



Project Number 282910

ÉCLAIRE

**Effects of Climate Change on Air Pollution Impacts and Response Strategies
for European Ecosystems**

Seventh Framework Programme

Theme: Environment

D24.7 Final report to the GA on networking activities

Due date of deliverable: **30/09/15**

Actual submission date: **30/09/15**

Start Date of Project: **01/10/2011**

Duration: **48 months**

Organisation name of lead contractor for this deliverable :
NERC

| Project co-funded by the European Commission within the Seventh Framework Programme | | |
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| Dissemination Level | | |
| PU | Public | <input checked="" type="checkbox"/> |
| PP | Restricted to other programme participants (including the Commission Services) | <input type="checkbox"/> |
| RE | Restricted to a group specified by the consortium (including the Commission Services) | <input type="checkbox"/> |
| CO | Confidential, only for members of the consortium (including the Commission Services) | <input type="checkbox"/> |

1. Executive Summary

During the Final ECLAIRE meeting in Edinburgh, the co-ordinator Mark Sutton presented a report on networking activities to the participants of the General Assembly, which covered the following topics (relevant slides have been copied below, for information):

- The ECLAIRE key messages which were emerging
- The ECLAIRE information delivery path – highlighting the links between the science developed in the components and the end users.
- Outreach activities within the EU, including the work with the Foresight Expert Panel: JHEB *Junction of Health Environment & Bioeconomy* (Future H2020) and green week articles, etc.
- International outreach activities, such as making the links with the UNECE Convention on Long Range Transboundary Air Pollution (CLRTAP), UNEP and OECD.
- Development of the Ammonia Guidance for CLRTAP and associated Framework Code, which also supported the revision of the NEC Directive.
- Work on the ‘Nitrogen on the Table’ report, which highlights the influence of food choices on nitrogen emissions and the environment.
- Relevant articles in the media.
- Steps towards a future ‘International Nitrogen Management System’ (INMS), a science-policy support system for the global nitrogen problem and the ‘Towards INMS’ project proposal which is currently under development.
- Visualising the linkages between International Nitrogen Policy Frameworks.

2. Objectives:

To provide a verbal report to the General Assembly on the networking activities undertaken in the project.

3. Activities:

A report in the form of a powerpoint presentation was given to the final meeting, general assembly audience, in Edinburgh, September 2015.

4. Results:

Presentation was made (see relevant slides from the presentation, below).

5. Milestones achieved:

There were no associated milestones.

6. Deviations and reasons:

There were no deviations.

7. Publications:

There were no publications directly relevant to this deliverable.

8. Meetings:

The presentation was made at the 5th and final General Assembly, which was held in Edinburgh, 1st-4th September.

9. List of Documents/Annexes:

Relevant slides are copied below, in Annex 1.

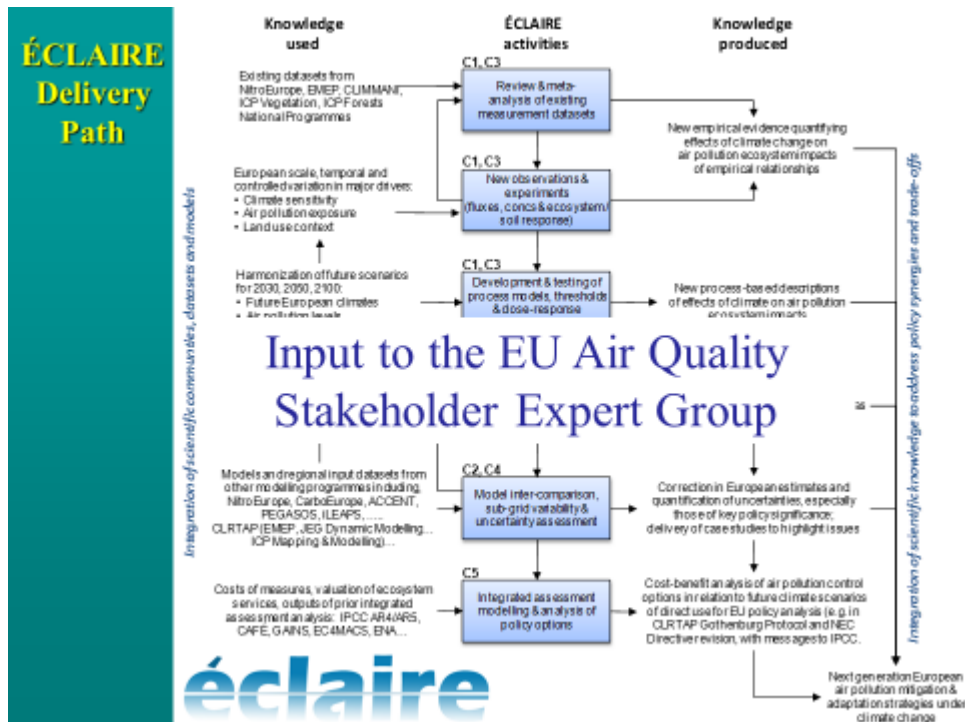
Annex 1: Relevant slides presented at the 5th GA.

