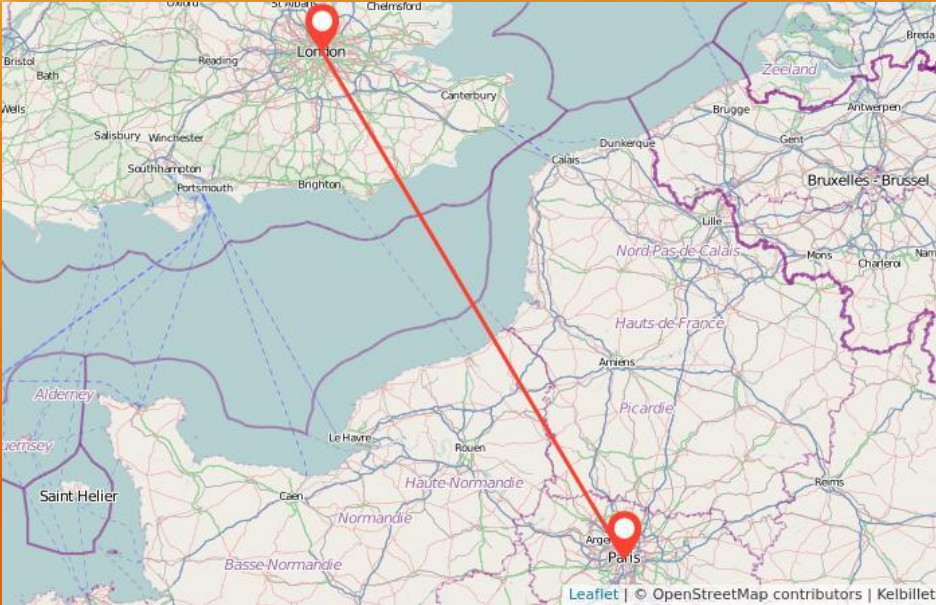


Zero Emission: Behaviour and motivation determine effectiveness of technical solutions

Bart Bremmer, January 31 2023

Why ask a sociologist at a technology conference?



Outline

- Research into low-emmission housing systems
- Flaws in behaviour and flaws in technology
- The human-machine interaction
- The role of intrinsic and extrinsic motivation
- Agricultural examples how to achieve the desired behaviour *through technology*

How to improve the effectiveness of low-emission housing systems

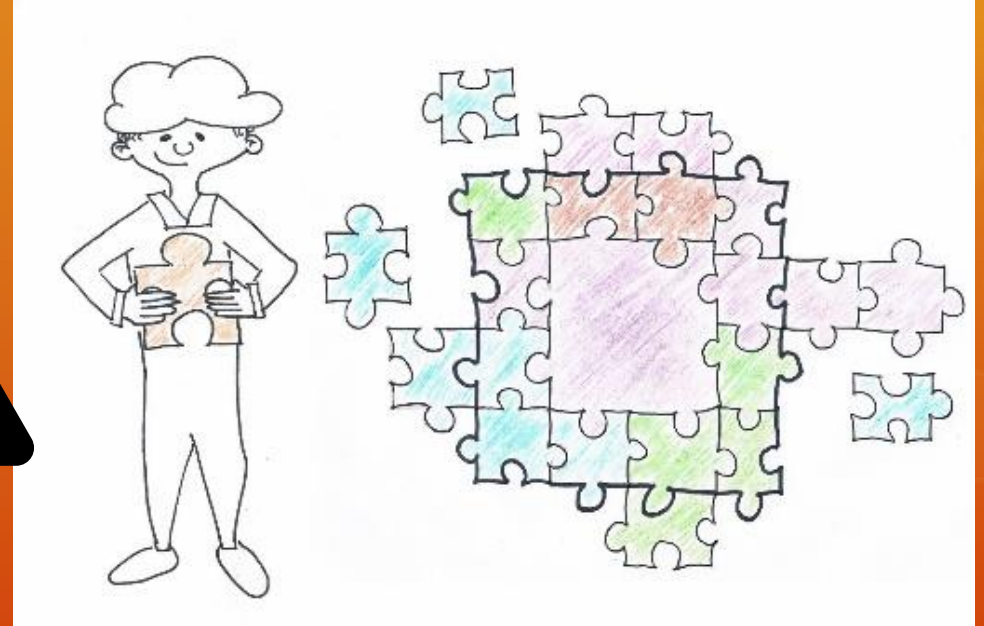
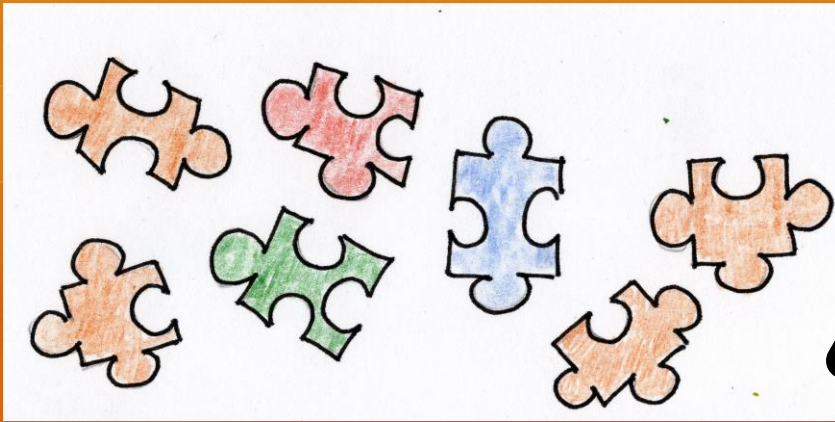
- Interview livestock farmers and other stakeholders
- Explore the problem perception and possible causes of ineffectiveness
- Investigate solutions and formulate recommendations to improve effectiveness
- Focus on the use of these housing systems



