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Leverage Points for Organic and Sustainable Food Systems

Mid-term

SF-CO Joint Project Seminar

Brussels, 16./17. November 2022

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WHY?
Project‘s motivation

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Rearranging deck chairs…

- Many interventions are treating symptoms not causes
- Interventions are often ‘technical adjustments’ rather than systemic changes
- Reinforcing (or at least accepting) systems rather than changing them
- We need a more systemic understanding of the type of sustainability interventions available

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WHAT?
Project‘s aim

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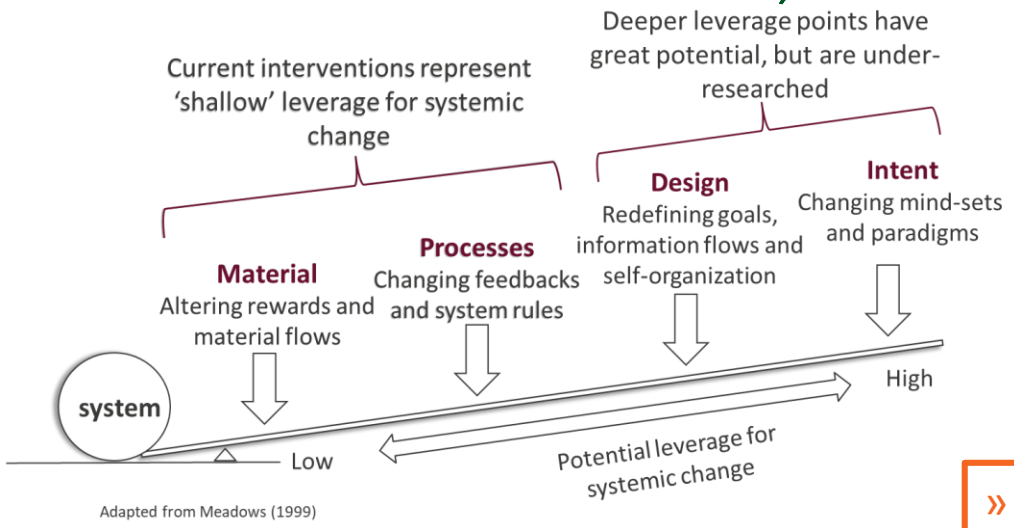
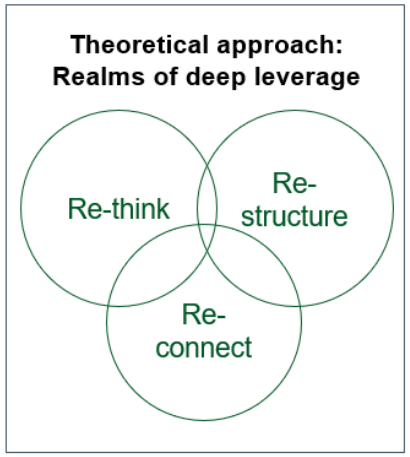
Conceptual background



Leuphana University Lüneburg
Leverage Points for Sustainability Transformation



based on Abson et al. 2017

- **“re-connect”** people to nature to encourage sustainable behaviours
- **“re-structure”** institutions and consider how institutional dynamics can create an enabling environment for sustainability
- **“re-think”** how knowledge is created and used, shared and validated

» **AIM: identify “deep” leverage points to further develop and scale up organic and sustainable food systems** (referring to products, technologies and marketing practices) in order to promote higher resource-efficiency, highlight inefficiencies and specify the reasons for decision-making processes that led to the configuration of the food systems.

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HOW?
Project‘s structure & implementation

