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Task Force on Reactive Nitrogen

From Ammonia Codes to the Nitrogen Green Economy

Lead countries: UK and Denmark

Mark Sutton and Tommy Dalgaard
(co-chairs TFRN)

EB-33, Geneva
9 Dec 2014

TFRN Goal (EB decision 2007)

"the long-term goal of developing technical and scientific information,

and optio ... *gy*
developm

to encour ... *policies*
on nitrog ... *cycle*

and which may be used by other bodies outside the Convention in consideration of other control measures"

UK proposes to withdraw as TFRN joint lead-country from end 2014

TFRN 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.

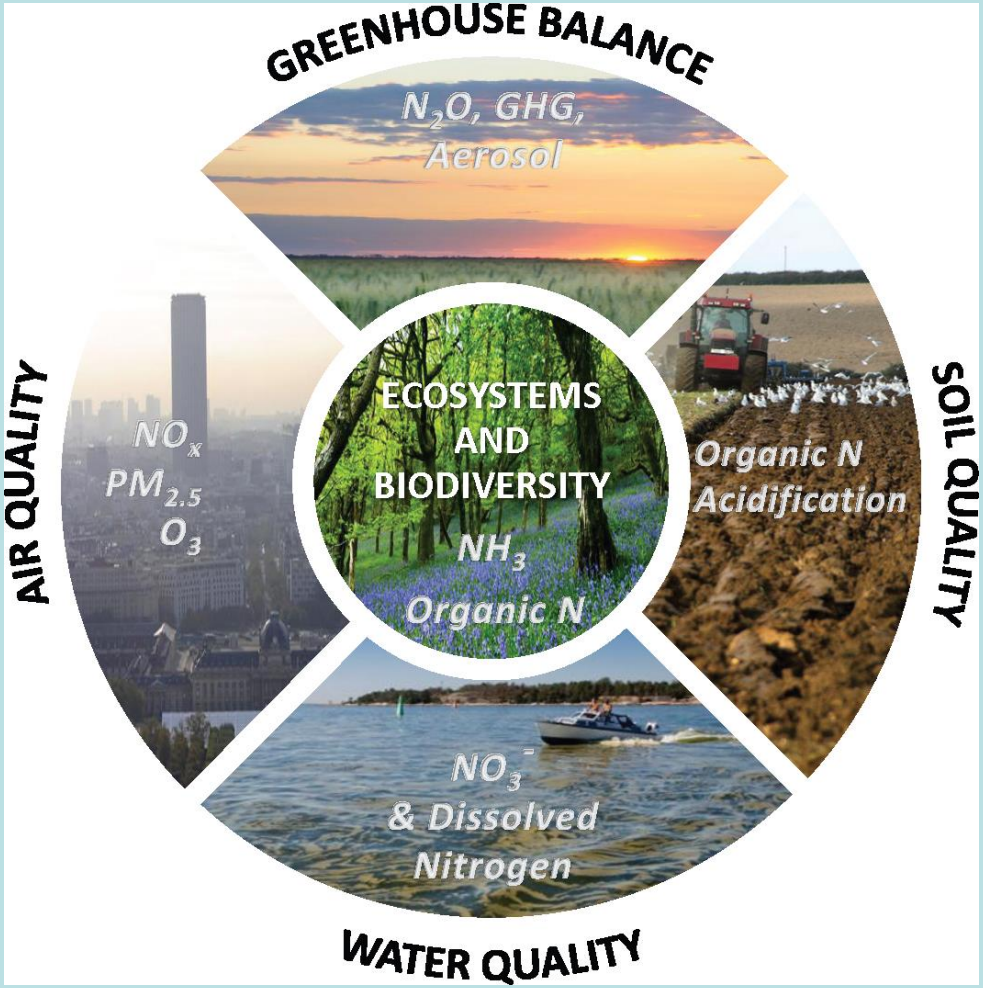
Can N help us think bigger?