Low-emission floors in the dairy sector



Mismatch between technology and farmer



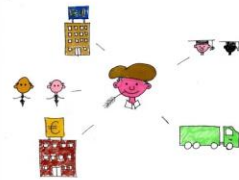
Transition perspective

External developments

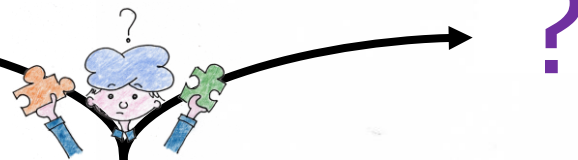
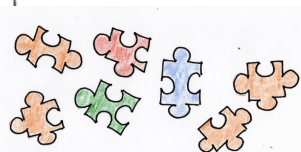


- **Climate change**
- **Ammonia and Biodiversity**
- **Animal welfare**
- **Less pesticides and herbicides**
-

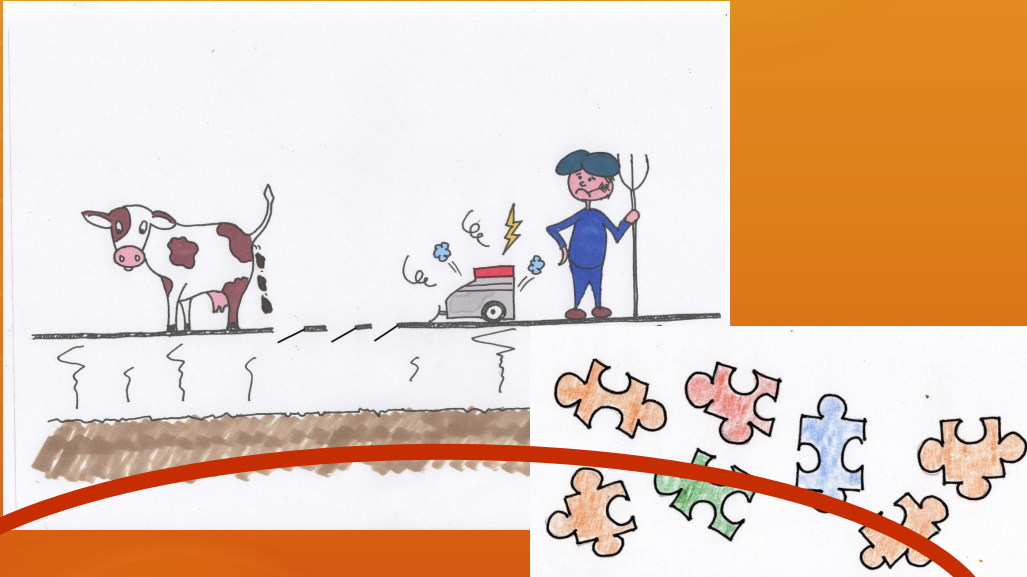
System: ('the way we do things here')



