

Different title than in the agenda

Estimation of costs for implementing options from the GAINS model as identified in EPMAN-3, including statement of uncertainties, co-benefits and factors included/not yet included.

# Status of data in GAINS

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- Basic data as used for the CAFE process (pretty old, for NH<sub>3</sub> related technology principally based on the 1999 guidance)
- The update planned before scenarios for UNECE (February 2010) and shall include the information included in the current background document.

# Categories of emission control options in GAINS for agriculture

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- Low nitrogen feed
- Low emission housing
- Air purification
- Covered storage  
*(low and high efficiency)*
- Low ammonia application  
*(low and high efficiency)*
- Urea substitution
- Incineration of poultry manures
  
- Combinations of the above options
  
- + options to control non-CO<sub>2</sub> GHG (CH<sub>4</sub>, N<sub>2</sub>O)

The expenditures on emissions control are differentiated in GAINS into:

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- **Investments**
- **Fixed operating costs**,  
*i.e., costs of maintenance, insurance, administrative overhead*
- **Variable operating costs**,  
*e.g., increase in feed or fertilizer price, additional energy, water and labour use, costs of waste disposal, etc.*

# Examples; National vs. GAINS costs

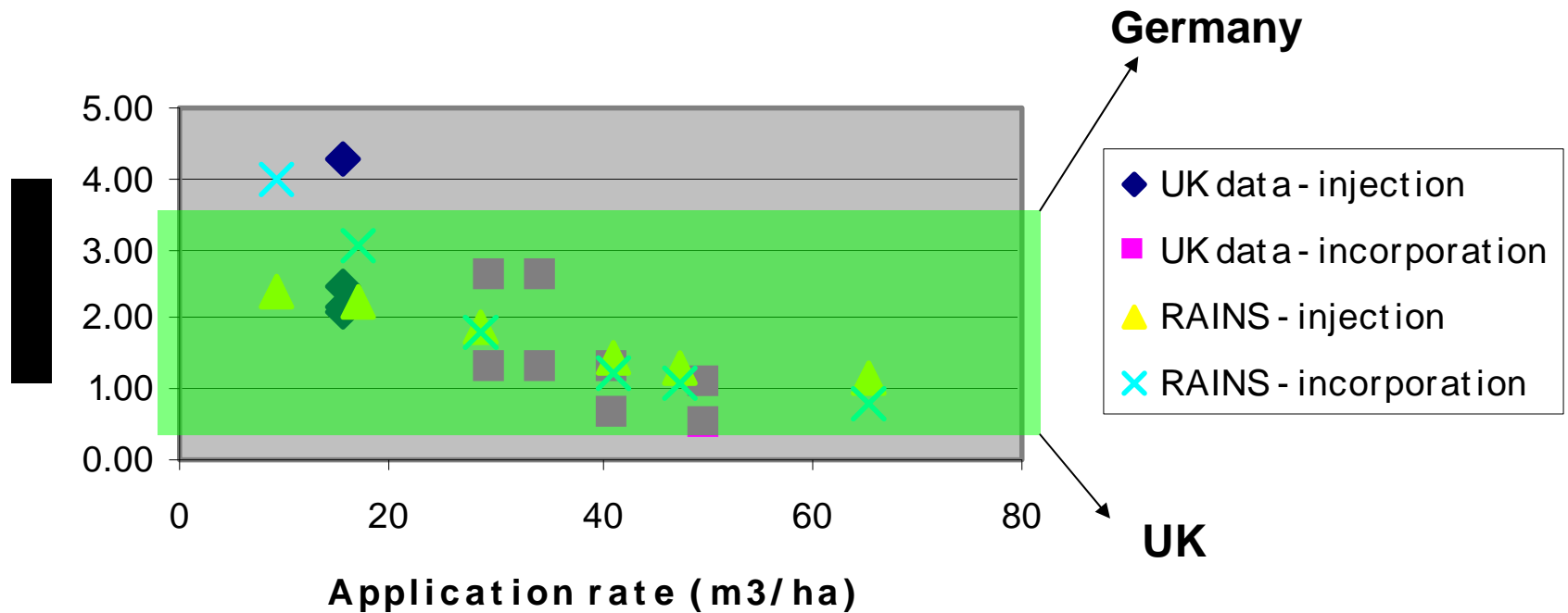
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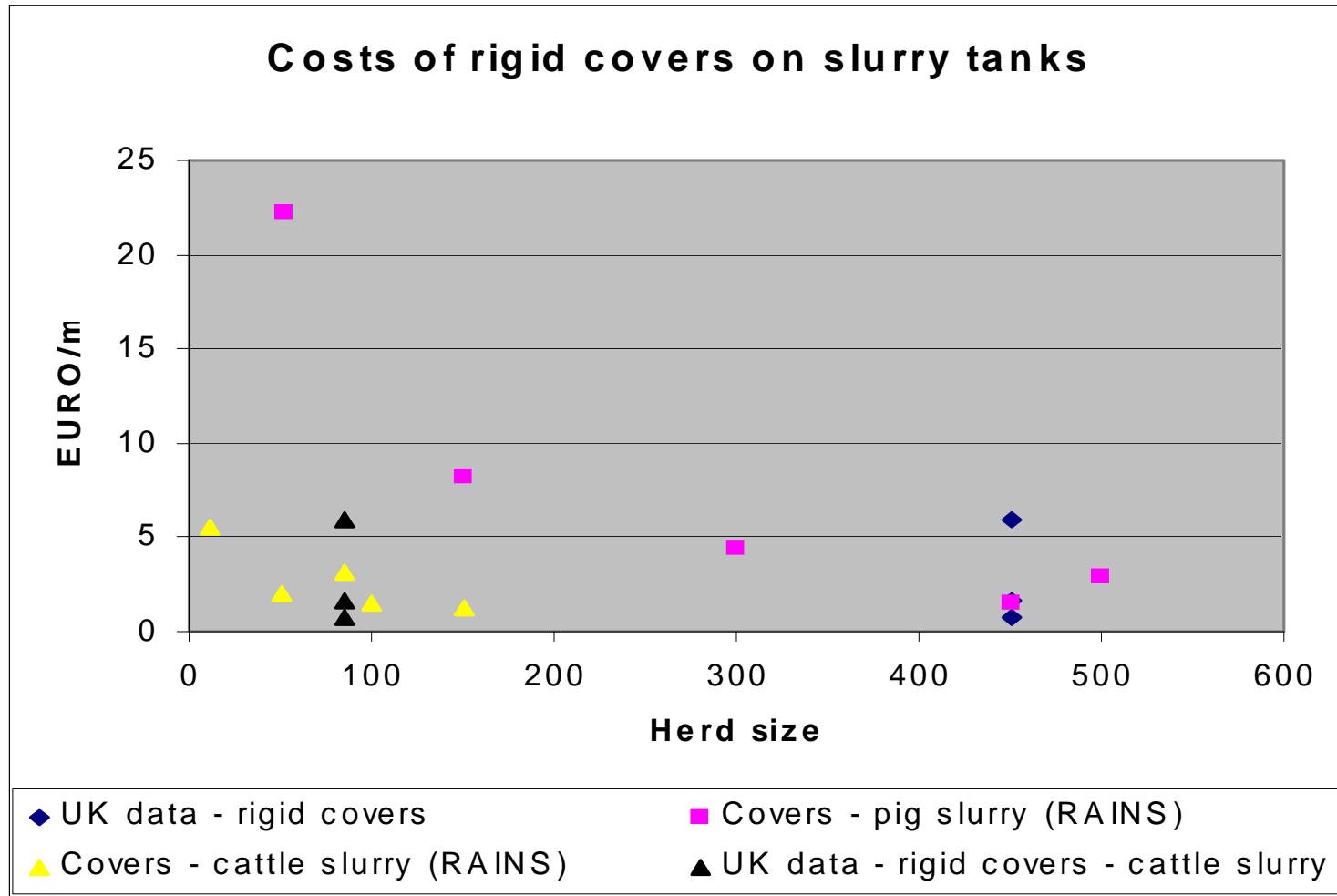
- Manure application
- Covered stores

