Expert Panel on Nitrogen and Food

Report to TFRN10 – 28 April 2015
Lissabon, Portugal

Main task

- To create a better understanding of the relationship between human diets and the N-cycle / ammonia emissions
  - Composition of present EU diets (12 commodity categories as cereals, vegetable oil, dairy and sugar);
  - ‘N-footprint’ of these categories
  - Alternative consumption and production scenarios
  - Effect of these scenarios on (EU) N – emissions, notably ammonia emissions
- Co- chairs Cristian Pallière and Henk Westhoek

Products sofar

Journal of Agricultural Science, Page 1 of 14. © Cambridge University Press 2013
doi:10.1017/S0021859613000786

NITROGEN WORKSHOP SPECIAL ISSUE PAPER

The nitrogen footprint of food products in the European Union

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Contents lists available at ScienceDirect

Global Environmental Change

journal homepage: www.elsevier.com/locate/gloenvcha

Food choices, health and environment: Effects of cutting Europe's meat and dairy intake

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Nitrogen on the Table

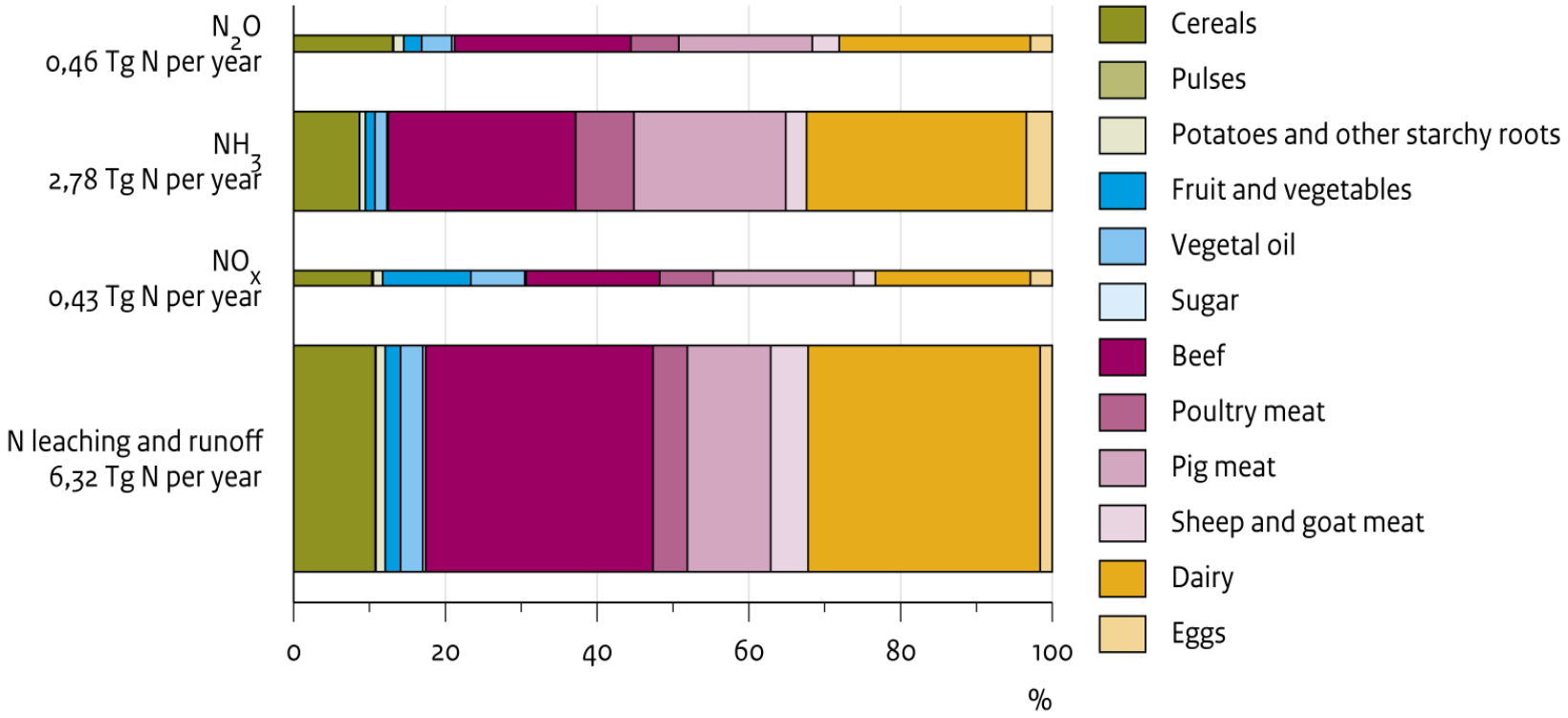
A special report of the European Nitrogen Assessment

