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IMPLEMENTING THE SYSTEMS-BASED BREEDING CONCEPT

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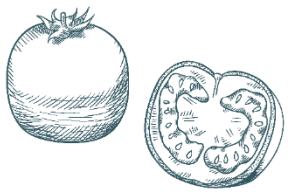

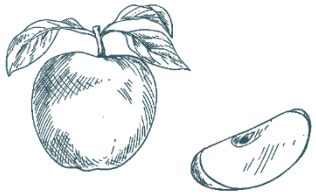

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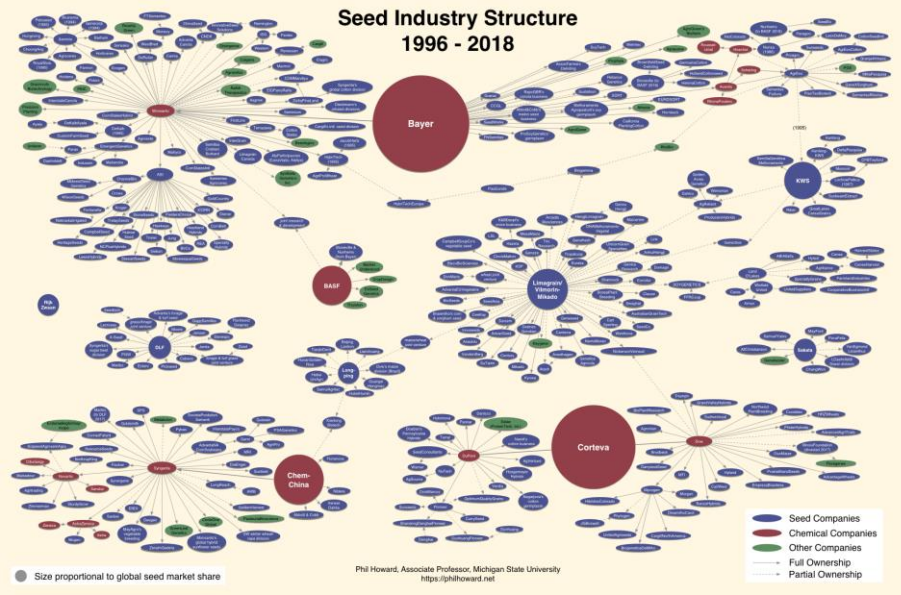
Current trends in agriculture and plant breeding

- Continuous focus on linear value chains
- More focus on molecular traits
- Loss of agro-biodiversity

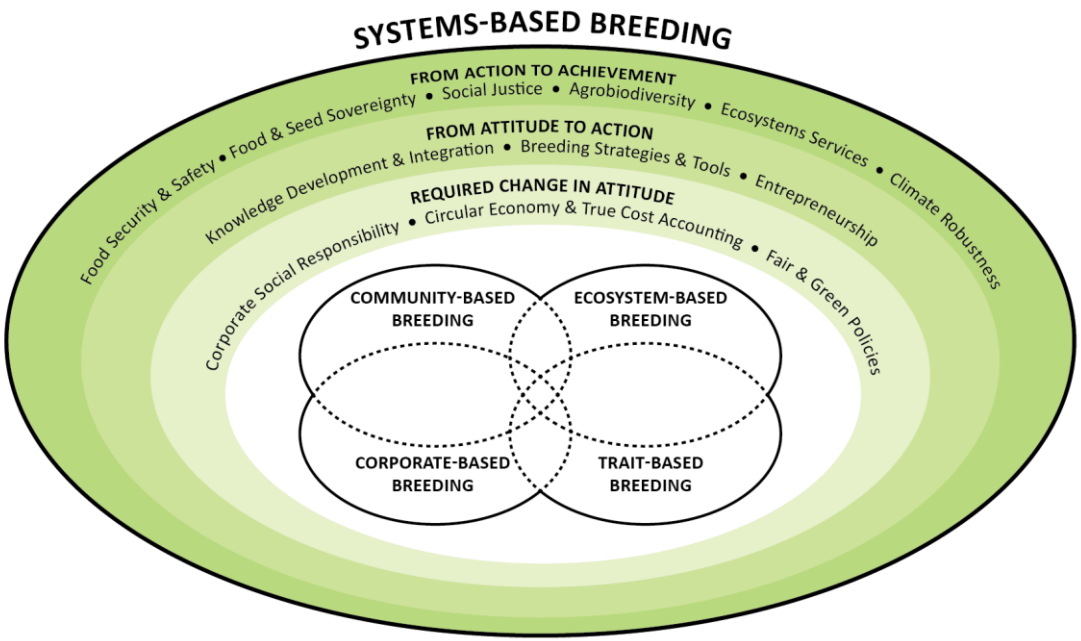
➢ How to breed for long term ecosystem-services?



