

Learning from drivers and conflicts

Bedded pack barns: from network to innovation

IFSA July 2012

Paul Galama, Karen Eilers, Hendrik Jan van Dooren



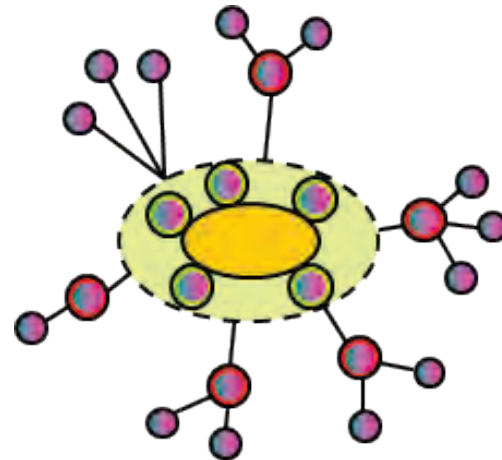
Topics

- Network approach with free actor
- Participative innovative process
- Learning process (DEED method)
- What did we learn and conclusions

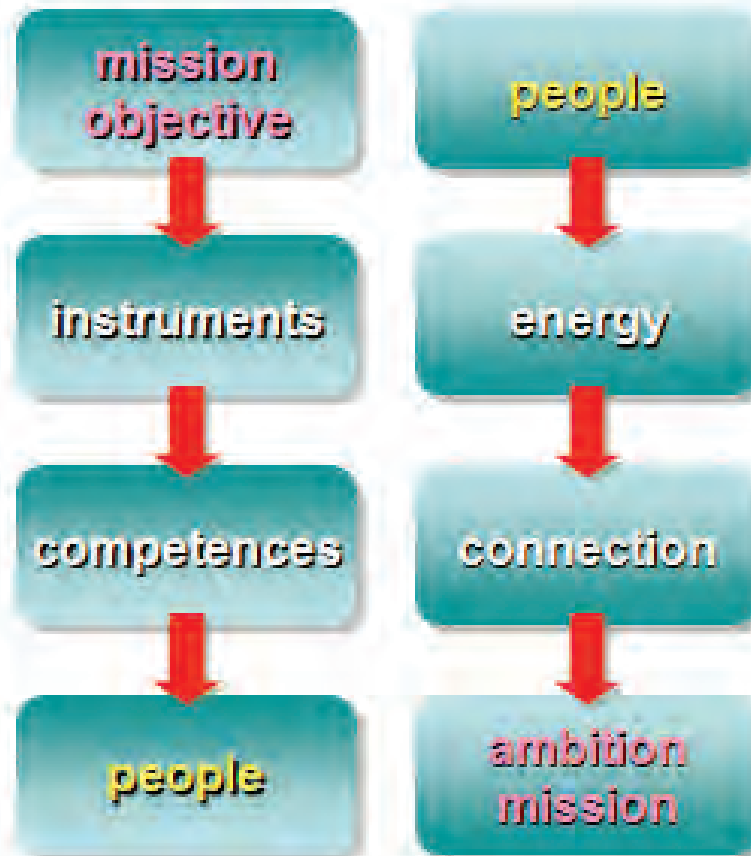


Network approach

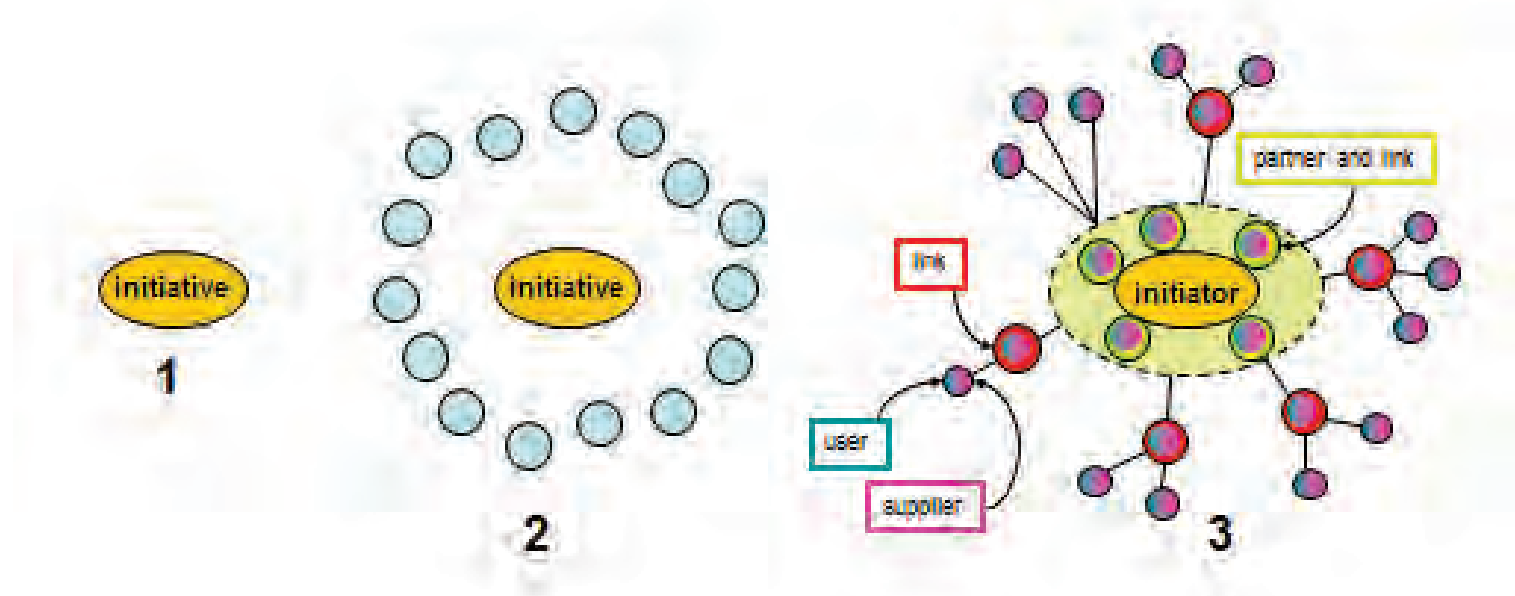
- Since 2004 demand driven research of Ministry ANFQ
- Focus on entrepreneurs initiatives:
 - First year 167 applications, 50 selected
 - Until 2010 > 200 networks selected
 - Since 2010 subsidy arrangement of Min. ANFQ
- Role of researcher
 - Free actor
 - Inspiration
 - Expert
 - Reflection
- Co creation of knowledge (researchers and network)



