Deliverable 3.3:
Scenario Modelling Report

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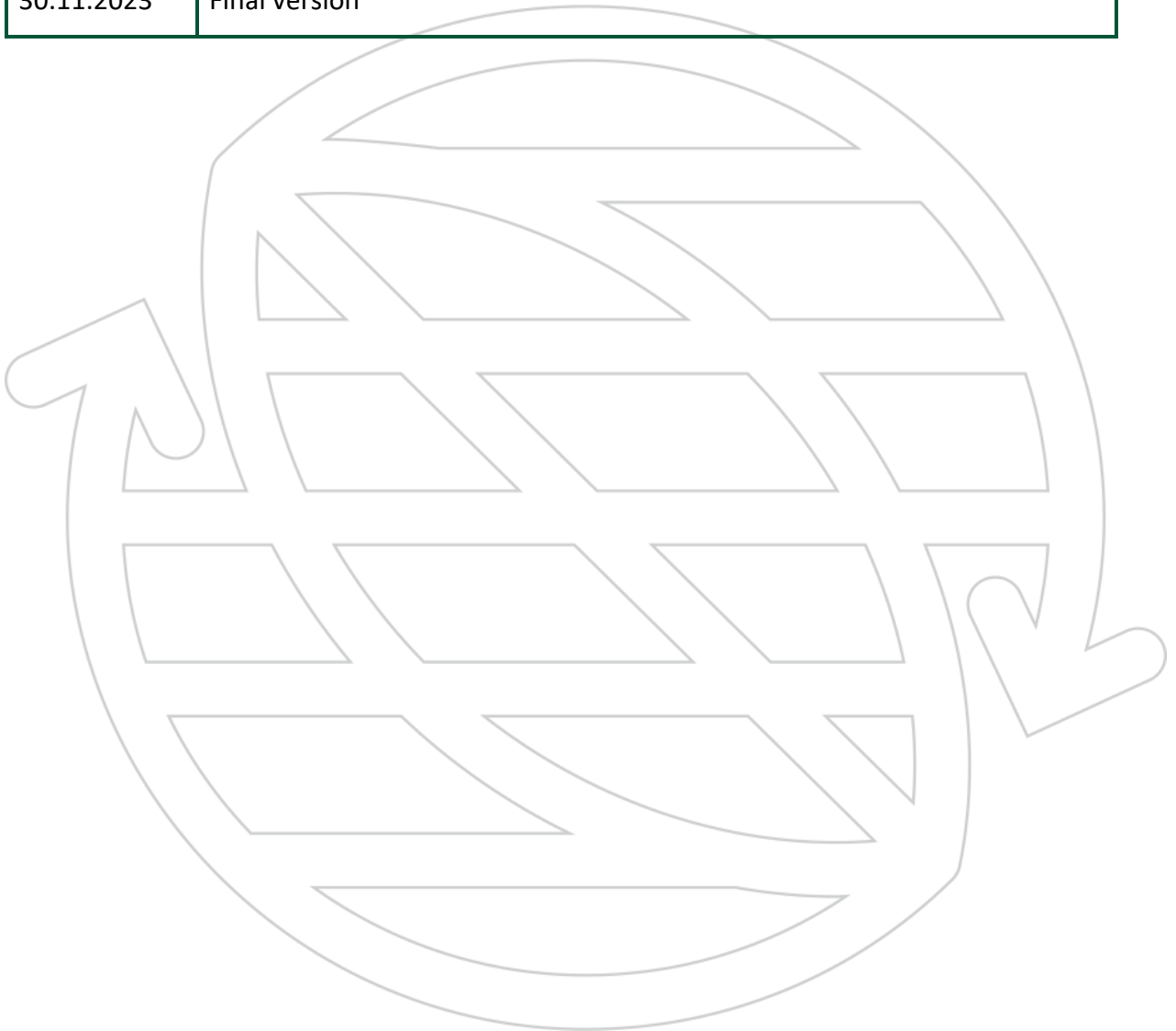
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1) Objective and structure of the report

The qualitative scenario modelling was carried out as a participatory workshop with external experts (from agriculture, nutrition, sustainability) and the stakeholders from the innovative case studies. The scenario workshop focuses on the field of deep sustainability levers in order to project the effects of these levers for the future. The intention behind it was to develop scenario-based assumptions and to define variants of future developments based on qualitative expert opinions. The scenarios define boundaries of development to highlight routes for the future-oriented design of food systems and serve as an orientation for future policy designs towards sustainable food production. This task should be viewed as an outlook at the end of FOODLEVERS. This task is one of three tasks within FOODLEVERS that are dedicated with the development of scenarios and whose results complement each other in terms of transformative change of food systems (see Table 1).

The report is divided into three parts. Section 2 outlines the conceptual background, defining the preconditions, framing and context underlying the scenario modelling. The methodological approach to conduct this study is presented in Section 3. Finally, Section 4 introduces the results obtained from the country-specific scenario workshops.

Table 1. Contribution of scenario-building tasks to assess levers for sustainable transitions.

Task	Contribution to assess levers for sustainable transitions	Realms of deep leverage addressed			Influence on realms of deep leverage
		re-think	re-connect	re-structure	
3.1 Stakeholder decision making model	Influence decision-making of individuals and communities forward a sustainable style of life and develop adequate policy actions			x	Contributes to an understanding of how knowledge flows through stakeholders of the systems.
3.2 Agent-based modelling	Experiments with different parameters corresponding to levers resulting in short-term and long-term changes	x		x	Defines a long-term perspective on how a value chain is structured and how it can be changed over time.
3.3 Qualitative scenario modelling	Formulates corridors of development for the future, working as guidelines for policy makers			x	Defines a common perspective and shared vision among all the stakeholders contacted and involved in the 3 years project.

2) Conceptual Framework: Preconditions, Framing and Context

Pre-conditions

Following the participatory workshop in Romania and a subsequent adaptation, the following pre-conditions were defined for the implementation of the scenario workshops:

Table 2. Pre-conditions for implementing the scenario workshops.

1.	Stakeholder groups	Farmers, policy makers, consultants, researchers but preferably also beyond these groups
2.	Number of stakeholders	approx. 15 participants MINIMUM: 6 participants, but preferably more (to be able to develop at least 3 scenarios with 2 people for each Scenario)
3.	Scope	national or regional food system
4.	Duration	3-4 hours
5.	Format	Though workshops in presence were preferred by the majority of the consortium members, the guidelines presented here are elaborated for an online format of the workshop, but can be equally applied to workshops in presence. It is up to the project partners to choose the format dependent on the availability of the national stakeholders, the budget and capacities.
6.	Number of scenarios	A minimum of 3 Scenarios should be developed by each partner country (max. 5 Scenarios) See chapter 3d.
7.	Time horizon	Develop scenarios for 2050

Conceptual framework of the workshop and link to FOODLEVERS

The workshop is built on the concept of backcasting scenarios. Countering the original approach of forecasting as outlined in the project proposal, this method allows to develop scenarios by starting from potential futures and moving backwards to the present (Figure 1). The fact that all three tasks within FOODLEVERS that are dedicated to developing scenarios are applying the forecasting perspective is the reason for choosing this technique as it might be a valuable amendment.

Backcasting is based on the idea to delineate future visions and draw pathways backward from these visions to the present (Dreborg, 1996; Robinson, 1990). If desirable futures are sought, backcasting scenarios allow to explore options, e.g. in technology or policy, that should be taken to reach those futures (Kishita et al., 2016).
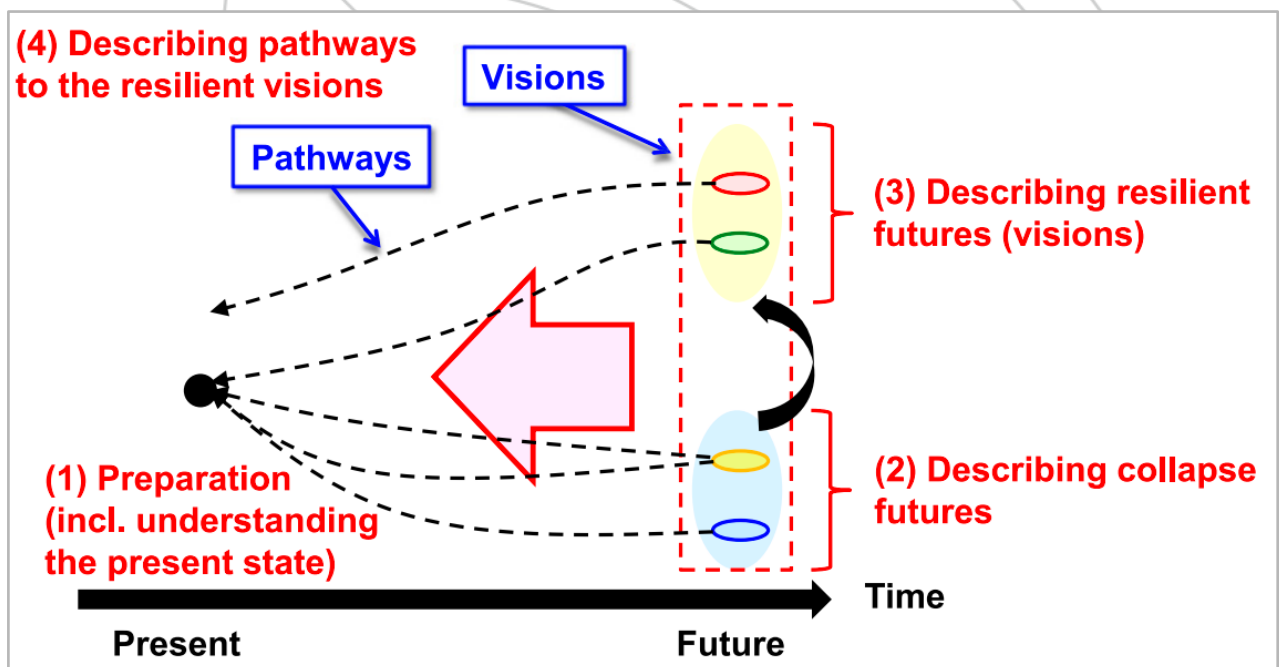
Figure 1: Example for the concept of backcasting scenario design for resilient and collapse futures. The numbers correspond to the steps in the scenario design process applied by (Kishita et al. 2017).

For FOODLEVERS' scenarios, backcasting involves three main stages, representing the framework underlying the workshops:

1) Development of **visions** pertaining to <u>desirable futures</u> (here: of the national/regional food system)
2) Elaborating on **what** needs to change at the <u>present state</u>, **how** and **by whom**
3) Develop a **storyline/pathway** to get <u>from the present to the visions for desirable futures</u>
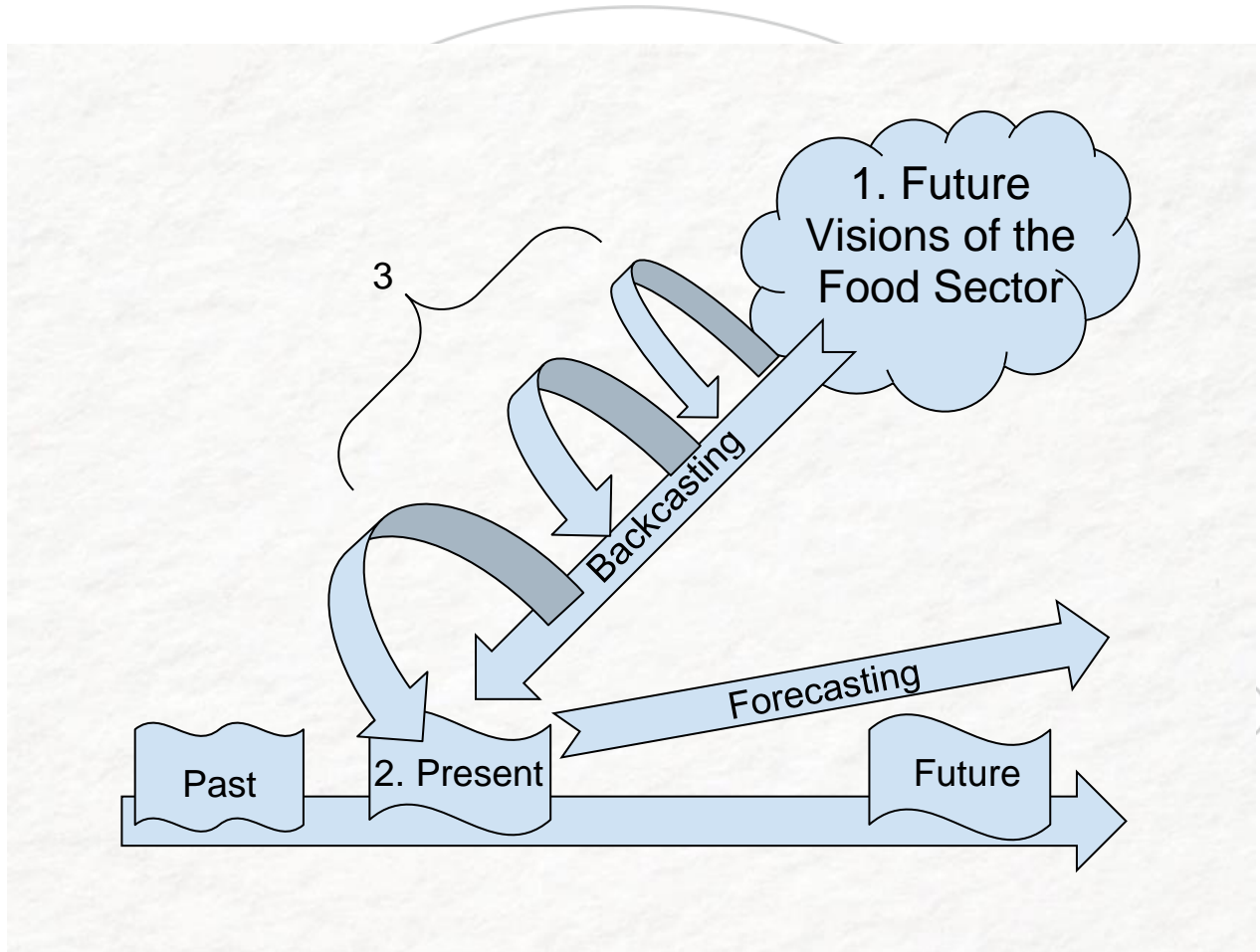
Figure 2: FOODLEVERS' approach for developing qualitative scenarios.

Hence, the scenarios developed in the workshops are normative scenarios. They aim at characterising possible futures of European food systems to meet pre-defined objectives. By doing so, a portfolio of scenarios will be developed, reaching different objectives through different approaches, i.e. leverage points or 'chains of leverage' (Fischer & Riechers 2018). Each scenario will be described by using the respective futures to **backcast from 2050 to now** to identify potential transition pathways.

3) Common implementation guidelines

a) General aim and structure of scenario workshops

Common scenario development guidelines have been designed to sure consistent results from the participating partners. They were developed for conducting online workshops. However, the project partners could equally apply them to workshops in presence.

For the fixation of results, a template on the online platform Mural was developed with guiding questions that defined the structure of the workshop (see Annex). This included:

1. **Identifying key objectives and desired level of ambition/targets:** What are the most important objectives of the scenario? What is the level of ambition/target for each of these objectives?
2. **Identifying key components in the scenario:** What does this mean in terms of how the food system needs to be re-organised to meet the vision of your scenario? What are key components, how is each component characterised and what are relations between them?
3. **Summary of results:** What is the story of your scenario? Considering the objective(s) given and level of ambition/targets, how is the food system organised to meet the objectives in your scenario?

The scenario development workshops were designed to last no longer than 4 hours. They were organized in a common design as shown in Table 3.

Table 3. Agenda for the implementation of FOODLEVERS' qualitative scenario workshops.

