Track 2 summary: Transition to renewable resources

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Track 2:
Transition to renewable resources

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Reflections from

- Introductory plenary sessions
- Organic production systems mitigating climate change (oral session)
- Fossil fuel free farming – is it possible? (oral session)
- Multifunctional use of farm ressource – improved use of biogas digestate (poster workshop)

Introductory plenary sessions

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Elisabeth Gauffin:

- **To make a change, organic farming need to grow to a higher marked share**

Susanne Padel:

- **Organic rules and systems foster innovation (➔for example restrictions on nutrient or energy use will promote systems with a higher ressource use efficiency?)**
- **Know-how innovations are as important as technical innovations**

Introductory plenary sessions

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Christine Watson/Elisabeth Stockdale:

- **Recycling nutrients and energy between farms (and the rest of society), and linking livestock and greenhouse production to land-based food production should be an important focus point**

Paolo Bárberi:

- **Present organic farming systems show both some of the best and some of the worst cases (sustainabilty impact assessment reference methods are needed to identify where to focus improvements)**

Organic production systems mitigating climate change (oral session)

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- **Sundberg et al.: Can organic farming contribute to long term climate goals? – maybe, there is a large variation – further development needed**
- **Eriksen et al.: Multispecies grasslands (i.e. more biodiversity) can help to stabilize crop productivity and store carbon in the soil.**
- **Carter et al.: Nitrogen mineralisation and nitrous oxide emissions are important to account for when comparing effects of ensiled versus composted green manure**

Fossil fuel free farming – is it possible? (oral session)

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- **Sundberg et al.: Yes! But the carbon balance and the effect of different energy sources (for e.g. biogas vs. straw) needs to be accounted when assessing the overall GHG effect of fossil fuel free organic farming systems**
- **Koesling et al.: Embedded energy in barns is significant to consider – but varies a lot….**
- **Johansson and Belfrage: Drought horse power could supplement other biofuels for traction and benefit quality of life, less soil compaction, grassing for nature conservation etc.**

Multifunctional use of farm ressource – improved use of biogas digestate (poster workshop)

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- **Råberg et al.: Biogas and strategic N management goes well together**
- **Gunnarsson et al: Biogas nutrients include more than Nitrogen management**
- **Madsen et al.: Effect of post-harvest catch crops (for biomass for e.g. to biogas)**
- **Mortensen et al.: Species mixtures for high and stable biomass production**
- **Løes et al.: Plant production consequences of biogas from manure – a complex field!**

How has the seminar shown that organic farming systems are – or not are – a driver for change?

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Yes!

- **Facilitates the whole systems thinking needed to assess improvements in ressource use efficiency (Bárbieri, Sundberg)**
- **Has a defined goal to improve ressource use and the use of renewable ressource**
- **Development of how to integrate biogas as a measure to more recycling+bioenergy prod.**
- **BUT: A lot of variation to take into account and learn from**

What has the seminar shown that can be utilized by organic food and farming systems?

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- **Whole systems and food chain environmental impact assessment methods (for e.g. LCA): E.g. to invetigate how biogas can reduce GHG compared to for e.g. energy from straw**
- **More biodiverse grassland/cropping systems has multifunctional potentials**
- **Koestling et al. New housing standards needed**
- **Integration of biogas has large potentials**
- **More clear targets for renewables and reduced energy use should be set**

Has the seminar given suggestions for new pertinent research questions?

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- Effect of more (bio)diverse systems – for e.g. on resilience to climate changes
- How to cover the temporal variations in energy and ressource needs when converting to renewable sources?
- Important factors to design new and less energy costly housing systems
- How to assess tradeoffs between services (energy, GHG etc.), and multifunctionality
- And many more points - Thank you very much!