- How would we attract our Ministers?
- Jobs, Green Economy, Overcoming the Barriers
- Joining up across the N cycle, with better ‘Economy-Wide’ Nitrogen Use Efficiency can help with all these

The five key threats of nitrogen

The WAGES of too much nitrogen

Water quality
Air quality
Greenhouse balance
Ecosystems
Soil quality



European Nitrogen Assessment (2011)

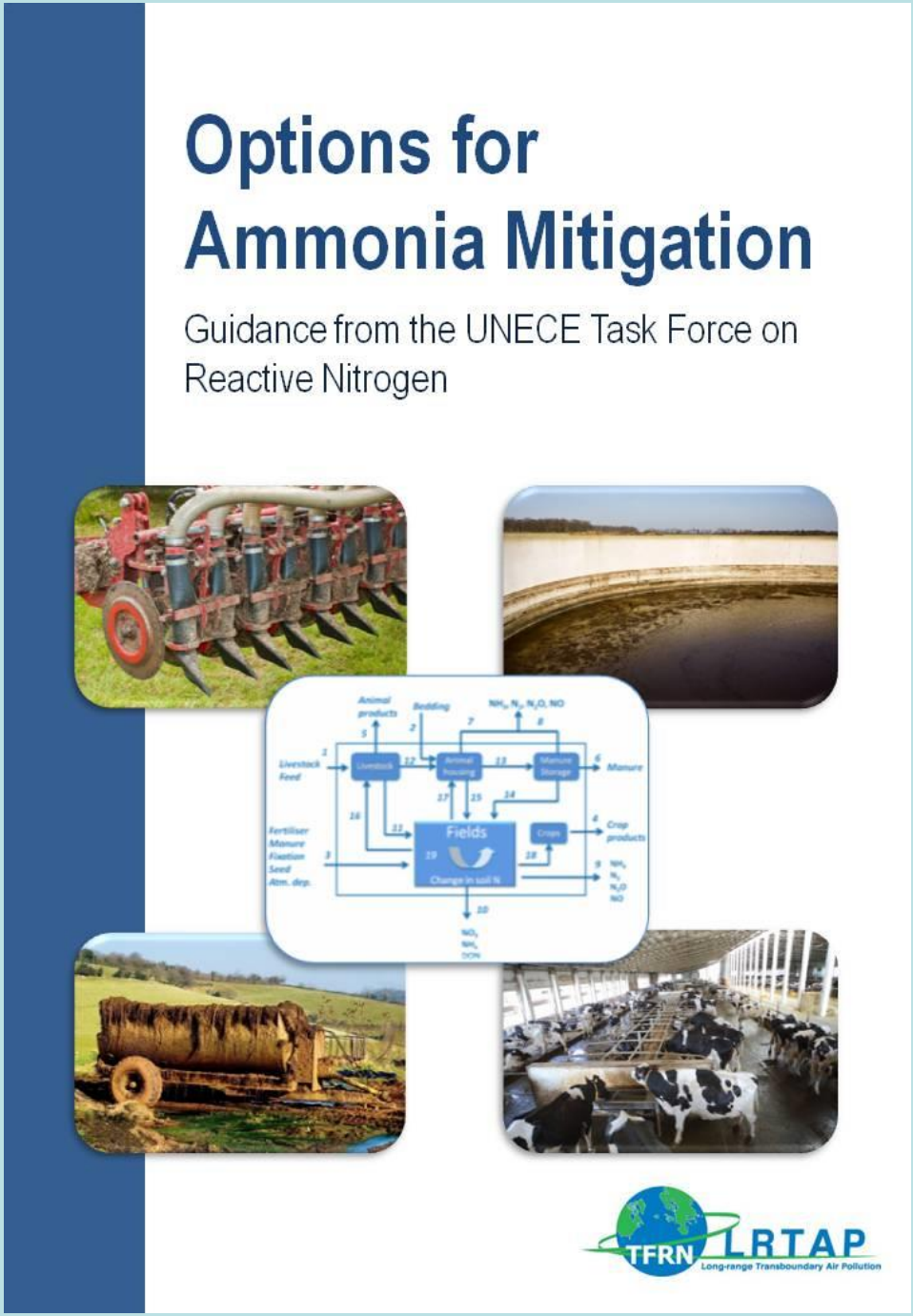
Two documents to know:

1. UNECE Ammonia Guidance Document

New

Russian language version

2. UNECE Ammonia Framework Code



Ammonia mitigation – Updating the Framework Code

- Basis for Countries to establish their **own national Codes** of Good Agric Practice for Ammonia (mandatory under GP Annex IX)
- Last update 2001. Also relevant for NECD review.
- Grateful for resources from European Commission for workshop in Edinburgh (Nov. 2014) inc. EECCA countries

Revised Ammonia Framework Code

- Follows same paragraph structure as 2001 version – for easy comparability
- Updated with new technical information
- More balanced now (less pessimistic)
- Contains a range of ambition: not a common standard code
- Includes an indicative 30% benchmark for good practice achievable by many methods

Sections of the Framework Code

A. Nitrogen management, taking account of the whole nitrogen cycle;
B. Livestock **feeding strategies**;
C. Low-emission **manure spreading techniques**;
D. Low-emission **manure storage** systems;
E. Low-emission **animal housing** systems; and
F. Possibilities for limiting ammonia emissions from the **use of mineral fertilizers**.

Ammonia Framework Code

Lessons from the Edinburgh Workshop

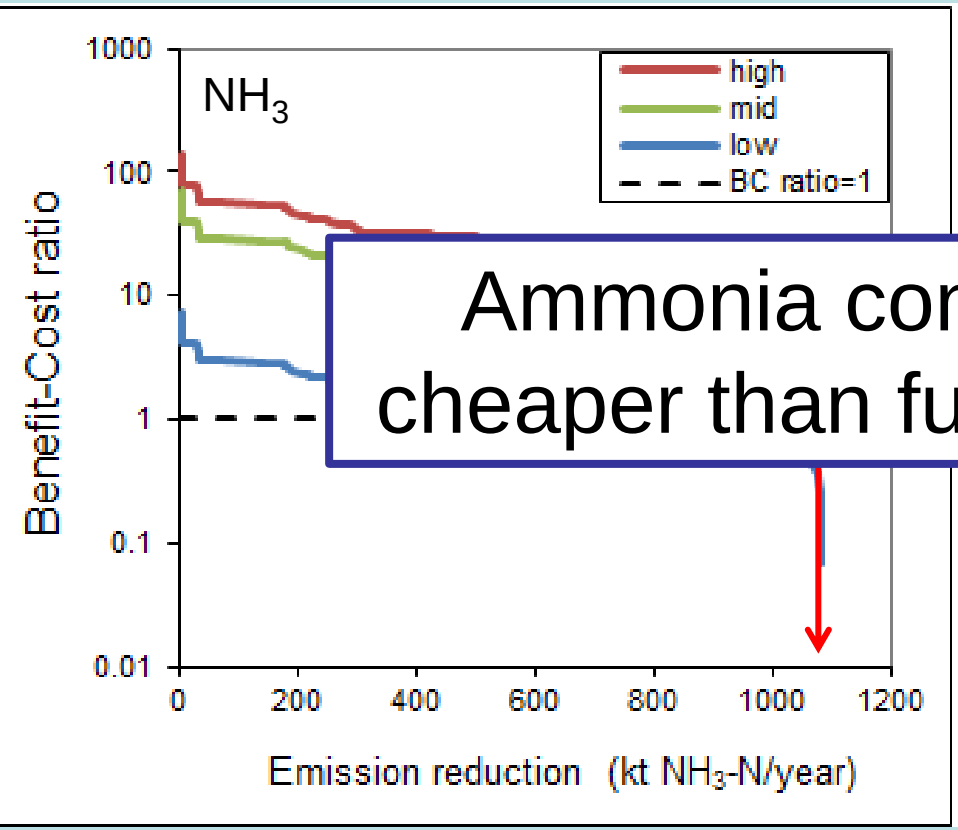
A. Consensus that it is achievable. Range of measures; BAT included; voluntary approach
B. Confusion over the term ‘code’ for some countries (the measures are voluntary)
C. Having an Ammonia Code is mandatory for each Party (<**10 of 25** signatories have done it)
D. Framework Code is a support for countries to update their National Ammonia Code