1. Welcome. What is at stake, who is in the room. Objectives of the workshop.	15 min
2. Setting the scene (plenary). Presenting the pre-defined Visions.	20 min
3. Introduction to break out sessions (plenary).	15 min
Break	*10 min*
4. First break out group session. • Identifying key objective(s) and desired level of ambition • Identifying key components in the scenario, characterising potential changes on these components and articulating a coherent scenario in view of developing the top line narrative.	90 - 120 min
Break	*10 min*
5. Second break out group session. Preparing a summary of the developed scenarios	20 min
6. Wrap up.	10 min
Total Time Required:	**max. 3h 40m**

b) Setting the Scene

To generate a common sense of understanding and to provide a starting point for the workshop participant, the researchers were asked to present:

1. ***Characteristics of the national/regional food system*** (e.g. scope, Import/Export, Specialisation, drivers and challenges etc.)
2. **Pre-defined Visions:**
   - The visions (see chapter 3c) are based on the principle of backcasting, meaning the participants had to ponder and discuss the necessary developmental steps that need to take place for the visions to be realised.
   - They were presented in a highly stylized (and, to some extent, "caricatural") way to make them as "comprehensible" as possible – with a strong focus on agriculture and food production – while many aspects are left quite open/undetermined.
   - The objective of the workshop was to complexify, develop (in particular with respect to other dimensions: food industry, retail, consumption/diets, trade…) and nuance them, while keeping a certain level of contrast between them (role of facilitators)
   - The question of spatial heterogeneity is not addressed per se at this stage (but will be later in the process). The objective is to identify key principles for farming systems/processing/retail/diets that might apply in different ways depending on the geographical contexts.
   - As this is all about developing normative scenarios (e.g. objective-driven scenarios), big "drivers" like climate change, geopolitics, energy prices (to name a few) are not considered in this first step. Yet, "boundary conditions" can be identified during the workshop.

⚐ Remark: If the partners have decided that the visions will be defined by the workshop participants themselves, the presentation of pre-defined visions was replaced with the first task for the participant to define their own visions.

c) (Pre-)Defining the underlying visions

The guidelines left it open to the implementing project partners, how to define the visions for the scenario workshops. Three options have been proposed:

1. Pre-definition of the visions
   a. Choose predefined visions from the suggestions below
   b. Pre-define your own country-specific visions
2. Definition of visions by workshops' participants

Exemplary VISIONS

1. **Climate-based Vision 🏙️:** Desertification and Climate Change make for an agricultural landscape in which the cultivation and production of food is limited to certain areas only. This development makes for a spatially very restricted and highly specialised food production whose focus is on producing carbon efficient food with an overall reduction of meat production. Scaled up production makes for a strong top-down distribution of power in the production chain.

2. **Biodiversity-based Vision 🌱:** The food production sectors overall aim is to preserve and enhance biodiversity for stabile use and future development. With only a marginal effect of land-usability change due to climate change, the sharing of land for multiple crop and food production by different actors is facilitated by governmental actors. With an increased land efficiency, interfarm competition is minimised implying territorial de-specialisation in favour of less intensive and biodiversity boosting practices. Joining knowledge and workforce capacities fosters a development of economies of scope in which the reciprocal provision of resources is promoted.

3. **Boosting production through Innovation 🤘:** Maximising production outputs through ecological, economic and social innovation while strongly increasing climate and carbon efficiency of food production. The "rebound-effect" can lead to subsequent reduction of efficiency potential. The technological fixes lead to strong farm & food processors concentration, and require dietary changes with regard to the range of offered products.

4. **Rural renaissance through food production 😎🌿:** Food production becomes a key driver of rural renaissance, attracting young people and dynamizing rural and marginal areas. Small scale and family farms are favoured over highly concentrated structures, with potential contrasting effects on the production, processing and distribution of food depending on the areas and the type of food production.

5. **Consumption-based Vision 💬:** Reduced or changed consumption by changes in consumer behaviour or thinking, including reducing food waste, the consumption of resource, conflict or transport intensive foods (e.g. animal products, avocados).

d) Developing scenarios

To answer the key guiding questions (see 3a), break-out groups were formed based on the preferences expressed by the participants and on the number of participants. Each group was supposed to work on one vision that served as the starting point for creating a scenario. The groups were supported by one or more researchers that facilitated the workflow.

For detailed structure of the breakout session see Chapter 6, Annex.

4) Results: Qualitative Scenarios

a) Germany

SCENARIO 1

Biodiversity-based Vision

The food production sectors overall aim is to preserve and enhance biodiversity for stabile use and future development. With only a marginal effect of land-usability change due to climate change, the sharing of land for multiple crop and food production by different actors is facilitated by governmental actors. With an increased land efficiency, interfarm competition is minimised implying territorial de-specialisation in favour of less intensive and biodiversity boosting practices. Joining knowledge and workforce capacities fosters a development of economies of scope in which the reciprocal provision of resources is promoted.

1. Key objectives and desired level of ambition/targets

What are the most important objectives of the scenario? What is the level of ambition/target for each of these objectives?

Primary objectives & related ambitions:

Preserve and Enhance Biodiversity in Food Production	Implement agroecological practices that prioritize native and diverse plant species.	Establish protected areas within agricultural landscapes to serve as biodiversity hotspots.	Integrate genetic diversity preservation into crop breeding programs to maintain resilient and diverse plant varieties.	Facilitate partnerships between farmers, scientists, and conservation organizations to monitor and enhance biodiversity.
Facilitate Multi-Actor Land Sharing and Cooperation	Develop and implement land-sharing agreements and policies that encourage collaborative land use among different food production actors.	Create digital platforms to facilitate transparent and efficient land-sharing arrangements.	Establish local agricultural councils or committees to mediate land-sharing conflicts and promote fair distribution.	Provide incentives and subsidies for cooperative farming models that enhance biodiversity and sustainable land use.
Promote Economies of Scope and Resource Reciprocity	Foster knowledge exchange and capacity-building programs among food producers, researchers, and policymakers to enhance resource efficiency.	Develop regional resource hubs where surplus resources can be shared and redistributed within the agricultural community.	Implement policies that incentivize resource-sharing practices, such as collaborative seed banks and equipment cooperatives.	Encourage the establishment of food production clusters that optimize resource utilization and reduce waste through symbiotic relationships among different actors.

Secondary objectives & related ambitions:

Enhance Climate Resilience in Food Production

- Promote the adoption of climate-smart agricultural practices, such as conservation tillage and agroforestry, to build resilience to changing weather patterns.
- Invest in research and development of climate-resilient crop varieties and livestock breeds.
- Provide training and technical support to farmers for implementing climate-resilient practices.

Foster Community Engagement and Empowerment

- Create platforms for community involvement in decision-making processes related to food production and land use.
- Support local initiatives that aim to strengthen food sovereignty and community-led agricultural projects.
- Implement educational programs that promote sustainable food production practices and raise awareness about the importance of biodiversity conservation.

Ensure Equitable Access to Resources and Benefits

- Implement policies that address land tenure and ownership issues to ensure fair access to productive land for all food producers.
- Monitor and enforce regulations to prevent monopolization of resources and promote fair competition.
- Establish transparent supply chain systems that prioritize fair pricing and distribution of agricultural products, benefiting both producers and consumers.

2. **Identifying key components in the scenario:** How must the food system be re-organised to meet the vision of your scenario? What are key components, how is each component characterised and what are relations between them?

1 Production

★★★★★ **Diversified and Agroecological Practices:** Farmers would adopt agroecological practices, prioritizing native and diverse plant species. This would lead to a shift away from monoculture farming towards more diversified and resilient agricultural systems.

★★★★★ **Genetic Diversity Preservation:** Crop breeding programs would incorporate genetic diversity preservation, resulting in a wider range of resilient and adapted plant varieties. This promotes biodiversity within the production system.

★★★ **Climate-Resilient Farming:** Climate-smart agricultural practices would be implemented to enhance resilience to changing weather patterns, ensuring that production can withstand climate challenges.

3 Processing

Adapted Processing Methods: Food processing methods would need to be adapted to accommodate a wider variety of crops and products, reflecting the increased diversity in agricultural production.

★★ **Resource-Efficient Techniques:** Processing facilities would implement resource-efficient techniques to minimize waste and environmental impact.

2 Distribution

★★ **Transparent and Collaborative Supply Chains:** Transparent supply chains would be established, prioritizing fair pricing and distribution of agricultural products. This would promote equitable access to resources and benefits.

★★ **Efficient Logistics:** Distribution networks would become more efficient and adaptable to accommodate the diverse range of products coming from different farms.

Local Food Hubs: Regional resource hubs would emerge to facilitate the sharing and redistribution of surplus resources within the agricultural community.

4 Consumption

Diverse Diets: With increased biodiversity and availability of diverse crops, consumers would have access to a wider range of foods, potentially leading to more healthy diets and resilient consumption patterns once shortages of products arise

Note: The numbers indicate in which logical order the components are affected by the scenario. Stars indicate the key components.

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3. Summary of results:

What is the story of your scenario? Considering the objective(s) given and level of ambition/targets, how is the food system organised to meet the objectives in your scenario?

Primary Objective:

In this reimagined food system, the primary objective revolves around preserving and enhancing biodiversity while ensuring stable and sustainable food production for the future. This transformation begins at the production stage, where farmers embrace agroecological practices, nurturing a diverse array of native plant species and reducing reliance on chemical inputs. This shift not only fosters biodiversity but also fortifies soil health, creating a resilient foundation for agricultural endeavors.

A pivotal change occurs in land use policies, facilitated by governmental actors. Collaborative land-sharing agreements become the norm, allowing different actors to cultivate crops on the same land parcels. This collaborative approach minimizes land fragmentation and maximizes overall land efficiency. The result is a mosaic of diversified crops, carefully tended by a collective effort, and contributing to the broader tapestry of biodiversity.

As climate change exerts its influence, the agricultural sector responds with climate-smart practices, ensuring resilience in the face of shifting weather patterns. Robust research and development efforts yield climate-resilient crop varieties and livestock breeds, safeguarding against environmental uncertainties.

Secondary Objective:

Moving downstream to processing, food processors adapt to a more diverse range of crops, necessitating investments in innovative processing technologies. Traceability systems become paramount, guaranteeing the authenticity and quality of products originating from this diverse agricultural landscape. Resource sharing emerges as a key strategy, with processors engaging in collaborative efforts, optimizing resource utilization, and minimizing waste.

Distribution networks undergo a significant transformation, favoring local and regional cooperation. These networks prioritize regional supply chains, enhancing the efficiency of resource allocation. Resource hubs and cooperative systems are established, becoming the linchpins of this reconfigured distribution network. These hubs facilitate the seamless allocation and redistribution of resources, ensuring that surpluses are redirected where they are most needed.

Empowered communities play a central role in this reorganized food system. They actively engage in decision-making processes, influencing how food is produced and distributed. Community-led initiatives take root, bolstering food sovereignty and community-driven agricultural projects. Equitable access to resources and benefits becomes a guiding principle, ensuring that small-scale and marginalized food producers receive the support and training they need to thrive.

At the consumption stage, consumers are connected to the vibrant tapestry of this reinvigorated food system. They partake in the benefits of enhanced biodiversity, savoring a diverse array of sustainably produced foods. Transparent supply chain systems guarantee fair pricing and distribution, benefiting both producers and consumers alike.

In this reimagined food system, the objectives of biodiversity preservation, collaborative land use, climate resilience, and community empowerment converge to shape a resilient, equitable, and sustainable food supply chain for generations to come.

Key components and their main features

Biodiversity-Centric Farming Practices:
Main Features: This component emphasizes agroecological practices that prioritize native and diverse plant species. It involves reducing the reliance on chemical inputs, diversifying crops, and implementing conservation measures to enhance biodiversity and soil health.
Interrelation with Other Components:
Production: This component is at the heart of the production stage. It directly influences the diversity of crops grown and the health of the soil, setting the foundation for the entire agricultural process.
Processing: Processors must adapt to handle a wider range of diverse crops that result from biodiversity-centric farming practices. This component provides the raw materials for processing.
Distribution: The availability of diverse crops influences the offerings within the distribution network. It may lead to specialized distribution channels for specific types of produce.

Collaborative Land Use and Policies:
Main Features: This component involves the facilitation of land-sharing agreements and policies by governmental actors. It encourages multiple actors to use the same land for different types of crop production. This minimizes land fragmentation and maximizes overall land efficiency.
Interrelation with Other Components:
Production: Collaborative land use directly impacts the way crops are grown and managed. It allows for a more diversified and efficient use of land resources.
Processing: Processors may need to adapt to handle crops from shared lands, potentially requiring coordination and resource sharing between different processing facilities.
Distribution: Land use policies influence the availability and allocation of land for different actors. This affects the distribution of crops within the system.

Climate-Resilient Agriculture:

Main Features: This component focuses on adopting climate-smart agricultural practices that make production more resilient to changing weather patterns. It includes the development and implementation of practices like conservation tillage, agroforestry, and the use of climate-resilient crop varieties.
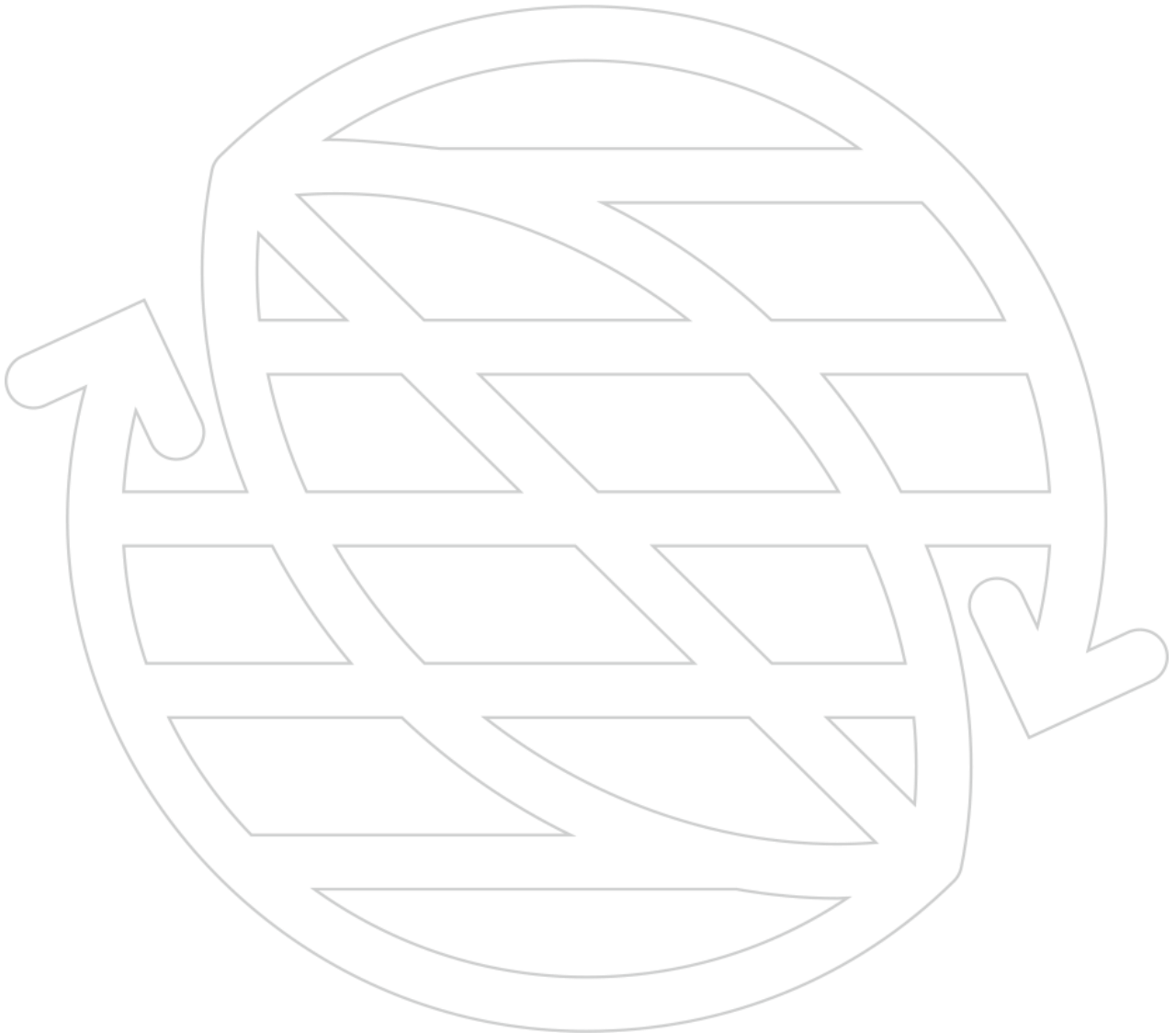
Interrelation with Other Components:

Production: Climate-resilient practices directly impact how crops are grown and managed in response to changing climate conditions. This ensures the stability of production over time.

