1. The Interactive Learning & Action Approach

2. Issues in Transdisciplinary Research

3. Learning from TransForum – transition programme for sustainable development of agriculture

4. Conclusions
Athena Institute is part of the Faculty of Life and Health Sciences at the Vrije Universiteit Amsterdam.

Mission Athena Institute: To develop a scientific knowledge base that can be used to organize an open dialogue between science and society in order to address complex societal issues (with a life/health science component) in a sustainable way.

- 20 years of experience with Transdisciplinary Research
- Projects in the fields of agriculture, health and environment both in The Netherlands and developing countries
The Interactive Learning and Approach approach - principles

- End-users have a prominent role in decision making
- A shared vision is central to the process
- Trust is developed
- Mutual learning is stimulated
- Network building is part of process
- Knowledge (different sciences, practice) is integrated
The Interactive Learning and Action approach - activities

- Training in the Interactive Learning and Action Approach
- Interdisciplinary team
- Continuous feedback-loops to ensure cross-checking of the information
- Collection of data, exchange and integration of information
- Literature search
- Interviews
- Dialogues
- Interactive, participatory workshops

Projects at various levels in continuous interaction with different actors

Zweekhorst et al. 2002
Interactive Learning and Action approach - conditions

- Methodology
- Principles
- Human resources
- Institutional setting
- Wider context

(Broerse 2000, Zweekhorst 2004)
Besides conducting Transdisciplinary Research ourselves, we also monitor and evaluate other projects and provide training and coaching.

Help projects with Transdisciplinary Research using our framework AND

Enrich our framework through closely observing and monitoring practice.

ILA monitoring aims to contribute to learning within, between and from Transdisciplinary Research Projects.

Enhance learning by developing new monitoring tools: Dynamic Learning Agenda, AV learning histories, eye-opener workshops.
Issues in Transdisciplinary Research

What can we learn from a large transition program stimulating Transdisciplinary Research for sustainable development of agriculture in the Netherlands?
Aims to stimulate:

- Sustainable development of agriculture
- Transition from Agriculture 'Knowledge Infrastructure' (KIS) to 'Agro Innovation System' (AIS)

By supporting:

- 30 innovative projects (IP's)
- 30 scientific projects (SP's)
- Learning from and between projects (LP's)

Overall budget: 60 mln Euro
(30 mln funding (BSIK) + 30 mln matching)
TransForum is based on five hypotheses:

- **Sustainable development is a dynamic system property**
- **Sustainable development needs system innovation**
- **System innovation is a non-linear learning process**
- **System innovation requires KOMBI approach**
- **KOMBI approach implies trans-disciplinarity**
Interdisciplinary monitoring team from Athena Institute has:

- Developed monitoring methodology
- Closely studied 8 Innovative Projects
- Supported the learning programme of TransForum itself

- Joske Bunders (project leader)
- Barbara Regeer (co-ordinator)
- Anne-Charlotte Hoes (PhD student)
- Mariette van Amstel (researcher)
Learn about issues in Transdisciplinary Research

We see two types of challenges for transdisciplinary research:

• Challenges in internal dynamics
• Challenges in boundary dynamics
Challenges to Transdisciplinary Research – internal dynamics

- How to create mutual trust?
- How to stimulate knowledge co-creation?
- How to maintain a reflexive working process?
- How to enhance learning?

Challenges in internal dynamics

(Regeer and Bunders 2007)
Challenges to Transdisciplinary Research – internal dynamics

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Challenges in internal dynamics

(Regeer and Bunders 2007)
How to stimulate knowledge co-creation?

• Assumption TR:
  – Bring people together
  – Develop shared vision
  – Cocreate knowledge

• We studied scientists-entrepreneurs interaction in three cases

• How was the interaction between the two groups shaped and knowledge (co)created?
Homogeneous learning spiral (interaction within group) is sometimes needed for heterogeneous collaborations to be effective,

- if there is no collective commitment
- if questions, views, perspectives are not articulated

Moreover, knowledge creation is contextualised (mode-2)
How to maintain a reflexive working process?

- Not always possible from start
- Often great urge is felt to start ‘doing’
- Slowly build in reflection sessions

Zweekhorst et al. 2004
How to enhance learning?