TFRN LRTAP

Papers and executive summary report launched April 2014

Nr losses dominated by livestock sector

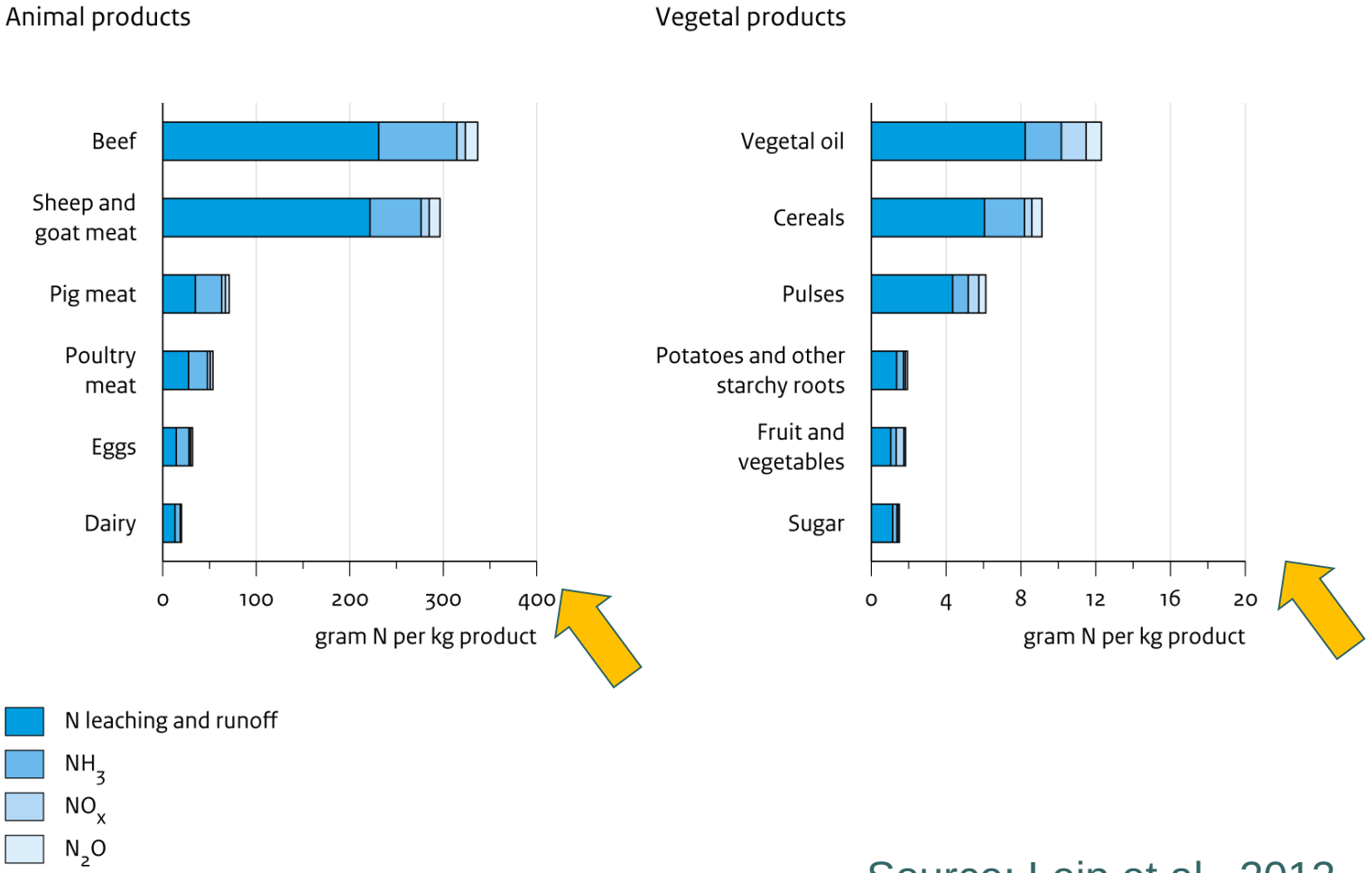
Emissions of reactive nitrogen in EU27, 2004



