Wilfried Winiwarter, Albert Bleeker (co-chairs)

IIASA

Task Force on Reactive Nitrogen

Expert Panel on Nitrogen Budgets – 3 (Prague meeting)

report to TFRN
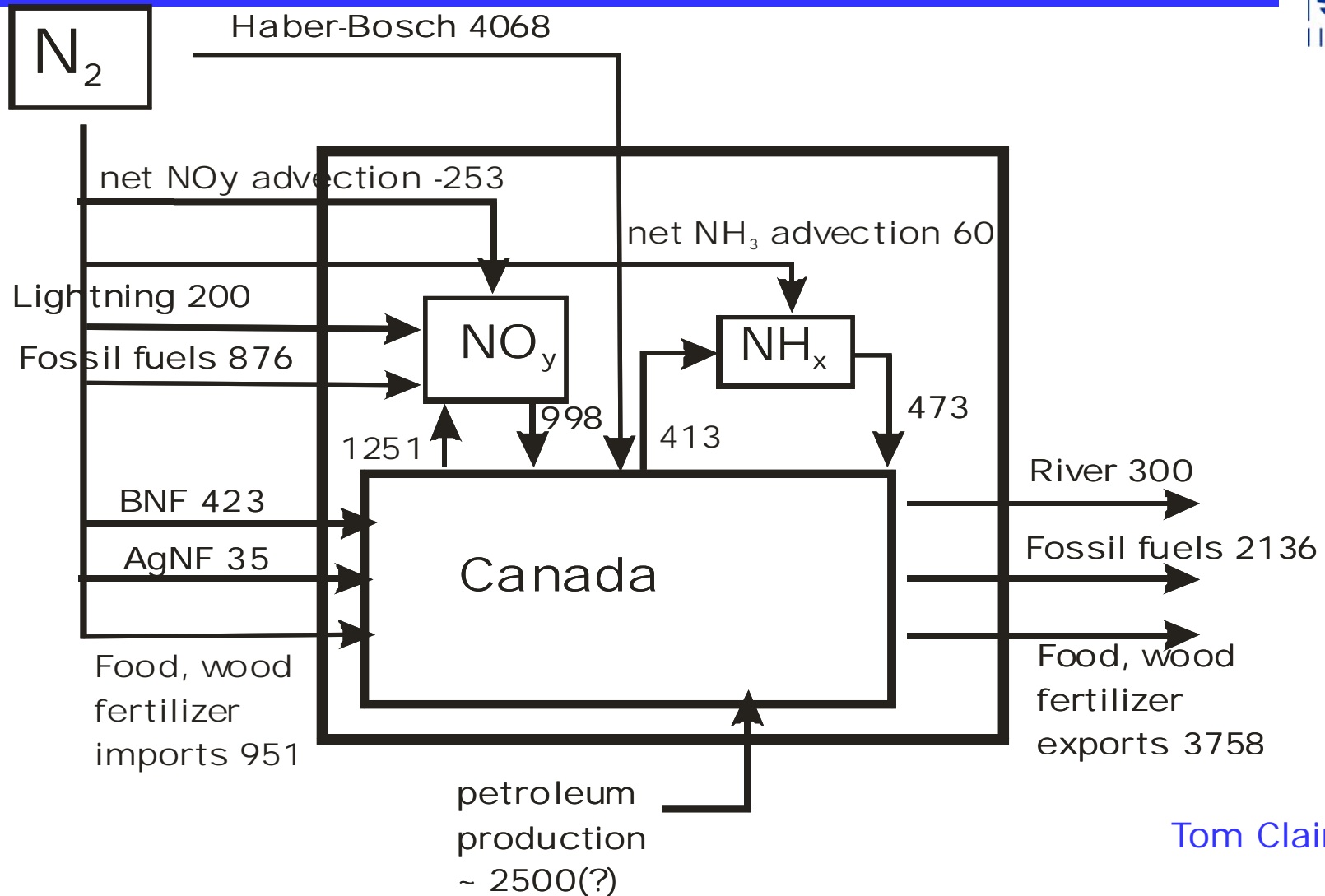
EPNB Agenda
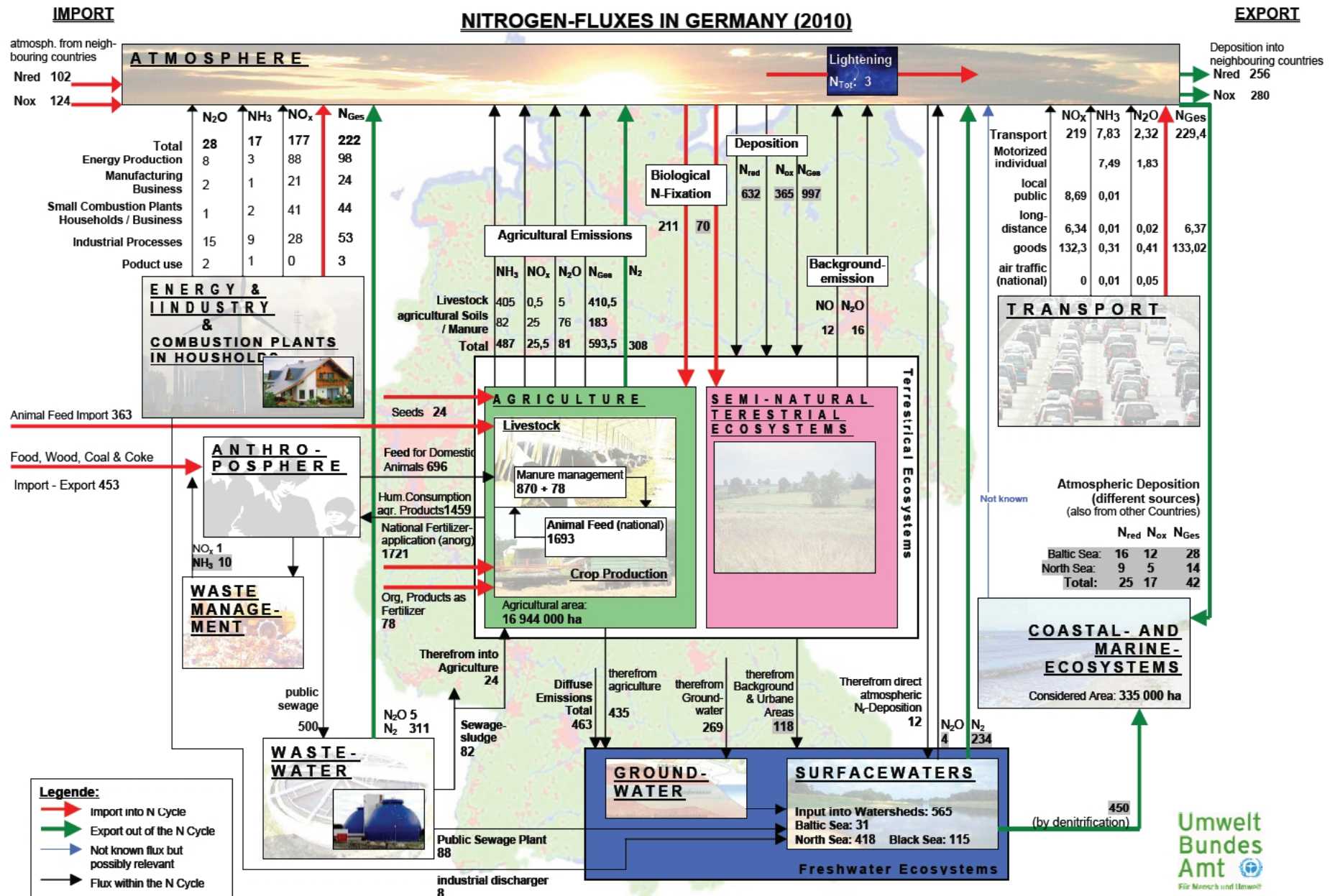
A) Reports from related activities

