



INTERACTION OF FOREST MANAGEMENT AND WOOD PROCESSING INDUSTRY IN SELECTED SEE COUNTRIES

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1. Introduction

- The demand for wood by forest industries has been projected to increase by 15–35% in 2030 compared to 2010 (Mantau et al., 2010).
- Forests are considered an important resource to meet these renewable energy targets

1. Introduction

- (i) wood and wood waste represent currently about half of all the renewable energy production (EUROSTAT, 2010)
- (ii) forests are not managed to their full extent as fellings are generally well below the annual increment.

Croatia

- NFI, forests and forestland area 2 580 826 ha
- 77% state, 23% privately owned.
- growing stock is 552,146,000 m³
- annual cut - state forests is 7 325 000 m³,
- private forests 1 087 000 m³
- broadleaved (62.07%), then coniferous (6.45%)
and mixed forests (18.58%),
- beech (36.44%), oaks *Quercus robur* L. (14.83 %) and *Quercus petraea* L. (8.35%), hornbeam (5.34%), and fir – *Abies alba* Mill. (9.38%).

Bosnia and Herzegovina

- forests and forest land 3 231 million ha
- 1 652 million ha are high forests, and 1 252 million ha are coppice forests.
- 80% are public forests, 20% privately owned.
- NFI= 5.7 million m³ are harvested per year
- annual increment more than 11 million m³
- volume of annual felling in public high forests 4 416 000 m³

Serbia

- NFI (2008), forests cover an area of 2,252,400 ha or 29.1% of the total area.
- Growing stock 362.5 million m³ or 160.9 m³/ha and an annual increment of 9.08 million m³ or 4,0 m³/ha.
- The total annual harvesting volume in Serbia 2,696 000m³,
- industrial round wood = 968 000 m³ and
- fuel wood = 1 728 000m³. (Statistical yearbook).

2. Research goals

- a) Background and key figures of the sector
- b) Trade flow of timber production and wood industry production values through import and export data in selected countries.
- c) Consumption of wood per capita with a comparative analysis of the relationship between growing stock, annual production, and wood industry production values.

3. Timber production

Production of timber per assortments from 2008-2013 in Croatia

Year	Roundwood	Thin technical wood	Wood for processing	Fuelwood	Total
	m3				
2008	2.256.873	27.666	-	1.768.988	4.356.561
2009	2.017.515	15.013	-	1.782.334	4.174.156
2010	1.991.541	12.263	-	1.941.566	4.295.449
2011	2.323.717	51.079	1.090.026	1.467.708	4.932.530
2012	2.259.801	35.279	1.002.516	1.428.436	4.726.032
2013	2.259.031	41.689	872.953	1.611.871	4.785.544
2014	2.242.972	35.929	694.988	1.850.720	4.824.609

