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Office fédéral de l'énergie OFEN
Ufficio federale dell'energia UFE
Uffizi federal d'energia UFE

KTT & INTEGRATION FOR SWEET – MEETING I 2026

AGENDA

13:00	**Welcome and workshop objectives**
13:05	**PART I – Methods to start a transdisciplinary project/consortium** **Introducing simple methods to frame knowledge integration at the start of transdisciplinary projects/consortia**
14:15	*Coffee Break*
14:30	**PART II – Breakout rooms** **Reflecting on the use and activation of knowledge integration methods in SWEET consortia**
15:45	*Coffee Break*
16:00	**PART III – Plenary session** **Presenting the different insights of the breakout groups**
16:45	**End**

Making transdisciplinarity work:

Using simple methods to activate integration in consortia

March 19th 2026

SWEET Workshop, Bern

L. Simon – Kintegra GmbH

Dr. Leonhard Simon, “Léon”

Developing and testing concepts and tools to do science with and for society

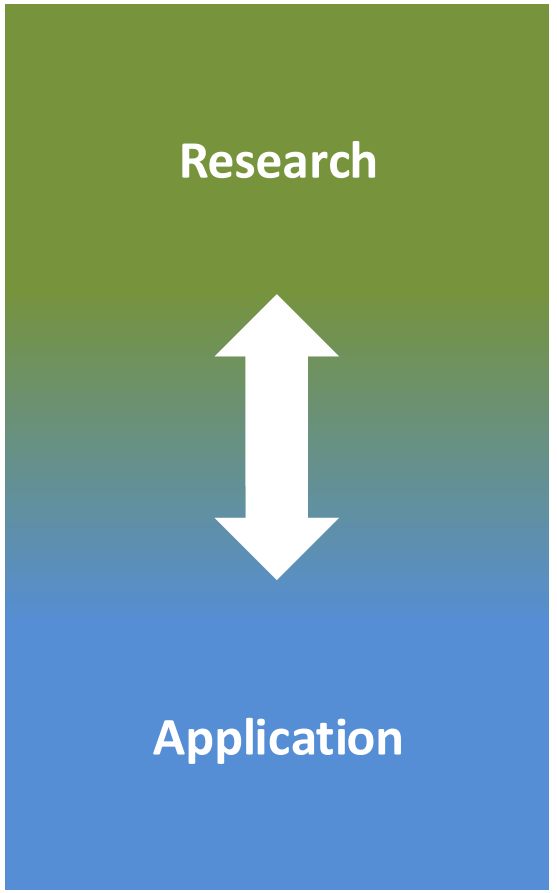
Knowledge integration specialist, helping to solve complex sustainability-issues by using a transdisciplinary approach at Kintegra; projects in several domains related to sustainability: biodiversity, agriculture, housing, energy

Head of Transdisciplinarity, SNF NRP82 on Biodiversity and Ecosystem Services

Postdoc/Oberassistent (until 2024): Sustainable Agroecosystems’ Group (SAE) and Transdisciplinarity Lab (TdLab)

PhD in Environmental Science and Policy (ETH Zurich)

MSc in Sustainability Sciences, more distant past in Electrical engineering (FH/HES) and industry research on renewable energy systems and e-mobility



Applying concepts and tools to enable sustainability transformations

13:00

Methods to activate a transdisciplinary consortium *L. Simon*

Goal: Introducing simple methods to frame knowledge integration at the start of transdisciplinary consortia

14:15

Coffee break

14:30

Group work – Reflection exercise *self-moderated*

Goal: Reflecting on the use and the activation of knowledge integration methods in the SWEET consortia

15:45

Coffee break

16:00

Presentation of the results of the different groups *all*

Goal: Presenting the different insights of the different groups

Ca.16.45

Methods to activate a transdisciplinary consortium

Tame vs. “Wicked” problems

Tame problems

- Characteristics: clear description, objective and solution
- Examples: solving equations, engineering, modeling soil processes
- Science is designed to deal with these problems

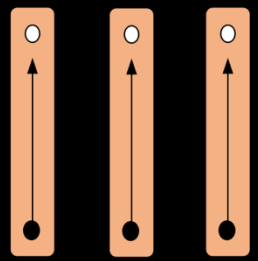
(thestreet.com)

Wicked problems

- Charachteristics: cannot be completely described, the objectives are disputed, and no unique and definitive solutions
- Examples, sustainability issues, public policy
- Science not designed to deal with these problems

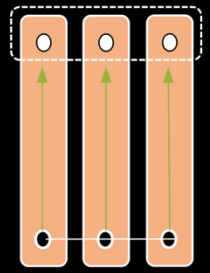
(focus.de)

Disciplinarity



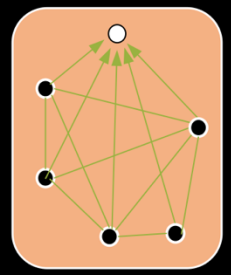
Integration within disciplinary boundaries

Multidisciplinarity



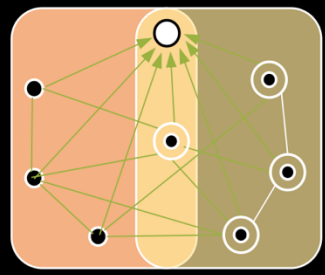
Parallel efforts without integration across different disciplines

Interdisciplinarity



Joint efforts with integration across different disciplines

Transdisciplinarity



Joint efforts with integration across science, policy and practice

Tress G, Tress B, Fry G (2005) Clarifying Integrative Research Concepts in Landscape Ecology. Landscape Ecology 20 (4): 479-493

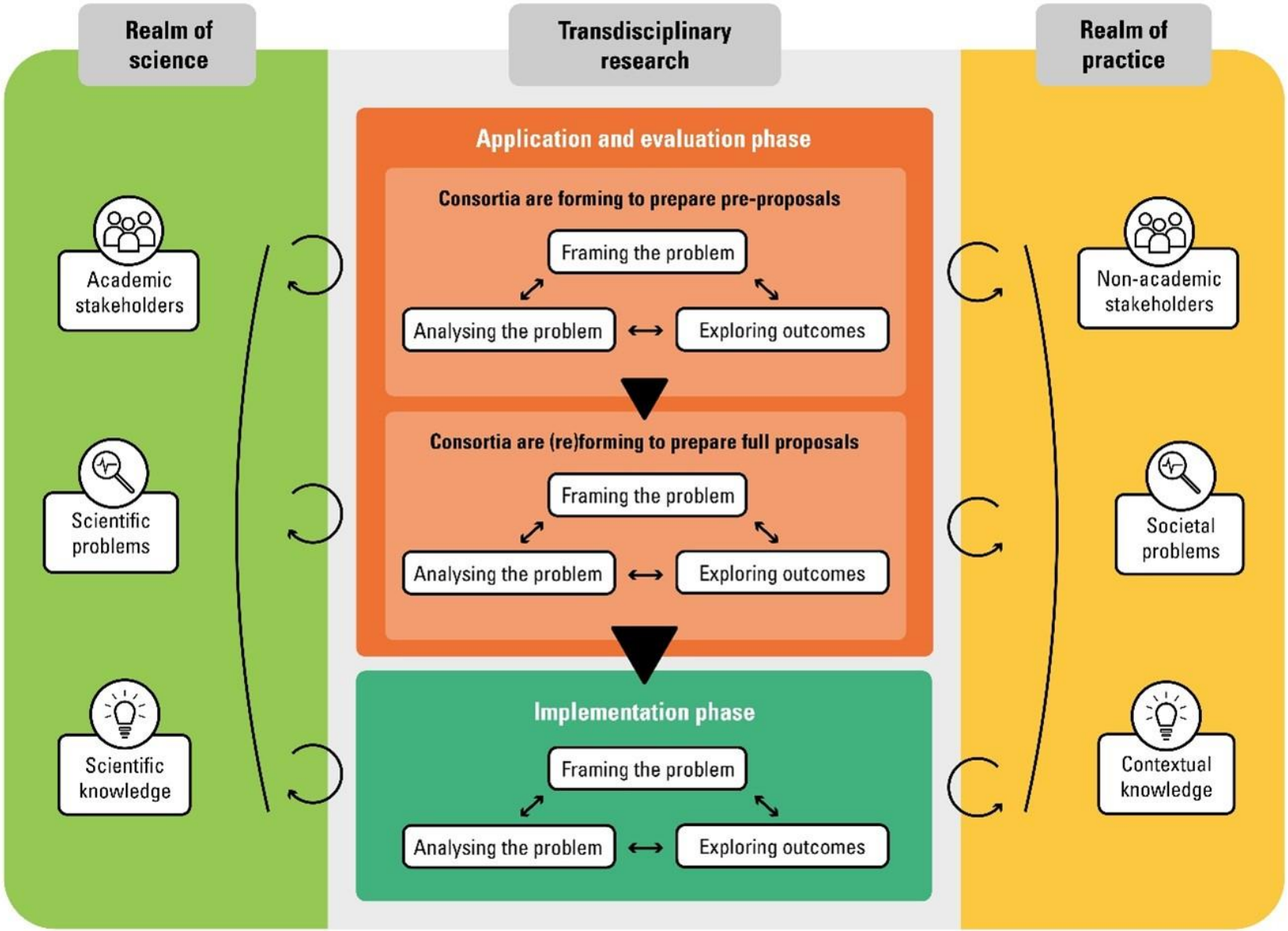
Discipline [countable] (formal): an area of knowledge; a subject that people study or are taught, especially in a university.

(Oxford's OALD)

Transdisciplinarity

"Transdisciplinarity is a **reflexive research approach** that **addresses societal problems** by means of **interdisciplinary collaboration** as well as the **collaboration between researchers and extra-scientific actors**; its aim is to enable **mutual learning processes** between science and society; **integration is the main cognitive challenge** of the research process."

(Jahn et al., 2012)



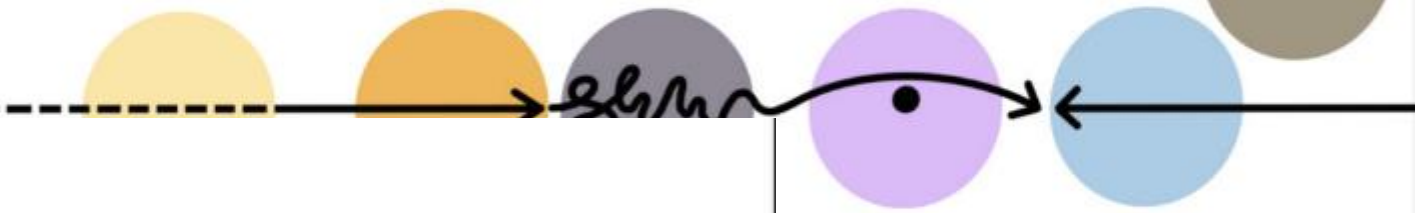
(SWEET, from Pohl et al., 2017)

Don't Use This Toolbox

If yo

Project Phases

The KTT tools are assigned to colors corresponding to the different phases of the project. Some tools can be applied at any time.



Final Phase
Comparing actual with planned performance allows to detect deficits and to take corrective action.
When your team is still complete, this is the best time to think about communication, dissemination and exploitation.

Post-Evaluation
is a great learning opportunity to improve performance next time. Take a fresh look on the project achievements, the team, the KTT tools applied, and opportunities for your next research proposal!

Selection Criteria

Information	< 20	< 1 day	< 500 CHF/yr	Little
Consultation	20-50	1-7 days	500-10'000.-/yr	Medium
Dialogue	> 50	> 7 days	> 10'000.-/yr	Advanced

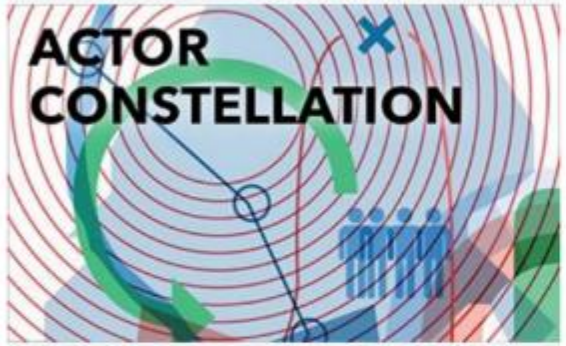
The criteria above help you finding suitable tools for Knowledge & Technology Transfer. There is no need to use all criteria. Just pick 2-3 of your choice.

The **direction of** | **Target group size** | The **attention span** | The **budget** for your | **Qualification**

td-net toolbox

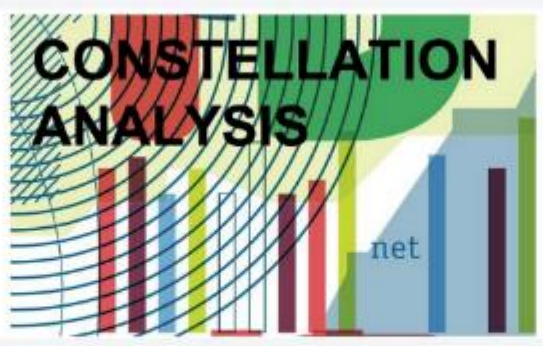
The methods and tools offered by the td-net toolbox specifically focus on jointly developing projects, conducting research and exploring ways to impact in heterogeneous groups. They are intended to help shape collaboration between experts and stakeholders from science and practice in systematic and traceable ways.

Learn more about the td-net toolbox



Actor constellation

Image: td-net



Constellation analysis

Image: td-net

Powered by:

swiss academies of arts and sciences

td-net – Network for Transdisciplinarity Research

> transdisciplinarity.ch

> td-methods@scnat.ch

Editorial Board

Antonietta Di Giulio
Kerstin Hemström
Martina Schäfer
Susan Thieme

Theres Paulsen
Christian Pohl

> Community – get involved!

About

> About the td-net toolbox

Cite methods

https://naturalsciences.ch/co-producing-knowledge-explained/methods/td-net_toolbox

SHAPE-ID

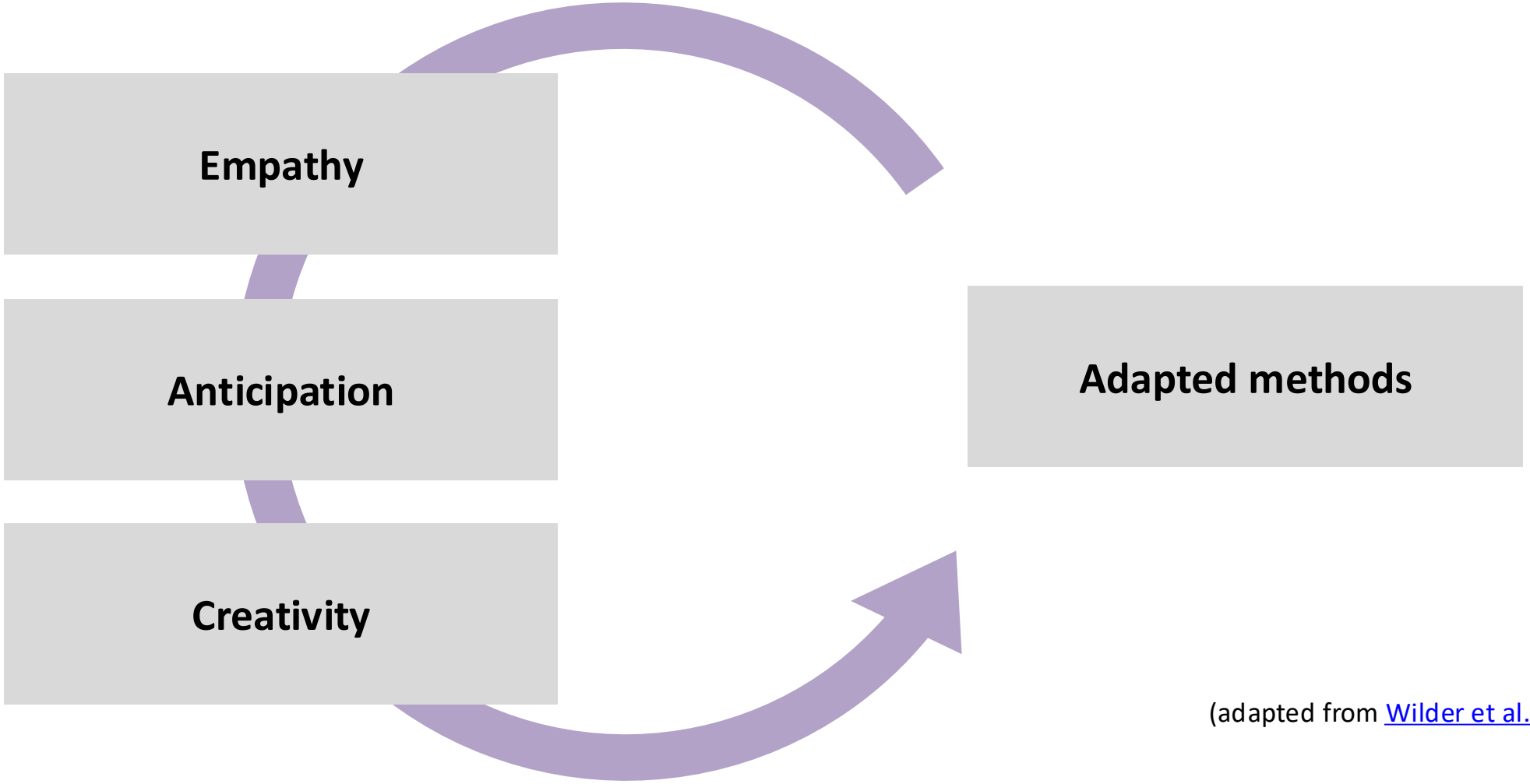
Shaping interdisciplinary practices in Europe

Discover

- What interdisciplinary and transdisciplinary research are and why they are worthwhile.
- How to create collaborative conditions and co-create a successful research project.
- How to engage and communicate with collaborators from other disciplines and other sectors.
- How to fund, support and evaluate these types of research, and much more.

https://www.shapeidtoolkit.eu/guided-pathways/

“Tailoring” methods to the needs of your processes



(adapted from Wilder et al., 2014)

Adapting and/or simplifying the method to your needs, without losing the essence of the method

Methods to activate knowledge integration (selection)

Three types of Knowledge

Soft Systems Methodology

Outcome Spaces Framework

Give & Take Matrix

Three types of Knowledge

…What knowledge do you need to achieve your goal?