Processing: Processors need to adapt to handle crops that are produced using climate-resilient practices, potentially requiring adjustments in processing techniques and equipment.

Distribution: Climate-resilient agriculture contributes to a more stable and reliable supply of crops, which can positively impact the efficiency and stability of the distribution network.

These three key components are interconnected and collectively form the foundation of the reorganized food system. They work together to promote biodiversity, efficient land use, and climate resilience, ultimately contributing to a more sustainable, equitable, and resilient food supply chain.
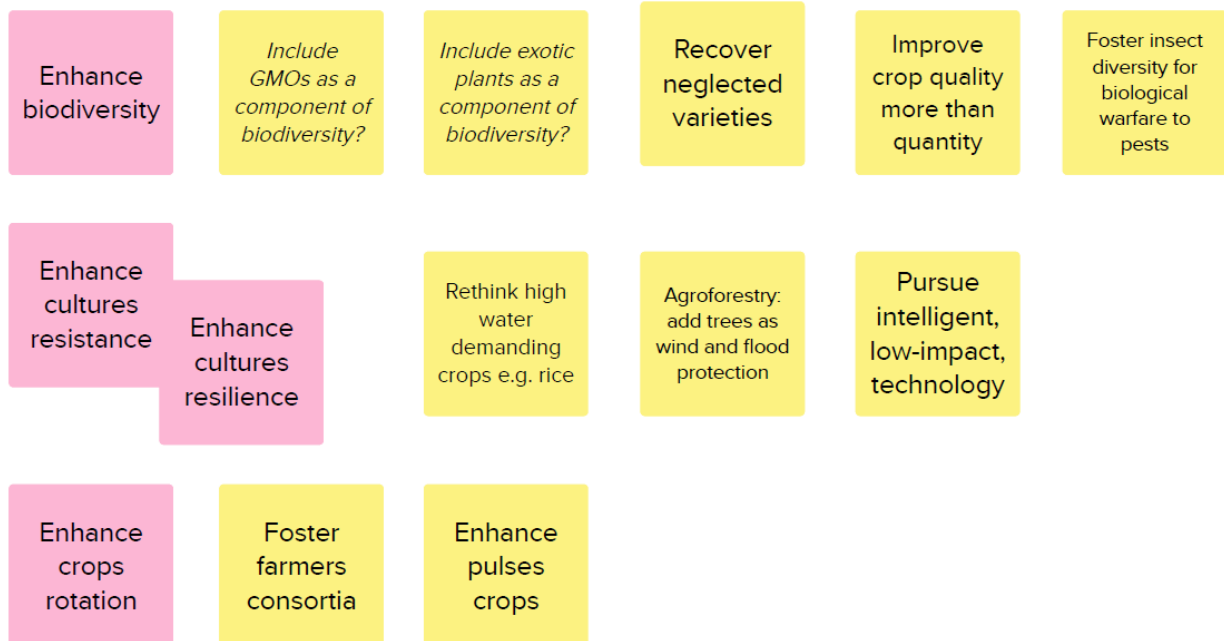
b) Italy

SCENARIO 1

Biodiversity-based Vision

The food production sectors overall aim is to preserve and enhance biodiversity for stabile use and future development. With only a marginal effect of land-usability change due to climate change, the sharing of land for multiple crop and food production by different actors is facilitated by governmental actors. With an increased land efficiency, interfarm competition is minimised implying territorial de-specialisation in favour of less intensive and biodiversity boosting practices. Joining knowledge and workforce capacities fosters a development of economies of scope in which the reciprocal provision of resources is promoted.
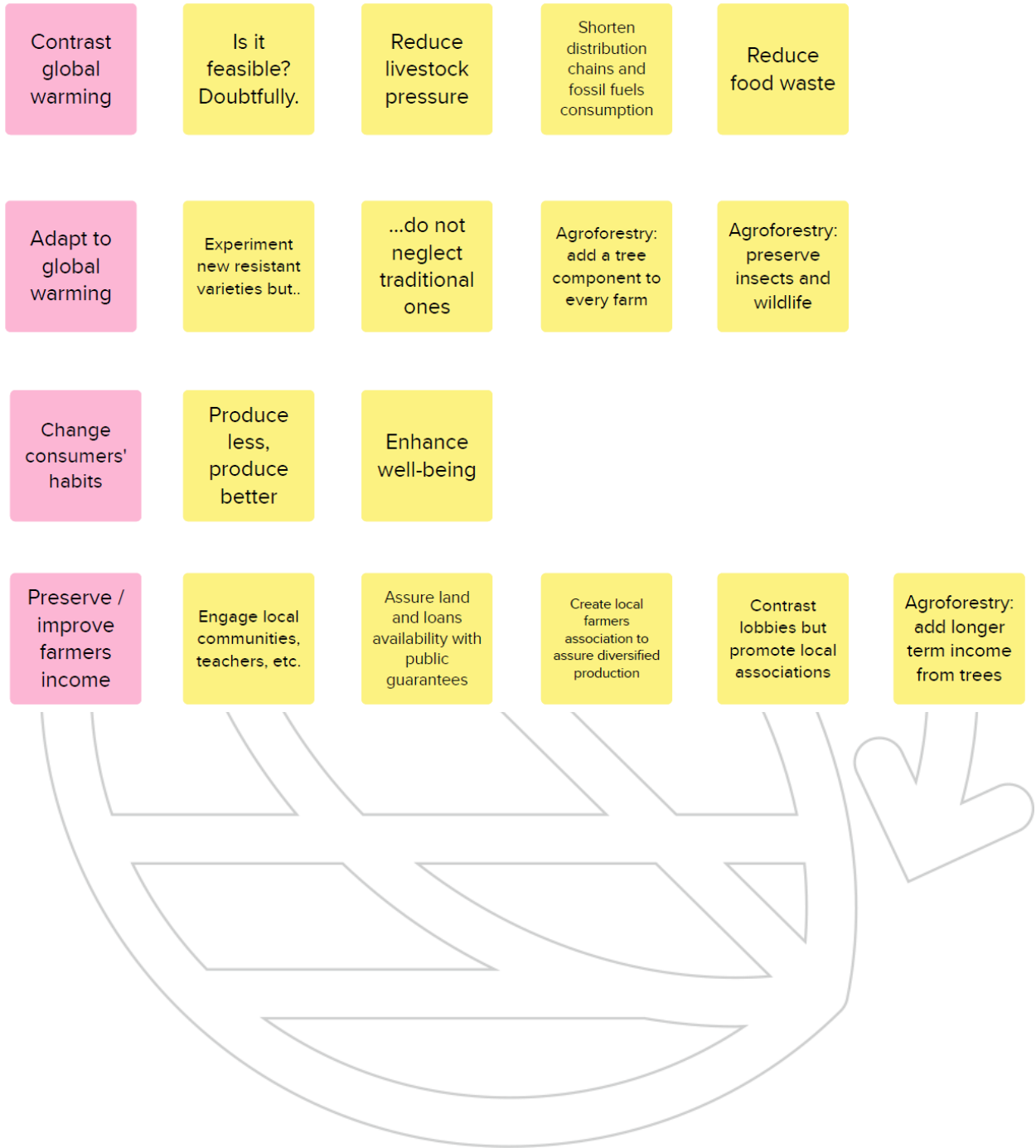
1. Key objectives and desired level of ambition/targets

What are the most important objectives of the scenario? What is the level of ambition/target for each of these objectives?
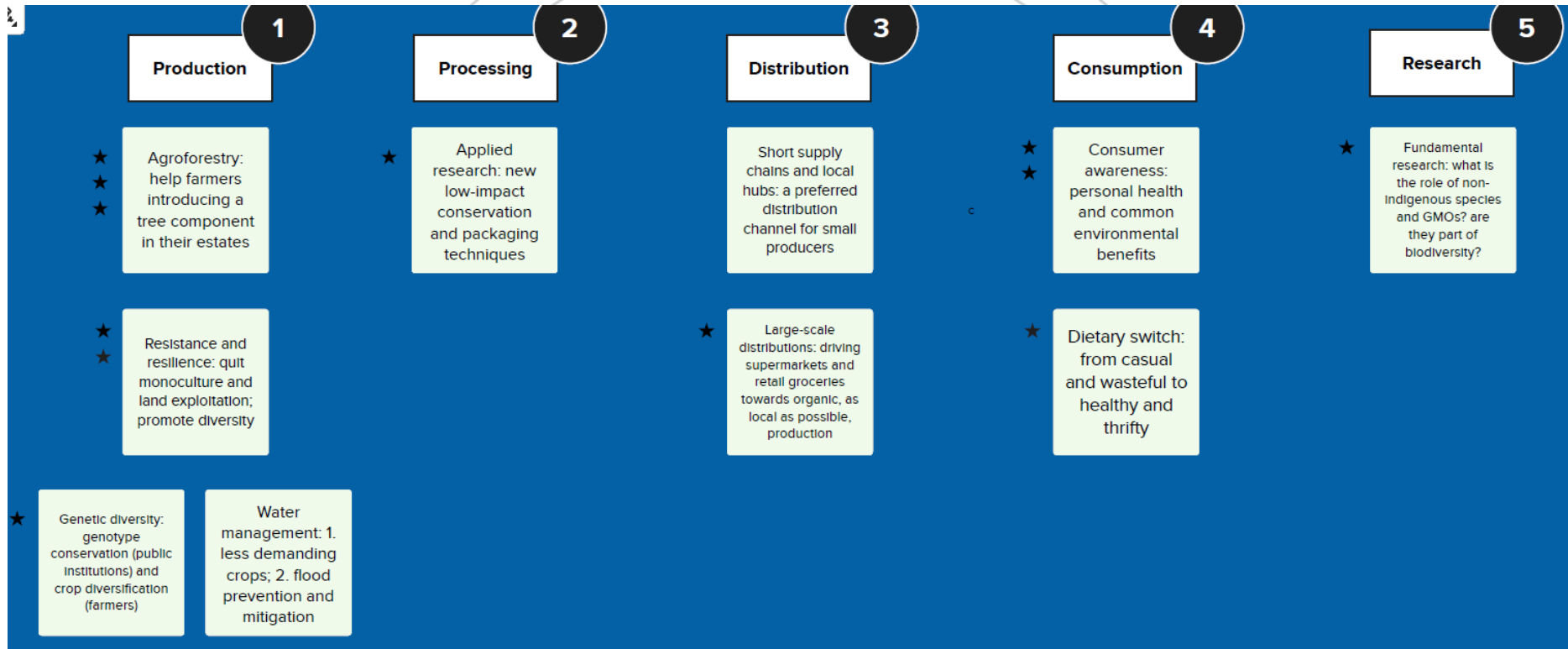
Primary objectives & related ambitions:

| Enhance biodiversity | *Include GMOs as a component of biodiversity?* | *Include exotic plants as a component of biodiversity?* | Recover neglected varieties | Improve crop quality more than quantity | Foster insect diversity for biological warfare to pests |

| Enhance cultures resistance | Enhance cultures resilience | Rethink high water demanding crops e.g. rice | Agroforestry: add trees as wind and flood protection | Pursue intelligent, low-impact, technology |

| Enhance crops rotation | Foster farmers consortia | Enhance pulses crops |

Secondary objectives & related ambitions:

Contrast global warming	Is it feasible? Doubtfully.	Reduce livestock pressure	Shorten distribution chains and fossil fuels consumption	Reduce food waste
Adapt to global warming	Experiment new resistant varieties but..	...do not neglect traditional ones	Agroforestry: add a tree component to every farm	Agroforestry: preserve insects and wildlife
Change consumers' habits	Produce less, produce better	Enhance well-being		

Preserve / improve farmers income	Engage local communities, teachers, etc.	Assure land and loans availability with public guarantees	Create local farmers association to assure diversified production	Contrast lobbies but promote local associations	Agroforestry: add longer term income from trees

2. **Identifying key components in the scenario:** How must the food system be re-organised to meet the vision of your scenario? What are key components, how is each component characterised and what are relations between them?

Note: The numbers indicate in which logical order the components are affected by the scenario. Stars indicate the key components.

3. Summary of results:

What is the story of your scenario? Considering the objective(s) given and level of ambition/targets, how is the food system organised to meet the objectives in your scenario?

Primary Objective:

The external constraint to our imagined scenario is food sufficiency at a global scale.

We strongly believe that biodiversity is a major driver towards crop resistance and resilience. Good faming practices include improving soil health in terms of microbiological components (bacteria and fungi) and producing a variety of food and by-products, e.g biofuels.
in this scenario local, national and EU institutions cooperate harmoniously towards an organic transition in land management, promoting biodiversity as a pivotal component of an ideal product system. Long distribution chains are discouraged but allowed, for the sake of food sufficiency.
In this scenario every single citizen/consumer makes informed choices, based on scientific evidence and health. To this end, public institutions take care of school and adult food education, as part of national (hopefully, European) health systems.
Despite the best practices described, we think that a reversing climate change is beyond the reach of the best possible practices, however, a lot can be done through biodiversity in terms of global warming's effects adaptation and mitigation.

Secondary Objective:

In a less ideal scenario, we discussed the role of some easily feasible interventions (maybe too optimistic?) for improving biodiversity, resistance and resilience.
Agroforestry (i.e. the inclusion of a more or less important woody component in agricultural land management) is a strong driver towards biodiversity, providing a wealth of ecosystem services, from log and fruits production to carbon and dust sequestration to landscape amelioration.
Education at all levels is pivotal towards a green transition; this incudes fundamental and applied research, in particular there is the need of new intelligent technologies, unlike the fashionable smart agriculture, nowadays mostly devoted to the mass production of a few varieties. As for fundamental research, we discussed (inconclusively) the role of GMOs and alien species with respect to biodiversity.
Practically speaking, it does not seem unreasonable to have public institutions and bank cooperation for long term loans and subsidies, at present too short-timed, in particular when agroforestry is involved.
In our imagined renewed production system there is a strong reduction in livestock pressure on the ecosystem and the distribution chain. We have no expertise on fishery and insect farming.

Key components and their main features

Climate change effects mitigation: We believe that biodiversity is pivotal factor towards a more resistant, resilient and equitable food production. Biodiversity includes crops and trees as well as the soil microbiota, an emerging research topic. Diversity should be pursued also in livestock breeding, gradually transitioning to a niche sector. Biodiversity should always be accompanied with the highest possible reduction of environmental impact, in terms of carbon and water footprint.
Biodiversity can be promoted to 'Landscape diversity', minimising the distances from users to ecosystem services, not just from customers to produce. Farmers networks could play a key role with this respect.

Citizen awareness: Biodiversity means a wider choice to the consumers. An informed choice is required, though. This could be achieved in multifold ways. First of all education, at all levels, including school, citizen science, public health systems, fundamental and applied research. Then comes the role of associations, farmers networks could share crop rotations and local food hubs could induce an economy of scale and reduce food waste.

