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Boosting organic seed and Plant breeding across Europe 2017-2021

A multi-actor approach

Bram Moeskops IFOAM EU, Project Coordinator
Monika Messmer, FiBL-CH, Scientific Coordinator

Monika.Messmer@fibl.org

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LIVESEED in a nutshell



Aiming for 100% organic seed of adapted cultivars



Approach & impact

LIVESEED in a nutshell

- Budget: 7.4 M EUR EU funding & 1.5 M EUR Swiss funding
- Duration: 4 years (June 2017 – May 2021)
- Coordinator: IFOAM EU
- Scientific coordinator: FiBL (Switzerland)
- Goal: **Boosting organic seed and plant breeding in order to improve the performance, sustainability and competitiveness of the organic sector**
- Approach:
 - Inter- and transdisciplinary
 - Policy – economy – science interface
 - Multi-actor & stakeholder involvement
 - Wide geographic representation
 - Wider range of crops: cereals, legumes, vegetables, forage, fruits



Working together



49 partners
18 countries

23 breeding & research institutes
7 breeding companies
8 seed companies
11 organic associations

Aim: Improve integrity and competitiveness of organic sector by reaching 100% organic seed of cultivars suited for Organic Agriculture

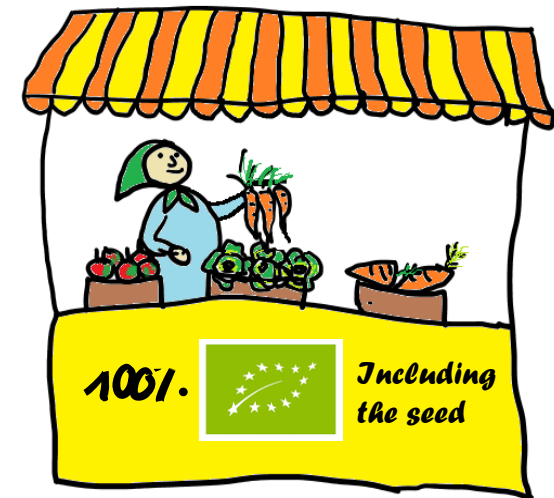
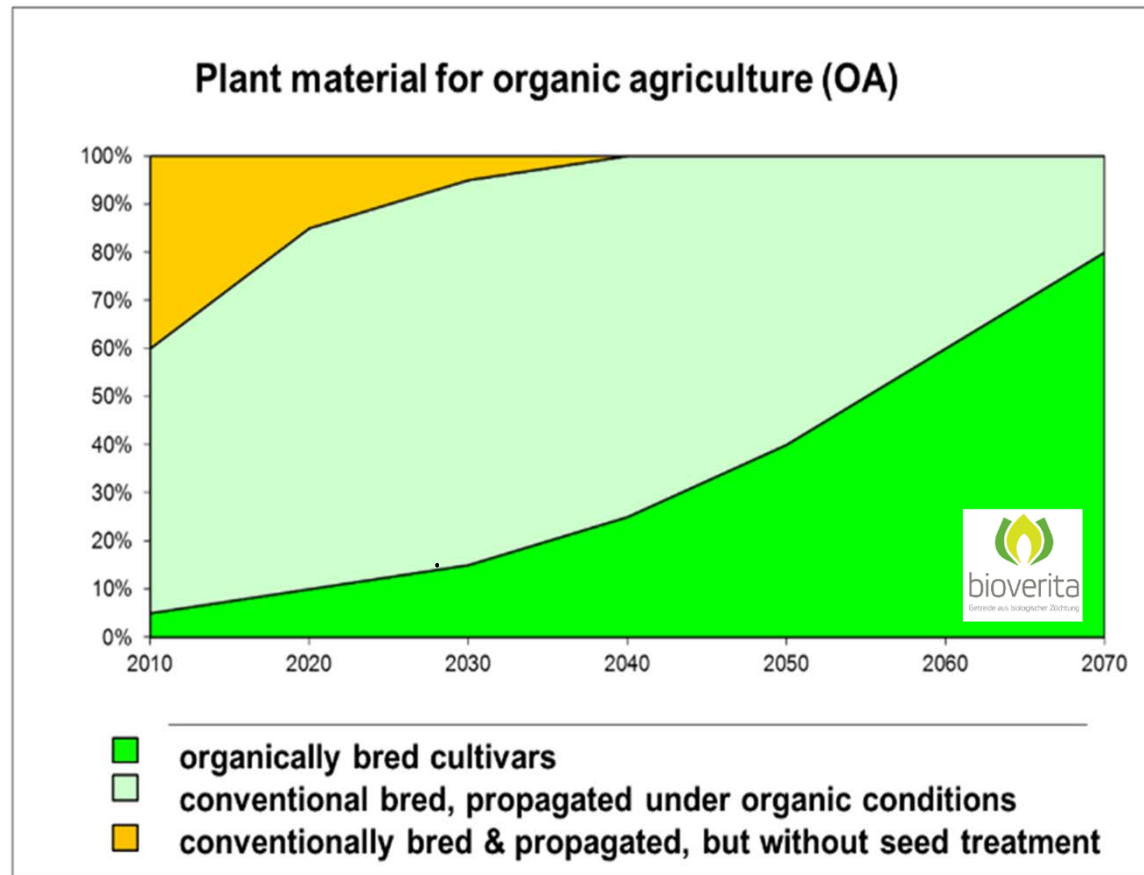
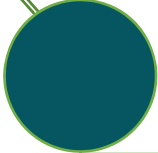
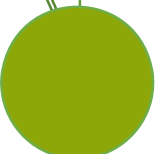
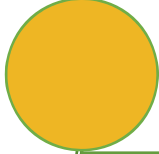
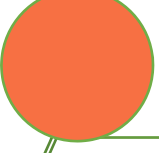
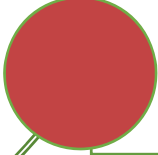