Dynamic knowledge/learning agenda
• Tool evolved in process
• Based on participant observation (and learning histories)
• Feed back into project team and update regularly
• Articulates important questions / pitfalls
• Broadens scope
• Puts them on the 'agenda'
• Functions as point of reference in meetings
• Similarities emerge
Examples of Persistent Questions on Learning Agenda’s

• How do niche projects make connections with 'mainstream' actors without risking being swallowed by them?
• How do professionals involved refrain from defaulting into 'mode-1'?

• i.e. Questions deal with boundaries between system innovation projects and standing regimes on structure, project and competences level
Challenges to Transdisciplinary Research – boundary dynamics

• How to deal with tension between institutional requirements and participation in project?
• How to contribute to science?
• What new competences are needed and how are they acquired?
Challenges to Transdisciplinary Research – boundary dynamics

- How to deal with tension between institutional requirements and participation in project?
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Challenges in boundary dynamics

(Regeer and Bunders 2007)
Tension between wider context and project

• dynamic and multiple understanding of sustainable development in project

• versus

• request for predefined set of goals and definitions of sustainable developments by surrounding of project
Sustainable Development as process

- In TR (and the ILA) problem articulation, is not predefined, but rather part of project itself

- Earlier monitoring projects of TR for SD: going into the field with priority defined set of goals and definitions did not generate aspired movement towards sustainable development

- Make articulation of sustainable development part of learning process between variety of actors
• Challenge in boundary dynamics: some funding agencies, NGO’s and governmental bodies expect clear definitions and quantifiable objectives of sustainability

Options:

– Make these actors part of learning process too (e.g. organise excursions to projects)
– Create boundary objects: for instance innovative indicators that comply to both worlds
How to contribute to science?

Challenges from perspective participant from science

(Tress et al. 2003)
Challenges of Transdisciplinary Research

• How to deal with tension between institutional requirements (e.g. reputational system based on number of publications) and participation in project?

• What new competences are needed and how are they acquired?

• How to contribute to science?

(Tress et al. 2003)

Challenges in boundary dynamics
Contribution to science

- In what different ways do the Transdisciplinary Research projects at TransForum (and the monitoring thereof) contribute to science?

- We identify three different types of contributions to science
What is the contribution to science?

1. Contribution to monodisciplinary science
2. Description of exemplars
3. Meta-analysis
What is the contribution to science?

1. Contribution to monodisciplinary science
   Eg.1 Developing Agroparcs
   Eg.2 Impact on knowledge infrastructure
      (Closed Greenhouse)

2. Description of exemplars
   Eg.3 Science-Entrepreneurs collaboration
      contribution to Action Learning

3. Meta-analysis
   Eg.4 Comparison Dynamic Learning Agenda’s
      contribution to monitoring & evaluation
What is the contribution to science?

1. Contribution to monodisciplinary science
   Eg.1 Developing Agroparcs
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2. Description of exemplars
   Eg.3 Science-Entrepreneurs collaboration contribution to Action Learning

3. Meta-analysis
   Eg.4 Comparison Dynamic Learning Agenda’s contribution to monitoring & evaluation
Example 1: Developing Agroparcs
Example 1: Developing Agroparcs

- A monodisciplinary scientist (process technologist) participating in a transdisciplinary project, such as the development of an Agroparc, enriches his scientific field by:
  - New empirical data
  - New insights in own field through collaboration with other scientific fields

- However, different experiences in two cases:
  - NGB: enriching of own research field AND relevant to actors from practice, due to open communication, co-creation of research questions, and mutual vision development
  - BPT: enriching of own research field, but no use to practice, due to lack of transdisciplinary facilitation
Example 2: Impact on knowledge infrastructure

- Synergy is a learning network of Greenhouse entrepreneurs (innovators) committed to developing the Closed Greenhouse.
- Involved scientific fields are enriched by this network through new questions, issues, and empirical data.
  - Eg. Shift from technical (energy) research to plant physiology.
  - Eg. Funding collaborations for new research programs.
Conclusions

• The ILA offers a framework for transdisciplinary research on complex and challenging issues such as sustainable development

• Challenges are both internal and at the boundaries of transdisciplinary projects

• Closely monitoring transdisciplinary projects using ILA enhances learning of participants and generates new knowledge:
  – Mono/multi disciplinary knowledge
  – Case-studies on transdisciplinary projects
  – Generic knowledge on new strategies for sustainable development