



BioRES- Sustainable Regional Supply Chains for Woody Bioenergy

WORK PACKAGE 8:

Deliverable 8.4 : Market information system

Work package leader: GIZ

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BioRES project overview

BioRES aims at introducing an innovative concept of Biomass Logistic and Trade Centres (BLTCs) in Serbia, Croatia, and Bulgaria based on cooperation with technology leaders from Austria, Slovenia, Germany, and Finland. This will help increasing the demand for woody bioenergy products (processed fire wood, wood chips, wood pellets, and wood briquettes) in these countries and contribute to the achievement of EU targets set out in the RES Directive (2009/28/EC).

Objective of Work package 8

Communicate and disseminate all project results at local, regional, national and European level in order to enhance the impact achieved by the BioRES project and to ensure sustainable further market growth for woody bioenergy products in Bulgaria, Croatia, Serbia and abroad.

Methodology and Application of the Market information in Serbia, Croatia and Bulgaria

The web-based market information system and a biomass calculator will be publically available on the project website in English, Bulgarian, Serbian and Croatian language. For orientation by market actors the prices of the main woody energy products for the domestic market and the prices of the fossil fuel prices in Bulgaria, Serbia and Croatia are collected before the heating season on an annual basis in September. BGBIOM, REGEA and Serbia are collecting the minimum and maximum prizes for end consumers on national scale. KSSENA is coordinating the data collection on annual basis and GIZ will review and publish it on the website and facilitate the national and international outreach to market actors. The data compilation over the project duration will result in national market statistics for each of the main woody energy products: Financial value in EUR in relation to production volumes and sales of woody energy products in the domestic markets. In all three implementing countries apart from firewood the major share of woody energy products are exported to neighbouring countries. Price indications of average transport costs per Kilometer intend to provide orientation for local supply chains and incentives for reducing long distance trading of woody bioenergy by fossil fuel based transport and subsequently lowering carbon footprint. In case of relevant price changes, prices will be revised and updated during the year. Due to market size, all prices are on national level. The market information files and biomass calculator can support the web-based marketing of actors involved in BLTC set-up and local supply chain development and will be provided by BioRES partners on request.

This methodology was decided at the 2nd project steering committee meeting. This market information approach builds upon experiences from BiomassTradeCentrell project and the ongoing GIZ DKT Bioenergy Program in Serbia.

Market information system

In the 3 countries the main woody energy products have the following basic specifications in common:

Products	basic specification
Firewood	the length of 25, 33, 50 and 100 cm and the moisture content of 20% or 50%
Wood chips	categories P16, P31.5, P45, P63, P100 and moisture content of 20%, 30%, 40% or 55%
Wood pellets	6 mm size with a moisture content of maximum 10% and different package type (price per ton for loose pellets or price for tone for packaging in 15 and 20 kg bags respectively) In all 3 countries ENplus certified wood pellets are produced for export and are differentiated in certified and non-certified in prize overviews per country.
Wood briquettes	with a moisture content of maximum 10% and different package type (price per ton for loose delivered briquettes or price per ton for packaging in 15 or 20 kg bags)
Charcoal	depending on granulation and packaging

The three country tables below show the total price range of main woody bioenergy products for end consumers in Serbia, Croatia and Bulgaria in comparison with the corresponding prices for most relevant fossil fuels being substituted in relation with the same energy content than 1 ton of the respective biomass product.

The range of MWh for firewood, wood chips and charcoal reflects the variation depending mainly on the tree species (1), bark content (2) and moisture content (3). The energy content of natural gas is converted from MWh/m³ to MWh/t for direct comparison with average energy content of biomass in MWh/t unit. The given variation in the energy content for natural gas (12.7-14.1 MWh/t) reflects the utilization of lower and upper heating value depending on the usage of small scale condensing boilers or industrial scale combustion processes.

The variation for heating oil reflects the different oil types from light heating oil up to heavy heating oil.

