



POSSIBILITIES OF INCREASING RENEWABLE ENERGY RESOURCES IN CROATIA – WOOD PELLET

Andreja PIRC BARČIĆ, Ph.D.
Prof. Darko MOTIK, Ph.D
Branko LIKER, Mr.Sc.
Maja MORO, Ph.D.

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INTRODUCTION

Known fact: *Energy from renewable sources globally presents very important issue!*

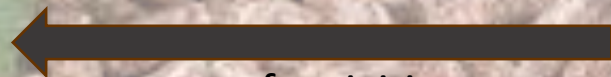


the potential role of **wood-pellet** in a sustainable biofuel systems presents an important issue Wood-pellet is a renewable fuel with no carbon dioxide emissions contributing to global warming and has the highest potential for carbon dioxide reduction



Croatia has by signing the Kyoto Protocol committed itself to reduce greenhouse gas emissions by five percent by 2020

Promotion of wooden biomass usage



one of activities to fulfil these obligations

The EU 28 produced 13.3 million tonnes of wood pellet in 2014

GERMANY= 2.1 million tonnes

FRANCE = 1.2 million tonnes

AUSTRIA = 0.9 million tonnes

SWEDEN = 1.3 million tonnes (IN 2013)

Baltic countires = cca. 2 million tonnes (IN 2013)

In 2013 in the western Balkans production of wood pellets increased by 64% over 2012 --- **648.104 tonnes** --- in 2014 production grew by **21%**

192 wood-pellet manufacturers (92 in B&H)

European pellet consumption will reach 35 million tonnes by 2020

in the wood biomass usage CROATIA is still at the beginning

a potential production of Croatia wood-pellet producers is 260.000 tonnes per year

92% of wood-pellet production is placed to foreign markets

2014

Export	Quantity	Price
WOOD-PELLET	171 tis. tonnes	172 EUR/t
Briquets	38 tis. tonnes	111 EUR/t

majority of pellet producers have failed in providing all the necessary certificates, without which it is not possible to ensure good market placement in European wood pellet market.

There are 10 wood-pellet producers in Croatia (the first started in 2007)

Croatian wood pellets are mainly exported to Slovenia and Italy

OBJECTIVES

1.) to explore how much Croatian households in generally know about wood pellets

2.) what the possibilities of its future consumption incensement

MATHERIALS AND METHODS

- The sample frames were random samples of 1050 Croatian households
- the sample frame covered all 20 Croatian counties and Zagreb City (n=50 per county)
- The total number of usable surveys was 840 (80%)
- A telephone survey was the method used for surveying respondents
- The questionnaire consisted of 17 questions
- Data collection was carried out during March, April, and May 2015.

RESULTS

Table 1. Respondent profile of potential wood-pellets users in Croatia

- Almost 40% of 834 respondents were living in rural areas, villages and towns with population up to 5000 people
- 37.1% of respondents, were located in medium-sized and large cities with population over 10000 people
- while 23.9% were located in small cities between 5000 and 10000 people

Gender of respondents (%) (n=831)		Education level of respondents (%) (n=834)		Age groups of respondents (%) (n=836)	
Male	62.5	Primary school	22.3	18 – 30 years old	11.5
				31 – 40 years old	11.0
Female	37.5	High school	60.2	41 – 50 years old	16.5
				51 – 60 years old	21.8
				Older than 60	39.2
		University	14.7		

Table 2. Household profile of potential wood-pellet users in Croatia

*Number of persons in household (%) (n=837)		Number of employed persons in household (%) (n=779)		**Monthly household income (%) (n=833)	
1	14.3	1	27.3	Up to 500 EUR	38.1
2	28.4	2	36.1		
3	20.1	3, 4, 5 and more	11.6	500 – 750 EUR	26.7
4	22.1	Other (unemployed; retired)	25.0	750 – 1000 EUR	15.6
5 and more	15.1			More than 1000 EUR	19.7

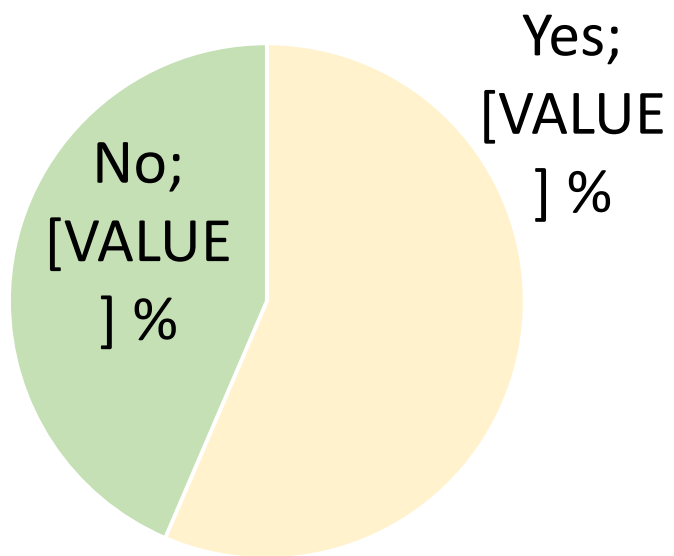
* Children are included in number of persons in household

