



# **Task Force on Reactive Nitrogen (TFRN)**

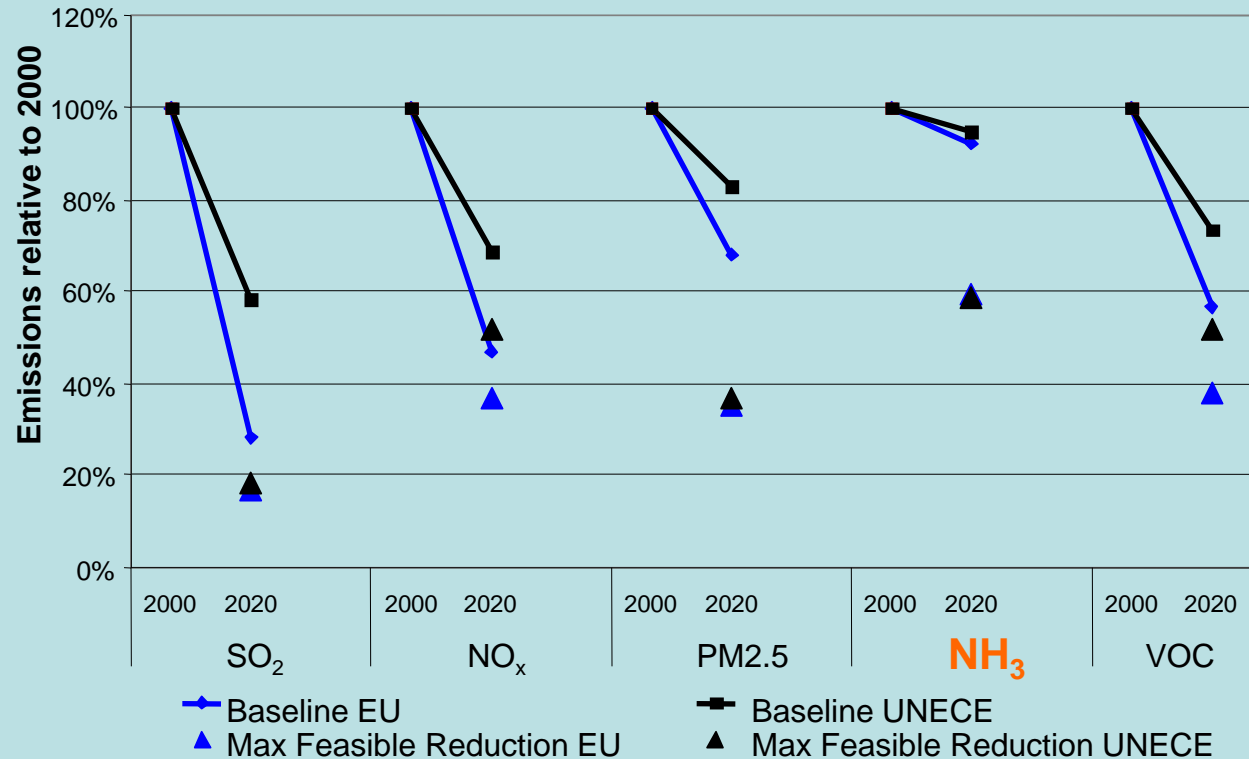
## **Costs of ammonia abatement and the climate co-benefits**

**Mark Sutton and Oene Oenema  
(co-chairs TFRN)**

25 October 2010

# Challenges to abate ammonia...

- Only a few countries have so far implemented existing technical capability
- A long-term perspective may be needed
- Future negotiations depend on reliable data on costs of abatement measures

