

The European Nitrogen Assessment, ENA

Results from ENA-1: Nitrogen & current European policies





Nitrogen in Europe

Current Problems & Future Solutions

EUROPEAN
SCIENCE
FOUNDATION

www.nine-esf.org

Nitrogen in Europe Current Problems and Future Solutions

European Science Foundation Program
Running for 5 years, started March 2006
Aims to integrate European research and
researchers
Delivering an assessment report of the
state of European nitrogen, sources,
transformations and impacts, as well
as establishing a basis to recommend
future solutions





Nitrogen in Europe

Current Problems & Future Solutions

EUROPEAN
SCIENCE
FOUNDATION

www.nine-esf.org

Objective of ENA

To review current scientific understanding of nitrogen sources, impacts and interactions across Europe,
Taking account of current policies and the economic costs and benefits, as a basis to
Inform the development of future policies at local to global scales.





Nitrogen in Europe

Current Problems & Future Solutions

EUROPEAN
SCIENCE
FOUNDATION

www.nine-esf.org

Planned workshops in the process (2008-2009)

ENA Workshop 1: Multiple Nitrogen Problems and the Current Policy Measures.

ENA Workshop 2: Nitrogen processing in the biosphere

ENA Workshop 3: Dispersion, budgets and impacts of nitrogen on different scales.

Other ENA Workshops

Managing nitrogen in relation to key societal threats

European nitrogen policies and future challenges



Nitrogen in Europe

Current Problems & Future Solutions

EUROPEAN
SCIENCE
FOUNDATION

www.nine-esf.org

Overall structure of the ENA

1. Introduction, Scope & Objectives (coordination team)
- A. Nitrogen in Europe: the present position.
 2. European N problem in global perspective (Erismann)
 3. N in current European policies (Oenema)
 4. Challenge to integrated N science & policies
- B. Nitrogen processing in the biosphere
 5. N processes & effects in terrestrial ecosystems (Gunderson & Butterbach Bahl)
 6. N processes & effects in aquatic ecosystems (Durand & Breuer)
 7. N processes & effects in coastal/marine ecosystems (Voss)
 8. N processes & effects in the atmosphere (Hertel)



Nitrogen in Europe

Current Problems & Future Solutions

EUROPEAN
SCIENCE
FOUNDATION

www.nine-esf.org

ENA-1: Tasks for the workshop

Develop ownership of the ENA structure

Background documents as a starter for Chs 2 & 3:

The European nitrogen problem in a global perspective

Nitrogen in current European policies

Provide basis to develop Chapter 4:

The need to integrate nitrogen science and policies

Consolidate views on the 5 key threats



Nitrogen in Europe

Current Problems & Future Solutions

EUROPEAN
SCIENCE
FOUNDATION

www.nine-esf.org

Prioritization of 5 key threats

- **W**ater quality
 - **A**ir quality (esp. particulate and ozone)
 - **G**reenhouse gas balance
 - **E**cosystem biodiversity
 - **S**oil fertility/soil quality
-
- **A**ir quality
 - **B**iodiveristy
 - **U**nbalanced GHGs
 - **S**oil fertility
 - **E**utrophication of waters



Nitrogen in Europe

Current Problems & Future Solutions

EUROPEAN
SCIENCE
FOUNDATION

www.nine-esf.org

Structure of the Workshop

Introduction of ENA

Presentations of background documents

General discussion of the two documents

WG1 & WG 2: Review the BG docs in detail. Prepare synthesis report of emerging issues; Start editing text.

