



Task Force on Reactive Nitrogen (TFRN)

Update on activities and discussion on options for
revision of Annex IX of the Gothenburg Protocol

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WGSR-45, 2 September 2009



General objectives of TFRN:

To provide technical information to be able

- to develop an integrated vision and approach to abatement of reactive nitrogen emissions and effects;
- to improve coordination on the development of integrated reactive nitrogen policies;
- to search for synergies between policies on air pollution and other policies;



Work plan agreed in TFRN-1 in May 2008

- a) Expert Panel on N Budgets (Lead: AT)
- b) Expert Panel on Mitigation of Agric. N (Lead: CA + CZ)
- c) European Nitrogen Assessment (Lead: ESF-NinE)
- d) Analyze the linkages across (other) Conventions,
- e) Develop options for revision of Annex IX and its Guidance Document of the Gothenburg Protocol
- f) Explore consequences of changes in human diets on the nitrogen cycle



Summary Progress Report 2009

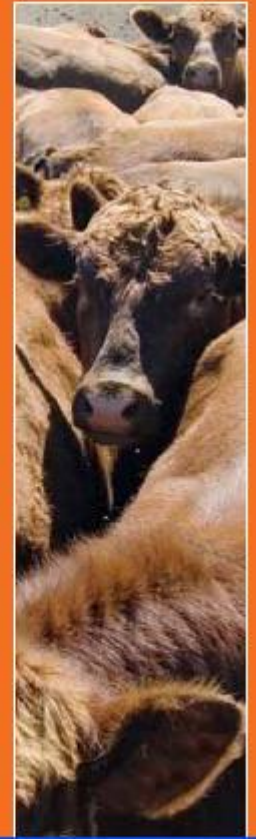
- a) EPNB-2 meeting on April 27: developing basis of budget approaches
- b) EPMAN-2 meeting on April 27: *Options for revision of Annex IX and its Guidance Document of the Gothenburg Protocol*
- c) TFRN-2 April 28-29: Full review of activities inc. national experiences
- d) Three ENA-workshops, in November 2008; June and September 2009
- e) Contributions to report of WGE on 'Effects of airborne nitrogen'
- f) Discussions with OSPAR, HELCOM, UNEP, CBD
- g) Brochure "Managing the European Nitrogen Problem"
- h) Setting up an Expert Panel "Human diets and the N cycle"

Managing the European Nitrogen Problem

A proposed strategy for integration of European Research
on the multiple effects of reactive nitrogen

A proposed strategy
for integration of
European research
on the multiple
effects of reactive
nitrogen

Consultation responses
by 1 October 2009.





Progress on proposals for revision of Annex IX and Guidance Document of Gothenborg Protocol

- At this stage, focus on outline proposals
- The TFRN Report details the progress
- Gradual building of consensus
- Additional meetings needed:
 - EPMAN-3 in Dublin on 24-25 September 2009
 - TFRN-3 in Amsterdam on 24-25 November 2009

What did we achieve so far?

- Literature review on manure spreading techniques; effectiveness and economic costs of reducing NH_3 emissions; clear recognition of co-benefits for farmers;
- Enquiries about mandatory implementation of low-emission techniques - NL and DK;
- Various draft texts for Annex IX;
- Draft texts for Guidance Documents;

Proposal to strengthen the integrated N approach in Gothenburg revision

“Parties shall safeguard that measures targeted towards NH₃ abatement minimize Nr release in other chemical forms or to other environmental media as covered in relevant international agreements.

Likewise, synergies of measures not primarily targeted at NH₃ emission reduction should be taken into account.

Parties should/shall ensure that the "Advisory codes of good agricultural practices" referred to in section A of Annex IX will describe in more detail:

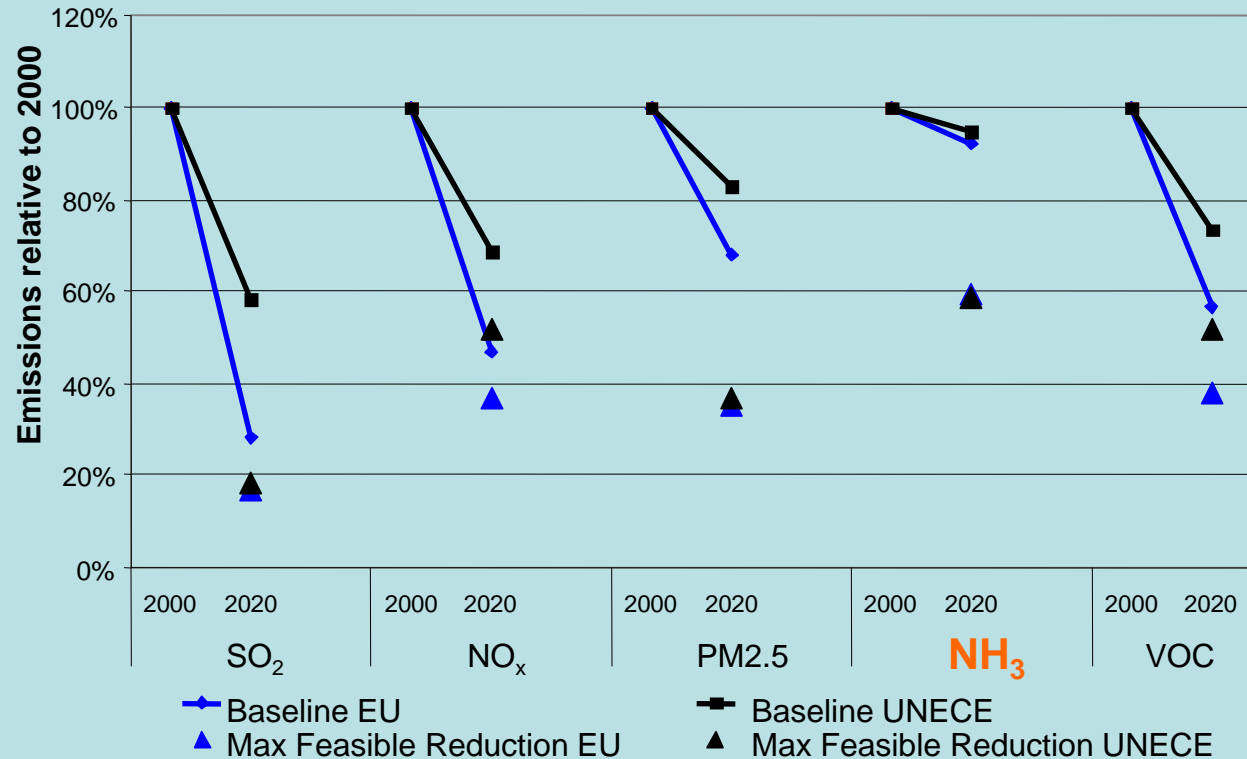
- (a) an integrated way to consider Nr in the environment;
- (b) measures that suggest successful abatement of reactive nitrogen; and
- (c) instruments (indicators) to control the success of such measures.”

Complexities in NH₃ emission abatement

- Many NH₃ sources, especially in animal agriculture;
- Many low-emission techniques are now available; many options
- There are economic benefits & costs, which are farm-specific;
- There are side-effects, if not applied properly: smart implementation needed;
- Agriculture is highly diverse and also dynamic, with differences between Parties;
- Some prefer simple, cooking-book like provisions

But it is clear that more can be done...

- In many cases existing technical capability has yet to be implemented
- A long-term perspective encouraging gradual change may be needed



Amman, IIASA

Several ways of varying ambition levels

- Phrasing of 'how mandatory'
- Required percentage mitigation for acceptable technologies
- Extent of exemptions allowed to mandatory requirements (e.g. small farms)
- Timescale of requirements (to allow gradual accommodation)
- Option to limit requirements only to new equipment sold after a certain date
- etc

