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Swiss Confederation

Federal Department of the Environment,
Transport, Energy and Communications DETEC

Federal Office for the Environment FOEN
Air Pollution Control and Chemicals Division

Switzerland: Nitrogen management in Swiss agriculture

WGSR 55th session, Special session on agriculture and air pollution
Geneva 1st June 2017



Swiss Agricultural NH₃ emissions

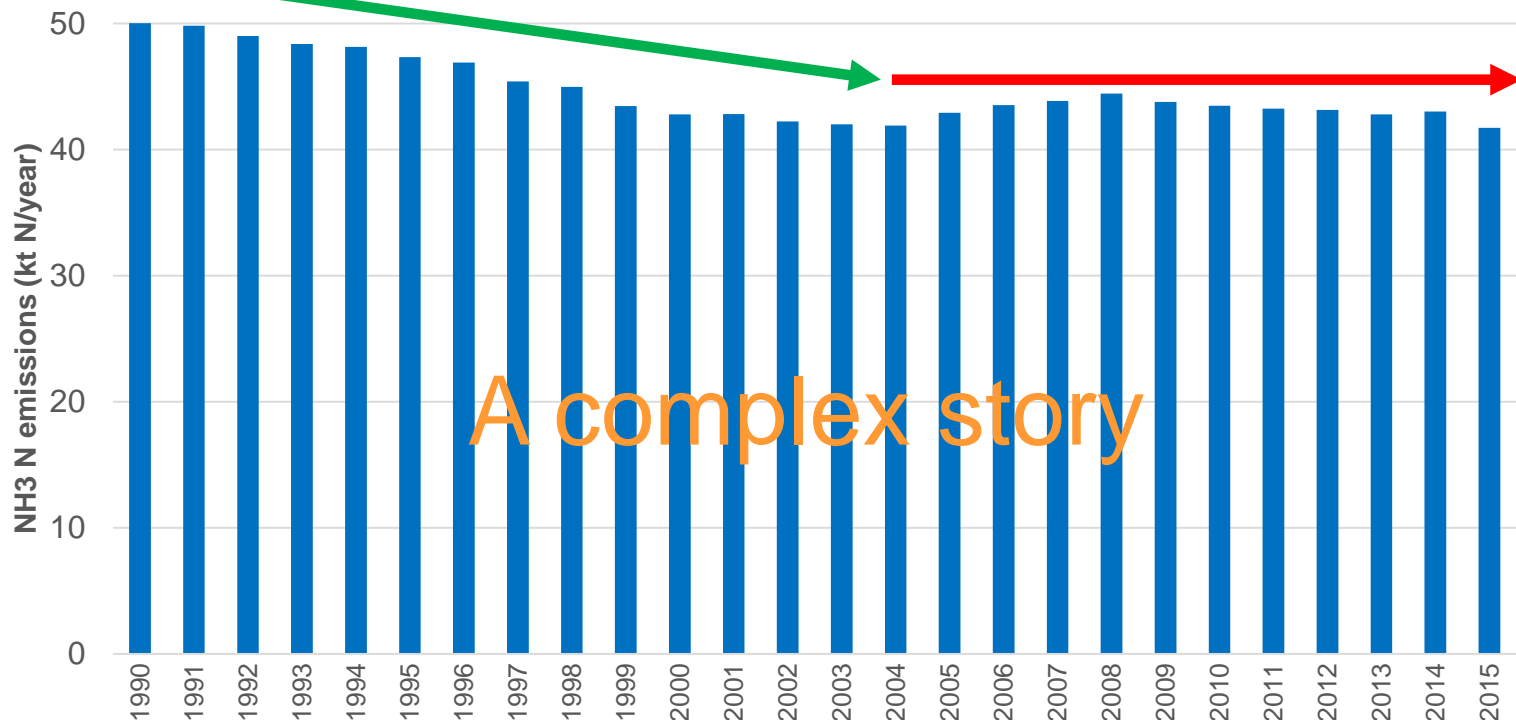
livestock and manure

- 1990–2004 -17%
- 2004–2015 ±0%

Emissions livestock + manure 1990 – 2015

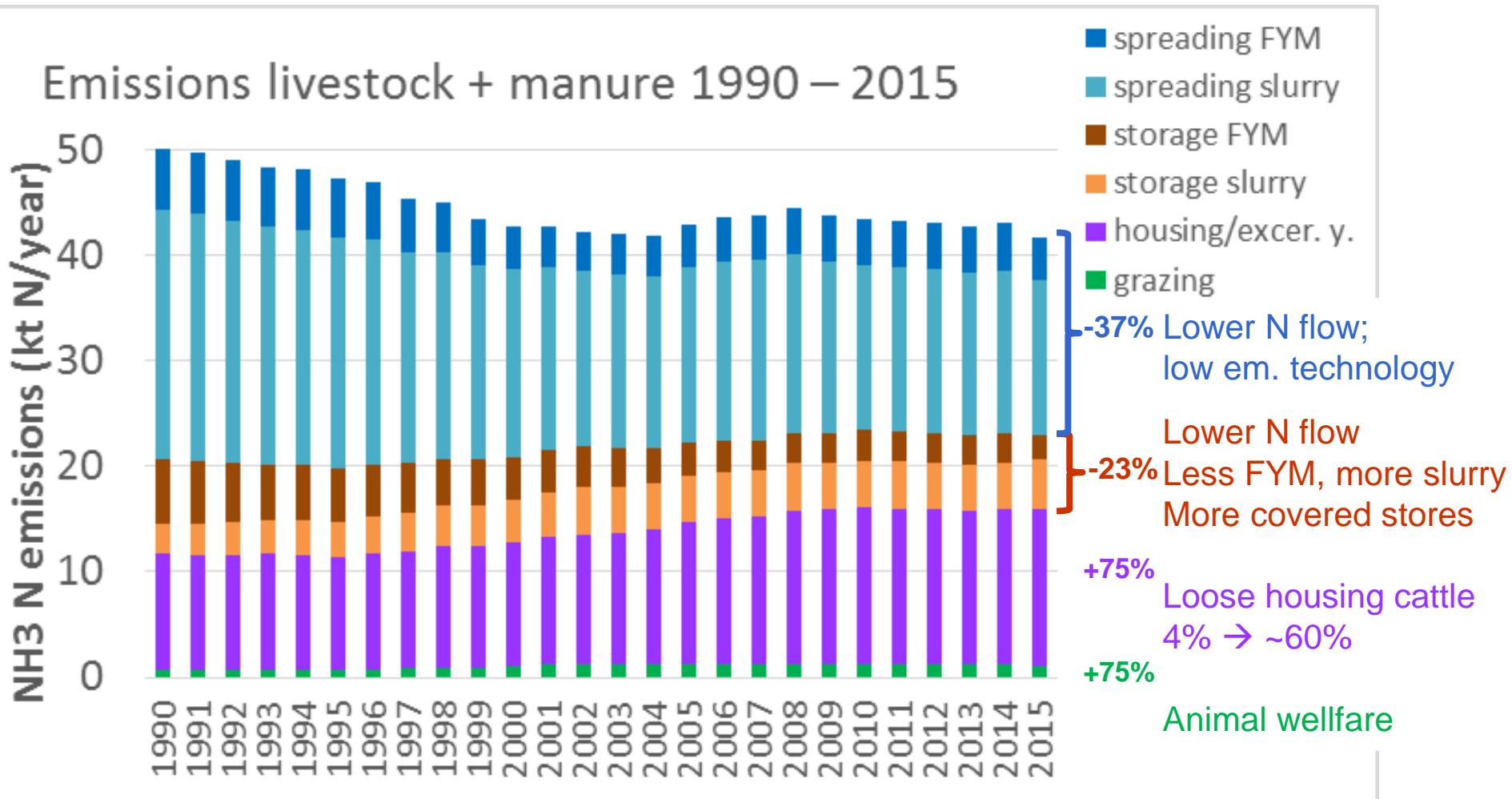
Total national emissions

- **2005 – 2015 -5.0%**



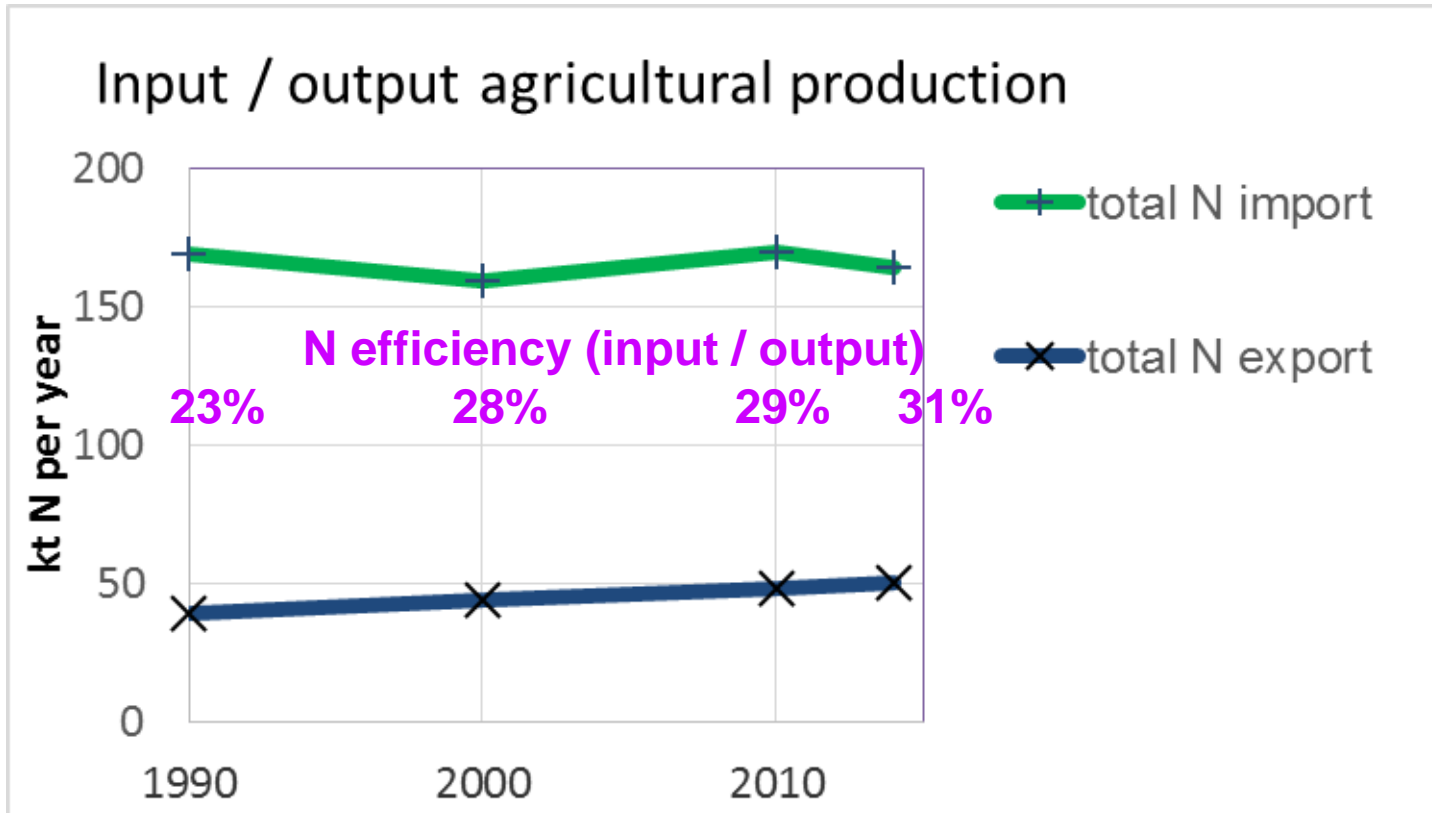




Swiss Agricultural NH₃ emissions





N Efficiency Swiss agriculture

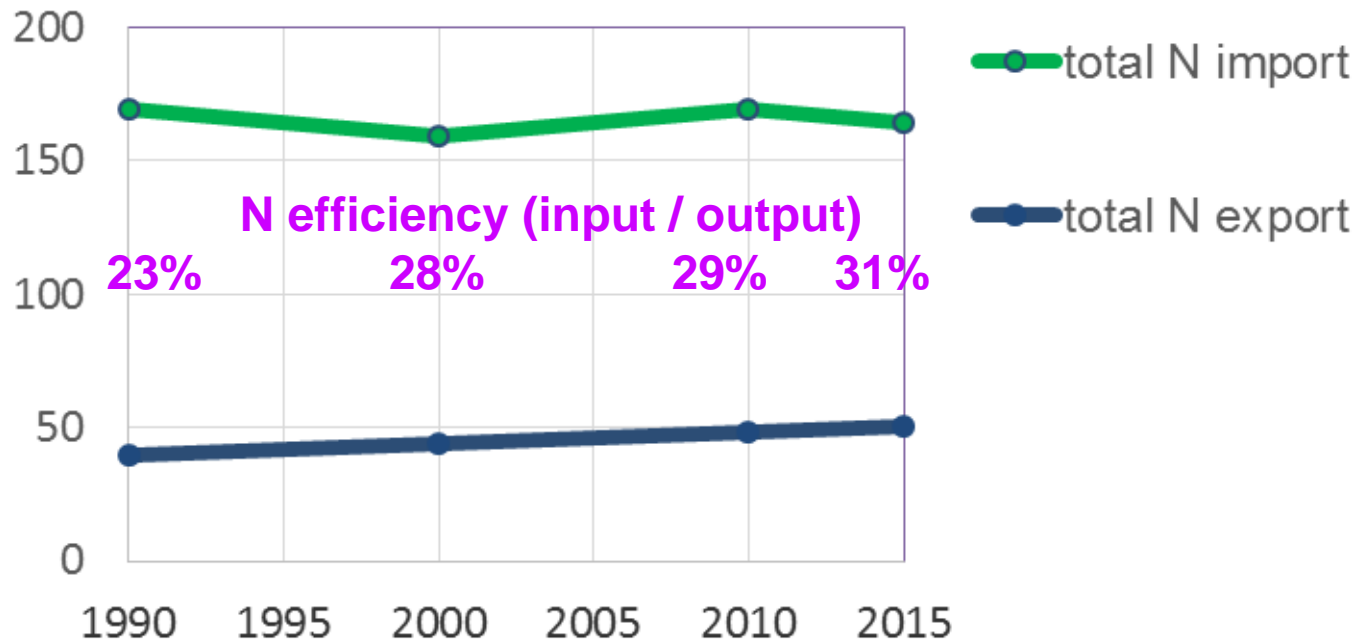




- \pm same N input, +29% more N output \rightarrow much better efficiency 
- -21 kt N fertilizer use — +25 kt N in feed (+77% N feed) 



N Efficiency Swiss agriculture