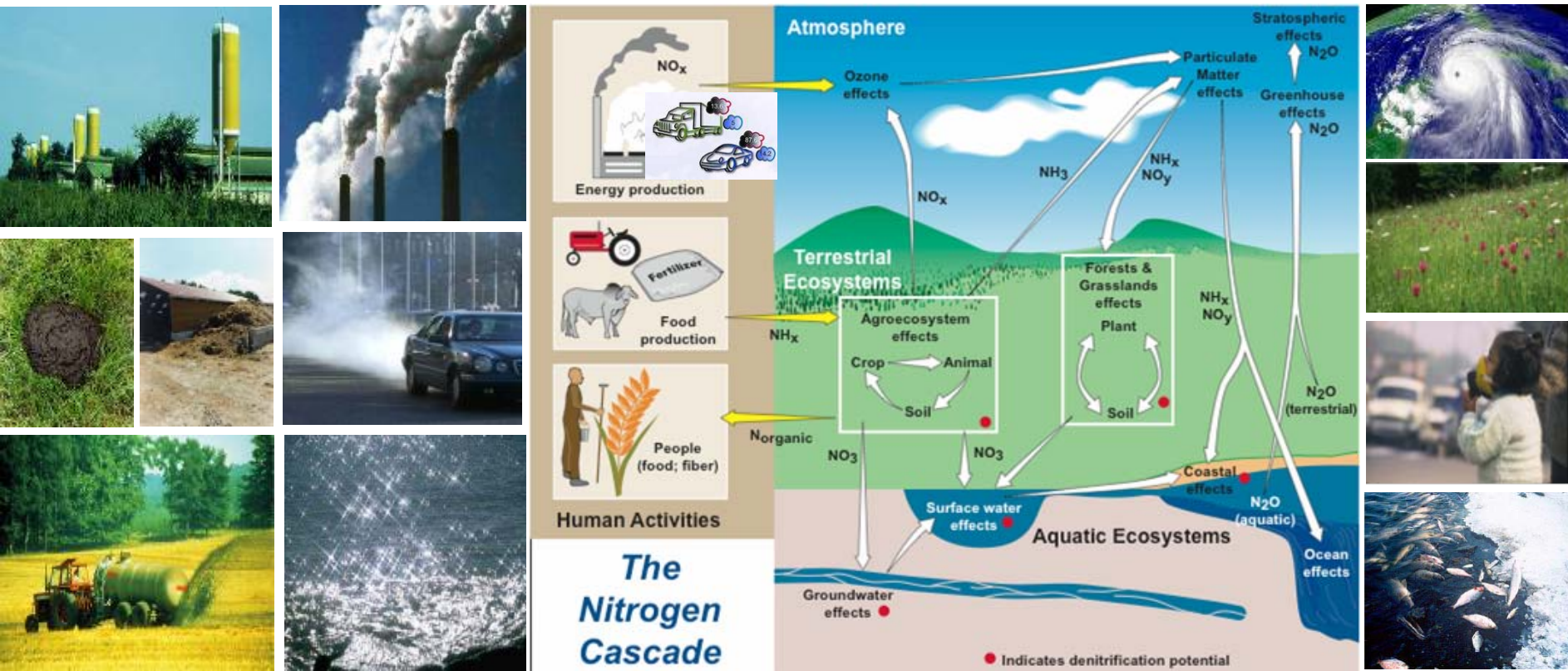
Constructive criticism:

- MESSAGE – is it clear? Do we agree?
- STRUCTURE – internally & with other chapters
- STYLE – refining English
- JUSTIFY CLAIMS! – good referencing

WG 3: Small group to look at the overview

- Infiltrate and contribute to WGs 1 and 2
- Prepare comments of key issues for Ch 4
- Reflect on overall ENA. Are some aspects missing or not sufficiently visible?

Background document 2: The reactive nitrogen formation and cascade



Formation of Nr

Cascade through the environment

Effects

Background document chapter 3

Aim: to provide background information

Content:

- What is policy?
 - Air-related policies
 - Water-related policies
 - Policies affecting N use in EU agriculture
 - Conclusions
- } Focus on international conventions and EU



Nitrogen in Europe

Current Problems & Future Solutions

EUROPEAN
SCIENCE
FOUNDATION

www.nine-esf.org

David Powlson, Bruna Grizzetti

General recommendations for Chap. 2:

The European nitrogen problem in a global perspective

Positive N aspects

System boundaries

Global perspective

Historical perspective

Future challenges (food demand, urbanization, intensification, biofuels, climate change, ...)



Nitrogen in Europe

Current Problems & Future Solutions

EUROPEAN
SCIENCE
FOUNDATION

www.nine-esf.org

Outline of chapter 3 (30 pages)

Till Spranger, Gerard Veldhof

Nitrogen in current European policies

Provide the reader: Overview of regulations in tables

Messages (assessments) of successes and failures, synergies and trade-offs

3.1 Introduction: introducing sectors and problems	1 p
3.2 Notions of policy and measures	3 p
3.3 Overview of policy and measures affecting N in EU	8 p –
3.4 Analyses of some key policies	10 p +
Policy objectives + environmental quality objectives	
Instruments	
Addressees	
Measures	
Effects	
3.5 Assessment of critical success factors (<i>incl. examples of countries</i>)	5 p
3.6 Interactions between policies (synergies, tradeoffs and side-effects)	2 p
3.7 Conclusions	1 p



Nitrogen in Europe

Current Problems & Future Solutions

EUROPEAN
SCIENCE
FOUNDATION

www.nine-esf.org

3.3 Overview of policies and measures affecting N in EU: basic table for ENA

Effects	Effect threshold	Link to N cascade	Relevance and link to N.	Distance to threshold	NEC	WFD
Water quality - -							
Air quality - -							
Greenhouse gas balance - -							
Ecosystem biodiversity							
Soil fertility/soil quality							
Other effects							



Nitrogen in Europe

Current Problems & Future Solutions

EUROPEAN
SCIENCE
FOUNDATION

www.nine-esf.org

Peringe Grennfelt, Hans van Grinsven

General recommendations for Chap. 4:

The need to integrate nitrogen science and policies

Goal:

Setting the scene

Convince readers about relevance of (selling the) integrated approach. What can go wrong, what can be gained?