B) Country budgeting reports

C) Status of N-budgeting guidelines

D) Status of farm level budgets and their relationship to options as presented in Annex IX

Simplified N budget for Canada

N₂

Haber-Bosch 4068

net NOy advection -253

net NH₃ advection 60

Lightning 200

Fossil fuels 876

NOy

NHx

998

413

473

1251

BNF 423

AgNF 35

Canada

River 300

Fossil fuels 2136

Food, wood fertilizer imports 951

Food, wood fertilizer exports 3758

petroleum production ~ 2500(?)

Tom Clair

IIASA

Preliminary results: national N-budgeting map (Gg/a)
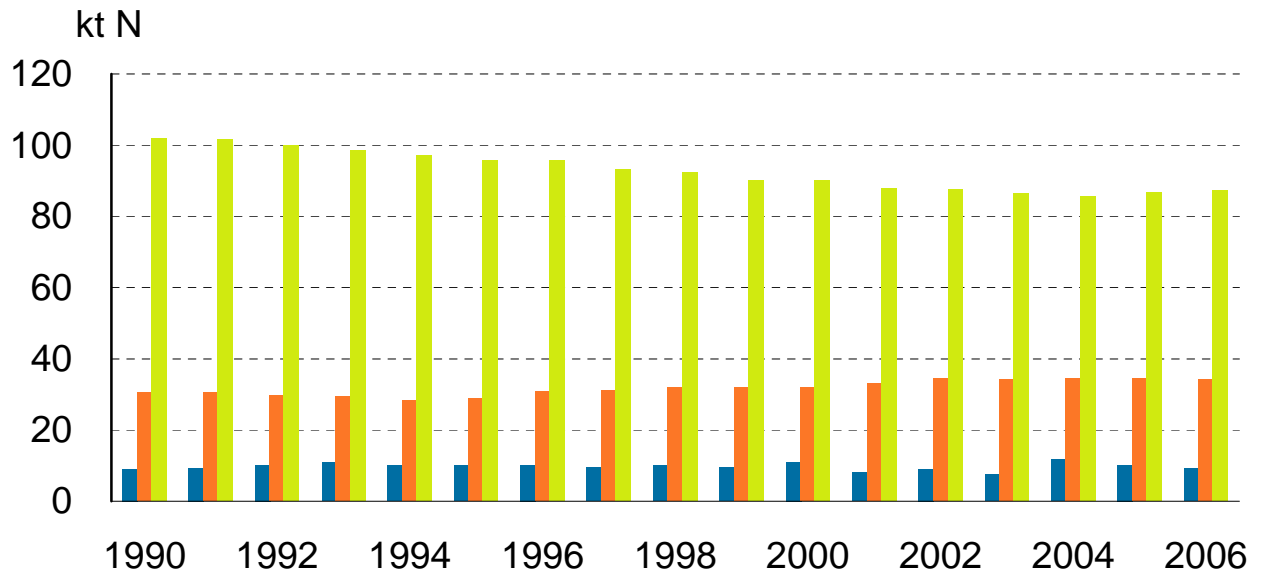

