Task Force on Reactive Nitrogen (TFRN)

Feedback from WGSR-46 on revision of Annex IX of the Gothenburg Protocol

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TFRN-4, 12 May 2010
## Current Annex IX of Gothenburg Protocol

<table>
<thead>
<tr>
<th>A. Advisory code of good agricultural practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Urea and ammonium carbonate fertilizers:</td>
</tr>
<tr>
<td>ban on ammonium carbonate fertilizers;</td>
</tr>
<tr>
<td>no quantitative targets for urea fertilizers</td>
</tr>
<tr>
<td>C. Manure application: soft target &gt;30% reduction from reference method in the Guidance Doc.</td>
</tr>
<tr>
<td>D. Manure storage: large pig &amp; poultry farms: firm target &gt;40% reduction for new stores</td>
</tr>
<tr>
<td>E. Animal housing: large pig &amp; poultry farms: firm target &gt;20% reduction for new housing</td>
</tr>
</tbody>
</table>
It is clear that more can be done…

• Only a few countries have so far implemented existing technical capability

• A long-term perspective encouraging gradual change may be needed
TFRN documents to WGSR-46

Provided for this meeting:

- **Annex IX options** (ECE/EB.AIR/WG.5/2010/5)
  - **Appendix I**: Simple method for farm size thresholds
  - **Appendix II**: Alternative detailed approach for thresholds based on manure nitrogen
- **Informal Note 11**: Factors affecting net costs and benefits of ammonia abatement
Humans’ quest for animal protein

1. Livestock population
   → Livestock feeding

2. Manure in housings
   → Manure storages

3. Grazing animals
   → Manure application

4. Fertilizer application

Measures of proposed/revised Annex IX

1. Nitrogen management: affect all sources
2. Livestock feeding strategies: affect all manure sources
3. Animal housing systems: affect one source
4. Manure storage systems: affect one source
5. Manure application: affect one source, but cumulative
6. Fertilizer application: affect one source
Ammonia Guidance Document and Category 1, 2, 3 techniques

• The Guidance Document for ammonia lists 3 categories of techniques:
  – Category 1: well proven methods
  – Category 2: sound, but some uncertainties
  – Category 3: problems and not recommended
• Category 2 and 3 methods may be used to meet Annex IX commitments, but suitable verification should be provided by the Party.
• Guidance document being updated. Drafts on TFRN Website: Revised versions after TFRN-4 (11-13 May 2010, Prague)
Three ambition levels

A. Technically feasible options that reflect a high level of ambition in reducing NH$_3$ emissions, while remaining cost effective.

B. Technically feasible options that reflect a moderate level of ambition, as well as being cost effective.

C. Technically feasible options that reflect a modest level of ambition, as well as being cost effective.
Use of thresholds to vary ambition levels of Options A-C

**Farm Size Thresholds**
- Medium and large farms (future economic development)
- Small farms (few animals per farm and different economics)

Options for scaling farm size (TFRN-3 Appendices I & 2):
- Number of livestock units on the farm
- Amount of N excreted by housed animals on the farm

**Other Threshold Option**
(e.g., equipment standards for manure spreading)
Decisions needed from WGSR on thresholds approaches

<table>
<thead>
<tr>
<th>Threshold Indicator</th>
<th>Number of Livestock units on each farm</th>
<th>Total N excretion of housed livestock on each farm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Described</td>
<td>TFRN-3: App I</td>
<td>TFRN-3: App II</td>
</tr>
<tr>
<td>Benefits</td>
<td>• Simple to calculate</td>
<td>• More accurate and equitable indicator</td>
</tr>
<tr>
<td></td>
<td>• Available statistics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Costings easier</td>
<td></td>
</tr>
<tr>
<td>Disadvantages</td>
<td>• N excretion technically superior</td>
<td>• Harder to apply detailed method</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Additional resources needed to develop and estimate costings</td>
</tr>
</tbody>
</table>

**Specific Proposals**
- To use the simpler approach (Appendix I), unless WGSR expresses a preference otherwise
- To investigate supporting thresholds based on equipment standards for manure spreading (e.g. simple exemption for small slurry tankers)
Selecting thresholds

**Threshold for cattle farming (~50% agric NH₃)**
- 50 livestock units: 13% of farms in EU; 72% of cattle
- 100 livestock units: 6% of farms in EU; 50% of cattle

**Threshold for pig farming (~20% agric NH₃)**
following EU-IPPC regulations:
- Sows 750
- Fattener Pigs: 2000  
  - Covering ~20% of pigs in EU

**Threshold for poultry farming (~15% NH₃)**
following EU-IPPC regulations:
- 40,000 broilers /laying hens ~70% of EU poultry in EU

**Specific Proposals**
- For cattle farms: use threshold of 50 livestock units, unless certain parties request to use 100 livestock units (e.g. for EECCA countries).
- TFRN consider a second pig threshold for simple basic measures
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
Land application of animal manure

- Low-emission spreading methods, such as band spreading and slurry injection have been shown to be cost-effective.
- Proposed to phase out the unabated, surface application of slurry: according to three levels of ambition (A-C).

Targets and Options

- Alternative technologies can be included subject to verification by adopting Parties, e.g. “Application Timing Management Systems” (ATMS) and slurry dilution.
- Other exemptions apply for specific soil types, solid manure applied to cropped land, etc.
- Possibility for additional simple exemption for small slurry tankers
Current Reduction Plans are mainly modest ambition
- TFRN Option B gives significant additional reduction
- BE, NL, DK show that much more can be done if there is willingness
Reactions of WGSR

1. Does WGSR disagree with the proposed approach for setting farm size thresholds? (e.g. animal numbers rather than N excretion)
   A: Unanimous agreement for the simpler method (animal numbers) including consensus EU position.

2. Are the options A-C suitably ambitious? (e.g. all options, even A, are less than MFR)
   A: No agreement, e.g. EU: “The EU will be in a better position to answer this question once the revised Guidance Document V is available and would be very interested in getting information on the benefits and costs of the measures listed for each of the ambition levels.

3. Are different target dates, thresholds or ambition levels requested by EECCA countries?
   A: No answer yet.
Priorities following WGSR-46 for Gothenburg Revision

• Most important:
  – Complete the Ammonia Guidance Document
  – Provide estimates of the costs-benefits of the proposed options A-C (with breakdown, transparency and European upscaling of costs)
• **Also to do for Annex IX**
  – Clarify our farm size thresholds for housing/storage in relation to existing IPPC/GP limits, and consider action on smaller pig farms.
  – Clarify the specification for land application Options to avoid ambiguity, and consider small spreader exemption. Add deliberate redundancy if necessary.

• **Also to do for the guidance document**
  – Clarify the different kinds of N budgeting and what approach is intended in Annex IX
  – Clarify the linkages between implementing changes for animal welfare and ammonia.
  – Provide an overview table that links the % values in Annex IX with available methodologies in the Guidance Document.
Regarding Costs

- a) verify the translation of Options A, B and C, into GAINS,
- b) reporting the costs assumed (e.g. € /kg N abated) for each measure in Annex IX in each country;
- c) scaling up the estimates to the national level,
- d) identifying ‘high-cost outliers’, as a means of tuning the packages for Options A, B, C. (Generate simplified Europe-wide, Annex IX cost curve for WGSR)