Figure 1 : Schematic time line to reach the goal of 100% organically propagated seed of suitable cultivars (light green) in short term and to foster cultivars specifically bred for organic farming systems (bright green) in the long term

LIVESEED Ambition

- Significantly improve the availability and quality of seeds for organic farming, and thus achieving the regulatory 100% organic seed target by 2037
- Increased transparency in the EU organic seed market
- Improved access to a wider pool of high-quality seeds of cultivars suited for the organic sector
- More harmonized registration approaches for organic seed in the EU
- Efficient seed multiplication methods and breeding approaches
- The availability of tools and resources for pre-breeding and breeding

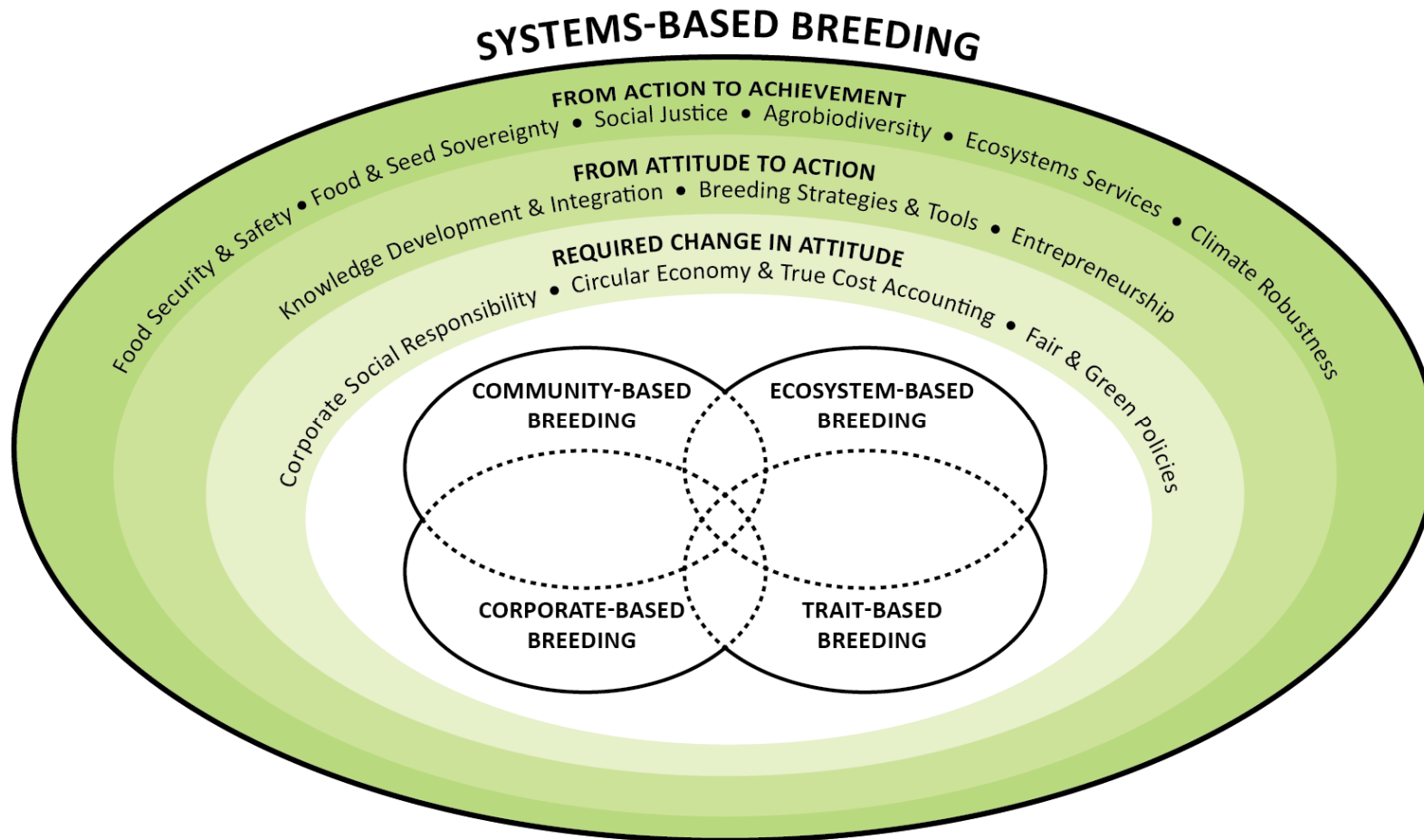
Main targets & objectives

- **Policy & regulation**
Harmonized Implementation of Organic Regulation with respect to seed
Recommendation for delegated acts of new organic Regulation (848/2018)
- **Research & development in organic plant breeding and seed health**
Innovative approaches in plant breeding for more resilient cultivars and holistic seed health strategies improve quality of organic seeds
- **Cultivar testing & seed multiplication**
Increase accessibility of organic seed and adoption of new cultivars
Recommendation for release of organic cultivars, toolbox for OHM
- **Socio-economics & market**
Improve the competitiveness of the organic seed supply chains from breeding to the consumer, *financing of organic plant breeding*
- **Communication & network**
Enhance knowledge & rise awareness on the benefits of organic plant breeding and organic seed

LIVESEED Innovations

- Co-development of knowledge by inter- and transdisciplinary multi actor approach
 - Farmer, breeder, seed producer, processor, retailer, consumer, policy makers, national authorities
 - Policy, Socioeconomy, Biology, Agronomy, Breeding & Genetics
- Holistic approaches for breeding and seed production
 - Systems-based breeding including also socio-economic components
 - Plant – Plant interaction
 - Plant – Soil microbe interaction
 - Plant – Seed microbe interaction
- Enabling more sustainable food production systems
 - Large portfolio of crops on farm level to mitigate risks of crop failure
 - Functional biodiversity on field level to reach high level of self regulation and closed nutrient cycle
 - Safeguarding and evolving genetic resources for future generations