Summary of distribution of variety registration at CPVO in the period 2012-2016, according to crop, company and country (Annual report 2016)

	arable crops	vegetable crops	fruit crops
Top 5 crops	69,4	67,2	60,9
Top 10 crops	85,3	79,5	81,4
Top 5 companies	47,0	69,3	22,2
Top 15 companies	63,5	95,3	43,6
Top 5 countries	63,5	94,2	39,9

Systems-based breeding:
6 goals for ecological and social resilience



Six key-elements (goals):

1. Social justice
2. Food security, quality and safety
3. Food and seed sovereignty
4. Agro-biodiversity
5. Ecosystem services
6. Climate robustness

Lammerts van Bueren et al. 2018. **Towards resilience through systems-based plant breeding. A review.** Agronomy for Sustainable Development.

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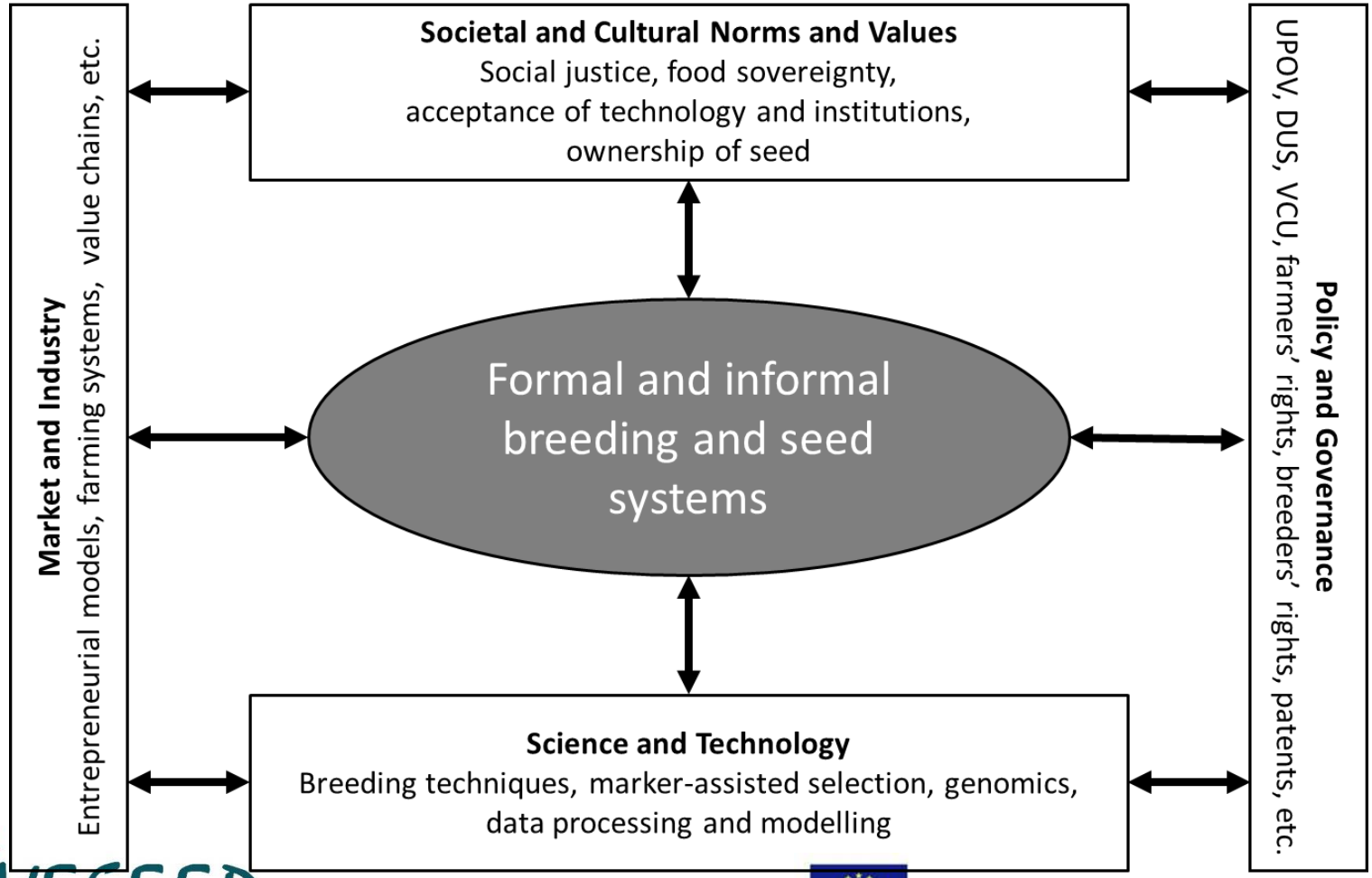
Roles and positioning of breeding and seed systems within their economic, scientific, institutional and cultural environment (Figure 3, Lammerts van Bueren et al. 2018)



