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## Article

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# Analysis of Stakeholders' Expectations for Dairy Sector Development Strategies from a Central-Eastern and Western European Perspective

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## Abstract

*The development paths chosen by farmers and the critical success factors involved can be better understood when the business context in which these farmers operate is known. Also, interaction in the chain contributes to the strength of the chain. This raises questions such as do chain parties cooperate and is there a certain consensus concerning the future strategic route? This article provides a unique analysis of how stakeholders envisage the future of dairy farming in a period of radical policy change and what barriers they foresee to their objectives. The questionnaire used examined perceptions on development strategies, availability of resources, opportunities & threats (O&T), farmer skills and future expectations. In 2015 and early 2016, a total of 161 completed questionnaires were collected from stakeholders (leading persons in the dairy chain) in the Netherlands, Slovenia, Lithuania and Poland. Data were analysed by PCA, ANOVA, cluster and stepwise regression methods. Eight strategic clusters of stakeholders were found. Farm expansion and specialisation was the most expected development strategy (57% of stakeholders). Almost one fourth of the stakeholders took a wait and see approach, of which 15% looked for opportunities to activate at a particular moment in time, while 8% were generally pessimistic about the future. Diversification in combination with organic farming was chosen by 5% of the stakeholders, 10% of stakeholders focused on cooperation, service and high tech, and another 5% placed their trust in skills, subsidies and labour. The opinions of stakeholders were highly affected by the country of origin, while only minor variations in opinions were observed between different*

*categories of stakeholders. Polish stakeholders showed the most specialised view on the dairy chain, but they scored relatively low on cooperation. Development towards diversification and organic agriculture received higher scores in Slovenia and Lithuania compared to the Netherlands and especially to Poland. Netherlands' stakeholders were the most positive about the future e.g. they foresee expansion and market opportunities. It was shown that strategies, resources and O&T each directly affect future expectations, which was in agreement with the hypothetical model used.*

## Key Words

*cluster analysis; stakeholders; dairy sector; development strategies; opportunities; Europe*

## 1 Introduction

Support for agriculture in the EU through the Common Agricultural Policy (CAP) is gradually being reduced. In the dairy sector, the abolition of the milk quota system and the reduction in export subsidies are examples of this. Price structure is expected to reflect supply and demand, so market oriented business strategies will be increasingly important for the performance of farms and the wider sector (KNUDSON et al., 2004: 1333). The business circumstances relate to the chain in which the farmers receive their inputs and services and have their raw products processed or sold to the consumer. Ministries, NGOs, farmer unions, input and processing companies, and service organisations play a role in the functioning of chain and bar-

gaining in the chain. All these parties comprise the stakeholders in the particular product chain or sector.

According to management theory (KOTLER and KELLER, 2012: 48), businesses choose strategies that match their internal strengths and weaknesses with external opportunities and threats, because this improves their performance. In a farming context this means that strategic choices should exploit the farm's strengths taking advantage of opportunities and circumventing threats to the farmer's goals posed by the business environment. The strategies chosen by the sector representatives, i.e. the stakeholders, depend on many internal and external factors which then impact on their own businesses and on farmers' goals and decisions. Moreover, according to the theory of vertical coordination, interaction in the chain contributes to the strength of the chain (CAO and ZHANG, 2011: 164; TSANOS and ZOGRAFOS, 2016: 689). Thus, the development paths chosen by the farmers and the critical success factors noted can be better interpreted when knowing the sector and business context in which the farmers operate in these countries. This raises questions such as i) do parties cooperate and is there a certain consensus concerning the future strategic route, ii) is the consensus view of the farmers backed by the other stakeholders in the chain and vice versa, and iii) who or what are the driving forces in the sector? To be able to address these questions, the opinions of both farmers and stakeholders towards sector development and critical success factors should be known.

Studies on future farm development paths are usually based on farm and farmer's data (DARNHOFFER, 2010: 216; EDWARDS-JONES, 2006: 783; FARMAR-BOWERS, 2010: 141). Also decision making is normally studied at farm level (DEFRANCESCO et al., 2008: 121; GORTON et al., 2008: 325; LOBLEY and BUTLER, 2010: 3).

As part of our ERASMUS<sup>+</sup> STRATEGIC MANAGEMENT PROJECT (2015), the opinions and visions of a large group of dairy farmers (1,028) towards farm development strategies in three Central and Eastern European (CEE) countries (Poland, Slovenia and Lithuania) were studied by VERHEES et al. (2017: 1) and DE LAUWERE et al. (2016: 2). The responses of a sub-set of these farmers were recorded through the years 2011 to 2016 together with a sample of farmers from the Netherlands (KLOPČIČ et al., 2016: 111). Stakeholder studies on sector development are scarce. Therefore, the main goal of the present study was to examine stakeholders' opinions on development strat-

egies, availability of resources, opportunities & threats (O&T), farmer skills and future expectations in the selected countries together with the relationships between these aspects. The questions and approach were similar to the farmers' study. The stakeholders were also from the same countries as in the farmers' studies, thus from one Western European country and three CEE countries, which latter experienced relatively large structural changes since becoming member of the EU (GORTON et al., 2008: 323; ROZSTALNYY and KUIPERS, 2014: 28). The year of data collection (2015/16) was a historical year for the dairy sector because after 30 years the milk quota system was abolished and the sector theoretically returned to free, unlimited production. After completing the present stakeholders' study, the three questions raised above will be addressed in more detail in a follow up article.