Source: Leip et al., 2013

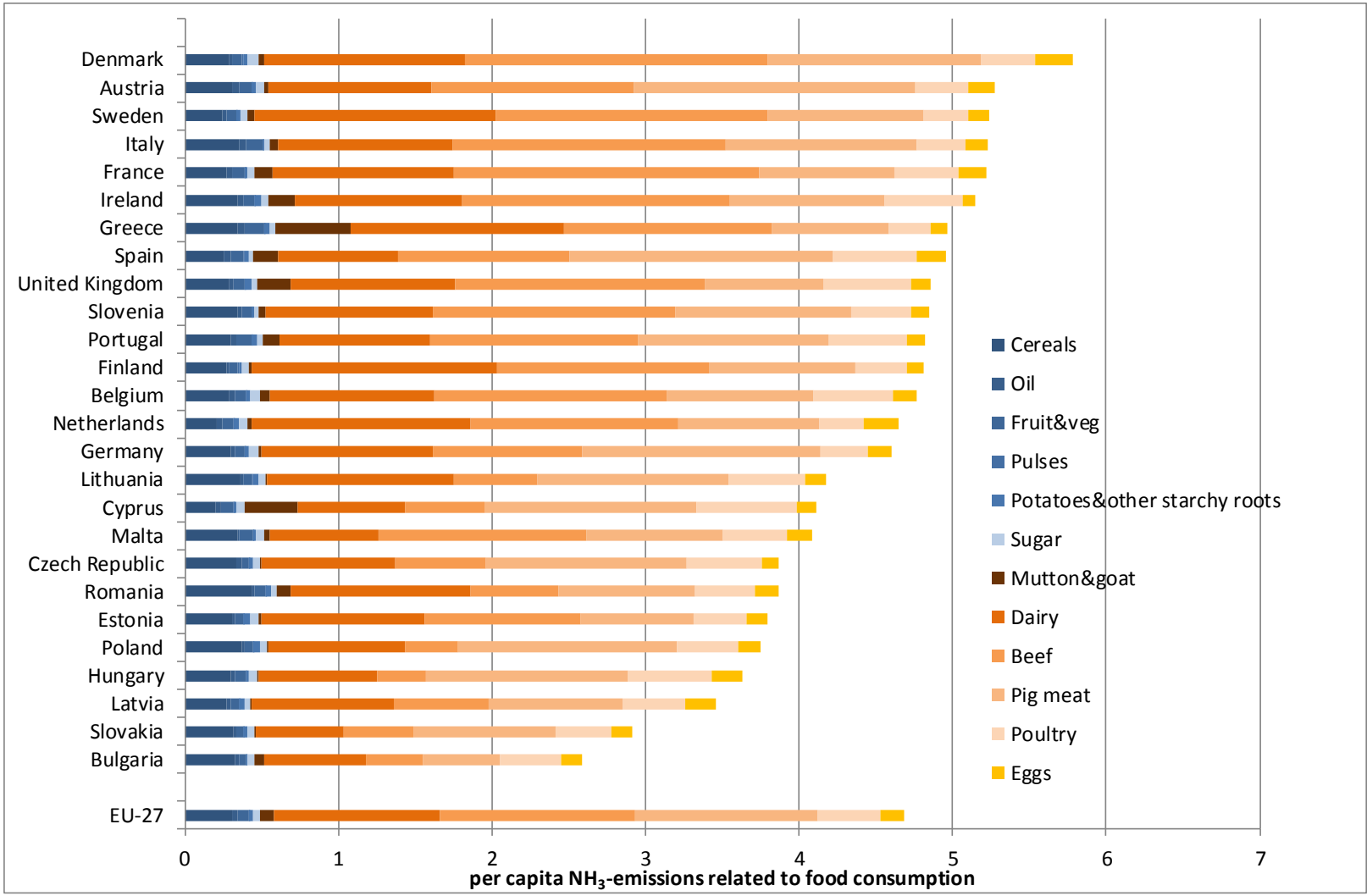
Large differences in N intensities

Emissions intensities of reactive nitrogen in EU27, 2004



Source: Leip et al., 2013

Large differences between countries in N footprint



2. What would happen if Europe would reduce its meat and dairy consumption?

Six alternative diets

Alternative diets
Reference
Reference – BF[1]
-25% beef and dairy
-25% pig and poultry
-25% all meat and dairy
-50% beef and dairy
-50% pig and poultry
-50% all meat and dairy

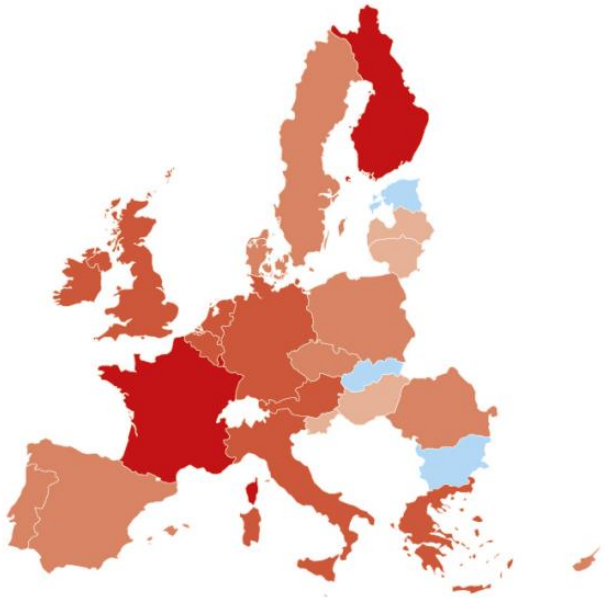
And two scenarios for land use: ‘High price’ (more cereal productiion) and greening (extensification and bioenergy)