Soft Systems Methodology

…How to describe a complex system?

Soft Systems Methodology

…How to describe a complex system?

Outcome Spaces Framework

…How to define goals?

Soft Systems Methodology

…How to describe a complex system?

Outcome Spaces Framework

…How to define goals?

Give & Take Matrix

…Who provides what?

Soft Systems Methodology

…How to describe a complex system?

Outcome Spaces Framework

…How to define goals?

Give & Take Matrix

…Who provides what?

For each method…

Why is it useful?

How does it work?

How can you tailor it?

Where should you be careful?

Three types of Knowledge

What knowledge do you need?

https://naturalsciences.ch/co-producing-knowledge-explained/methods/td-net_toolbox/three_types_of_knowledge_tool

Different forms of knowledge

1. **Knowledge of the current status: Systems knowledge** of structures and processes, variabilities, etc..

2. **Knowledge concerning that which may and may not be: Target knowledge**, i.e. the evaluation of current situations, prognoses and scenarios; providing critical levels, "guiding ideas", ethical boundary conditions, visions.

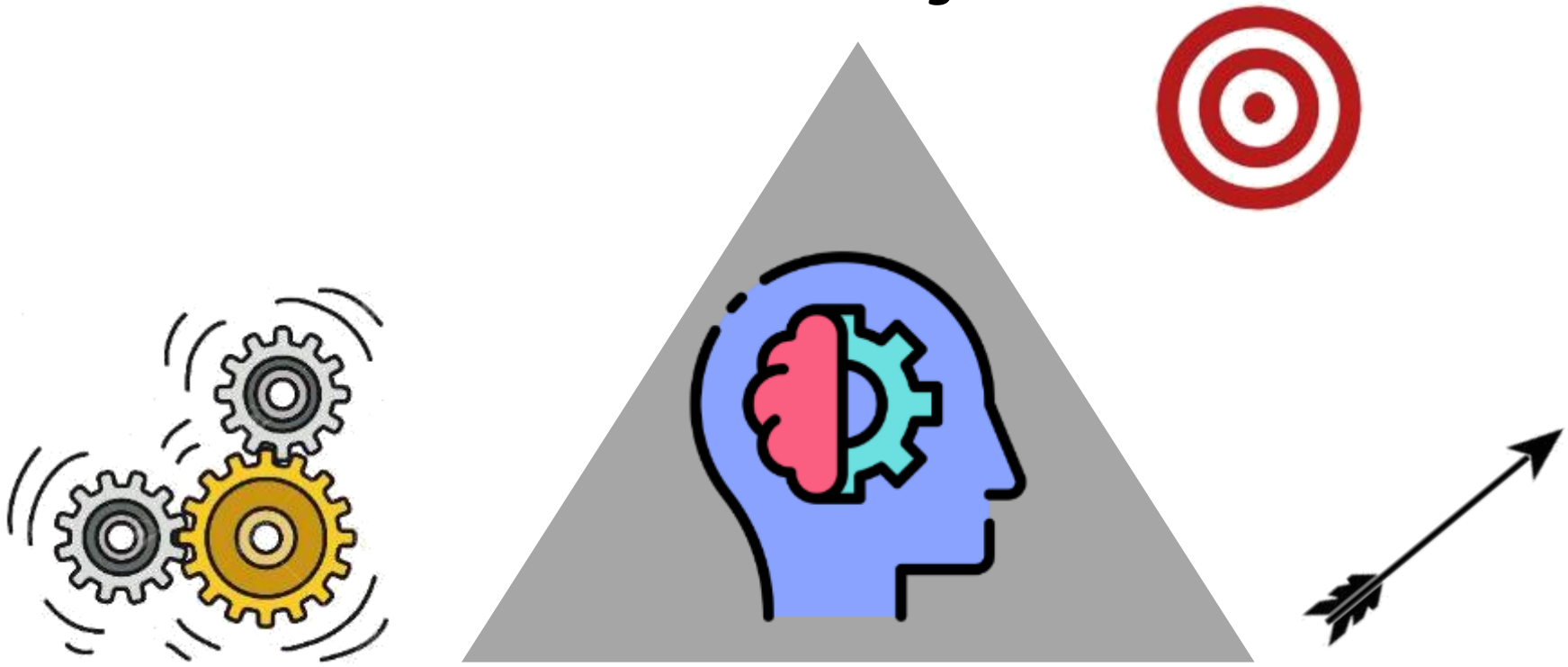
3. **Knowledge on how to make the transition from the current to the target situation: Transformation knowledge**, i.e. gaining knowledge on how to shape and implement the transition from the existing to the target situation.

(ProClim 1997)

How can you tailor it?

Target

Where to go?



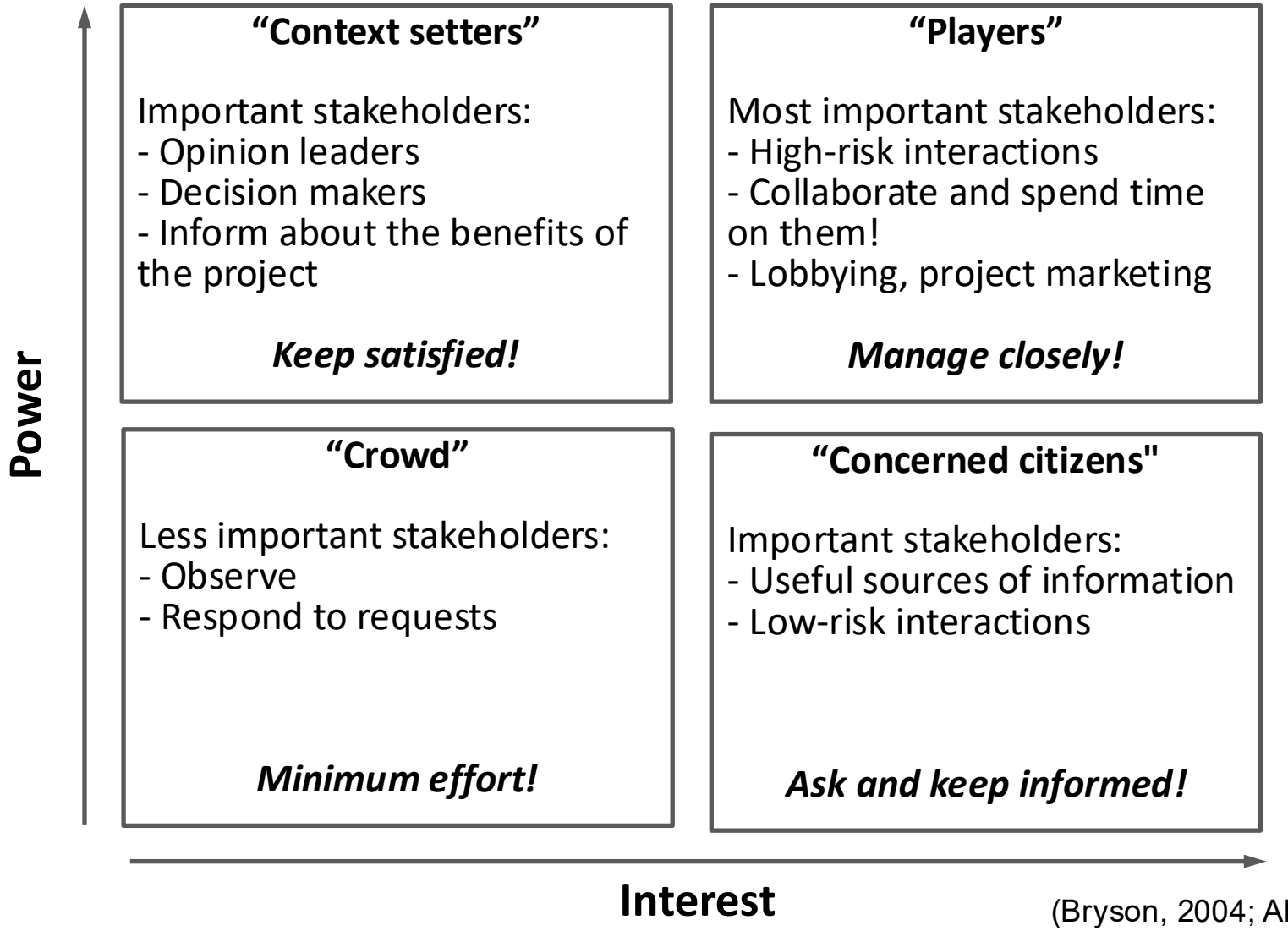
Systems

How do things work?

Transformation

How to get there?

Actors' matrix (generic)



(Bryson, 2004; Alean-Kirkpatrick, 2016)

Types of involvement

Science

Delegate / Empower

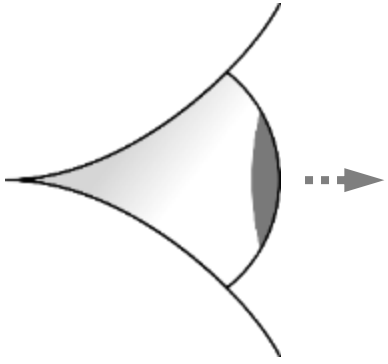
Co-produce

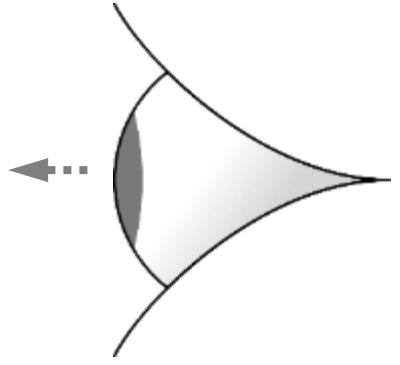
Consult

Inform

Practice

(Lüttringhaus, 2003; Rowe & Frewer, 2005)





Functional stakeholder-engagement plan

Type of actors (Who?)	Type of knowledge (Why?)	Type of involvement (How?)	When to involve (When?)
 Actor X	*e.g. system knowledge*	*e.g. consultation*	*e.g. project design*
 Actress Y	....	....	....
⋮	⋮	⋮	⋮

Functional stakeholder-engagement plan

Type of actors (Who?)	Type of knowledge (Why?)	Type of involvement (How?)	When to involve (When?)
 Actor X	*e.g. system knowledge*	*e.g. consulation*	*e.g. project design*
 Actress Y	....	....	....
⋮	⋮	⋮	⋮

Different types of Knowledge

Why is it useful?

- To be specific about the different pieces of knowledge that you (and other actors) may need

When is it useful?

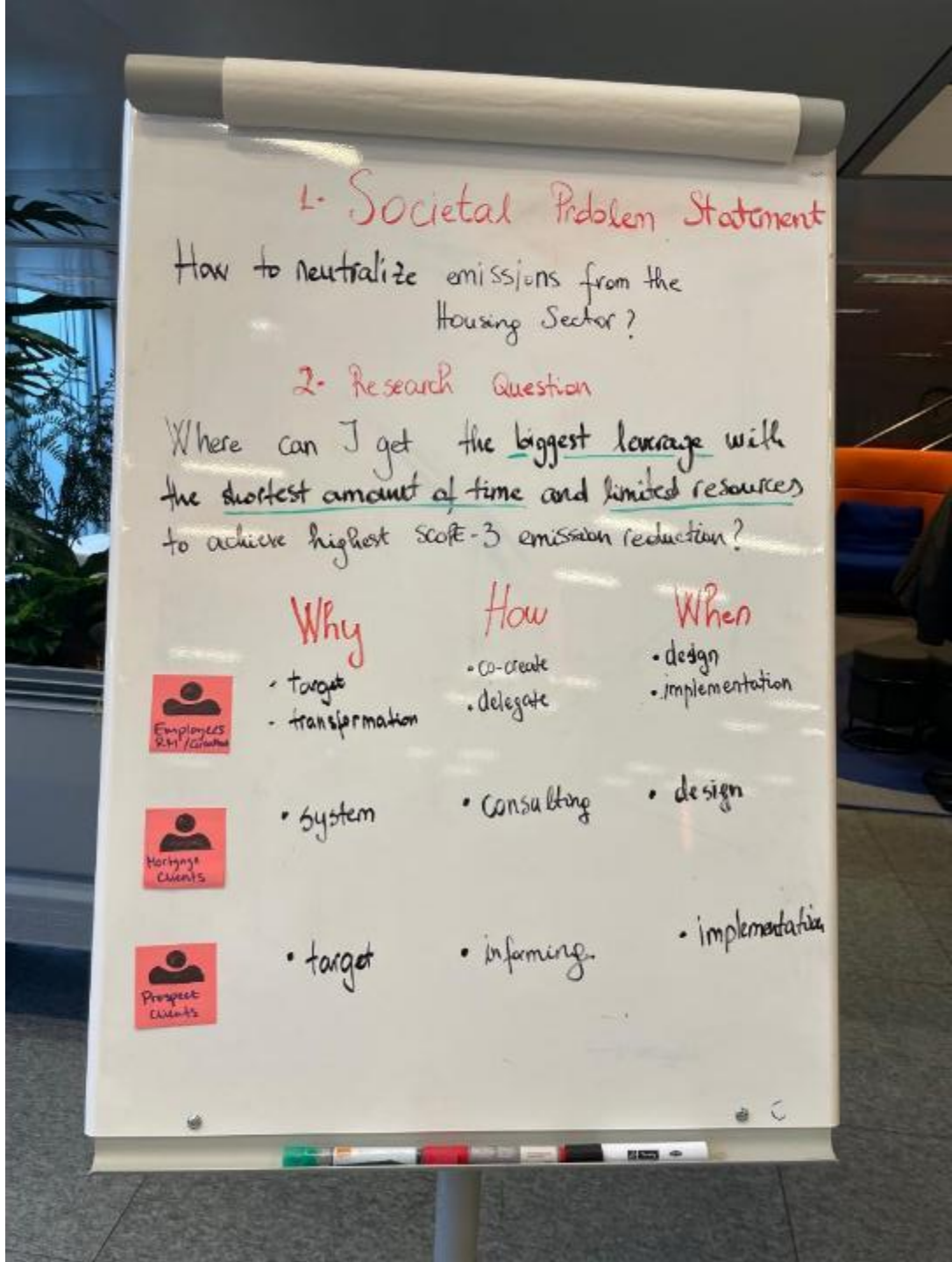
- For a problem framing (early in a process)
- As a reflection frame (during a process)

How can you tailor it?