Innovative breeding strategies for organic from trait-based to systems-based breeding including societal challenges and SGD



Lammerts van Bueren et al. (2018) Towards resilience through systems-based plant breeding. A review. *Agronomy for Sustainability* 38:42

Framework of organic seed and plant breeding

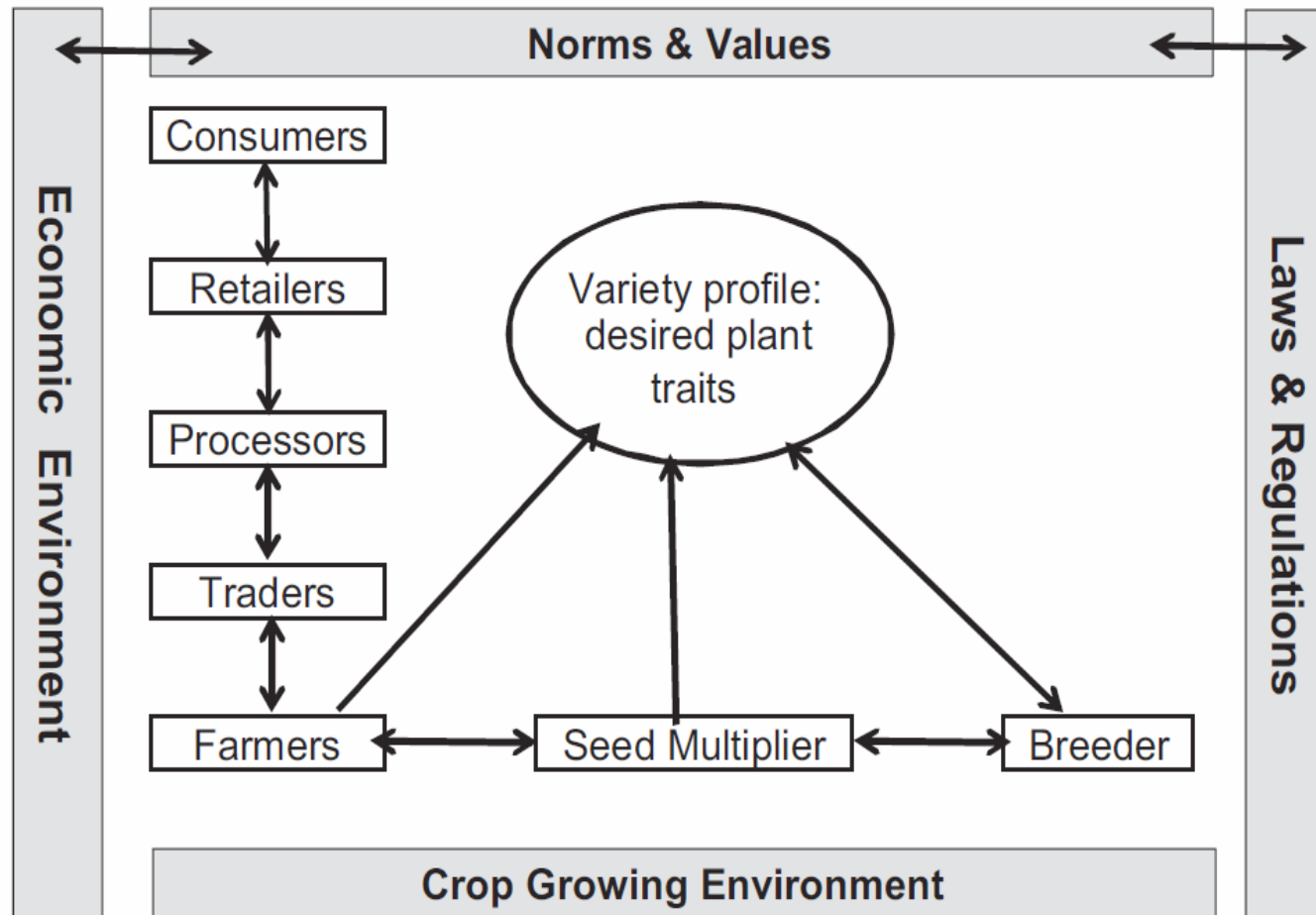
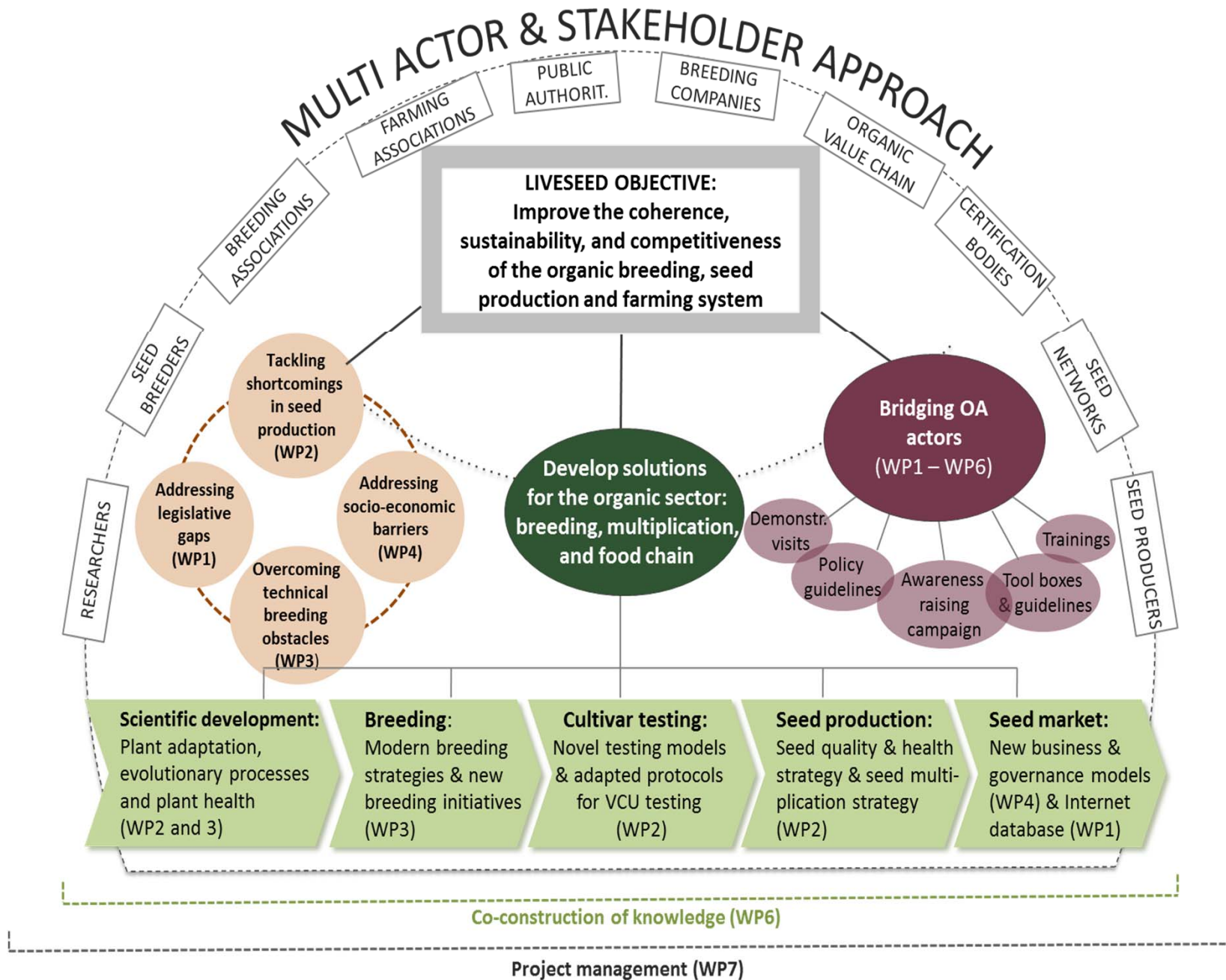
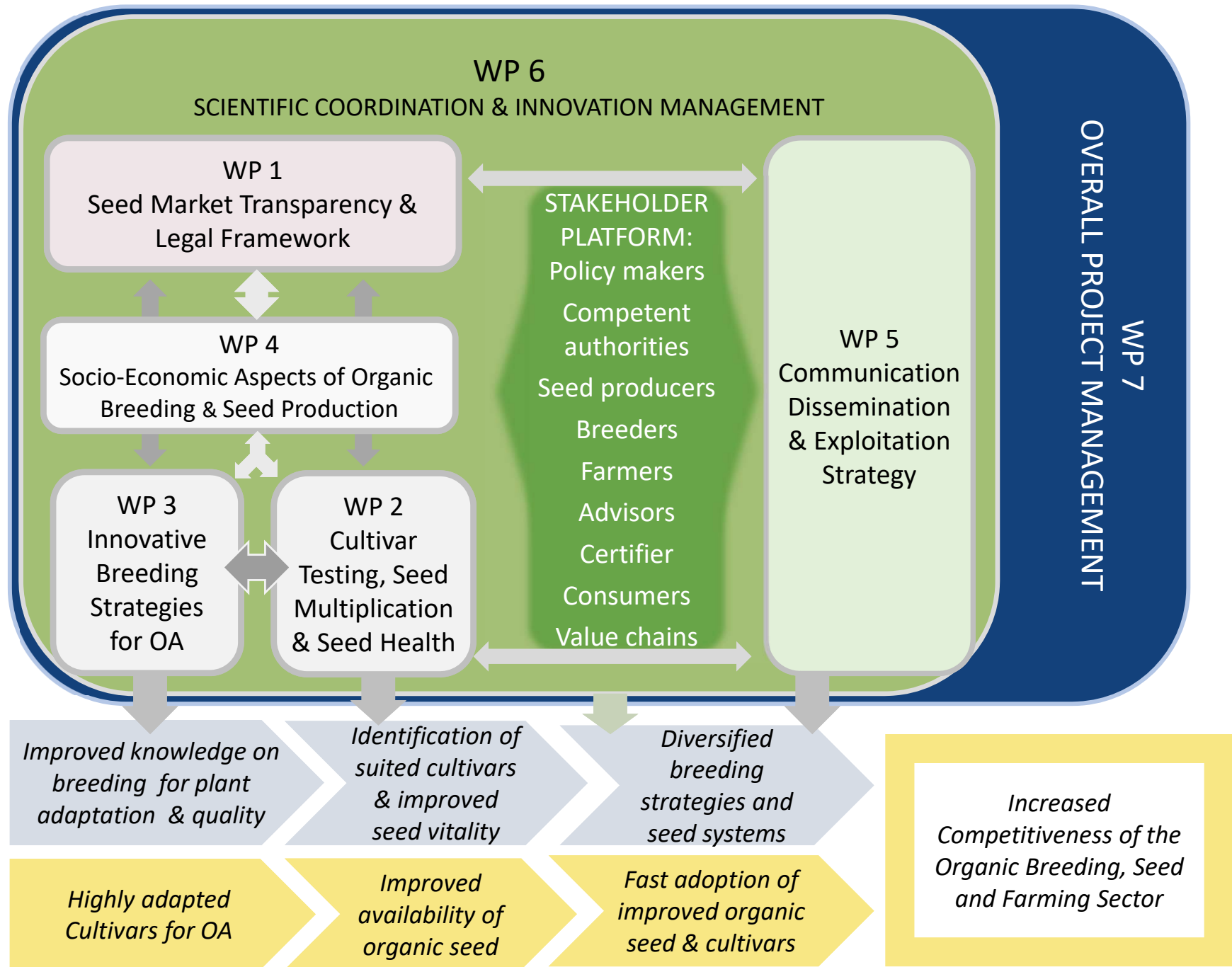