# Examples of costs for manure incorporation

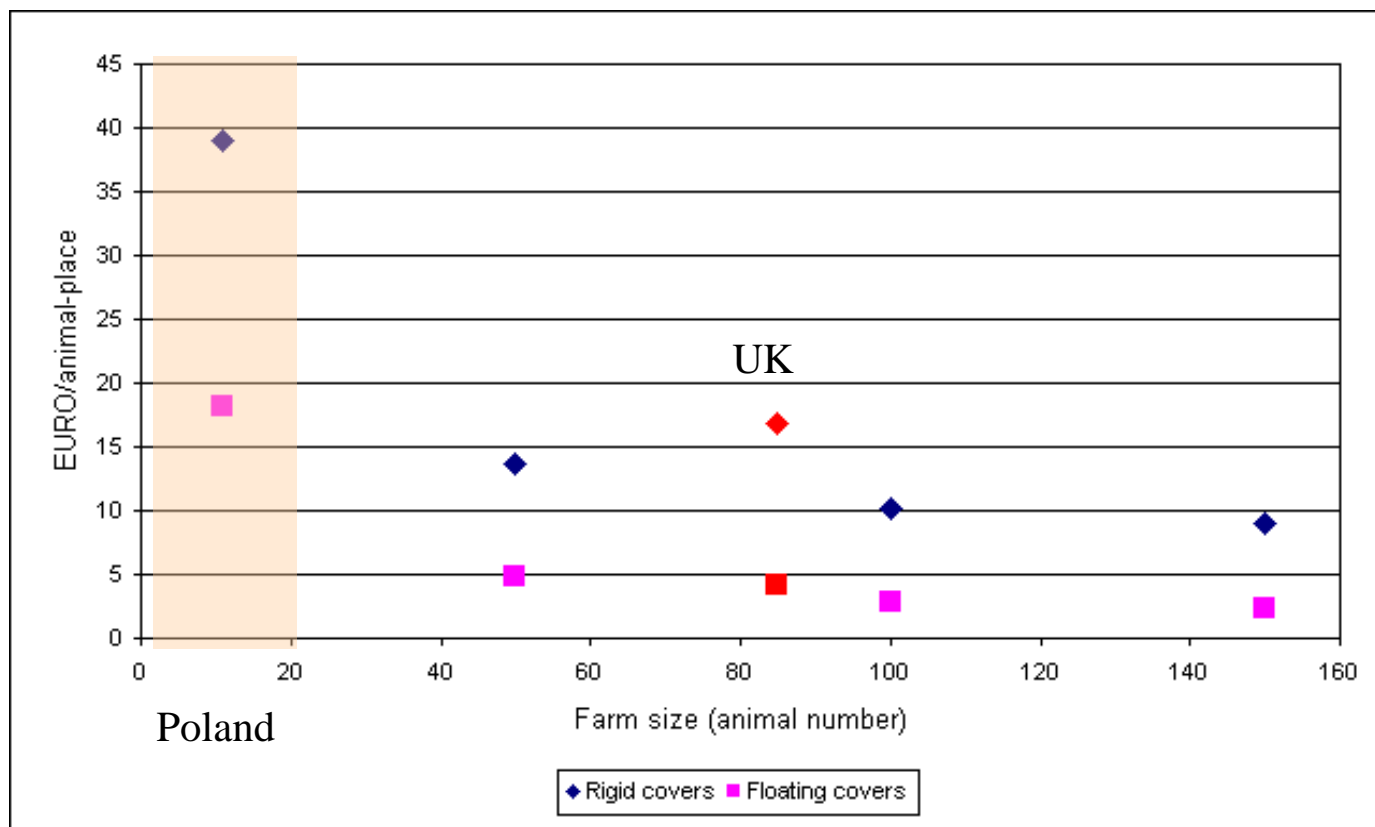
## Costs for slurry injection and incorporation of slurry and manures



# Comparison of costs for storage covers for UK



# Examples of investment functions (*storage of cattle manure*)





# Biggest problems

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- Current structure and its evolution
- Current penetration of measures
- Constraints in application (applicability) of specific measures
- Consideration of some pollutant/media interactions
- More difficult to develop parameterization for Southern and Eastern Europe

# EXAMPLE

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- Potential impacts of considering implications of non-NH<sub>3</sub> legislation on European costs of reducing NH<sub>3</sub> emissions; the latter driven by ecosystem and PM health targets

# Nitrate Directive (NEC-ND) scenario

*Compared to the National baseline (NEC)*

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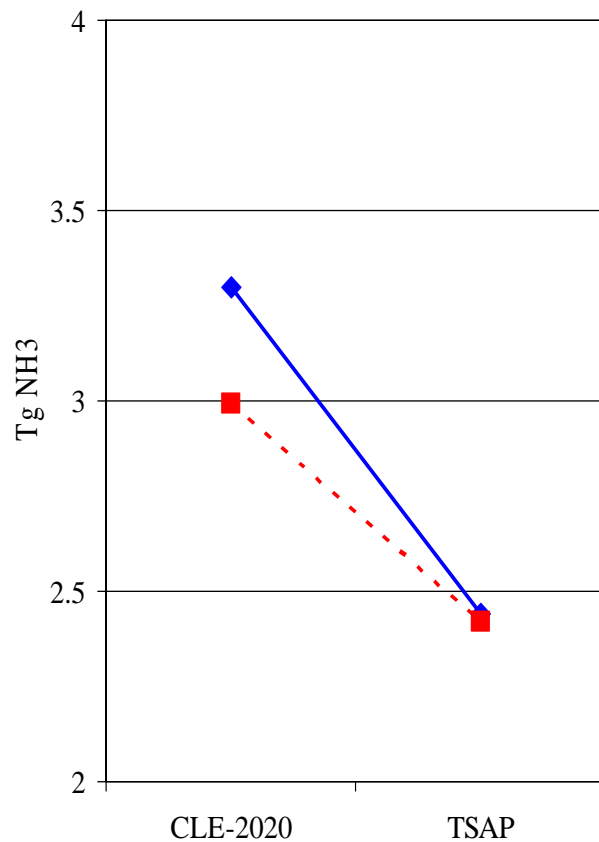
- 2020-CLE emissions lower by:
  - 304 kt NH<sub>3</sub>,
  - 92 kt N<sub>2</sub>O
- 2020-CLE costs are higher by about 873 million €
  - 163 million € - technical measures
  - 710 million € - balanced fertilization costs estimated by Alterra (CAPRI model)
  - *Costs of revenue loss due to reduction in livestock not included (preliminary estimates range from 1.5-2 bln €)*

# Expected impact of full implementation of the Nitrate Directive

*CLE – Current legislation, TSAP – EU Thematic Strategy*



### Emissions from agriculture



### Total costs in agriculture