Source: Westhoek et al., 2014

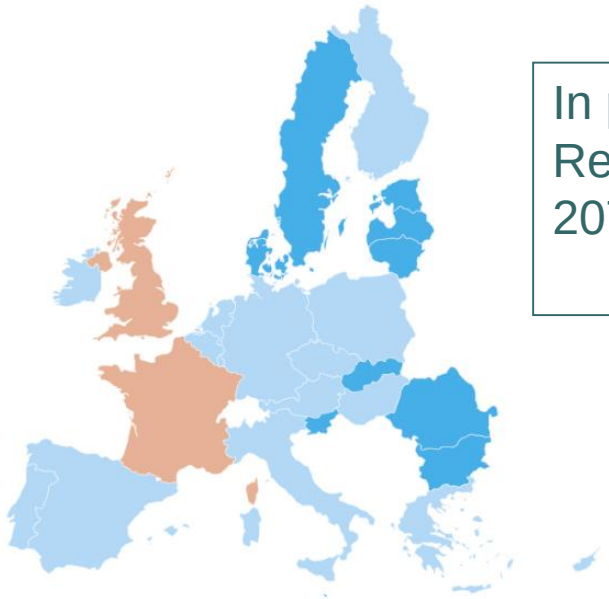
Intake of saturated fats reduced by 40%

Per capita intake of saturated fat in EU27

Reference, 2007



Alternative diet (minus 50% meat and dairy)



gram per capita per day

Less than 20 | 20 – 25 | 25 – 30 | 30 – 35 | 35 – 40 | More than 40

In parallel:
Red meat reduced from 207% to 107% of RMDI

The intake of proteins remains well above recommended level

Source: Westhoek et al., 2014

Major environmental effects of minus 50% meat and dairy consumption

- Around 40% lower nitrogen emissions from EU agriculture
- Soy import could be reduced by 75%

