



**International  
Fertilizer Industry  
Association**

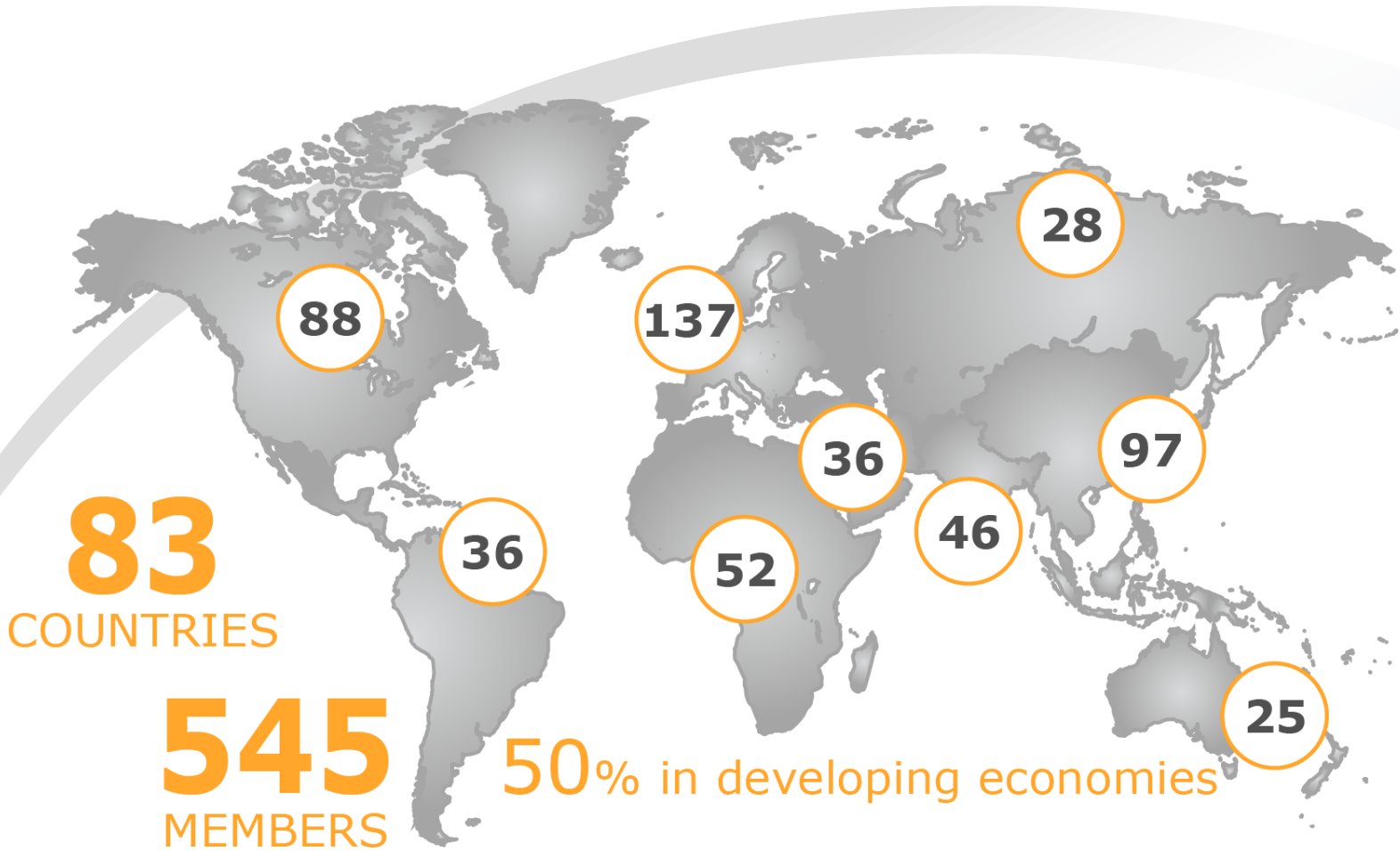
## **UNFCCC Workshop on N<sub>2</sub>O Emissions**

**Bonn, Germany, 22 October 2014**

**Volker Andresen, Technical & SHE Director**



# About us





# Fertilizer Production Overview

- Areas of greenhouse gas reduction in our industry:
  - CO<sub>2</sub> from ammonia production
  - N<sub>2</sub>O from nitric acid production
- N<sub>2</sub>O has about 300 times more global warming potential than CO<sub>2</sub>
- N<sub>2</sub>O is an unwanted by-product of the catalytic oxidation of ammonia
- Bulk of global nitric acid production is based in Western Europe, North America, and the Former Soviet Union