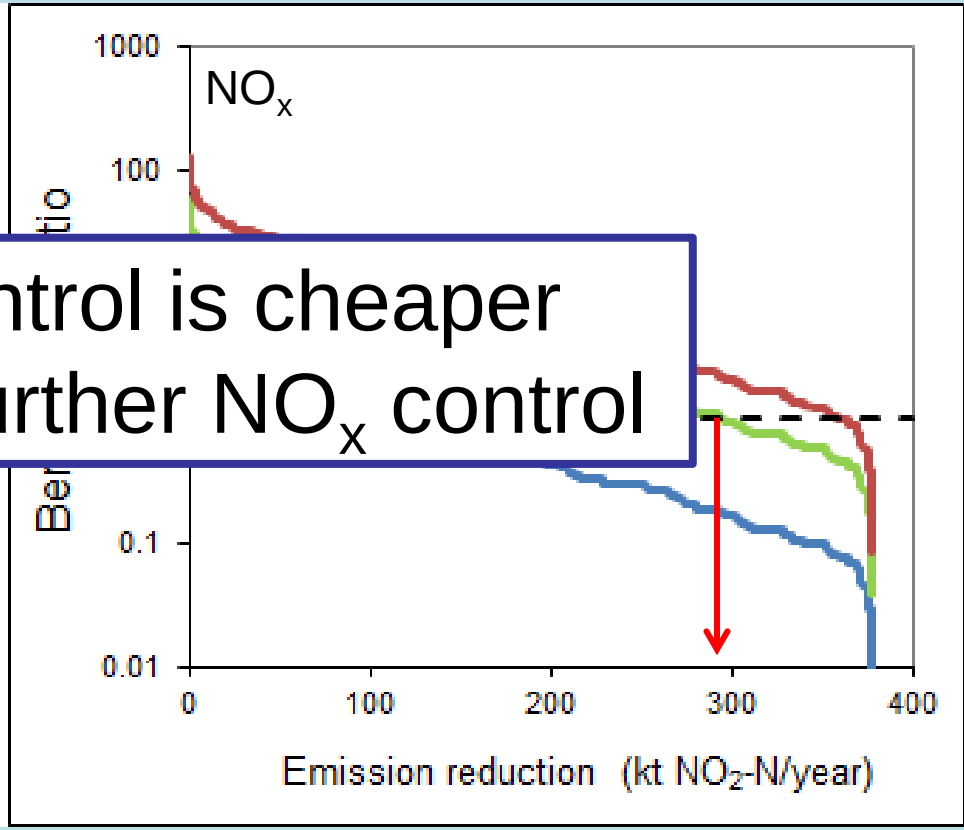
Ammonia Framework Code
The documents you have

A. Draft Revised Framework Code (*2014/8*)
B. Stakeholder Comments and Replies (*Inf. Doc. 3*)
C. Minutes of the Edinburgh Workshop (*Inf. Doc. 7*)
D. Marked up comments of final amendments from Edinburgh (*Inf. Doc. 8*)