Ambition & exemptions

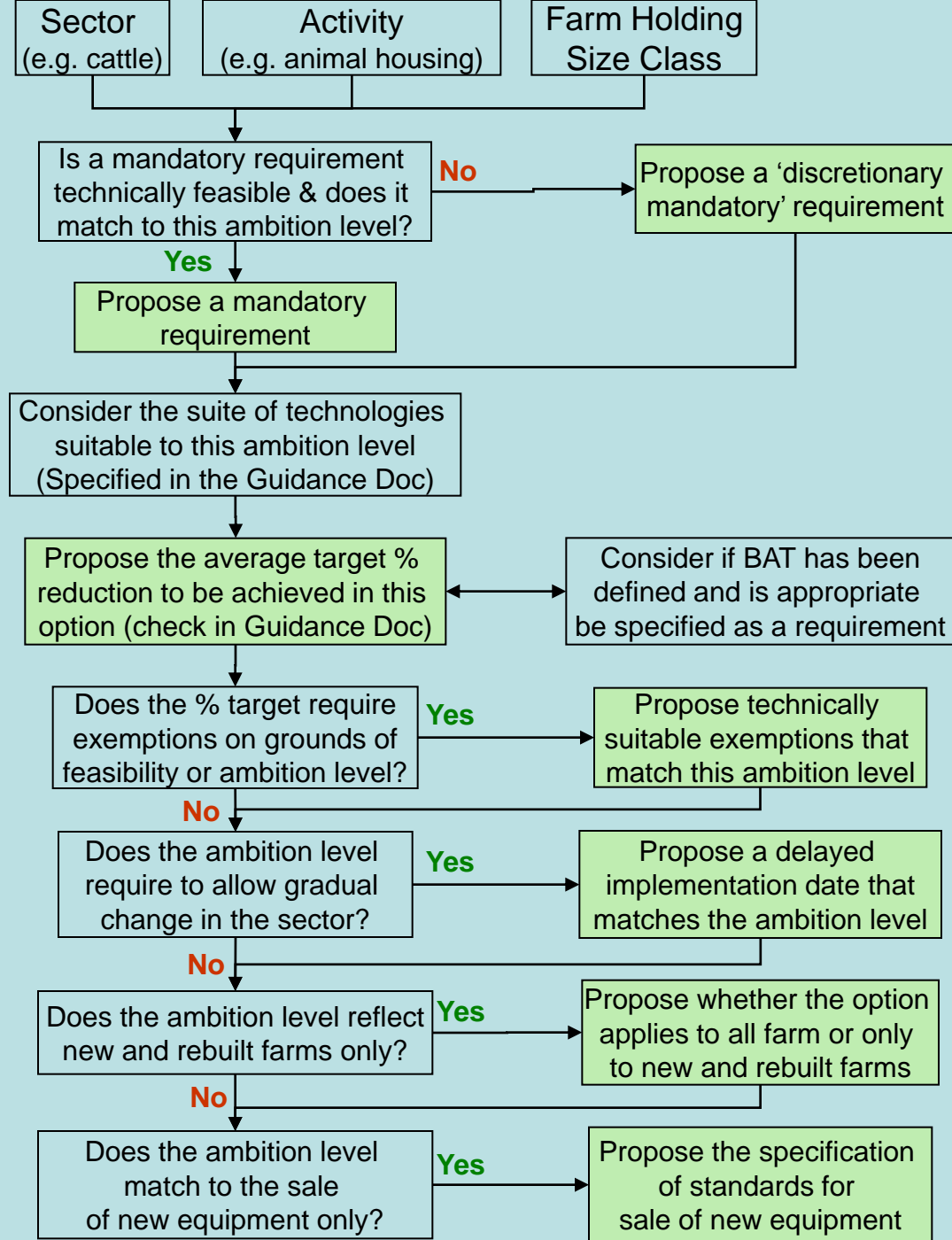
High ambition options should be accompanied by appropriate exemptions

Example of farm size

- (a) large farming operations
→ a BAT approach?
- (b) medium size farms
→ simple basic requirements?
- (c) small farm holdings (inc hobby farms)
→ no mandatory requirements?

Discussion: the technical basis for the definitions and appropriate exemptions.

A framework for developing mandatory options



TFRN is preparing several dishes with the menu of options

Possible ambition indications to guide the technical discussion

High Ambition (A): Technically feasible options that reflect a high level of ambition in reducing ammonia emissions, while remaining cost effective, in order to encourage possible ratification by the Parties of any revised Protocol. These options are reflective of the urgent need for action to reduce ammonia emissions, in the light of widespread effects on the environment and human health.

Medium Ambition (B): Technically feasible options that reflect a moderate level of ambition, as well as being cost effective. These options include decisive action with unambiguous mandatory measures to ensure that significant progress is made in reducing ammonia emissions, given its effects on the environment and human health.