- Use more generic formulations: How do things work? Where to go? How to get there?
- The *how* and *when* to involve are not required but can help in framing a process.

Where should you be careful?

- Actors usually have more than one type of knowledge to offer



Soft Systems Methodology

How to describe a complex system?

Tame vs. “Wicked” problems

Tame problems

- Characteristics: clear description, objective and solution
- Examples: solving equations, engineering, modeling soil processes
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(thestreet.com)

Wicked problems

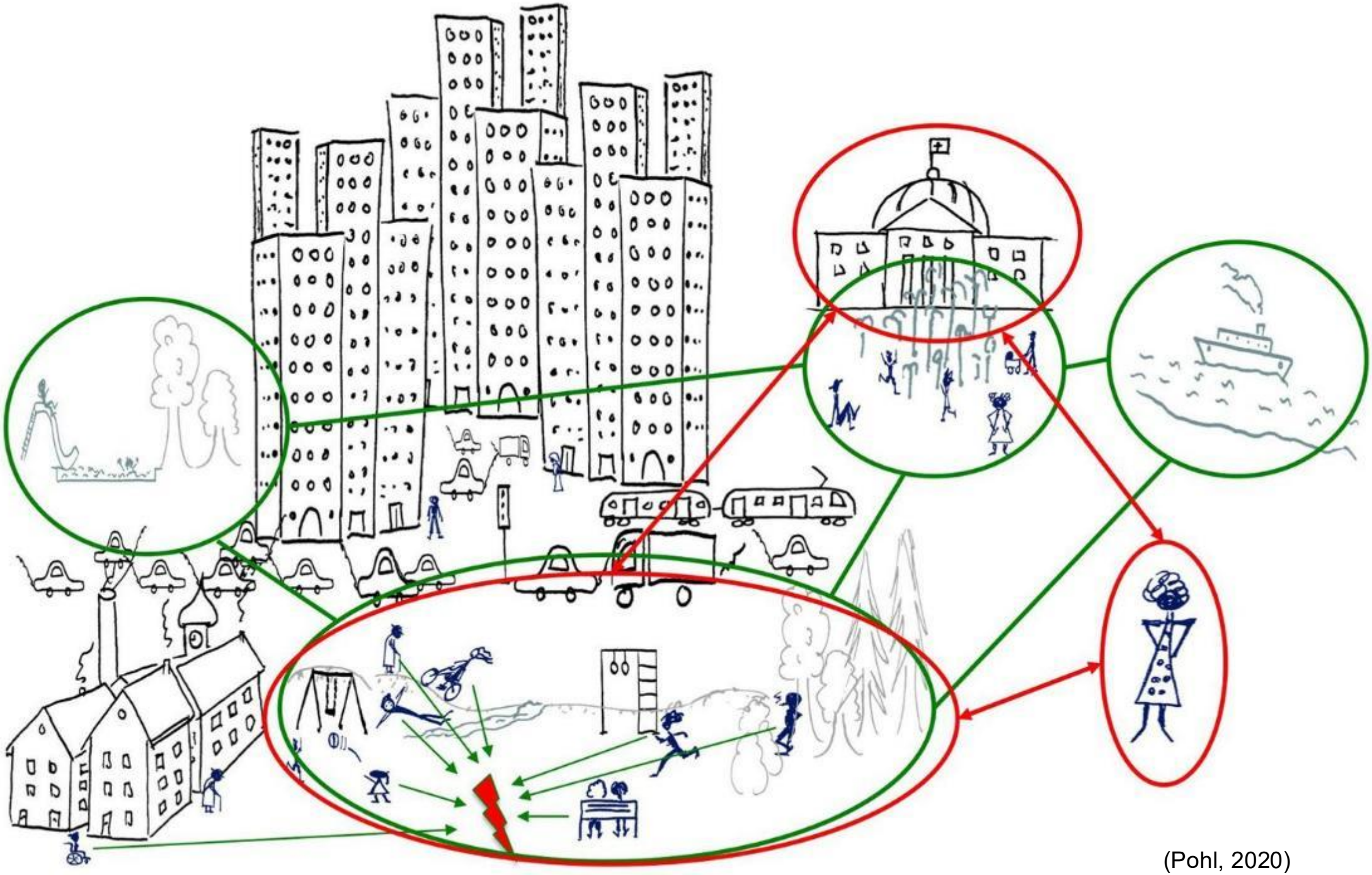
- <u>Charachteristics: cannot be completely described, the objectives are disputed, and no unique and definitive solutions</u>
- Examples, sustainability issues, public policy
- Science not designed to deal with these problems

(focus.de)

Soft Systems Methodology

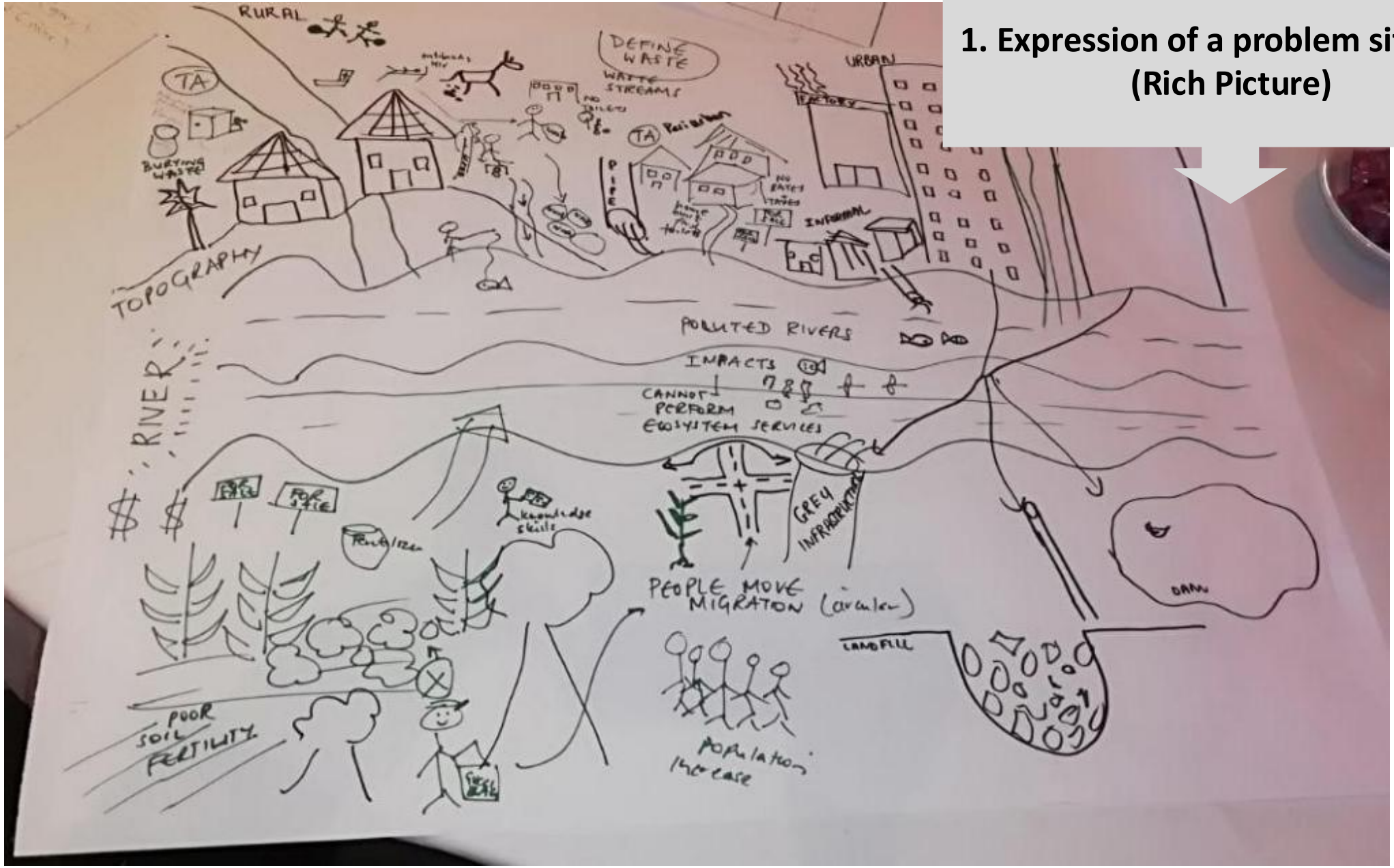
1. Expression of a problem situation (Rich Picture)
2. Root definition (CATWOE)
3. Organizing necessary activities
4. Comparing conceptual models to reality, and correcting

https://naturalsciences.ch/co-producing-knowledge-explained/methods/td-net_toolbox/soft_systems_methodology

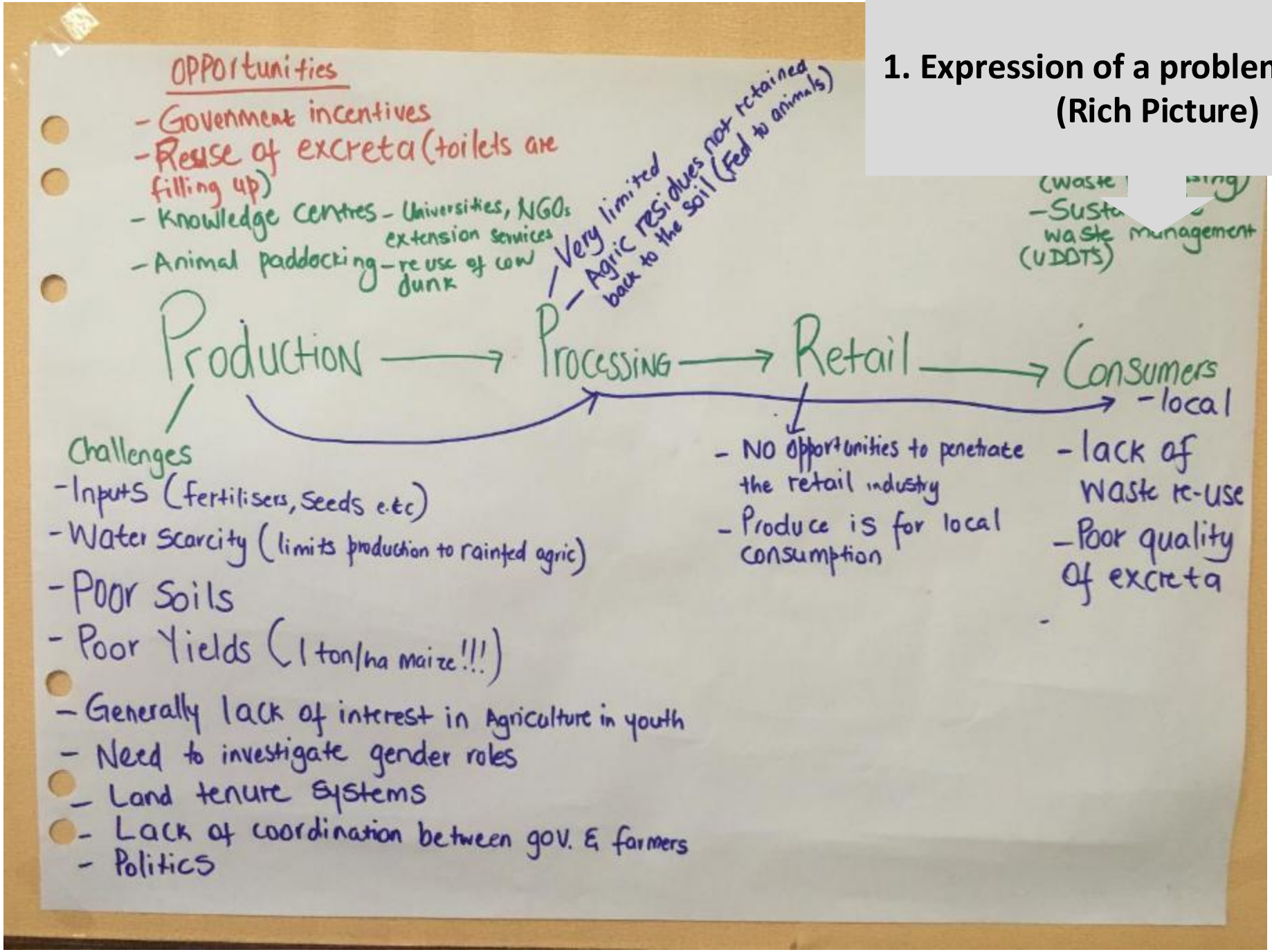


(Pohl, 2020)

1. Expression of a problem situation (Rich Picture)



1. Expression of a problem situation (Rich Picture)



In the “rich pictures”, you identify the “CATWOE”

2. Root definition (CATWOE)

C ('customers'): Who would be **beneficiaries** or **‘victims’** (loser) of this system?

A ('actors'): Who would carry out **what activities** of this system?

T ('transformation process'): What **input** (e.g., knowledge, information) is transformed **into what output** (e.g., compost) by this system?

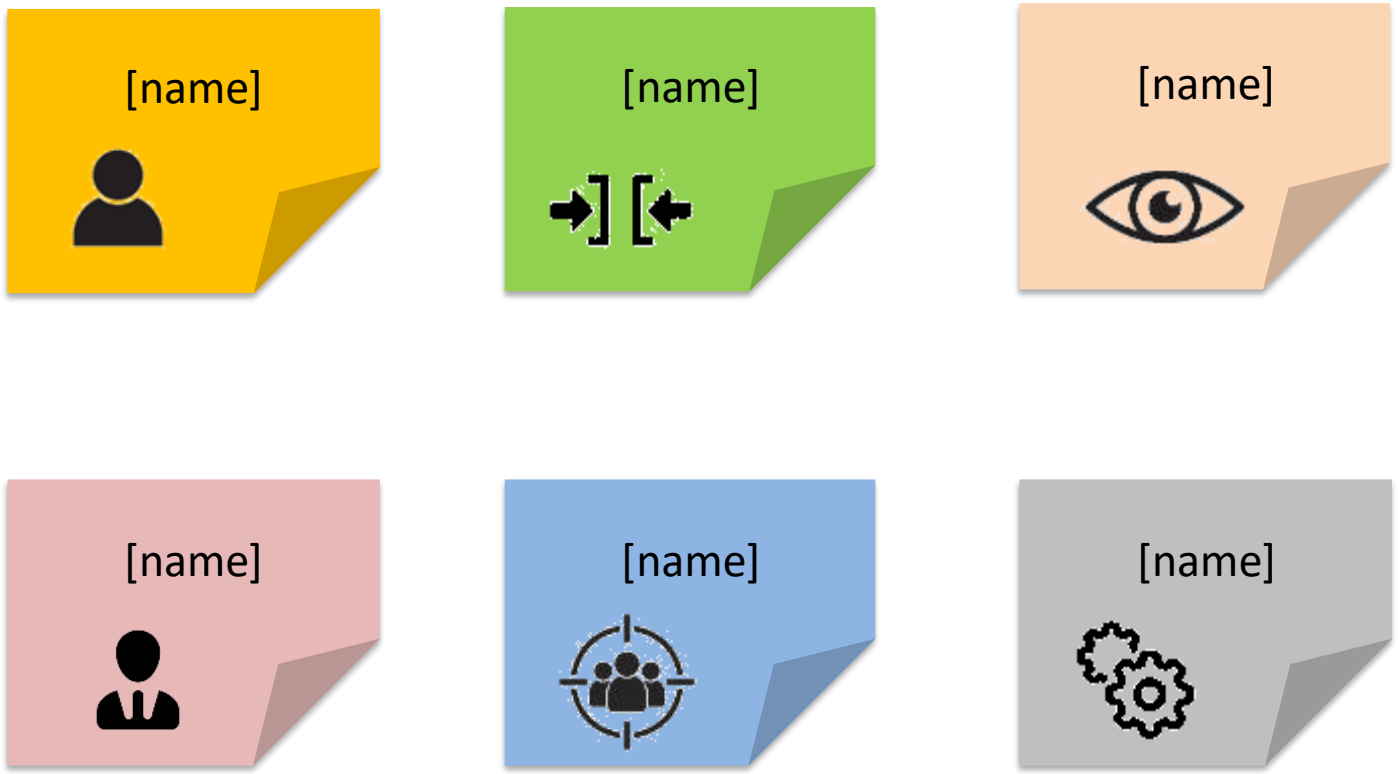
W (‘worldview'): What **image** (e.g., activity for a more just world) of the world makes this system meaningful?

