



Nitrogen, the Circular Economy and the potential for NO_x recapture and utilization

Mark Sutton

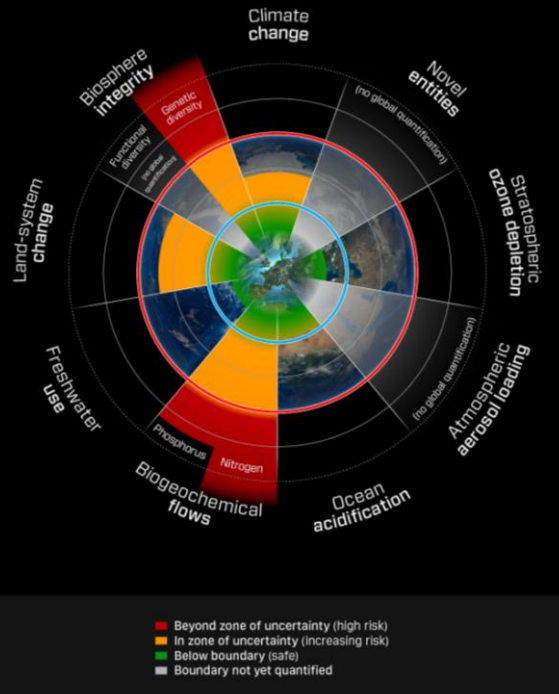
Brussels, TFTEI
25 June 2015

Building the case for change

- Hard times: period of little commitment
- How can we all benefit from a joined up nitrogen approach?
 - **WAGES**: Water, Air, Greenhouse, Ecosystems, Soils
 - **Win-wins**: environment, food & energy security
 - **Nitrogen Use Efficiency**: a positive approach
 - **Nitrogen Green/Circular Economy**: innovation & jobs
 - **Addressing the Barriers**: gravity of common cause

Planetary Boundaries A safe operating space for humanity

Steffen et al. 2015
Science



Task Force on Reactive Nitrogen Key Topics

- Mitigation of **agricultural nitrogen**, with special attention to ammonia. (*Ammonia Framework Code*)
- Development of regional **nitrogen budgets** to inform full N optimization strategies
- Assessment of the relationships between **nitrogen and food** choices
- Awareness and knowledge building on **nitrogen in EECCA** countries.
- **Catalytic activity** on nitrogen for use by other bodies outside the convention.

Two documents to know:
1. UNECE Ammonia Guidance Document
 New
 Russian language version

Options for Ammonia Mitigation

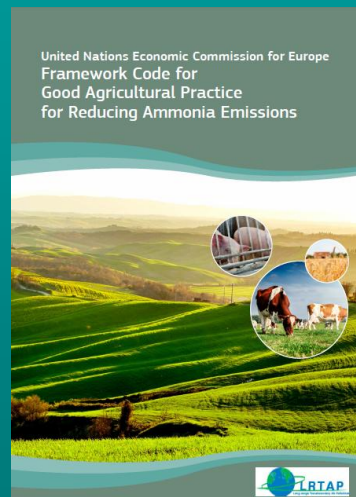
Guidance from the UNECE Task Force on Reactive Nitrogen



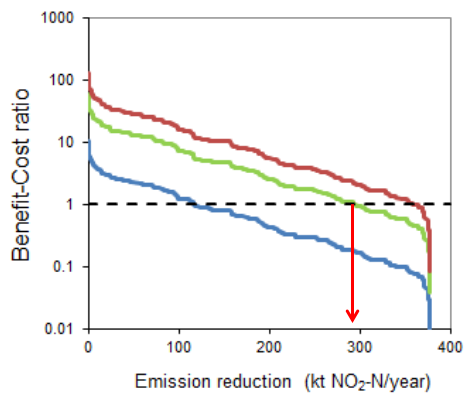
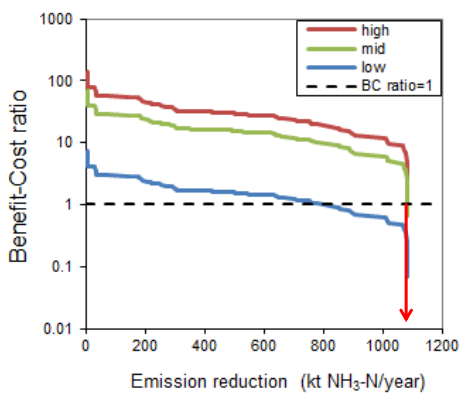
Ammonia Framework Code Lessons from the Edinburgh Workshop

- A. General consensus that it is doable. Range of measures; BAT included; voluntary approach
- B. Confusion over the term 'code' for some countries (=measures here are voluntary)
- C. Having a National Ammonia Code is mandatory (<10 of 25 signatory countries have done it)
- D. Framework Code a support for countries to make or update their National Ammonia Code

EB adopted it Dec 2014 & now published (May 2015)



EU benefit-cost ratios: NH₃ & NO_x mitigation UNECE Air Convention: Task Force on Reactive Nitrogen



Van Grinsven et al.
Environ Sci. & Tech 2013

UN says fertiliser crisis is damaging the planet

Scientists urge rich world to halve its meat consumption

The shape of nitrogen to come

An analysis reveals the huge impact of human activity on the nitrogen cycle in China. With global use of Earth's resources rising per head, the findings call for a re-evaluation of the consumption patterns of developed societies.