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Deliverable 3.10: Solutions, obstacles and examples mentioned at the workshop in Witzenhausen 2018, organised in four categories/environments as described in Figure 3 (Lammerts van Bueren et al. 2018)

Category		Solutions (in %)	Obstacles (in %)	Examples (in %)
	N =	85	68	39
Market and Industry	69	27%	37%	54%
Policy and Governance	43	18%	32%	15%
Science and Technology	51	33%	18%	28%
Societal and Cultural Norms and Values	29	22%	13%	3%

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Deliverable 3.10: Solutions, obstacles and examples mentioned at the workshop in Witzenhausen 2018

- Most-mentioned Obstacles:
  - law and regulations
  - short term profit
  - lack of long term funding
- Most-mentioned Solutions
  - collaboration in breeding
  - market reorganisation
  - knowledge sharing
- Together they describe a common idea for organising breeding in a different way, with more collaboration of the value chain

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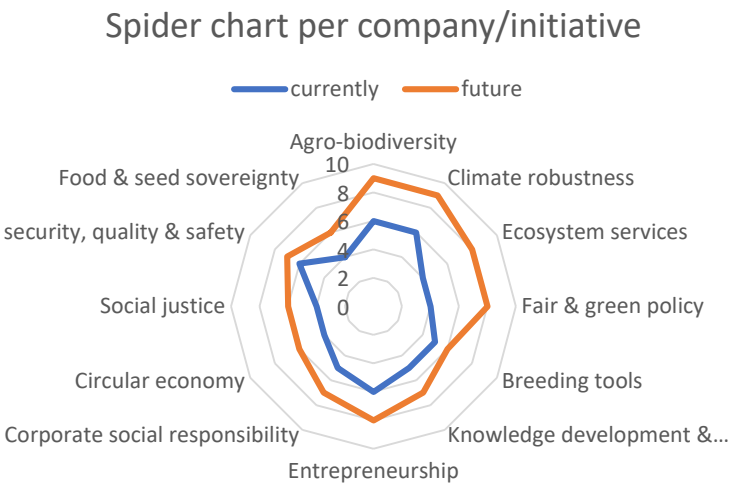
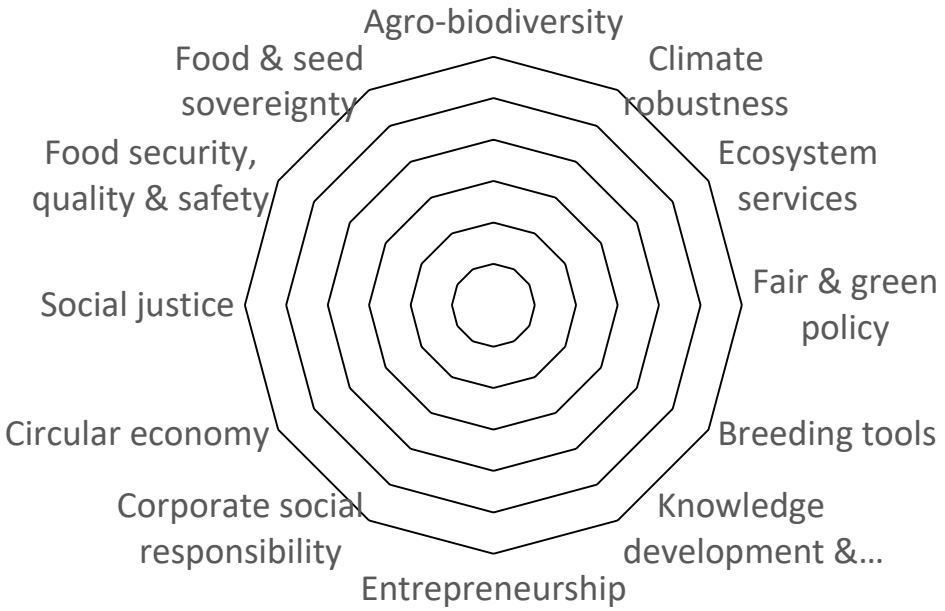
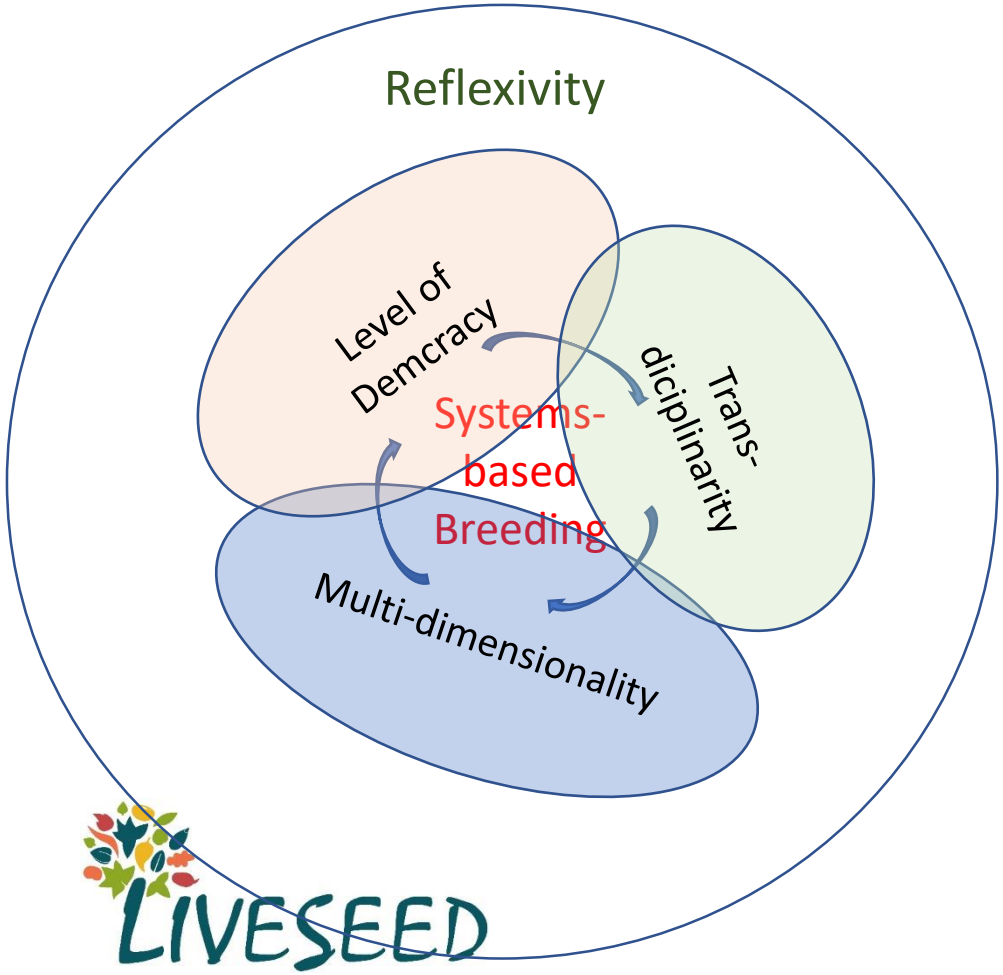
Applying 12 key elements in assessment