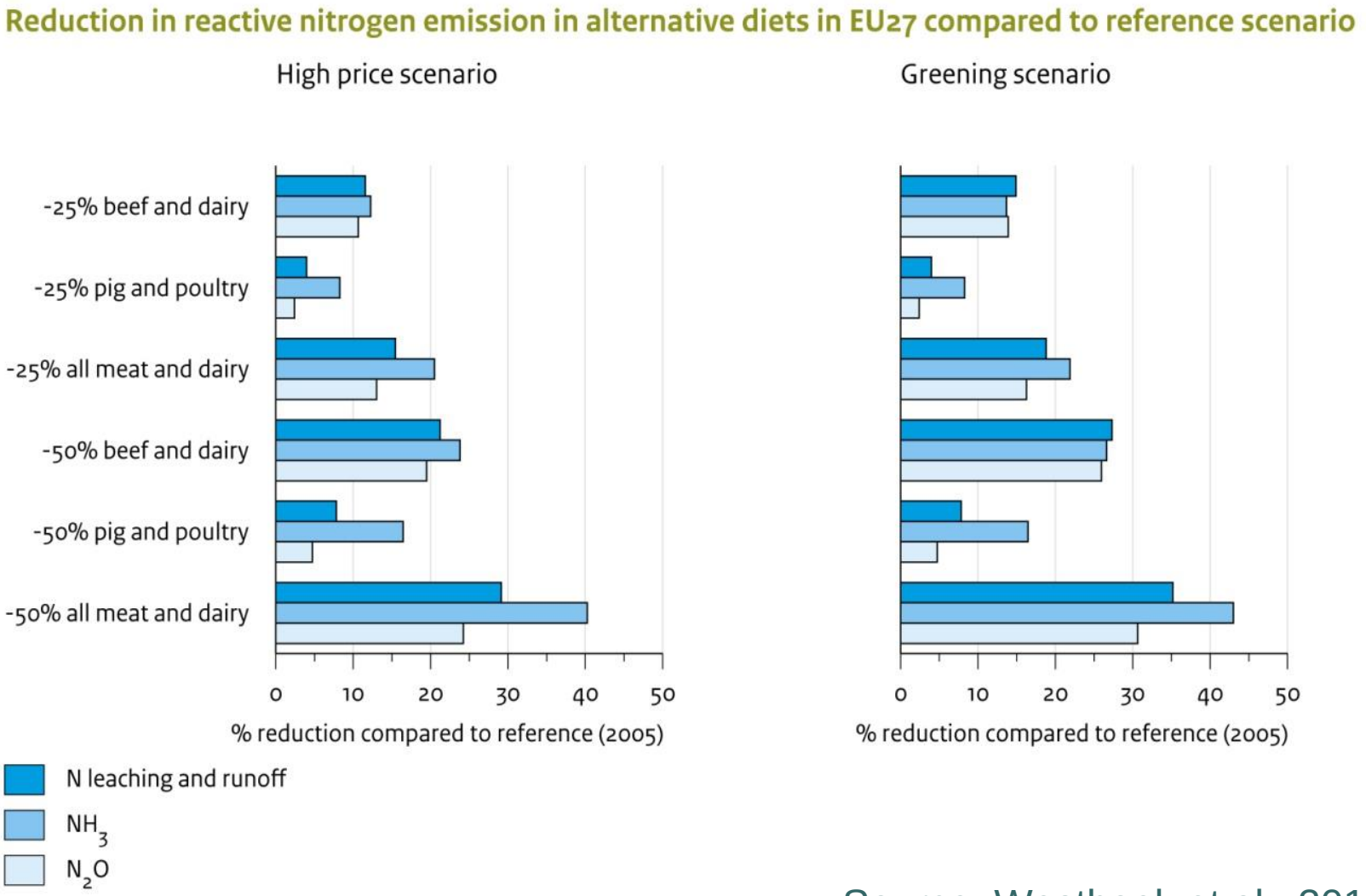
Greening scenario

- 43% less greenhouse gas from agriculture
- bio-energy production; extensification of land use;