* **Monthly household income = Total monthly household income – Monthly household loan

Table 3. Building characteristics and energy information of potential wood-pellet users in Croatia

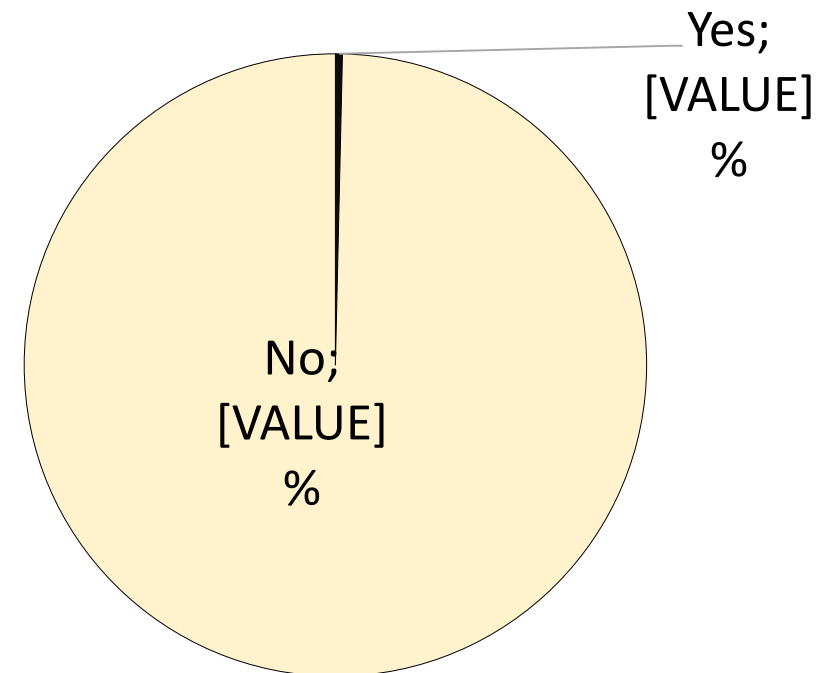
Age of building (%) (n=832)		*Energy source used for heating (%) (n=840)		Size of space that is heated (%) (n=831)		Annual energy expense for heating (%) (n=824)	
Up to 10 years	6.5	Gas	26.8	Up to 50 m ²	28.6	Up to 700EUR	60.3
10 – 20 years	22.7	Electricity	2.1	50 – 100 m ²	51.5	700-1400 EUR	37.8
More than 20 years	70.8	Wood	58.6	100 – 200 m ²	18.1	More than 1400 EUR	4.9
		Other	3.6	More than 200 m ²	1.8		

Do you know who is producing and where to buy wood-pellets in Croatia
(n=832)



Awareness of wood-pellet presence in Croatian market

Do you use wood-pellet? (n=829)



Do you plan to start use wood-pellets sometime in the future?

Of the 826 respondents, 11.9% said that they are planning to use it in the future.



Of these 98 respondents (11.9%) 65% noted that this future time presents 5 and more year's period.



When asking respondents about their awareness about subventions related to renewable energy source usage for households financed by Environmental Protection and Efficiency Fund, only 1/4 of 828 respondents (26.6%) said that they are familiar with these facilities.

SUMMARY

Croatian households mainly consists of two to four persons, in 1/4 households all members are unemployed and/or retired or only 2 household members are employed who usually generate monthly household income up to 750EUR.

Seventy percent of building are older than 20 years and the majority of this households are using wood as heating energy source, with spending up to 1400EUR for heating costs (95% of respondents).

In Croatia wood pellet usage is still minor and only ¼ of respondents stated that they are familiar with subventions and government programs in which use of renewable energy sources in encouraged.

Croatian market (public institutions and private persons) is not yet enough informed about scope of wood pellet usage and it advances in the contacts of ecology and green economy. Additionally, increased sectorial activates of all sectorial members must be accurate. These activities must necessarily include results of scientific researches and professional studies, which prove that the use of wood pellets represents an economically and ecologically important part of the Croatian wood sector in the first place and of all people living in Croatia.

Because of raw material resources wood-pellet
represents the fuel of the future!

Andreja PIRC BARČIĆ, Ph.D.
Prof. Darko MOTIK, Ph.D.
Branko LIKER, M. Sc.
Maja MORO, Ph.D.

University of Zagreb, Faculty of Forestry, Zagreb, Croatia

e-mail: apirc@sumfak.hr;

mmoro@sumfak.hr;

motik@sumfak.hr

Drvenjača d.d. – Fužine, Fužine, Croatia

e-mail: branko.liker@drvenjaca.hr