O ('owners'): Who could **abolish** (or advance) this system?

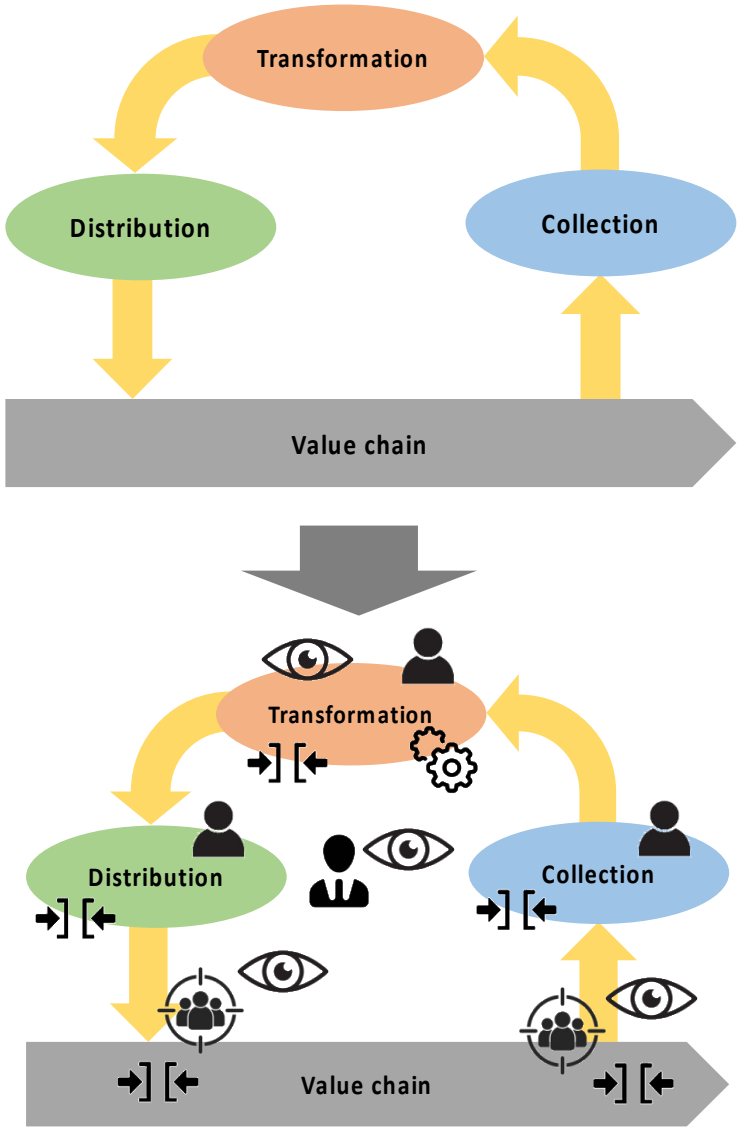
E ('environmental constraints'): What **external constraints** does this system take as given?

(from Checkland, 2000; 2001)

Example on power-point



Example on power-point on circular bioeconomy



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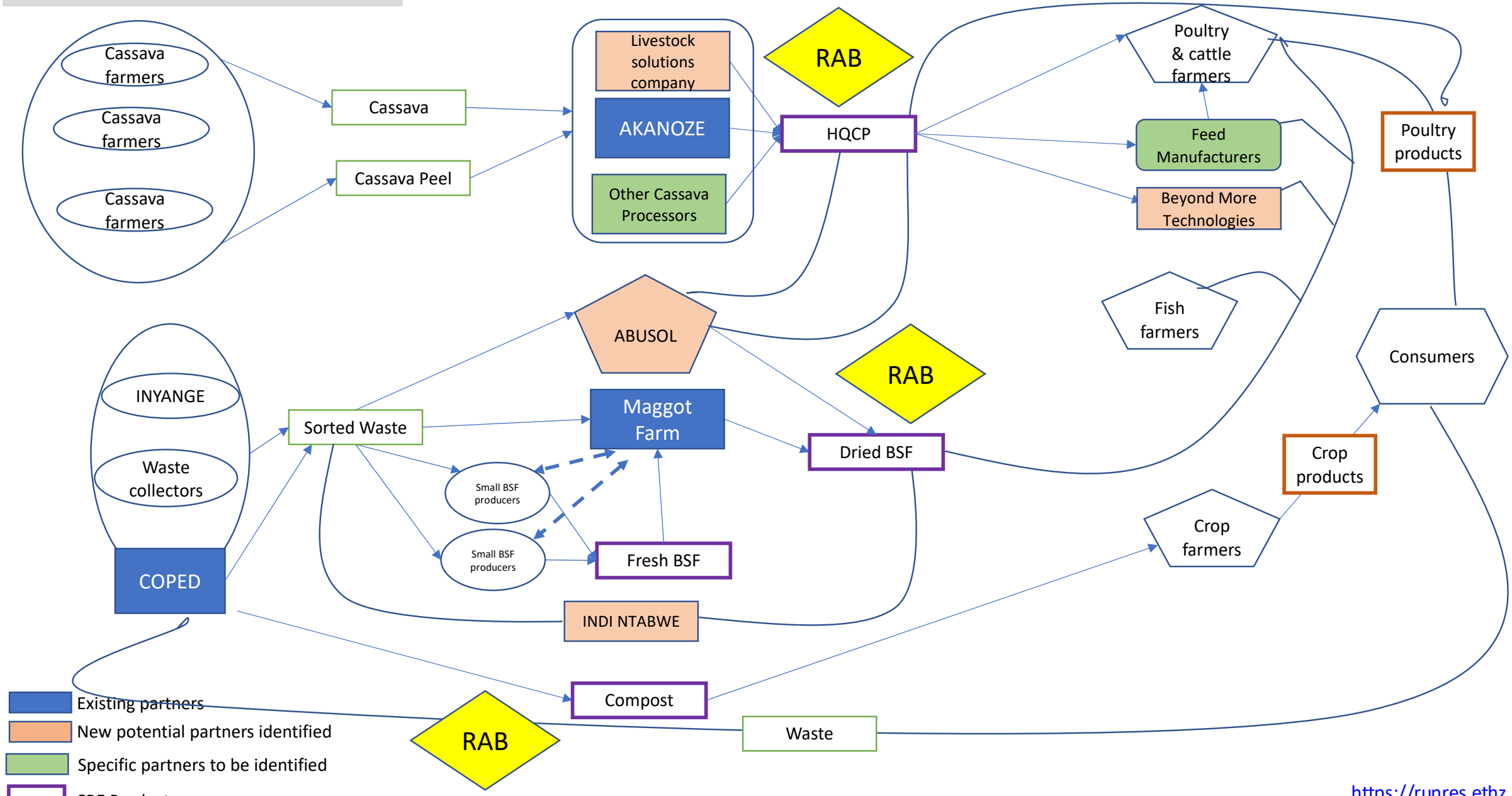
https://runres.ethz.ch

MAGGOT Farm



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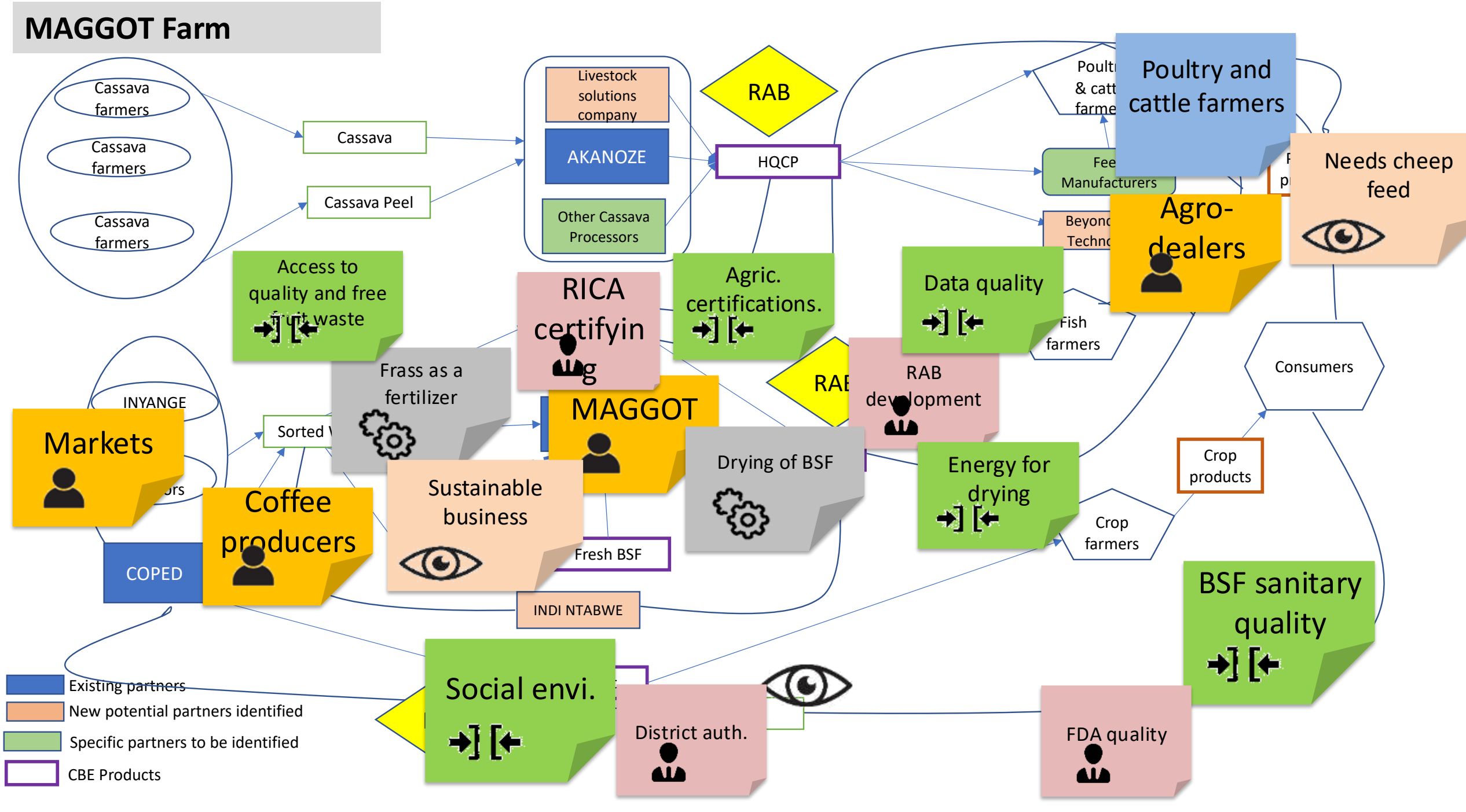
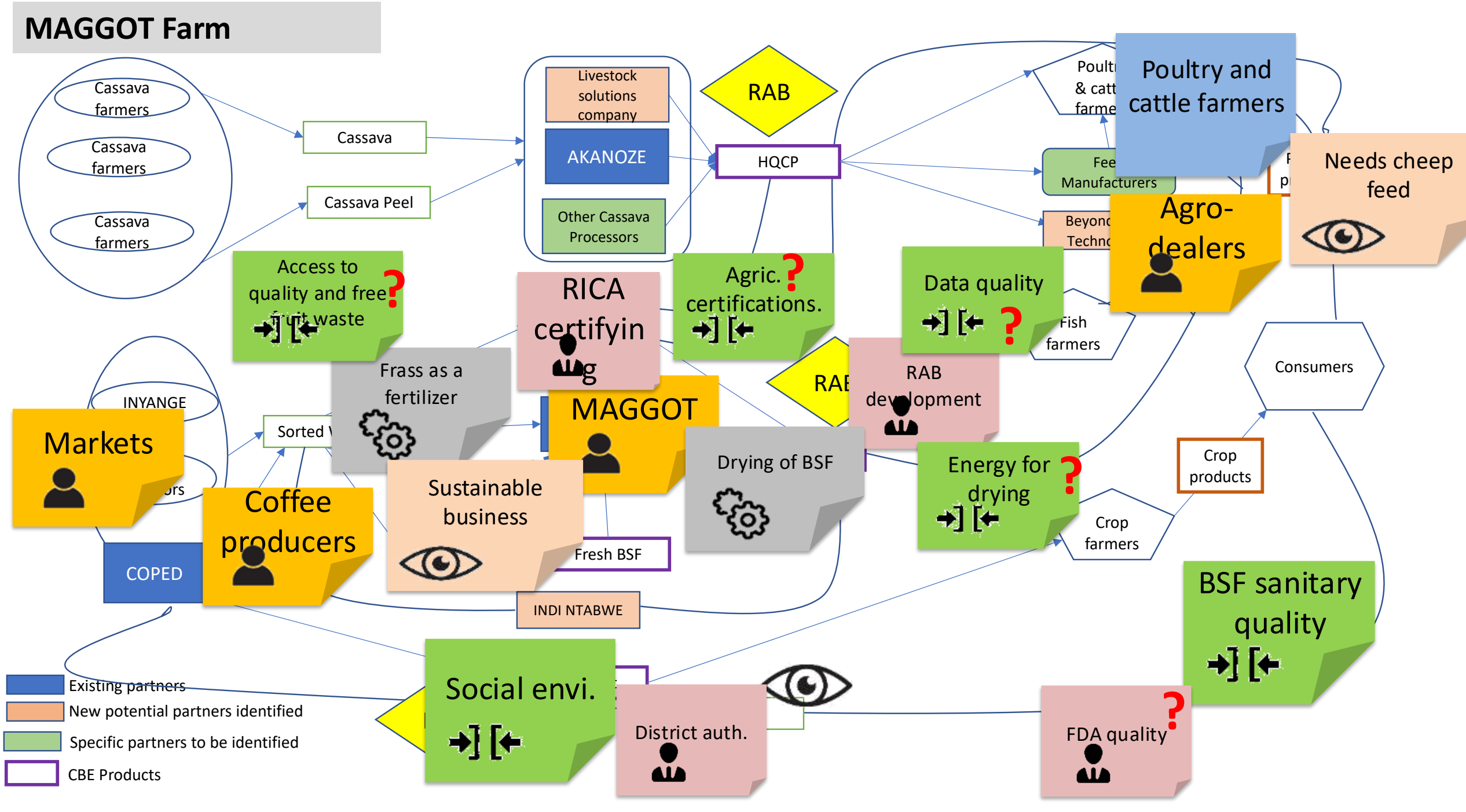
MAGGOT Farm


Cassava farmers
Cassava farmers
Cassava farmers
Cassava
Cassava Peel
Livestock solutions company
AKANOZE
Other Cassava Processors
RAB
HQCP
Poultry and cattle farmers
Fee Manufacturers
Agro-dealers
Needs cheep feed
Data quality
Agric. certifications.
RICA certifying
Access to quality and free fruit waste
Fish farmers
Consumers
Frass as a fertilizer
MAGGOT
RAB development
Markets
INYANGE
Sorted
Drying of BSF
Energy for drying
Crop products
Crop farmers
Coffee producers
Sustainable business
Fresh BSF
COPED
INDI NTABWE
BSF sanitary quality
Social envi.
District auth.
FDA quality
Existing partners
New potential partners identified
Specific partners to be identified
CBE Products