Figure 2. Situational context influencing organic plant breeding and seed production adapted from Osman et al., 2015





LIVESEED involvement with key stakeholders

- Over 100 stakeholders in 24 countries ready to support LIVESEED project through e.g. participation in farmers, seed supplier, and surveys, expert interviews, and knowledge sharing
- Visit of national authorities for organic regulation with regard to seed in 10 countries
- Workshop with CPVO and Examination offices for heterogeneous material and adjusted DUS and VCU for organic varieties
- Exchange with European Seed Association
- Exchange with EU commission DG Sante, DG Agri, DG Research
- National workshops with national authorities, farmers, breeders, seed companies, certification bodies to develop a declaration how to improve organic seed availability
- Exchange with the European Consortium for Organic Plant Breeding (ECO-PB), IFOAM EU seed expert group and IFOAM International on new breeding techniques

Policy Booklet

<https://www.liveseed.eu/liveseed-finalv2-webinteractive-1/>



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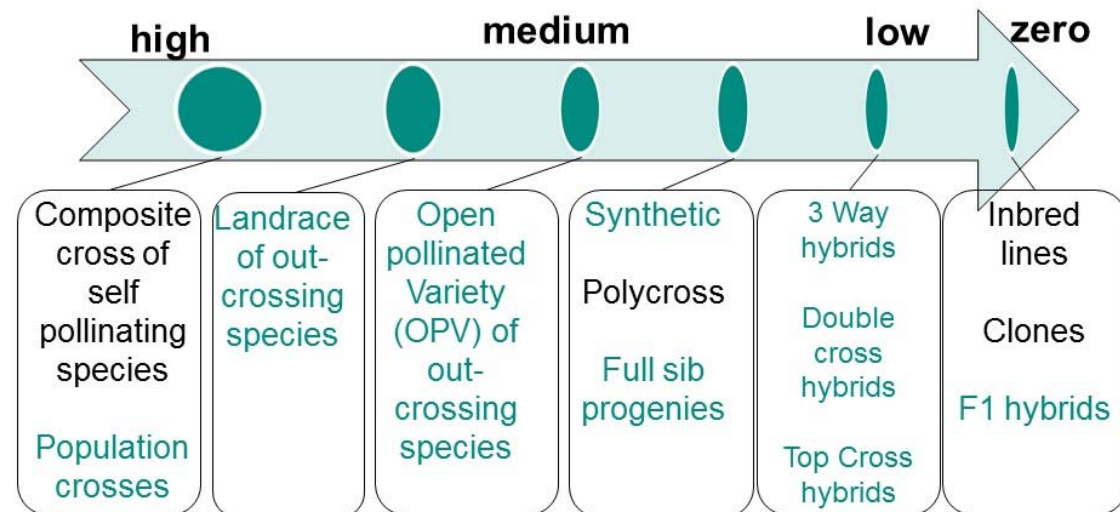
This project received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727230.

Breeding for Diversity

The organic sector needs a wide range of species & cultivar types that are adapted to different growing conditions and match the demand of different market chains:

- Homogeneous inbred lines
- Homogeneous F1 hybrids
- Open pollinated populations (e.g. population varieties of outcrossing species)
- Heterogeneous material (e.g. composite cross populations of inbreeding species)