## 2 Material and Methods

### 2.1 Framework

We used a conceptual framework based on common marketing management theory (like in KOTLER and KELLER, 2012: 48), encompassing the effects of internal and external factors on decision making. Such a framework was used by ONDERSTEIJN et al. (2003: 34) for studying the link between farm development strategies and environmental management of dairy farmers in the Netherlands, and also by HANSON et al. (2007: 727) for studying strategy factors on dairy farm performance in Sweden. This framework was applied by KLOPČIČ et al. (2016: 111) and VERHEES et al. (2017: 5) to the dairy sector in the same countries as the present study, analysing the future expectations (performance) of farmers on basis of four elements, i.e. self-perceived opinions on strategies, farming goals, resources and O&T. After analysis, the framework was somewhat adapted. The hypothesis is that the conceptual framework for the farmers' opinions also fits the stakeholders' opinions. It predicts that country and stakeholder category affect the choice of strategies, resources, O&T and farmer skills, while each of these four elements directly affects future expectations (see Figure 1).

### 2.2 Sample

The intention was to collect by questionnaire data on 40 dairy stakeholders per country in the Netherlands, Poland, Lithuania and Slovenia. The stakeholders were to come about equally from 8 categories of dairy

**Figure 1. Relationship model**

Source: HANSSON (2007); KLOPCIC et al. (2016); VERHEES et al. (2017)

chain partners: input suppliers; breeding and veterinary organisations; financial organisations; farmers unions; milk processing companies; experts from universities, research and extension; ministries, and finally NGOs. The questionnaires were collected mainly in 2015 with some additional questionnaires collected in Poland and Lithuania in the early months of 2016. In total 161 questionnaires were collected from stakeholders. These comprised 46 from the Netherlands, 45 from Slovenia, 40 from Lithuania and 30 from Poland. The stakeholders were leading persons in the dairy chain and included for instance the president of a big dairy cooperative, a minister of agriculture, a president of a farmers union, a director of a large agricultural bank, representatives of NGOs, a researcher in farm management and chain expertise, and a professor in farming systems. In Poland a few stakeholder categories (input suppliers, NGOs, and financial organisations) were not represented in the sample.

### 2.3 Questionnaire

The questionnaire (Appendix 1) addressed the various elements of the conceptual framework: “farm development paths / strategies, including cooperation” (10 questions), “availability of resources” (11 questions), “O&T” (22 questions), “required farmer skills” (6 questions) and “future expectations / performance” (5 questions). Besides these structured questions, three open questions were included. Each stakeholder was asked to briefly describe strong and weak points of the dairy sector in the country. The questionnaires were presented to the stakeholders in their national languages. The same questions were used in previous farmers’ studies of KLOPČIČ et al. (2016) and VERHEES et al. (2017).

To measure development paths, 10 potential strategies were listed. Respondents were asked to indicate how important they considered each strategy was for the dairy sector/farms’ development in the next five years. A 7-point Likert scale anchored by 1 ‘not important at all’ to 7 ‘very important’ was used. To measure availability of resources for farming purposes, a list of 11 resources was used. Respondents were asked to indicate how difficult they were to obtain in the field (1 “very difficult to obtain” to 7 “very easy to obtain”). To measure O&T, a list of 22 questions concerning the farm community external environment was used. Respondents were asked to indicate whether they considered it a threat or an opportunity (-3 “a big threat” to +3 “a big opportunity”). For comparison reasons, this scale was transformed in the results section to the 1 to 7 scale. To assess farmer skills, 6 farmer skills were listed (1 “needs very much improvement” to 7 “very well developed”). To measure future expectations, a list of 5 indicators for expectations was applied. Respondents were asked to indicate whether they agreed with the statements (1 “fully disagree” to 7 “fully agree”).

The strong and weak points as described by the stakeholders on paper were classified qualitatively by counting similar remarks. For both the strong and weak points, 5 till 10 major issues (remarks) for each country were assessed.

### 2.4 Methods of Analysis

To condense the questionnaire results, Principle Component Analyses (PCA) with the Varimax method were conducted. Separate PCAs were done for the variable groups of strategies, resources, O&T, farmer skills and future expectations. A scree plot (sharp

increase in Eigen value going from last to the first component), Eigen values (should be above 1), and total variance accounted for (above 50%) were used as criteria. Average scores across the variables in each main factor were used in the subsequent analyses.

To characterize the main factors, strategies, resources, O&T, farmer skills and future expectations were considered as continuous variables based on the 7-point Likert scale values. Impressions on normality of the main factors were obtained on basis of the mean, standard deviation, skewness and kurtosis statistics (see Table 1). Almost all these factors approach normality, which allows use of significance tests on differences between countries and stakeholder categories. The factors “expansion” and “cooperation” are slightly skewed to the lower scores and “land” and “farmer skills” are slightly skewed to the higher scores. The scores on “skills” are somewhat peaked.

To test whether countries and stakeholder categories had an effect on, respectively, strategies, resources, O&T, farmer skills and future expectations, analyses of variance (ANOVA) were used. Stakeholder category and country are categorical (nominal) variables. Statistical differences between stakeholder categories and between countries were assessed using the Bonferroni test. The possibility of combining certain stakeholder categories was examined. This would

increase the number of respondents per category. The original 8 stakeholder categories and 4 combined categories are presented in Table 2. All stakeholder categories are represented in all countries, except for Poland where 3 categories are missing. It appeared difficult to find leading persons in these business categories in this country to cooperate in the study.

The four combinations of stakeholder categories in Table 2 are based on the effect of each category separately and on the effect of the combined categories on the answers to the various questions. This is illustrated in Table 3. A One-Way ANOVA was used to signal significant effects (F-test), while the Bonferroni test was applied to separate the stakeholder categories between which differences existed.

The analysis of effects for the 4 categories of stakeholders (Table 3) shows substantial similarities to that for the 8 categories of stakeholders. Moreover, the 4 categories of stakeholders are nicely balanced, i.e. the number of stakeholders in each combined category group is between 39 and 43, while it varies from 9 stakeholders (Financial organisations) to 39 (Experts) for the original 8 categories. These larger categories are considered an advantage to the analysis.