MAGGOT Farm


Cassava farmers
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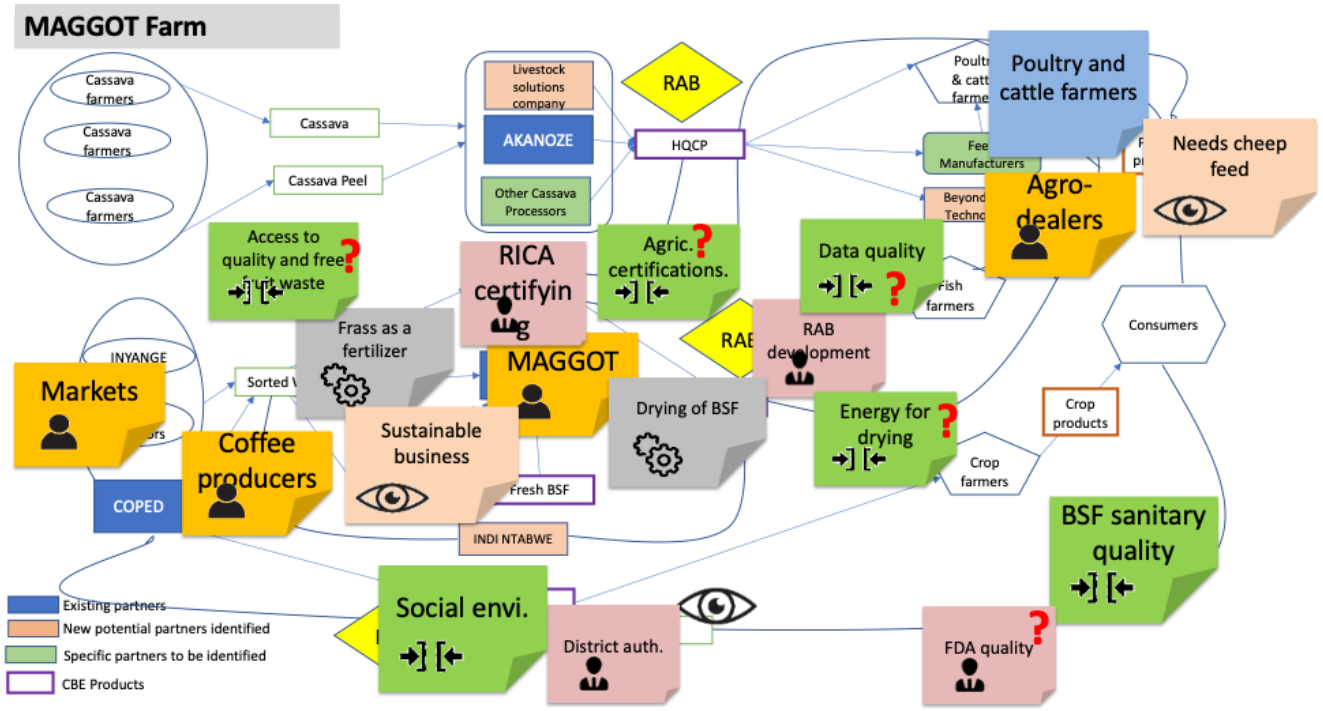


3. Organizing necessary activities

4. Comparing conceptual models to reality, and correcting

Outcome Spaces Framework …How to define goals?

Give & Take Matrix …Who provides what?

Soft Systems Methodology

Why is it useful?

- Makes it possible to describe a complex problem.
- Drawing helps to communicate and deal with different world-views (or “thought-styles”).

When is it useful?

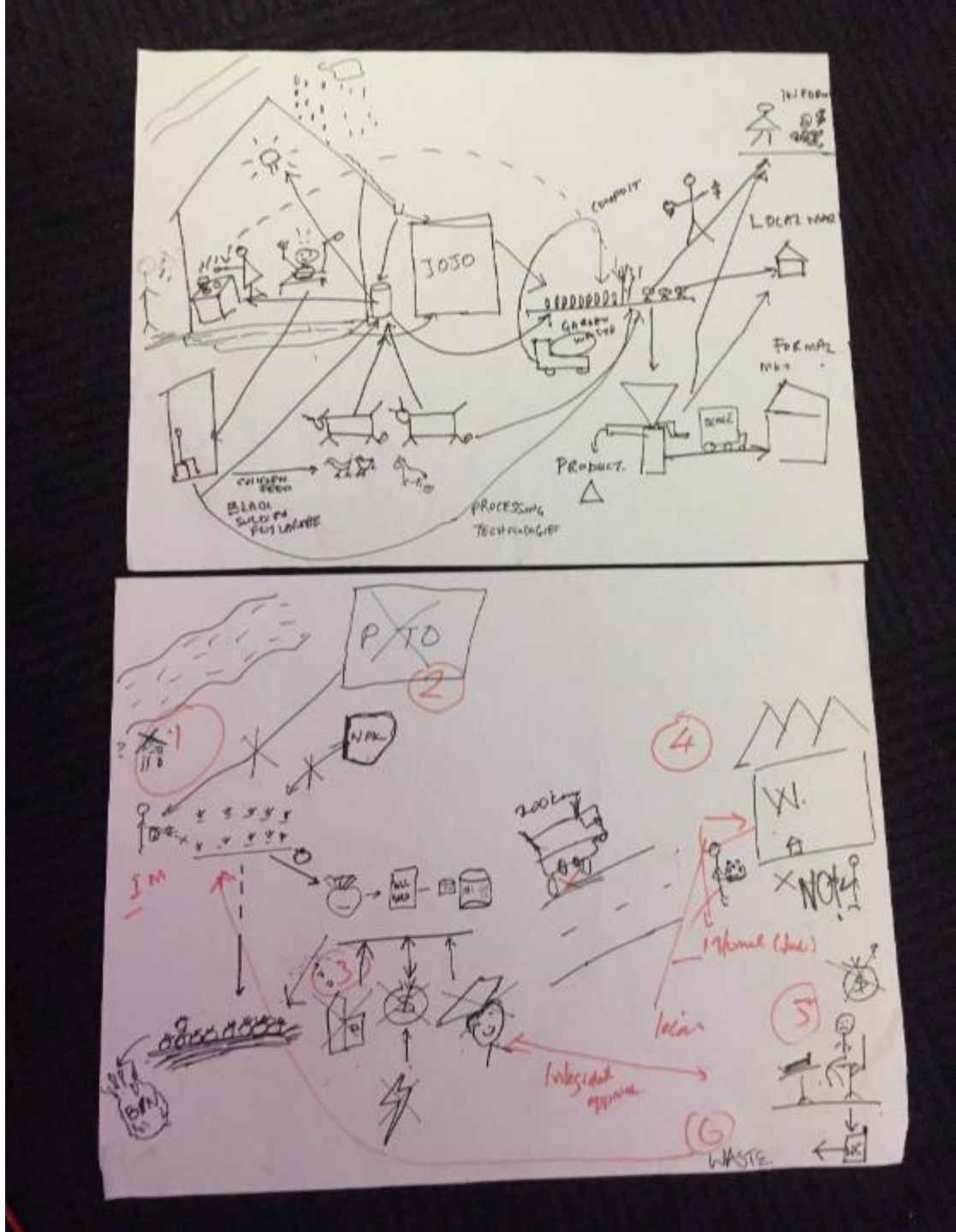
- For a problem framing (early in a process)
- As a reflection frame (during a process)

How can you tailor it?

- Can be carried out in steps, or partially, e.g. only rich picture
- Not all categories of the CATWOE have to be used. The most, the better, but this can be adapted too (e.g. skip the worldviews).

Where should you be careful?

- Many actors tend to stick to bullet points, they have to draw (and new perspectives come in).
- Some CATWOE categories are difficult to deal with, e.g. worldviews



Outcome Spaces Framework

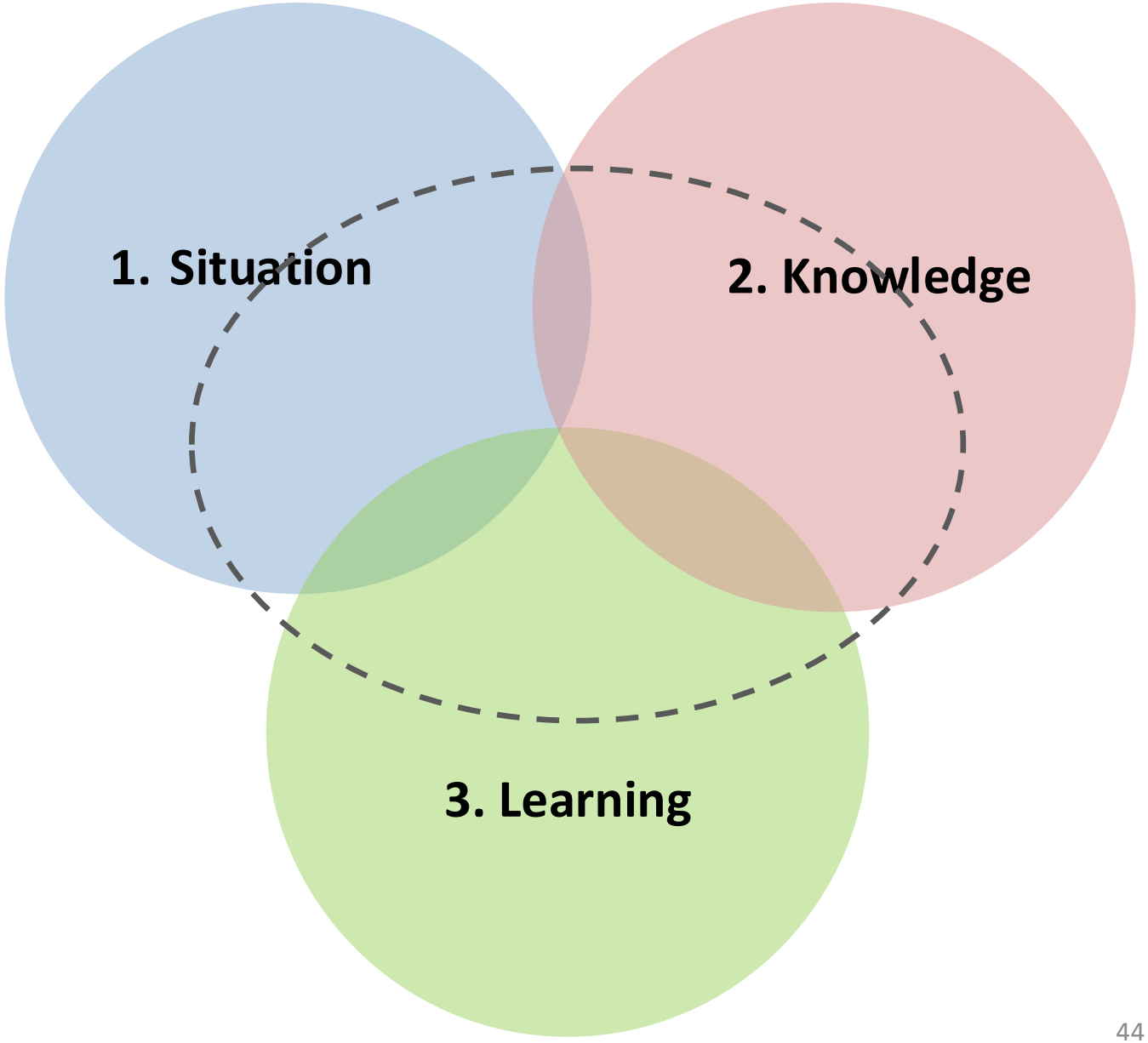
How to define goals?

https://naturalsciences.ch/co-producing-knowledge-explained/methods/td-net_toolbox/outcome_spaces_framework

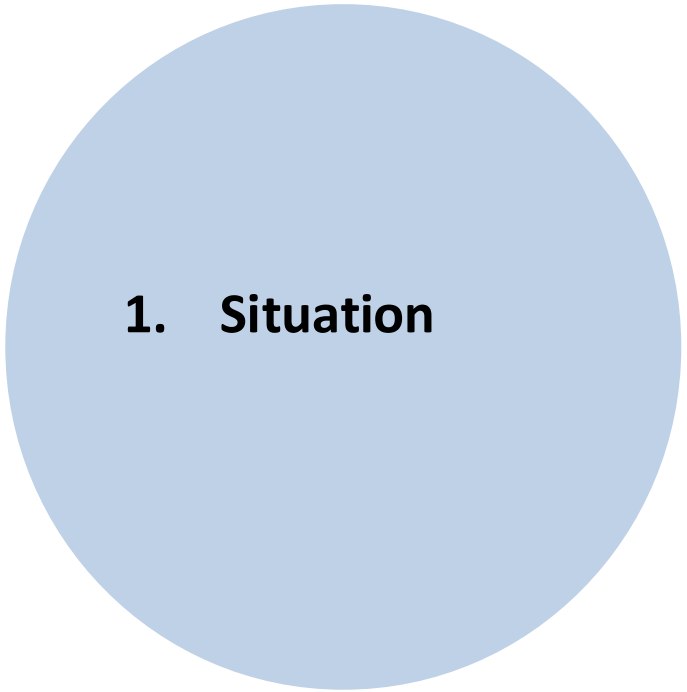
Outcome Spaces Framework

A structure to reflect on the different outcomes that a consortium aims to achieve:

- Changing a situation
- Generating new knowledge
- Learning new things



Outcome space



"Improvement within the 'situation' or field of inquiry"

The improvements can be bio-physical, economic, social, or institutional.

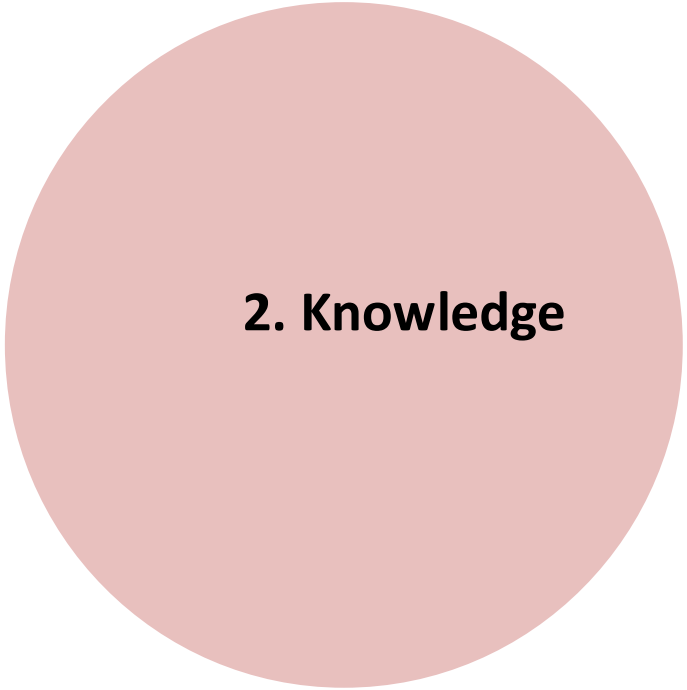
E.g. Municipality-supported circular economy model for organic waste into compost.

(Mitchell, 2015)

Outcome space

Scholarly knowledge ("is it true?") and practical forms of knowledge ("does it work?").

"Elements aiming insights to be accessible and meaningful to research participants and broader beneficiaries"



E.g. Knowledge on how to structure and easily calculate the economical viability of a circular-economy business. (Mitchell, 2015)

Outcome space

Outcomes mainly in form of mutual and <u>transformational learning</u> for researchers, project staff and project participants.