High prices scenario

- 25% less greenhouse gas
- EU becomes a major exporter of cereals

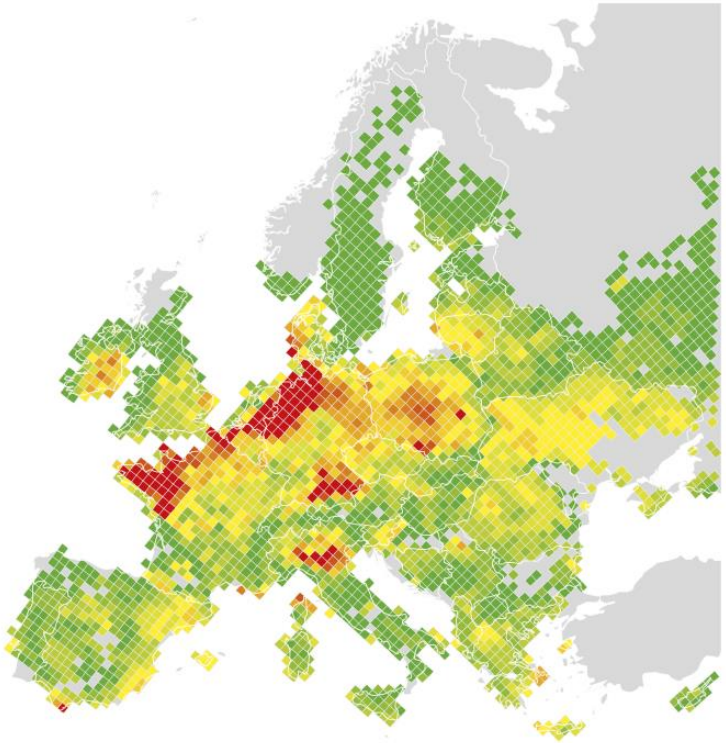
Reduction up to 40% in Nr losses



Source: Westhoek et al., 2014

Exceedances of critical loads for eutrophication

Reference, 2009



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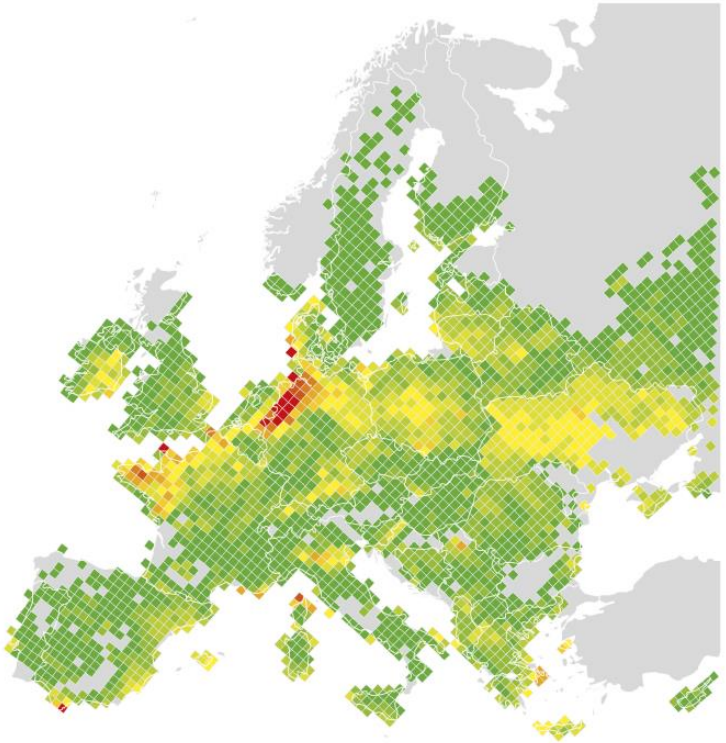