Input / output agricultural production



- ± same N input, +29% more N output → much better efficiency 
- But: -21 kt N fertilizer use — +25 kt N in feed (+77% N feed) 



What happened ?

- Quite successful 1990 to 2004
 - Less animals (fattening pigs ~-25%, dairy cows -20%) but higher milk yield
 - Introduction N + P balance → Strong reduction mineral fertilizer
 - → relative importance manure has increased
- Stagnation since 2004
 - Goals nutrient balance have been achieved
 - Reduction number dairy cows mostly compensated by suckling cows
 - Emission reduction (spreading technique, reduction N excretions, more grazing etc.) counterbalanced by shift to more animal friendly systems (loose housing + exercise yard cattle, multi pen housing with outside access pigs etc.)

Nutrient aspects in Swiss agricultural policy

- Since 1994 direct payment program with strong focus on reduced environmental impact and more animal welfare
 - Incentive payments if farmer comply with a set of measures: crop rotation, N and P balance equilibrium etc.; since 1999 mandatory
- N and P balance have lead to optimisation of production:
 - Mineral fertilizer use: N –25%, P –70%, K –80%
 - Manure nutrients: N – 5% N, P >–20%
 - no decrease in yields
 - Farmers awareness for good manure management has increased considerably



Resource programs

- Since 2008 additional programs on Cantonal level for measures with special relevance for the environment
 - Farmers can apply to join program
 - Chose strategy and measures to include; clear quantitative aims
 - Detailed assessment of baseline situation; Monitoring program
 - Six year duration of program; Obligation to participate until end of program
 - Obligation to continue with measures after end of the program



Resource efficiency incentives

- Since 2014 Federal Resource Efficiency Incentives to improve the sustainable use of natural resources and the use efficiency of resource use techniques with known effect are supported
 - Low emission slurry spreading techniques
 - Conservative soil tilling
 - Use of more precise pesticide application systems
 - Cleaning systems for pesticide spaying equipment



Conclusions

- Stepwise approach with 1) incentive program and 2) compulsory program for ecological performance was quite successful during 10 years; then achievements maintained, because no new obligations or incentives
- General challenges
 - How to keep up persistent and sustainable optimization on farms?
 - Awareness raising and maintenance for farmers
 - Compliance monitoring
 - Counterbalancing effects and synergies of different measures
 - What fits into the existing policy implementation framework
 - Active communication to a broader public (e.g. <https://www.bafu.admin.ch/bafu/en/home/topics/air/info-specialists/air-quality-in-switzerland/nitrogen-containing-air-pollutants-affect-biodiversity.html>)



Greetings from Switzerland !

www.schweizerbauer.ch