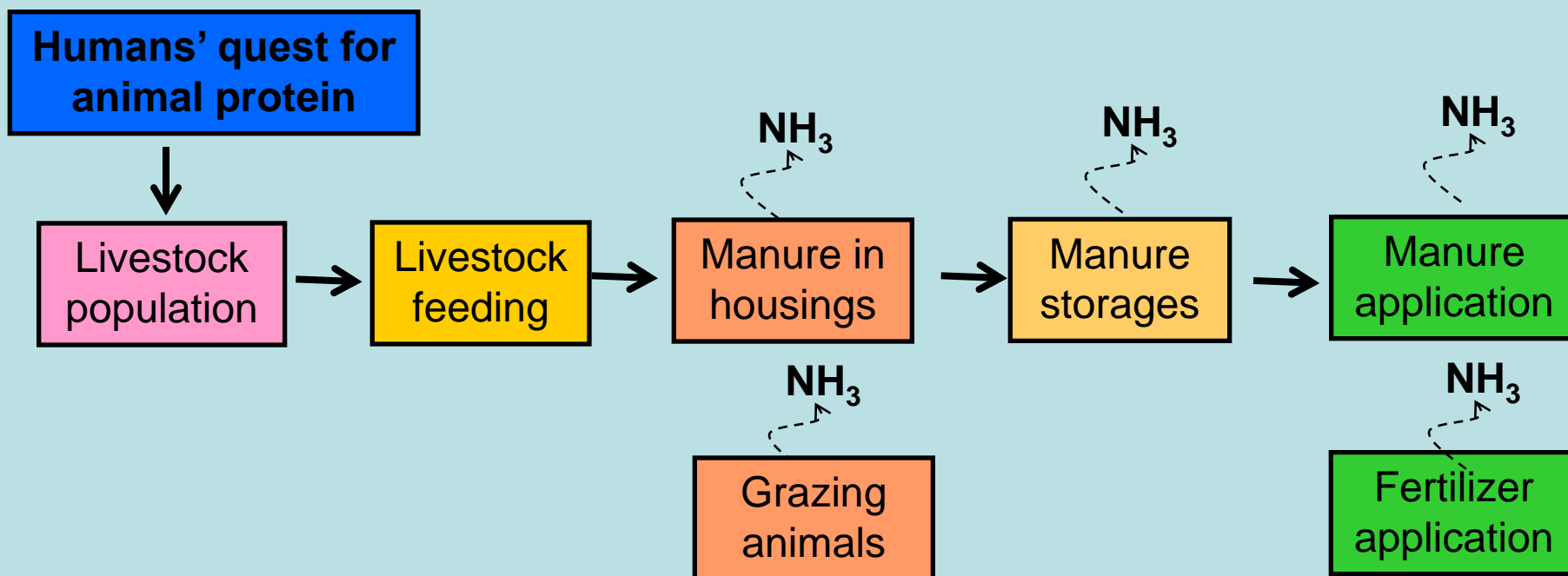


Amman, IIASA

# Gothenburg Protocol Revision

- **National Emission Ceilings**
  - Negotiated by Parties based on costs optimization between different pollutants in relation to environmental effects (GAINS).
- **Annex IX on basic requirements for low ammonia emissions,**
  - Negotiated by Parties based on costs of the measures, and the measures providing a reasonable contribution to meeting the national ceilings.
- In both case we need accurate costs data.

# Sequence of processes that affect total NH<sub>3</sub> emissions



## Measures of proposed/ revised Annex IX

- |                                  |  |
|----------------------------------|--|
| 1, Nitrogen management:          | affect <b>all</b> sources                |
| 2. Livestock feeding strategies; | affect <b>all</b> manure sources         |
| 3. Animal housing systems:       | affect one source                        |
| 4. Manure storage systems;       | affect one source                        |
| 5. Manure application            | affect one source, <b>but cumulative</b> |
| 6. Fertilizer application:       | affect one source                        |

## Proposals for Updated and **New** measures in Annex IX

- **Nitrogen management, considering the whole N cycle**
- **Livestock feeding strategies**
- Animal housing, **including cattle housing**
- Manure storage, **including those for cattle manure**
- Manure spreading, including those for cattle manure
- Mineral fertilizer use, including urea, **ammonium phosphate and ammonium sulphate**

- Possibility for a “Pick and Mix” approach

# COSTS

- Objectives:
  - Developing consensus on the control costs
  - Focus on the components of Annex IX (A,B,C)
  - Inclusion of the co-benefits
  - Relationship to NO<sub>x</sub>-N costs & benefit valuation.
- Outcomes:
  - Basis to update the Guidance Document
  - Basis to update GAINS & national estimates
  - Basis to estimate costs at the UNECE scale

# Requirements for ammonia abatement costings

- **Transparency** : we understand what exactly is done.
- **Justified**: we agree that the calculation basis is sound.
- **Robustness**: based on sufficient data and with uncertainties indicated.
- **Common sense**: we use anomalies to understand methodologies and avoid artefacts.

