



8th GLOBAL NITROGEN CONFERENCE

30 MAY – 3 JUNE 2021 | ONLINE

Final Program



**Umwelt
Bundesamt**



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

The 8th International Nitrogen Initiative Conference

INI2021 will take place online from 30 May to 3 June 2021

Reactive nitrogen compounds are a key resource for food production in the light of a growing world population. At the same time, human activities through multiple processes result in losses of reactive nitrogen to all environmental media. The increased abundance of reactive nitrogen in the biosphere leads to numerous effects on the environment, human health, climate and biodiversity. Pressure on the planet's resources and ecology is steadily increasing. The amount of reactive nitrogen compounds emitted into the environment is far too high and already exceeds the "safe operating space" for future life on our planet. Most of the UN Sustainable Development Goals (SDG) are closely interlinked with the nitrogen cycle. This demonstrates the crucial importance of solutions for this complex problem, which must fit the framework conditions in the respective region. Meeting these goals in parallel is dependent on spreading knowledge on effective nitrogen management, increasing the efficiency of nitrogen use in food production and decreasing unwanted nitrogen emissions to the biosphere. The recent resolution of the fourth session of the UN Environment Assembly (UNEA-4) on sustainable nitrogen management recognizes the multiple pollution threats resulting from anthropogenic reactive nitrogen, including air pollution, with adverse effects on the terrestrial, freshwater and marine environments. The resolution supports the exploration of options through which the SDGs could be achieved, including the sharing of assessment methodologies and relevant best practices.

The 8th conference of the International Nitrogen Initiative (INI2021) will be the meeting point for scientists from all over the world who are dealing with reactive nitrogen compounds in agriculture, industry, traffic, soil, water and air. It will be the place to exchange results, ideas and visions to improve future holistic management of reactive nitrogen in order to further reduce hunger and poverty and at the same time avoid further hazards for human health, biodiversity and environmental media. It will be a perfect opportunity to engage with important policy makers and other relevant stakeholders. A joint conference declaration based on the latest scientific knowledge might stimulate further policy action towards effective integrated nitrogen management.

INI conferences are held every three years on different continents. After the first conference in the Netherlands in 1998, INI2021 is now being organized from Europe again: Germany, the place where about 100 years ago scientists Fritz Haber and Carl Bosch invented industrial ammonia fixation, a major source of today's reactive nitrogen circulating through the biosphere, is proud to be the organizer of a major online conference.

At INI2021, scientists and delegates are invited to present findings on:

- Sustainable agriculture, food and nutrition systems, in relation to effective nitrogen management
- Threats for health, environment and biodiversity and solutions to combat these nitrogen-driven effects
- Observations of global challenges, nitrogen fluxes and interactions between different drivers and pressure
- Closing the nitrogen cycle through innovations for sustainable N management
- Integrated nitrogen science and policy approaches

INI2021 is hosted by Germany's Federal Environment Agency (Umweltbundesamt – UBA) with the support of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. Co-organizer is the International Nitrogen Initiative.



Welcome to Berlin – it would have been a pleasure for us!



It is our great pleasure to host the 8th Global Nitrogen Conference of the International Nitrogen Initiative in 2021 (INI2021) as an entirely online conference. As President of the German Environment Agency, I would like to invite you most warmly to join the conference under the overarching theme – “Nitrogen and the United Nations Sustainable Development Goals”.

The theme of the INI2021 highlights the relevance of a sustainable nitrogen management within the UN 2030 Agenda, of which the Sustainable Development Goals (SDGs) are the heart. An urgent call for action.

While an increasing supply of nitrogen is a prerequisite for combating hunger in some parts of the world, we simultaneously have to reduce nitrogen emissions significantly in order to sustain diverse ecosystems on land and below water (in rivers, lakes and oceans), to improve and preserve human health and to tackle climate change. Recognizing these direct linkages, the Fourth United Nations Environment Assembly recently agreed on a resolution on “Sustainable Nitrogen Management”.

In order to further substantiate and advance these high-level processes, the global “reactive nitrogen community” is asked to enhance the understanding of the impacts of reactive nitrogen, its interdependencies with other environmental phenomena and related tipping points. Additionally, it will be crucial to further develop integrated N-mitigation measurement portfolios and to cultivate scenarios leading to appropriate amounts of reactive nitrogen within the system. This will help to inform policies, push innovative industries, refine education and will ultimately contribute to a transformation towards a more sustainable consumption and production.

The German Environment Agency is convinced that an integrated approach, connecting the different environmental endpoints and nitrogen emitting sectors, fosters synergies and trade-offs and is thereby most beneficial for the solution of the various problems related to excess nitrogen emissions.

In this spirit, INI2021 is a unique opportunity to bring together scientific and political representatives of the large global “reactive nitrogen community”. The virtual get-together is being organized by the country where Professor Fritz Haber and Dr. Carl Bosch invented the industrial ammonia synthesis more than a century ago. I am confident that the conference will be a valuable experience for all participants and an excellent opportunity to exchange knowledge and experiences that will help find sustainable solutions for reactive nitrogen management on the international and national level.

It now rests with you to supplement the conference outline with your research and visions in the form of lectures, poster presentations and contributions to discussions.

We look forward to learning from you at INI2021!

Professor Dirk Messner – President of the German Environment Agency

INI goes fully virtual – we would have loved to meet in Berlin!

It is our great pleasure to invite you to attend the 8th Conference of the International Nitrogen Initiative (INI2021) online from 30 May – 3 June 2021. Since 1998, these international nitrogen conferences have been a unique platform to highlight nitrogen’s role as an essential resource and a major environmental threat. They provide a forum and catalyst for interdisciplinary nitrogen research, bringing together scientists from a range of disciplines – from atmospheric science to economics, from plant biology to policy analysis. They have also been an important opportunity to engage with other important stakeholders, including civil society, national governments, international organizations and fertilizer companies, among others.

Previous conference declarations as well as INI-sponsored nitrogen assessment reports across national and regional scales have contributed significantly to increasing calls for international action. These efforts culminated in the adoption of an intergovernmental resolution on sustainable nitrogen management at the UN Environment Assembly in March 2019 – a watershed moment in global nitrogen governance. It is therefore very fitting that the German Environment Agency is the main organizer of INI2021, with the support of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. This is the first time a government body has taken an organizing role, and a reflection of nitrogen’s increasing importance to policymakers.

The overarching theme of INI2021 is the Sustainable Development Goals – the 17 UN-sanctioned targets for social, environmental and economic outcomes to be achieved by 2030 – with nitrogen central to 16 of them. How humanity manages its relationship with nitrogen over the coming decade will be critical in determining whether we meet these goals. Some, such as ending hunger and poverty, will require better access to nitrogen. Others, such as protecting life on land and below water as well as climate action, will require reducing nitrogen pollution. All will benefit from better nitrogen management and more effective policies. And while we are confident INI2021 will mark an important step in advancing nitrogen science and policy further, its success will depend on you – your work, your ideas, and ultimately, your participation.

