

Currently the woody biomass is the only types of RESs that contribute to the production of energy in Kosovo. The woody biomass in form of fire-wood currently is dominating as a heating energy source (94% is fire wood, only 1.30% are other types of biomass). The woody biomass is used as an alternative because of not-fulfillment of the demands for heating with other energy sources (with central heating or with the use of natural gas).

The consumed quantity of fire wood only by households has been 5.9 m³, while the brickets produced and imported are in a very small quantity, and the other types of biomass are not used in Kosovo (AgriPolicy (2009) (Bajraktari. A. et al., 2010).

AVAILABILITY OF LAND

The rising interest on biomass for renewable energy has put pressure on agricultural products and systems at the global level. It is then important that the production of renewable energy does not compete negatively with other uses of the arable lands and in general of the rural land. In a country like Kosovo that imports large quantities of food, including basic staple food as cereals, it would be difficult to accept that good agricultural land are used for energy production in place of food production. In part this aspect is likely to be directly affected by the market. But experiences in other EU countries suggest that the subsidizing regime can affect the market so profoundly to favor energy destination toward food destination of agricultural land. The subsidizing intensity for the renewable energy sector, in this case of the biomass sector, should then be accurately tuned in order to avoid negative alteration of the internal market. For example it could be favored a regime that subsidize the use of a fraction of the land area in farms located in the mountain territories, where productivity of other crops is low while there is already a market for energy wood. However, beside productive agricultural lands in Kosovo there is a quite relevant extension of land (statistic needed) which has been abandoned by agricultural practices. This land can be a potential target for stimulating the production of energy wood, via short-medium rotation tree plantation (AgriPolicy (2009). Even in the case of land that has been abandoned for pollution problems the production of energy wood can be evaluated, but in this case the type of pollutant and the type of wood utilization should be accurately studied in order to avoid that the energy crops and the wood utilization system mobilize the pollutants in the environment causing a r-circulation of the pollutant. Finally, residual lands such as riverbanks, road sides, area in industrial settlements and even urban areas can be used for substantial amount of wood production for the bioenergy sector without negative impacts on the environment and on the food availability.

Abandoned land

The production of wood is one of the numerous outputs of a natural forest, and not necessary the most important one. In the presence of a high market demand for wood, natural forests can be endangered by overexploitation, and illegal logging. Besides enforcing the entire legal framework to avoid overexploitation and illegal logging, it is important to activate legal and sustainable systems to produce more wood to be used in substitution of wood that would be otherwise obtained from natural forests (Biomass District Heating Scheme Feasibility Appraisal for Sustaining Dunbar, 2010). The legally produced wood can also activate sustainable new bio-economy systems with relevant and long lasting benefits for the environment and

for the society. As a reference, the EEA (European Environmental Agency) has assumed that a short rotation coppicing system of broad leaves trees can produce 7.5 ton year⁻¹ ha⁻¹ as an average. *Populus* clones can produce, with reference to published results on the international literature, from 5 to 25 ton of dry wood year⁻¹ ha⁻¹ while the giant reed (*Arundo donax* L.) has produced in Italy an average of more 35 ton of dry matter year⁻¹ ha⁻¹ over a 9 to 10 years period. These productivities, even in their lower values are by no doubts several times higher than the productivity of natural forests in Kosovo. Hence a limited land area used for a decent trees cropping system can substitute the production of a relatively large area of natural forests, thereby decreasing the cutting pressure on such large forest area (Brian B. at al., 2013).

In Kosovo, there is a considerable area of bared forest lands (20 000 – 30 000 ha) and a part of agricultural lands in mountain-hilly locations which are abandoned. All of these areas should be afforested converting them into forest crops and plantations for providing of the raw material for bio-energy and also through this improve the sequestration of the Carbon Dioxide (Co2).

Enduse

Currently the hydro-energy and the woody biomass are the only types of RESs that contribute to the production of energy in Kosovo. The woody biomass in form of fire- wood currently is dominating as a heating energy source (94% is fire wood, only 1.30% are other types of biomass, Table 1 and Table 2). The woody biomass is used as an alternative because of not-fulfillment of the demands for heating with other energy sources (with central heating or with the use of natural gas).

TABLE - 1
Consumption of biomass in Kosovo for the period 2009-2010

Total	m3	Ktoe
Fire wood	1.966.567	234.7
Pellets and brickets	-	-
Other types of Biomass	25.562	5.8

Source: Kosova Statistic Agency

TABLE - 2
Consumption of biomass in Kosovo for the period 2010-2011

Total	m3	Ktoe
Fire wood	1.981.334	236.3
Pellets and brickets	-	-
Other types of Biomass	28.252	6

Source: Kosova Statistic Agency

The consumed quantity of fire wood only by households has been 5.9 m³, while the brickets produced and imported are in a very small quantity, and the other types of biomass are not used in Kosovo (Bajraktari. A. et al., 2010) (Pira, B. et al., 2011).

WOODY BIOMASS DATA IN DETAIL

In 2003 - 2004 the inventory of Kosovo forests was conducted. The results are as follows: Total area of lands is around 464.800 ha or 41%. From this 278 880 ha are classified as public forest lands and 185 920 ha as private forest lands. Forests with deciduous species cover more than 90 % of forest lands. The dominating species of deciduous are oak and beech. Forests with coniferous species cover 7 % of forest lands and there are dominating: fir, spruce and pine. The total standing volume in public forests is estimated to be around 33.5 million m³. From this volume, 25.9 million m³ are trees with a diameter >7 cm, in the chest height. In private forests, the total standing volume is estimated around 19.5 million m³ from which 14.5 million m³ are trees of a diameter >7 cm. Annual increment of trees are with a diameter >7 in the chest height, is 1.165 million m³. There is a considerable area of bared lands (20 000 – 30 000 ha). Some parts of these areas are eroded and

have a rare stratum of top soil. Besides a weak fertility, a considerable part is suitable for afforestation; it is concerning the fact that 40% of public forests lands and 29% of private forest land are subject to uncontrolled and illegal activities of use. Comparing to all applied standards, these figures are very high. The situation is very critical, particularly in coniferous forests, where the existence of wide forest areas is put under the risk, if immediate measures will not be taken. The results of inventory also confirm that the low forests, especially public ones are being over used. These results also show that many young forests and those of a middle age have an urgent need for intervention, starting from cleaning and pre-commercial thinning to the commercial thinning.

CONCLUSIONS

We can say that Arguments for setting concrete actions towards promoting woody biomass use in the heating and electricity sector include that the use of sustainable woody biomass

- spares fossil fuel reserves,
- helps to mitigate the effects of climate change
- fosters value creation and employment.

An increasing use of domestic woody biomass for energy production contributes

- to increase the share of renewable energy in electricity production

- to increase the share of renewable energy in the heating and cooling sector and
- to reduce greenhouse gas emissions.

The action plan is based on the following structure:

- **Key Issues:**
 - o Woody Biomass Supply
 - o Energy production
 - o Use of energy
 - o Awareness Raising
 - o Research & Development
 - o Other

Each key issue is defined by measures and detailed actions. These actions provide information on:

- Target group
- Timeframe
- Responsibility and
- Financin

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