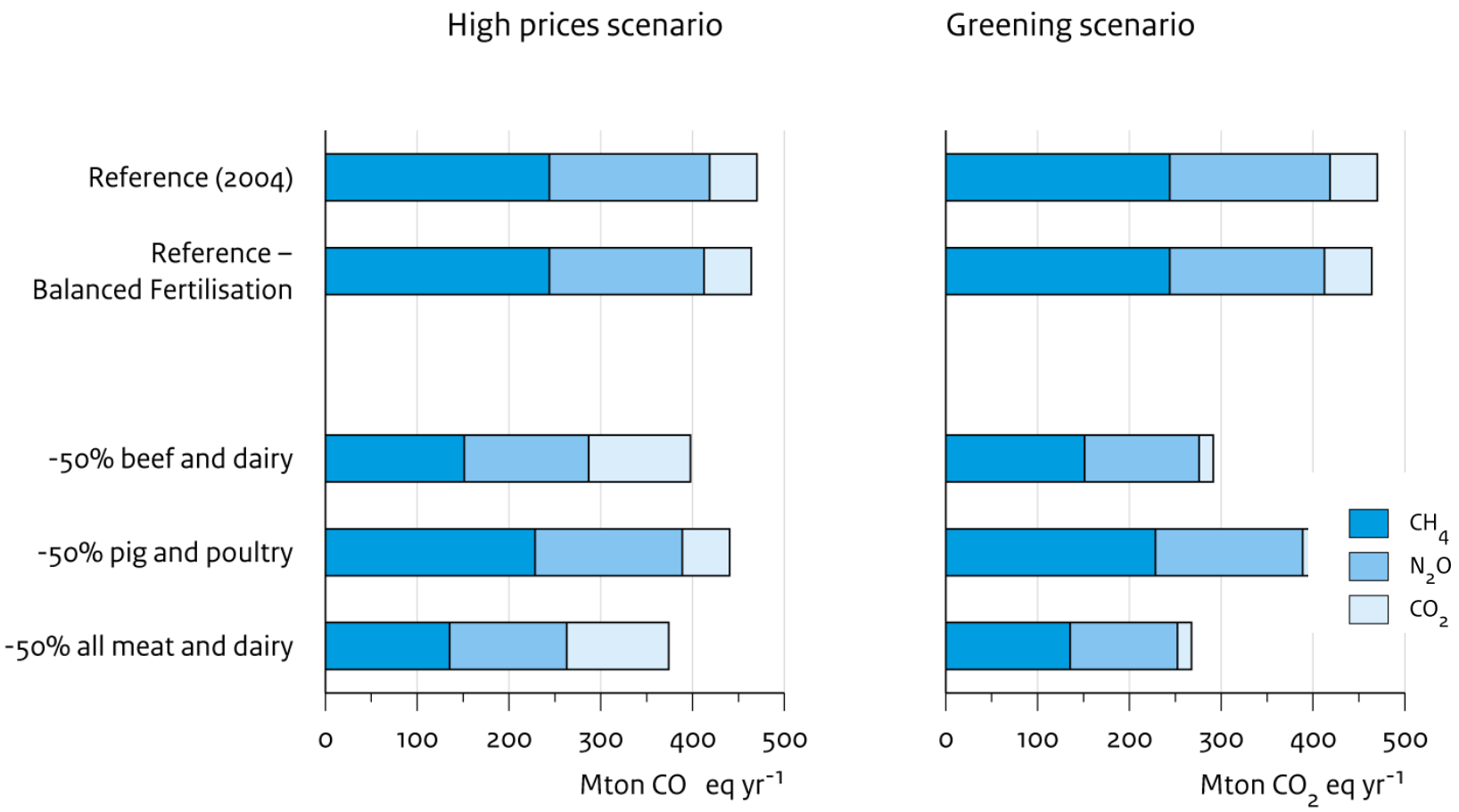
Equivalents nitrogen per hectare and year