To group the stakeholders together, first a hierarchical cluster analysis, i.e. Ward’s method, was applied to the 17 main factors in Table 1 grouping the

**Table 1. Characteristics of main factors**

Main factors and number of questions included between brackets	Overall mean	Standard deviation	Normality test	
			Skewness statistic/std. error	Kurtosis statistic/std. error
<b>a. Development paths - scores 1 to 7</b>				
Expansion/Intensification (3)	5.38	1.14	-6.1	3.3
Diversification/Organic (4)	3.80	1.20	0.1	-1.8
Wait&See (1)	3.58	1.56	0.5	-2.0
Cooperation (2)	5.30	1.32	-5.0	2.1
<b>b. Resources - scores 1 to 7</b>				
Knowhow/Advice (3)	5.20	1.10	-3.2	0.7
Subsidies/Credit (3)	4.25	1.05	-0.7	-1.1
Land (2)	2.54	1.11	5.7	3.2
Labour (2)	3.32	1.21	1.3	-0.2
<b>c. Opportunities &amp; Threats - scores -3 to +3</b>				
Free market (2)	-0.23	1.73	0.7	-2.8
ICT/Tech (2)	1.80	0.87	-3.4	2.1
Regulations/Consumer concerns (4)	-0.18	1.03	2.1	0.1
Services (3)	0.89	0.89	-0.4	-0.1
Grazing/Greening (4)	0.10	0.95	-0.6	-0.8
Consumer orientation (3)	0.40	0.94	-1.6	2.3
Location/Legislation (2)	-0.23	1.05	0.5	-0.4
<b>d. Farmer skills – scores 1 to 7 (5)</b>	2.65	1.05	6.7	5.1
<b>e. Expectations – scores 1 to 7 (5)</b>	4.52	1.32	-0.2	-2.0

Source: authors’ analysis on basis of questionnaires’ data

**Table 2. Number of stakeholders by country and by stakeholder category**

Country	Stakeholder category								
	Input suppliers	Breeding/ veterinary organisations	Financial organisa- tions	Farmers unions	Milk processing companies	Experts from universities, re- search, extension	Ministries	NGOs	Total
Netherlands	5	6	5	5	5	7	8	5	46
Poland	0	2	0	3	4	15	6	0	30
Lithuania	5	6	2	5	7	7	5	4	40
Slovenia	5	5	2	7	4	11	6	5	45
Total	15	19	9	20	20	39	25	14	161
Stakeholder categories combined	43			40		39	39		
Names of combined categories	Input suppliers			Farmer unions/ Dairy companies		Experts	Ministries/ NGOs		

Source: authors' analysis on basis of questionnaires' data

stakeholders together which are most closely associated with certain combination of factors. Based on the agglomeration coefficient, 10 stakeholder segments were selected as a possible solution. After examination of the characteristics of these segments, four segments had characteristics in common and were combined to two segments, leaving 8 segments in the study. We call those segments "strategic groups".

To determine the relationship with future expectations, the other four elements in the model, i.e. strategies, resources, O&T and farmer skills were regressed on future expectations. First, all main factors per element were entered step by step into the analysis.

Next, F-tests were conducted to test the extent to which the four elements of the model (see Figure 1) explain the variation in future expectations. Countries and stakeholder categories were included as dummy variables to reduce the error term variance. The effects of country and stakeholder category as categorical variables were obtained by comparing each to one of the existing country or stakeholder categories. The proportion of the variation explained by the regression procedure is expressed by the coefficient of determination ( $R^2$ ).

Calculations were performed with the IBM-SPSS statistics 23 package; statistical significance was set at 5 and 10% probability levels.

**Table 3. Questions that show significant differences in answers between the four and/or eight stakeholder categories (One-way ANOVA, F-test)**

	Significant differences Bonferroni test (at P<0.05) <sup>1</sup>	
Questions	for 8 stakeholder categories	for 4 stakeholder categories
Strategy: organic farming	NGOs > dairy companies; Experts < veterinary/breeding services, ministries, NGOs	Ministries/NGOs > farmer unions/dairy companies Experts < input suppliers, ministries/NGOs
Availability: land to buy	NGOs > experts	Input suppliers > experts
Availability: direct payments	Input suppliers < experts	Input suppliers < experts, ministries/NGOs
Availability: qualified labour	NGOs > farmer unions, experts	Ministries/NGOs > farmer unions/dairy companies
<i>Questions for which F-test is significant in case of 8 stakeholder categories</i>		
Strategy: expansion	Non-significant	
O&T: regulations on animal welfare	NGOs > farmer unions, financial organisations	
O&T: consumer concerns	NGOs > ministries	
<i>Questions for which F-test is significant in case of 4 stakeholder categories</i>		
Availability: EU subsidies	Experts > input suppliers (P=0,53)	
O&T: greening the CAP	Ministries/NGOs > input suppliers	

<sup>1</sup> > means significant higher score; < means significant lower score

Source: authors' analysis on basis of questionnaires' data



### 3 Results

#### 3.1 Country Effects

The choice of the development paths, i.e. strategies, and the assessment of resources, O&T, farmer skills and future expectations of stakeholders are highly dependent on the country of origin (see Table 4).

Overall, the development paths of expansion/intensification, ICT/Tech, know-how/advice and co-operation, in this order, score highest as future strategies and/or opportunities. Netherlands and Polish stakeholders see expansion and intensification of dairy production as the most important development strategy. Slovenian stakeholders also score high on expansion and intensification, but even higher on the merits of cooperation, while, conversely, Polish stakeholders score low on the value of cooperative actions for their sector. Lithuanian stakeholders have, relatively, the lowest focus to farm expansion and intensification, while they, together with the Slovenian stakeholders, are the most positive towards diversification and organic farming. Polish stakeholders are the most positive towards the availability of subsidies and credit.

The Slovenian stakeholders express the lowest availability of know-how and advice (although it is still an above average score), while the Lithuanian stakeholders mention a lack of qualified labour. Generally all countries are rather pessimistic about the availability of land, which is indicated to be the scarcest resource.