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Structure

WP5: Project management

WP4: Communication and dissemination

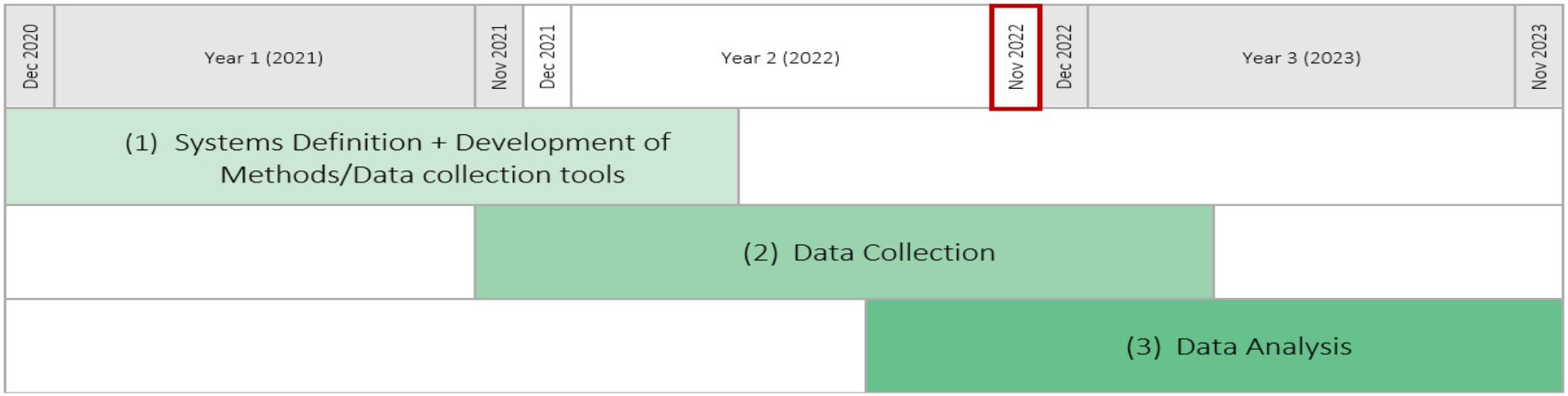
WP 1: System definition
T1.1: Identification of case studies
T1.2: Definition of reference system
T1.3: Data collection protocols

WP2: Holistic sustainability assessment
T2.1: Ecosystem services assessment
T2.2: Life cycle and emergy assessment
T2.3: Socio-economic value chain assessment
T2.4: Consumer behaviour analysis

WP3: Holistic scenario development
T3.1: Stakeholder decision making model
T3.2: Agent-based modeling
T3.3: Qualitative scenario modeling

Time

Implementation



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(1) System Definition
e.g. Selection of innovative case studies

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BE: Community supported agriculture supplying a **local hospital**	DE: **city farm** run as a community supported cooperative linking urban consumers with a network of regional biodynamic farms	FI: **mushroom farming** in forest and urban contexts using forestry side products & urban waste streams (small diameter trees, coffee grounds)	IT: organic farm managing **walnut & olive orchards grazed by laying hens**; production of biogas & energy; collaboration with & education of citizens
			
UK: biodynamic **mixed community supported agriculture** with active member involvement; provision of educational projects	RO: biodynamic farm cooperating with a **network of organic farms** with short distribution channels; partnership with school	PL: local **network** of 28 **pasture organic farms** to build a market & to get a "grass-fed" standard for beef	

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(1) System Definition
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BE: Community supported agriculture supplying a **local hospital**	DE: **city farm** run as a community supported cooperative linking urban consumers with a network of regional biodynamic farms	FI: **mushroom farming** in forest and urban contexts using forestry side products & urban waste streams (small diameter trees, coffee grounds)
Collaboration with social facilities (providing organic meals & „healing garden“ to hospitals, develop cultivation plan in consultation with the hospital) 	Methods of distribution (e.g. use of cargo bikes, food hubs, online platforms) 	Circular bioeconomy (using forestry side products for food production instead of bioenergy production) 

Learning from innovations in: Products, Production techniques, Marketing, Organisation and governance [1]

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[1] OECD 2014: https://www.oecd.org/site/innovationstrategy/defininginnovation.htm

(1) System Definition
e.g. Selection of innovative case studies

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Horticulture

Agroforestry



Mixed farming

Livestock farming

Clustering by farming system…

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(1) System Definition
e.g. Selection of innovative case studies

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CSA

Urban

Circularity



Network

Clustering by context…

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(3) Preliminary results
e.g. Ecosystem services assessment

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- **Aim:** to assess Ecosystem Services provided by agricultural value chains in selected farming systems
- **Method:** Incorporation of key indicators for measuring ecosystem services in an existing tool, the *Public Goods-Tool.* The PG-Tool is a sustainability assessment tool for farming systems which analyses farm performance based on different dimensions (soil, water, manure, and nutrient management, landscape and heritage, energy and carbon, food security, agro-biodiversity, social capital, farm resilience, and animal health and welfare).