Large effect on nitrogen depostion through reduced ammonia emissions

Source: Westhoek et al., 2014

Strong reduction in greenhouse gas emissions

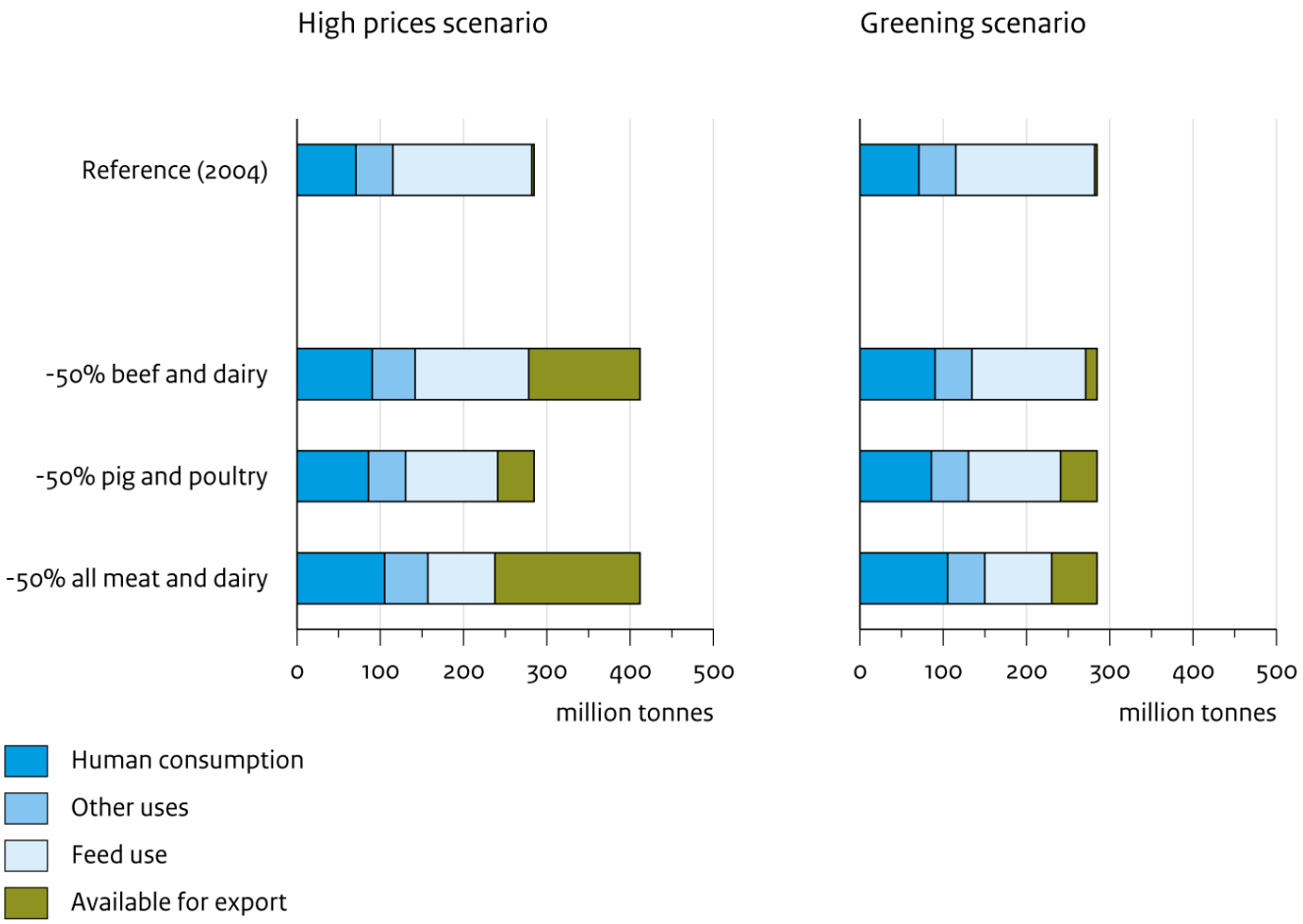
Greenhouse gas emissions from agriculture in alternative diets in EU27



Source: Westhoek et al., 2014

EU could become major exporter of cereals

Cereal use in alternative diets in EU27



Source: Westhoek et al., 2014

Future work (to be discussed)

- Diffusion of results
- Integration into other processes
- Synergies with other resources / green growth in agriculture
- Include private sector: fertilizer industry, farmers, food companies,
- New expert panel?

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