Gabriele Wechsung

Swiss Trends 1994-2005

kt N

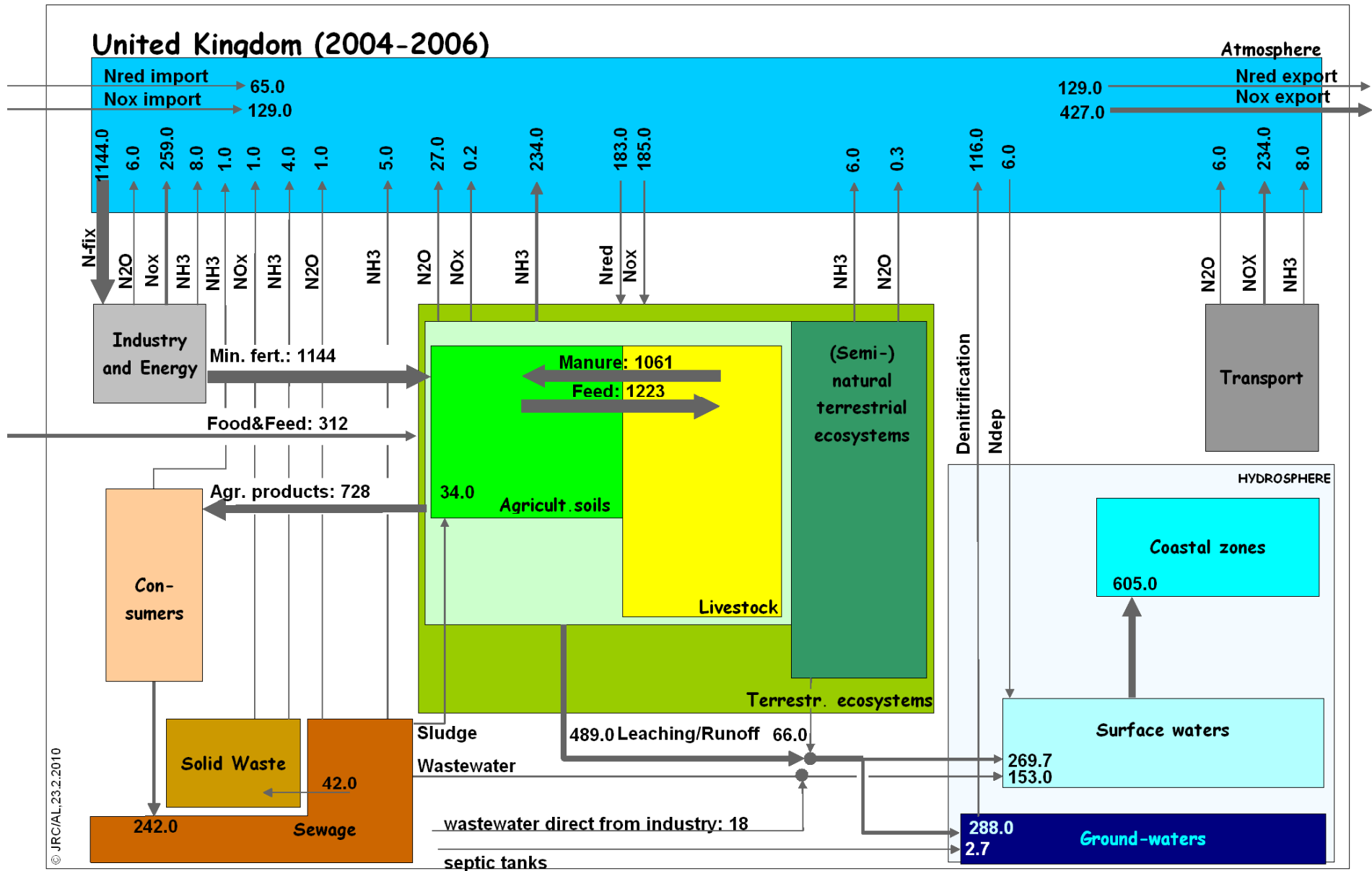Legend:
- N-fixation
- deposition
- imported fodder
- mineral fertilizer

kt N
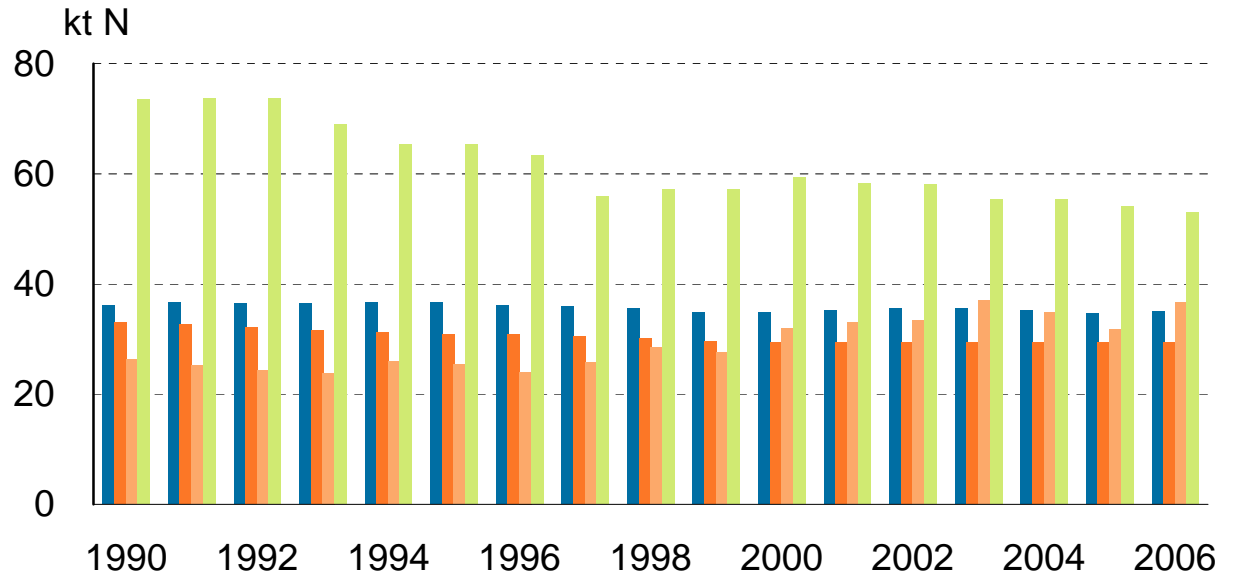
Legend:
- vegetable products
- animal products
- manure (liquid and solid)

