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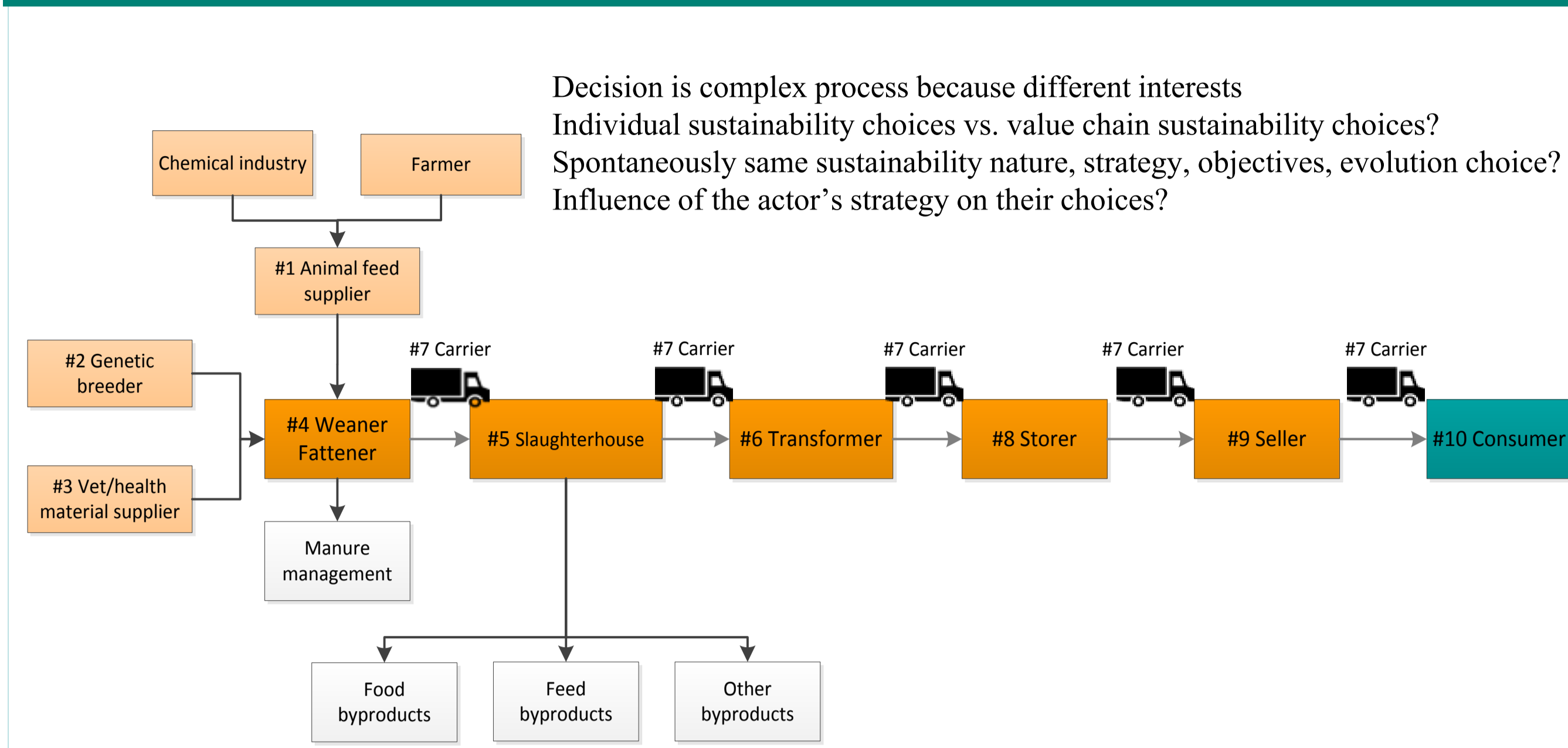
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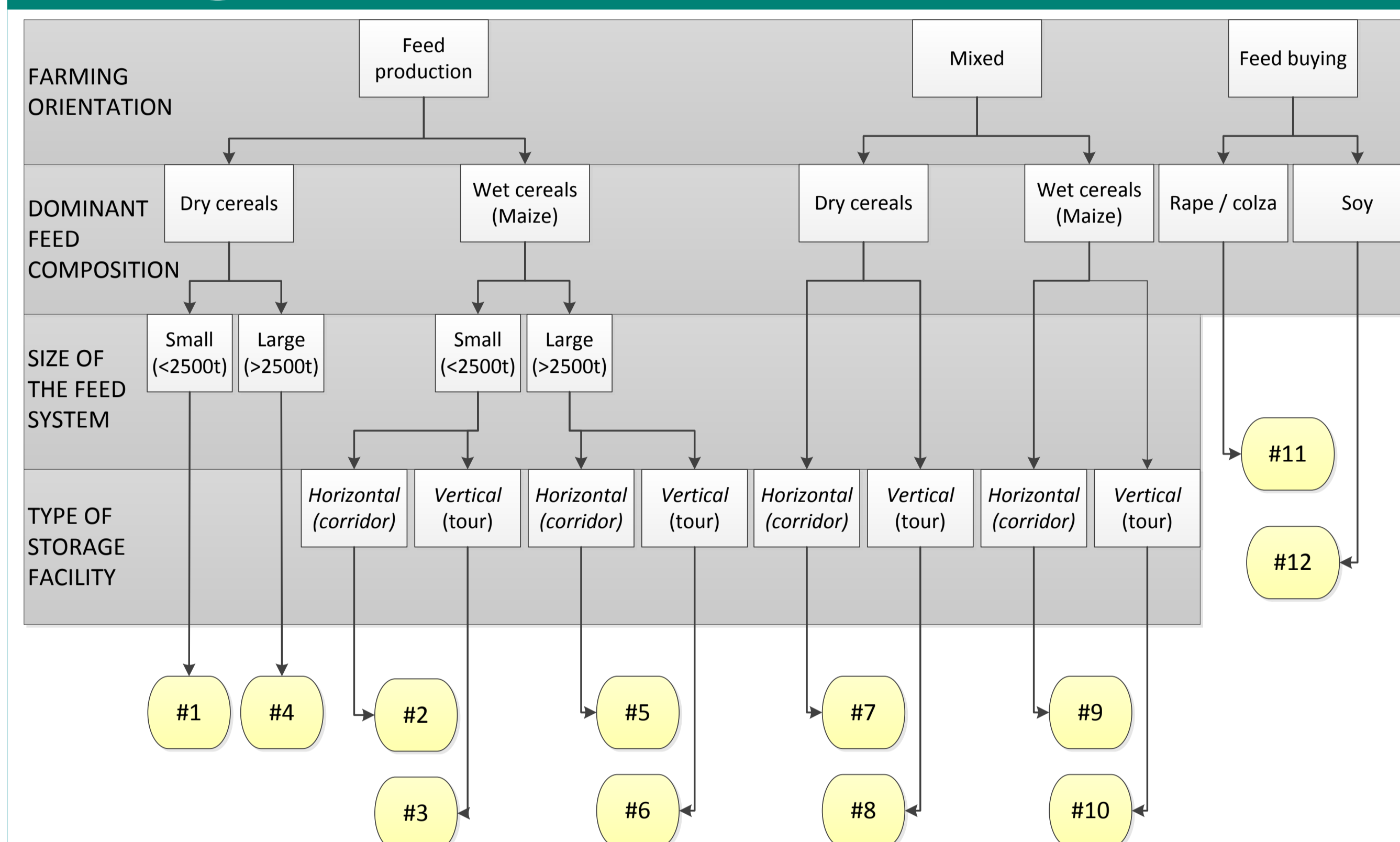
Individual choices influence on value chain sustainability