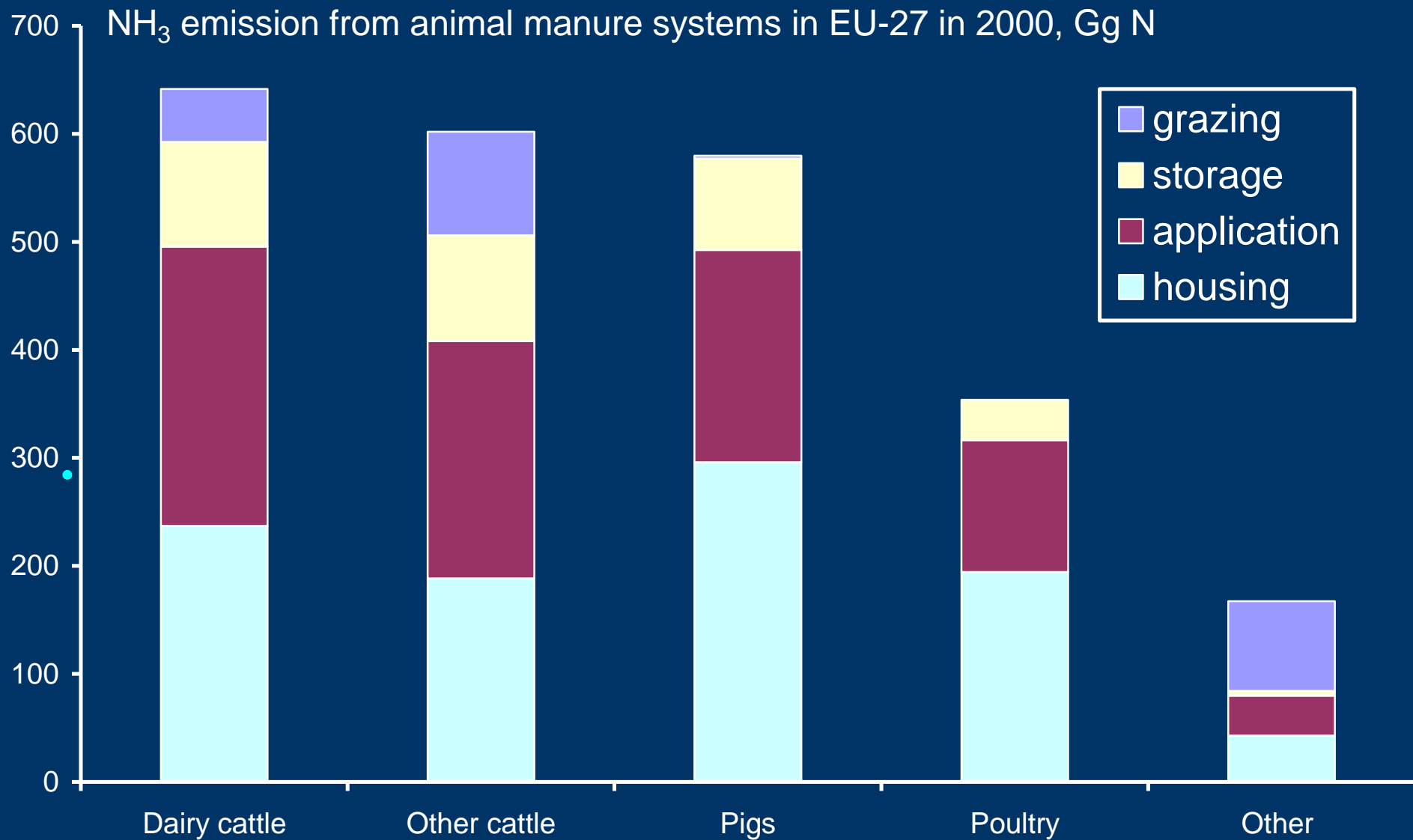
Low Ambition (C): Technically feasible options that reflect a modest level of ambition. These options emphasize 'discretionary mandatory' requirements, recognizing that other socio-political constraints may limit the possibility for the Parties to agree more ambitious commitments.