- **Ready to answer your questions**

EU benefit-cost ratios for NH_3 and NO_x mitigation

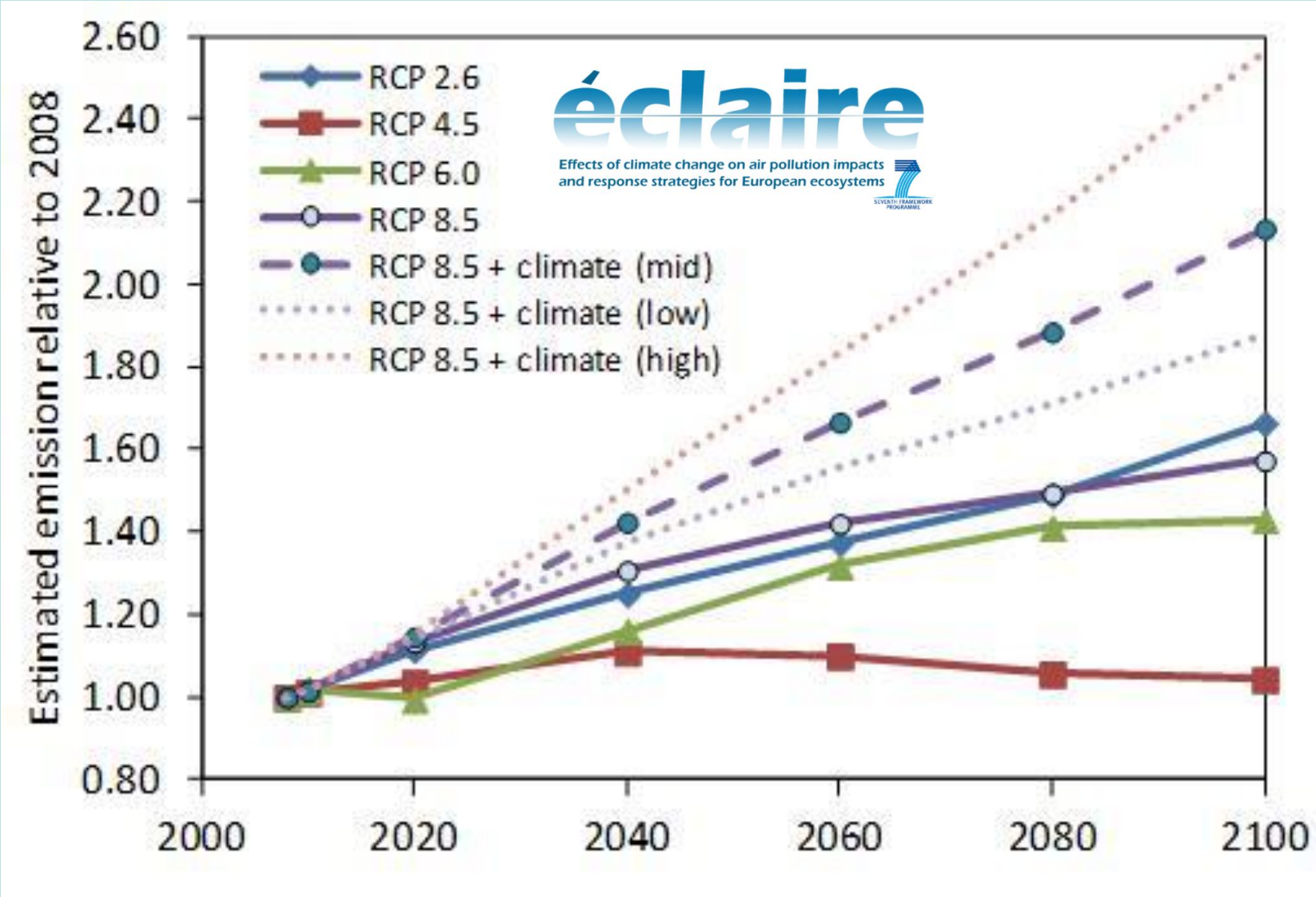




Ammonia control is cheaper
cheaper than further NO_x control

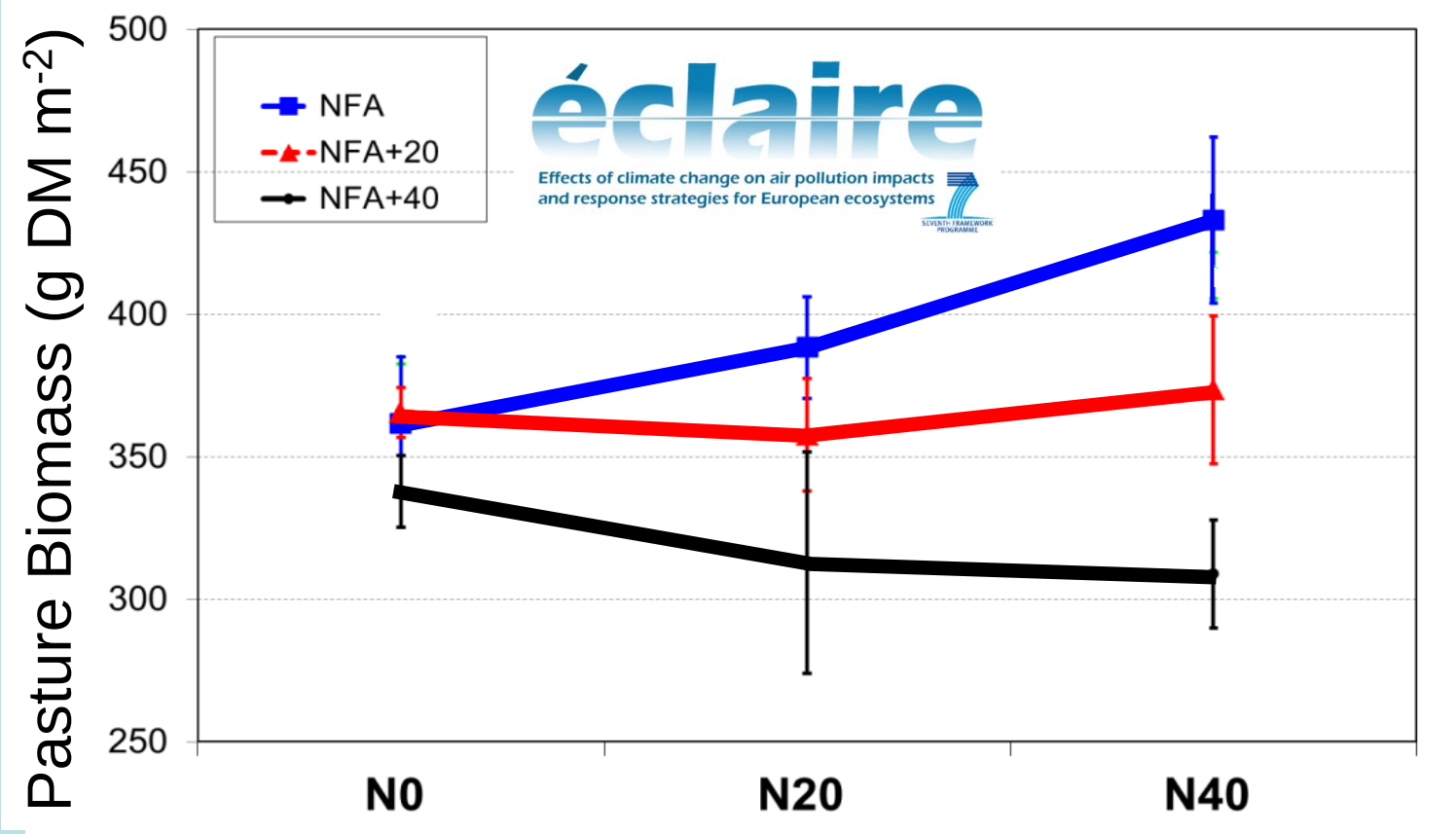
Van Grinsven et al. (*Environmental Science and Technology*, 2013)

Climate and global ammonia emissions



Sutton et al. *Phil Trans. Royal Society*, London 2013 (suppl. Mat.)

New Finding: Ozone reduces agricultural Nitrogen Use Efficiency



Alonso, Bermejo et al. CIEMAT, Spain

Ozone and nitrogen interactive response of an annual pasture yield (g dw m^{-2}) from the 2013 experiment.FA=charcoal filtered air, NFA =non filtered air, NFA+=non filtered air supplemented with 20 nl l^{-1} of O_3, NFA++=non filtered air supplemented with 40 nl l^{-1} of O_3. N0=soil N background, N20=20 kg N ha^{-1};N40=40 kg N ha^{-1}.

THE TIMES
Scotland Edition
Friday April 25 2014 | thetimes.co.uk | No 71180
Max 19C min 3C
Only 60p to subscribers £1.20

Halving EU meat and dairy intake would reduce N emission by 40%

How can LRTAP engage in the consumption challenge?