Netherlands' stakeholders see an opportunity in the free market and in consumer orientation, whereas the Slovenian and Lithuanian stakeholders perceive the free market concept as a threat rather than an opportunity for development. The Polish stakeholders are positioned in between. The Polish stakeholders are also less interested in grazing and EU Greening practices than the stakeholders in Slovenia and the Netherlands.

The opportunities of location and associated legislation are positively appreciated by the stakeholders in Poland, while the stakeholders in the other countries, especially in Slovenia, see this as a barrier for future development. Finally, the Netherlands stakeholders showed a higher score for farmer skills than those in Lithuania and Slovenia, and have higher future expectations than the stakeholders in the other three countries.

**Table 4. Stakeholders' opinions expressed by main factor and by country; means and significant differences are listed**

Elements of model and main factors	Means (Likert scale 1-7) <sup>1</sup>				Significant differences at P<0,05	
	Stakeholders from					
	Netherlands (NL)	Slovenia (SI)	Lithuania (LT)	Poland (PL)	F-test	Bonferroni test
a. Development paths						
Expansion/Intensification	5.87	5.46	4.66	5.48	9.59	LT < NL, PL, SI <sup>2</sup>
Diversification/Organic	3.52	4.42	4.29	2.67	22.35	PI < NL <SI, LT
Wait&See	3.57	3.67	3.75	3.10		
Cooperation	5.36	6.07	5.29	4.27	14.02	SI>NL,PL,LT and PL<NL,LT
b. Resources						
Knowhow/Advice	5.69	4.37	5.67	5.09	18.88	SI<NL,PL,LT and PL<NL
Subsidies/Credit	4.12	3.88	4.31	4.96	7.45	PL>NL,LT,SI
Land	2.39	2.55	2.49	2.82		
Labour	4.02	3.43	2.60	3.02	13.10	LT<NL,SI and PL<NL
c. Opportunities & Threats						
Free market	5.26	2.64	3.15	4.00	30.66	NL>PL,LT,SI and SI<PL
ICT/Tech	6.00	5.57	6.14	5.42	6.46	PL<NL,LT and SI<LT
Regulations/Consumer concerns	4.23	3.80	3.47	3.67	4.45	NL>LT
Service organisations	5.09	4.56	5.21	4.68	5.43	SI<NL,LT
Grazing/Greening	4.45	4.32	3.89	3.53	8.38	PL<NL,SI
Consumer orientation	4.83	4.31	4.16	4.21	4.99	NL>PL,LT,SI
Location/Legislation	3.79	3.34	3.84	4.30	5.53	PL>SI
d. Farmer skills	3.11	2.41	2.29	2.79	6.04	NL>LT,SI
e. Future expectations	5.50	4.07	3.88	4.49	17.53	NL>PL,LT,SI

<sup>1</sup> For Opportunities and threats original scores have been increased by 4 to make them comparable with the other main factors.

<sup>2</sup> LT < NL,PL,SI means that stakeholders in LT score significantly lower on this development path than stakeholders from NL and PI and SI. Source: authors' analysis on basis of questionnaires' data

**Table 5. Stakeholders' opinions expressed by main factor and by stakeholder category; means and significant differences are listed**

Elements of model and underlying main factors	Means (Likert scale 1-7) <sup>1</sup>				Significant differences at P<0,05	
	Stakeholders from					
	Input suppliers (S)	Ministries/ NGOs (M)	Expertise organisations (E)	Farmer Unions/ Dairy companies (D)	F-test	Bonferroni test
a. Development paths						
Expansion/Intensification	5.55	5.34	5.23	5.35	3.68	M > E
Diversification/Organic	3.99	4.14	3.32	3.74		
Wait&See	3.53	3.15	3.82	3.80	2.89	D > E
Cooperation	5.38	5.21	4.87	5.71		
b. Resources						
Knowhow/Advice	5.50	5.21	5.09	4.99	5.82	S < M,E; E > D
Subsidies/Credit	3.92	4.54	4.65	3.95		
Land	2.67	2.76	2.29	2.43	2.65	
Labour	3.44	3.69	3.08	3.05		
c. Opportunities & Threats						
Free market	3.90	3.86	3.64	3.67		
ICT/Tech	5.90	5.83	5.50	5.98		
Regulations/Consumer concerns	3.68	4.09	3.85	3.67		
Service organisations	5.16	4.78	4.96	4.67		
Grazing/Greening	3.89	4.26	4.23	3.82		
Consumer orientation	4.34	4.68	4.43	4.18		
Location/Legislation	3.72	4.03	3.81	3.55		
d. Farmer skills	2.63	2.83	2.53	2.63		
e. Future expectations	4.50	4.55	4.60	4.41		

<sup>1</sup> For O&T the original scores have been increased by 4 (to scale 1 to 7) to make them comparable with the other main factors.

Source: authors' analysis on basis of questionnaires' data

### 3.2 Stakeholder Category Effects

The four stakeholder categories do not differ substantially in their opinions on development paths, the assessment of resources, O&T, farmer skills and future expectations (see Table 5). The only significant differences found were for the development paths towards diversification/organic and cooperation, and for the availability of subsidies/credit. The stakeholders from the ministries/NGOs are more positive towards diversification and organic farming than the experts from the research and advisory organisations, while the cooperation strategy is more highly valued by the farmer unions/dairy companies than by experts. The input suppliers are less positive about the availability of subsidies and credit than the ministries/NGOs and the experts stakeholders' categories.

