



## 2006 IFA Technical Symposium



**INNOVATION AND CORE TECHNOLOGIES FOR SUSTAINABLE GROWTH**

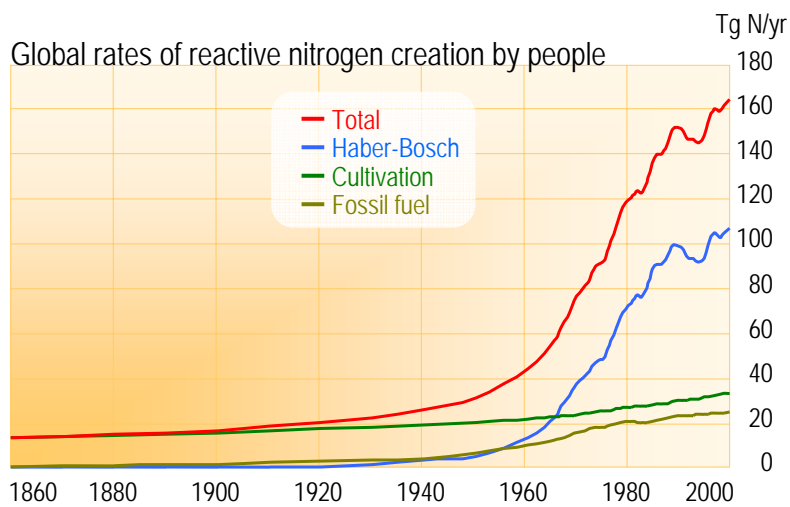
*Technical developments in fertilizer production for greater efficiency and environmental stewardship*

Vilnius, Lithuania, 25-28 April 2006

# Update on the International Nitrogen Initiative

L.M. Maene, Director General  
International Fertilizer Industry Association

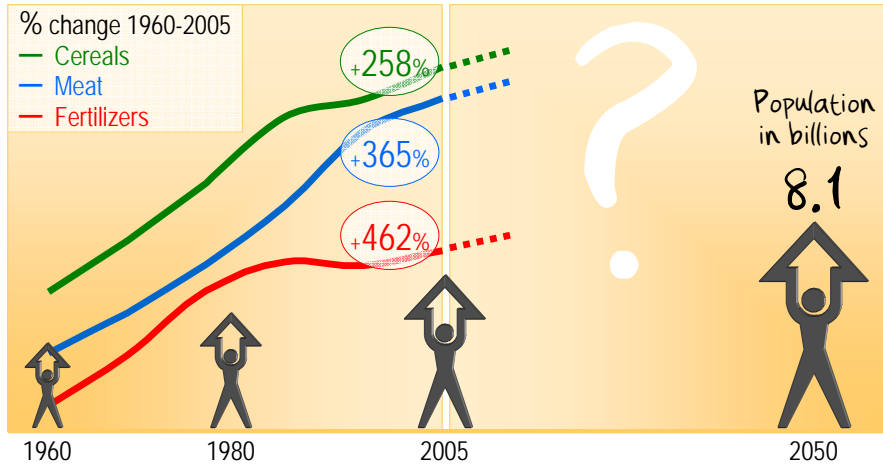
## Why nitrogen?



Update on the International Nitrogen Initiative

Source: Galloway et al.