Air, Health, Ecosystems, Climate & Efficiency come together.

Raise taxes on meat to turn us into demitarians, says UN

Ben Webster Environment Editor

Extra taxes could be imposed on meat to deter families from buying it, according to a United Nations task force which recommends halving consumption of meat and dairy products to reduce pollution.

Britain's livestock farmers would suffer a "severe" loss of income from such a change in diet but there would be environmental benefits, including less pollution of the air, water and soil, and lower greenhouse gas emissions.

A team of scientists advising the United Nations Economic Commission for Europe (Unece) studied ways of reducing nitrogen pollution from chemical fertiliser and manure.

The task force on reactive nitrogen concluded that if everyone in the EU became "demitarian" — halving the amount of meat and other animal products consumed — it could reduce greenhouse gases from agriculture by 25 per cent to 40 per cent and nitrogen emissions by 40 per cent.

It would also cut the risk of heart disease and cancer by bringing consumption of saturated fats down to within levels recommended by the World Health Organisation.

The task force's report, published today, will inform negotiations between governments over tightening the EU emissions directive and the Unece's convention on cross-border air pollution. The scientists found that beef was the worst meat for environmental impact, causing 25 times more nitrogen pollution per unit of food protein than cereals. For pig and poultry meat, eggs and dairy, the pollution was 3.5 to 8 times that of cereals.

The team questioned whether people would be likely to cut consumption of meat simply by being better informed. They suggested that tougher measures, such as new taxes, might be more successful in changing behaviour.

They conclude: "A more direct policy intervention could be that of making meat and dairy products more expensive, either by direct taxation or by taxing the environmental effects."

The report admits that "the effects on the livestock sector will most likely be severe". Some farmers would be able to switch from rearing animals to planting cereals, but others with land less suitable for crops, particularly in Scotland and Wales, would suffer loss of income.

Reducing meat consumption would free "large areas of agricultural land in the EU" because much less land would be needed for grazing and for growing crops to feed to livestock. The report says the land could be used for growing biofuels to replace fossil fuels. Professor Mark Sutton, from the UK's Centre for Ecology & Hydrology and co-author of the report, said: "Adopting a demitarian diet across Europe would reduce nitrogen pollution levels by about 40 per cent which is similar to what could be achieved by adopting low-emission farming practices."

He acknowledged that reducing consumption in Britain would have limited impact on global emissions because countries such as China and India were increasing their consumption.

Dr Diane Mitchell, the National Farmers' Union chief environment adviser, said: "Eating less meat is a simplistic solution to what is a highly complex situation. The livestock and dairy sectors are already doing much to tackle their footprint.

"Some of this land can only be used for pasture and goes some way to protecting our wonderful countryside."

1GM 1GM

Nitrogen on the Table
Westhoek et al., 2014

Building the case for change

- Hard times: period of little commitment
- Identifying the champions for change
- What can you and your Minister get out of ammonia and nitrogen?
  - **WAGES**: **W**ater, **A**ir, **G**reenhouse, **E**cosystems, **S**oils
  - **Win-wins**: environment, food & energy security
  - **Nitrogen Use Efficiency**: a positive approach
  - **Nitrogen Green Economy**: jobs & opportunities