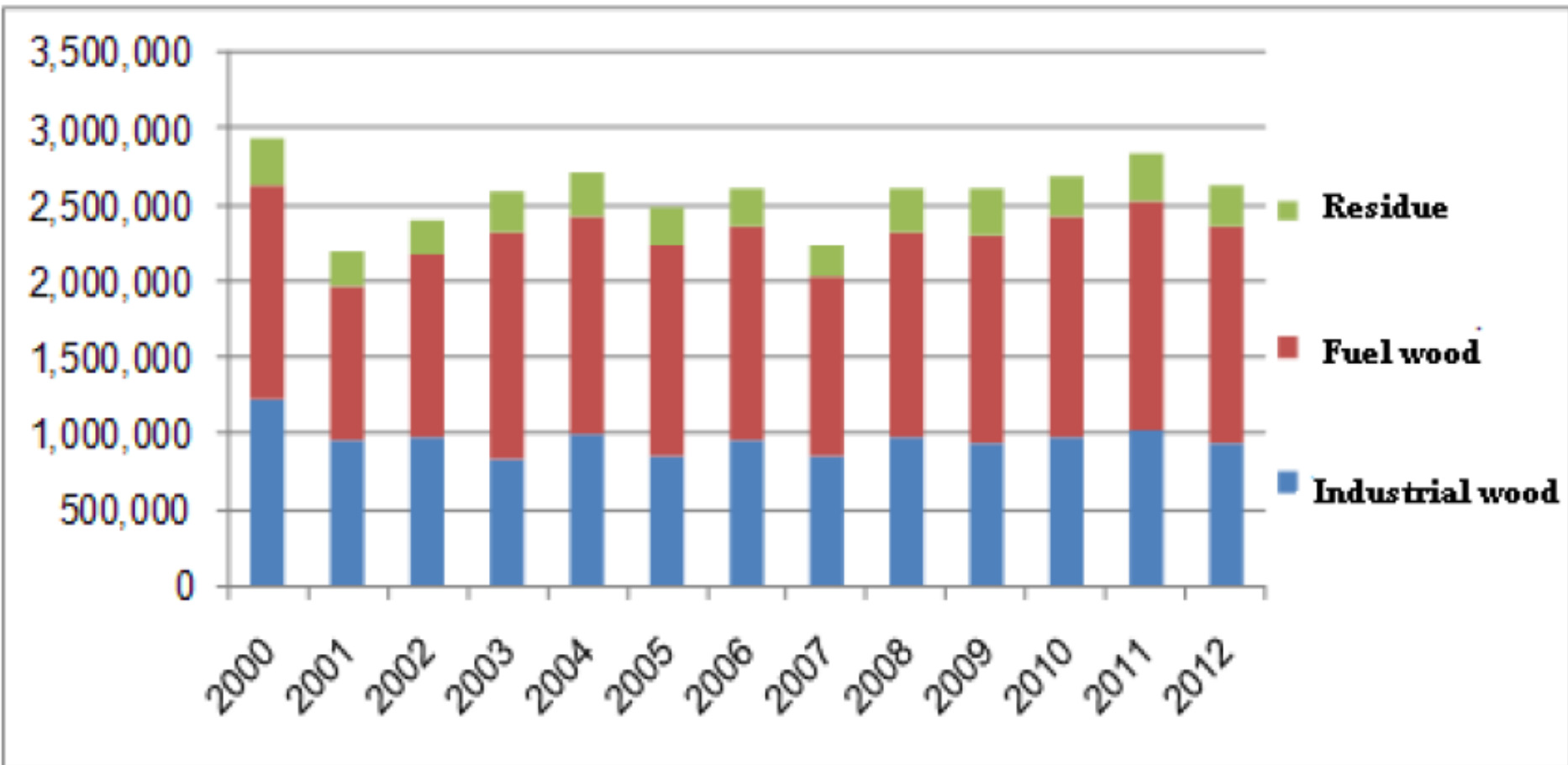
Sales value of wood assortments in Croatia from 2008 to 2014

Year	Logs	Thin roundwood	Cellulose wood	Firewood	Total
	EUR				
2008	155.196.539	1.902.548	26.925.556	18.433.195	202.457.838
2009	137.099.315	2.408.870	20.129.645	17.841.473	177.479.303
2010	123.712.944	438.544	23.300.557	22.355.817	169.807.862
2011	149.888.709	1.639.369	28.420.753	24.325.987	204.274.819
2012	146.793.596	1.137.752	24.994.907	25.431.938	198.358.194
2013	155.817.026	1.307.711	22.586.746	33.135.411	212.846.894
2014	148.657.894	1.118.421	17.197.368	41.039.473	207.713.156

Production of timber per assortments from 2006-2013 (Agency of Statistics BiH, 2007-2013)

Year	m ³							
	2006	2007	2008	2009	2010	2011	2012	2013
TOTAL	4.104.333	3.752.936	4.010.888	3.429.025	3.614.899	3.500.351	3.796.369	4.024.171
Coniferous	1.749.530	1.591.946	1.722.003	1.395.745	1.577.825	1.580.277	1.763.822	1.944.451
Logs	1.349.294	1.195.805	1.308.068	1.028.723	1.060.401	1.047.823	1.176.542	1.256.218
Mining wood	112.518	102.532	108.615	83.812	102.254	118.818	122.860	136.472
Other long coniferous wood	129.427	113.540	116.007	76.717	83.013	92.945	74.783	14.396
Cord coniferous wood	144.990	168.622	181.540	204.261	330.437	318.806	388.066	536.315
Coniferous firewood	13.242	11.447	7.773	2.232	1.720	1.885	1.571	1.050
Broadleaf	2.354.803	2.160.990	2.288.885	2.033.280	2.037.074	1.920.074	2.032.547	2.079.720
Logs	800.490	727.703	733.200	568.364	597.570	567.670	613.353	643.300
Mining wood	8.069	8.776	6.368	6.954	7.140	5.879	4.886	3.666
Other long broadleaf wood	12.180	14.621	13.170	13.100	16.355	13.599	17.344	15.941
Cord broadleaf wood	87.682	81.216	103.485	117.591	157.552	127.066	130.651	82.008
Broadleaf firewood	1.445.806	1.328.326	1.432.371	1.326.714	1.257.769	1.205.142	1.266.259	1.334.378
Other roughly processed wood	635	348	291	557	688	718	54	427