### 3.3 Stakeholder Strategic Groups

The results of the clustering procedure resulted in eight strategic stakeholder groups as shown in Table 6. The largest stakeholder strategic group (26.1%) is focussed on farm expansion with a perceived lack of know-how and service to handle the development of

the sector in the best possible way. This group is mainly situated in Slovenia and, to a lesser extent in Lithuania. The stakeholders that belong to this group are about equally spread over the four stakeholder categories. The second largest strategic group (22.4%) focuses on expansion and intensification in dairy farming, while perceiving a free market as an opportunity and expressing high future expectations. This strategic group is dominant in the Netherlands, and is relatively the highest represented in the supplier services category. Specialisation in dairy farming, while emphasising the opportunities of localisation is chosen by almost 9% of the stakeholders, almost all from Poland. The wait and see strategic group with focus on know-how and subsidies (14.9%) is composed of stakeholders from Lithuania and Poland. The expert stakeholders in these countries especially prefer this development path. Around 10% of the stakeholders, mostly in Lithuania and Slovenia, belong to the ICT and services focussed strategic group. A positive perspective for diversification and organic farming is expressed in Slovenia by 11% of the stakeholders, belonging to the ministries/NGOs and suppliers' categories. Trust in skills and the availability of subsidies



**Table 6. Strategic groups by country and stakeholder category**

	Clusters = strategic groups <sup>1</sup>								
	Focus on Expansion/Intensification in dairy and free market with positive outlook on future 1	Expansion oriented with a perceived lack of know-how and service 2	Specialisation in dairy with positive opinion about Location 3	Wait&See, Know-how and Subsidy oriented 4	Focus on cooperation, service and tech with worry about skills 5	Diversification/Organic with focus on land, consumer and grazing/greening 6	Trust in skills, subsidies and labour input 7	Wait& See with pessimistic outlook on the future 8	Total %
Country									
Netherlands	<u>65.2</u>	13	4.3	6.5	6.5	2.2	2.2	0	100%
Slovenia	4.4	<u>48.9</u>	0	0	13.3	11.1	4.4	<u>17.8</u>	100%
Lithuania	2.5	<u>25.0</u>	0	<u>27.5</u>	<u>17.5</u>	5.0	5.0	12.5	100%
Poland	3.3	13.3	<u>40.0</u>	<u>33.3</u>	0	0	10.0	0	100%
Category									
Suppliers	<u>34.9</u>	<u>25.6</u>	4.7	11.6	9.3	7.0	2.3	4.7	100%
Ministries/ NGOs	<u>17.9</u>	<u>33.3</u>	10.3	7.7	10.3	10.3	7.7	2.6	100%
Experts	12.8	<u>23.1</u>	10.3	<u>35.9</u>	7.7	0	5.1	5.1	100%
Farmer unions/ Dairy proc.	<u>22.5</u>	<u>22.5</u>	10.0	5.0	12.5	2.5	5.0	<u>20.0</u>	100%
<b>Total %</b>	<b><u>22.4%</u></b>	<b><u>26.1%</u></b>	<b>8.7%</b>	<b>14.9%</b>	<b>9.9%</b>	<b>5.0%</b>	<b>5.0%</b>	<b>8.1%</b>	100%

<sup>1</sup> Percentages of stakeholders per strategic group above 15% are underlined.

Source: authors' analysis on basis of questionnaires' data

and labour are more highly rated by Polish stakeholders (10% versus 5% overall). In Lithuania and Slovenia, 13% and 18%, respectively, of the stakeholders (overall 8%) have a pessimistic outlook on the future. These stakeholders come mainly from the farmers' unions/dairy companies' category.

### 3.4 Prediction of Expectations

The factor "Expectations for the future" was based on 5 questions (see Appendix). This factor as dependant variable was linked to the four other elements in the model, i.e. expected development paths, availability of resources, O&T and farmer skills. A linear regression procedure was applied in which these 4 elements, encompassing 16 main factors, were regressed on the dependant variable Expectations (Table 7). Each element from top of table to bottom entered the regression equation stepwise. The 16 main factors in the analysis did not show clear signs of multi-collinearity: all Pearson correlations ( $r$ ) were below 0.25, except between diversification/organic and cooperation ( $r = 0.43$ ), between know-how/advice and service organisations ( $r = 0.37$ ), and between regulations/consumer concerns and grazing/greening ( $r = 0.53$ ). The coefficient of determination ( $R^2$ ) was 0.54, indicating that over half of the variation in future expectations was explained by the model. The elements O&T, strategies

and resources, in that order, contributed significantly to the model in explaining expectations. More specifically, four main factors explained most of the variation in the expectations of the stakeholders, namely expansion/intensification, free market, ICT/Tech and grazing/greening. The resources element contributed less to the solution than the O&T and strategies elements, while the skills element was not significant. Thus, other than for skills, the model fitted the data.

## 4 Discussion

### 4.1 Context of Study

The over-arching study is rather unique in the fact that both opinions of farmers and stakeholders in the field are analysed. This publication deals with how stakeholders in agriculture envisage the future of the dairy sector and which barriers they foresee to that future. The ultimate intent is to mirror the opinions of stakeholders and farmers, i.e. do they have similar or different outlooks on internal and external factors affecting agriculture, and do they foresee similar or divergent strategic development routes? Because of the lack of such stakeholder studies, the outcomes of the present study cannot really be compared to other data. The so-called national "Smart Specialisation Strate-

**Table 7. Farming goals, resources, opportunities and threats, and skills regressed on future expectations<sup>12</sup>**

Elements of model and main factors	F-values	b-coefficient and significance <sup>3</sup>
<b>Strategies</b>	F=8.394; P=0.000	
Expansion/Intensification		0.313**
Diversification/Organic		-0.063
Wait&See		0.005
Cooperation		-0.034
<b>Resources</b>	F=2.577; P=0.040	
Knowhow/Advice		0.072
Subsidies/Credit		-0.015
Land		0.101
Labour		-0.100
<b>Opportunities &amp; Threats</b>	F=13.517; P=0.000	
FreeMarket		0.374**
ICT/Tech		0.303**
Regulations/ Consumer concerns		-0.057
Service organisations		-0.068
Grazing/Greening		0.237*
Consumer orientation		0.005
Location/Legislation		0.023
<b>Skills</b>	F=2.654; P=0.105	0.125

<sup>1</sup> b-coefficient expresses a unit change (+ or -) in future expectations per unit increase in the particular factor.