# Complex issue

- We must distinguish the different elements:
  - Methodological issues
  - Reference situation – different farms, countries, interactions,
  - Data – empirical data, data from model



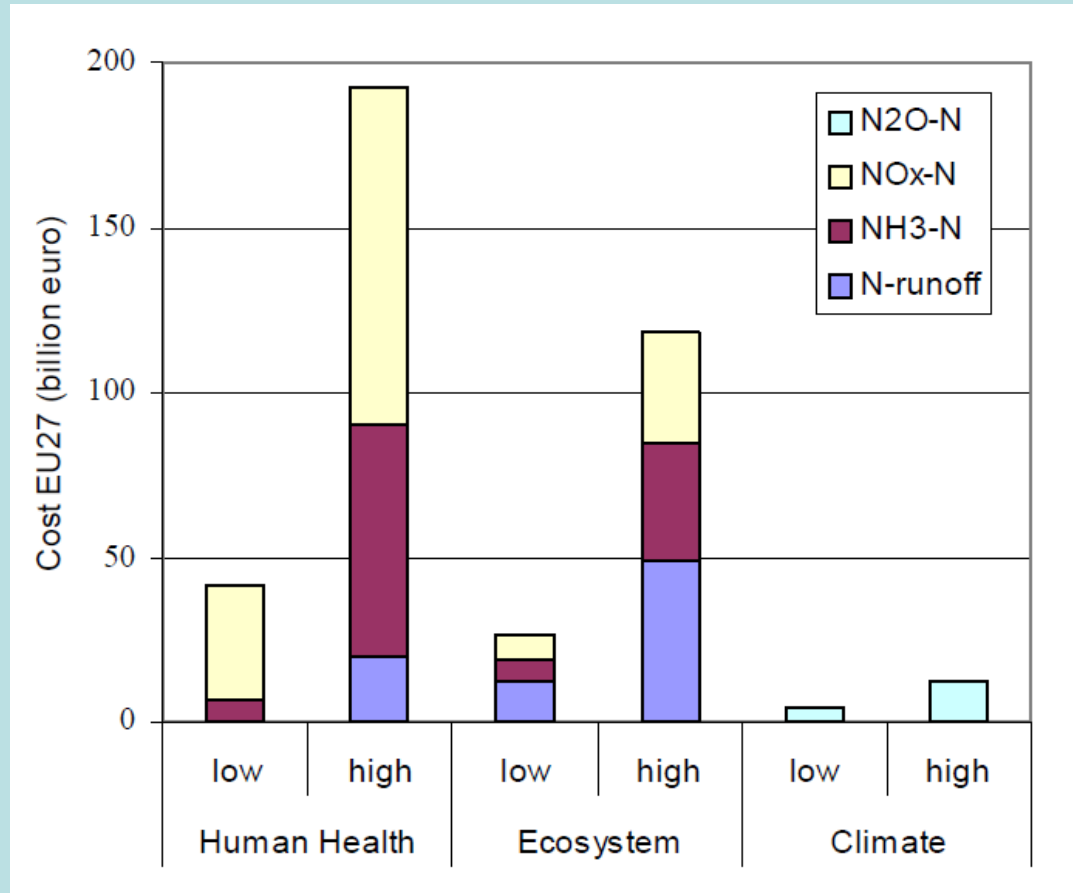
# Avoiding Bias

- This is a technical meeting: not negotiation
- Costs data are vital for the negotiations by the Working Group on Strategies and Review (WGSR)
- Avoid temptation to let negotiating positions influence the cost estimates
- All numbers must be fully justified & open
- A robust basis to support the negotiations

# Co-benefits

- We must count both the positive and negative costs
- Co-benefits to the farmer need to be quantified:
  - Fertilizer value saved; agronomic flexibility
- Co-benefits to society to be noted:
  - Parallel reduction in GHG emissions and water pollution
  - Benefits of reduce emissions for ecosystems, human health and climate

# Societal Costs and Benefits: Is it worth it?



European  
Nitrogen  
Assessment,  
(CUP, in press)

WGSR-47  
Inf. Doc. #7

- Societal costs, €10-€20 damage / kg N emitted for each form
- Major net benefits of mitigating reactive nitrogen
-

# Products from the workshop

- Inputs for the Guidance Document (update over winter)
- Inputs for GAINS (update over winter)
- Better understanding by everyone!
- Basis for costing Annex IX options (winter)
- **REPORTS**
  - Reports of Working Groups, and overall.
  - To TFRN-5 (Wednesday) and to WGSR-48
  - Book to publish BG Documents, WG reports and other papers.