Harmonised procedures: We all live following rules, but coping with EU, national and regional rules, sometimes contrasting ones, is frustrating and time consuming. There is the need for medium and long term subsidies with clear goals and appropriate time spans. Furthermore, actions and subsidies should clearly pave the way towards organi production, waste reduction and environmental sustainability.
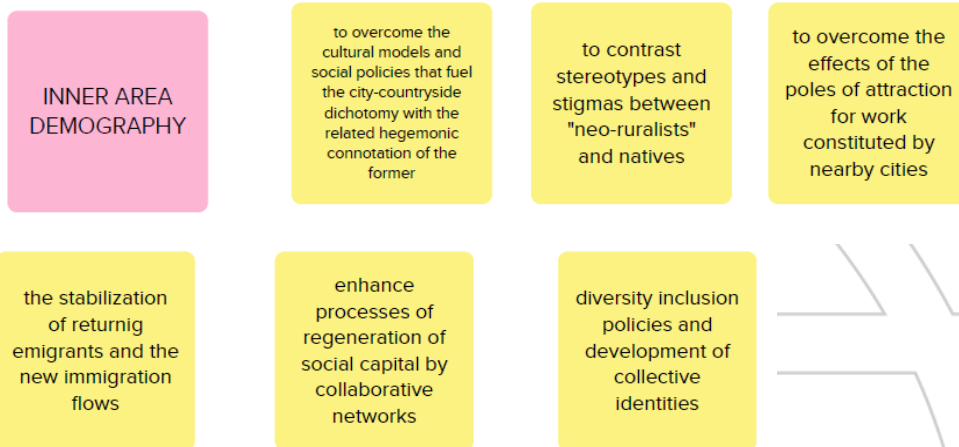
SCENARIO 2

Vision: Rural renaissance food production

Food production becomes a key driver of rural renaissance, attracting young people and dynamizing rural and marginal areas. Small scale and family farms are favoured over highly concentrated structures, with potential contrasting effects on the production, processing and distribution of food depending on the areas and the type of food production.

1. Key objectives and desired level of ambition/targets

What are the most important objectives of the scenario? What is the level of ambition/target for each of these objectives?
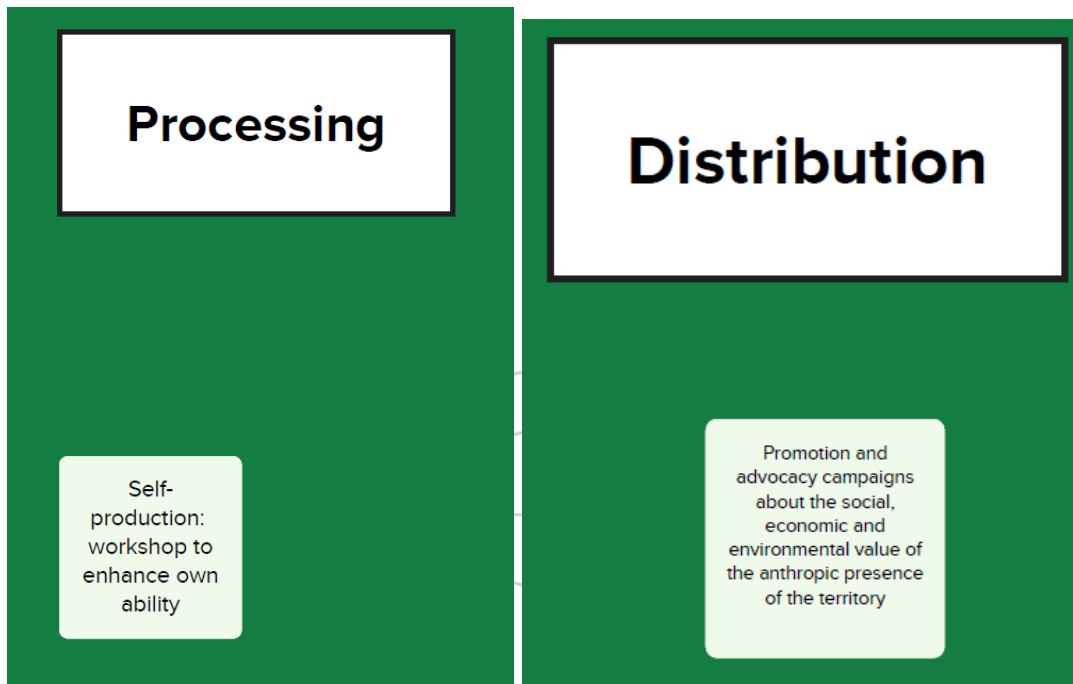
Primary objectives & related ambitions:

INNER AREA DEMOGRAPHY	to overcome the cultural models and social policies that fuel the city-countryside dichotomy with the related hegemonic connotation of the former	to contrast stereotypes and stigmas between "neo-ruralists" and natives	to overcome the effects of the poles of attraction for work constituted by nearby cities
	the stabilization of returnig emigrants and the new immigration flows	enhance processes of regeneration of social capital by collaborative networks	diversity inclusion policies and development of collective identities

Secondary objectives & related ambitions:

FARMER'S QUALITY LIFE	enhance self-production for: food, tools and material for farmer's activity, personal care	valorization of ecosystem services for the preservation of local territory and global environment	existence of protected areas from the risk of land grabbing

2. **Identifying key components in the scenario:** How must the food system be re-organised to meet the vision of your scenario? What are key components, how is each component characterised and what are relations between them?

Note: The numbers indicate in which logical order the components are affected by the scenario. Stars indicate the key components.

Processing	Distribution
Self-production: workshop to enhance own ability	Promotion and advocacy campaigns about the social, economic and environmental value of the anthropic presence of the territory

3. Summary of results:

What is the story of your scenario? Considering the objective(s) given and level of ambition/targets, how is the food system organised to meet the objectives in your scenario?

Key components and their main features

In 2050, southern Etruria, the territory that straddles the administrative borders of Lazio, Tuscany and Umbria, which is the area of our exercise in building future scenarios, will have reversed the trend of depopulation and economic marginalization that characterizes it, together with the other internal areas of the peninsula, for decades now. It will represent an alternative model to development centered on industrial production and metropolitan densification. The medium-high hill towns will return to being largely inhabited, welcoming the exodus from the surrounding cities caused by the rise in temperatures caused by climate change and the spread of existential attitudes and sensitivities closer to the socio-cultural models experienced in the rural world. The phenomenon is already underway: it will gain numerical consistency and therefore socio-political importance. The small towns will offer the structures and services necessary for real access to and exercise of human and citizenship rights: there will be cultural and educational facilities (an update of country schools capable of also including informal education opportunities present in the community); socio-health facilities (community hospitals and forms of local medicine capable of collaborating with the social capital present in the prevention of diseases and the promotion of health); public "on-demand" mobility services for the reconnection of rural areas and their connection with nearby railway and motorway transfer stations. Those creations of "Smart cities" that are appropriate to contain environmental impact, improve energy efficiency, support the circular economy and work/life balance will be available. In the houses scattered throughout the area, which will have recovered, together with the attached agricultural lands, their full socio-economic and cultural functionality, there will be new declinations of the traditional extended peasant families (including, in addition to the nuclear family, for example the people interested in the Worldwide Opportunities on Organic Farms) and the multi-family units that once cohabited the large farmhouses (intentional communities, ecovillages, eco-communities). The communities inhabiting the southern Etrurian towns will be made up of a mix of natives and non-natives, with very different identity profiles held together by feelings of belonging which may be historically rooted and of continuity, or the result of recent "conversions" of unpredictable duration. Inter-ethnic mixing and cultural syncretism will be of particular importance and "ecosophy", i.e. the ethical-political attention systematically articulated towards the environment, the social and the individual, will be widely widespread.

SCENARIO 3

Consumption-based Vision

Reduced or changed consumption by changes in consumer behaviour or thinking, including reducing food waste, the consumption of resource, conflict or transport intensive foods (e.g. animal products, avocados).

1. **Key objectives and desired level of ambition/targets**

What are the most important objectives of the scenario? What is the level of ambition/target for each of these objectives?

Primary objectives & related ambitions:

SHORT VALUE CHAIN	diversified productions	final price which also takes into account environmental damage	characteristic value of the product: relationship, social and cultural values	to comunicate in the final price the economic values of the social and environmental impact
	farmer's markets in urban areas	farmer's markets in rural areas	food education campaigns: courses and events	infrastructure investments: • wiring • streets maintenance • public services to businesses
	Training on short value chain for the producers	valorization of the halfways products of the production process	initiative of "experiential" tourism in the farms	production linked to various local needs and decreased risk of food poisoning
	recycling and trade of the halfways products of the production process for other productions			

Secondary objectives & related ambitions:

COLLABORATIVE NETWORK

qualification of social capital towards cooperation

integrated economic development

functional and complementary startups

animation of a community of good practices

Shared assumption of practical responsibilities

precise roles within the network

production and distribution synergies through inter-territorial networks

2. **Identifying key components in the scenario:** How must the food system be re-organised to meet the vision of your scenario? What are key components, how is each component characterised and what are relations between them?

Note: The numbers indicate in which logical order the components are affected by the scenario. Stars indicate the key components.

Consumption 4

Public infrastructural strategies 5
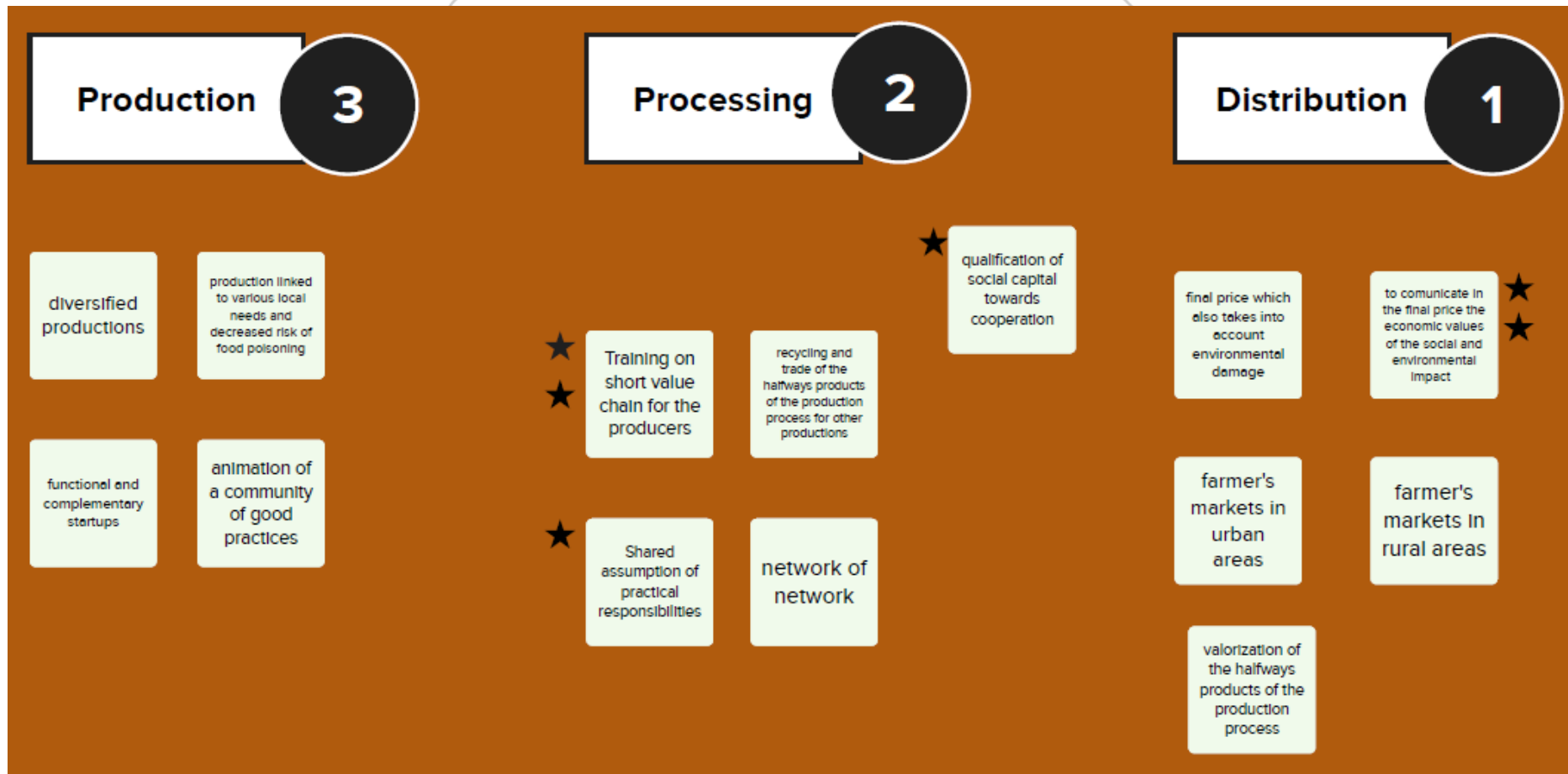
food education campaigns: courses and events

initiative of "experiential" tourism in the farms

infrastructure investment
- swiring
- streets maintenance
- public services to businesses

integrated economic development

3. Summary of results:

What is the story of your scenario? Considering the objective(s) given and level of ambition/targets, how is the food system organised to meet the objectives in your scenario?

Primary Objective:

In creating a scenario where the consumer's point of view is primary, the value chain of the product is important. in 2050 the consumer will not be an individual who passively buys products by filling the shopping cart but will be an active protagonist of the production process. this will happen thanks to initiatives that will lead him to directly understand the ways and methods of production and to take economic responsibility for these processes by respecting a price that is transparent for the different links that make up the production chain.
The consumer, informed of the social, economic and environmental value of every single product on sale, through direct contact with the producer, will also have greater attention in reducing the waste of products which, once their biography is known, are also loaded with emotional connotations .

Secondary Objective:

Producers, to meet the demands of more informed and participatory consumers, and to counter the effects of extreme events that endanger crop yields, will join together in networks organized on a territorial scale. These will cover the needs of the population to which they are addressed and will be respectful of the agronomic vocations of the area by choosing traditional crops that respect the characteristics of the cultivation land and respecting social practices. At a national level they will join as many networks that can cover the demand for products not included in traditional local agriculture.

Key components and their main features

Consumer awareness: choice of products with low environmental impact, which respect the work of those who produce them, which do not produce waste or which we in turn turn into a product. The product purchased is no longer an indicator of one's social status but becomes an opportunity for socialization within a world characterized by direct relationships born from a need for humanity after the great phase of social networks.

The producers n 2050, producers, understanding the importance of working as a team for the survival of their business and the territory, will have united in networks that will cover large spaces in the social and economic sectors. Cooperativism will no longer be left to the spontaneity of the individual within the group but will be organized to better respond to the countless challenges of the future such as food sovereignty and survival.

c) Belgium

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SCENARIO 1

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Vision: Rural renaissance food production

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Food production becomes a key driver of rural renaissance, attracting young people and dynamizing rural and marginal areas. Small scale and family farms are favoured over highly concentrated structures, with potential contrasting effects on the production, processing and distribution of food depending on the areas and the type of food production

1. Key objectives and desired level of ambition/targets

What are the most important objectives of the scenario? What is the level of ambition/target for each of these objectives?

Collective reflection: Setting goals for the proposed scenario.
- The ILVO-team initially thought this theme would not be relevant for Flanders, as even 'rural' areas are quite densely populated and depopulation is not an issue here.
- However, some stakeholders insisted on discussing this theme though, for the following reasons: **Problem definition**:
  o Most villages have become 'dormitory villages', with the majority of inhabitants working or going to school outside the village (in Flanders, larger towns or industrial zones are never far away);
  o In these smaller villages specialty stores (bakery, butcher, etc.) are no longer present
    (while supermarkets are omnipresent along the roads connecting towns);
  o Farmers produce for the long supply chain, not for their own community;
  o Even rural villages have become a kind of food desserts;
  o Also many services (e.g. medical) are no longer available in every village;
  o Social structures in the villages are deteriorating, local anchoring has been lost.
- However, most villages still have some facilities, such as a village school (although only primary school mostly), a football ground with canteen, a youth movement room, a parish hall or community centre, (a church that is not used much anymore), etc.
- We do not need upscaling of existing farms, but more smaller farms that are again reconnected with the local community.

Goal for 2050:
Main goal:
In each village in Flanders we have a **food/social hub**, where the local community has access to fresh, healthy, diversified food, from local producers.
Secondary goals:
Food is central in the hub, but it also has social services;
Through the hub local anchoring and connections at the local level are restored.