Genetic diversity within cultivar for different cultivar types



Regulation & Policy on organic seed

New organic regulation accepted in May 2018

- Intensified our work to give recommendation in the policy process of developing delegated and implementing acts
- Organic seed data bases & derogations (WP1)
- National working groups and national annex I (WP1)
- Toolbox for description of **Heterogeneous Populations Cereals** of running temporary experiment extended by definition and description of **Organic Heterogeneous Populations in new organic regulations** (WP2)
- Several workshops with stakeholders and authorities (WP2)
 - LIVESEED workshop in France & Brussels, ECO-PB meeting in Rennes, IFOAM Seed Expert Group, 3 Arche Noah Workshops, 1 Demeter workshop

Regulation & Policy on organic cultivars

- **Recommendation for implementing act of upcoming new temporary experiment for varieties suited for organic agriculture for adjusted DUS and VCU**
- Report on present organic DUS and official and post release VCU testing (WP2)
- Meetings with DG Sante in May 2018
- LIVESEED – ECO-PB – CPVO Workshop in Dez 2019 to explain concept of heterogeneous populations and organic varieties and anticipated changes through new organic regulation on the release of cultivars to CPVO, national examination offices, ESA, UPOV, Plantum (WP2)

Conclusion & Recommendations on multi-actor approach

- **To achieve impact it is important to create an enabling framework**
 - address scientific, technical, but also legal and economic challenges in the different socio-economic context of the various EU States and regions.
 - Dialog with stakeholders and policy makers as well as consumers are key and often neglected
 - Different disciplines as well as stakeholders covering different aspects of this broader breeding and seed framework need to be considered
- **Stakeholder involvement needs time to build trust and common understanding**
 - Process needs to be steered and accompanied, sometimes pushed and moderated by facilitator/supporter (not a dictator)
 - Actors and stakeholders should be treated each other with respect and on equal level
 - Peer-to-peer meetings and workshops are essential to establish personal relationships, that then can be strengthened by Skype (SKYPESEED)
 - Common definitions and language need to be found to allow mutual understanding
 - Development of common vision is an interactive and iterative approach between different actors and stakeholders

Conclusion & Recommendations on multi-actor approach

- **Co-creation of knowledge and participatory decision making processes are very rewarding and allow scientific and technical solutions to become real innovations with impact on a larger scale**
 - Combination of scientific, technical, experiential and social knowledge allows thinking out of the box to solve lock-in situations
 - Engagement of actors in decision making process creates ownership and fast adoption of innovations
- **Participatory research is very exiting but more difficult to plan**
 - As actors and stakeholders also involved in decision making process, outcome can not be predicted from the start
 - Finding solutions which are accepted and carried on by most actors and stakeholders needs participatory tools and more time
 - Involving actors and stakeholders in a very participatory way is still contradictory to present research funding, where research plan, individual activities, milestones and deliverables need to be defined for the upcoming 4-5 years
 - More flexibility and less administration would be needed in the future

Upcoming Events

Be part of it

- **EUCARPIA – ECO-PB – LIVESEED Workshop on breeding for plant - microbiome interaction** on 6th December 2019 in Tulln Austria as side event of miCROPe, abstract submission by 29th June 2019
<https://www.micrope.org/register.php>
- **10th Organic Seed Growers Conference**, February 12-15, 2020 in Corvallis, Oregon, USA
- **20th Organic World Congress 2020**, on September 21 -27, 2020 in Rennes, France : <https://owc.ifoam.bio/2020/conference-fora>, Abstract submission Sept 2019 organized by ITAB & INRA
- **III International Organic Fruit Symposium and I International Organic Vegetable Symposium** in Catania, October 5-8, 2020:
<https://www.ishs.org/symposium/698> organized by Ferdinando
- **EUCARPIA Section Organic and Low Input Agriculture & LIVESEED Scientific Conference** 9-11 March 2021, Cesis, Latvia organized by Linda



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NEW: FiBL Europa offers a position for a plant breeder in Brussels, see www.fibl.org – career

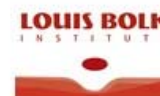
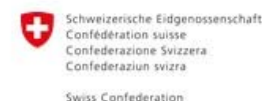


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Thanks a lot for
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