G. Petit^{1,2}, G. Yannou-Le Bris^{3,4}, G. Trystram¹

Can those actors achieve a same vision of food value chain sustainability?



Context of the case study: choosing among 12 feed scenarios



Methodology

Evaluating the sustainable performance of the 12 scenarios (set of 30 indicators env. eco. soc)

Indicators weighing by the actors of the value chain (4 interviews: agrifood cooperative, logistician, distribution cooperative, retailing shop director)

Ranking best performing scenarios (fuzzy AHP-topsis model)

Results

Weighting results for sustainability pillars

Agri coop	Env.	Soc.	Eco.
Env.	=	=	0
Soc.	=	=	0
Eco.	>>>>>	>>>>>	
Logistician	Env.	Soc.	Eco.
Env.		0	0
Soc.	>>>		0
Eco.	>>>>	>>>	
Distrib coop 1	Env.	Soc.	Eco.
Env.		0	0
Soc.	>>>		0
Eco.	>>>>	>>>	
Distrib coop 2	Env.	Soc.	Eco.
Env.		=	=
Soc.	=		=
Eco.	=	=	

Number of participants agree on the comparison in pairs of sustainability indicators

	Env.	Soc.	Eco.
Env.		2/2	3
Soc.	2/2		3
Eco.	2/0	2/0	

0 None of the players have the same opinion
2/2 Two actors have the same opinion, two others have the same opinion
2/0 Two actors have the same opinion, the others differ
3 Three actors have the same opinion
4 The four players have the same opinion