<sup>2</sup> Countries and stakeholder categories are included as dummy variables, entering the analysis in the last steps; Lithuania is taken as the base country and ministry/NGOs as the base stakeholder category to compare with.

<sup>3</sup> \* P<0.05 \*\* P<0.01

Source: authors' analysis on basis of questionnaires' data

gies" reports for the EU provide some information about future focus in agriculture and agro-business in each country but it is often not really clear which parties contributed to these reports. Moreover, these reports are written as global policy documents covering a wide field of EU relevant topics, not comparable to the focus on farm development and critical success factors in the present study.

Perceptions of stakeholders were sought. Some questions, especially in the O&T field may have elicited conflicting responses for the same opinion. For example, we noticed on the basis of remarks made, that the questions on "grazing of cattle" or "reduction in antibiotic use" – a threat or opportunity – yielded different answers for the same basic opinion. Government representatives in the Netherlands and Slovenia are highly in favour of grazing cattle. Nevertheless, one official rated grazing as a threat because he

feared that the goals for grazing would not be reached by the sector. A colleague emphasised the positive image of grazing and thus listed it as an opportunity. The time of questioning stakeholders could also be important. The year 2015 was a turbulent year, because of the abolition of the quota system at 1 April 2015 and a decreasing milk price. In the Netherlands it resulted somewhat unexpectedly in a period of uncertainty, i.e. in the course of 2015 the policy was announced to replace the milk quota system by a set of environmental and land-tied rules, including a phosphate quota per farm. Thus, stakeholders in the Netherlands who answered the questionnaire early in 2015 might have been less optimistic if they had replied at the end of 2015 or in 2016.

## 4.2 Country and Stakeholder Effects

The opinions of stakeholders are very much affected by country of origin, while the 4 categories of stakeholders showed only minor variations in opinions. CHAPLIN et al. (2004: 75) and GORTON et al. (2008: 334) described a production oriented mind set of European farmers. In this study, the stakeholders in all four countries chose expansion in dairy as one of the most dominant strategies, with the Netherlands having the highest, and Lithuania having the lowest score. Polish stakeholders showed the most specialised view of the dairy chain of all stakeholders studied, which is in line with the farmers' opinions expressed in the study of MALAK-RAWLIKOWSKA and ZEKALO (2014: 106). Participation in cooperatives became less popular after communist times in Eastern Europe (MILCZAREK-ANDRZEJEWSKA et al., 2008: 15; POHAR and KLOPČIČ, 2013: 163; WILKIN et al., 2007: 7). Nevertheless, cooperation with colleagues and processors in the chain is still favourably regarded in Slovenia, and to a lesser extent in Lithuania. Slovenia has 120 cooperatives dealing with the coordination of the sale of milk internally in the country to private processors and externally to Italy. Despite the strong position of cooperative processors in Poland, cooperation is poorly appreciated there. It would be interesting to examine these differences between countries to determine the barriers to exploiting cooperation as a vehicle to organise farmers and increase efficiency, for instance in machinery use, and to increase their bargaining power. The inclusion of the milk processing plant in the chain of cooperation is especially rare in most CEE countries. Development towards diversification and organic agriculture receive higher scores in Slovenia and Lithuania compared to the

Netherlands and especially to Poland. Overall, the ministries/NGOs opt significantly more for diversification than the expert category of stakeholders. In Slovenia, most of the stakeholders from farmer unions/dairy companies also give a high score to diversification. With its specific natural conditions, diversification in Slovenia encompasses agro-tourism and sale of special local products (KLOPČIČ et al., 2010: 7), while in Lithuania it encompasses mixed farming of livestock and crops (STALGIENĖ and KUIPERS, 2014: 79), and the Lithuanian stakeholders wish to continue this way of farming (KRIŠČIUKAITIENĖ et al., 2010: 89). The stakeholders in the Western EU country – the Netherlands – appeared very confident of coping with EU market policies after 2015; they see the expanding milk market and abolition of milk quotas as a big opportunity for development. This may be due, among other factors, to the strong infrastructure for dairying in this country and the larger average herd size than in the other countries. VERHEES et al. (2011: 174) indicated differences in farmers' proclivity between one Central and one Western European country, while KLOPČIČ et al. (2016) stated that Netherlands' farmers have more confidence in their achievements than farmers from the CEE countries. It can be postulated that the same is true for the stakeholders. However, there are exceptions to the rule, for instance the Polish stakeholders expressed more confidence in acquiring subsidies and credits, surely very important resources for developing the sector.

These results largely coincide with the description of the strong and weak points by the stakeholders. In the Netherlands, a high level of education, a well organised cooperative chain and a clear chain leader were frequently mentioned as strong points, while high costs and lack of support from society were cited as weak points. Confidence in the market was less frequently mentioned as a strong point compared to the relatively high score it received in the quantitative questionnaire outcome. In Lithuania, a good environment for farming and the tradition of farming were most frequently listed as strong points, and a lack of organisation in the chain and a low milk price were listed as weak points. These latter issues obviously tempered expectations as also observed from the quantitative questionnaire results. In Poland, the growth potential of the sector was highlighted as a strong point, which is in agreement with the high score for the local environment. Farm structure and cooperation between farmers were rated poorly, which coincides with the low score for cooperation in Po-

land. In Slovenia, the presence of a strong processing industry was mentioned, although foreign ownership was considered a weak point. Lack of interaction in the chain was most frequently mentioned as weak point. A weak farm structure and an unfavourable agricultural policy were also points of concern. Level of education was listed as a strong point by some stakeholders, while, in contrast, the questionnaire yielded a relatively low score for farmer skills. The transfer of know-how was described as a cause of concern in agreement with the modest questionnaire score for availability of know-how.