We look forward to seeing you online. Welcome and herzlich willkommen!

Prof. N. Raghuram (Chair of the International Nitrogen Initiative)
Prof. David R. Kanter (Vice-Chair of the International Nitrogen Initiative)



Monday, 31 May 2021 - Oral Sessions

Opening Session

🕒 12.00 p.m. CEST

[Opening Session](#) | Heike Leitschuh

Welcome from the organizers | Stefanie Wolter, Markus Geupel

Nitrogen matters! | [Nandula Raghuram](#), [David Kanter](#)

Nitrogen and German Policy | [Svenja Schulze](#)

Nitrogen in the EU | [Virginijus Sinkevičius](#)

Nitrogen in context of UNEP | [Joyce Msuya](#)

Nitrogen in context of FAO | [Maria Helena Semedo](#)

Nitrogen and Air Quality | [Anna Engleryd](#)

Nitrogen and SDG in Africa | [Caroline Makasa](#)

[Panel](#) | [Nandula Raghuram](#), [David Kanter](#)

🕒 1.40 p.m. CEST - BREAK

Plenary Session

🕒 2.00 p.m. CEST

[Key-Note Session Day 1](#) | Heike Leitschuh

Nitrogen: of planetary importance for Earth resilience | [Johann Rockström](#)

Vision for future N management | [David Kanter](#)

Ecologic intensification - new approaches to increase nitrogen use efficiency in dairy farming | [Friedhelm Taube](#)

New Trends in Nitrogen Management: Africa Perspective | [Vincent Aduramigba-Modupe](#)

Improving plant NUE: From phenotype to genotype | [Nandula Raghuram](#)

INMS Project introduction and overview | [Mark Sutton](#)

Tuesday, 1 June 2021 - Oral Sessions

Plenary Session	Parallel Session 1	Parallel Session 2
<p>🕒 12.00 p.m. CEST</p> <p>Key-Note Session Day 2 Cargele Masso Nitrogen in India Tapan Adhya Nitrogen and Air Pollution Anna Englerlyd Digital Agriculture and Nitrogen: Science, Implementation and Policy Harold van Es Nitrogen in livestock systems including regional characteristics and inequalities Aimable Uwizeye How Nitrogen influences meeting UN SDG for Africa Caroline Makasa</p> <p>Panel</p> <p>🕒 2.15 p.m. CEST - BREAK</p> <p>Parallel Discussion Sessions, watching prerecorded talks the week before is obligatory.</p>	<p>🕒 2.30 p.m. CEST</p> <p>1b - Responsible consumption and production and feedbacks in the N cycle Jill Baron The groundwater diet: trade-offs and benefits of healthy dietary choices in the context of nitrate pollution Martine Hoogsteen Sustainable food systems from a nitrogen perspective Adrian Leip Evidence-based Nitrogen Indexes for Sustainable Agro-food Systems Xia Liang Assessing future nitrogen fertilizer demand and use for the shared socioeconomic pathways J M Mogollon Nutrient-extended input-output analysis for food nitrogen footprint Azusa Oita</p> <p>2a - Livestock production and nitrogen emissions Helmut Döhler Sources of nitrous oxide from intensively managed pastures Johannes Friedl Effect of nitrogen-reduced diet on NH₃ and N₂O emissions of dairy cows on pasture Christof Ammann Effects of lime application management on nitrous oxide emission and nitrogen use efficiency: An example from an Irish intensive grassland system Ognjen Zurovec Long-term measurement of ammonia and nitrous oxide emissions from Australian feedlots Mei Bai High animal comfort and low emissions in a new housing system for pigs - conceptual study and first results from pilot farms and laboratory experiments Helmut Döhler</p> <p>5a - Climate feedbacks (incl. N₂O-emissions)(1) Bernhard Osterburg Impact of nitrogen additions on greenhouse gases emissions at different stages of plant residue decomposition Muhammad Sanaullah The Global N₂O Database - Open & collaborative science for addressing epic N₂O issues Chris Dorich Effect of crop residue management on N₂O emissions in European cropping systems Marco Carozzi</p> <p>5b - Biogeochemical N Cycle (ammonia / deposition) Wilfried Winiwarter Standing on the shoulders of giants - Research infrastructures as modular platforms for reactive nitrogen deposition monitoring Frederik Schrader Modelling Nitrogen Deposition in Germany from 2000-2015 Martijn Schaap Modelling Atmospheric Ammonia using Agricultural Emissions with Improved Spatial Variability and Temporal Dynamics Xinrui Ge Satellite monitoring of ammonia: from point sources to long-term trends Martin Van Damme Top-down estimation of NH₃ emissions and related deposition in LOTOS-EUROS using an Ensemble-Kalman approach Shelley van der Graaf The dynamics of ammonia bi-directional exchange above agricultural crops Alexander Moravek</p> <p>Special Session: Nitrogen Use Efficiency and Sustainable Nutrient Management - ANIMAL / MIX Xin Zhang Nitrogen indicators for characterizing farm performance in European case studies Miguel Quemada A simple and easy-to-communicate framework for analyzing Nitrogen Use Efficiency (NUE) in agriculture and food systems Lars Stoumann Jensen Indoor breeding or full-grazing dairy management? A farm system analysis of Nitrogen Use Efficiency Philipp Löw Guidance Document on NUE indicators of the INMS Luis Lassaletta Modelling nitrogen use efficiency by world poultry production systems in 2050 under contrasting production and dietary scenarios Fernando Estellés Barber Nitrogen use efficiency indicators designed for the diversity of global dairy production systems Sharon Aarons</p> <p>🕒 3.10 p.m. CEST - BREAK</p>	<p>🕒 3.20 p.m. CEST</p> <p>2a - Livestock production and nitrogen Balance and nutrient Cycle Gabriele Wechsung An integrated approach to nutrient management on dairy farms Shabtai Bittman Integrated Nitrogen Balance in Livestock Sector: Case Study of Latvia Inga Grinfeldte Influence of soil properties on N₂O and CO₂ emissions from excreta deposited onto tropical pastures in Kenya Zhu Yuhao</p> <p>2b - Optimizing the efficiency of nitrogen use in crop production (fertilizers) Max Hofmeier Release dynamics and crop recovery of Controlled Release Fertilizers (CRF) Cristina Martinez Sustainable plant nutrition and nitrogen Tom Bruulsema Slow but sure: the potential for slow-release nitrogen fertilizers to increase crop productivity and reduce environmental damage in Nepal Naba Raj Pandit Assessing nitrogen availability in biobased fertilizers: effect of vegetation on mineralization patterns Hongzhen Luo Improving organic amendment use in Australian vegetable production David Riches</p> <p>5a - Climate feedbacks (incl. N₂O-emissions)(2) Christian Brümmer Food security and greenhouse gas emissions for cereals in sub-Saharan Africa towards 2050 Martin van Ittersum Long-term trajectories of the carbon footprint of nitrogen use in Mediterranean agriculture (Spain, 1860-2016) Eduardo Aguilera Impact of fertilizer additives on N₂O emissions for contrasting corn growing seasons in Canada Elizabeth Pattey Inventory reporting of livestock emissions: the impact of the IPCC 1996 and 2006 Guidelines Gültac Cinar</p> <p>5b - Biogeochemical N Cycle (N Budget) Barbara Amon Surface Nitrogen Budgets for Cropland and Pastureland on a Global Grid - Opportunities and Challenges Katrin Kaltenecker The global nitrogen cycle from 1965 to 2010 Benjamin Leon Bodirsky Are German Forest Soils a Source or Sink for reactive Nitrogen? Model-aided Evaluation of Large-Scale Ground-based Observations Stefan Fleck Mitigating Reactive Nitrogen Loss and Associated Environmental Damage: Opportunities from Changes in Food Production and Consumption Practices in China Yixin Guo Is Nitrogen the Next Carbon? Viney Aneja</p> <p>Special Session: Nitrogen Use Efficiency and Sustainable Nutrient Management - CROP 1 Luis Lassaletta Is Early Sowing of winter cereals as effective as Catch Crops in Increasing Nitrogen Use Efficiency in Cropping Systems? Iris Vogeler Effect of conservation agriculture and integrated soil fertility management on urea nitrogen use efficiency in contrasting agro-ecological regions in Kenya Eunice Annah Mutuku Coffee plants have low NUE Felipe Santinato Increasing nitrogen use efficiency by new designed cropping systems in an intensive agricultural region of China Chong Zhang Changed crop type and crop rotation as a measure to increase N use efficiency and achieve reduction targets for N leaching Tommy Dalgaard</p>