- **Process** of indicator selection and integration:
  (1) Extensive literature review: **635** indicators
  (2) Prioritization according to data quality, time requirements & relevance: **100** indicators
  (3) Stakeholder surveys on national level: **25** indicators (**53** with sub-indicators) were added to the PG-tool in the domains of **environmental integrity, economic resilience & social well-being**
  (4) National expert workshops: Test & validation of the adapted assessment tool

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(3) Preliminary Results
e.g. Ecosystem services assessment

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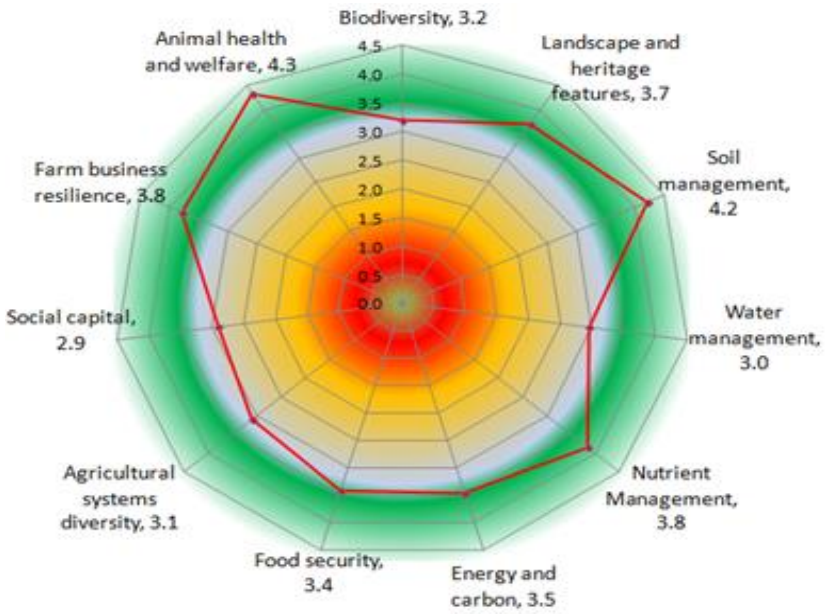
» Scoring system

Each question is marked with score between 1 and 5 where 1 is the lowest mark, indicating that no benefit is being provided and 5 is the highest score.

» Approach

- Assessment takes about 2-4 hours on-farm
- Quantitative and qualitative questions
- Simple programming in Excel spreadsheet



» Results

- Results sheet gives immediate feedback to the farmer
- Highlights areas where further development is needed
- Highlights areas where performance is good
- Advisor can talk through the results and go through the detailed scoring to discuss

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(3) Preliminary Results
e.g. Ecosystem services assessment

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	**Initial data collection - farm information**													
2	Farm name													
3	Dates covered (note that this should be a year)													
4	Own farm or tenant farmer? (if both, give one which is predominant)	owner occupier												
5	Dominant soil type													
6	Annual rainfall		mm											
7	Altitude		metres above sea level											
8	Number of years since organic conversion started		years and months											
9	Number of years fully organic		years and months											
10	What is the level of agri-environmental participation?													
11	Region (for FBS purposes)													
12	is more than 50% land LFA (for FBS)													
13														
14	FBS classification	other												
15	Total UAA (utilisable agricultural area, actual hectares)	0.7	ha											
16														
17	**Initial data collection**	**units**		**Marketable Yield - tonnes/ha**	**Yield - total tonnes**	**Tonnes - import**	**Tonnes - export**		**Notes**		**Energy content - MJ/tonne**	**MJ imported**	**MJ exported**	**N kg/ton**
18														
19	**Arable crops**													
20	Wheat - feed	100.0	ha	4.5	450	20	Tonnes				10472.0	0.0	209440.0	
21	Wheat - milling	0.0	ha	4.5	0	0	Tonnes				11782.0	0.0	0.0	
22	Barley	10.0	ha	4.5	45	5	Tonnes				11172.0	0.0	55860.0	
23	Oats	0.0	ha	4.0	0	0	Tonnes				10406.0	0.0	0.0	
24	Triticale	0.0	ha	4.5	0	0	Tonnes				12180.0	0.0	0.0	
25	Rye	0.0	ha	3.5	0	0	Tonnes				12180.0	0.0	0.0	
26	Mixed cereals/grain	0.0	ha	4.5	0	0	Tonnes				11365.3	0.0	0.0	
27	Peas - dry	0.0	ha	3.5	0	0	Tonnes				11745.0	0.0	0.0	
28	Field beans (broad and other beans)	0.0	ha	3.0	0	0	Tonnes				11135.0	0.0	0.0	
29	Fodder beet	0.0	ha	70.0	0	0	Tonnes				11340.0	0.0	0.0	
30	Sugar beet	0.0	ha	55.0	0	0	Tonnes				11000.0	0.0	0.0	