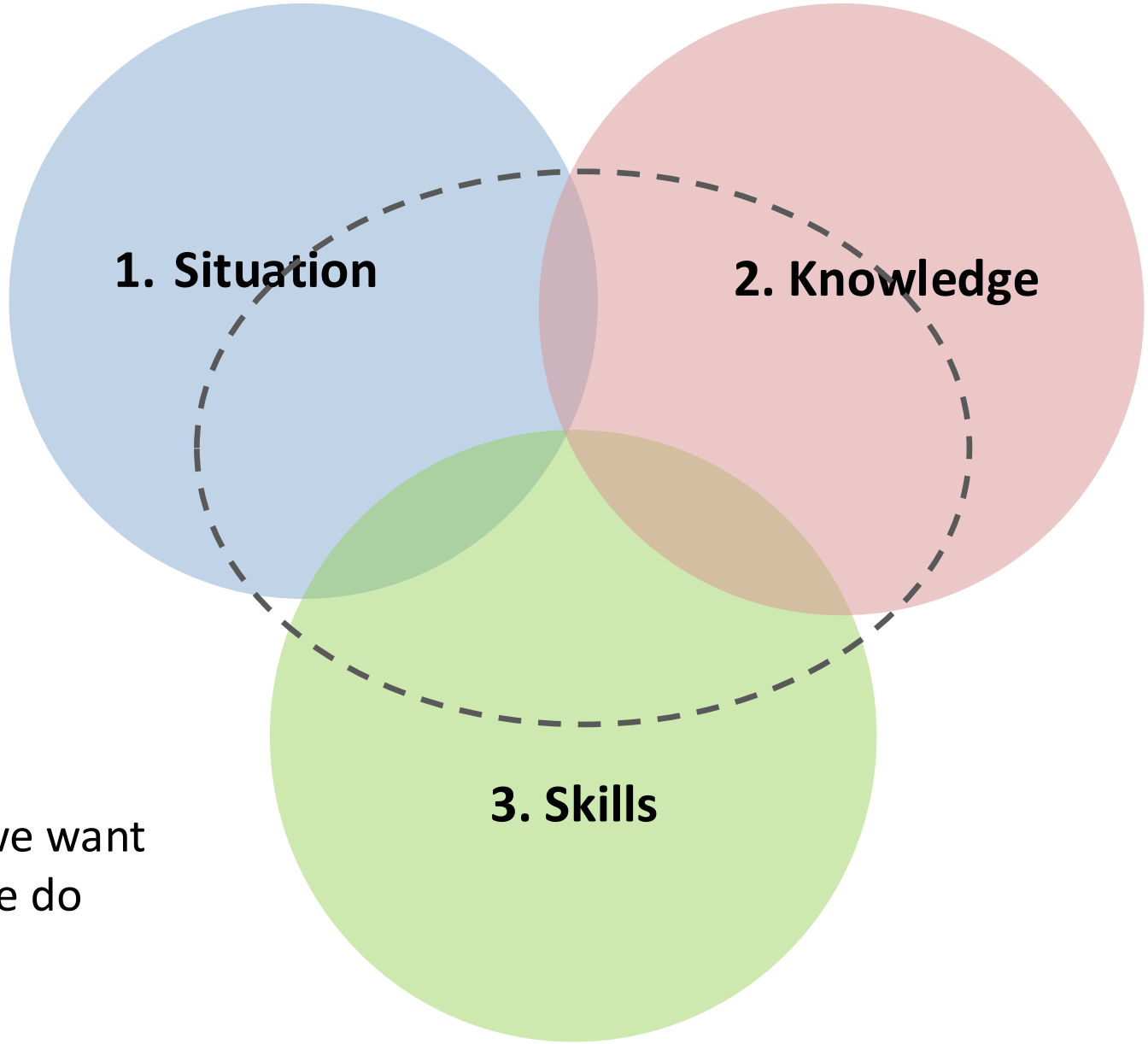
E.g. Trained specialists for generating high-quality compost in high quantities.

Depending on the audience, "skills" is a good substitute.

(Mitchell, 2015)

Outcome Space Framework

What do we want to change in the world? Which problem do we want to "solve»?



What new knowledge (that we don't yet possess) do we want to generate?

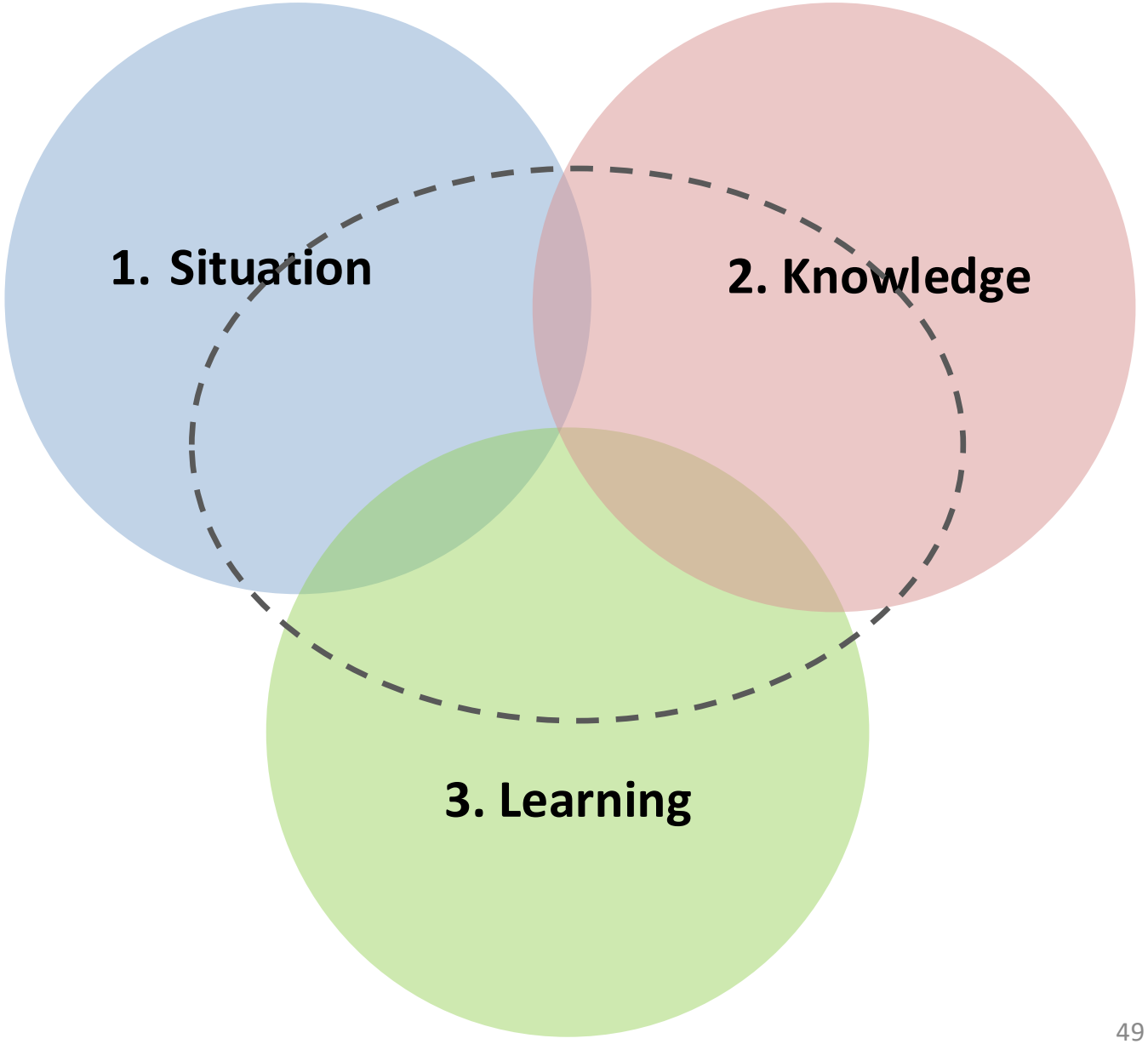
What skills do we want to learn (that we do not have yet)?

What do we want to do?

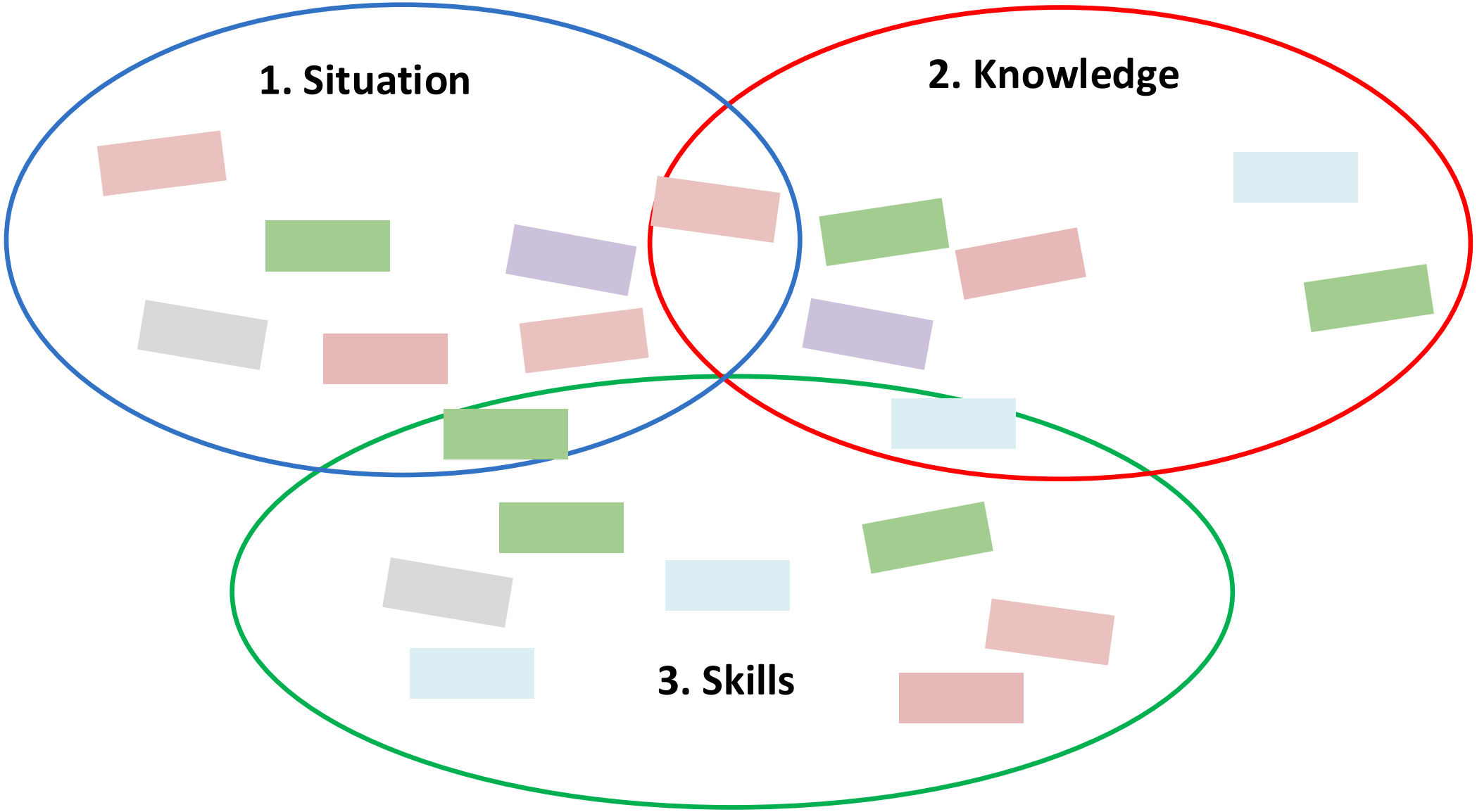
Outcome Spaces Framework

In the diagram:

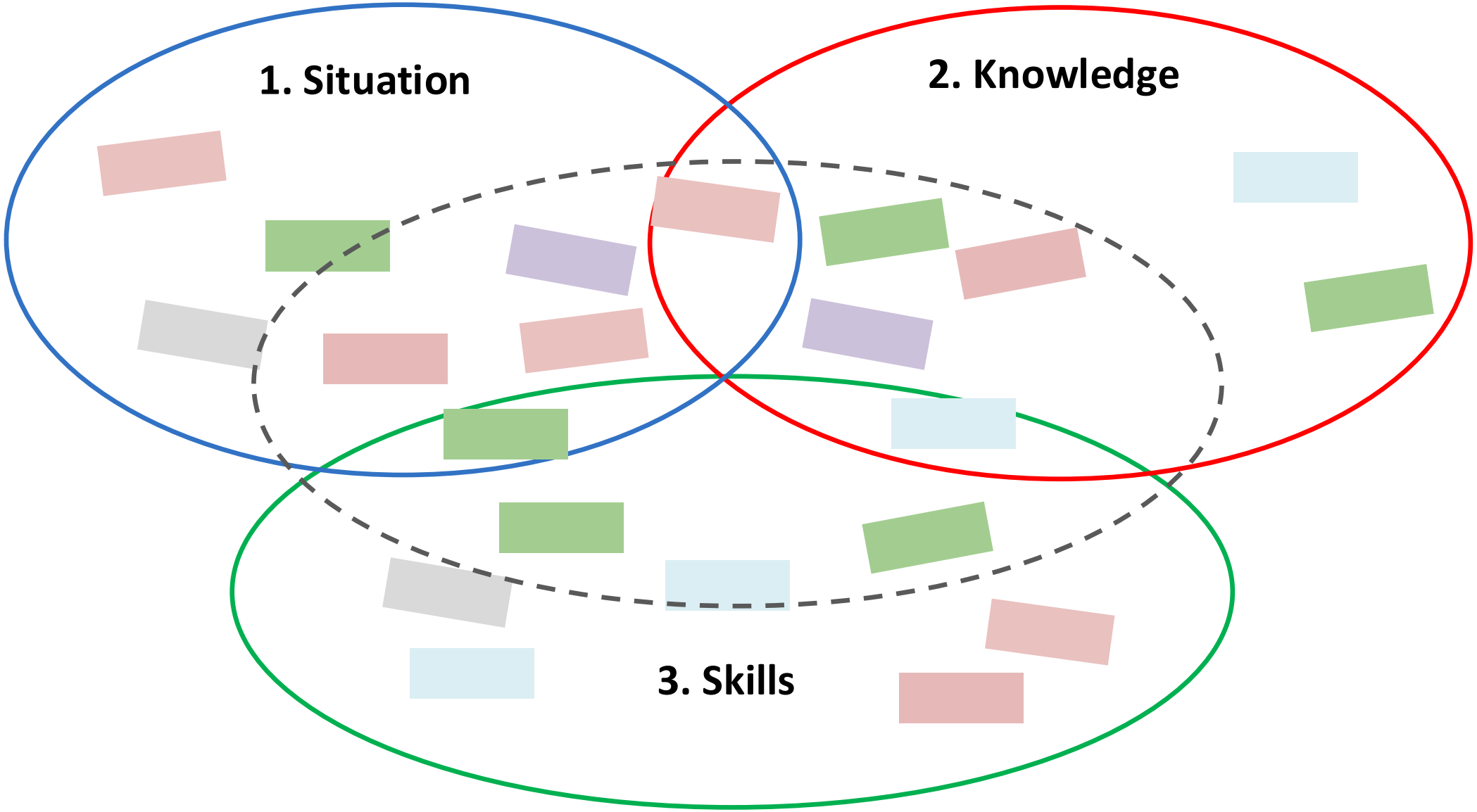
- Participants create, first for themselves, a series of sticky notes with elements relating to the situation, the knowledge, and the skills needed for them in their consortia.
- The participants then stick their various sticky notes onto a large poster with the three circles and finally explain their choices.
- The participants define what they want to address in their consortium (dashed circle).