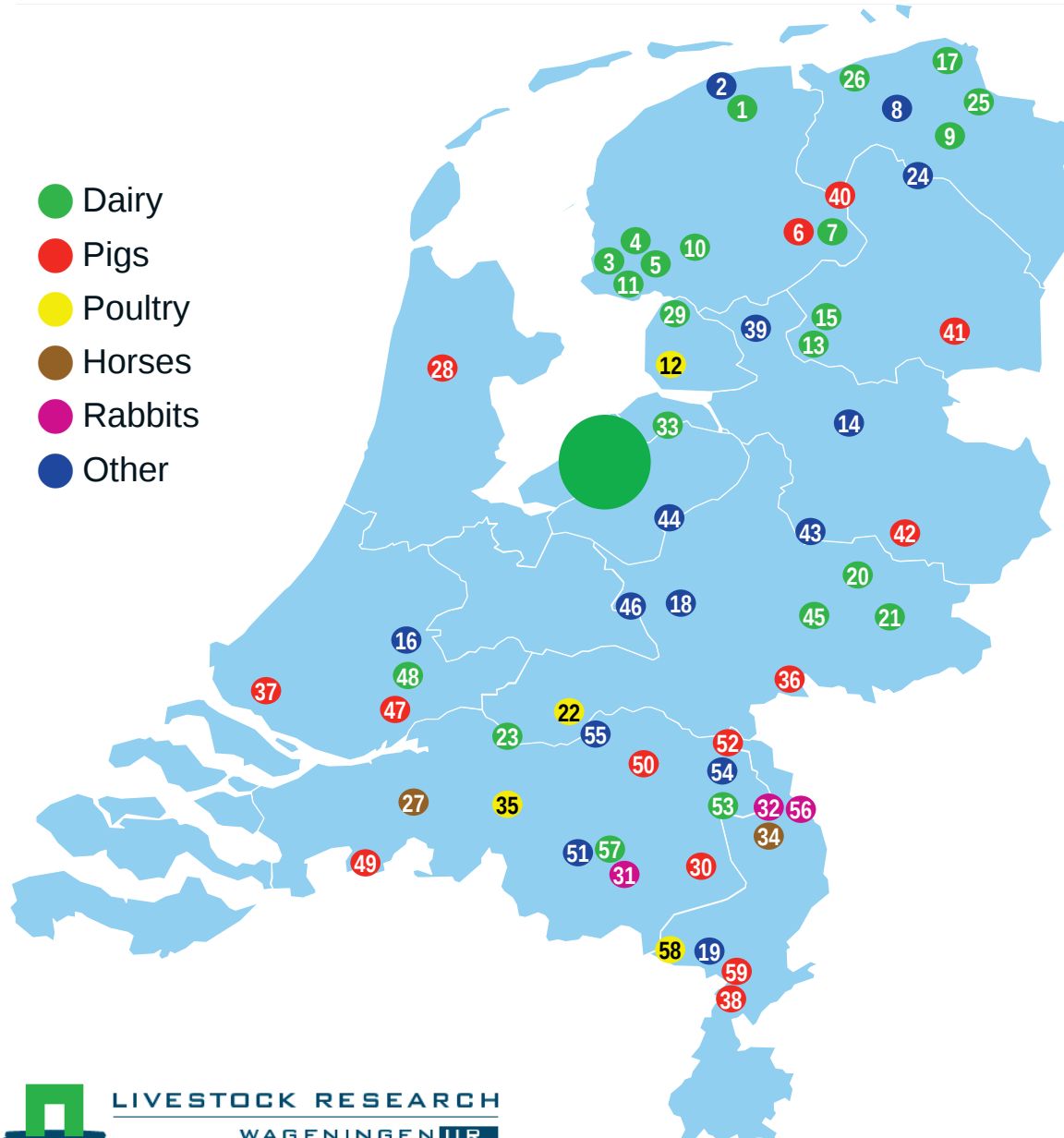
Project approach versus network approach



From small initiative to network



Example networks in 2007



Network
“New housing systems Dairy”

2006:

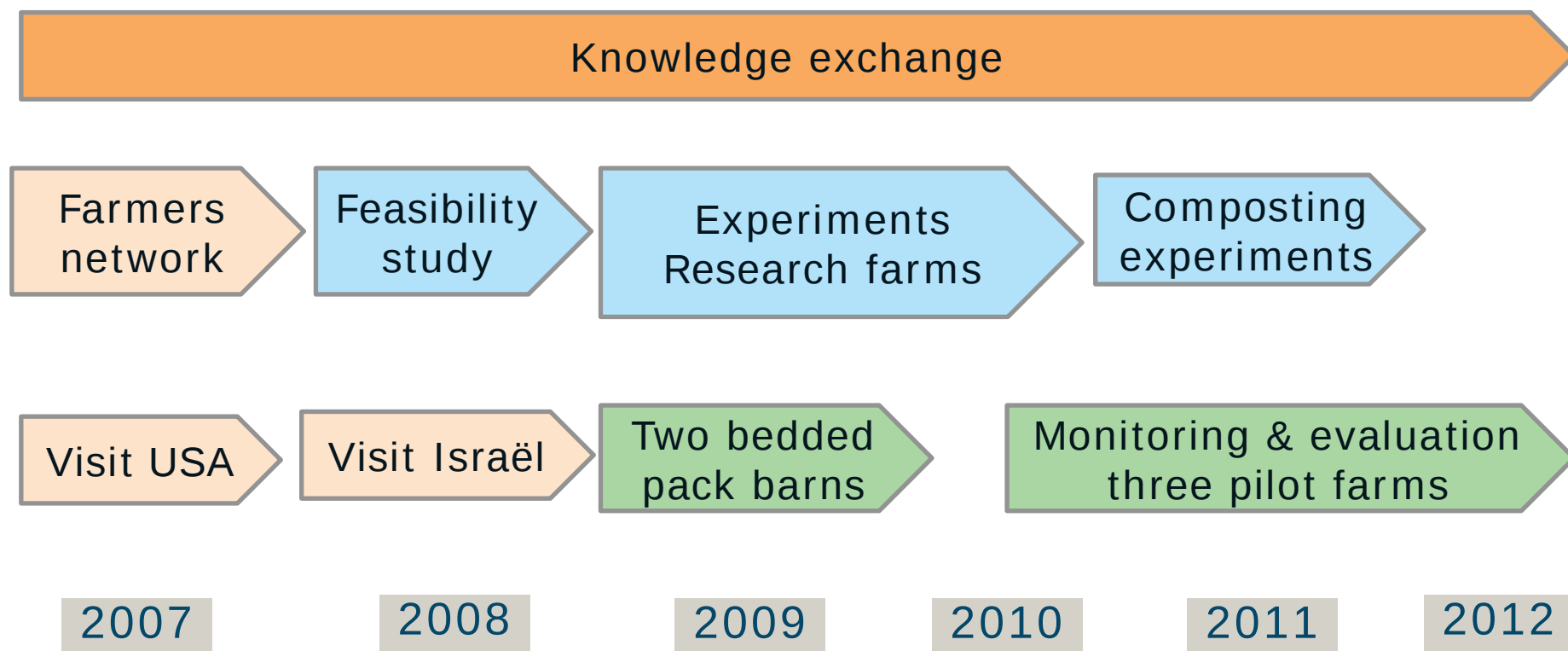
- Exchange ideas
- Workshop new designs

2007:

- Focus on bedded pack barns
- On research agenda



Overview research and knowledge exchange





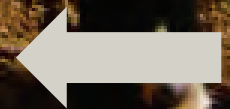
USA: Composting wooden chips and sawdust

Twice a day cultivate the bedding
7 m² per cow bedding



A large indoor dairy farm with a high, arched metal roof and translucent panels. The floor is covered in a thick layer of brown, dried manure. Several black and white cows are visible, some standing and some lying down. The background shows a green field and trees through the open sides of the structure.