Tuesday, 1 June 2021 - Poster Sessions

Poster Session

🕒 11.00 a.m. - 12.00 p.m. CEST

Algae extracts as a sustainable nitrogen-containing fertilizer | [Lin Du](#)
Alternative fertilizers from nutrient-rich wastes for organic crops | [Beatriz Góme-Muñoz](#)
Ammonium volatilization from urea and its inhibition by urease inhibitor Limus: Methods for sensual perception as tools to foster environmental awareness. | [Barbara Nave](#)
An open-path QCL-based sensor for fast-response and high-sensitivity measurements of atmospheric ammonia | [Yin Wang](#)
Assessment of nitrogen flows at farm and regional level when developing the manure management system for large-scale livestock enterprises | [Eduard Vasilev](#)
Biogas Residues in substitution for Chemical Fertilizers: Mitigation of agricultural nitrogen pollution | [Bella Tsachidou](#)
Changes in nitrogen agricultural practices to increase farm sustainability - tomato production | [Soraia Cruz](#)
Comparing yield, nutritional quality, water and nitrogen use efficiencies of deficit drip and flood irrigated sorghum (*Sorghum bicolor*) and corn (*Zea mays*) subjected to different nitrogen rates | [Florence Cassel](#)
Development of biodegradable polymers for controlled nutrient release from organic fertilizers | [Evelien Vermoesen](#)
Effect of nitrification inhibitors and soil pH on N₂O emissions | [Ximena Huérfano](#)
Effect of organic carbon and nitrogen addition on the emission of nitrous oxide in aggregates from straw-incorporated soil | [Yin Junhui](#)
Effect of urease and nitrification inhibitors on N₂O emissions, ammonia volatilization and crop yield in a rape crop | [Mónica Montoya](#)
Effects of available nitrogen on numbers of native herbaceous plants in Aomori, Japan | [Mitsuhisa Baba](#)
Exploring the Impact of Nitrogen Sources on Yield, Partitioning and Nitrogen Use Efficiencies of Irrigated Lowland Rice Fields | [Ntinyari Winnie](#)
Exploring the limitations of first-order kinetics in modelling net N mineralization from plant residue at low and variable temperatures | [Jorge Federico Miranda-Vélez](#)
Identification of a new N-heterocyclic core structure with nitrification inhibition activity in Australian soils | [Bethany Taggart](#)
Impact of climate change on nitric oxide and nitrous oxide emission from typical landuses in Scotland | [Sergiy Medinets](#)
Impact of N-fertiliser reduction on agronomic parameters and quality aspects for drinking water | [Insa Kühling](#)
Indices of crop water stress from UAV images precisely map residual nitrogen and risk of nitrate leaching spatial variability | [Jan Haberle](#)
Indonesian Nitrogen Footprint Assessment of Food Sector | [Farah Wirasjenjaya](#)
Land preparation and maize-based multiple cropping on nitrogen content of two agroecological zone of southwestern nigeria | [Fademi Ibukunoluwa Oladapo](#)
Long-term nitrogen fertilization can increase the availability of residual phosphorus in arable soil | [Jaroslav Záhora](#)
MELS and DATAMAN PROJECTS - Identifying cost-effective mitigation strategies for greenhouse gas and ammonia emissions | [Barbara Amon](#)
Modelling Greenhouse Gas and Nitrogen Emissions from Ruminant Farming Systems and Influence of Feed Management Decisions on Downstream Emissions | [Latifa Ouatahar](#)
N₂O, N₂ and NH₃ emissions following different slurry and digestate application techniques in growing crops | [Caroline Buchen-Tschiskale](#)
NIRS sensing for organic fertilizers: a chance for an efficient manure management in the EU? | [Jörg Rieger](#)
Nitrate accumulation in semiarid apple orchard on the Loess Plateau of China | [Guo Shengli](#)
Nitrogen and water use efficiency of maize in long-term field experiment | [Agnieszka Rutkowska](#)
Nitrogen footprint of protein-free products | [Kentaro Hayashi](#)
Nitrogen use efficiency in long and short-term experiments of the Russian Federation | [M.V. Belichenko](#)
Nitrogen value of pruning of *Leucaena leucocephala* (Lam.) deWit, *Senna siamea* (Lam.) Irwin & Barneby and *Enterolopium cyclocarpum* (Jacq.) Griseb. | [Adejoke Olukemi Akinyele](#)
Numerical analysis of agricultural emissions impacts on PM_{2.5} in China using a high-resolution ammonia emission inventory | [Meigen Zhang](#)
Oxygen regulates nitrous oxide production directly in agricultural soils | [Xiaotong Song](#)
P budget calculations of German farmland and resulting manure surpluses in livestock hotspot regions | [Uwe Häußermann](#)
Root system architecture variability and nitrate reductase activity in wheat genotypes for nitrogen use efficiency | [Aysha Kiran](#)
Sensor technologies for detection of urine patches in livestock-grazed pastures | [Jiafa Luo](#)
The global distribution of soil nitrification and the fraction of associated N₂O emission by using stochastic gradient boosting models | [Baobao Pan](#)
Variability of atmospheric ammonia and its sources over Indian region | [Saumya Singh](#)
Nr management in current Brazilian policies | [Gisleine Cunha-Zeri](#)
Liquid Swine Manure Nitrogen Conservation and Concentration Technology | [Alison Deviney](#)
Wheat productivity at various N-levels and future predictions under changing climate | [Abdul Wakeel](#)
National nitrogen flows in Germany | [Martin Bach](#)