Number of participants agree on the comparison in pairs of environmental indicators

	Env1	Env2	Env3	Env4	Env5	Env6	Env7	Env8	Env9
Env1		2/2	2/0	2/0	2/0	2/2	3	3	3
Env2	2/2		3	3	3	2/2	3	3	3
Env3	2/0	3		3	3	2/2	2/0	3	3
Env4	2/0	3	3		4	2/2	2/2	3	3
Env5	2/0	3	3	4		2/2	2/2	3	3
Env6	2/2	2/2	2/0	2/0	2/0		2/0	2/1	2/1
Env7	3	2/0	2/0	2/2	2/2	2/2		2/1	2/1
Env8	3	3	3	3	3	2/0	2/0		3
Env9	3	3	3	3	3	2/0	2/0	4	

Number of participants agree on the comparison in pairs of economical indicators

	Eco1	Eco2	Eco3	Eco4	Eco5	Eco6	Eco7
Eco1		2/0	2/2	2/0	2/2	2/0	3
Eco2	2/1		3	3	3	2/0	2/0
Eco3	2/2	3		3	2/2	3	3
Eco4	2/0	2/0	2/0		2/0	2/0	2/0
Eco5	2/0	3	2/0	2/0		3	2/0
Eco6	2/0	2/0	3	2/0	3		3
Eco7	3	2/0	2/0	2/2	2/0	2/0	

Number of participants agree on the comparison in pairs of social indicators

	Soc1	Soc2	Soc3	Soc4
Soc1		3	3	2/0
Soc2	3		4	3
Soc3	3	4		3
Soc4	2/0	3	3	

Results for each #scenario and according to actors preferences

	Agrifood cooperative			Logistician			Distribution cooperative			Retailing shop		
	Score	Rank	Perf	Score	Rank	Perf	Score	Rank	Perf	Score	Rank	Perf
#1	0.398	5	Acceptable	0.448	6	Acceptable	0.432	3	Acceptable	0.475	5	Acceptable
#2	0.24	11	Poor	0.404	9	Acceptable	0.255	10	Poor	0.313	11	Poor
#3	0.257	9	Poor	0.477	3	Acceptable	0.365	6	Acceptable	0.378	8	Acceptable
#4	0.395	6	Acceptable	0.414	8	Acceptable	0.392	5	Acceptable	0.459	6	Acceptable
#5	0.236	12	Poor	0.364	12	Acceptable	0.218	12	Poor	0.298	12	Poor
#6	0.254	10	Poor	0.432	7	Acceptable	0.332	8	Acceptable	0.364	9	Acceptable
#7	0.456	4	Acceptable	0.381	10	Acceptable	0.316	9	Poor	0.516	4	Acceptable
#8	0.471	3	Acceptable	0.468	4	Acceptable	0.43	4	Acceptable	0.603	3	Acceptable
#9	0.334	8	Acceptable	0.381	11	Acceptable	0.239	11	Poor	0.34	10	Acceptable
#10	0.347	7	Acceptable	0.461	5	Acceptable	0.363	7	Acceptable	0.415	7	Acceptable
#11	0.957	1	Excellent	0.697	1	Excellent	0.797	1	Excellent	0.616	1	Acceptable
#12	0.814	2	Excellent	0.662	2	Excellent	0.792	2	Excellent	0.604	2	Acceptable

Outlook

- Sustainability performance needs to be discussed among value chain actors. Choice negotiation.
- Big differences are observed between indicators classification but still alignment seems achievable even if not necessarily identical to individual sustainability orientations.
- Pillars classification of eco > social > env vs. Today environmental assessment. Need to strengthen the needs of parallel performance measurement system (acv, CSR enterprise, VC performance).
- If a value chain performs better on non prioritized indicators, it does not come out here, whereas in multicriteria evaluation (only one strategy taken into account) it may emerge as the best. Group evaluation vs. individuals evaluation
- Limit : evaluation system is highly dependent on the selected indicators.
- Nature of data to collect, handle, sharing to carrying out future studies.

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Contact

Gaëlle PETIT, PhD Student

(1) AgroParisTech, INRA, UMR 1145 Food Engineering and process, F91300 France.

(2) AgroParisTech – Chaire SDSC

1 rue des Olympiades - F-91744 Massy Cedex

Other authors

(3) Laboratoire Genie Industriel, CentraleSupélec, Université Paris-Saclay, 3 rue Joliot-Curie, 91192 Gif-sur-Yvette, France

(4) AgroParisTech, 75005, Paris, France

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