Israël:
bedding of dried manure
20 m² per cow

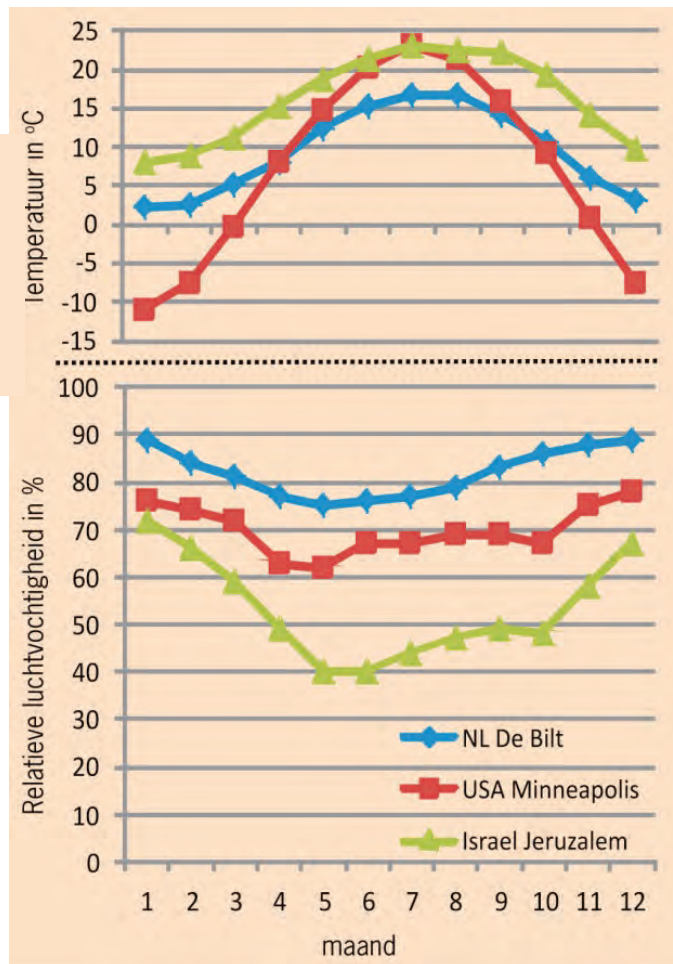


Feasability study

1. How to keep bedding dry in dutch climate?



2. What is the ammonia emission of different bedding materials?



3. €



LIVESTOCK RESEARCH
WAGENINGEN UR



Experiments on regional farms



Composting: wooden chips and sawdust



Drainage with sand



Absorbing with peat ground and reed



Cows in Green house with folie

Research on practical farms



Many ways of knowledge exchange



You tube (12000 visitors)