2. **Identifying key components in the scenario:** How must the food system be re-organised to meet the vision of your scenario? What are key components, how is each component characterised and what are relations between them?

Components to achieve the goal:
- Local producers have **access to land**: The municipality makes land available to farmers. Land is not necessarily owned by those who produce on it.
- A **location** for this hub, preferably central and starting from / connected to any facilities that are still present, such as the primary school, sports or cultural facilities (e.g. football canteen, youth house, parish hall, even a church being repurposed).
    - Given consumers' lack of time, it must be worth their while / attractive to come to the hub. Therefore, connection of the food hub to other services is sought.
    - Multiple people (e.g. doctors) / services (e.g. elderly care, culture, postal and parcel pick-up, etc.) use the same hub.
- Food takes a central place in the **municipalities' policy** for the villages.
- The hub can become a place to cook together, to garden together, etc. This should all be embedded in one system, instead of in separate small projects.
- A group of people take up a central role around food in the village. Complementary functions are needed, as an individual farmer cannot perform all functions needed in a hub.
    - Volunteer work may be important. Organisation, administration, bookkeeping, care functions, do not all need to be done by paid workers, but adapted regulations for volunteers are needed.
- if food prices in the hub are higher than in the supermarket, the difference must be eliminated or substantiated. The first by taxing 'polluting' food or subsidising agro-ecological food, the second by making prices more transparent.
- **Awareness raising of (future) consumers** is important. Farmers and their products must become known. Visibility in the village is important, e.g. at local events or fairs.
- At the national/regional level, **policies** need to be **tailored to small farms**. E.g. by allowing / facilitating on farm slaughtering of farmers that sell meat at the hubs, by tailoring food safety regulations and/or controls to small farms (after all, traceability is much easier in the hubs than in the long chain if anything should go wrong).

3. **Summary of results:**

What is the story of your scenario? Considering the objective(s) given and level of ambition/targets, how is the food system organised to meet the objectives in your scenario?

Steps to be taken to achieve the goals
To achieve the goal of having a **food/social hub** per village in 2050, participants in our discussion group felt these elements were most important:
1. Having a place for the hub
2. Changes in the legislation
3. Awareness raising

These are the steps they think are necessary to achieve the most important elements:

1. A place for the food/social hub in each village

- The place would most likely need to be provided by the municipality in each of the villages/boroughs within the larger municipality.
- A prerequisite for municipalities to do so, is that they see fresh, healthy, diversified food, from local producers as a basic requirement for their inhabitants, as are social and health services.
- Farmers and/or inhabitants of the villages will thus need to **engage in conversation with the municipality**.
- Before being able to do so, they would need to get their story clearer, better substantiated ⇨ a **report/dossier** is needed on the cost of the current system, versus the benefits of having a hub. This would need to include:
    - The environmental and social cost of the conventional long chain food system and the current lack of social services in the villages;
    - A valuation of ecosystem services and social services of having food produced by local, agroecological or organic farmers, having local food distribution, and local social/health services.
        - ⇨ I.e. a **sustainability analysis** needs to be done at the local level.
    - An analysis of potential places within the village;
    - An actor analysis for the village;
    - A system analysis for the village and the municipality it is part of;
    - Barriers and opportunities to realise the hub.

    The report would need to show that a food/social hub is cost-saving and reinforces social cohesion in the village. It would need to be written in the language used by the local policy-makers *("let's talk money")*.
- This process requires **facilitators**: a tandem of a researcher (from outside the community) and a representative of the local community seems appropriate for this purpose.
- They need to be supported by sufficiently large engagement of the local community. A **transition group** in the village could make a good start. This should include a leading role for people who are already strongly involved locally (e.g., in local associations).
- Going through this process in some pilot villages would require **funding** (for the time of all involved and for the necessary research). In Flanders, participants would look towards the Flanders Research Foundation that supports fundamental scientific and strategic basic research.
- Beyond practical outcomes for the villages involved, such research should also provide a **blueprint** for other villages and communities.

2. Changes in legislation

Some of the necessary changes are not situated at the municipality level, but at the national/regional level. There overall **policies** need to be **tailored more to small farms and short chain food marketing**.

- Because of the connection with the local community, autocontrol at the farms selling food at the hub could far more be a valid option than it is in the long (worldwide) food chain;

- **Transparency** in this case is key,
  as is trust between local consumers and local producers.

From their experience with Belgian/Flemish authorities, however, the participants in our discussion group did not see direct short term entry points to achieve this.

An example referred to was of a farmer who wanted to slaughter pigs and process meat at his farm for short chain distribution. Now, Belgian food safety regulations still allows households to slaughter small livestock (chickens, pigs, etc.) for proper use. A farmer who would want to do something similar for a number of households, however, cannot do so, but needs to pass through a slaughterhouse and comply with the same rules as for livestock being slaughtered for sale of the meat in distant foreign countries, disregarding the fact that hygiene could probably be guaranteed better at the farm than at household level. Also mobile slaughtering units are not yet available/allowed in Flanders.

3. Awareness raising

Time was lacking to elaborate further on awareness raising of (future) consumers.
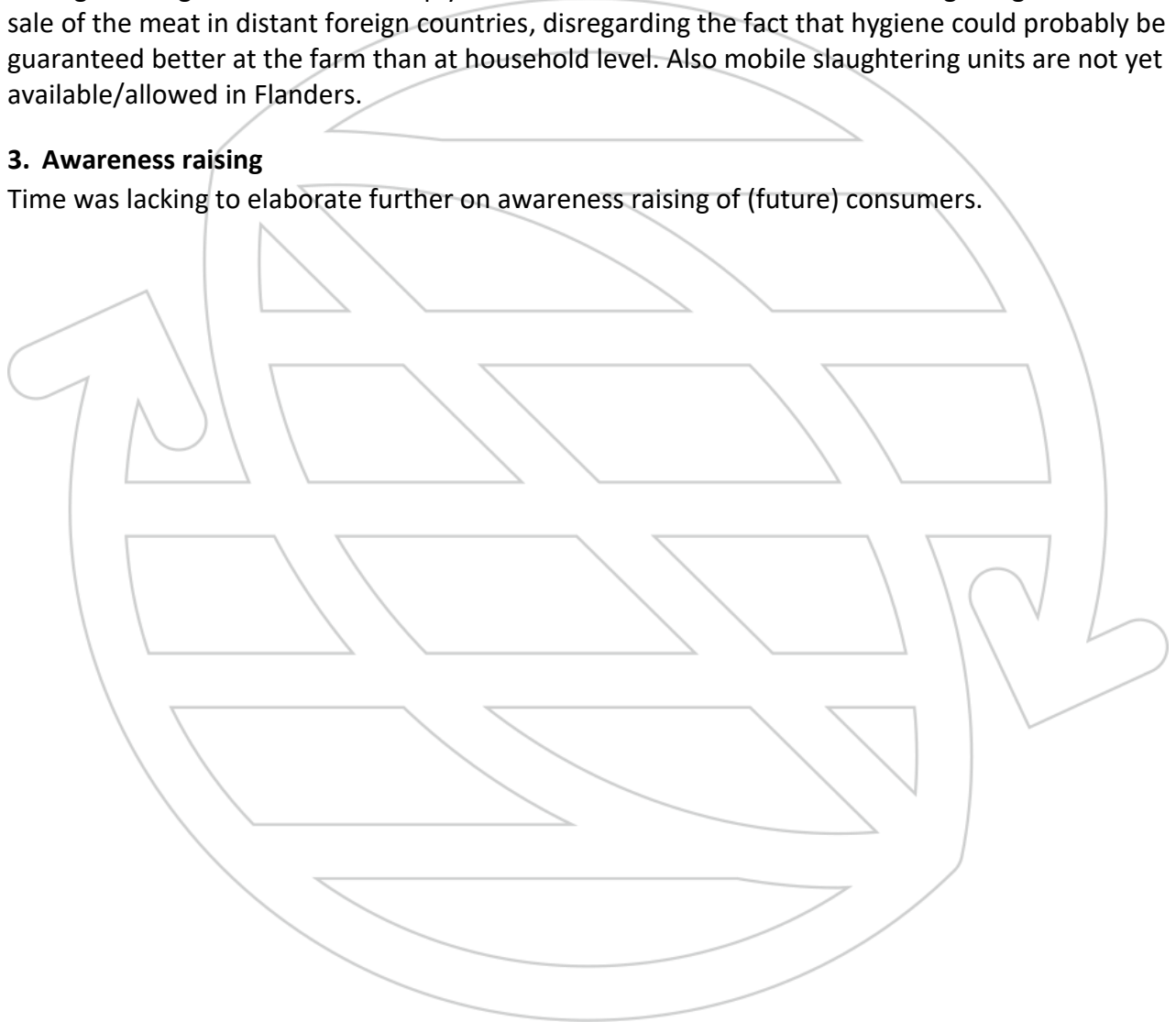
SCENARIO 2

Biodiversity-based Vision

The food production sectors overall aim is to preserve and enhance biodiversity for stabile use and future development. With only a marginal effect of land-usability change due to climate change, the sharing of land for multiple crop and food production by different actors is facilitated by governmental actors. With an increased land efficiency, interfarm competition is minimised implying territorial de-specialisation in favour of less intensive and biodiversity boosting practices. Joining knowledge and workforce capacities fosters a development of economies of scope in which the reciprocal provision of resources is promoted.

1. <u>Key objectives and desired level of ambition/targets</u>

What are the most important objectives of the scenario? What is the level of ambition/target for each of these objectives?

Collective reflection: Participants were exchanging goals for the proposed scenario.

- Integration of trees in agriculture, what could also be a species corridor. Working more in the direction of agroecology.
- Minimizing the use of pesticides in agriculture
- Increase the amount of organic farms
- Soil health, increase the quality of the soil
- Crop rotation
- More land efficiency -> soil health
- Decrease the pressure of agriculture in the environment
- More organic matter in soil
- Biodiversity on the agricultural fields and outside of the agricultural fields are different concepts
- Increase biodiversity in soil
- Decrease soil erosion
- Increase water quality
- Improve water retention on agricultural land
- Integration of flower-enriched field edges, small landscape elements like posts or wood edges for birds, more varied landscape for more biodiversity
- Collaboration between sectors
- Improve knowledge about biodiversity and biodiversity-friendly measures such as field edges. What type of field edge to use, which kind of crop rotation…?
- More local sales and specialization. For instance, cultivating cauliflower could be ideal in some parcels and not that well suited in others for biodiversity.
- Buffering: 5m fertilizer-free buffer strokes along water streams to prevent leaching of fertilizers to water streams

- More landscape elements like pools for amphibians, more species management, create species corridors. Select the species to protect, umbrella species. Connection between species, protection of amphibians. Potential of doing this measure in collaboration with other farmers.
- Alternative crop for maize, like perennial food crops, 8 years ago this was not so evident

Main goal: Reduce pesticides
Secondary goal: Include more trees in agriculture and work towards more agroecology

2. **Identifying key components in the scenario:**

How must the food system be re-organised to meet the vision of your scenario? What are key components, how is each component characterised and what are relations between them?

Components to achieve the goals: After selecting the main and secondary goal, the participants elaborated on the components needed to achieve them by 2050.

1. **Main goal:**
   - Provide education to consumers
   - Offer training and specialized education for farmers
   - Price fixing
   - More local and accessible food
   - More conversion to organic
   - Invest in research in specific crop varieties in organic farming, and more research in organic farming in general

2. **Secundary goal:**
   - Offer training and specialized education to farmers
   - Legislation
   - Invest in research in better practices to enhance biodiversity
   - Valorization of trees in the business model
   - Agroforestry subsidies

Characterization of the components: The participants explained why these are important, who should lead the actions, and how should it be done.
- More organic farming -> policymakers
- Education of consumers -> policymakers
- Training for farmers -> policymakers
- First, the action should come from policymakers, then consumers that become more aware could adapt their behavior, and then farmers can adapt their practices to be more biodiversity-inclusive

- Organic production is still a niche, consumers could change that
- Agriculture should dare to engage more in public relations

4. <u>Summary of results:</u>

What is the story of your scenario? Considering the objective(s) given and level of ambition/targets, how is the food system organised to meet the objectives in your scenario?

To reach a future where biodiversity is better protected and enhanced in agriculture, two goals are mainly needed in Flanders. First, a reduction of pesticides in agriculture is required, since this negatively affects biodiversity. This will stop one of the main causes of the harsh strike in biodiversity in Flemish agricultural fields. After this, measures to enhance and connect biodiversity to agriculture are needed. The secondary goal will be to introduce more trees in agriculture, that means, to work in direction of agroecology. Including trees and other elements in the landscape like field edges and pools for amphibians not only maintains biodiversity, but also connects species by acting as a species corridor.

To achieve these goals, some elements of the current agri-food system should change, promoting a more sustainable future. Related to pesticides, consumers would get educated on the negative effects of the overuse of pesticides for the local flora and fauna. At the same time, farmers could get more training and specific education on why it is important to reduce the use of pesticides. Organic farming, by definition, don't use chemical pesticides. Therefore, an increase in organic farming could pose more biodiversity-friendly food production. More local and accessible food has to be provided, that can engage the consumers on a more sustainable, local and organic consumption. However, price should be controlled to not demotivate consumers. To ensure sustainable outcomes in agriculture, more research in organic farming should be conducted, as well as in specific crop varieties more suitable to specific agricultural lands.

Similarly, introducing more trees and working in a more agroecological way also needs changes in the current agri-food system. Legislation should allow and attract farmers to include trees in their fields, as well as agroforestry subsidies. To motivate farmers, there is a need for a valorization of trees in the farm business model. In this regard, investing in research in better practices to enhance biodiversity, increasing the budget for research is essential. Similar to the goal of reducing pesticides, offering training and specialized education to farmers will help raising awareness in biodiversity-friendly practices. Altogether with research, this will lead farmers to include more trees and elements that works as a species corridor, connecting habitats and maintaining healthy populations.

Departing from 2023 to an ideal biodiversity scenario in 2050, first the budget for research should increase to allow results that offer insights on better practices. At the same time, legislation should be improved and adapted to include more organic farms and better practices to enhance biodiversity, as well as providing more subsidies for agroecological practices. Then, offer more training to farmers and education to consumers will raise awareness and improve biodiversity on agricultural fields. This will lead to control organic prices and promote the local sales.

SCENARIO 3

Consumption-based Vision

Reduced or changed consumption by changes in consumer behaviour or thinking, including reducing food waste, the consumption of resource, conflict or transport intensive foods (e.g. animal products, avocados).

1. **Key objectives and desired level of ambition/targets**

What are the most important objectives of the scenario? What is the level of ambition/target for each of these objectives?