Jürg Heldstab

UK budget on EPNB template

United Kingdom (2004-2006)

Atmosphere

Nred import 65.0
Nox import 129.0

Nred export 129.0
Nox export 427.0

1144.0 N-fix
6.0 N2O
259.0 Nox
8.0 NH3
1.0 NH3
1.0 NOx
4.0 NH3
1.0 N2O
5.0 NH3
27.0 N2O
0.2 NOx
234.0 NH3
183.0 Nred
185.0 Nox
6.0 NH3
0.3 N2O
116.0 Denitrification
6.0 Ndep
6.0 N2O
234.0 NOX
8.0 NH3

Industry and Energy

Min. fert.: 1144

Food&Feed: 312

Agr. products: 728

Con-sumers

(Semi-) natural terrestrial ecosystems

Manure: 1061
Feed: 1223

34.0 Agricult.soils

Livestock

Transport

HYDROSPHERE

Coastal zones
605.0

Surface waters
269.7
153.0

Terrestr. ecosystems

Sludge
Wastewater
489.0 Leaching/Runoff 66.0

Solid Waste
42.0

242.0 Sewage

wastewater direct from industry: 18

septic tanks

288.0
2.7 Ground-waters

Unit: kt N/year

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Penny Johnes

Situation around 2004-2006 - Reference

Policy use of national budgets

- Use as quantification tools (compare fluxes)