Wood production in Serbia in the period 2004-2012



The value of the wood sold on the roadside, by assortment groups, in 2012
(Euros, source: Vasiljevic A. 2015)

Company	Total		Logs for veneer and peeling		Logs for sawmill		Other techn.wood		Fuelwood and pulpwood	
	€ * 10 ³	%	€ * 10 ³	%	€ * 10 ³	%	€ * 10 ³	%	€ * 10 ³	%
PE „Srbija-sume“	43,921	62.1	2,360	18.8	5,398	59.5	2,045	52.2	24,119	73.5
PE „Vojvodina sume“	23,388	27.7	9,990	79.7	6,661	25.7	844	21.5	5,894	18.0
National parks	5,972	7.6	59	0.5	2,849	11.0	1,030	26.3	2,034	6.2
Others	1,871	2.7	131	1.0	965	3.7	0	0,0	776	2.4
Total	75.152	100,0	12.540	100.0	25.871	100.0	3 919	100.0	32.822	100.0

Source: Business reports of companies

4. Wood industry production

Croatia

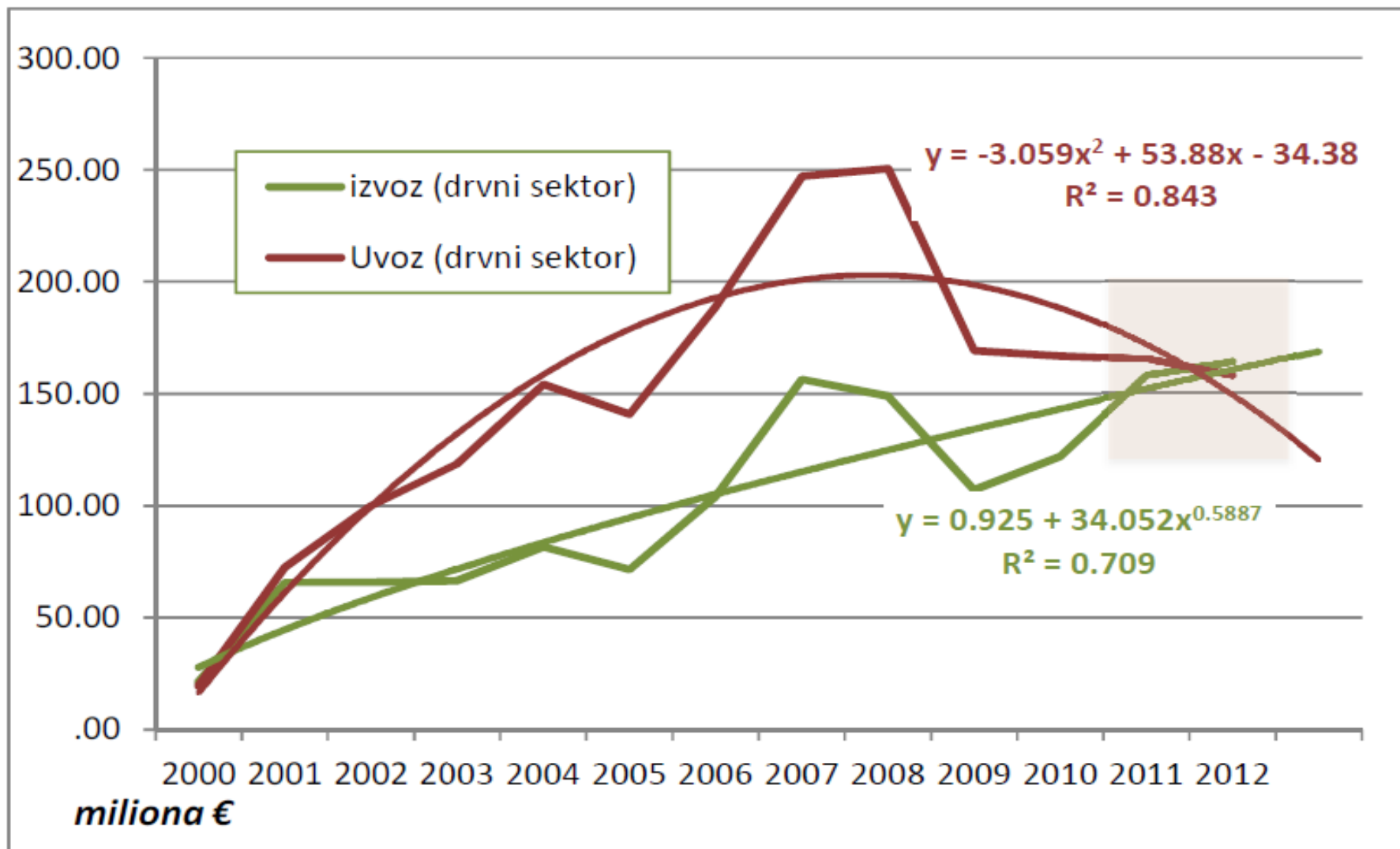
year	Production	Import	Export	Consumption
	EUR	EUR	EUR	EUR/per capita*
2009.	530.723.946	192.388.000	333.803.782	87
2010.	526.893.556	167.013.008	376.804.590	71
2011.	574.197.969	171.492.882	439.799.145	69
2012	616.453.978	150.573.239	449.816.970	71
2013	707.177.826	147.383.861	537.512.903	71