Farmer who gives courses

- Articles
- Presentations
- Book
- Website www.vrijloopstallen.wur.nl

- Farmers
- Advisors
- Policy makers
- Architects



Sustainability aspects

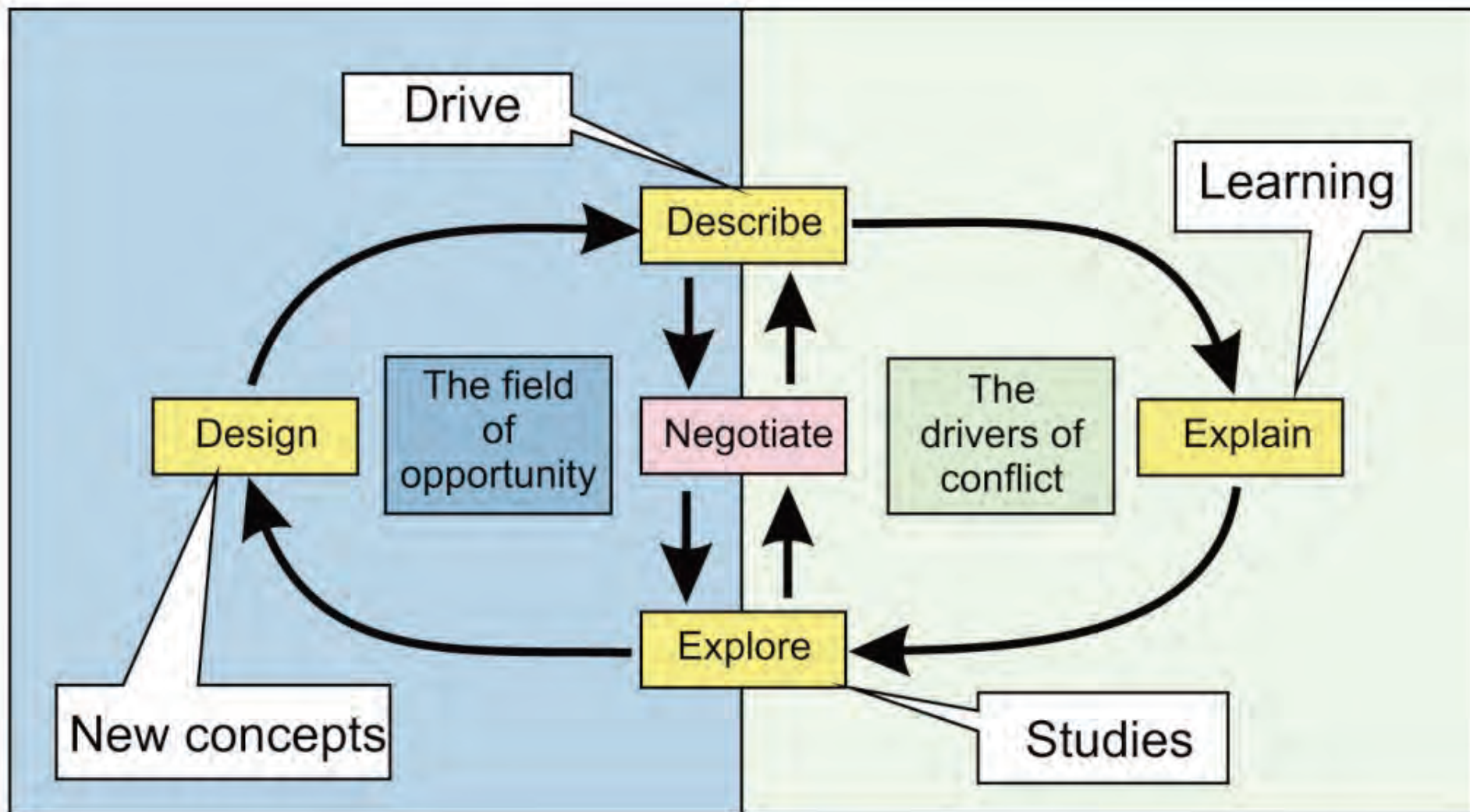
Drive of farmers

- Animal welfare, health and longevity
