



# *Research for transition:* Reflections based on the SCAR Foresight Reports

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<https://ec.europa.eu/research/scar/index.cfm?pg=home>

# The key message of the SCAR Foresight exercises

SCAR FEG 3 (2011): on efficiency versus sufficiency

- NOT: sustainability = efficiency OR sufficiency
- BUT: **sustainability = efficiency x sufficiency**

Is sufficiency built into organic farming, also from the demand side?

SCAR FEG 4 (2015): The bioeconomy should be **governed** according to the same principles that govern living systems

- **Food first**
- Sustainable yields
- Cascading use of resources
- Circularity
- Diversity

Is research for organic 'efficient'? Does it sufficiently use –omics to understand the processes underlying agro-ecology ('precision ecology' – Pablo Tittone)

# Permaculture principles (David Holmgren)

1. Observe and interact
2. Catch and store energy
3. Obtain a yield
4. Apply self-regulation and accept feedback
5. Use and value renewable resources & services
6. Produce no waste
7. Design from patterns to details
8. Integrate rather than segregate
9. Use small and slow solutions
10. Use and value diversity
11. Use edges and value the marginal
12. Creatively use and respond to change

## SCAR4SIGHT Principles

- Food first
- Sustainable yield
- Cascading
- Circularity
- Diversity

# SCAR4sight recommendations for research

1. New paradigms for primary production based on ecological intensification
2. Emerging enabling technologies: the digital revolution
3. Resilience for a sustainable bioeconomy
4. The new energy landscape
5. Business and policy models for the bioeconomy
6. Socio-cultural dimensions of the bioeconomy
7. Governance and the political economy of the bioeconomy
8. Foresight for the biosphere

# Is the Knowledge and Innovation System fit for purpose?

- Challenge driven: but is there a common vision?
  - Agro-ecology (as techno-fix) within the current socio-economic system
  - Or agro-ecology as prototype of a new societal system?
- Transdisciplinary
- Socially distributed
- Reflexive
- New rewarding and assessment systems
- Competencies and capacities

**2<sup>nd</sup> option: comparison between agro-ecology and conventional agriculture does not make sense !**

**Monetary valuation of external costs: NH<sub>3</sub> (manure) and NO<sub>x</sub> (diesel) most important**

**Farmers need to convert to organic, but also researchers! (cfr bottom-up research)**