	Key elements
Required change in attitude	Corporate social responsibility
	Circular economy & True cost accounting
	Fair & green policy
From attitude to action	Knowledge development and integration
	Breeding strategies and tools
	Entrepreneurship
From action to achievement	Food security, safety & quality
	Food & seed sovereignty
	Social justice
	Agrobiodiversity
	Ecosystem services
	Climate robustness





Implementing systems-based breeding: **Lessons learned from DIVERSIFOOD on multi-actor processes: change in attitude**



Reflection in a group process

- Make the implicit explicit
- What are our assumptions?
  - We are often unaware of them

Adapted scheme of Figure 7, Deliverable 1.3, EU-Project DIVERSIFOOD

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M3.5: Organic plant breeding in a systems-based approach and integration of organic plant breeding in value chain partnerships

- Main questions to address collectively:
  - Why should different value chain actors support organic plant breeding?
  - The advantage of organic plant breeding for value chain (farmer, processors, traders)
  - The advantage of organic plant breeding for consumers and society (local and global)
- Tailor-made approaches are needed
  - Needs to include ***new*** approaches for: knowledge exchange, communication, marketing, education, etc

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The importance of a systems-based approach

- Fostering diversity in breeding approaches and breeding initiatives helps:
  - maintain agrobiodiversity
  - make agriculture more climate robust
  - foster the development and maintenance of knowledge
  - develop new types of relationships
  - keep an open mind on what seeds are: part of our common heritage

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- Thank you for your attention!

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