- Manure quality

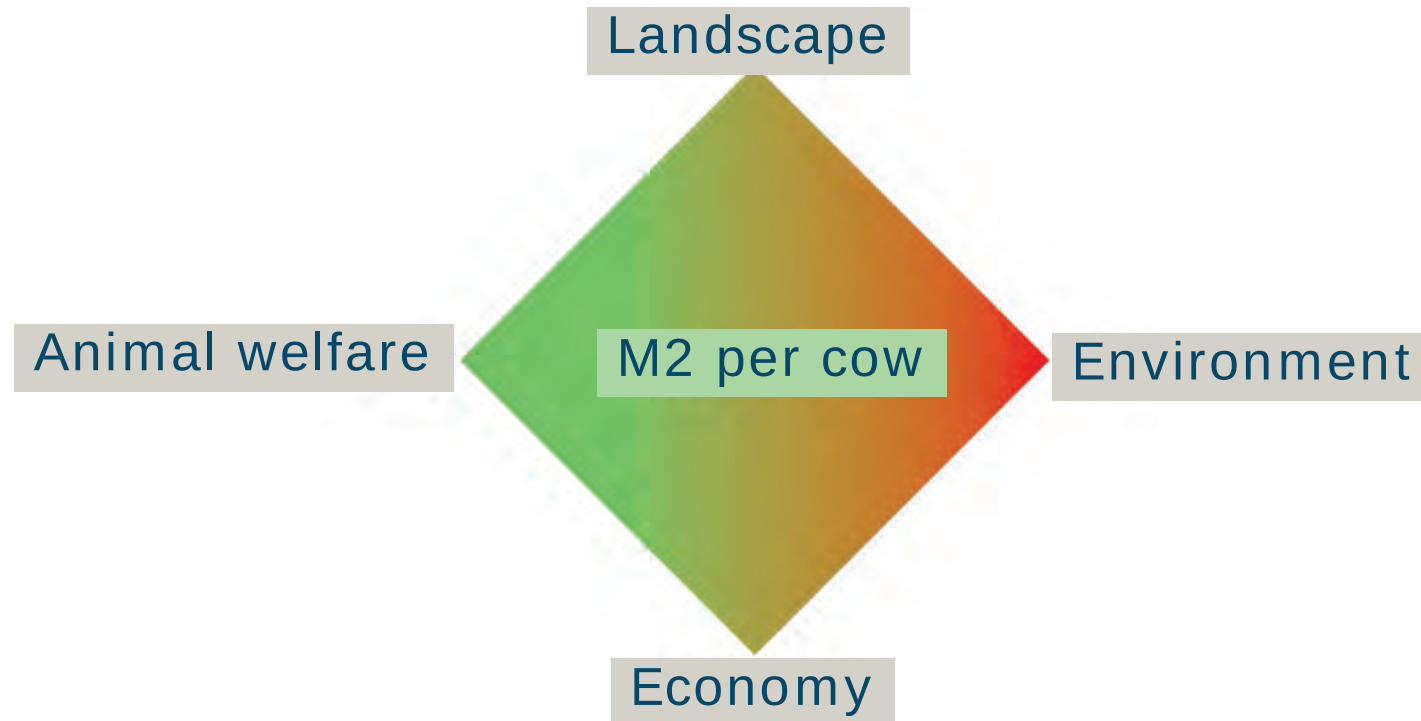
Possible conflicts

- | | |
|---|------------------|
| ■ Emission (NH ₃ , N ₂ O, CH ₄) | Government |
| ■ Milk quality | Dairy Industry |
| ■ Landscape | Local government |

Learning process (DEED methode)



