



## DELIVERABLE 3.2

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**Deliverable Name:** A sustainability assessment tool for farmers to evaluate their own AM system.

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## 1.Introduction

The development of the sustainability assessment tool for farmers was based on the registrations made on monitor farms in all participating countries of the consortium supplemented by Luxembourg. The procedure for doing the registrations and the intermediate evaluations, as described in the protocol D3.1 and the periodic report (midway) was followed. Monitor farm data of 2013 and 2014 were used for validating the tool. The specific registrations for 2015 were not used. The registration schemes were inspired on the registrations made in the Dairyman project<sup>1</sup> and supplemented with registrations which are important for evaluating sustainability of automatic milking systems and grazing. To decide which of the indicators and themes should be included in the tool, a wide range of existing sustainability assessment tools were studied including the Dairyman Sustainability Index (DSI) (Elsaesser et al., 2013; Elsaesser et al., 2015), RISE (Häni et al., 2003) and SAFA (FAO, 2013). DSI tool is based on the gathering of data by farm registration schemes which were made available by the Dairyman team. In these indicator-based sustainability assessment tools, the sustainability performance of a farm is generally evaluated on economic, environmental, and social themes. In SAFA, a fourth dimension of sustainability is added to discuss more institutional and managerial themes. Through extensive questionnaires and input of farm data, the performance of each indicator is determined and aggregated to the theme level.

## 2.Development of the tool

The tools studied, in particular the DSI tool, were taken as an inspiration for the development of a sustainability assessment tool in the Autograssmilk project. In one of the consortia meetings of the project, all partners involved were asked to define which themes they found important is the assessment of the sustainability performance of AM dairy farms on economic, environmental, social and governance themes. This resulted in lists of themes which were grouped and resulted in a final list of 25 themes. All partners were asked to distribute 100 points over the themes in each dimension to determine the weight within each dimension. The weighing process for the themes was performed in the PMC (Project Management Committee), as here experts from research, farmers' organisations and farmers were represented from all involved countries (AGM weight in Figure 1). Nineteen PMC members filled in the weights of the themes in each dimension. Figure 1, shows the themes and weights within the four dimensions environment, economy, social acceptance and governance. To assess the performance on each theme, 50 indicators were identified from the registration schemes used in the Autograssmilk project to assess the monitor farms. During consortia meetings the list of indicators was discussed and experts were consulted to discuss the calculation of economic

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<sup>1</sup> <http://www.interregdairyman.eu/en/dairyman.htm>

indicators. Moreover, an existing French tool (CAP2er<sup>2</sup>) is used for the calculation of biodiversity and GHG emissions.

### **3.The need for context specificity**

The data of the monitor farms as well as discussions in consortia meetings provided valuable insight in the differences between countries on data monitoring, use of indicators as well as differences in performance, costs and grazing season. Similarly, one of the conclusions of Elseasser (2015) in Dairyman was: “Differences and special situations between regions should be taken into account”. This was addressed by introducing a possibility for regional reference values. Partners in all involved countries provided reference data to allow a context specific sustainability assessment.

### **4.The tool**

The general outline of the tool is presented in Figure 1. A farmer can fill in the various Excel sheets and will be presented with a sustainability report. In the tool, a farmer can select the reference values of his or her country, but also compare it to other countries. This can contribute to the awareness of differences in dairy production systems in the involved countries. The sustainability assessment tool developed in Autograssmilk does not use all registrations which were gathered in the registration schemes (available on [www.autograssmilk.eu](http://www.autograssmilk.eu) ), but only those that could be used to quantify the identified themes.

### **5.References**

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Häni, F., Braga, F., Stämpfli, A., Keller, T., Fischer, M., Porsche, H., 2003. RISE, a tool for holistic sustainability assessment at the farm level. International Food and Agribusiness Management Review 6, 78-90.

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<sup>2</sup> <http://idele.fr/linstitut-de-lelevage/cap2er.html>

Dimension	AGM weight	Theme	Indicator
Environmental	31	Nutrients	N Balance, per ha
			P Balance, per ha
			Efficiency N
			Efficiency P
	16	Biodiversity	Number of different crops
			Average paddock size
			N Balance, per ha
			Share of permanent grassland
			Biodiversity score - CAP'2er
			Intensity grazing (cow/ grazed ha)
13	Water	Land under biodiversity scheme	
16	GHG	Water costs per dairy cow	
23	Energy use	GHG balance	
Economic	39	Farm profitability	Electricity costs per dairy cow
	11	Variable costs per cow	Fuel costs per ha of cultivated land
	16	Stability in income - Resilience	Farm Net Income per dairy cow
	14	Labour	Variable costs per dairy cow
	10	Investments	Exposure to price fluctuations
	5	Production costs per kg milk	Dependency on subsidies
	6	Debt	Total labour costs per kg milk
Social	18	Animal welfare	Days outside
			Health care costs per cow
			Culling rate
	19	Working hours	Estimated labour hours worked per week
			Overworked
	18	Work quality	Physical hardness
			Exposure to hazardous material
	11	Image and participation	Atmosphere on farm
			Governance aspect 1 to 3
	12	Farm continuity	PR
			Expectancy next decade
			Successor
	14	Work - life balance	Satisfaction with income level
Survival			
Work life balance			
Governance	7	Product Quality	Free Time
			Holiday Days
	10	Diversification and openness farm	SSC average winter and summer
			Grazing
			Regional acception
			Farm visits
			Relation to other farmers
15	Relation and participation in community	Training days	
		Use of advisory service (crops, dairy)	
17	Corporate Social Responsibility	Agri-environmental payments	
		Biogas and / or solar energy	
26	Education and skilled staff	Tourism	

Figure 1. Framework of the Autograssmilk sustainability tool showing dimensions, themes and indicators as identified. AGM weight is a value for the importance of the themes within each dimension. The indicators have an equal weight within each theme.