INSTITUTIONAL AND INDUSTRIAL SYMBIOSIS CASE STUDY OF COOPERATION FOR DEVELOPMENT IN FORESTRY AND WOOD-BASED SECTOR

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Industrial symbiosis?

- It is possible?
- How is this possible?
- Industrial symbiosis idea - transfer natural models to the anthropogenic world
- In the theory of industrial ecology, companies imitate nature this way: within it, nothing is waste, and every element is constantly processed and managed.
- Is this a new theory?
Is this a new theory?

- No, this theory is as old as the world!
- How is it? It's nature ...
- But ... in economics ...
- The theory, methodologies, and case studies in the field of industrial symbiosis have been developing for nearly 30 years...
- Maybe you need to research it?
Why especially in the forest and wood-based sector?

- The competitiveness of the forest-and-wood based sector [continues] to be determined by the strong conflict between its productive, recreational and protective functions.
- The concept of "sustainable development" stems directly from forestry management.... You know....
Sylvicultura Oeconomica

- Hans Carl von Carlowitz defined the concept of economic activity in forestry...

- *Sylvicultura Oeconomica* oder Anweisung zur wilden Baum-Zucht (Sylvicultura Oeconomica or the Instructions for Wild Tree Cultivation)

- in the 18th century (1713);
So many basics, introductions…
Time for a case study… **Objectives:**

- Question about: the possibility of cooperation (industrial symbiosis) of various partners in the forest and wood-based sector (and they have conflicting business interests)…

- What factors can create the symbiosis and cooperation of actors?
A new competitive model?

- A starting point for local development programming should be seeking new dynamic factors, which are not limited to local resources, but rather are related to intermunicipal and intersectoral cooperation.

- A development policy based only on competition is no longer sufficient and often leads to opposite effects to those intended.
Material and methods (in short)

- diagnostic survey of **two partnerships** in forest areas - the case of Poland - a few words about them in a moment...
- about 550 respondents, from four main groups (municipalities, business /especially from the forestry and wood-based sector/, NGO's, inhabitants /towns and villages/)
- research period, finally, two years (2016-2017)
- above all, qualitative analysis, but
- of course, also quantitative tools:
- identification of main factors (descriptive statistics methods, multivariable analysis, regression) and agglomeration methods (i.a. Ward method)…
Case 1: Puszcza Notecka (Notecka Forests)
Międzychód: main municipality in the 1. partnership
Notecka Forests Microregion

Increasing the Use of Wood in the Global Bio-Economy, Belgrade, Serbia, September 26th – 28th, 2018
Puszcza Notecka (Noteck Forests):

- area of 1400 square kilometers (homogeneous forest);
- in the Wielkopolska region, north of Poznań;
- between two rivers: Warta and Noteć;
- only forest - 100 km long, 20 km wide;
- you can go all day - and not meet any people;
- problems: poverty, poor economic development;
- 10 municipalities;
- near cities - woodworking factories (industry).
Case 2: Bory Niemodlińskie

- area of 500 square kilometers (homogeneous forest);
- the Śląsk (Silesian) region of Opole, south of Opole and the Odra river;
- problems (the same): poverty, poor economic development
- multinational structure (Polish people, Silesians, Germans, repatriates…)
- 7 municipalities;
- 16 cooperation incubators
- small industry.
Niemodlin: main municipality in the 2. partnership
Niemodlin Forests Microregion

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Bory Niemodlińskie (Niemodlin Forests)

Natur reserve: Jaśkowice

Forest district Tułowice
Bory Niemodlińskie: lakes in forest areas
Results

Which main factors determine the success of cooperation (symbiosis) in both cases of partnerships?
<table>
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<th>INTEGRAL MODEL OF COOPERATION</th>
<th>Identification of the power of factors influencing the effectiveness of the partnership</th>
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<td>I. Composition of the partnership</td>
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<td>II. Potential for partnership</td>
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<td>III. Functional network</td>
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<td>IV. Development programming</td>
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<td>X. Trust</td>
<td><strong>Very Strong (I)</strong></td>
</tr>
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</table>

Table 1. Diversification of the impact of cooperation factors of the studied partnerships.
What determines the quality of symbiosis (cooperation)?

- Composition of the partnership (87%)
- Potential for partnership (72%)
- Functional network (69%)
- Development programming (68%)
- Trust (95%)
We have our own examples?
We have our own examples?

- I think so! Yes!

- vivant sequentes!!!
What are the prospects?

- I am curious about your experiences...
- What cases are in your countries or regions?
- Because they are for sure!
- The future of development depends on our cooperation!
- Symbiosis: look in the same direction 😊
Thank You!

Хвала на пажњи!
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