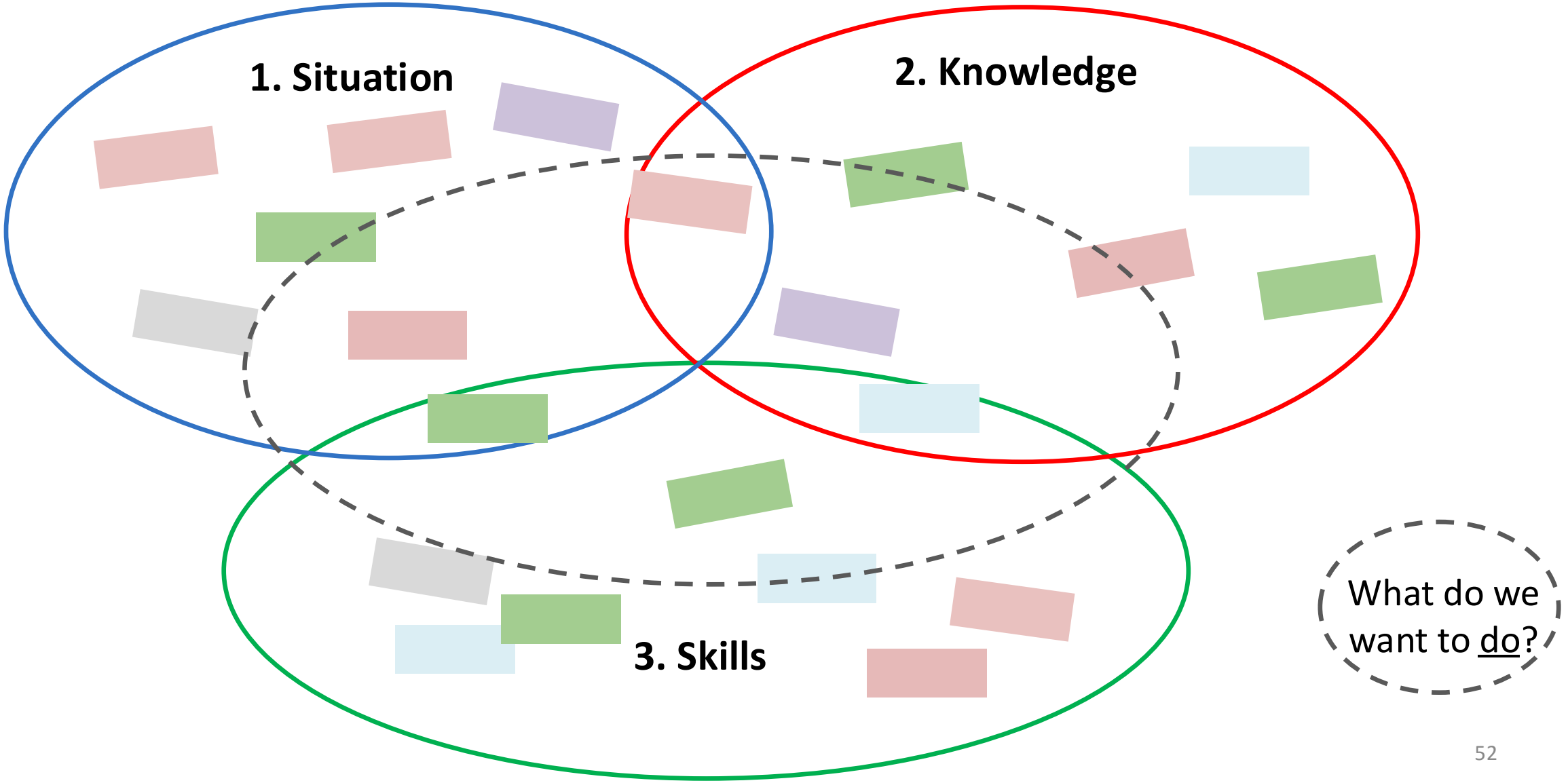
On (virtual) posters



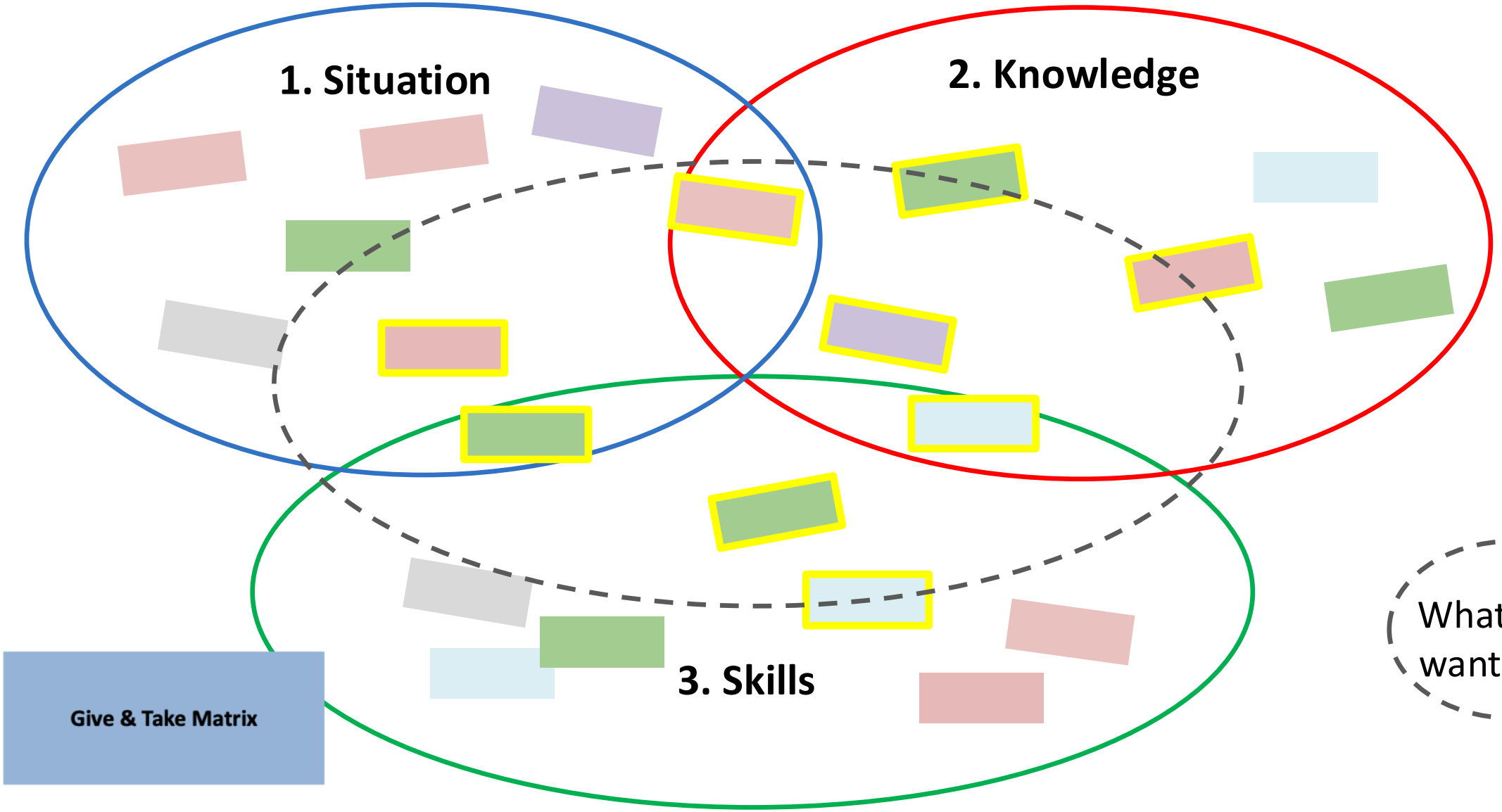
On (virtual) posters



On (virtual) posters



On (virtual) posters




Outcome Space
SITUATION
KNOWLEDGE
LEARNING
Clean & Green City Region + Healthy people
network and interdisciplinarity
HH understand and Know How to Sort Waste at Home
Increase (maximum possible) quantity of waste collected and recycled
Diversify the end products from waste recycling
INCREASED RECYCLING AND ACCEPTANCE OF INSECT THAT ARE SAFE & HYGIENIC
EMPOWERMENT OF YOUTH TO TAKE ADVANTAGE OF OPPORTUNITIES IN CE
SUSTAINABLE INNOVATIONS AT SCALE
Sorting/Collection/Drying of Waste in the entire Ruhengeri City
PUBLIC SECTOR POLICY DRIVEN CHANGE & SUPPORT TOWARDS CE
GENUINE PARTNERSHIP FOR SCIENTISTS AND PRACTITIONERS
personal development
Increase the productivity and quality of agricultural product
SCALING OUT OF INNOVATIONS BEYOND OUR CITY-REGION (MASHUNDAMI)
Improve government municipality engagement in waste management
APPROPRIATION OF RUWRES SUIT INNOVATIONS BY KEY STAKEHOLDER ACTORS
knowledge on actors and power
RUWRES INNOVATION UPSCALING APPROACHES ESTABLISHED
OUT-SCALING of RUWRES innovations to other Cities/Regions
Human waste recycling promotion
Behavioral Changes of people in Waste handling
Inputs for Policy Makers
Legal Framework developed and adopted around the use of Human waste in compost
teaching critical sciences
HACCP Flour is integrated in animal feed formulation by poultry farmers and feed manufacturers
TRANSFER OF SKILLS & KNOWLEDGE TO COMMUNITY MEMBERS

Outcome Spaces Framework

Why is it useful?

- To describe actors' preferred outcomes in a process
- To decide what a consortium aims to address and what not.

When is it useful?

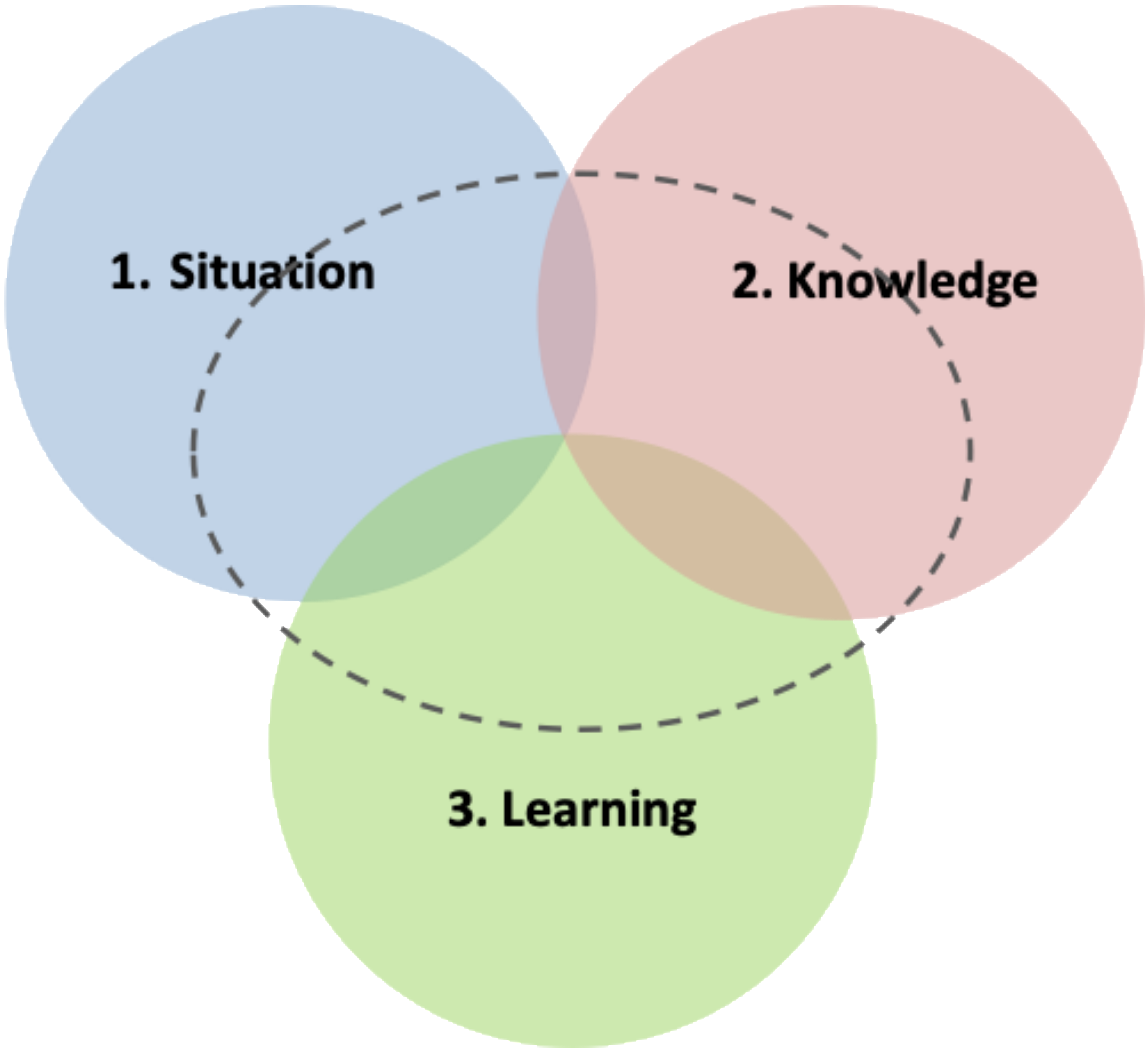
- At the beginning of a process
- At the middle of a process, for instance for evaluation

How can you tailor it?

- The concept of "learning" gets often confused with "knowledge", consider using "Skills"
- It can be combined with the design of a work-plan (who does what for when).

Where should you be careful?

- Many cards = many talks, better to stay brief (and moderate accordingly)



Give & Take Matrix

Who provides what?

https://naturalsciences.ch/co-producing-knowledge-explained/methods/td-net_toolbox/give_and_take_matrix

Give-and-Take Matrix

A structure to establish links between different actors and teams

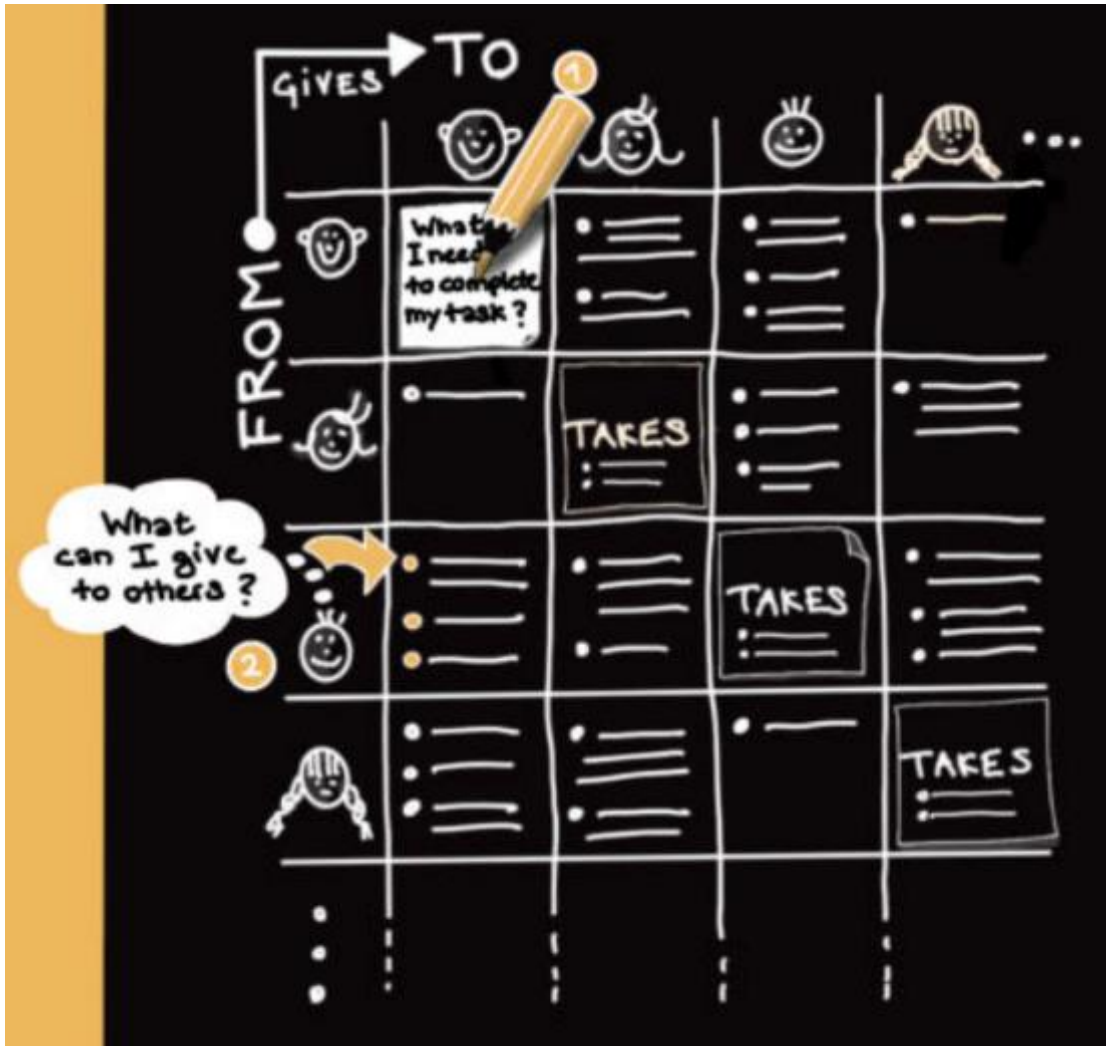
1. In groups, the participants brainstorm what whey can give and what they take out of a project or process.
2. The groups present after each other their different *gives* and *takes*.
3. The other groups check how far their own *takes* and *gives* correspond and react if necessary.
4. The participants acknowledge that the different items fit, and discuss on how to make the remaining discrepancies match.