The Wider Landscape: Mega-trends in agriculture

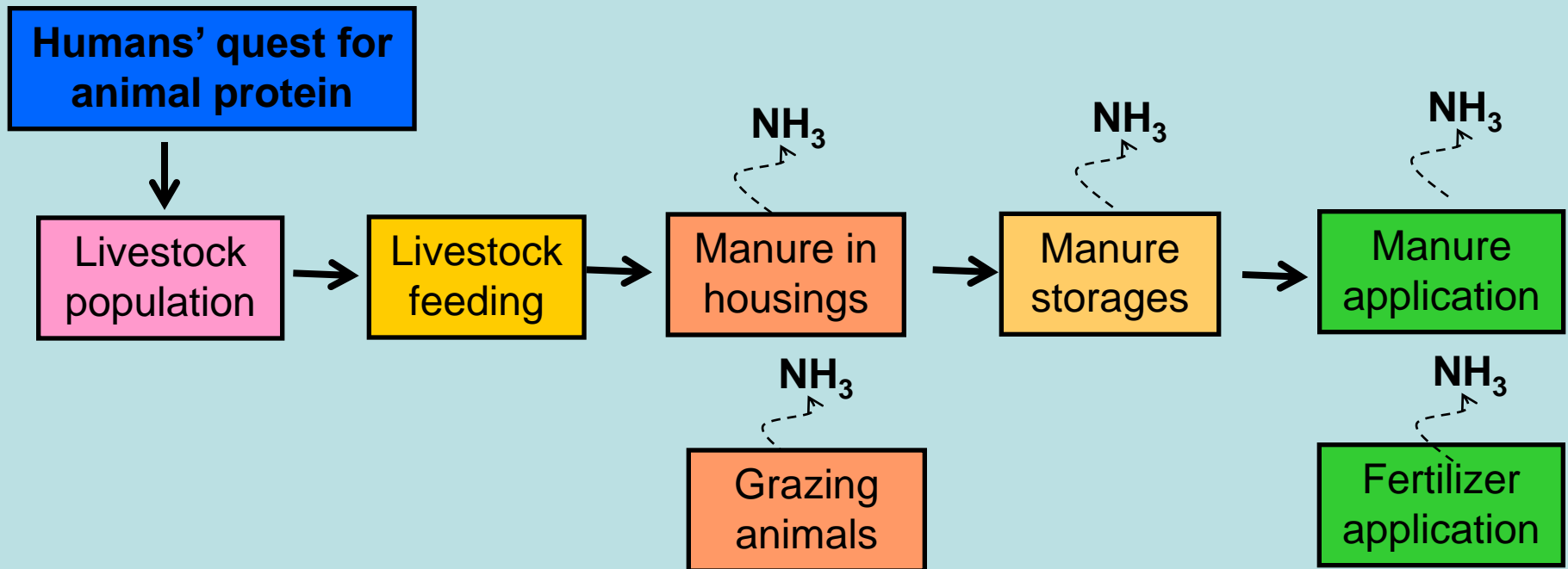
- Globalization of markets
- “Livestock revolution”
- “Livestock’s Long Shadow”
- Further up-scaling: farms become bigger;
- Further intensification; more produce per unit input;
- Food safety, animal welfare, impacts of climate change, sustainability become more important;

The Gothenburg revision should anticipate and exploit these developments

NH₃ emissions from animal manures in EU-27



Sequence of processes that affect total NH₃ emissions



Measures of Annex IX

- 1, Nitrogen management (NEW)
2. Livestock feeding strategies (NEW);
3. Animal housing systems: (NEW for Cattle)
4. Manure storage systems;
5. Manure application
6. Fertilizer application:

affect all sources
affect all manure sources
affect one source
affect one source
affect one or more sources
affect one source

Effectiveness of measures in Annex IX of Gothenborg Protocol

The current measures of Annex IX have the potential to reduce NH_3 emissions by 30-50%, when fully implemented, as shown by experiences in NL and DK.

Most cost-effective measures are

- Nitrogen management,
- Livestock feeding strategies and
- Low-emissions manure application techniques

Slurry spreading methods are key to reducing ammonia emissions



The “Splash Plate Spreader” represents 1950s technology

Today, there are a wide range of low emission techniques available



The car and the exhaust pipe...

Findings of the review on Annex IX & Guidance Document

We suggest to streamline/improve the linkages between Article 3, Annexes II and IX, the Guidance Document and Framework Code of Good Agricultural Practice.

Need to simplify the requirements & make less ambiguous

We suggest to including additional measures in Annex IX, with 3 ambition levels:

- Nitrogen management, taking account of the whole nitrogen cycle;
- Livestock feeding strategies;
- Large cattle farms
- Animal housings and manure storage;
- Manure spreading and
- Urea fertilizer use



Summarizing

EPMAN-3 in Dublin on 24-25 Sept. 2009

to prepare a detailed set of proposals of options for revision of Annex IX and the Guidance Document.

TFRN-3 in Amsterdam 24-25 Nov. 2009

to discuss and approve the proposals to pass to WGSR

Questions to WGSR

1. Should we consider the effects of human diets on livestock production and NH_3 emissions, and propose some general strategies?
2. Will the functions of Article 3 (Basic obligations), Annex II (ceilings), Annex IX (NH_3 emissions abatement techniques), Guidance Document and Code of GAP remain the same in the revised Gothenborg Protocol?

Questions to WGSR

1. Are the three broad ambition categories (A-C) appropriate to guide the technical discussion?
2. Do you have preferences in the manner of varying ambition levels? (text phrasing, % targets, lead-in time, new equipment only etc)
3. Do you support the concept of using standard technical exemptions to facilitate ratification? (e.g. farm size, topography)