Progress report of the Expert Panel on Nitrogen and Food (EPNF) to TFRN-4

Prague, May 12th, 2010
Mandate

- The general aim of the EPNF is to create a better understanding of the relationship between human diets and the N-cycle.
  - Lowering of meat and dairy consumption could have various beneficial effects, including a substantial lowering of the societal cost for mitigation NH3 and greenhouse gas emissions.
- The work of the EPNF will result in a Guidance document to the Parties to the Convention
The protein consumption in the EU-15 is 70% higher than recommended.
Large differences in conversion per product category

Conversion factor (based on crude protein)

NB Partly conversion of lower value to higher value proteins
Meat consumption per capita in European countries (Kg/year)
Structure

1. Problem definition: losses of Nr → agriculture (EPNB ?)

2. Differentiation per product category:
   1. Define product categories
   2. Allocation of losses of Nr to product categories (total) (EPNB ?)
   3. Determine environmental effects per product category (per (group of) country of production) [LCA type approach] (per FU)

3. Analyses of human diet:
   1. Determine present diets: intake of calories, protein and saturated fat, vegetables and fruits
   2. Compare actual intake per country to WHO recommendations
   3. Analysis of potential gaps/ imbalances
4. **Potential for improvement**
   1. Define directions of improvement:
      1. Exchange within categories (apples for pears)
      2. Changes between categories (beans for meat)
      3. Limit consumption (because consumption not in line with WHO recommendations)
   2. Definition of scenarios
   3. Determination of effects (volume and emissions)
      1. Product based LCA
      2. Input-output analyses on continental scale (dynamic approach; not full scale)

5. **Discussion**
   1. How to change human behaviour
   2. Change of production systems for same product categories

6. **Conclusions and recommendations**
Product categories (tentative)

- Beef
- Pigmeat
- Milk
- Cereals
- Beans
- Fruits
- Etc.
- We are aware that the production methods differs per country / region and per farming system (conventional / organic etc.)
Not (only) static product LCA-approach

• Example

• Beef: 40 kg NH3-N per kg meat

• But minus 10% beef consumption in EU does not mean minus 10% ammonia

• Could mean:
  – More export / less import EU: effects elsewhere
  – Less efficient production: -5%
  – Less intensive production -15%
Proposed scenarios

1. Business as usual
2. Reduce protein intake to +10-20% recommended intake: Reduce
3. Selection of “best” source per category (in terms of effects on N cycle) [look also within product categories to the effect of different farming systems] Change
4. Combination of Reduce and change

Outcomes:
Volumes of production of different agricultural products (cereals, beans, beef etc)
Differences in economic value of agricultural production (assuming fixed prices) = indication
Process

• Next meeting october 2010 (separate from TFRN)
• Started as small group, finalizing expert panel composition end of June
• Experts welcome (will be call in coming weeks) based in Inception document
• Actual start first phase (litt inventory) July-September
Step by step

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3. Analyses of human diet:
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   1. How to change human behaviour
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6. Conclusions and recommendations
Dairy cows  Beef cattle  Pigs  Poultry  Laying hens  Sheep and goats  Arable sector

Allocation of budgets / losses to product categories

- CO2 fertilizer production
- CO2 emission
- CH4 enteric fermentation
- CH4 manure management
- N2O manure management
- N2O soil emission
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Outcomes:
Volumes of production of different agricultural products (cereals, beans, beef etc)
Differences in economic value of agricultural production (assuming fixed prices) = indication
• At present: high (N) emissions from agriculture
• Large differences between food categories: need for data: LCA-type and top-down
• Not looking into ways of reducing N losses per category
• Possibilities to reduce the N impact:
  – Exchange within categories (apples for pears)
  – Changes between categories (beans for meat)
  – Limit consumption (because consumption not in line with WHO recommendations)