Poster Session

🕒 4.00 p.m. - 5.00 p.m. CEST

A nitrogen footprint perspective for Brazilian water sector | [Camille Nolasco](#)
A Nitrogen Footprint Tool for Communities: A Case Study for Baltimore, MD, USA | [Elizabeth Dukes](#)
Algae extracts as a sustainable nitrogen-containing fertilizer | [Lin Du](#)
Alternative fertilizers from nutrient-rich wastes for organic crops | [Beatriz Góme-Muñoz](#)
N₂O, N₂ and NH₃ emissions following different slurry and digestate application techniques in growing crops | [Caroline Buchen-Tschiskale](#)
Assessment of nitrogen flows at farm and regional level when developing the manure management system for large-scale livestock enterprises | [Eduard Vasilev](#)
Biogas Residues in substitution for Chemical Fertilizers: Mitigation of agricultural nitrogen pollution | [Bella Tsachidou](#)
Changes in nitrogen agricultural practices to increase farm sustainability - tomato production | [Soraia Cruz](#)
Characterization of reactive nitrogen emissions from turfgrass systems | [Viney Aneja](#)
Comparing yield, nutritional quality, water and nitrogen use efficiencies of deficit drip and flood irrigated sorghum (*Sorghum bicolor*) and corn (*Zea mays*) subjected to different nitrogen rates | [Florence Cassel](#)
Delayed N timing for maize reduced N₂O emissions and drainage [NO₃-] while increasing yield | [Peter Scharf](#)
Development of biodegradable polymers for controlled nutrient release from organic fertilizers | [Evelien Vermoesen](#)
Detection of nitrogen in winter wheat based on Sentinel-2 data | [Gretelerika Vindeker](#)
Changes of soil microbes related with carbon and nitrogen cycling after long-term CO₂ enrichment in a typical Chinese maize field | [Liping Guo](#)
Effect of nitrification inhibitors and soil pH on N₂O emissions | [Ximena Huérfano](#)
Effect of urease and nitrification inhibitors on N₂O emissions, ammonia volatilization and crop yield in a rape crop | [Mónica Montoya](#)
Context is everything: what controls nitrogen concentrations in U.S. streams | [Jana Compton](#)
Exploring the Impact of Nitrogen Sources on Yield, Partitioning and Nitrogen Use Efficiencies of Irrigated Lowland Rice Fields | [Ntinyari Winnie](#)
Exploring the limitations of first-order kinetics in modelling net N mineralization from plant residue at low and variable temperatures | [Jorge Federico Miranda-Vélez](#)
Impact of N-fertiliser reduction on agronomic parameters and quality aspects for drinking water | [Insa Kühling](#)
Indices of crop water stress from UAV images precisely map residual nitrogen and risk of nitrate leaching spatial variability | [Jan Haberle](#)
Land preparation and maize-based multiple cropping on nitrogen content of two agroecological zone of southwestern nigeria | [Fademi Ibukunoluwa Oladapo](#)
Liquid Swine Manure Nitrogen Conservation and Concentration Technology | [Alison Deviney](#)
Long-term nitrogen fertilization can increase the availability of residual phosphorus in arable soil | [Jaroslav Záhora](#)
MELS and DATAMAN PROJECTS - Identifying cost-effective mitigation strategies for greenhouse gas and ammonia emissions | [Barbara Amon](#)
N₂O, N₂ and NH₃ emissions following different slurry and digestate application techniques in growing crops | [Caroline Buchen-Tschiskale](#)
NIRS sensing for organic fertilizers: a chance for an efficient manure management in the EU? | [Jörg Rieger](#)
Nitrate accumulation in an intensive small agricultural catchment: challenges and solutions | [Jianbin Zhou](#)
Nitrogen and water use efficiency of maize in long-term field experiment | [Agnieszka Rutkowska](#)
Nitrogen use efficiency in long and short-term experiments of the Russian Federation | [M.V. Belichenko](#)
Nitrogen value of pruning of *Leucaena leucocephala* (Lam.) deWit, *Senna siamea* (Lam.) Irwin & Barneby and *Enterolopium cyclocarpum* (Jacq.) Griseb. | [Adejoke Olukemi Akinyele](#)
Nr management in current Brazilian policies | [Gisleine Cunha-Zeri](#)
Nutrient enrichment changes water transport structures of savanna woody plants in Brazil | [Lucas Silva Costa](#)
P budget calculations of German farmland and resulting manure surpluses in livestock hotspot regions | [Uwe Häußermann](#)
Ammonium volatilization from urea and its inhibition by urease inhibitor Limus: Methods for sensual perception as tools to foster environmental awareness. | [Barbara Nave](#)
Urease inhibitor still active at low concentration | [Heitor Cantarella](#)
National nitrogen flows in Germany | [Martin Bach](#)
Impact of climate change on nitric oxide and nitrous oxide emission from typical landuses in Scotland | [Sergiy Medinets](#)