Where weights are required these are fresh weights.

The data input on this sheet are input on a farm-gate basis. i.e if wheat is grown for feed and used on the farm then it is not added to the export column or the import column although it is shown in the hectare and yield columns.

Imports/exports are for a 12 month period

The FBS classification is calculated based on the entries to this sheet in a separate calculation sheet from the FBS Workbook.

Please note:
Winter cover arable crops have been left out of the data collection, as they are unlikely to be leaving the farm gate and will therefore not affect the 'farm-gate' NPK budget.

For crops with more than one sowing to harvest cycle within a 12 month period please adjust the yield as appropraite. Do not increase the hectarage to allow

Info | References | Conversion charts | Initial data collection sheet | Soil management | Agri-environmental management | Landscape and Heritage | Water mana ...

(3) Preliminary Results
e.g. Ecosystem services assessment

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» **Preliminary Results from our case study in UK:**

- Biodynamic mixed farm
- CSA with over 350 members providing an innovative governance structure for restructuring local distribution channels
- Produces vegetables, beef, pork, poultry meat, eggs and dairy products



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(3) Preliminary Results
e.g. Ecosystem services assessment

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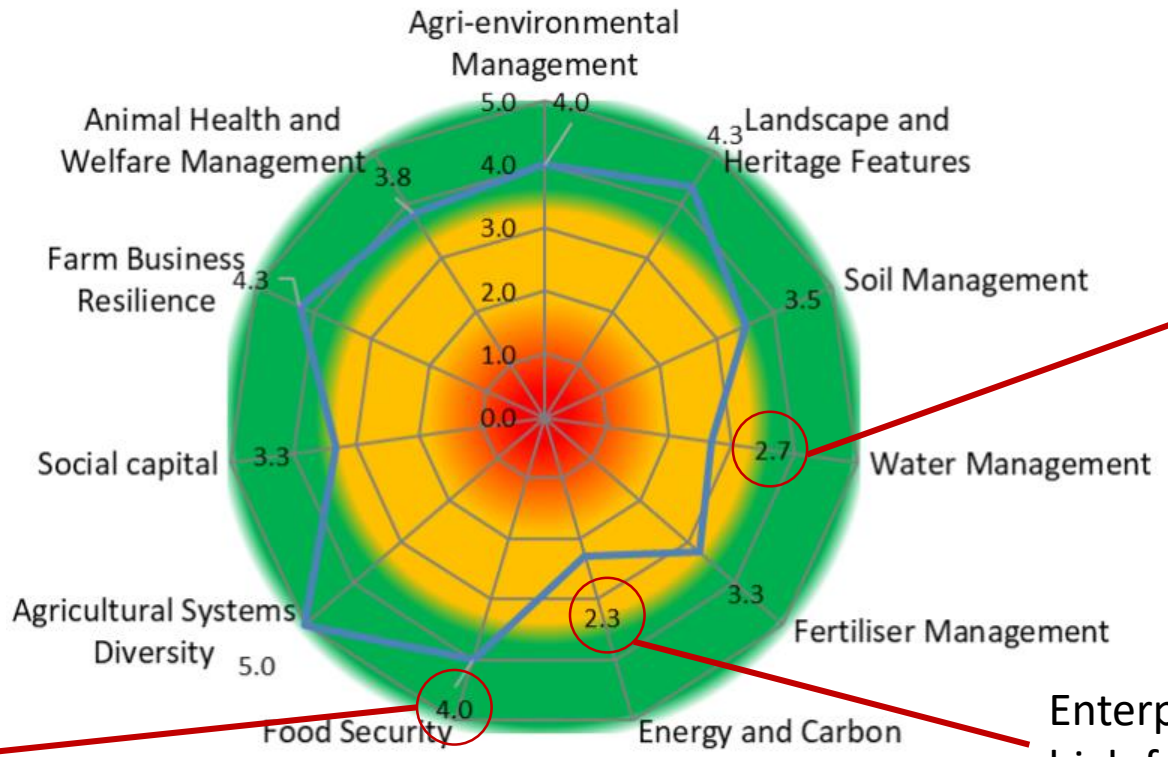
» **Preliminary Results from our case study in UK:**