Niches (alternative practices)



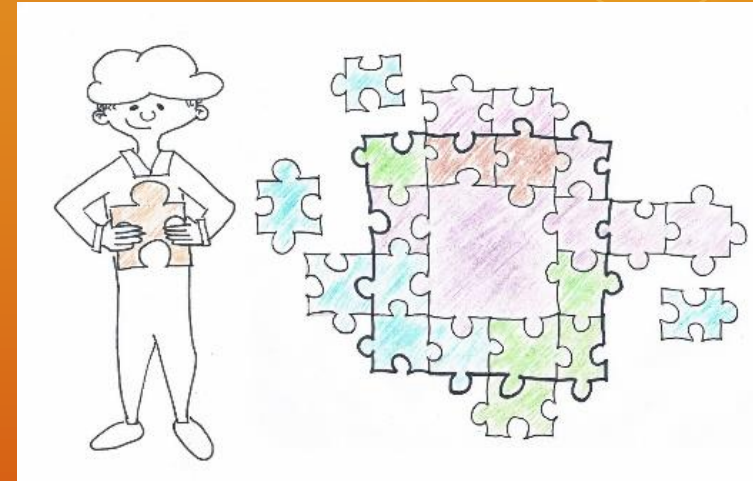
The mismatch between technology and farmer



Behavioural change through change in technology

Change the circumstances :

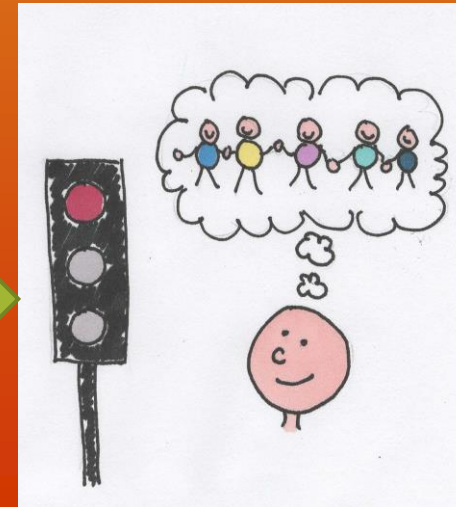
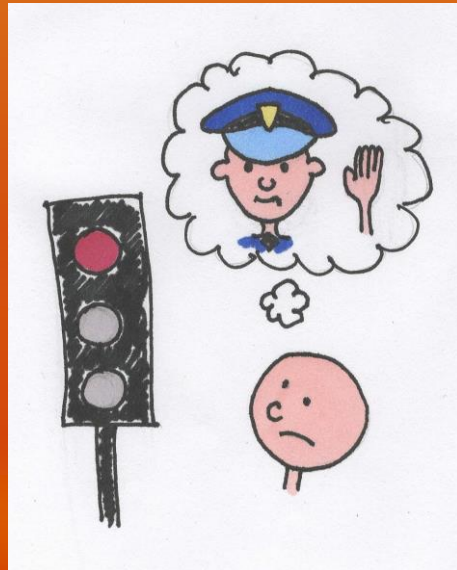
- Policy (enforcement)
- Market conditions
-

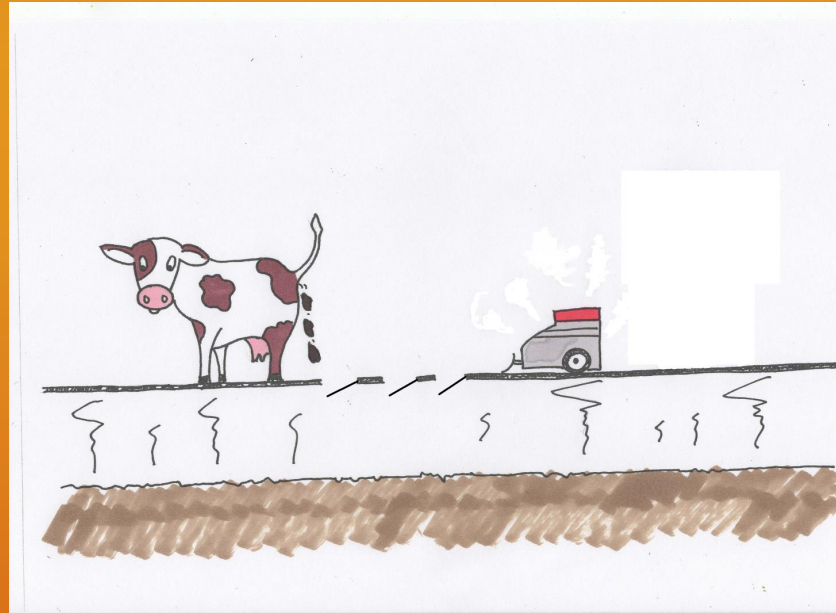


Behavioural change aimed at the farmer:

- Education → overrated
- Facilitation → expensive

Intrinsic and extrinsic motivation





But how to apply this to technology in agriculture?



Technology that creates Win-Win



Technology that doesn't conflict with other goals



Technology that organises feedback and makes behaviour visible



Gemiddeld gasverbruik per type woning

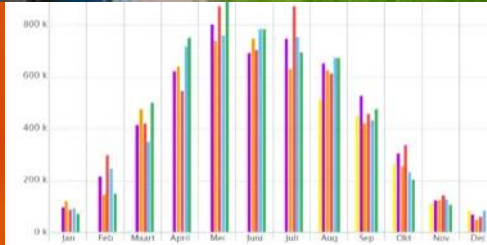
Appartement: 19 m³

Rijtjeswoning: 25 m³

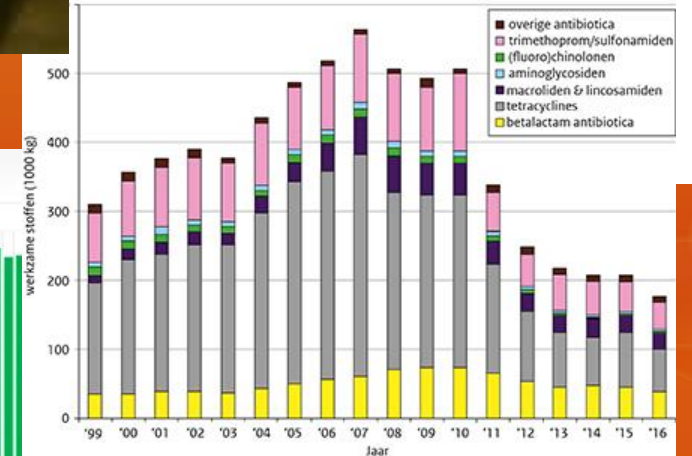
Hoekwoning: 29 m³

Jouw verbruik: 30 m³

2 andere 1 kamer 12 m³



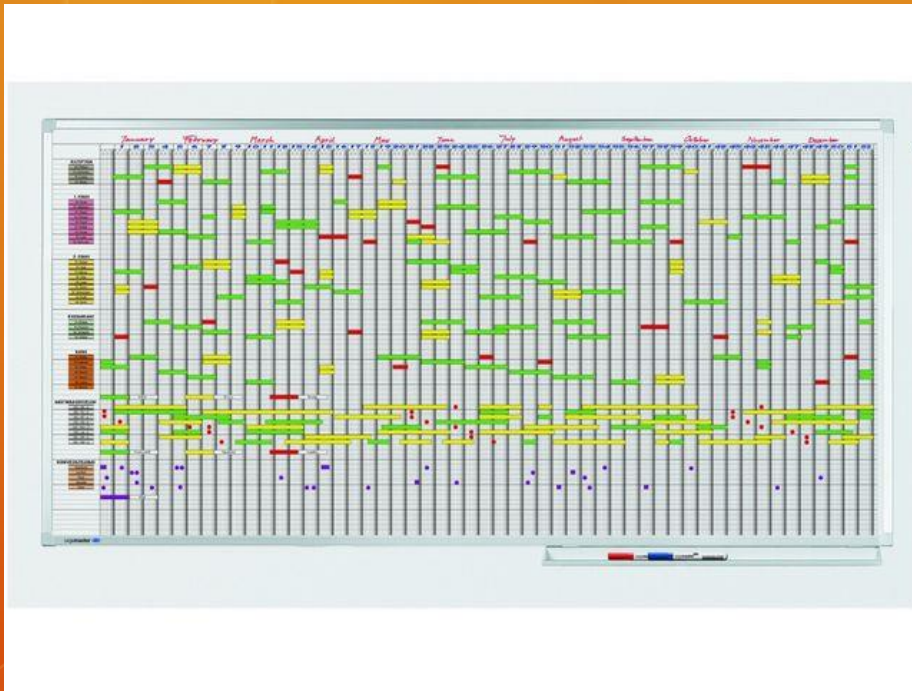
1.43 MWh	1.44 MWh	1.39 MWh	1.34 MWh	1.41 MWh
1.0.15	1.0.18	1.0.13	1.0.5	1.0.8
1.39 MWh	1.45 MWh	1.41 MWh	1.41 MWh	1.41 MWh
1.0.3	1.0.19	1.0.12	1.0.10	1.0.2
1.49 MWh	1.5 MWh	1.48 MWh	1.42 MWh	1.41 MWh
1.0.20	1.0.16	1.0.17	1.0.9	1.0.4
1.44 MWh	1.48 MWh	1.47 MWh	1.5 MWh	1.49 MWh
1.0.7	1.0.6	1.0.11	1.0.1	1.0.14



