

Setting

The Expert panel on Nitrogen and Food is operating within the framework of the Taskforce on Reactive Nitrogen (TFRN). The TFRN is placed under the Working Group on Strategies and Review of the UNECE Convention on Long-range Transboundary Air Pollution. The long term goal of the TFRN is: “Developing technical and scientific information, and options which can be used for strategy development across the UNECE, and to encourage coordination of air pollution policies on nitrogen in the context of the nitrogen cycle and which may be used by other bodies outside the Convention in consideration of other control measures”. <http://www.clrtap-tfrn.org/>

Aim and dissemination

The general aim of the EPNF is to create a better understanding of the relationship between human diets and the N-cycle. The work of the EPNF will result in a Guidance document to the Parties to the Convention. This document can provide guidance to the Parties to the Convention in identifying technical and broader options for reducing emissions from agricultural in the implementation of their obligations under the Protocol.

Approach

The Expert panel will not perform original research itself, but will make use of existing published research.

Timing

The draft document of the Expert panel will be ready by the summer of 2011. The final document will be ready in December 2011.

Chapter 1 Introduction

Framing the issue, central question(s)

General:

What is the geographical boundary of our investigation: EU-27, Europe, US and Canada?

We are not going to investigate *how* to achieve possible dietary changes. Neither economic nor social effects on the agricultural sector of possible dietary changes will be included in this study.

Questions to be answered:

- *Which different product categories would be relevant in the light of the Task Force?*

(Presently, we think of main categories: cereals, beans, sugar, oil crops, different types of meat, milk, cheese, butter, fish (aquaculture) etc)

We probably need to speak about food categories, being basic products like beef, cheese, cereals and sugar. We are not investigating the environmental effects of processing, neither the environmental effect of compound products.

Discussion: is this the right approach? Do we need to take into account compound products as well?

Expertise needed:

See chapter 2 and 3

Chapter 2 Environmental impact of different product categories

Central questions:

- *What would be (a) suitable indicator(s) to express the environmental impact of different product categories, especially of nitrogen compounds ? For example: type of loss (air (NH₃, NO_x), GHG (N₂O), water(NO₃);*
- *What is the functional unit (link to Chapter 3) (per kg of product, per kcal, per kg protein ?)*
- *Which relevant information is available to assess the impact of the different product categories?*
- *What is the impact (per indicator) per product category? Is it relevant to differentiate the impact of different product categories per country / region/intensity of production?*
- *What are other effects / relevant LCA indicators of the same product categories, like land use, water use, P use, emission of GHGs?*
- *What are per product category the main potentials to reduce the effect of N-emissions? Are there trade-offs with other environmental issues (land use, emissions of greenhouse gases)? Can something be said about the costs of implementing these changes?*

We (probably) should take also aquaculture into account.

Expertise needed:

Expertise on nitrogen cycling and emissions
 Expertise on livestock and arable production systems
 Expertise on LCA-methodology
 Expertise on aquaculture (and emissions)

Chapter 3 Current status of human diet in EU27

Central questions:

- *What is the present intake of different products in the different countries: in kg; in calories, in protein? Is there a need to distinguish certain groups within countries?*
- *What is the present intake of saturated fats per product category?*
- *What are the WHO standards for human diet (in EU conditions?) How are these recommendations translated into national recommendations?*
- *Is the present average consumption in accordance with the WHO-recommendations? If not so, what would be logic modifications of the diets to construct diets which are in accordance with the WHO-recommendations?*
- *Given the (probably) different impacts of different product categories, what would be possible modifications of the diets in order to reduce the environmental impact of food consumption? The modifications need to be within the WHO-standards and need to be plausible.*

Expertise needed:

- Expertise on nutrition (and health)
- Expertise on actual food consumption

(Our own brief analysis has indicated that in Europe most people consume more proteins than is actually needed according to the WHO recommendations, but that this has no or hardly any health consequences. Most people however consume more saturated fats than is healthy (according to WHO), of which 50-70% stem from animal origin).

Chapter 4 *Potential for improvement*

- *What would be the environmental effect of implementing the dietary changes as suggested in Chapter 3 (static approach)*
- *What would be possible synergistic and antagonistic effects of dietary changes (like effects on land use, water use, P use, emission of GHGs and human health?)*

Do we need to determine three scenarios, rather than demonstrating the effects per product category? Examples of possible scenarios: business-as-usual; use of best-available techniques; reduction of consumption of products with highest impact?

Do we need to take a more dynamic approach (looking at the impact of the agricultural system as a whole), or a more static (LCA-type) approach?

Should we also include socio-economic effects of different scenarios / options, especially on the farming sector?

Expertise needed:

combination of Chapter 2 and 3

Chapter 5 *Conclusions*

Do we need a Chapter on consumers behavior and opinion? What are the factors that influence consumers?

Literature (to be completed ...)

Tukker, A.e.a. (2009) Environmental impacts of diet changes in the EU, Annex report. JRC-IPTS, Seville.

de Vries, M. en de Boer, I.J.M. (2010) Comparing environmental impacts for livestock products: A review of life cycle assessments. *Livestock Science* 128, 1-11.

WHO. 2002a. Diet, nutrition and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation. 916, World Health Organization, Geneva.

WHO. 2002b. Protein and amino acid requirements in human nutrition : report of a joint FAO/WHO/UNU expert consultation. 935, World Health Organization, Geneva.