ÉCLAIRE Key message

“The emerging message is that climate change will worsen the threat of air pollutants on Europe’s ecosystems:

- Climate warming is estimated to increase the emissions of many trace gases, such as ammonia (NH₃), soil emissions of nitrogen oxides (NO_x) and important biogenic volatile organic compounds (BVOCs). These effects would increase ground-level concentrations of NH₃, NO_x and ozone (O₃), particles (PM_{2.5}) as well as atmospheric nitrogen deposition.
- Climate warming may increase the vulnerability of ecosystems towards air pollutant exposure or atmospheric deposition. Such effects may occur as a consequence of combined perturbation, as well as through specific interactions, such as between drought, O₃, N and aerosol exposure.”

Annex





MENU FOR A BETTER ENVIRONMENT

Our menu choices from field to plate have the potential to improve both air quality and climate - Dr Clara Howard explains how we can get our 'just desserts' and the role of research.

50% of the global population is expected to live in cities by the year 2030. As the use of fertilizers increases, the amount of nitrogen that is lost to the atmosphere increases. This leads to air quality issues, including acid rain and global warming. Research is being done to improve the efficiency of fertilizers and to develop new fertilizers that are more effective and less likely to be lost to the atmosphere.

More efficient use of nitrogen in agriculture is being the application of fertilizers, the use of cover crops, and the use of precision agriculture. These practices can help reduce the amount of nitrogen that is lost to the atmosphere and improve the health of the soil. Research is also being done to develop new fertilizers that are more effective and less likely to be lost to the atmosphere.

As with any diet, the amount of nitrogen that we consume is important. We need to eat a balanced diet that includes a variety of fruits, vegetables, and whole grains. This will help us maintain a healthy weight and reduce our risk of chronic diseases. Research is also being done to develop new fertilizers that are more effective and less likely to be lost to the atmosphere.



Forum on Fertilizers and Nutrients for Growth

16 May 18:00 - 19:00
 Gallery, Altona Sports (A&P), Heere, Alst
register.conferenceofertilizers.eu

Organic address **Political Perspectives**

Chair
 Britta Reimers MEP

Vice-Chair
 Julie Gillling MEP

Guest speaker: Our Nutrient World
 Prof. Mark Sutton, Center for Ecology and Hydrology, Edinburgh
 Author of the UNEP report "One Nutrient World"
 Professor Sutton is the author of the recent UNEP report "One Nutrient World: The challenge to produce more food and energy with less pollution. The Global Overview on Nutrient Management addresses the scientific complexity of how humanity can rise to these challenges and maximize the opportunities of improved nutrient management.

The EU Year of "Air Quality"

EU Air Pollution Policy Review 2011-2013
 12-13 October
 Secretary General of DG Environment
 How Fertilizers can provide a solution
 Sarah Hoggart
 Fertilizers Europe

From Parliament Magazine

- Green Week &
- EU Parliament Forum

ECLAIRE Team provided UNECE Ammonia Guidance

Plus revised Framework Code to support NECD revision



Options for Ammonia Mitigation

Guidance from the UNECE Task Force on Reactive Nitrogen











Full report to be launched in the summer

Executive Summary out already

Nitrogen on the Table

The influence of food choices on nitrogen emissions and the European environment.



