

# NitroEurope IP presentation for iLEAPS 18 Jan, 2007

## Nitrogen and the European greenhouse gas balance.

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### Abstract

The NitroEurope IP – or NEU for short – was presented at the 4th iLEAPS meeting 17-18 January, 2007, University of Wageningen, Netherlands.

First an overview was given of the nitrogen cascade as an introduction why we care about nitrogen. The Nitrogen Challenge was summarized as being:

- Multi-source : agriculture, fossil fuel, natural
- Multi-pollutant:  $N_2O$ ,  $NO_x$ ,  $NH_3$ , aquatic  $NO_3^-$ , aerosol etc
- Multi-problem: GHG balance, biodiversity, water quality, human health
- Multi-receptor: Forests & other terrest. ecosystems, agriculture, rivers, stratosphere, urban, coastal & marine, humans

Then the major objective of NEU was presented: “What is the effect of reactive nitrogen ( $N_r$ ) supply on net greenhouse gas budgets for Europe?” with an overview of possible effects such as elevated

- N supply increases direct and indirect (by  $NH_3$  emission/deposition and  $NO_3^-$  leaching)  $N_2O$  emissions;
- N supply may increase  $CH_4$  emissions from wetlands, reduce  $CH_4$  oxidation in soils and reduce in ruminant  $CH_4$  emissions;
- $NH_3$  emission/deposition increases primary productivity and carbon sequestration by vegetation in non-agricultural systems

The overall structure of NEU was then presented in terms of : (1) an observing system for N fluxes and pools, (2) a network of manipulation experiments, (3) plot-scale C-N modelling, (4) landscape analysis, (5) European up-scaling and (6) uncertainty and verification of European estimates. Specific emphasis was given to component 5 focusing on upscaling  $N_r$  and NGE fluxes for terrestrial ecosystems to regional and European levels, considering spatial variability and allowing assessment of past, present and future changes. Examples of preliminary model results for  $N_2O$  emissions at a European scale were presented