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Rural Development

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Bioeconomy case study

The wood biomass sustainability criteria in Slovakia[1]

In 2017, Slovakia introduced three "criteria for the sustainable use of biomass" to be applied to all biomass-related projects financed by the European Structural and Investment Funds (ESIF). The three sustainability criteria focus on: 1) the proof of origin of wood feedstock, 2) transportation and distribution, and 3) the effectiveness of the wood biomass energy conversion. This case study describes the need for such criteria in Slovakia, their content and application, and the impacts expected.

Introduction

The most important renewable energy sources (RES) in Slovakia are wood and other solid biofuels, liquid biofuels, biogas and renewable waste, which account for 70.4 % of primary production (Gavurová et al. 2016). Biomass has the largest energy potential among RES with a theoretical potential equal to 44 % of all RES in Slovakia. The use of biomass for heating has been the focus of the government's renewable energy policy. The country has extensive forests (around 41 % of the country) and biomass is thus a significant domestic low-carbon energy resource. Slovakia is required to increase its energy consumption supplied by RES from 6.7 % in 2005 to 14 % in 2020[2]. The Energy Policy of the Slovak Republic aims in increasing the share of renewable and secondary energy sources, which constitutes a significant portion of woody biomass produced in forestry, wood industry, and pulp and paper industries (Majlingovová et al. 2020).

(1) Viera Sefferova Stanova, for the ENRD Thematic Group on Bioeconomy and Climate Action in Rural Areas, May 2020

(2) https://www.mhsr.sk/uploads/files/47NgRIPQ.pdf

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Background and context

In 2017, the total consumption of solid fuelwood biomass in Slovakia (fuelwood, wood chips, woody residue, briquettes and pellets) reached 3.05 million tonnes. The key consumers of woody fuels, the dominant renewable source of energy in Slovakia, are the timber processing, pulp and paper making industries private households, municipal heat units and the energy sector[3].

The subsidised development of bioenergy projects in Slovakia increased demand for wood biomass, resulting in massive logging and a decrease in biodiversity (Zamkovský et al. 2018). Therefore, several environmental NGOs advocated for the establishment of a task force for biomass sustainability to develop the "criteria for the sustainable use of the biomass". For most bioenergy (except for biofuels in the transport sector) there were no sustainability requirements.

The impact on nature was mainly visible in the logging beyond the planned amounts, removal of forest logging residues for bioenergy production and cutting of wood vegetation outside of forest areas (windbreaks, trees along the rivers and roads for example). It was proved by the Slovak Regulatory Office for Network Industries that several power stations were producing electricity using forest wood of high quality (Grade III and V of national categorization).[4] These impacts were found to be caused by an increased market demand for wood as a result of the financial subsidies aimed at encouraging renewable sources of energy, in both the state budget and structural funds.

The last amendment of Act no. 309/2018 on the Promotion of Renewable Energy Sources and High-efficiency Cogeneration[5] forbids state subsidies for all wood burned in biomass energy facilities, except for wood originating from energy crops and waste from the wood processing industry. The power stations are only supposed to burn chips made from low-grade timber not suitable for other industrial purposes. Only wood of the lowest quality - Grade VI - can be used for energy purposes.

Criteria for the sustainable use of the wood biomass - formulation

In the case of projects involving the use of biomass, it was necessary to document that the sustainability criteria were met, in accordance with the recommendations in the Report from the European Commission, Council and the European Parliament on the sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling[6]. A pilot project was set up to develop the criteria for the sustainable use of fuel dendromass in Slovakia for programmes co-funded by the ESIF in 2014 – 2020. The criteria were adopted by the Ministry of Environment in June 2017[7] as follows:

Criterion 1: Proof of origin of feedstock - fuel dendromass

This criterion is to ensure a more efficient and sustainable management of timber i.e. an optimal use of forested and non-forested land, as well as solid-wood-based residues, which are the most important sources of wood biomass for energy generation in Slovakia. This criterion is to prevent the use of fuel dendromass from land that has high value in terms of biodiversity (mainly protected areas) for fuel production and generation of heat and electricity. In the case of forest land, the feedstock must come from the planned logging as defined in the Forest Management Plan or accidental logging, which are governed by the conditions laid down in the valid forestry and nature conservation legislation. The aim is also to stop wood biomass from non-forested land from being exploited in conflict with the management of protected areas and Natura 2000 sites.