Special Report of the European Nitrogen Assessment 

THE TIMES

Leading articles

Eat Less Meat
A vital message is buried in a new report on climate change

It is not allowed to produce food shortages, and price inflation within the next half century if we fail to change what we eat. The world population is now roughly seven billion, is expected to rise to ten billion by 2050. More than 200 million hectares of land have been leased for growing in the past two years and five declarations in the Americas alone confirm a race equalling to 95% that will probably begin, by the summer, by far the most rapid rate of farmland in for growing corn and wheat.

Rising crop yields and better science will undoubtedly help with food supply, but rising property will also give more farmers a taste for beef and lamb. Our option is to farm the hills of the world's livestock industry. The animals producing most of our red meat would never see the light of day or breathe fresh air. That might be acceptable, but it would be neither compassionate nor healthy — for humans or the environment.

The right course is to raise livestock well and regard the animal welfare and public good as part of a balanced diet. That means eating less of it.

How much less? For Britain, 50 per cent less, according to the Department of Energy and Climate Change. The figure comes from a report on changes that the department says will have to be made to our food to do our "fair share" towards limiting global carbon emissions.

Meat production is a carbon-intensive business, and the political agency behind the report is the need to appear serious about carbon emissions in the build-up to a UN climate conference in Paris in November. The environmental urgency is another matter. It will be hotly debated long after the conference, whether or not the business stakeholders reach any sort of accord on whether or not world temperatures actually rise as few scientific prognosticators.

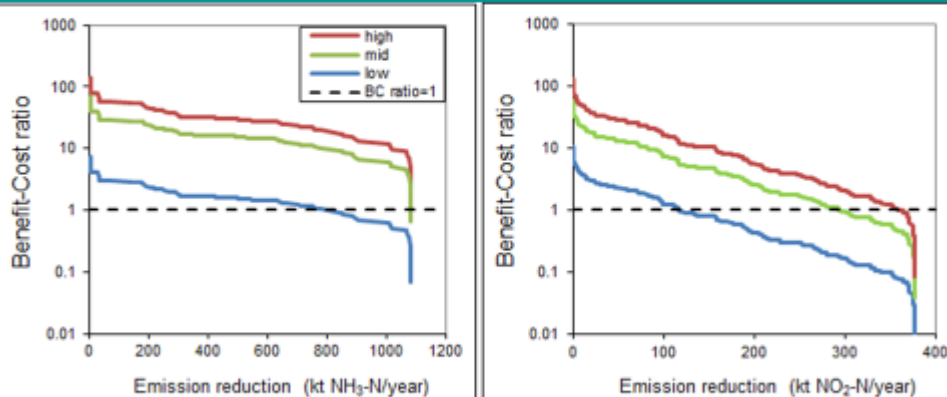
What is not in doubt is the competing case for cutting back on meat, regardless of its impact on global warming. A 30 per cent reduction in meat consumption would, a former chief medical officer has said, prevent 10,000 premature deaths a year in Britain. Globally, meat farming is a big cause of soil risk because of the high ammonia produced in animal waste. It is a principal cause of desertification in habitats of desertification as a result of overgrazing. The farmer drives down biodiversity. The latter facts have public, and both trends will only worsen as demand for a more western diet grows among China's rapidly expanding middle class.

The demand will be used as an argument for more intensive factory farming of cattle and sheep. The technology exists and is being used to house huge cow, Chinese herds that live almost entirely indoors. This is neither an ethical nor a sustainable food future. The beauty of battery-farmed poultry and pork is that it depends on the over-use of antibiotics and produces meat that is too high in fat and low in protein to be worth the cost in animal welfare.

There is no doubt that freely grazing cattle on well-thatched cover-crops of farmland to feed. A field the size of a football pitch produces, by weight, 60 times more food and vegetables than a cow. This is not an argument for more industrialised farming, but for changing our habits. The US Department of Agriculture will shortly urge Americans to eat less meat. It is good advice. If we all did, we would be healthier and might even argue it more

Westhoek et al., 2014

EU benefit-cost ratios for NH_3 and NO_x mitigation



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



Toward the International Nitrogen Management System (INMS)

- Initiative 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 in cooperation with UNEP, LRTAP, Marine Conventions FAO etc
- Linking the economic, environmental, food and energy benefits of better *Nitrogen Use Efficiency*
- **ECLAIRE scientists taking the lead**
- **What should the EU contribution look like?**