Wednesday, 2 June 2021 - Oral Sessions

Plenary Session	Parallel Session 1	Parallel Session 2
<p>🕒 12.00 p.m. CEST</p> <p>Key-Note Session Day 3 Jan Willem Erisman The history and future perspectives of Baltic Sea Eutrophication Maren Voss Nitrogen and water pollution in China Chaoqing Yu Nitrogen – Friend or Foe of Soil Organisms? Sophie Zechmeister-Boltenstern How increased nitrogen availability has influenced biodiversity of terrestrial ecosystems Carly Stevens Nitrogen Strategy in Germany Stefanie Wolter</p> <p>Panel</p> <p>🕒 2.15 p.m. CEST - BREAK</p> <p>Parallel Discussion Sessions, watching prerecorded talks the week before is obligatory.</p>	<p>🕒 2.30 p.m. CEST</p> <p>2b - Optimizing the efficiency of nitrogen use in crop production (crop production & nitrogen emissions) Alberto Sanz Cobena Low nitrate leaching determined by threshold for cover crop biomass Chiara De Notaris Reducing N runoff during irrigated cotton production Graeme Schwenke Winter N₂O accumulation in sub-boreal grassland soil depends on clover and pH Peter Dörsch Nitrogen leaching from paddy field with different nitrogen and water managements practices Niveta Jain Fate of 15N-nitrogen fertiliser applied in high rainfall zone dairy pastures of southern Australia Helen Suter Ammonia volatilization and nitrous oxide emissions from organic fertilizers applied to arable soils in the North China Plain - possible trade-offs and mitigation approaches Marco Roelcke</p> <p>2b - Optimizing the efficiency of nitrogen use in crop production (fertilizer and water application) Tapan Adhya Effect of irrigation frequency and water quality on N losses from vertisols Shahar Baram Impact of banding enhanced efficiency nitrogen fertilizers on nitrogen use efficiency in agriculture Chelsea Janke Allelopathic crop residue mulches improve nitrogen use efficiency and productivity of wheat Sardar Alam Cheema Optimizing Water and Nitrogen Use Efficiency (WUE & NUE) with Airjection® Irrigation D. Goorahoo</p> <p>2b - Optimizing the efficiency of nitrogen use in crop production (grain production) Harald Menzi Improving nutrient management recommendation for maize in Africa and India using the Nutrient Expert® Tool Shamie Zingore Rice genotypes for higher nitrogen use efficiency in lowlands Dinesh Kumar Information on Seasonal and Varietal Differences Provide Opportunities for Improving Nitrogen Use efficiency and Nitrogen Management in Irrigated Paddy Rice in Kenya Joseph Gweyi-Onyango Thirty-years long-term rice-rice-rape rotation optimizes 1,2-benzenediol concentration in rhizosphere paddy soil and improves nitrogen use efficiency and rice growth Xinhua He Sustainable nitrogen management in rice cultivation under stress prone areas in Asia Yam Kanta Gaihre</p> <p>2b - Nitrification & Inhibitors; microbes Friedhelm Taube Microbial communities and functional genes of nitrogen cycling in the rhizosphere of rice B. Ramakrishnan Investigating the fate and behaviour of nitrification inhibitors in soil systems Parvinder Kaur Sidhu The efficacy of 3,4-dimethylpyrazole phosphate on N₂O emissions is linked to niche differentiation of ammonia oxidizing archaea and bacteria across four arable soils Xiaoping Fan Rhizosphere functional microbiomes drive N availability to wheat Gupta, Vadakattu</p> <p>4a - Threats for terr. Biodiversity 1 Markus Geupel Towards critical levels for ammonia - a fumigation study using endangered nitrogen sensitive plant species Jürgen Franzaring Critical Nitrogen Loads in nitrogen-sensitive Forest Associations - Results from Baden-Württemberg, south-western Germany Marina Roth Mapping potential future developments of forests due to climatic change and nitrogen deposition Winfried Schröder Dose-effect Relations for Habitat types and Nitrogen deposition Wiegner Wamelink Nitrogen budget and critical load estimate in a semi-arid grazed ecosystem Claire Delon Impacts of invasive plants on Nitrogen cycling in a montane tropical grassland Manaswi Raghurama</p> <p>4b - Threats for aquat. Biodiversity (inland) Klaus Arzet Excessive N inputs elevate nitrate concentrations of shallow and deep well groundwater along the Indus River floodplain aquifer in Pakistan Muhammad Riaz High-resolution simulation of nitrate leaching from agricultural land across Germany Claas Nendel Mapping nitrate concentrations in upper groundwater using Random Fores Job Spijker Sources of nitrogen in rivers worldwide: exploring linkages to sustainable development goals Maryna Strokak Precising target NO₃ concentrations to limit green algae blooms in Brittany Durand Patrick</p> <p>Special Session: Nitrogen Use Efficiency and Sustainable Nutrient Management - CROP 2 Xin Zhang Assessment of required increases in nitrogen use efficiencies in agriculture to comply with water and air quality objectives in EU27 Wim de Vries Optimising Nitrogen release in an agroforestry system Adejoke Olukemi Akinyele The challenge to improve nitrogen-use efficiency in broadacre dryland farming of Western Australia Andreas Neuhaus Improving genetical controlled crop nitrogen use efficiency Guohua Xu</p> <p>🕒 3.10 p.m. CEST - BREAK</p>	<p>🕒 3.20 p.m. CEST</p> <p>2b - Optimizing the efficiency of nitrogen use in crop production (conventional management) Xiaotang Ju N source and tillage management: Effect on nitrous oxide emissions and barley yields in a rainfed Mediterranean area Guillermo Guardia Fertigation of Orchards - Spatial Variability in N Usage and Losses Shahar Baram Mining soil nitrogen threatens Australian wheat Shu Kee Lam Nitrogen management in direct seeded rice, agronomic, physiological and economical perspectives Hafeez ur Rehman</p> <p>2b - Optimizing the efficiency of nitrogen use in crop production (crop production & nitrogen emissions) Shabtai Bittmann Quantification and mitigation of ammonia emissions from paddy fields in subtropical central China Jianlin Shen Mitigation of N₂O emissions by soil pH management (MAGGE-pH): growing evidence Peter Dörsch Mitigation of nitrous oxide emissions from horticultural crops and implications for the Montreal Protocol Ian Porter Leaching of dissolved nitrogen and carbon from winter cover crop in Mediterranean Central Chile Osvaldo Salazar Interactive effect of nitrogen and potassium on nitrogen use efficiency in wheat under saline conditions Abdul Wakeel</p> <p>2b - Optimizing the efficiency of nitrogen use in crop production (technological management) Tom Bruulsema Sensitivity of hyperspectral bands to N concentration at different growth stages in winter wheat Jose Luis Pancorbo Predicting N status in maize with clip sensors: choosing sensor, leaf sampling point, and timing Jose L Gabriel In-situ real-time NIR monitoring of nitrogen in irrigated cotton northern NSW, Australia Tim Weaver The GxExM interaction and effect on nitrogen uptake in Australian cotton Tim Weaver</p> <p>3b - Reduction of nitrogen in wastewater to ensure clean water and sanitation Stefanie Wolter Assessing nitrogen fluxes: From human food intake over urine and faeces to wastewater treatment and disposal Ina Koerner Reducing nitrogen pollution in water systems in China: implications for the Sustainable Development Goals Mengru Wang Global Accounting of Reactive Nitrogen in Municipal Solid Waste David Meng-Chuen Chen Regional nitrogen soil surface budgets Germany Uwe Häußermann The Nitrogen Legacy: Long-term effects of water pollution on human capital Esha Zaveri</p> <p>4a - Threats for terr. Biodiversity 2 Henning Meesenburg Nitrogen availability along an elevational transect in a tropical montane forest - Rwenzori, Uganda Joseph Okello Nitrogen oligotrophication in forests: An emerging global trend? Peter Groffman Impacts of nitrogen deposition on forest mineral -soil biogeochemical processes, across a trans-European gradient, investigated using a tool kit of stable isotope methods Rebecca Hood-Nowotny Nitrogen deposition increases drought sensitivity in Swiss forests Sabine Braun Accumulation of Atmospheric Nitrogen Deposition in Mosses Winfried Schröder</p> <p>4b - Threats for aquat. Biodiversity (off shore) Simone Richter Nitrogen, Water and Global Change - an Integrated Modeling Perspective Carolien Kroeze Effects of vegetation structure on nutrient outflows from a montane tropical Forest-Grassland mosaic Manaswi Raghurama Geographical targeted landscape management for reduced N pollution from agriculture Tommy Dalgaard Nitrogen impacts on the Wadden Sea and adjacent Elbe Estuary (Europe): ecosystem degradation, recovery and ongoing impacts Justus van Beusekom Reducing nutrient pressures on aquatic ecosystems in Europe Bruna Grizzetti</p>