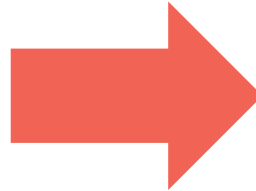
Drivers and conflicts



Drivers and conflicts

Upgrade waste

- Dredging from ditches
- From housekeeping



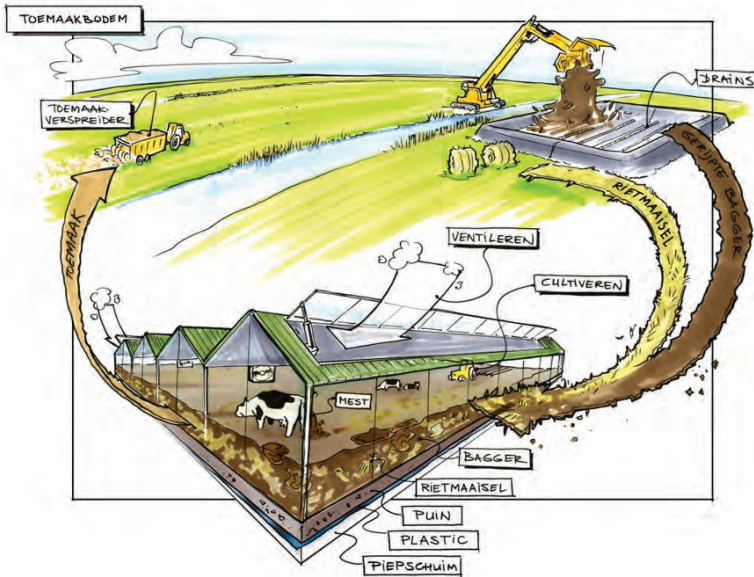
More risk

- Food quality
- Soil fertility

Soft bedding for low emission



Hard bedding for walking cow



What did we learn? (proces)

- Free actor important to keep focus
- Don't put idea too fast on research agenda
- Put conflicts on time on policy agenda
- Farms visits worldwide gives a lot of inspiration
- YouTube video has a great impact
- Combination of research on experimental and commercial farms works well
- Trial and error approach on different pilot farms works well, but focus now on most promising

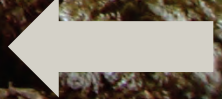
What did we learn? (sustainability)

- Animal welfare and health 
- Manure quality  
- Ammonia emissions
 - Stable 
 - Land 
- Quality milk 
- Economics  
- Landscape  



A photograph of a large indoor dairy farm. In the foreground, a large area of dark brown, moist manure is visible, with several small wisps of white steam or ammonia gas rising from it. In the background, several black and white cows are standing or lying down in a stall. The stall has a concrete wall on the left and a metal railing. The floor is covered in manure. The text "Too much aerating gives too much ammonia emission" is overlaid on the manure in the center. A large white arrow points to the right in the bottom right corner.