Technology that helps to meet the social norm



Technology that makes behaviour easy/easier



Technology that increases autonomy of the farmer



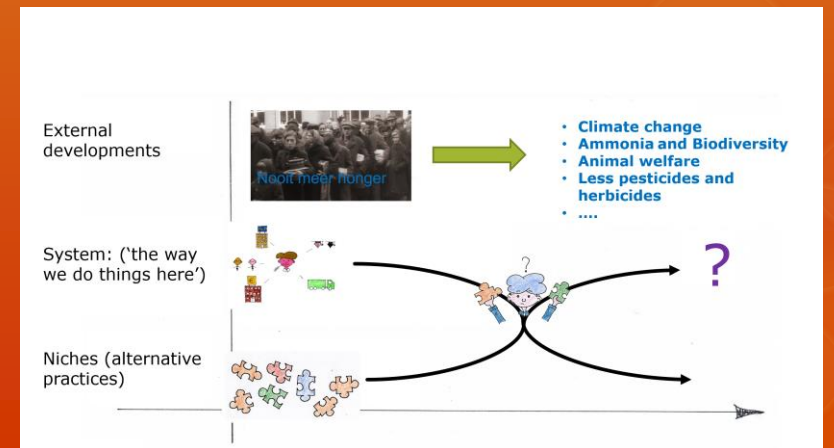
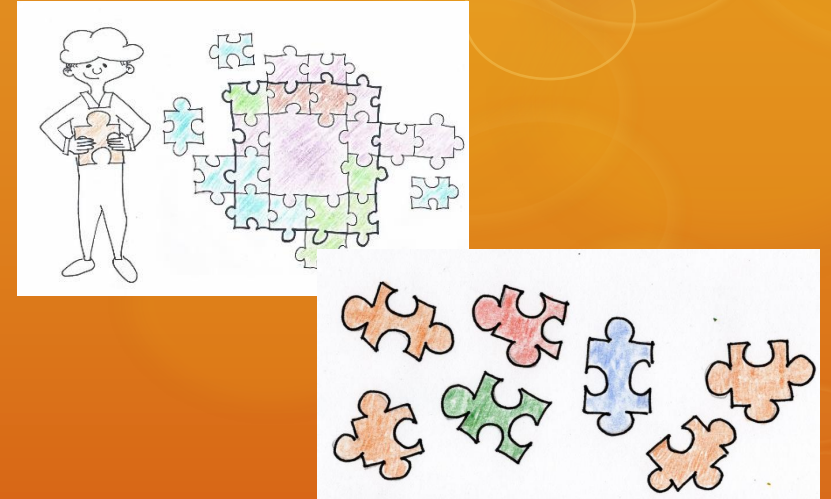
Internalisation of behaviour, through technology

- Create Win-win
- Reduce conflicts with other goals
- Organise feedback and make behaviour visible
- Technology that helps to meet the social norm
- Make behaviour easier
- Increase autonomy of the farmer
-
-

Challenge: Can we convert these mechanisms into design requirements?

Concluding remarks: The role of behaviour and motivation in technology

- (Most) technology doesn't work without certain behaviour
- Technology and behaviour should be considered in interaction
- ... especially in times of transition
- Behaviour depends on motivation
- (Pure) extrinsic motivation is weak
- ... but extrinsic motivated behaviour can be internalised by technology
- Can we convert farmer behaviour and motivation into design requirements?



Thank you for your attention!