Goals:
- Less meat and more plant-based products
  - The amount of meat can be based on the demand in the frame of regional production
- All food should be 100 local/regional
- An at least 25% of all the sales should be directly from the farm

Consumers should:
- Have a positive image of Flemish products

Regarding bio/organic
- It is a secondary objective but more organic is appreciated

Financial level:
- Environmental costs should be included in all products. That could maybe help the bio-product more competitive.
- Governments should support

d) Poland

The workshop in Poland was attended by 10 people, including: 3 researchers, 3 representatives of organic certification bodies, 1 processor, 1 farmer, 2 representatives of NGO
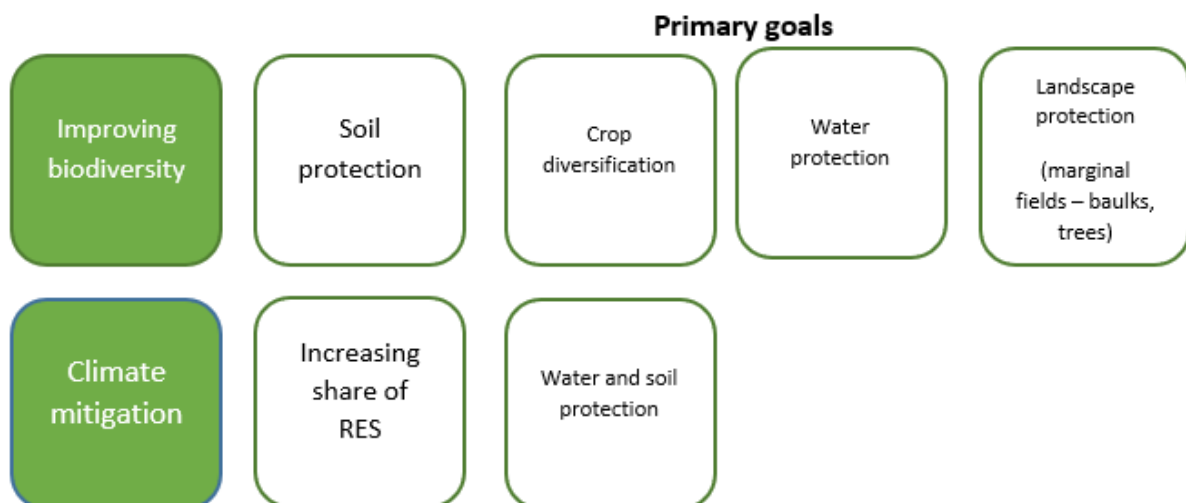

SCENARIO 1

Biodiversity- and Climate-based Vision
Desertification and climate change make for an agricultural landscape in which the cultivation and production of food is limited to certain areas only. This development makes for a spatially very restricted and highly specialized food production whose focus is on producing carbon efficient food with an overall reduction of meat production. Scaled up production makes for a strong top-down distribution of power in the production chain. In the same time, food production sectors overall aim is to preserve and enhance biodiversity for stabile use and future development. The sharing of land for multiple crop and food production by different actors is facilitated by governmental actors. With an increased land efficiency, interfarm competition is minimized implying territorial de-specialization in favour of less intensive and biodiversity boosting practices. Joining knowledge and workforce capacities fosters a development of economies of scope in which the reciprocal provision of resources is promoted.

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1. **Key objectives and desired level of ambition/targets**

What are the most important objectives of the scenario? What is the level of ambition/target for each of these objectives?

Primary objectives & related ambitions:

Primary goals

| Improving biodiversity | Soil protection | Crop diversification | Water protection | Landscape protection (marginal fields – baulks, trees) |

| Climate mitigation | Increasing share of RES | Water and soil protection |

Primary objectives & related ambitions:

Regulations reducing pollution	GHG emission reduction	Shortening supply chains	Reducing chemical pesticides use	Promotion and implementation of agroecological practices
Sustainable consumption and increasing consumers awareness	Sustainable diet including meat consumption reduction	Food waste reduction	Food packaging policy	
Sustainable livestock production	Increase share of animals in farms	Reduce livestock intensification	Diversification livestock species in farms	Welfare improvement

2. **Identifying key components in the scenario:**

How must the food system be re-organised to meet the vision of your scenario? What are key components, how is each component characterised and what are relations between them?

1 Production	2 Processing	3 Distribution	4 Consumption
Farmers adopt agroecological and climate smart practices ★★★	Adopt shared transport ★★	Adopt green/shared transport ★★	Increase interest in local products, collaboration (cooperatives, CSA), self pick-up ★★★
Maintenance of baulks and in-field trees ★★	Increase use of RES ★★	Climate-smart logistics ★★	Increase purchase of products based on traditional varieties and breeds ★★
Will to collaborate for agroecology ★★	Joint selling ★★	Collaboration with local food producers ★★	Involving in building food/good diet networks with NGOs ★★

★★★

Ranking in the scale 1-3, where 1 is very relevant, 2 - relevant

**1, 2, 3, 4** – ranking of importance for value chain actors

3. Summary of results:

What is the story of your scenario? Considering the objective(s) given and level of ambition/targets, how is the food system organised to meet the objectives in your scenario?

Main features of the food system reorganization:

In order to achieve the climate and environmental goals, the various groups of the value chain must take specific actions. Farmers have to get out of individual interests perspective and show their willingness to cooperate. All producers should honestly make the same sacrifices so that no one gains an advantage and no one loses. Good agricultural practices should be adopted more widely and marginal habitats such as baulks should be protected. Increased use of renewable energy is necessary, particularly photovoltaic systems and agricultural biogas plants. Processors have to cooperate mainly with local producers and use renewable energy as much as possible in their processes. Sales and transportation should be carried out jointly, in order to reduce emissions. Consumers must prioritize sourcing locally made products with a focus on quality, how they are made and their impact on health.
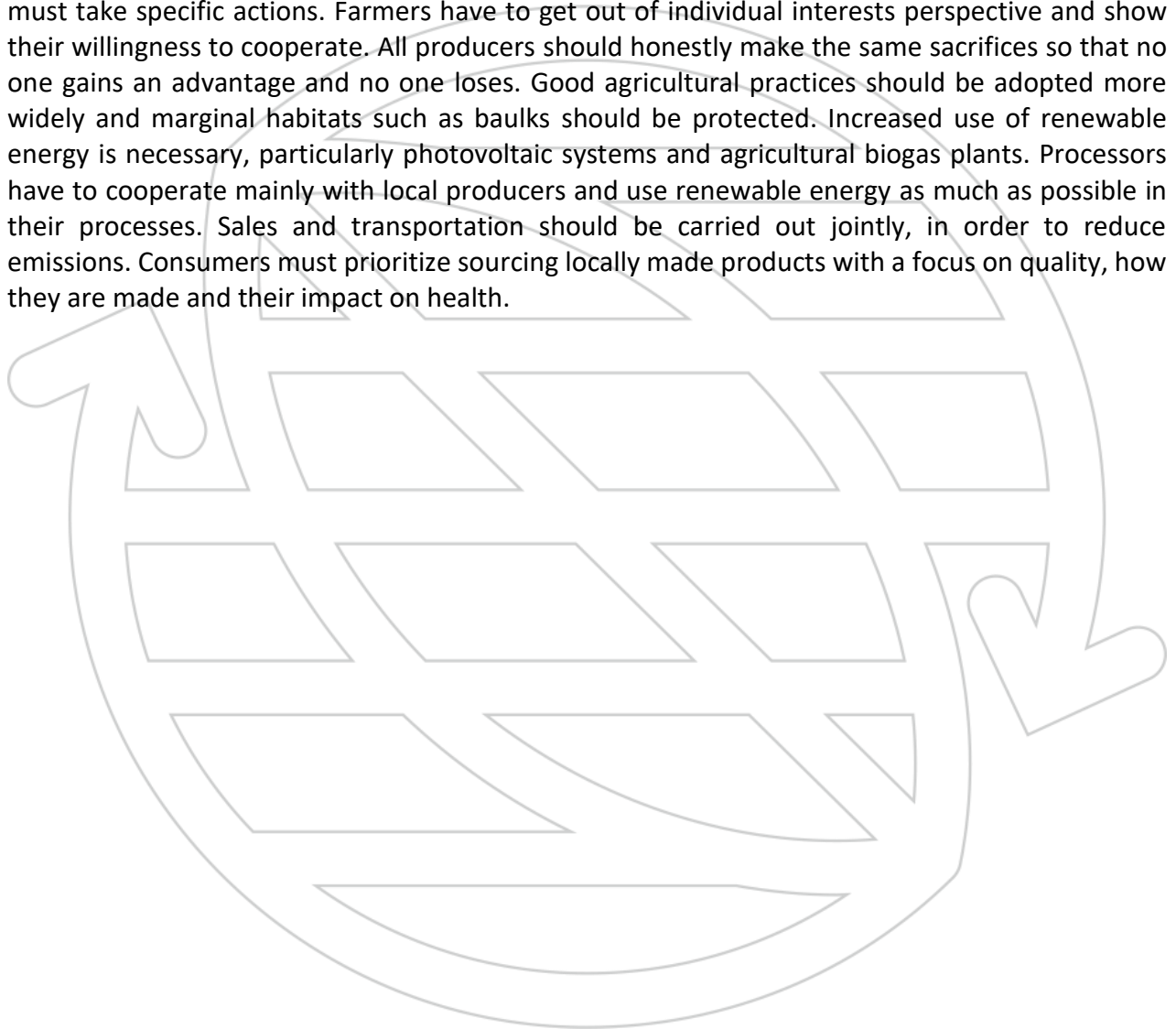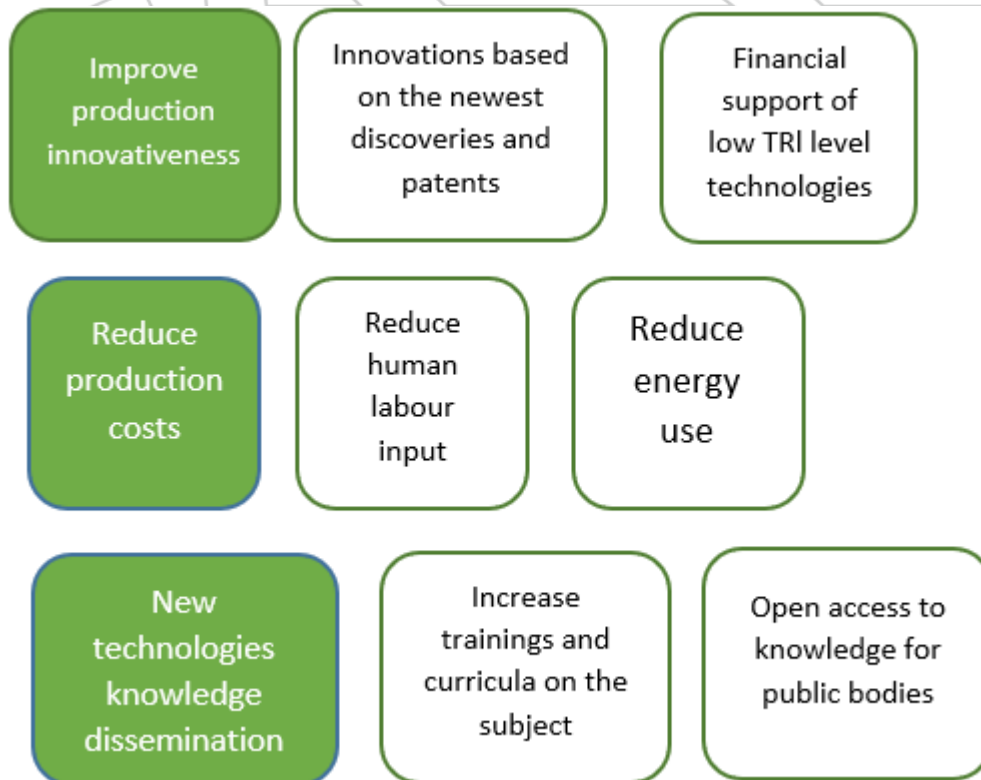
SCENARIO 2

Boosting production through innovation
Maximizing production outputs through ecological, economic and social innovation while strongly increasing climate and carbon efficiency of food production. The "rebound-effect" can lead to subsequent reduction of efficiency potential. The technological fixes lead to strong farm & food processors concentration, and require dietary changes with regard to the range of offered products.
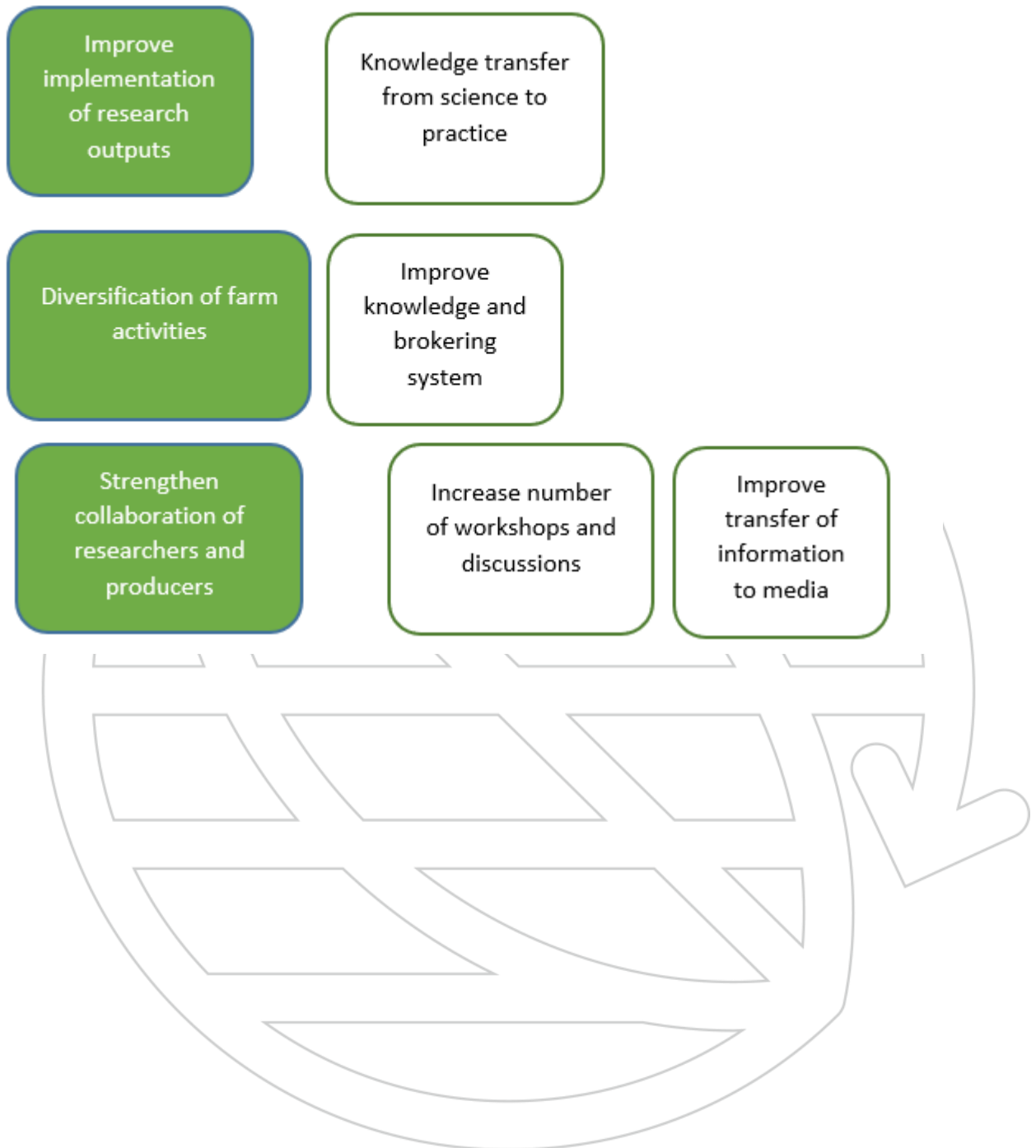
1. Key objectives and desired level of ambition/targets

What are the most important objectives of the scenario? What is the level of ambition/target for each of these objectives?

Primary objectives & related ambitions:

Secondary objectives & related ambitions:

2. **Identifying key components in the scenario:**

How must the food system be re-organised to meet the vision of your scenario? What are key components, how is each component characterised and what are relations between them?

Ranking in the scale 1-3, where 1 is very relevant, 2 - relevant

1, 2, 3, 4 – ranking of importance for value chain actors

3. Summary of results:

What is the story of your scenario? Considering the objective(s) given and level of ambition/targets, how is the food system organised to meet the objectives in your scenario?