Main performance indicators of the wood processing industry in 2011
(FIRMA 2012: BiH industry outlook Wood & Metal Processing Sectors, 2012)

2011						
	Sales (mil EUR)	percent share	Exports (mil EUR)	percent share	Employment	percent share
Sawmill products	235.4	6.6	141.3	3.3	-	-
Veneer	46.8	1.3	12.8	0.3	-	-
Joinery	24.5	0.7	24.78	0.6	-	-
Other wood products	29.02	0.8	7.85	0.2	-	-
Furniture	171.7	4.8	177.5	4.1	7,942	5.9
Prefabricated houses	3.3	0.1	14.89	0.3	-	-
Total WP	511.5	14.3	381.26	8.9	7,942	5.9
Total Manufacturing	3,578.06	100	4,299.94	100	133,707	100

Bosnia and Herzegovina

- the share of the wood processing industry in 2011 in terms of **GDP** increased to **0.85** % in 2011 from 0.75 % in 2010.
- the structure of production, revenues and exports is becoming more favourable, with a higher proportion of production from segments with higher added value
- Estimated consumption of sawnwood in 2020 is 507 769 m³ (UNECE report 2012, B2 scenario).



Main performance indicators of the wood processing industry in Serbia
(Source: Vasiljevic A. 2015)

Serbia

- Total export of wood processing industry and furniture in 2014 = 460 mill. USD
- Surplus in export of furniture reached in 2014 around 128 mill. USD.
- Domestic consumption of furniture is on the lowest level in last decade and producers are mostly oriented towards export.
- Estimated consumption of sawnwood in 2020 is 880 087 m³ (UNECE report 2012, B2 scenario).

5. CONCLUSION

- The development of entrepreneurship in selected countries is limited by factors such as:
 - a) underdeveloped infrastructure;
 - b) a lack of skilled labour;
 - c) limited access to markets and to finance;
 - d) a lack of investment support and
 - e) low entrepreneurial potential.

- Public forest enterprises have important influence in forest management and have a strong social role as employer.
- sawmilling industry characterised by over-capacities and use of outdated technologies in many cases.

- Technological innovation and coordinated production clusters are needed to increase efficiency in the sawmill operations.
- industrial biomass sector among the most promising fields for investments but needs respective strategic planning of resource and capacity needs, infrastructure and logistics.

- Region is a net exporter of primary and secondary forest products.
- Production and sales of sawnwood the most important product category,
- potential to generate domestic value-added (final) products in the processing industry based on quality raw material in selected countries.



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