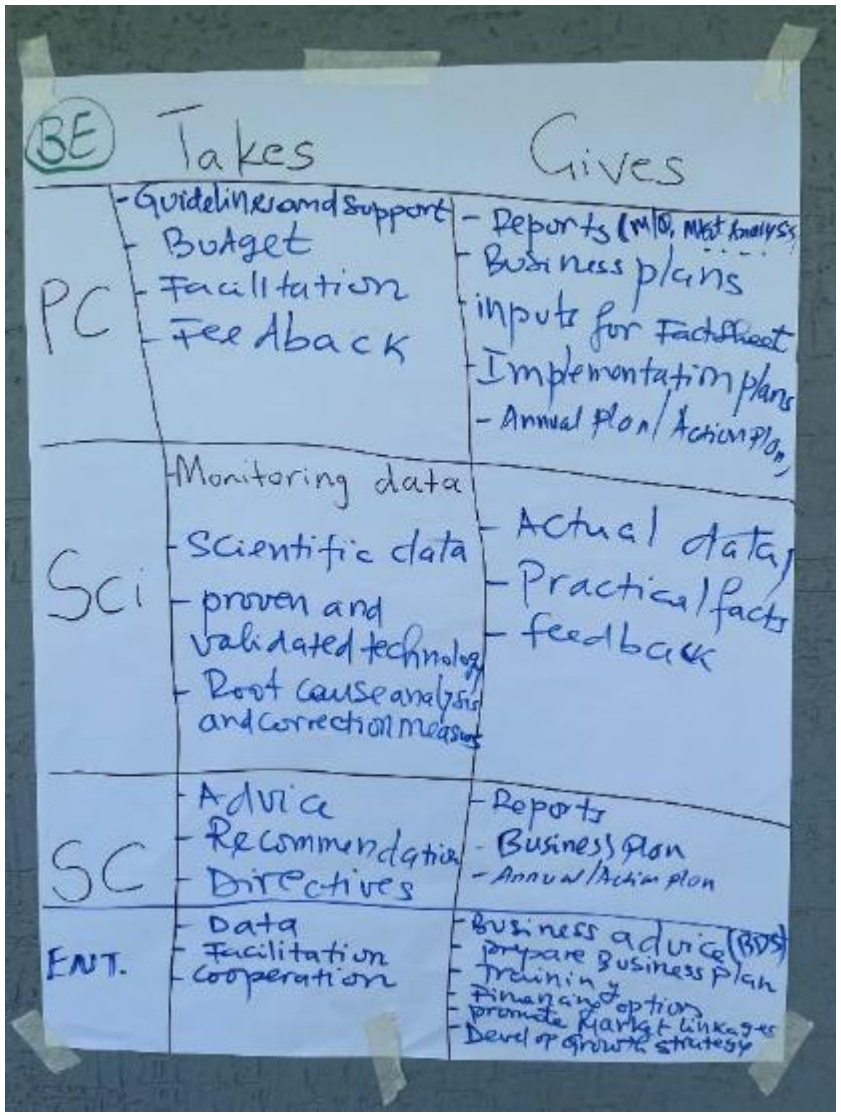
Give-and- take matrix

	Subproject 1 GIVES	Subproject 2 GIVES	Subproject 3 GIVES	Subproject 4 GIVES
Subproject 1 TAKES		GIVES / TAKES		
Subproject 2 TAKES				
Subproject 3 TAKES				
Subproject 4 TAKES				

Give-and- take matrix

	Subproject 1 GIVES	Subproject 2 GIVES	Subproject 3 GIVES	Subproject 4 GIVES	Subproject 5 GIVES	Subproject 6 GIVES
Subproject 1 TAKES		GIVES / TAKES				
Subproject 2 TAKES						
Subproject 3 TAKES						
Subproject 4 TAKES						
Subproject 5 TAKES						
Subproject 6 TAKES						





Give-and- take matrix

	Subproject 1 GIVES	Subproject 2 GIVES	Subproject 3 GIVES	Subproject 4 GIVES
Subproject 1 TAKES		GIVES / TAKES		
Subproject 2 TAKES				
Subproject 3 TAKES				
Subproject 4 TAKES				

Give & Take Matrix

Why is it useful?

- To clarify the different needs and contributions of a different actors or groups working together.
- To identify the intensity of collaboration in a consortium

When is it useful?

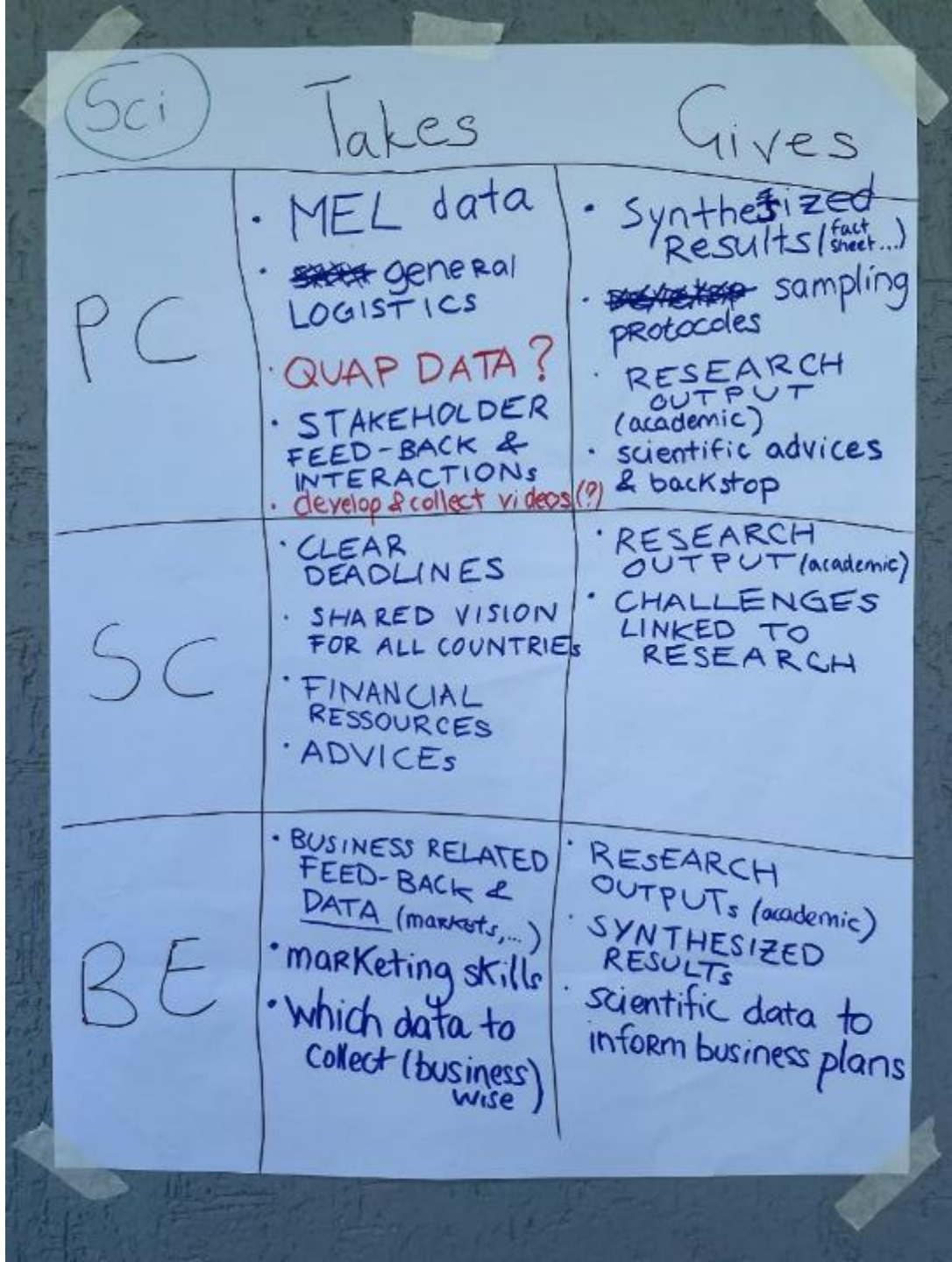
- At the beginning of a process
- At the middle of a process, to re-align the contributions of different actors or groups

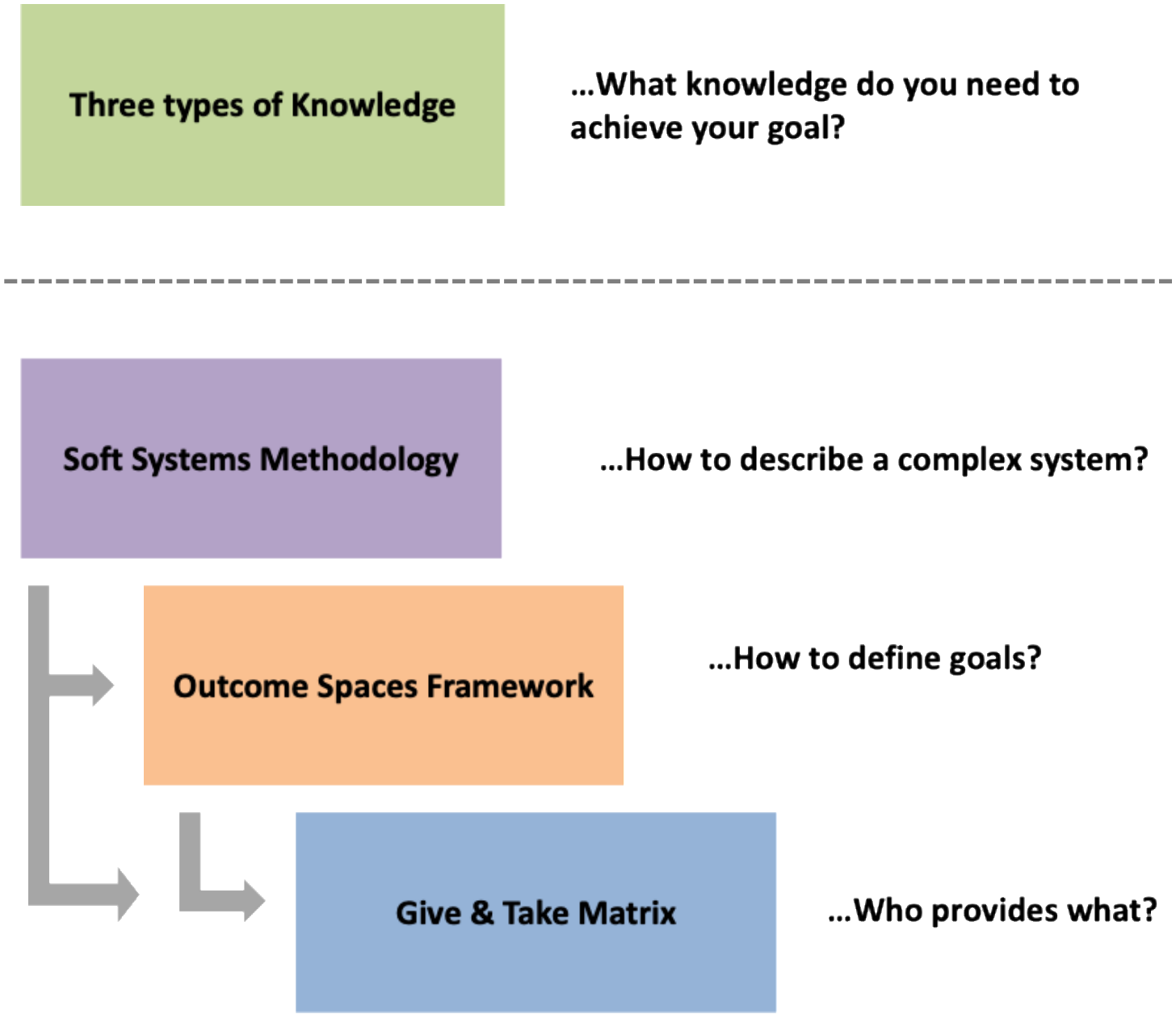
How can you tailor it?

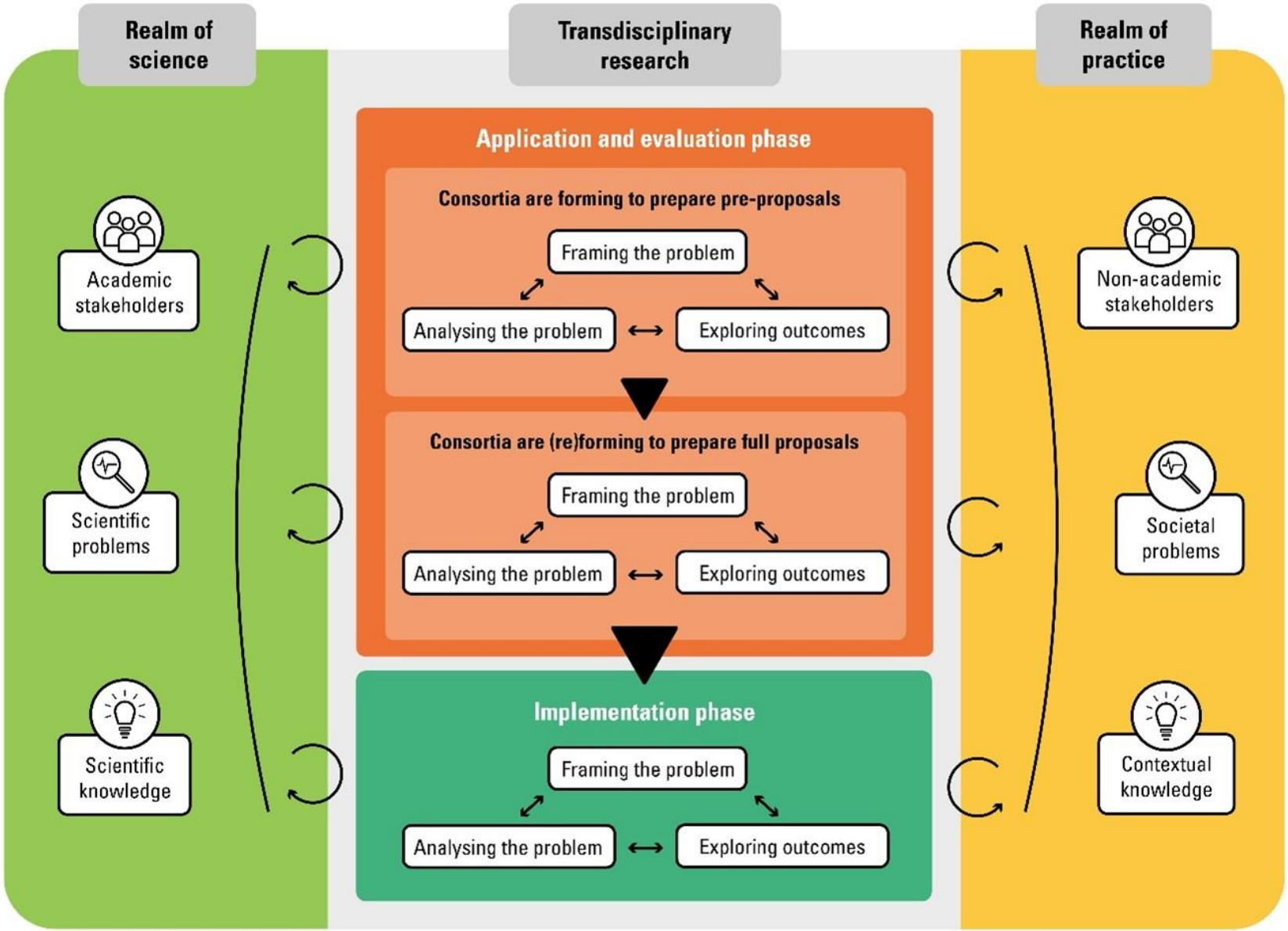
- It is easier to split the table in smaller tables for each group of actors and then merge them in a larger one. The merging is optional, and an array of smaller tables could fit too.
- It can be followed by a roadmap.

Where should you be careful?

- The focus should be on making sure that the gives and takes correspond well, and that the items' timelines also fit.




Three types of Knowledge
…What knowledge do you need to achieve your goal?
Soft Systems Methodology
…How to describe a complex system?
Outcome Spaces Framework
…How to define goals?
Give & Take Matrix
…Who provides what?



(SWEET, from Pohl et al., 2017)

Thank you!

Do you have any questions or comments?

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