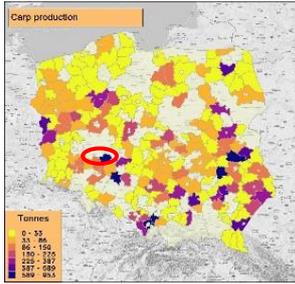# KEY ECONOMIC DRIVERS OF THE DEVELOPMENT OF TYPICAL CARP FARMS IN POLAND. A case study of the Barycz Valley.

Carp production in Poland

Carp has been known in Poland for 800 years and it is a very important species for Polish nation especially on Christmas Eve. The area of ponds - 90 th. ha and 20 th. tons of carp production - has given Poland the leading position in the EU (7th in the world). Carp farming is seen as very traditional, extensive and sustainable, characterized by 2-3 years of production cycle which is dependent on the climatic conditions.

Economics of carp aquaculture in Success project

The economics of aquaculture production is an important element of sustainability in this industry. Each business model requires business verification and identifies key drivers for competitiveness and growth. The study of these parameters within different fish species is conducted within the framework of the SUCCESS/ H2020 project. One of the elements of the project is the study of carp production in Poland, Germany and the Czech Republic. The presentation is based on the results of case studies of farms located in the Barycz Valley in Poland.

Methods of survey

Interviews with Focus Group Experts and statistical analyses enabled three farms to represent typical production segments. The adopted segments of the Barycz Valley farm were the pond surface size and production volume:

- PL-FCP-10 – with annual production about 10 metric tons,
- PL-FCP-90 – with annual production about 90-100 metric tons,
- PL-FCP-190 – with annual production about 190-200 metric tons.

Operational and financial data were obtained using a direct interview in September 2016 on modified forms used in the Agribenchmark research programs. The third stage of data collection was study visits to farms where the parameters obtained were directly verified. The research was scientifically supervised by the Thünen Institute, Germany.
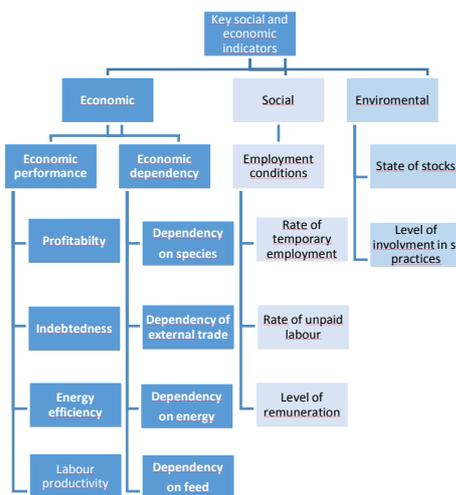

The drivers used in farm describing and comparing to other species and among different scale of production were defined in three groups: economic, social and environmental - according to project Success methodology. All off them determine the competitiveness of carp species and the future of carp farms. The structure of the drivers are presented on Fig. 1.

Fig. 1. Structure of the key drivers in carp development

Results

Based on the collected materials, the basic drivers of farm economics, which were responsible for their development, were analysed. These areas include: 1) Profitability; 2) Indebtedness; 3) Energy efficiency. These areas were analysed in 3 typical farms representing typical scale of production. The details of each three category are presented on fig. 2.
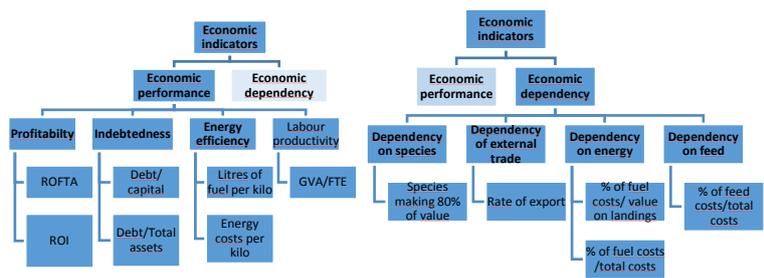

Fig. 2. Structure of economic indicators

Based on the analysis of the detailed parameters identified within the highlighted elements, eight key economic drivers of the farm were identified and their metrics were assigned. These measures include profitability, indebtedness, energy efficiency, labour productivity, dependency on species, external trade, energy and feed. As a result of the various combinations of these economic factors, it is possible to obtain different economic results for these entities (Tab. 1).

Tab. 1. The results of the survey

Variable	Aquaculture PL-FCP-10	Aquaculture PL-FCP-90	Aquaculture PL-FCP-190	Measure unit
GVA/FTE	9,8	29,9	51,6	€/FTE
ROFTA	--	--	--	ratio
ROI	-25,9%	7,8%	4,6%	%
Debt/capital ratio	--	--	--	ratio
Debt/total value of assets	0,0	0,0	0,0	ratio
Energy costs per kg of fish produced	0,1	0,2	0,1	€/kg
Species making up 80% of the total value	1	1	1	Number
Rate of export	0,1%	0,1%	0,1%	%
Energy costs/ total costs	2,4%	6,9%	4,6%	%
Feed costs/ total costs	9%	22%	30%	%

Conclusions

Although carp production is not the part of intensive production, market conditions promote large producers and specialization combined with economies of scale effects. An alternative to scale effects may be to shorten the supply chain. Medium and small producers address their production to direct supply the local market by diversifying their recipients.

Research has shown that the profitability of production was most influenced by the combination of farmer decisions regarding production intensification within the pond capacity (scale), production process automation (cost structure), as well as the selection of sales markets and the resulting distribution scheme (direct sale, local market deliveries, global market sale).

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