- Scenarios

- Communication tool

- Identify intervention points

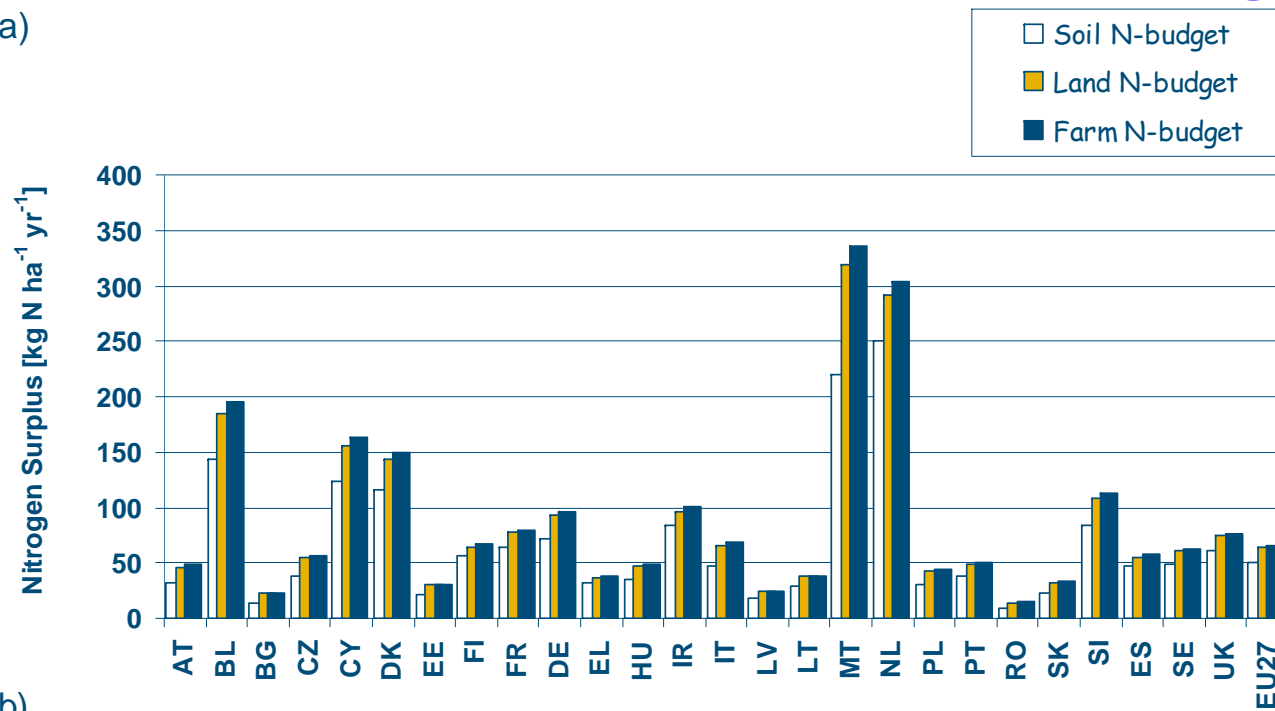- Extract indicators

National budgets for management

- Indicators
    - Total NH3 vs. NEC
    - Deposition vs. Critical loads
    - Limits to fertilizer application
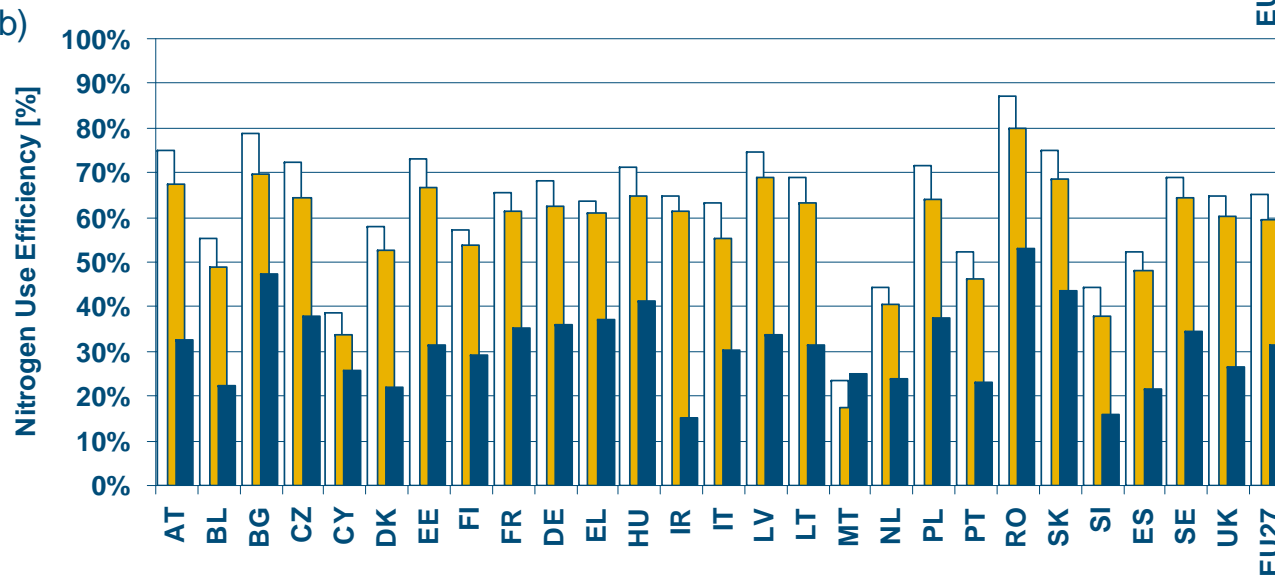
- The latter would require also spatial resolution

NS/NUE for farm, land and soil N-budgets

a)

b)

Wim
de Vries

Contributions to Annex IX

- Farmgate balances for demonstration farms using OECD methodology
  - extension possible if needed

- No possibility to define "level of high efficiency" – also as strongly dependent on specific country and sector /farm situation (animal vs. plant production) – instead results of reports (and improvements) would create benchmark

- National budgets: clearly indicators can be extracted – available results from countries would constitute a benchmark.

Workplan 2010/11

- Improve on calculation template (web-based)
- Provide guidelines (description / methodology)
- Liaise with OECD – OECD/EUROSTAT/EPNB-TFRN meeting in fall (details to be determined)
- Reference to OECD farmgate-balance in guidance document

- Long – term perspective: see previously

Long term targets

- Pool changes $\leftrightarrow$ N$_2$ emissions

  $\left.\begin{array}{c} \\ \\ \\ \end{array}\right\}$ Dynamic system

- Time lag

- Local / regional budgets (Spatial differentiation)

- Validation; QA/QC on inputs