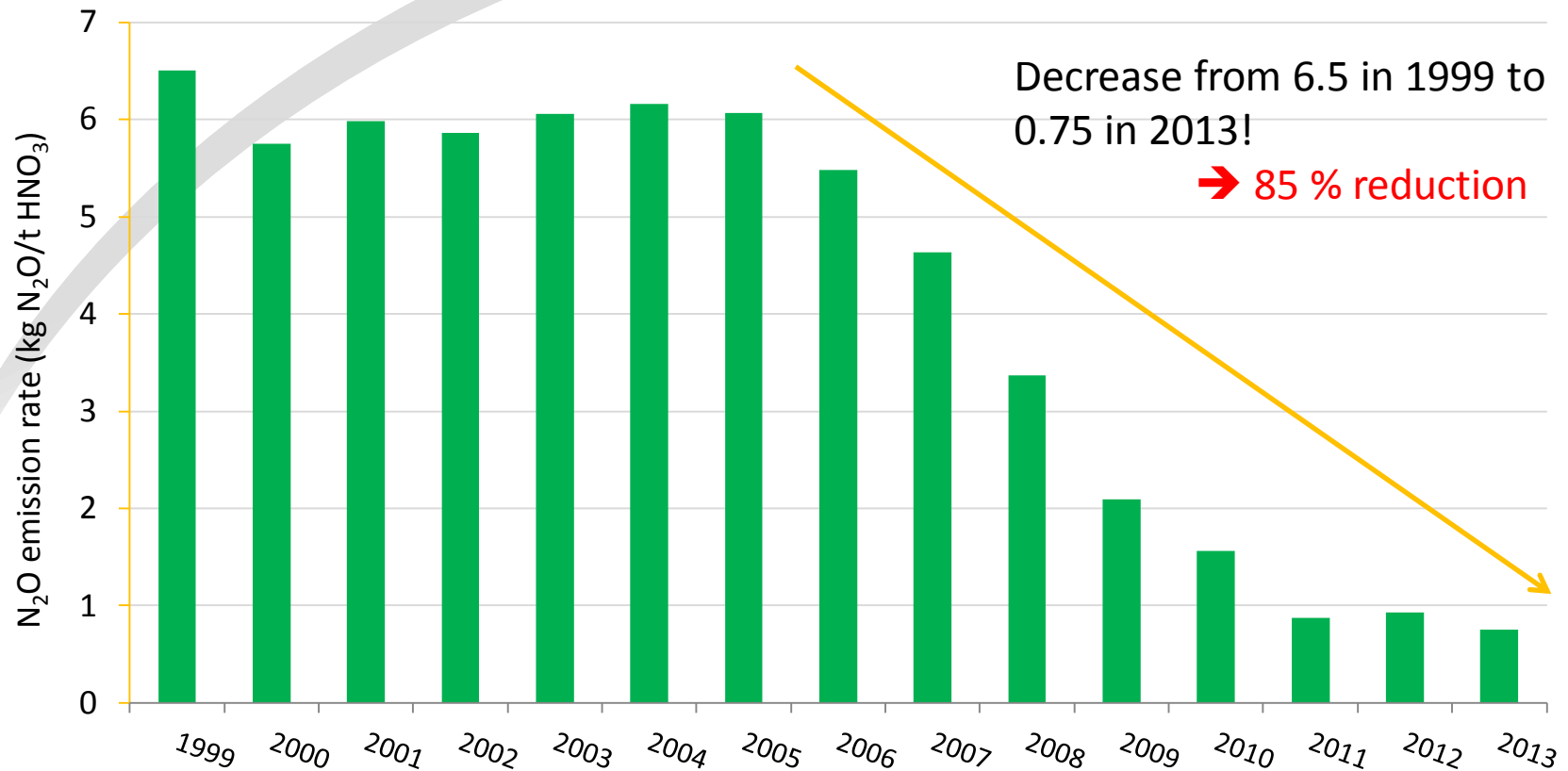
# Good Mitigation Practices: Best Available Techniques (BAT)

- The two main *abatement* approaches are:
  - Secondary: “*in process*” technology
  - Tertiary: “*end of pipe*” (“*tail gas*” N<sub>2</sub>O decomposition)
- Existing plants: 70-85 % reduction potential
- New plants: 90-95% range
  - Average emission value: 1.51 kg N<sub>2</sub>O/t Nitric Acid\*
- However, there are no “natural” investment incentives for Nitric Acid producers

\*Source: IFA October 2014 Environmental Performance Benchmarking Report

# Case Study 1: Sharp Decrease in N<sub>2</sub>O Emissions from European Fertilizer Production

N<sub>2</sub>O emission rate for European nitric acid plants





## Case Study 1 (continued): What triggered the Reduction in N<sub>2</sub>O Emissions in Europe?

- Technological development of “*in process*” and “*end-of-pipe*” abatement solutions
- European Union-Emissions Trading System (ETS):  
A market-based scheme that creates financial incentives to facilitate investments in these abatement solutions



## Case Study 2: North American Mitigation Initiative in the Fertilizer Sector

- Climate Action Reserve: carbon offset credits in North America
- For example, Potash Corp invested in “*in process*” reduction catalyst in U.S. fertilizer facility:
  - Voluntary initiative facilitated by Climate Action Reserve scheme
  - 90% reduction potential in this secondary abatement
  - Tertiary removal can be even more efficient (up to 95% reduction) but the upfront cost would be much higher



## Moving forward

- In the global nitric acid sector, greenhouse gas reduction potential remains significant
- However, there are no “natural” investment incentives for the nitric acid producers
- That is why some regions have taken innovative approaches to lower investment hurdles
- IFA will continue to benchmark its producer members and to share best practices among them





*Thank you*