### 4.3 Stakeholder Strategic Groups

Eight strategic groups of stakeholders were defined. The stakeholders were asked to answer the questions from a chain (sector) perspective. Farm expansion and specialisation, mostly in dairy, is the most expected development strategy in the near future (57% of stakeholders predicted this development path). Expansion and intensification combined with market freedom is the dominant strategic group in the Netherlands. However, whether there is a preference for specialisation versus diversification cannot exactly be derived from this study. Almost 9% of the stakeholders specifically emphasised specialisation in combination with favourable local circumstances related to the local situation. This group of stakeholders came from Poland, which has very favourable natural conditions for dairy production, with large availability of permanent grasslands and a high, unused potential for milk production. Diversification in combination with organic farming was chosen by 5% of the stakeholders, mostly Slovenian supplier organisations and ministries/NGOs. It is curious that the expert category did not choose this route to development. Experts seem to focus on the availability (or not) of know-how, services and subsidies. It is intriguing that almost one fourth of the stakeholders take a passive – wait and see – approach, 15% look for opportunities to activate at one moment in time know-how and/or subsidies, while overall 8% are pessimistic about the future, seeing many obstacles. Those groups of stakeholders are mostly situated in Lithuania (40% of all stakeholders); Poland (33%) and Slovenia (18%). Know-how transfer and subsidies obviously play a crucial role in the development of the sector. More insight in the critical success factors for diversification and organic farming and in the process of knowledge transfer would be helpful in more thoroughly explaining the outcomes. The perceived availability of resources

is rather different between the countries so the reasons for this could also be explored to gain more insight in these findings.

#### 4.4 Framework exploring Future Expectations

Future expectations (performance) can be predicted by insight into the opinions of stakeholders regarding strategies, availability of resources, and O&T. Insight into farmer skills did not significantly contribute to the prediction of future expectations. Therefore, the proposed model does apply with exception of the element Skills. Remarkably, a rather small number of attitude statements, i.e. towards expansion/intensification, the free market, ICT/Tech and grazing/greening, had almost the same predicting power as the combined three elements in the model (strategies, resources and O&T). This indicates that we may be able to do our assessments in the field by applying more simplified schemes. This should be further explored.

## 5 Conclusions

The opinions of stakeholders are significantly affected by the country of origin, while the four categories of stakeholders show only minor variations in opinions. Obviously, history, culture and natural circumstances affect the outlook of stakeholders.

Eight strategic groups of stakeholders were defined. Farm expansion and specialisation, mostly in dairy, is the most expected development strategy in the near future (57% of stakeholders choose this development path). This group can be split into three sub-groups, i.e. expansion and intensification combined with market freedom, expansion with a perceived lack of service and know-how, and specialisation in dairy in combination with favourable local circumstances. Diversification in combination with organic farming was chosen by 5% of the stakeholders. Almost one fourth of the stakeholders take a wait and see attitude, 15% look for opportunities to activate at one moment in time, while 8% are overall pessimistic about the future, seeing many obstacles. About 10% of stakeholders focus on cooperation, service and high tech, and another 5% place their trust in skills, subsidies and labour. Specific outcomes for the countries are:

- Polish stakeholders have the most specialised view of dairy farming, although a substantial proportion adopts a passive strategy – wait and see;
- Lithuanian and Slovenian stakeholders look more towards diversification than stakeholders in the other two countries;
- Slovenian stakeholders are more cooperatively minded, while Polish stakeholders are least so; however, Slovenian stakeholders are concerned about availability of know-how;
- In all four countries land is the most difficult resource to obtain;
- Polish stakeholders are more positive about availability of credit and subsidies, and about the conditions for dairy production;
- Netherlands stakeholders are the most positive about the future e.g. they foresee expansion and market opportunities; conversely, a substantial group of stakeholders in Slovenia and Lithuania are pessimistic about the future.

In general, the significant differences found in this study in the composition of the strategic groups amongst countries are essential information for both EU policy makers and the chain partners. More insight into the critical success factors for the various development paths, and in the process of knowledge transfer and subsidies availability, would be helpful in more deeply explaining the results. In brief this study shows that from the viewpoint of the stakeholders, significantly different outlooks exist on agriculture in the selected European countries. Stakeholders' opinions seem also mainly in line with the farmers' views presented in the other studies. However, this impression requires further analyses. Tailor made measures and policies are required to deal with the diversity in opinions and outlook. It is likely that the detail of this would be easier constructed and implemented at the local level than at the EU central level.

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## Appendix

### Questionnaire concerning developments in dairy sector in our country – your view

(derived main factors are added in right side column)

A. Farm development: indicate which development paths you expect on the dairy farms in your country in next five years (tendency towards specialisation in dairy or diversification or intensification or organic farming)

1= not a major choice/development path, 2=, 3=, 4=neutral, 5=, 6=, 7 = major development path

	For sure not a major development	Not a major development	Perhaps not a major development	Neutral	Perhaps a major development	Major development	For sure a major development	Main factor
Expand in dairy production	1	2	3	4	5	6	7	Ext/Int
Wait and see strategy (watch new developments but decide later)	1	2	3	4	5	6	7	Wait & See
Diversification into other agricultural branches than dairy farming (like other animal species, crops, horticulture ....)	1	2	3	4	5	6	7	Div/Org
Diversification into non-agricultural activities (agro-tourism, special products, energy production, etc.)	1	2	3	4	5	6	7	
Organic farming	1	2	3	4	5	6	7	
(Further) specialisation in dairy farming	1	2	3	4	5	6	7	Ext/Int
Intensification on farm level (more animals/ha, crops/ha, milk/cow)	1	2	3	4	5	6	7	
New starters (coming into the sector)	1	2	3	4	5	6	7	Div/Org
Other: .....	1	2	3	4	5	6	7	

B. Cooperation: what role will cooperation play in the development of this sector in next five years, in your view?

1=not a major development, 2=, 3=, 4=neutral, 5=, 6=, 7 = a major development

	For sure not a major role	Not a major role	Perhaps not a major role	Neutral	Perhaps a major role	Major role	For sure a major role	Main factor
Cooperation between farmers (machinery use, selling/buying products...)	1	2	3	4	5	6	7	Coop



C. Chain integration: what role will chain integration play in the development of this sector in next five years, in your view?