The quality level of woody energy products has a significant impact on the competitiveness to the main counterpart fossil fuels in comparison to the same energy content.

Charcoal trading is significant in Serbia. Due to current market crises there is no price difference of certified and uncertified pellets in Serbia.

SERBIA	BIOMASS				FOSSIL FUELS		
	Price/t (incl. VAT, excl. Transport)	VAT for biomass in %	av.transport costs of biomass/km	Average energy content MWh/t of biomass ¹	Average energy content MWh/t for fossil fuels (Natural gas ² , heating oil ³ and coal)	Price/unit & Price/t (incl. VAT, excl. transport)	Price/t ⁴ (incl. VAT, excl. transport) with the same energy content than 1 ton of the biomass product
Firewood	40-50 €/t	10 %	1.5-2EUR/km	2.3-4.2 MWh/t	Natural gas: 12.7-14.1 MWh/t Heating Oil: 11.2-11.8 MWh/t Coal: 7 MWh/t	Natural gas; 0.5€/m3 or 684€/t Heating oil; 0.5€/l or 555,5€/t Coal; 150€/t	Natural Gas:112-226€/t Heating oil:108-208€/t Coal: 49-90€/t
Wood chips	45-60 €/t	20	1.5-2EUR/km	2.0-4.2 MWh/t	Natural gas: 12.7-14.1 MWh/t Heating Oil: 11.2-11.8 MWh/t Coal: 7 MWh/t	Natural gas; 0.5€/m3 or 684€/t Heating oil; 0.5€/l or 555.5€/t Coal;150€/t	Natural Gas: 97-226€/t Heating oil: 94-208€/t Coal: 43-90€/t
Wood pellets	190-210 €/t	20	1.5-2EUR/km	4.8 MWh/t	Natural gas: 12.7-14.1 MWh/t Heating Oil: 11.2- 11.8 MWh/t Coal: 7 MWh/t	Natural gas; 0.5€/m3 or 684€/t Heating oil; 0.5€/l or 555.5€/t Coal;150€/t	Natural Gas:221-258€/t Heating oil: 225-238€/t Coal: 102€/t
Wood briquettes	180-200 €/t	20	1.5-2EUR/km	4.8 MWh/t	Natural gas: 12,7-14,1 MWh/t Heating Oil: 11,2-11,8 MWh/t Coal: 7 MWh/t	Natural gas; 0.5€/m3 or 684€/t Heating oil; 0. 5€/l or 555.5€/t Coal; 150€/t	Natural Gas:233-258€/t Heating oil: 226-238€/t Coal: 103€/t
Charcoal	250 – 300 €/t	20	1.5-2EUR/km	7,8-8,5 MWh/t	Natural gas: 12.7-14.1 MWh/t Heating Oil: 11.2-11.8 MWh/t Coal: 7 MWh/t	Natural gas; 0.5€/m3 or 684€/t Heating oil; 0.5€/l or 555.5€/t	Natural Gas: 378-458€/t Heating oil: 367-422€/t Coal: 167-182€/t

¹ Range of MWh/t for firewood, wood chips and charcoal depends on the tree species from coniferous and broad-leaf-trees as well as depending on the moisture content

² conversion of natural gas unit from kWh/m³ to MWh/t: Upper heating value 10,28 kWh/m³, Lower heating value 9.26 kWh/m³ with a density of 0,731 kg/m³-> 1368m³/t

³ Heating Oil/Mazut: 1111l/t

⁴ Calculate: Price for each fossil counterpart * (min.& max. energy content of biomass / max. & min. energy content of fossil fuel) = price range of fossil fuel with same energy content than 1 ton of respective woody energy product

