REINWASTE

WP3

DELIVERABLE 3.3.2

PROFILING KPIS FOR THE DAIRY SECTOR (AGRICULTURAL SECTOR)

INTRODUCTION

The scope of the Key Performance Indicators designed for the REINWASTE project is to measure the impact generated by the implementation of the pilot action upon specific parameters. This document provides a list of KPIs that have been defined by CONFAGRI in collaboration with the external experts in order to carry out a self-assessment of the quality of the services supplied to the agro-food / agriculture companies supplied throughout the implementation of the WP3 "Testing".

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1. BACKGROUND

The aim of the below tables is to present a method for identifying key performance indicators (KPIs), and to present and discuss a set of such indicators suitable for benchmarking on dairy farms before and after the pilot actions. Data have been collected with the support of the available companies and the technical external experts. KPIs have been used to recognize differences in economic efficiency between farms and companies and to rank them.

2. List of KPIs tailored to agriculture sector for the evaluation of the impact of the "matchmaking phase"

Key Performance Indicators		Unit	2019	2020
1.1	Number of companies informed about the possibility to join one collaborative & open innovation environment for inorganic waste prevention	**N.**	**16**	**n/a**
1.2	Number of informative channels used by partners to inform companies about the possibility to join the REINWASTE collaborative & open innovation environment	**N.**	**4**	**n/a**
1.3	Number of companies participating to the "soft tender" scheme to select 15 pilot companies to be engaged in the technology transfer WPT3 testing	**N.**	**16**	**n/a**
1.4	Number of B2B meetings organized	**N.**	**14**	**n/a**
1.5	Number of people participating in the B2B meetings	**N.**	**22**	**n/a**
1.6	Number of interactions (phone calls, site visits, extra meetings) between the 15 companies and the Expert Team (other than the B2B meetings)	**N.**	**100**	**n/a**
1.7	Number of light assessment elaborated	**N.**	**15**	**n/a**
1.8	Number of companies with a clear propensity to deepen the initial screening	**N.**	**8**	**n/a**
1.9	Number of companies positively rating the service provided by the Expert Team	**%**	**100**	**n/a**

3. Intermediate phase: selection of 5 companies participating in the full testing phase

At the end of Phase 1, 5 companies will be shortlisted by experts to implement the second part of the analysis, namely the Phase 2: Test application (from Jan-2019 to Sep-2019). Some criteria were proposed to shortlist the 5 companies that will benefit of the full market intelligence advisory (technology audits).

With the support of the appointed technical experts, the next grid has to be filled out. The 5 companies with the highest score will participate in the phase 2 “Test application”.

Evaluation grid

Eligibility Criteria (YES / NO)	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15
The company has an ordinary balance sheet	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
The company has one or more (internal or external) specialists (such as agronomist or agrofood expert) with a full knowledge of the company production system and able to cooperate with the Expert Group	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
The company has a sufficient historical dataset of information concerning the own production system	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
The company is available to disclose specific information on own production and availability of a suitable dataset / information layers	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
During the B2B meetings, the company proposed solutions to eliminate / reduce plastic waste deriving from silage nets, wires and films.	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
During B2B meetings the company has proposed solutions or has already implemented good practices to	NO	NO	NO	NO	Yes	Yes	NO	Yes	Yes	NO	Yes	NO	Yes	NO	Yes

eliminate / reduce plastic waste deriving from packaging in general or other types of inorganic waste.															
The company is available to dedicate further man/days to the project activities (predictable in 50 working hours)	NO	Yes	Yes	NO	Yes	Yes	NO	NO	NO	Yes	Yes	Yes	NO	Yes	NO
Quality Criteria **Poor = 1 pt Medium = 3 pt Good = 5 pt**															
Level of cooperation expressed in Phase 1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Previous experience in projects financed by EU or National grants of any type related to technology transfer	1	1	3	1	5	3	1	1	1	3	3	5	1	5	3
Innovation propensity (€ already spent in innovation over the last x years, certifications, etc …)	3	3	3	3	3	3	3	3	3	3	3	5	3	5	3
Programmed investment to reduce raw materials / recycling / optimization of the industrial / agronomic process (€ to be spent in productive model change / green-eco investments)	1	1	3	1	3	3	1	1	3	3	3	3	3	3	3
Level of business relationship in the supply chain	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Potential of replicability to other dairy companies of the technological and/or managerial solutions screened during the light assessment (phase 1)	3	3	3	1	5	3	1	1	1	3	3	3	5	3	3
Others (add rows if you need more indicators)															
Total score	14	14	18	12	22	18	12	12	14	18	18	22	18	22	18