Main features of the food system reorganization

Agricultural innovations should be focused particularly on reducing production costs so that organic products can compete with conventional ones, reducing human labor due to the low availability of workers, and further improving the quality of organic food. An innovation-based production system can only develop if innovations are implemented. For this, it is necessary to transfer scientific and technical knowledge to those involved in production, to say only that majority of patents are not implemented. It is also necessary to support innovative technologies until they begin to pay off. Farmers have to be open to cooperation and new technologies, e.g. processing, digitization. For farmers, innovation can be simple and obvious things. Some parts of the value chain need to be locked into the farm, e.g. packaging, distribution, marketing. Innovation in processing can be based on new methods of food production (pickling) or preservation (vacuum drying). Distributors may, for example, use electric vehicles or online sales. Consumers have little influence on innovations unless they consciously choose products made through this path.
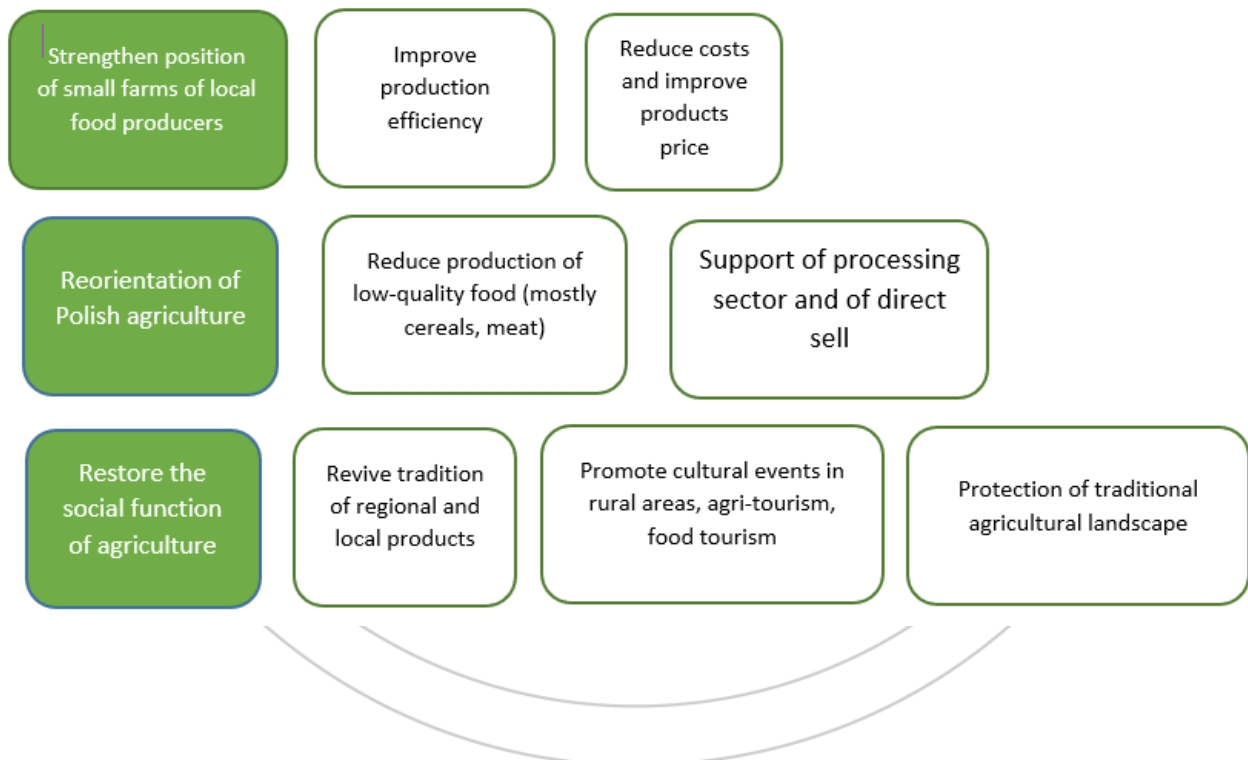
SCENARIO 3

Rural renaissance through food production

Food production becomes a key driver of rural renaissance, attracting young people and dynamizing rural and marginal areas. Small scale and family farms are favoured over highly concentrated structures, with potential contrasting effects on the production, processing and distribution of food depending on the areas and the type of food production.

1. Key objectives and desired level of ambition/targets

What are the most important objectives of the scenario? What is the level of ambition/target for each of these objectives?

Primary objectives & related ambitions:

Secondary objectives & related ambitions:

Strengthen collaboration of processors and producers	Set up cooperatives and producer groups	Obligatory share level of organic food in supermarket/grocery shop food	Support of local distributors	Copying good standards from other countries
Promote and introduce organic food into kindergarten and school canteens	Improve Green Public Procurement	Knowledge exchange between countries	Improve promotion of good practices in media	
Increase professional trainings of farmers in farms	Increase number of workshops and discussions	Increase number of demonstration farms	Improve agriculture advisory system strengthening professional service at the expense of technical service of farmers applications for CAP	

2. **Identifying key components in the scenario:**

How must the food system be re-organised to meet the vision of your scenario? What are key components, how is each component characterised and what are relations between them?

1 Production	2 Processing	4 Distribution	3 Consumption
Farmers produce food available at local level ★★★	Increase local processing ★★★	Sustainable logistics ★★	Improve awareness on producing food ★★★
Improve selling organization (cooperatives, CSA) ★★★	Preferences for local commodities ★★★	Collaboration with local food producers ★★	
Building alternative selling channels including direct sell ★★	Organization of education workshops for other processors ★★	Improve ethics of collaboration with farmers ★★	

★★★

Ranking in the scale 1-3, where 1 is very relevant, 2 - relevant

1, 2, 3, 4 – ranking of importance for value chain actors

3. Summary of results:

What is the story of your scenario? Considering the objective(s) given and level of ambition/targets, how is the food system organised to meet the objectives in your scenario?

Main features of the food system reorganization

In the current economic situation, there is a crisis in agricultural production. In the near future, either industrial agriculture will gain strength or there will be a renaissance of traditional agriculture. For this, it is necessary to increase profitability for small farms while lowering production costs. The role of agricultural policy is not clear, as certain systems cannot be subsidized indefinitely. It is necessary to return to regional products, small-scale processing of direct sales. Logistics must be rational, a greater level of organization must be developed. There is a need to increase consumer awareness and develop agro-tourism, culinary tourism and cultural events in rural areas.
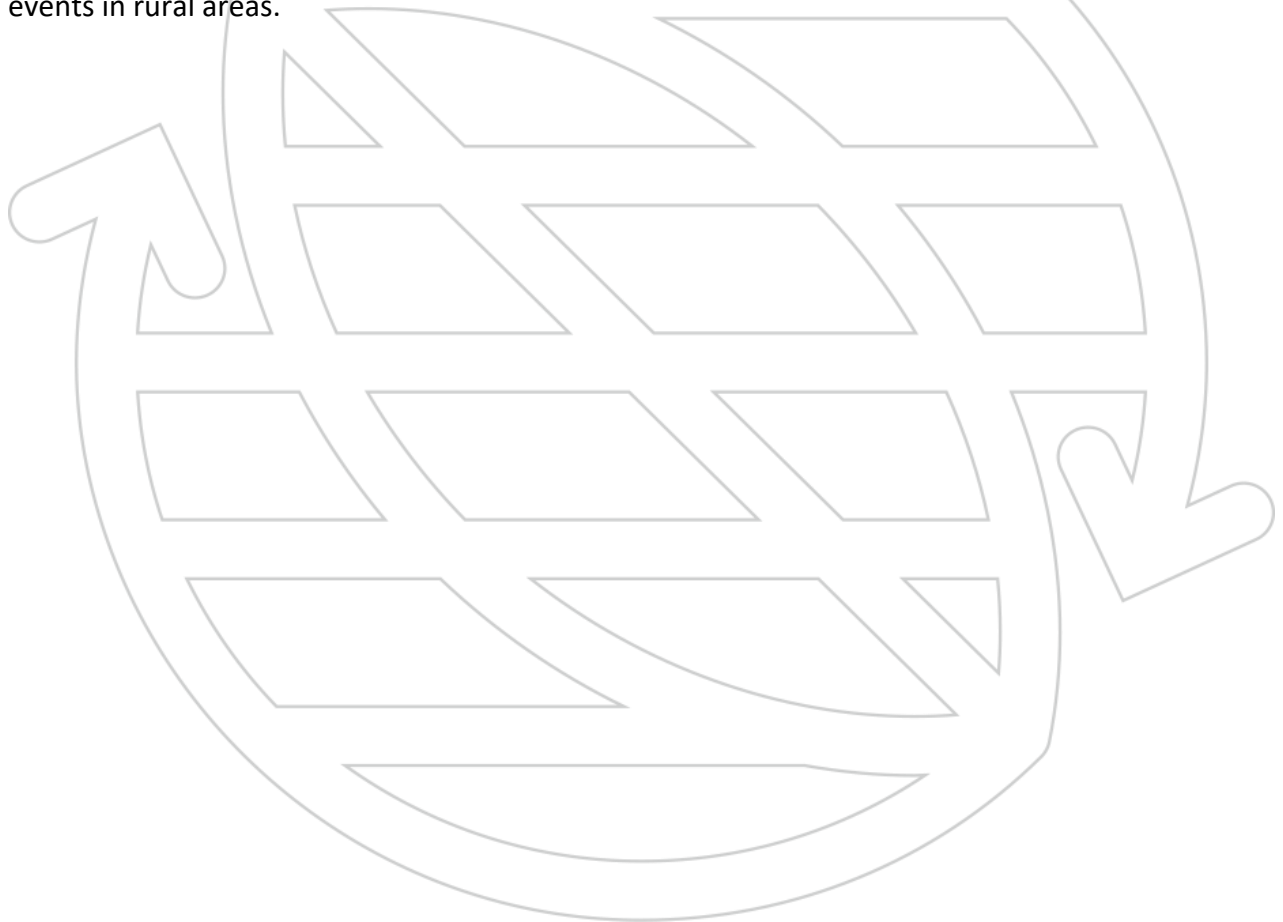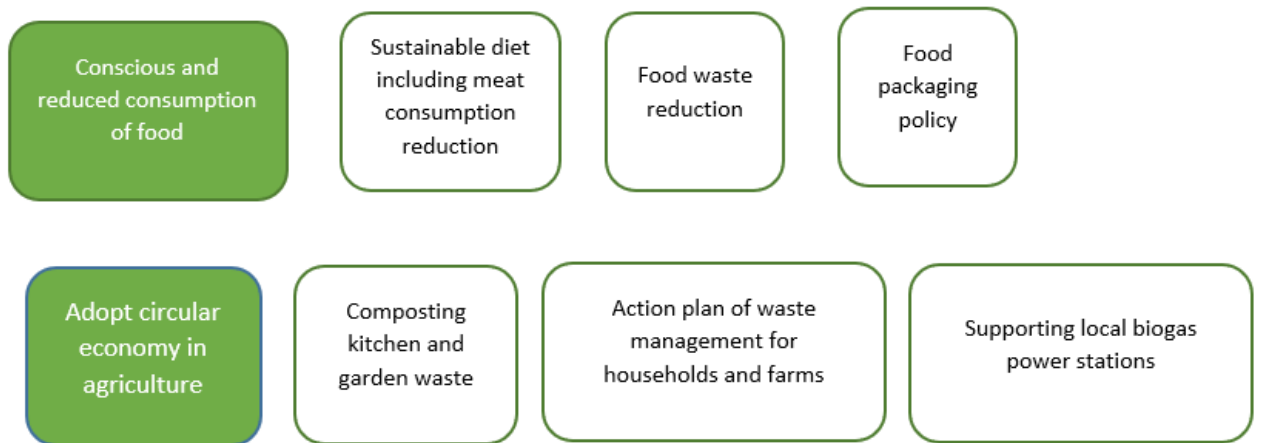
SCENARIO 4

Consumption-based vision

Reduced or changed consumption by changes in consumer behaviour or thinking, including reducing food waste, the consumption of resource, conflict or transport intensive foods.
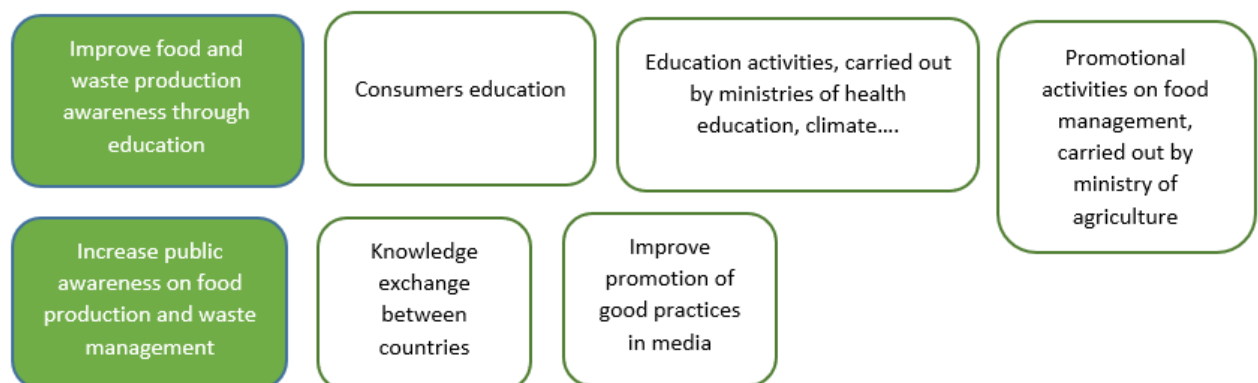
1. Key objectives and desired level of ambition/targets

What are the most important objectives of the scenario? What is the level of ambition/target for each of these objectives?

Primary objectives & related ambitions:

| Conscious and reduced consumption of food | Sustainable diet including meat consumption reduction | Food waste reduction | Food packaging policy |
| Adopt circular economy in agriculture | Composting kitchen and garden waste | Action plan of waste management for households and farms | Supporting local biogas power stations |

Secondary objectives & related ambitions:

| Improve food and waste production awareness through education | Consumers education | Education activities, carried out by ministries of health education, climate…. | Promotional activities on food management, carried out by ministry of agriculture |
| Increase public awareness on food production and waste management | Knowledge exchange between countries | Improve promotion of good practices in media | |

2. **Identifying key components in the scenario:**

How must the food system be re-organised to meet the vision of your scenario? What are key components, how is each component characterised and what are relations between them?


3 Production	2 Processing	4 Distribution	1 Consumption
Farmers adjust food production to consumers requirements and waste management policy ⭐⭐	Improve processors awareness on processed food quality ⭐⭐⭐	Sustainable logistics ⭐⭐	Improve awareness on processed food quality ⭐⭐
Improve animal feeding technologies based on organic food sector wastes ⭐⭐⭐	Education on circular economy ⭐⭐	Collaboration with local food producers ⭐⭐	Care about food use, reduce waste ⭐⭐⭐
	Organization of education workshops for other processors ⭐⭐	Improve ethics of collaboration with farmers ⭐⭐	Responsibility for own health and conscious purchase of food ⭐⭐

⭐⭐⭐

Ranking in the scale 1-3, where 1 is very relevant, 2 - relevant

1, 2, 3, 4 – ranking of importance for value chain actors

SUSFOOD2
CORE organic

3. Summary of results:

What is the story of your scenario? Considering the objective(s) given and level of ambition/targets, how is the food system organised to meet the objectives in your scenario?