Introduction & invitation to other chapters

Reflections:

Observations chapter 2 and 3

Integrating N-science: scenario development, modelling, risk approaches, LCA

Integrated N-policies: science based, benefits, costs, targets vs measures



Nitrogen in Europe

Current Problems & Future Solutions

EUROPEAN
SCIENCE
FOUNDATION

www.nine-esf.org

General results of the workshop

Good ambiance, enthusiasm and constructive inputs

General support for the overall outline, but

More on benefits; separate chapter?

Background documents good starters for Chs 2 & 3

Provided basis to develop Chapter 4

Consolidate views on the 5 key threats (WAGES): as these will form the basis for the rest of the report: important!

Set-up of the workshop was very good



Nitrogen in Europe

Current Problems & Future Solutions

EUROPEAN
SCIENCE
FOUNDATION

***Who is who* in nitrogen: building a network**

www.nine-esf.org

www.nine-esf.org

The European Nitrogen Assessment

www.nine-esf.org

info@nine-esf.org





Nitrogen in Europe

Current Problems & Future Solutions

EUROPEAN
SCIENCE
FOUNDATION

www.nine-esf.org

www.nine-esf.org

Planned ENA workshops

ENA Workshop 1:

Multiple nitrogen problems and current policy measures

Proposed dates: 22 - 23 May 2008

Focus: Development of ENA chapters 2, 3 and 4, plus review of wider ENA approach

ENA Lead: Oene Oenema

ENA Workshop 2:

Nitrogen processing in the biosphere

Proposed dates: 18 - 20 June 2008

Focus: Development of ENA chapters 5-8, plus review of wider ENA approach

ENA Lead: Mark Sutton

Other information: Plan for 4 working groups (terrestrial, aquatic, marine & atmosphere), with a total of c. 60 leading experts

ENA Workshop 3:

Dispersion, budgets and impacts of nitrogen on different scales

Proposed dates: 4 - 6 November 2008

Focus: Development of ENA chapters 9-13

ENA Lead: Gilles Billen

Other information: Plan for 5 working groups (i. rural landscapes, ii. urban landscapes, iii. regional watersheds & coastal eutrophication, iv. atmospheric transport & deposition and v. integrating European N fluxes), with a total of c. 60-70 leading experts

Other ENA Workshops

Managing Nitrogen in Relation to Key Societal Threats

Proposed dates: early 2009

Focus: Development of ENA chapters 14-18

ENA Lead: Peringe Grennfelt

European Nitrogen Policies and Future Challenges

Proposed dates: mid 2009

Focus: Development of ENA chapters 19-23

ENA Lead: Jan Willem Erisman & Hans van Grinsven

Please visit the NinE website regularly (www.nine-esf.org) to keep updated about further details of the different workshops.



Some more facts about the ENA

Major Sponsor:

Nitrogen in Europe: Current Problems and Future Solutions (NinE) - A research network of the European Science Foundation (ESF)

Key information sources:

National and European research projects and stakeholders, especially the NitroEurope Integrated Project

Coordinated by:

European Centre of the International Nitrogen Initiative (INI)

Coordination Team:

Mark Sutton, Jan Willem Erisman, Gilles Billen, Hans van Grinsven, Stefan Reis, Albert Bleeker and Peringe Grennfelt

Advisory Group during 2007:

Keith Bull (UNECE), Klaus Butterbach-Bahl (DE), Oswald van Cleemput (BE), Despo Fatta (CY), Benjamin Gimeno (ES), Liana Kalognomou (GR), Maria Loucao (PT), Luc Maene (Int. Fert. Industry Assoc.), Ulo Niinemets (EE), Oene Oenema (NL), Joergen Olesen (DK), Till Spranger (DE), Michel Sponar (European Commission), Wim de Vries (NL), Maren Voss (DE), Bernard Wehrli (CH)

Get in contact with the ENA team

If you want to contribute in any way to the ENA, please feel free to contact the ENA team via the NinE website (www.nine-esf.org) or by email (ena@nine-esf.org).

More NinE Information

The NinE website (www.nine-esf.org) is the place where you can find information about the progress of NinE and ENA. We hope that this website will evolve to a meeting place for people interested in nitrogen-related work in Europe and beyond. A special topic on the NinE website is a database on Who-is-Who in Nitrogen. This searchable database facilitates interested researchers and/or other parties in finding the right person in the field of nitrogen-related activities. The database not only contains information about names, addresses of people and institutes, but also on fields of expertise and participation in relevant networks. To find out more about Who-is-Who in the world of nitrogen, go to the NinE website, register and you will be taken to a database of people involved in the European N-world.



The European Nitrogen Assessment

As the major outcome of the ESF Nitrogen in Europe (or NinE) programme, the European Nitrogen Assessment (ENA in short) will address current nitrogen issues, the cascade effects and the interactions and feedbacks. The ENA provides valuable insight for governments and other stakeholders in the balance between the benefits of fixed nitrogen to society, against the different adverse effects of excess nitrogen in the environment.

This flyer contains information about the background of the ENA, its structure and the working plan for the coming years. Furthermore, it provides information on how to get involved in the production of this major effort in the field of integrated nitrogen in Europe.