# Feeding a growing population

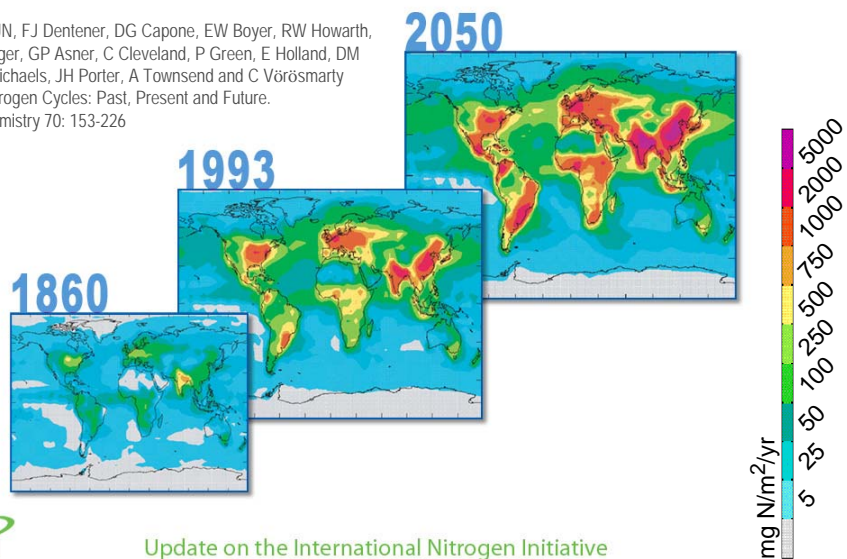


Update on the International Nitrogen Initiative

Source: FAO, IFA

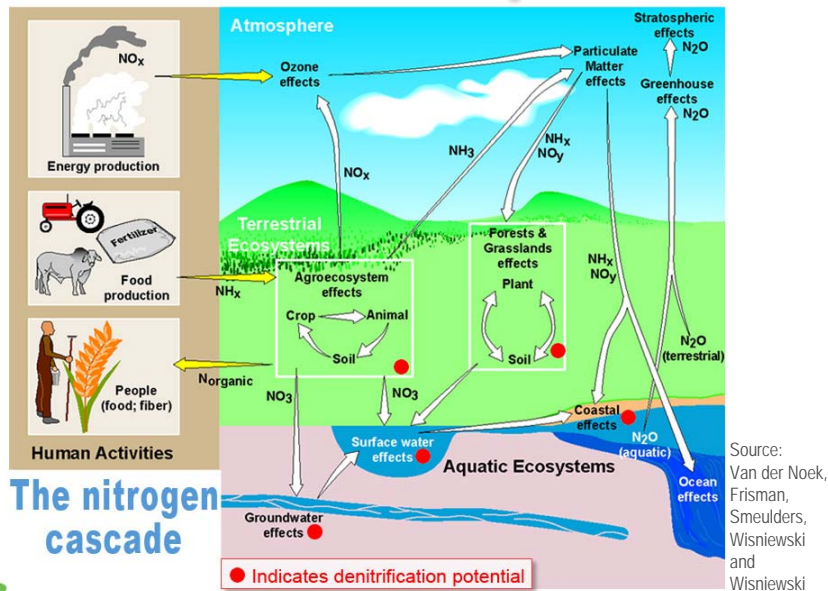
# Total inorganic atmospheric N deposition

Source:  
 Galloway JN, FJ Dentener, DG Capone, EW Boyer, RW Howarth,  
 SP Seitzinger, GP Asner, C Cleveland, P Green, E Holland, DM  
 Karl, AF Michaels, JH Porter, A Townsend and C Vörösmarty  
 (2004). Nitrogen Cycles: Past, Present and Future.  
 Biogeochemistry 70: 153-226



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# N accumulates and persists

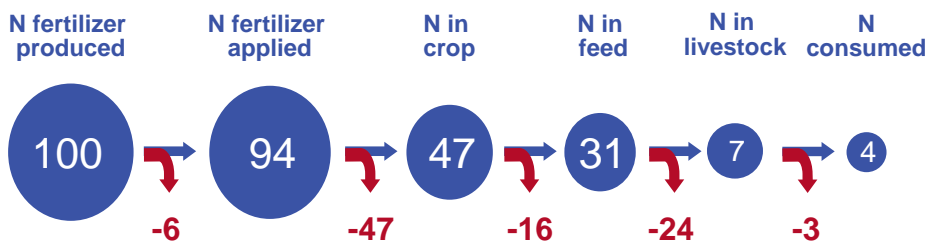


## The nitrogen cascade



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# The Fate of Haber-Bosch Nitrogen



**4% of the N**  
produced in the Haber-Bosch process and used for animal production enters the human body

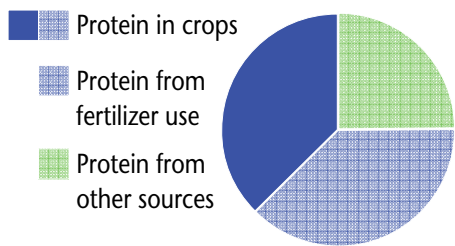


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Source: Davidson

# The nitrogen challenge

Total protein consumed by humans



How to optimize the use of nitrogen to sustain human life while minimizing the negative impacts on the environment and human health



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# What kind of instruments can be used?

They must be integrated if we are to meet the challenge.

- Scientific
- Engineering
- Social
- Political
- Economics



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# The process

⊕ The International Nitrogen Initiative uses a three-step process to move from science to design to the implementation of the right responses.