Vegetable crops irrigated with mains water – no water collection or recycling

Highly diverse farm – multiple crops and livestock types

Enterprise split over two sites – high fuel use travelling between sites daily

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Problems encountered

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- **Data availability** to determine the reference systems from the mainstream organic counterparts
  - Availability of farm accountancy data on organic production systems varies among partner countries and farm type. FADN database does not provide information on organic farming in Romania or on organic horticulture, for example.
  - Solution: e.g. for organic horticulture benchmarking data as well as average economic data was reviewed and requested from the respective associations (e.g. in Germany the *Zentrum für Betriebswirtschaf im Gartenbau e.V.* (ZBG – Centre for Business Management in Horticulture))

- **Budget limitation for Advisory Board members**
  - Budget that was originally foreseen to cover the travel costs of the advisory Board members was limited to be used only by people having the same nationality as the funding body (probably misconception in the proposal) -> loss of advisory board member
  - Solution: online participation in hybrid consortium meetings

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Experiences with cross-cutting issues

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» Multi-stakeholder

- In the first stage of the project a stakeholder map was created with all **network actors relevant for each case study**. Afterwards, **further actors** were identified which related to the specific farming system, institutional as well as geographical context of the case studies. (e.g. umbrella organisations, policy makers, consultants, experts etc.). These actors were invited to participate in different types of activities, such as workshops or interviews.
- There seems to be **different interest among stakeholder groups depending on the type of activity**: e.g. for bilateral interviews it was easier to involve diverse stakeholders from the food value chain vs. for integrated measures such as workshops the majority of participants were researchers and consultants while farmers or practitioners showed less interest.
- It seems as if holding workshops in an **online format** has become **more attractive** (probably due to pandemic experience)

» Multi-disciplinarity

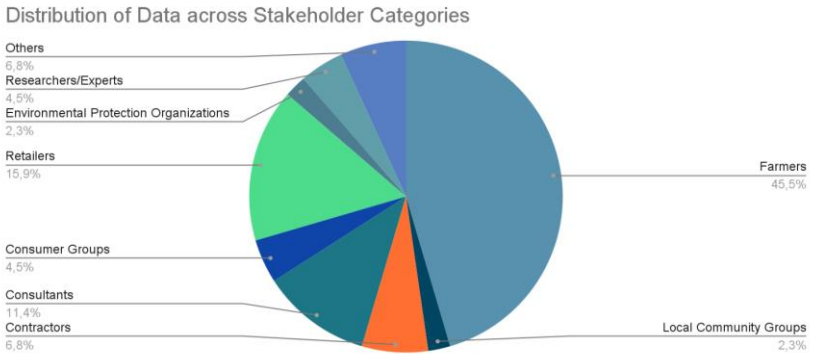
- Even if one partner has the expertise and leadership in a task, a project culture has been established that is characterised by **strong involvement and cooperation** among the whole project team. All project partners participate in the development process of methods (through internal meetings, workshops, feedback loops, etc.) and the implementation of data collection in the respective national context.