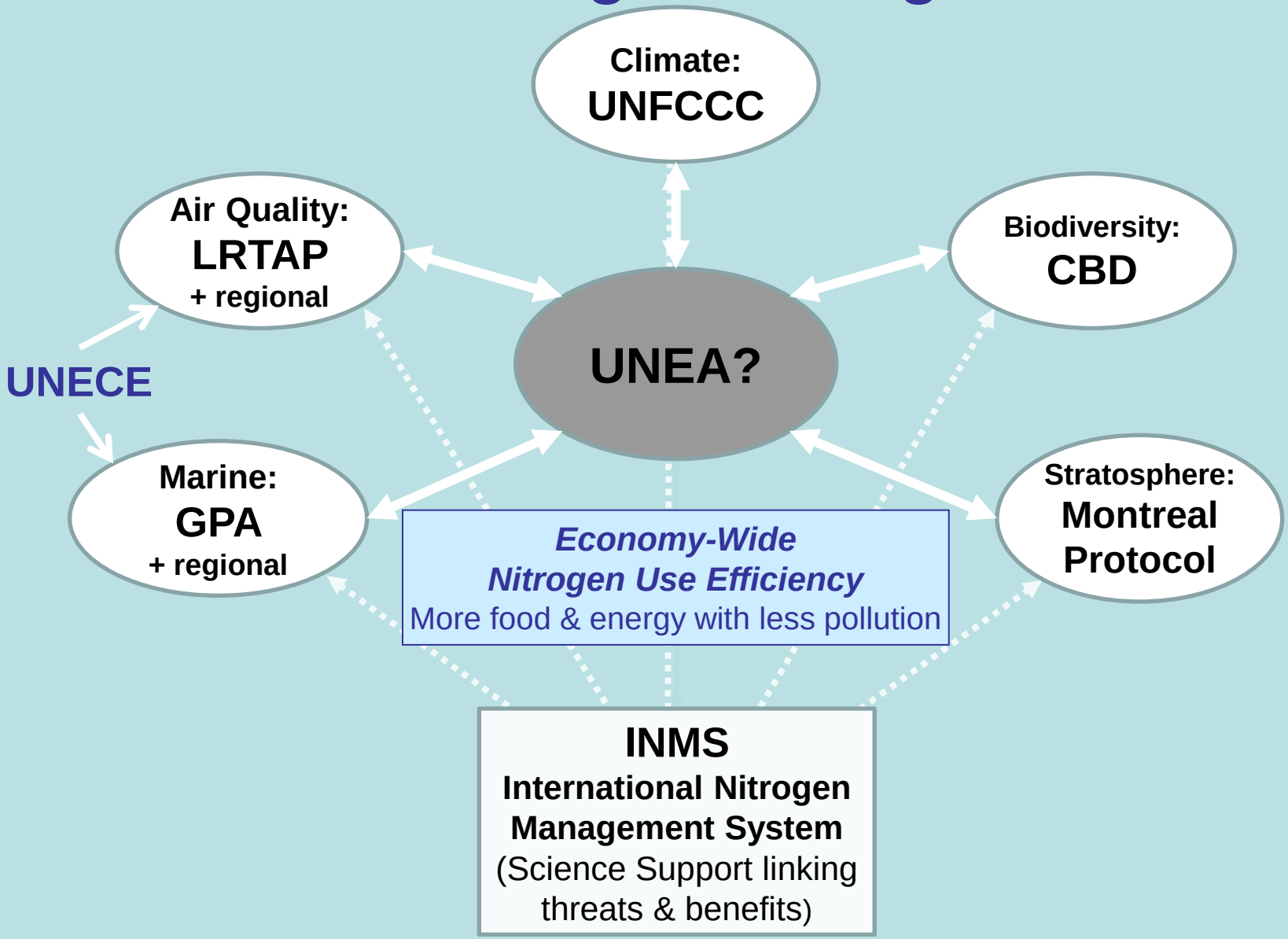
Opportunity 1:

Toward the International Nitrogen Management System (INMS)

- With United Nations Environment Program (UNEP)
- Toward a global science-policy support framework for nitrogen, addressing multiple co-benefits
- Engage with countries, industry, civil society, with UNEP, LRTAP, Marine Conventions FAO etc

- **Status:** Plenary Lisbon (April 2015). Finalize design (June 2015). Project Run: 2015-2019
- **Would your country join the INMS Steering Group?**

Counting the co-benefits of better nitrogen management



Opportunity 2:
OECD Environment Minister's Meeting 2016

- Danish chair, with clear water theme
- Could nitrogen be included as an "emerging topic"?
- EPOC Preparatory Meeting: 10-11 February 2015

- **Action:** If you are an OECD country and agree, then let your EPOC representatives know.
- **Other opportunities:** Environment for Europe (2016: Georgia). TFRN is ready to support