

Reducing GHG emissions from the livestock sector

A Learning and Experimentation Strategy

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Paper for ACCIS workshop, Birmingham, 23 November 2010



Position of our Institute

- Wageningen University and Research Centre
 - Scientific branch
 - Contract research branch
- Wageningen UR Livestock Research - Cluster System Innovations
 - Firstly contract Research group
 - But also reflection and analysis (scientific ambitions)
- Setting up and carrying out projects aiming to contribute to transitions (system innovations)
- Reflection and analysis: to evaluate results and improve our own methods.

The Dutch livestock sector

- Major producer animal proteins & dairy products (cows, pigs, hens)
- Main player on world market
- Until mid 1990s: mainly modernisation process (expansion and mitigation of 'side-effects')

Livestock: the GHG emission challenge

- UN FAO: Livestock contributes 18% to world GHG emissions
- Main factors
 - CO₂ (processing of meat and dairy products, transport, fertilizer production)
 - CH₄ (fermentation in ruminants like cows, manure storage) (21 CO₂ eq.)
 - N₂O (manure treatment, fertilization) (310 CO₂ eq)
- A neglected issue in GHG discussions and policies

Avoiding the reductionist pitfall

- Tackling GHG as a separate problem?
(the classic scientific and political approach)
- Would miss interdependencies
(‘catching’ GHG emissions by keeping cows indoor is bad for animal welfare)
- An integral approach is needed, tackling a range of sustainability problems.

A broader range of sustainability challenges

- GHG emissions
- Pollutants (ammonia, stench)
- Epidemic animal diseases (past decade: swine fever, foot&mouth disease, avian influenza)
- Small country: competing claims for soil (animals, food crops, fuel crops, nature, urbanisation)

The dynamic for change

- Until mid-90s: no serious pressure
- Late 90s: epidemic animal diseases: something's wrong
- Mid 2000s: Heavy pressure (Animal Party)
- Led to programs and projects for System Innovation
- 2008 Government white paper:
 - 2011: 5% of livestock sector should be sustainable (emphasis on animal welfare)
 - 2023: 100% livestock sector should be 'integrally' sustainable
- Our institute should contribute via variety of projects

Existing strategies: SNM and Tr.Mgt.

■ SNM

- There are no / few niches (no shared learning on novelties)
- No 'technical nucleus' of alternatives
- Instead a broad range of issues: fodder, manure storage & treatment, animal housing, animal welfare

■ Tr.Mgt

- Transition Arena would loose enormous variety in stakeholders
 - Tr.Mgt. misses the richness of 'bottom up' renewal
- Both have 'top-down' and 'manageability' overtones that neglect the ongoing, widely dispersed innovative dynamic

A 'Learning and Experimentation Strategy' (LES)

Combine 'top-down' and 'bottom-up' processes

■ Top down

- Develop visions of sustainable system (cf. Tr. Mgt)
- Define and carry out projects (our 'traditional' role)
- Engage stakeholders in the process to get commitment

■ Bottom up

- Broad variety of local innovative initiatives
- Based on local visions of farmers involved
- No/hardly diffusion of learning

■ Assessment and shared learning

- Make inventory of bottom-up initiatives
- Make results (from both 'top-down' and 'bottom-up') widely available
- Thus bring more intelligence into 'bottom-up' process
- Combine lessons from top-down and bottom-up
- Assess jointly with stakeholders
- Use as input for 'next round' in top down process.

Portfolio of promises

Key concept in LES: 'Promise' (rather than niche)

- Promise (= 'partial' innovation):
 - Attractive on certain sustainability dimension
 - Problematic to fit into existing system
 - Unknowns and/or problematic sides
- Historical transitions: combination and re-combination of 'partial' innovations (i.e. promises)
- Hence: need to work on 'portfolio' of promises
- 'Cow Power' project: app. dozen promises identified
Cf: <http://www.duurzameveehouderij.wur.nl/UK/>
- LES needs to work at two levels:
 - level of individual promises (wide variety)
 - portfolio level (connecting promises into a system; work in progress)

Ongoing work

- A prototype of a 'portfolio matrix' has been developed
 - One dimension: sustainability challenges (app. ten)
 - Other dimension: range of promises / initiatives
- 2011 and later
 - Apply to dairy cow sector (make inventory of projects and local initiatives)
 - Make results widely available (web-based tool)
 - Develop methodology for 'portfolio level analysis'
 - Share and discuss results with stakeholders, policy people and scientists
 - Anchoring: try to get commitment for this method and stimulate ownership in the sector
 - Try and make sector use LES as 'their approach'

Conclusion

- GHG emissions large problem in animal production
- But many other sustainability problems as well
- GHG emissions should be tackled along with other problems in an 'integral' methodology
- SNM and Tr.Mgt. have serious shortcomings (for this sector !?)
- Our approach
 - 'Promise' rather than 'niche' to do justice to variety of innovative activity and lack of learning exchange
 - LES to combine 'top-down' and 'bottom up' learning
 - Address learning at individual promise level as well as the portfolio level
 - Combines 'a bit of co-ordination' with the existing innovative power