-> very beneficial for research results, but also for us as researchers to get to know and apply new methods that are outside our comfort zone

» System approach

- Recurring discussions on the **definition of system boundaries**, e.g. for the reference farming systems or also for Life Cycle Analysis (mainly linked to the question of data availability)

Qualitative interviews for value chain assessment (44 in total)



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Future Outlook

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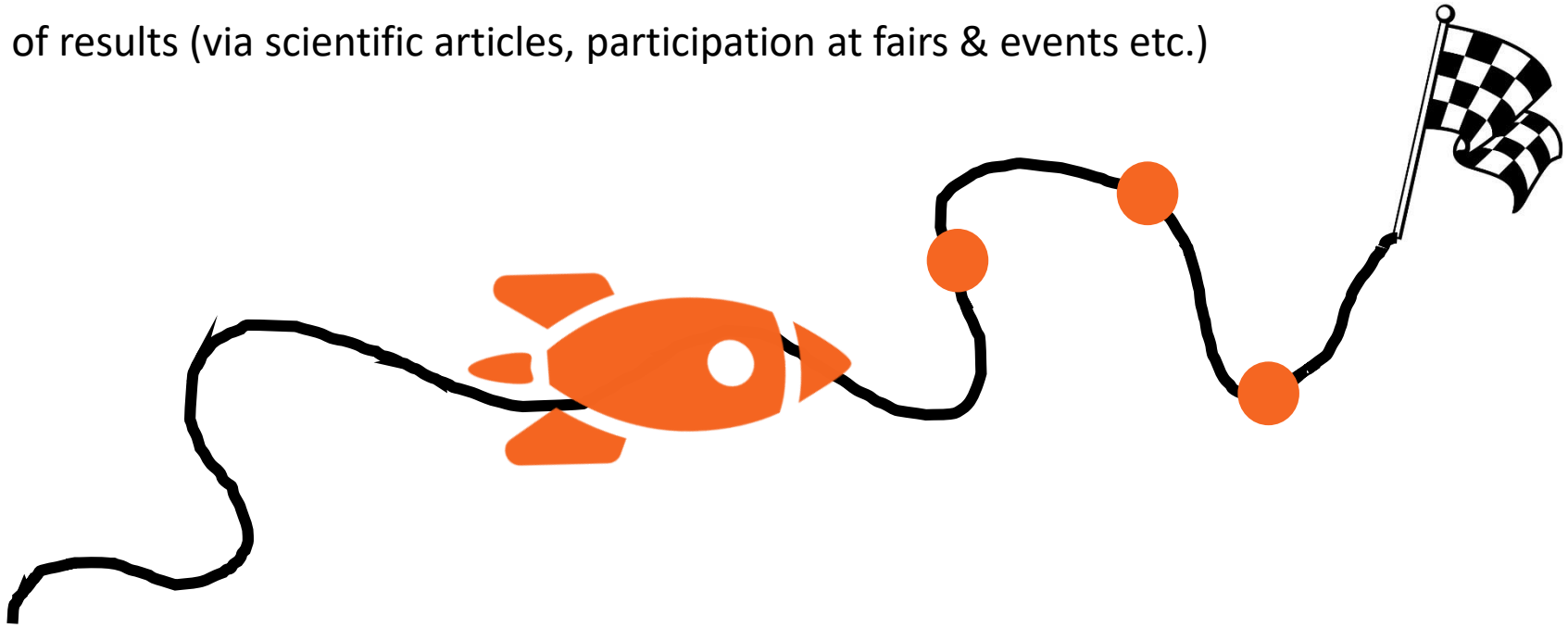
» **1 more year to go for…….**

- Completing data collection
- Analysis of sustainability studies
- Development of models & scenario
- Dissemination of results (via scientific articles, participation at fairs & events etc.)



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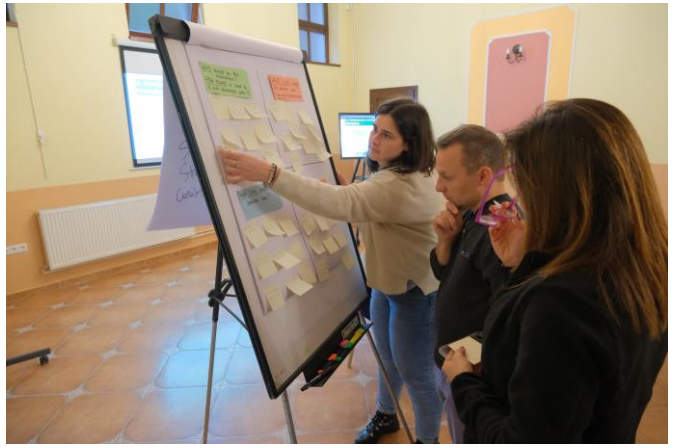

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THANK YOU

ON BEHALF OF FOODLEVERS TEAM!

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