4. Ex-post evaluation of the impact of the "test application"

Phase 2: Test application (from Jan-2019 to Sep-2019) = TECHNOLOGY AUDITS					
Key Performance Indicators		**Unit**	**2018 Baseline**	**2020 Project impact**	**2023 Midterm impact**
2.1	Number of business and feasibility plans addressing site-specific solutions to reorganize its own agricultural productive protocols in a logic of nearly-zero inorganic waste	**N.**	**n/a**		**n/a**
2.2	Cumulative number of technology solutions identified in the pilot actions	**N.**	**n/a**		**n/a**
2.3	Cumulative number of managerial / organizative solutions identified in the pilot actions	**N.**	**n/a**		**n/a**
2.4	Cumulative cost of innovative solution as indicated in the business and feasibility plans	**€**	**n/a**		**n/a**
2.5	~~Number of companies implementing (within the project duration) any technological and/or managerial / organizative solutions as figured out in the business and feasibility plan~~	**N.**			
2.6	~~Number of companies willing to implement technological and/or managerial / organizative solutions as figured out in the business and feasibility plan~~	**N.**			
2.7	~~Number of programmed investment to reduce raw materials / recycling /~~	**N.**			

	~~optimization of the industrial / agronomic process (€ to be spent in productive model change / green-eco investments)~~				
2.8	~~Investment costs to be likely mobilized by the companies to remanufacture their own productive system in the logic of inorganic waste minimization~~	**€**			
2.9	~~Average RoI (Return of Investment) of the proposed solutions (unit: years)~~	**Year**			
2.10	~~Increase of companies expenses in innovative solutions to minimize inorganic waste compared to the baseline (average)~~	**%**			
2.11	~~Number of companies increasing the technical background of their own (internal or external) specialists (such as agronomist or agrofood expert) around the REINWASTE topics~~	**N.**			
2.12	~~Number of identified technological and/or managerial / organizative solutions with a large potential of replication and exploitation across further companies operating within the same productive sector~~	**N.**			
2.13	Number of interactions (phone calls, site visits, extra meetings) between the 5 companies and the Expert Team	**N.**	**n/a**		**n/a**
2.14	Number of companies positively rating the service provided by the Expert Team	**%**	**n/a**		**n/a**

2.15	Possible new business services based on the approach tested in WPT3	**N.**	**n/a**		
2.16	Kg nets for hay presses and silage film / tons milk			**0.982**	
2.17	kg of waste at infective risk /tons milk			**0.015**	
2.18	Kg of various packaging/ tons milk			**0.030**	
2.19	kg of used oils / tons milk			**0.235**	
2.20	kg of oil and diesel filters / tons milk			**0.017**	
2.21	kg of lead batteries / t milk			**0.068**	
2.22	Cost waste disposal euro/tons waste			**299.19**	
2.23	Cost waste disposal € /tons milk			**0.50**	
2.24	€ Waste management / € annual revenue (%)			**0.08%**	

5. CONCLUSIONS

During the evolution of the experimentation phase it was decided to modify some KPIs to better increase the innovations implemented in companies. The additional KPIs taken into consideration are shown below.

The experimentation on the 5 farms expected the comparison between the alternative found for each pilot to verify the following KPI related to:
- cost of investment and use (euro/t of dry matter).
- environmental sustainability through the calculation of the equivalent CO2 (KgCO2 eq/t of dry matter).
- social sustainability as the work hours (h/t dry matter).
- production of plastic waste (Kg plastic waste/t dry matter).

The data showed in the table below, were related to the ton of dry matter intended as raw material and contains average values, obtained taking into account the real farms characteristics. For this reason, they cannot be considered universally valid in all situation. In different contest the numerous variables that influence these processes may show different data.

□

Pilot 1: alternatives to the traditionally round bale net	€/t dry matter	Kg CO2eq/t dry matter	h/ t dry matter	Kg inorganic waste/ t dry matter
round bale net with a 5 % lower weight	16.10	7.56	8.95	0.54
Polypropylene twine	15.23	7.85	7.92	0.30
SISAL twine	18.23	9.98	7.92	0.00
Big Baler	17.15	4.59	25.45	0.48
two-stage haymaking process of loose hay	21.69	17.96	8	0.00
Pilot 2: alternatives to the traditionally plastic silage film				
silage film of less thickness with 50% lower weight	13.70	4.47	65.98	0.32
haylage round bales	39.33	18.40	6.40	3.64