

“The development of industrial symbiosis networks in Latvia”

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I. INTRODUCTION

Industrial symbiosis seeks to improve the efficiency of industrial companies, by providing sustainable options for use of waste or by-product materials and energy. Industrial symbiosis is concerned with creating inter-firm cooperation and providing a collective benefit for the involved companies. This is accomplished by finding a suitable use for any waste or process by-product from one company within the manufacturing process of another company. By implementing such resource-saving measures any company could become more environmentally friendly and reduce its impact on the environment.

Conclusions drawn from the literature analysis suggest that the concept of industrial symbiosis is not included in Latvian legislation. Moreover the waste management policy in Latvia indirectly contributes to the export of waste, thereby acting contrary to the principles of industrial symbiosis.

Thought there is lack of legislative framework for the development of industrial symbiosis in Latvia, resource and by-product exchanges might have been formed due to economic conditions during the crisis. The aim of this research is to determine whether inter-firm resource and by-product exchanges have been formed between companies within Latvian woodworking industry and to characterise the identified cooperation networks according to industrial symbiosis principles.

II. APPROACH

Forestry and woodworking industry is one of the largest industries in Latvia, both in terms of turnover and number of companies. Although woodworking industry suffered great losses and reduction of production capacity during the recent economic crisis, now it is showing the greatest extent of recovery. Both production and export amounts are rising again. The reduction of impact on the environment created by wood processing industry is very important in order to ensure sustainable development. The main impacts within this industry are created due to the use of fossil fuels within the production process and landfilling large amounts of inorganic wastes as ash or biodegradable wastes as wood materials. Such wood processing by-products as bark, cuttings, sawdust and wood chips have high potential of recycling or can be used as fuel.

To identify inter-firm cooperation between woodworking companies in Latvia, the publicly available information was gathered from waste management information system and pollution permits issued to the largest companies.

III. RESULTS

A number of wood product exchanges and one waste energy exchange were identified by analysing data of the State statistical survey “3-Wastes” [1]. Although of the absence of industrial symbiosis promoting policies, Latvian companies

have for economic reasons created by-product exchange flows that are corresponding to the principles of industrial symbiosis. A summary of identified exchanges, their location and number of involved companies is presented in Table I.

IDENTIFIED WOOD MATERIAL AND BY-PRODUCT EXCHANGES IN LATVIA

Company/Network	Saw mill	Wood processing company	Furniture manufacturing	Biofuel company	Other company	Waste handling company	District Heating	N ^o . of companies	N ^o . of exchanges
Bolderāja		1				1	1	3	2
Inčukalns	3			1	1			5	6
Ūdens iela			1	1				2	1
Tukums				1	1		1	3	2
Ventspils	1				1			2	2
Salacgrīva				1	1			2	1
Rauna			1	1				2	1
Viļāni	1						1	2	1

The main distinction of these exchanges is that the by-products are used for manufacturing of high added value products and this is done closely to the origin of by-products. Therefore less transportation is required and landfilling of by-products is avoided. The identified exchange of waste energy is formed between a company which is producing biomass boilers and has an on-site testing facility. The waste heat from boiler testing is supplied by means of hot water to local district heating company.

IV. CONCLUSIONS

Although the concept of industrial symbiosis is not incorporated in Latvian legislation, some companies in wood processing industry in Latvia have already established inter-firm cooperation due to economic conditions. For further development of industrial symbiosis this term has to be recognized and included in the Latvian legislation. The use of waste materials and manufacturing by-products instead of raw resources should be promoted and inter-firm cooperation should be promoted. Another important factor for the development of industrial symbiosis networks in Latvia is promoting the re-use of waste and by-products close to their origin. At the national level industrial symbiosis promotion mechanisms, in particular, voluntary mechanisms need to be implicated. National recognition of industrial symbiosis could advantage sustainable development of industry and overall economic development of Latvia.

V. REFERENCES

- [1] Environmental information system. State statistical survey “3-Wastes”. <http://vdc2.vdc.lv:8998/atkritum.html>