Nature doi:10.1038/nature11954

More environment-friendly nutrient use could save \$170bn a year

18 Feb 2013: *Independent*, *Guardian*, *Herald Tribune*, *Times of India* and 300 articles worldwide

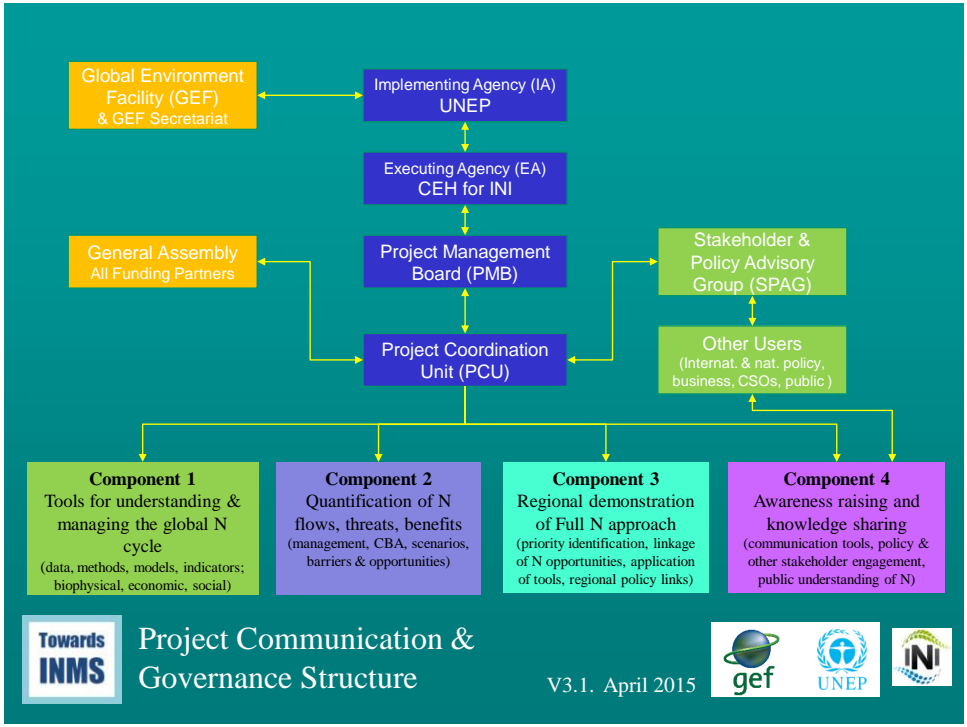
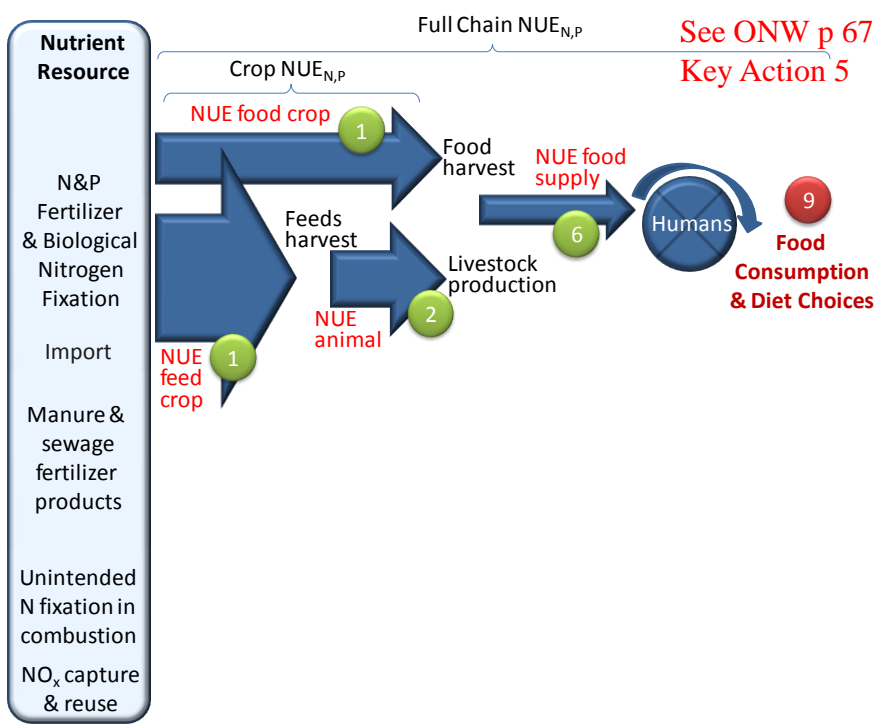
Nutrient Management
Global Overview

Our Nutrient World

The challenge to produce more food and energy with less pollution



Prepared by the Global Partnership on Nutrient Management in collaboration with the International Nitrogen Initiative



Component 2

Quantification of N flows, threats & benefits

Activity 2.1

Quantifying N flows, threats and benefits at global and regional scales

Activity 2.2

Preparation of global assessment of N fluxes, pathways & impacts

Activity 2.3

Integrating methods, measures & good practices to address N_r issues

Activity 2.4

Future N storylines & scenarios with management/ mitigation options & CBA

Activity 2.5

Collation & synthesis of experience & measures adopted by GEF and others

INMS status

- More detailed project outline now available:
- <http://www.inms.international/guidance-on-inms-proposal-documents>
- Basis to see where you fit into the project
 - Complete Excel Spreadsheet (before end June)
 - Model Commitment Letter (Cofinance)