1=not a major development, 2=, 3=, 4=neutral, 5=, 6=, 7 = a major development

	For sure not a major role	Not a major role	Perhaps not a major role	Neutral	Perhaps a major role	Major role	For sure a major role	Main factor
Chain integration (work together in production, supply and processing chain through long term agreements)	1	2	3	4	5	6	7	Coop

D. List three strong points of the dairy sector as a whole (the dairy chain) in your country.

1. ....
2. ....
3. ....

E. List three weak points for the dairy sector as a whole (the dairy chain) in your country.

1. ....
2. ....
3. ....

F. Are there specific legal issues, schemes, programs in your country which hinder dairy farmers to develop in a certain direction?

.....

G. Resources: Which resources are difficult or easy to obtain by the sector, in your view?

1=very difficult to obtain, 2=, 3=, 4=neutral, 5=, 6=, 7= very easy to obtain

	Very difficult	Difficult	A bit difficult	Neutral	A bit easy	Easy	Very easy	Main factor
Land to buy	1	2	3	4	5	6	7	Land
Land to rent	1	2	3	4	5	6	7	
Commercial credit	1	2	3	4	5	6	7	Subsidies Credit
EU subsidies	1	2	3	4	5	6	7	
Direct payments	1	2	3	4	5	6	7	
Machinery	1	2	3	4	5	6	7	
Qualified labour	1	2	3	4	5	6	7	Labour
Seasonal workers	1	2	3	4	5	6	7	
Advise of extension services	1	2	3	4	5	6	7	Knowhow Advice
Advise of private consultants	1	2	3	4	5	6	7	
Access to new and useful knowledge	1	2	3	4	5	6	7	

## H. Opportunities and threats: which society and market issues are opportunities or threats for this sector, in your view?

-3 = a big threat -2 =, -1=, 0= neutral +1=, +2=, +3= a big opportunity

	Big threat	A threat	A modest threat	Neutral	A modest opportunity	An opportunity	Big opportunity	Main factor
Abolition of milk quota as part of (future) CAP (Common Agricultural Policy)	-3	-2	-1	0	+1	+2	+3	Market
The international milk market	-3	-2	-1	0	+1	+2	+3	
Accession to /membership of EU	-3	-2	-1	0	+1	+2	+3	
EU subsidies	-3	-2	-1	0	+1	+2	+3	
Future reductions in direct payments (CAP)	-3	-2	-1	0	+1	+2	+3	Consumer orientation
Greening the CAP	-3	-2	-1	0	+1	+2	+3	Grazing Greening
Regulations concerning animal welfare	-3	-2	-1	0	+1	+2	+3	Regulations Consumer concerns
Regulations concerning veterinary and sanitary standards	-3	-2	-1	0	+1	+2	+3	
Regulations on use of manure and fertilizer	-3	-2	-1	0	+1	+2	+3	
Location of farms in the rural area/villages	-3	-2	-1	0	+1	+2	+3	Location Legislation
Land property legislation	-3	-2	-1	0	+1	+2	+3	
Advisory services	-3	-2	-1	0	+1	+2	+3	Services
Veterinarians	-3	-2	-1	0	+1	+2	+3	
Input suppliers (fertilizer; feed, etc.)	-3	-2	-1	0	+1	+2	+3	
Orientation on the consumers/the market	-3	-2	-1	0	+1	+2	+3	Consumer orientation
Certifying organisations, quality schemes	-3	-2	-1	0	+1	+2	+3	
Technical developments, like in housing systems and milk equipment	-3	-2	-1	0	+1	+2	+3	ICT Tech
Internet and ICT applications	-3	-2	-1	0	+1	+2	+3	
Consumer concerns regarding animal production	-3	-2	-1	0	+1	+2	+3	Regulations Consumer concerns
Reduction in the contribution of cattle to climate change	-3	-2	-1	0	+1	+2	+3	Grazing Greening
Reduction of antibiotic use in livestock keeping	-3	-2	-1	0	+1	+2	+3	
Grazing of cattle	-3	-2	-1	0	+1	+2	+3	

## I. Competencies: which farmer skills need improvement?

Skills on:	Needs very much improvement	Needs improvement	Needs a bit improvement	Neutral	Reasonable developed	Well developed	Very well developed	Main factor
Financial and economic management	1	2	3	4	5	6	7	Skills
Operational management (cows, land, machines)	1	2	3	4	5	6	7	
Marketing	1	2	3	4	5	6	7	
Networking	1	2	3	4	5	6	7	
Strategic reflection	1	2	3	4	5	6	7	
Innovativeness	1	2	3	4	5	6	7	

## J. Future expectations concerning this sector: please comment on some statements

1=fully disagree, 2=, 3=, 4=neutral, 5=, 6=, 7=fully agree

	Fully disagree	Disagree	A bit disagree	Neutral	A bit agree	Agree	Fully agree	Main factor
I am pessimistic about the future of the dairy sector in my country	1	2	3	4	5	6	7	Future expectations
I see a good future for the dairy sector in my country	1	2	3	4	5	6	7	
If I look back to the last five years, I am satisfied about the success of the dairy sector in my country	1	2	3	4	5	6	7	
The economic prospects of the dairy sector in my country are currently satisfactory	1	2	3	4	5	6	7	
I feel uncertain about the future of the dairy sector in my country	1	2	3	4	5	6	7	

## Remarks / other issues:

.....

.....

Name: .....

Thank you very much for filling in this questionnaire.