						Coal; 150€/t	
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CROATIA	BIOMASS				FOSSIL FUEL		
	Price/t (incl.VAT, excl. transport)	VAT for biomass in %	av. transport costs of biomass/km	Average energy content MWh/t of biomass	Average energy content MWh/t for fossil fuels (Natural gas, heating oil and coal)	Price/unit & Price/t (incl. VAT, excl. transport)	Price/t (incl. VAT, excl. transport) with the same energy content than 1 ton of the biomass product
Firewood	110-140 €/t	25	1.20 €/km	2.3-4.2 MWh/t	Natural gas: 12.7-14.1 MWh/t Heating oil: 11.2-11.8 MWh/t	Natural gas: 513-638 €/t Heating oil: 670-900 €/t	Natural gas: 84-211 €/t Heating oil: 131-338 €/t
Wood chips	45-60 €/t	25	1.20 €/km	2.0-4.2 MWh/t	Natural gas: 12.7-14.1 MWh/t Heating oil: 11.2-11.8 MWh/t	Natural gas: 513-638 €/t Heating oil: 670-900 €/t	Natural gas: 73-211 €/t Heating oil: 114-338 €/t
Wood pellets	210-275 €/t Enplus certified: >250 non certified/ other certified: <250	25	1.20 €/km	4.8 MWh/t	Natural gas: 12.7-14.1 MWh/t Heating oil: 11.2-11.8 MWh/t	Natural gas: 513-638 €/t Heating oil: 670-900 €/t	Natural gas: 175-241 €/t Heating oil: 272-366 €/t
Wood briquettes	90-130 €/t	25	1.20 €/km	4.8 MWh/t	Natural gas: 12.7-14.1 MWh/t Heating oil: 11.2-11.8 MWh/t	Natural gas: 513-638 €/t Heating oil: 670-900 €/t	Natural gas: 175-241 €/t Heating oil: 272-366 €/t

BULGARIA	BIOMASS				FOSSIL FUEL		
	Price/t (incl.VAT, excl. transport)	VAT for biomass in %	av. transport costs of biomass/km	Average energy content MWh/t of biomass	Average energy content MWh/t for fossil fuels (Natural gas, heating oil and coal)	Price/unit & Price/t (incl. VAT, excl. transport)	Price/t (incl. VAT, excl. transport) with the same energy content than 1 ton of the biomass product
Firewood	50-80 €/t	20	1-1.5 Euro/km	2.3-4.2 MWh/t	Natural gas: 12.7-14.1 Mwh/t Coal: 7 MWh/t	Natural gas: 0.45€/m3 or 616€/t ⁵ Coal: 100-150 €/t	Natural gas: 100 -204 €/t Coal: 33-90 €/t
Wood chips	45-100 €/t	20	1-2 Euro/km	2.0-4.2 MWh/t	Natural gas: 12.7-14.1 Mwh/t Heating Oil: 11.2- 11.8 Mwh/t Coal: 7 MWh/t	Natural gas: 0.45€/m3 or 616€/t Heating Oil: 600 €/t Coal: 100-150 €/t	Natural gas: 87-204 €/t Heating Oil: 102-225 €/t Coal: 29-90 €/t
Wood pellets	175-220 €/t Enplus certified: >200 non certified: <200	20	1-1.5 Euro/km	4.8 MWh/t	Natural gas: 12.7-14.1 Mwh/t Coal: 7 MWh/t	Natural gas: 0.45€/m3 or 616€/t Coal: 100-150 €/t	Natural gas: 210-233 €/t Coal: 69-103 €/t
Wood briquettes	150-220 €/t	20	1-1.5 Euro/km	4.8 MWh/t	Natural gas: 12.7-14.1 MWh/t Coal: 7 MWh/t	Natural gas: 0.45€/m3 or 616€/t Coal: 100-150 €/t	Natural gas: 210-233 €/t Coal: 69-103 €/t

* In Bulgaria the transportation costs are in average 10 - 15 Euro/ton

References: Information compiled by: REGEA for Croatia, Serbio for Serbia and BGBIOM for Bulgaria.

5 Official prices in Bulgaria are given in €/GJ (1MWh = 3.6 GJ).