Main features of the food system reorganization

Rational consumption should be based on moving away from a shopping model with large quantities of cheap products that harm health and are often thrown away. Bet on small quantities of better quality food, the economic balance will be similar. Meat consumption in Poland should be limited. Each household should have a plan for dealing with organic waste, including its reduction or management. Producers should use food industry waste for animal feed, while unconsumed food should be composted or gasified. It is necessary to increase the awareness of all players in this area and to clarify regulations on waste handling.
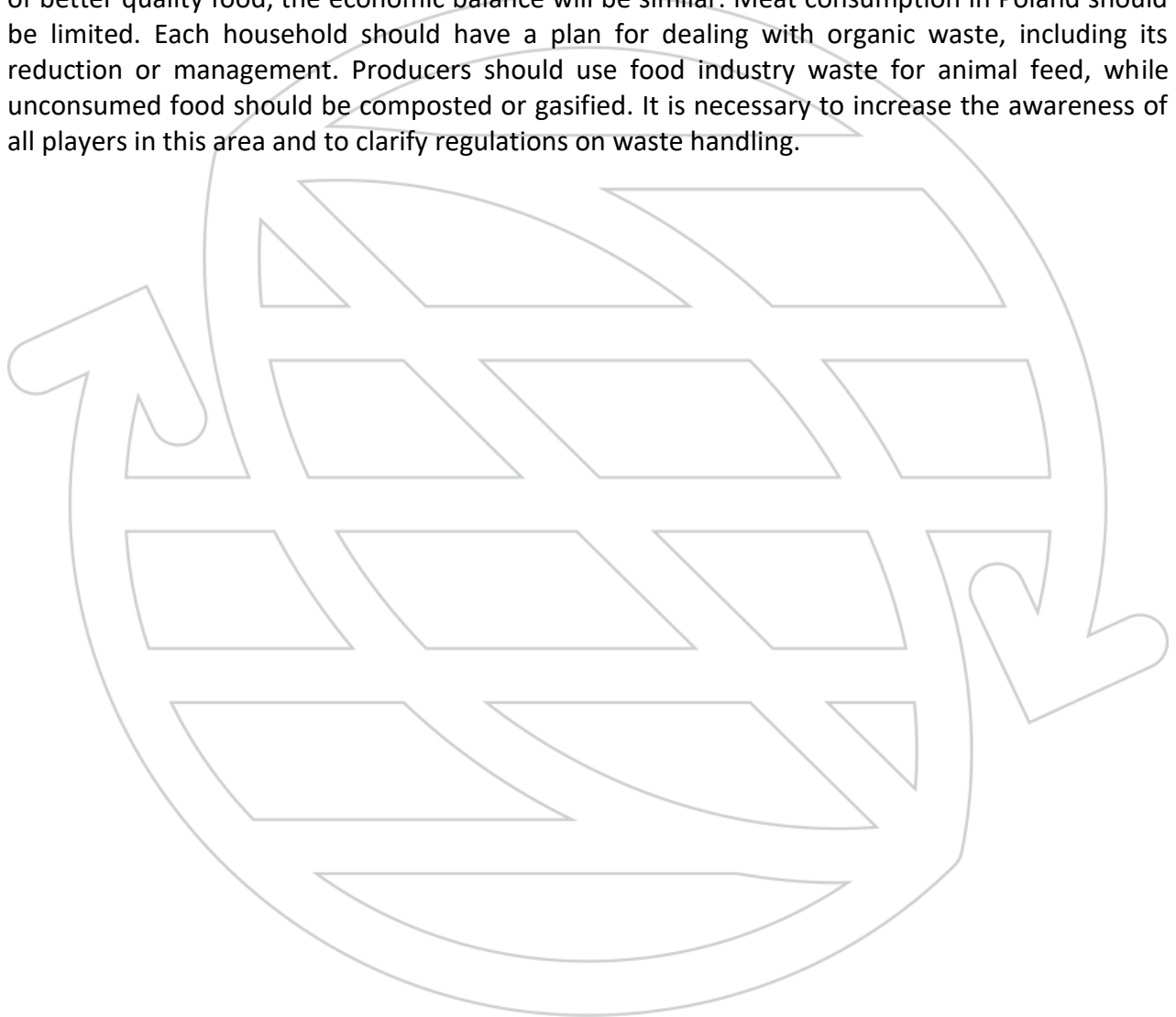
5) References

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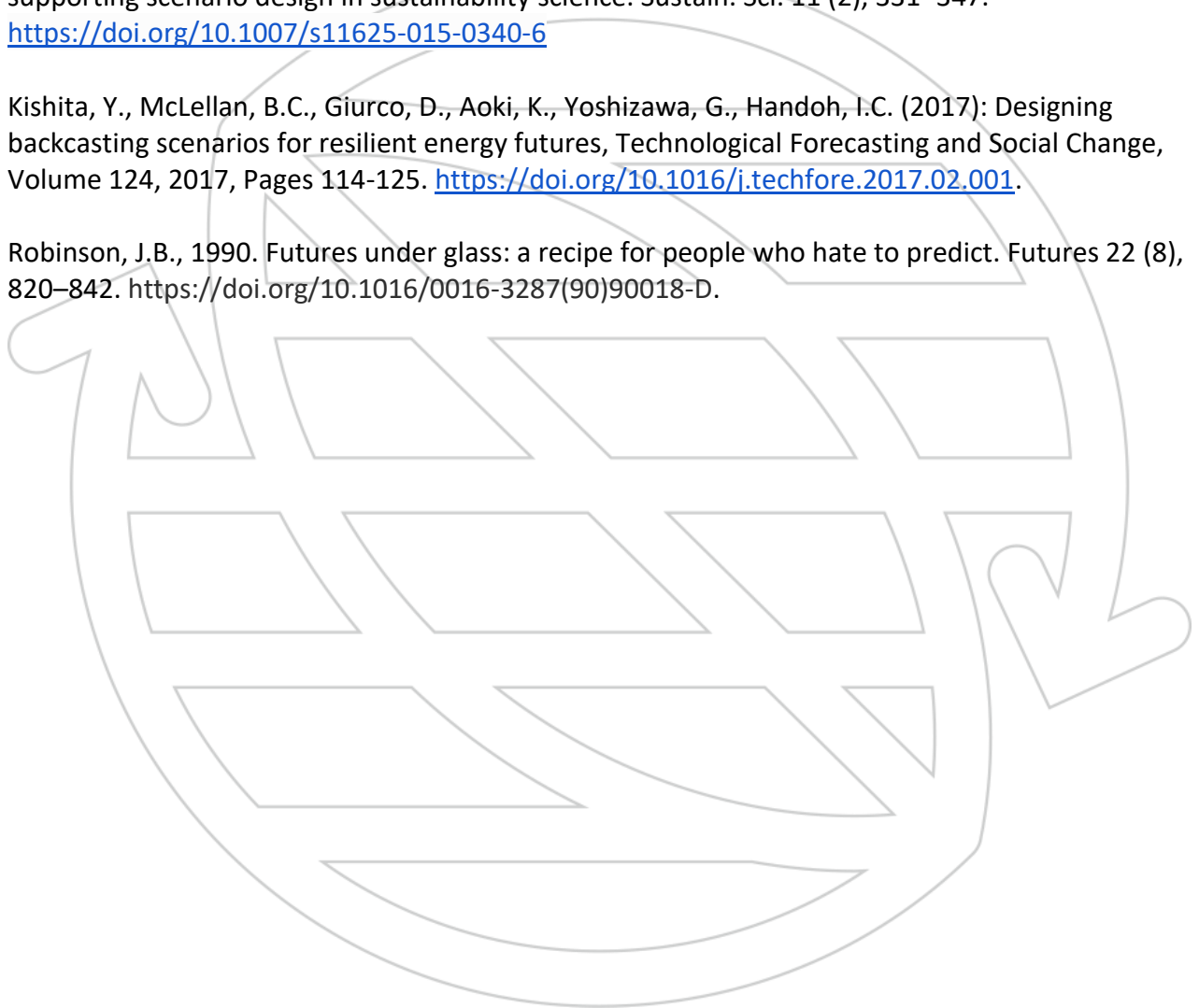
6) Annex

Common Implementation Guidelines

1. Setting the Scene

Present national/regional food system
- Scope
- Import/Export
- Specialisation
- Historic and current challenges

Present pre-defined Vision

- The visions below are based on the principle of backcasting, meaning the participants should ponder and discuss the necessary developmental steps that need to take place for the visions to be realised.
- They are presented in a highly stylized (and, to some extent, "caricatural") way to make them as "comprehensible" as possible – with a strong focus on agriculture and food production – while many aspects are left quite open/undetermined.
- The objective of the workshop is to complexify, develop (in particular with respect to other dimensions: food industry, retail, consumption/diets, trade…) and nuance them, while keeping a certain level of contrast between them (role of facilitators)
- The question of spatial heterogeneity is not addressed per se at this stage (but will be later in the process). The objective is to identify key principles for farming systems/processing/retail/diets that might apply in different ways depending on the geographical contexts.
- As this is all about developing normative scenarios (e.g. objective-driven scenarios), big "drivers" like climate change, geopolitics, energy prices (to name a few) are not considered in this first step. Yet, "boundary conditions" can be identified during the workshop.

▷ Remark:

If you choose the visions to be defined by the workshop's participants themselves (see chapter 3b), you can skip "2. Setting the scene" and add it as a first task for the participant to "4. Break out session".

2. Defining the Visions (Scenarios)

There are three options to define the visions for the workshop:

4. Pre-definition of the visions

      a. Choose predefined visions from the suggestions below

      b. Pre-define your own country-specific visions

5. Definition of visions by workshops' participants

Exemplary VISIONS

6. **Climate-based Vision** 🏯**:** Desertification and Climate Change make for an agricultural landscape in which the cultivation and production of food is limited to certain areas only. This development makes for a spatially very restricted and highly specialised food production whose focus is on producing carbon efficient food with an overall reduction of meat production. Scaled up production makes for a strong top-down distribution of power in the production chain.

7. **Biodiversity-based Vision** 🌿**:** The food production sectors overall aim is to preserve and enhance biodiversity for stabile use and future development. With only a marginal effect of land-usability change due to climate change, the sharing of land for multiple crop and food production by different actors is facilitated by governmental actors. With an increased land efficiency, interfarm competition is minimised implying territorial de-specialisation in favour of less intensive and biodiversity boosting practices. Joining knowledge and workforce capacities fosters a development of economies of scope in which the reciprocal provision of resources is promoted.

8. **Boosting production through Innovation** 🤘**:** Maximising production outputs through ecological, economic and social innovation while strongly increasing climate and carbon efficiency of food production. The "rebound-effect" can lead to subsequent reduction of efficiency potential. The technological fixes lead to strong farm & food processors concentration, and require dietary changes with regard to the range of offered products.

9. **Rural renaissance through food production** 👩‍🌾**:** Food production becomes a key driver of rural renaissance, attracting young people and dynamizing rural and marginal areas. Small scale and family farms are favoured over highly concentrated structures, with potential contrasting effects on the production, processing and distribution of food depending on the areas and the type of food production.

10. **Consumption-based Vision** 💭**:** Reduced or changed consumption by changes in consumer behaviour or thinking, including reducing food waste, the consumption of resource, conflict or transport intensive foods (e.g. animal products, avocados).

🏳 Remark:

These exemplary visions are only suggestions for points of departure to build the scenarios from, feel free to use them. If your groups show creative will to formulate their own vision to build a scenario upon, let them do their thing. It is very useful for the development of scenarios if you let imagination take its course.

🏳 Advice for the Participants:

Think about the group's interests (not just your personally preferred topics), try to be open-minded and to build on your group members' comments in a 'yes and...' spirit. If there are major disagreements, capture them for the record but don't dwell on them unless they absolutely prevent the group's progress.
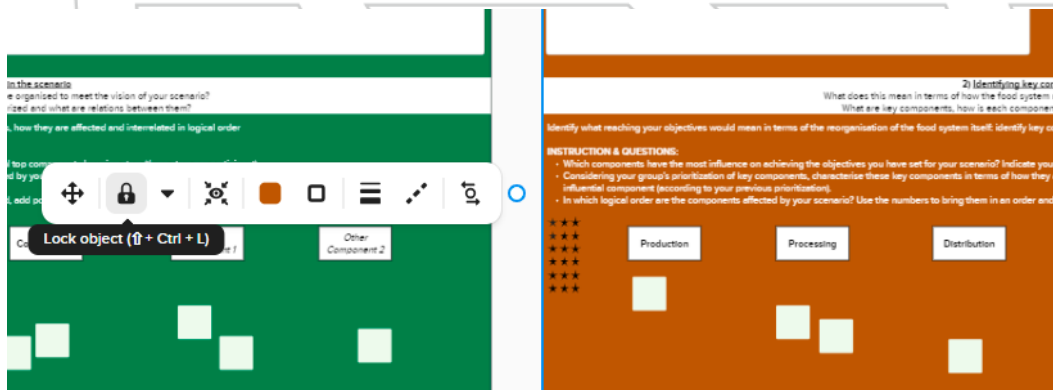
3. Breakout Session

Use your <u>nation-specific template</u> in MURAL for the structure of the breakout session and to capture the results.

- *GERMANY*
- *ITALY*
- *BELGIUM*
- *UK*
- *ROMANIA*
- *FINLAND*
- *POLAND*

⚐ Remark:

If you use MURAL during your workshop, please make sure that you <u>lock the elements</u> in MURAL that the participants should not move or edit before starting your Workshop.

Framework for scenario development

- Step 1: In the box "Block 1", identify the two main objectives of your scenario, and set targets (either qualitatively or quantitatively – the idea is to set a "direction of travel" rather than to give precise figures)

- Step 2: Identify what reaching such objectives would mean in terms of the reorganisation of the food system itself – looking at "Block 2".

- Step 3: Summary of results

Table III

Block 1: Potential OBJECTIVES of food systems
- Food self sufficiency & level of trade balance
- Reduced GHG emissions
- Increased biodiversity & N balance
- Preservation of Resources
- Contribution to GDP & job creation
- Farmers incomes
- Food security
- Maximise production output
- …

Block 2: Food system's COMPONENTs
- **Production**
  - Production inputs
  - Level of Specialisation of Producers
  - Level of Concentration of Producers
- **Processing**
  - Power Distribution
  - Relation of Produce amount to size of Food System
  - Spatial organisation
- **Distribution: Retail, Wholesale**
  - Role of retail own brands in the product mix
  - Retail own brand development strategy
  - Supply/ Purchasing Strategies
- **Consumption**
  - Dietary Practices
  - Product Mix
  - Willingness to Pay
  - Food waste management
- **External drivers**
  - Politics
  - Economy
  - Biophysical & environmental drivers
  - Sociocultural drivers
  - Technological and infrastructure
  - Demographic drivers
  - Global demand
  - Trade rules
  - …

Key guiding Questions

➢ Q1) "What are the 1-2 most important objectives of your scenario? What is the level of ambition for each of these objectives?"

➢ Q2) "What does this mean in terms of how the food system needs to be organised to meet the vision of your scenario? What are key components, how is each component characterised and what are relations between them?"

Workflow *(see Mural Maps)*

BREAK OUT SESSION 1 (90-120 min)

1) Identifying key objectives & desired level of ambition/targets

Invitation: What are the most important objectives of your scenario? What is our level of ambition/target for each of these objectives?

A) INDIVIDUAL REFLECTION (15 min)

Identify the two main objectives of your scenario, and set targets for each objective (either qualitatively or quantitatively – the idea is to set a "direction of travel" rather than to give precise figures)

• **Work instruction:** Capture your thoughts individually by adding post-its in the boxes below.

• **Questions:**

   • What is the *primary* objective of this scenario and its related level of ambition/target?

   • What is the *secondary* objective of this scenario and its related level of ambition/target?

B) COLLECTIVE DISCUSSION (30 min)

Agree on key objective/s and ambitions/targets

• **Work instruction:** Read through the individual post-its, discuss and agree as a group on the primary and secondary objectives & their related level of ambition. Capture your thinking and final objectives below.

• **Questions:**

- What is the *primary* objective of this scenario and its related level of ambition/target?

- What is the *secondary* objective of this scenario and its related level of ambition/target?

2) **Identifying key components in the scenario** (45 Min or more)

Identify what reaching such objectives would mean in terms of the reorganisation of the food system itself: identify key components, how they are affected and interrelated in logical order

Invitation: What does this mean in terms of how the food system needs to be organised to meet the vision of your scenario? What are key components, how is each component characterised and what are relations between them?

- **Work instruction & questions:**

  - Which components have the most influence on achieving the objectives you have set for your scenario? Indicate your individual top components by using stars (three stars per participant).

  - Considering your group's prioritisation of key components, characterise these key components in terms of how they are affected by your scenario (why, how and by whom). Use the post-its notes for explanation and start from most to least influential component (according to your previous prioritisation).

  - In which logical order are the components affected by your scenario? Use the numbers to bring them in an order and, if needed, add post-its or arrows for further explanation of interrelations.

BREAK OUT SESSION 2 (20 min)

3) **Summary of results**

Invitation: What is the story of your scenario? Considering the objective(s) given and level of ambition/targets, how is the food system organised to meet the objectives in your scenario?

- **Work instruction:** Summarize your group's results by using the template below.

- **Requested information:**

  - Objectives for this scenario and level of ambition

  - Key components (what components this objective puts the biggest constraints on) and their relations. Further explaining relations between components and characterization of components