(3) http://www.unece.org/fileadmin/DAM/timber/country-info/statements/slovakia2018.pdf

(4) https://www.eubioenergy.com/2015/11/11/slovakia-up-in-flames/

(5) https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2018/309/20190101.html

(6) https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52010DC0011

(7) https://www.op-kzp.sk/wp-content/uploads/2016/09/Kriteria-udrzatelneho-vyuzivania-biomasy-SEPT-2016.pdf (link is available in the Slovak only)

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Criterion 2: Transportation and distribution

The objective of this criterion is to ensure the sustainability of the wood biomass for energy use, as well as reducing greenhouse gas emissions, increasing energy security and self-sufficiency (especially in less developed regions) and reducing dependence on fossil fuel consumption. It also seeks to increase the transparency of wood biomass flows. To ensure the sustainability of wood biomass for energy generation, it is important to determine the transport distance. This involves calculating the direct distance from the place of origin to the place of consumption, as follows:

- The transport distance for the construction of new energy facilities for wood biomass must be within 50 km of the area where the biomass is sourced.
- The transport distance for the reconstruction or upgrade of existing energy facilities for wood biomass must be within 100 km of the area where the biomass is sourced.

Criterion 3: Effectiveness of wood biomass energy conversion

This criterion aims to increase the efficiency of the use of wood biomass for energy generation, including the reduction of greenhouse gas emissions and other pollutants arising from the conversion of energy. The minimal guaranteed energy conversion efficiency values arise from Art. 13, point 6 of Directive 2009/28/EC[8] on the promotion of energy from RES. The condition for electricity production in facilities is at a level of at least 70 %.

Implementation in policy and practice

The criteria have been incorporated in calls for proposals published in 2017 for any wood biomass or bioenergy projects funded by the ESIF in Slovakia. Support is possible under two programmes: the Operational Programme Quality of Environment (OP QE)[9], whose Managing Authority is the Ministry of the Environment, and the Rural Development Programme (RDP), whose Managing Authority is the Ministry of Agriculture and Rural Development.

Under the RDP, support is given for investments in the creation and development of non-agricultural activities, as well as for investments in the construction of facilities for the energy use of biomass for heat production and heating, or investments in the production of biomass for technical and energy uses, where part of the energy is fed into the grid. The call was opened in the second half of 2019 and the overall data are not yet available.

Under the OP QE, it was possible to apply for projects to replace inefficient solid fuel fired boilers with biomass based heat generating plants. The "criteria for the sustainable use of biomass" are mentioned in the eligibility conditions of the call published in 2017. As a result of the call, 24 projects have been approved with a total budget of EUR 5.3 million. The majority of these projects started in 2019 and are still in implementation by the time of writing the present document. Hence it is not yet possible to evaluate their impacts.

(8) https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0028

(9) https://www.op-kzp.sk/wp-content/uploads/2017/12/36.-Vyzva-na-predkladanie---oNFP_v_zneni_Usmernenia_c_2.pdf (call for proposals OPKZP-PO4-SC411-2017-36 with target "4.1.1 Increasing the share of renewable energy sources in gross final energy consumption of the SR)

A good example of a successful project Bioenergetic Reconstruction of Boilers" from the previous programming period (2007-2013) was based on a cooperation amongst eight local communities in the region of Poľana[10], a region rich in natural resources. The communities renovated their boiler rooms as part of a bioenergy project. The main objective was to increase the level of energy security in the rural community by using local biomass. Today the local communities use local wood chips as fuel in the new modern wood chip boilers which have replaced the traditional coal boilers. The new boilers heat 32 renovated buildings in 8 villages, while the villages themselves manage all of the new boiler rooms. The project's achievements include a well-coordinated community approach, greater energy security in the region, a 25 % reduction in energy costs, a 2643 tonnes reduction in fossil fuel emissions per year and the creation of new jobs. The total investment in the project amounts to EUR 7 200 000. The experience from this project contributed to developing the “criteria for the sustainable use of the biomass”.

Conclusions

The development of subsidised bioenergy projects in Slovakia has significantly increased the demand for wood biomass and lead to the burning of better quality wood. It has created problems for the sustainable management of natural resources and the protection of biodiversity.. Under pressure from environmental organisations, Slovakia adopted criteria for the sustainable energy use of wood biomass in two EU-funded programmes: the Operational Programme Quality of Environment and the Rural Development Programme in 2017. The criteria focus on 1) the proof of origin of fuel dendromass, 2) its transportation and distribution, and 3) the effectiveness of wood biomass energy conversion. Besides providing a regional approach to the use of wood biomass, this process also aims to minimise the production of greenhouse gases by limiting the transport of wood biomass. Finally, the projects applying the criteria are expected to decrease the pressure for logging in high-value habitats, create more opportunities for balanced territorial development and more investments in climate-effective renewable energy production. Moreover, legislative changes were made to only support the use of the lowest quality wood for energy purposes in 2018.

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(10) https://www.localeconomies.eu/plugging-the-leaks/

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