Wednesday, 2 June 2021 - Poster Sessions

Poster Session

🕒 11.00 a.m. - 12.00 p.m. CEST

An open-path QCL-based sensor for fast-response and high-sensitivity measurements of atmospheric ammonia | [Yin Wang](#)
Challenges facing N-regulation in Germany, The Netherlands and Denmark | [Brian H. Jacobsen](#)
Assessment of Nitrogen and Carbon compounds emission as aftermath of wildfires in Dniester Delta (Ukraine) in 2010-2019 | [Volodymyr Medinets](#)
Assessment of the efficiency of nitrogen removal from municipal wastewater | [Monika Suchowska-Kisielewicz](#)
Long-term atmospheric inorganic nitrogen deposition in West African savanna over 16 year period (Lamto, Côte d'Ivoire) | [Money Guillaume Ossohou](#)
Citizen dialogue on policy instruments for the reduction of reactive nitrogen in Germany | [Joyce-Ann Syhre](#)
„Communicating consequences of excess nitrogen. Short films for social media linking nitrogen and sustainable development goals. | [Jörn Hamacher](#)“
Cost curves for ammonia mitigation measures in German livestock systems | [Helmut Döhler](#)
Effect of organic carbon and nitrogen addition on the emission of nitrous oxide in aggregates from straw-incorporated soil | [Yin Junhui](#)
Effects of available nitrogen on numbers of native herbaceous plants in Aomori, Japan | [Mitsuhsa Baba](#)
Nitrogen budget estimation in the East Europe: A case study for Dniester and Prut catchments | [Sergiy Medinets](#)
High-resolution maps of ammonia concentration and nitrogen deposition for Baden-Württemberg | [Gauger, Thomas](#)
Historical N load from land to East-China sea and riverine N₂O emission in East-Asia | [Kazuya Nishina](#)
Identification of a new N-heterocyclic core structure with nitrification inhibition activity in Australian soils | [Bethany Taggart](#)
Regionalized nitrogen fate in freshwater systems on a global scale | [Jinhui Zhou](#)
Indonesian Nitrogen Footprint Assessment of Food Sector | [Farah Wirasenjaya](#)
Measures and scenarios for the implementation of the reduction targets set by the NEC directive (2016/2284/EU) for agriculture | [Uwe Häußermann](#)
Modelling Greenhouse Gas and Nitrogen Emissions from Ruminant Farming Systems and Influence of Feed Management Decisions on Downstream Emissions | [Latifa Ouatahar](#)
Nitrate accumulation in semiarid apple orchard on the Loess Plateau of China | [Guo Shengli](#)
Nitrate Leaching Potential for Drip Irrigated Cauliflower (Brassica oleracea var. Botrytis) Grown on a Sandy Loam Soil | [Florence Cassel](#)
Nitrogen Balance of Latvia | [Inga Grinfelde](#)
National Nitrogen Budget for Germany | [Martin Bach](#)
Nitrogen footprint of protein-free products | [Kentaro Hayashi](#)
Nitrous oxide emissions from Soddy podzolic sandy loam soil after long-term fertilizer and manure | [Sergei Lukin](#)
Numerical analysis of agricultural emissions impacts on PM_{2.5} in China using a high-resolution ammonia emission inventory | [Meigen Zhang](#)
Oxygen regulates nitrous oxide production directly in agricultural soils | [Xiaotong Song](#)
Physiological Nitrogen release from human population. A case study within East Europe | [Volodymyr Medinets](#)
Precipitation chemical composition and atmospheric nitrogen deposition in the lake Victoria catchment (East Africa) | [Baka Yoko](#)
Reactive nitrogen flows between pool “Energy and Fuel” and the Atmosphere in the Eastern European | [Lidiya Moklyachuk](#)
Reducing future nitrogen pollution in rivers of the Bay of Bengal | [Masooma Batool](#)
Reducing nitrogen footprint of Portuguese wine | [Soraia Cruz](#)
Root system architecture variability and nitrate reductase activity in wheat genotypes for nitrogen use efficiency | [Aysha Kiran](#)
High-resolution ammonia emission Inventory in Belarus | [Hanna Malchykhina](#)
Simulating 50 years of land management and groundwater flow to explain today's nitrate concentrations in Flemish surface waters | [Jeroen De Waele](#)
Temporal dynamics of reactive nitrogen fluxes over different ecosystems | [Christian Brümmer](#)
The global distribution of soil nitrification and the fraction of associated N₂O emission by using stochastic gradient boosting models | [Baobao Pan](#)
The Portuguese nitrogen footprint, a challenge in a Mediterranean country | [Cláudia Marques dos Santos Cordovil](#)
The potential of ryegrass as cover crop to reduce soil N₂O emissions and increase the population size of denitrifying bacteria | [Haitao Wang](#)
Validation of nitrogen dry deposition modelling above forest using high-frequency flux measurements | [Pascal Wintjen](#)
Variability of atmospheric ammonia and its sources over Indian region | [Saumya Singh](#)
Wheat productivity at various N-levels and future predictions under changing climate | [Abdul Wakeel](#)