**Phase I**  
Assessment of  
Knowledge

**Phase II**  
Identification of  
Solutions

**Phase III**  
Implementation of  
Solutions



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# Major outcomes to date



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# N Fertilizer Rapid Assessment

- ⊕ Efficiency of fertilizer N use
- ⊕ Role of emerging technologies
- ⊕ Pathways of N loss and their impacts
- ⊕ Societal responses



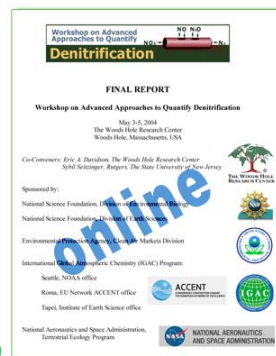
[Executive Summary \(online\)](#)  
[and scientific synthesis monograph](#)



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# Workshop on quantifying denitrification

- ⊕ Evaluating the state of knowledge in various ecosystems
- ⊕ Comparing methodologies from different scientific disciplines
- ⊕ Charting current weaknesses and actions needed



[Final Report \(online\)](#)



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# 3<sup>rd</sup> International Nitrogen Conference

- ⊕ Focus on Asia
- ⊕ Nanjing Declaration



*John Ziegler* *K. Minami* *John W. Meyer*



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# Follow-up to the Nanjing Declaration

- ⊕ Forwarded to the United Nations Environment Programme (UNEP)
- ⊕ Resolution expected to be submitted to the 2007 UNEP Governing Council
- ⊕ UNEP / Woods Hole Research Center policy workshop

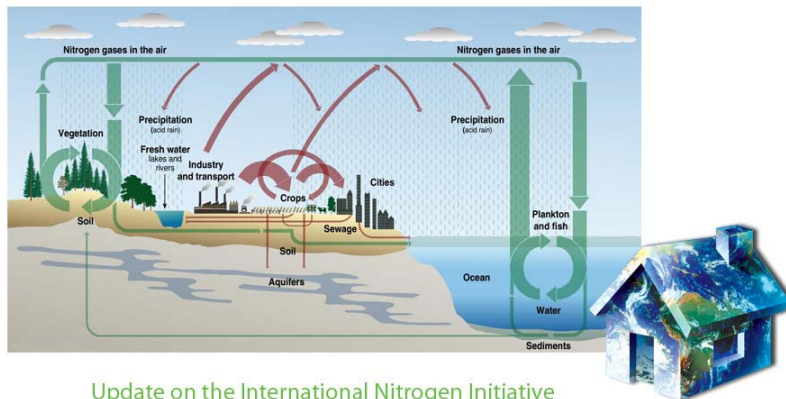


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# Millennium Ecosystem Assessment

- Highlighted nitrogen as one of the major issues that is not getting enough attention



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# Convention on Biological Diversity



- CBD Ad Hoc Technical Expert Group on Indicators for Assessing Progress towards the 2010 Biodiversity Target
- Nitrogen deposition indicator and related methodology
- Development of an N use efficiency indicator
- P to be included in the analysis?
- To be linked to info on rivers, wetlands and dead zones?



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# Consequences of industrial animal production

- ⊕ Consequences of current food consumption: trade in virtual water, energy and nutrients
- ⊕ Conference on "Livestock in a Changing Landscape" during the last quarter of 2006
- ⊕ Possibility of a workshop on the contribution of animal production to alterations in the N cycle



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## Regional centres

**North America**  
Consortium of interacting projects

**Latin America**  
Building a solid base

**Europe**  
NitroEurope project with EU funding

**Africa**  
Laying the foundation

**Asia**  
Nanjing conference and a preliminary assessment of reactive nitrogen cycles in Asia. 1<sup>st</sup> Indian workshop on N, new centre likely in South Asia



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# 4<sup>th</sup> International Nitrogen Conference

- ⊕ BRAZIL 2007
- ⊕ First organized totally under auspices of INI
- ⊕ Hosted by the Latin American Nitrogen Centre



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# Workshops on the horizon



- ⊕ A Review of Anthropogenic Nitrogen Impacts on the Open Ocean
- ⊕ Nitrogen and Human Health



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# Conclusions

- ⊕ Momentum continues to build around the challenge of managing the reactive N accumulating in the environment.
- ⊕ Opportunities to engage at regional and national levels are multiplying.
- ⊕ The fertilizer industry **MUST** be engaged to favour good policy-making.
- ⊕ Helping manage unwanted impacts from our industry's products preserves a favourable operating environment.



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