Too much aerating
gives too much ammonia emission

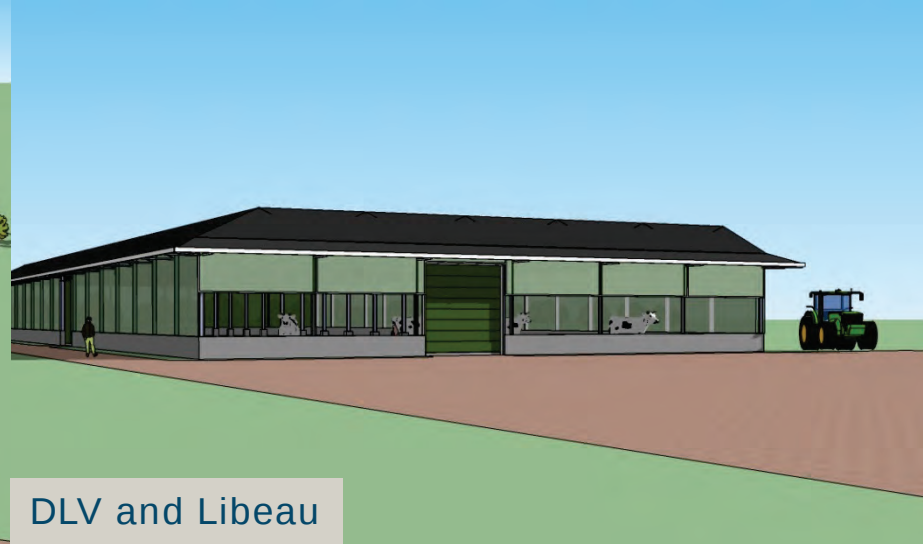




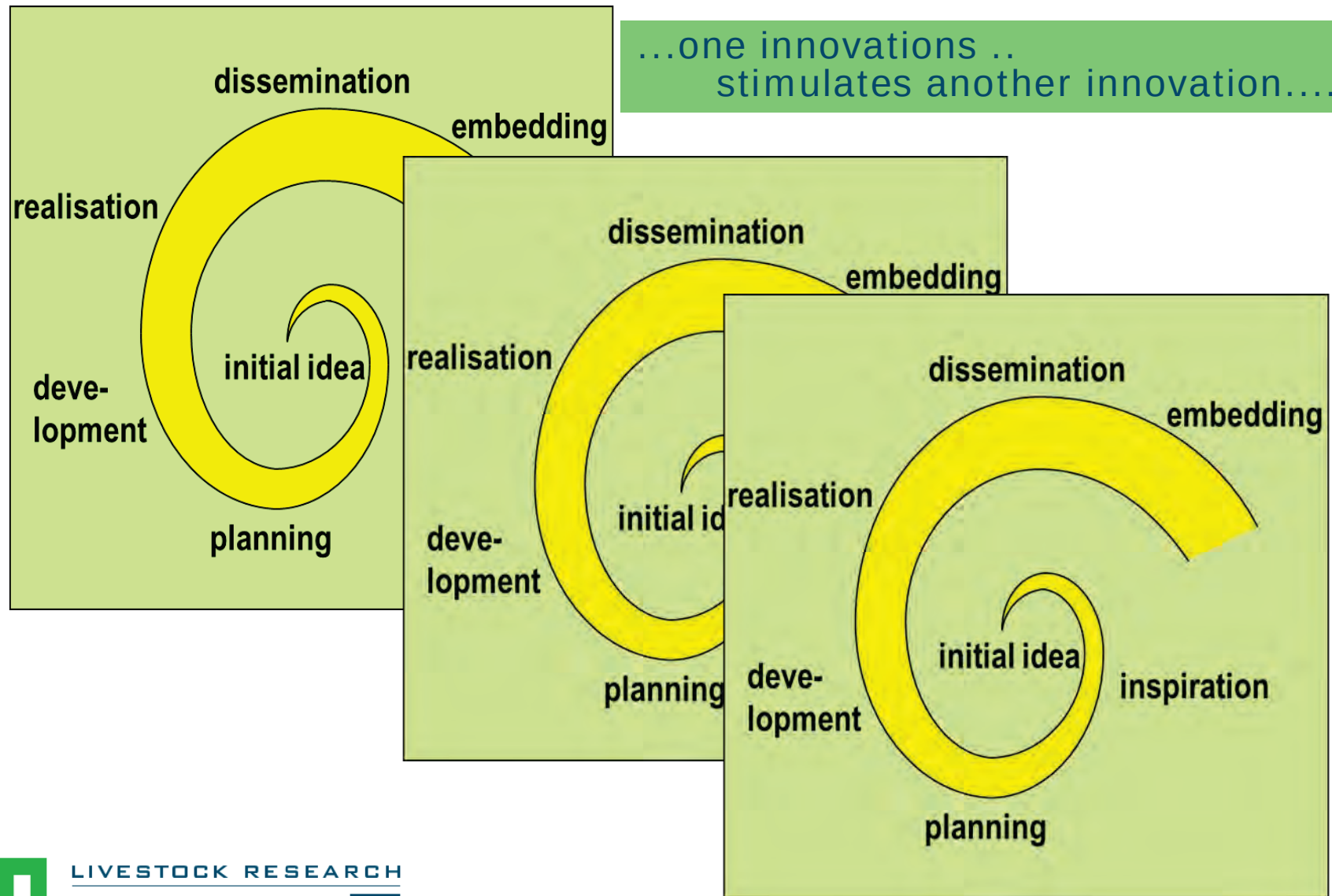
Economics depends a lot on

- M2 per cow
- Quality manure
- Longevity cows

Example of landscape



Spiral of innovation



Design and re-design...



LIVESTOCK RESEARCH
WAGENINGEN UR

Conclusions

- The free actors in network approach works well to start innovation process
- The DEED method works well to keep learning from innovation process
(Describe-Explain-Explore-Design)



Thanks for attention....

Paul.galama@wur.nl