Poster Session

🕒 4.00 p.m. - 5.00 p.m. CEST

A nitrogen footprint perspective for Brazilian water sector | [Camille Nolasco](#)
A Nitrogen Footprint Tool for Communities: A Case Study for Baltimore, MD, USA | [Elizabeth Dukes](#)
Challenges facing N-regulation in Germany, The Netherlands and Denmark | [Brian H. Jacobsen](#)
Assessment of Nitrogen and Carbon compounds emission as aftermath of wildfires in Dniester Delta (Ukraine) in 2010-2019 | [Volodymyr Medinets](#)
Assessment of the efficiency of nitrogen removal from municipal wastewater | [Monika Suchowska-Kisielewicz](#)
ALong-term atmospheric inorganic nitrogen deposition in West African savanna over 16 year period (Lamto, Côte d'Ivoire) | [Money Guillaume Ossohou](#)
Characterization of Atmospheric Reactive Nitrogen Emissions from Global Agricultural Soils | [Viney Aneja](#)
Citizen dialogue on policy instruments for the reduction of reactive nitrogen in Germany | [Joyce-Ann Syhre](#)
„Communicating consequences of excess nitrogen. Short films for social media linking nitrogen and sustainable development goals. | [Jörn Hamacher](#)“
Cost curves for ammonia mitigation measures in German livestock systems | [Helmut Döhler](#)
Delayed N timing for maize reduced N₂O emissions and drainage [NO₃-] while increasing yield | [Peter Scharf](#)
Changes of soil microbes related with carbon and nitrogen cycling after long-term CO₂ enrichment in a typical Chinese maize field | [Liping Guo](#)
Context is everything: what controls nitrogen concentrations in U.S. streams | [Jana Compton](#)
Nitrogen budget estimation in the East Europe: A case study for Dniester and Prut catchments | [Sergiy Medinets](#)
High-resolution maps of ammonia concentration and nitrogen deposition for Baden-Württemberg | [Gauger, Thomas](#)
Historical N load from land to East-China sea and riverine N₂O emission in East-Asia | [Kazuya Nishina](#)
Regionalized nitrogen fate in freshwater systems on a global scale | [Jinhui Zhou](#)
Liquid Hog Manure Nitrogen Conservation and Concentration Technology | [Alison Deviney](#)
Measures and scenarios for the implementation of the reduction targets set by the NEC directive (2016/2284/EU) for agriculture | [Uwe Häußermann](#)
Nitrate accumulation in an intensive small agricultural catchment: challenges and solutions | [Jianbin Zhou](#)
Nitrate Leaching Potential for Drip Irrigated Cauliflower (Brassica oleracea var. Botrytis) Grown on a Sandy Loam Soil | [Florence Cassel](#)
Nitrogen Balance of Latvia | [Inga Grinfelde](#)
National Nitrogen Budget for Germany | [Martin Bach](#)
Nitrogen use efficiency of maize and cotton in 1.32 Mha of commercial farms in Brazil | [Heitor Cantarella](#)
Nitrous oxide emissions from Soddy podzolic sandy loam soil after long-term fertilizer and manure | [Sergei Lukin](#)
Nr management in current Brazilian policies | [Gisleine Cunha-Zeri](#)
Nutrient enrichment changes water transport structures of savanna woody plants in Brazil | [Lucas Silva Costa](#)
Physiological Nitrogen release from human population. A case study within East Europe | [Volodymyr Medinets](#)
Precipitation chemical composition and atmospheric nitrogen deposition in the lake Victoria catchment (East Africa) | [Baka Yoko](#)
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The Portuguese nitrogen footprint, a challenge in a Mediterranean country | [Cláudia Marques dos Santos Cordovil](#)
The potential of ryegrass as cover crop to reduce soil N₂O emissions and increase the population size of denitrifying bacteria | [Haitao Wang](#)
The US nitrogen footprint: An updated approach and comparison | [Allison Leach](#)
Validation of nitrogen dry deposition modelling above forest using high-frequency flux measurements | [Pascal Wintjen](#)

Thursday, 3 June 2021 - Oral Sessions

Plenary Session	Parallel Session 1	Parallel Session 2
<p>🕒 11.30 a.m. CEST</p> <p>INI South Asia Award Nandula Raghuram</p> <p>🕒 12.00 p.m. CEST</p> <p>Key-Note Session Day 4 Kevin Hicks</p> <p>Air Pollution Health Effects Annette Peters</p> <p>Managing Nitrogen for sustainable agriculture production: Integrating Social and Ecological Perspectives Xing Zhang</p> <p>N matters – turning risk communication into agenda setting Norbert Taubken</p> <p>Panel</p> <p>🕒 1.00 p.m. CEST - BREAK</p> <p>Parallel Discussion Sessions, watching prerecorded talks the week before is obligatory.</p>	<p>🕒 1.15 p.m. CEST</p> <p>3a - Health Effects Marijana Curcic</p> <p>Reactive nitrogen compounds and their influence on human health Rolf Nieder</p> <p>Particulate organic nitrogen at an agricultural region in South Africa Pieter Gideon Van Zyl</p> <p>Projecting future nitrogen pathways and their impacts: the GLOBIOM-GAINS framework Wilfried Winiwarter</p> <p>4a -Special Session Forests Ann-Katrin Prescher & Kai Schwärzel</p> <p>Nitrogen impacts on forest mycorrhizas and functions. Martin Bidartondo</p> <p>Tree nutrition increasingly imbalanced in European forests Inken Krueger</p> <p>Nitrogen deposition and leaching in European forests Elena Vanguelova</p> <p>Continental-scale forest growth in Europe is driven by management and further modulated by nitrogen deposition. Marco Ferretti</p> <p>6a - Closing the N cycle: Innovations for sustainable N management (better Management of dairy and crop systems) Albert Bleeker</p> <p>Decoupled aquaponics - Innovative food production systems for a sustainable nitrogen management Hendrik Monsees</p> <p>Reducing ammonia volatilization and nitrous oxide emissions from agricultural soils Craig Drury</p> <p>Soil Nitrogen Storage and Availability to Crops are Increased by Conservation Agriculture Practices in Rice-based Cropping Systems in the Eastern Gangetic Plains Md. Khairul Alam</p> <p>Balancing nitrogen inputs for China's green agricultural development Liu Xuejun</p> <p>Sustainable Nitrogen Cycling: Using Human Bio-solids in Cropping Systems to Manage Soil N Nimesha Fernando</p> <p>7a - From science to policy (economic issues) 1 Hans van Grinsven</p> <p>Socioeconomic barriers of agricultural nitrogen use for sustainable development Baojing Gu</p> <p>Costs of regulating ammonia emissions from livestock farms near Natura 2000 areas - Analyses of case Brian H. Jacobsen</p> <p>The social cost of nitrogen - with examples from Germany Bernd Hansjürgens</p> <p>Developing a global economic valuation function for nitrogen impacts on coastal and marine ecosystem services Rute Pinto</p> <p>7b - Educational aspects, public awareness, risk communication (communication I) Wim de Vries</p> <p>A revised planetary boundary for agricultural nitrogen use Lena F. Schulte-Uebbing</p> <p>Linking Nitrogen Forms, Quantifications, and Epistemologies: A Science-Policy Interface Issue William San Martin</p> <p>National nitrogen budgets of Japan in 2000s Kentaro Hayashi</p> <p>Governing Nutrient Pollution Beyond Farmers David Kanter</p> <p>A guidance document for nitrogen impact assessment for human health and environment qualities Hideaki Shibata</p> <p>7b - Educational aspects, public awareness, risk communication (policy) 1 Mahesh Pradhan</p> <p>A national nitrogen target for Germany Markus Geupel</p> <p>The political ecology of manure export in Lower Saxony: an ethnographic case study Friederike Gesing</p> <p>How the Dutch nitrogen policy failed and led to serious nitrogen deposition reduction Jan Willem Erisman</p> <p>Comparison of regulatory approaches for determining application limits for mineral nitrogen fertilizer use in Germany Philipp Löw</p> <p>Towards a Credit System to Solve Agriculture induced Nitrogen Pollution Globally Deli Chen</p> <p>The Dutch story of an Integrated Approach to Nitrogen, all things come and go Mark Wilmot</p> <p>Evaluation and comparison of nitrogen mitigation measures across sectors Bettina Schäppi</p> <p>Special Session on Nitrogen Footprints 1 James N. Galloway</p> <p>Towards a practical environmental footprint tool Allison Leach</p> <p>The nitrogen footprint of Denmark - Applying Danish virtual nitrogen factors to estimate losses from food production Morten Graversgaard</p> <p>Input-output analysis of reactive nitrogen flows in industry and industrial nitrogen footprint: the case of Japan Kiwamu Katagiri</p> <p>Trends in the food nitrogen and phosphorus footprints for China, India, and Japan Azusa Oita</p> <p>Nitrogen-neutrality Fosters More Sustainable Meetings Xia Liang</p> <p>🕒 1.55 p.m. CEST - BREAK</p>	<p>🕒 2.05 p.m. CEST</p> <p>5b - Biogeochemical N Cycle (N₂O / denitrification / water) Benjamin Bodirsky</p> <p>Hydrological N export from tropical forests in the Congo Basin Simon Baumgartner</p> <p>Integrated control and Modelling of Denitrification in Agricultural Soils at various scales (DASIM) - first Reinhard Well</p> <p>Managing reactive nitrogen in agricultural systems under future conditions in Austria Bano Mehdi</p> <p>Terrestrial denitrification and nitrous oxide emissions: global estimates and uncertainties David Pelster</p> <p>The use of nitrogen compounds from organic waste Daniel Pleissner</p> <p>Quantifying landscape-level annual nitrous oxide fluxes in the Tibetan Plateau Lei Ma</p> <p>6a - Closing the N cycle: Innovations for sustainable N management (technologies and nutrient recovery) Claudia Cordovil</p> <p>Ground level and aerial sensors to detect crop N status and adjust fertilizer application María Dolores Raya-Sereno</p> <p>Catalytic Conversion of Nitrogen Oxide to Ammonia Yuichi Manaka</p> <p>Recovery of gaseous ammonia released from livestock farms by recyclable adsorbent Tohru Kawamoto</p> <p>Innovative explorations of subsurface redox conditions for future targeted N regulation Birgitte Hansen</p> <p>Plasma treatment of dairy slurry increases grass yields and nitrogen use efficiency Nick Humphries</p> <p>7a - From science to policy (economic issues) 2 Johannes Biala</p> <p>Trends in nitrogen induced costs due to impacts on human health, climate and ecosystems in Europe Wim de Vries</p> <p>German Pig Farmers' Perceived Agency under different Nitrogen Policies Luisa Stühr</p> <p>Societal benefits of halving agricultural ammonia emissions in China far exceed the abatement cost Xiuming Zhang</p> <p>Cost-effective nitrogen load reductions to Danish coastal areas – comparison of three economic models Berit Hasler</p> <p>Willingness to pay for improvements in surface water quality in Northern Europe: A meta-regression S. B. Olsen</p> <p>Cost-benefit analysis of reactive nitrogen for Germany Bettina Schäppi</p> <p>7b - Educational aspects, public awareness, risk communication (communication II) Andreas Prueß</p> <p>A scheme to relate nitrogen loads to characteristic plant species of FFH habitat types in Germany Sonja Winter</p> <p>Integrated evaluation of changes in agriculture in view of climate, biodiversity and water goals Hans Kros</p> <p>Nitrogen balances in urban areas: purpose and potentials Wilfried Winiwarter</p> <p>Nitrogen shares in global environmental impacts and crop production Hans JM van Grinsven</p> <p>7b - Educational aspects, public awareness, risk communication (policy) 2 Borhane Mahjoub</p> <p>Nitrogen balance and Water contamination risk assessment - The Castelo de Bode watershed example Maria Vale</p> <p>The first global nitrogen policy database David Kanter</p> <p>Natura 2000 as a strategic element of Nitrogen reduction policy Rudolf Uhl</p> <p>How Danish farmers have doubled N efficiency already & how to reach ambitious future targets Wibke Christel</p> <p>The Dutch integrated approach to monitor and calculate nitrogen deposition in Natura 2000 areas Roy Wichink Kruit</p> <p>How Germany's national air pollution control programme contributes to reduced emissions of reactive nitrogen into the atmosphere Marcel Langner</p> <p>Special Session on Nitrogen Footprints 2 Allison Leach</p> <p>Expanding the Nitrogen Footprint Pathway James N. Galloway</p> <p>Environmental footprint family to address local to planetary sustainability and deliver on the SDGs Davy Vanham</p> <p>Campus Nitrogen Footprints: How Institutions can Manage Their Impact Elizabeth Castner</p> <p>The N-Footprint of the agricultural research station at Aarhus University in Denmark utilizing an N-Institution calculator Morten Graversgaard</p> <p>The nitrogen footprint of Denmark - Applying Danish virtual nitrogen factors to estimate losses from food production Morten Graversgaard</p> <p>Indian food nitrogen footprint towards 2050: Religious dietary perspective Aurup Ratan Dhar</p> <p>🕒 2.45 p.m. CEST - BREAK</p> <p>🕒 2.55 p.m. CEST</p> <p>Closing Session Nandula Raghuram, Markus Geupel</p> <p>Notes from the organizers - summary and documentation Markus Geupel</p> <p>Berlin Declaration Lilian Busse</p> <p>Panel Diskussion with regional INI-directors Nandula Raghuram</p> <p>Farewell by the INI Chairs including PANEL Nandula Raghuram, Markus Geupel</p> <p>Farewell by the Hosts Markus Geupel</p>

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