

Nutrient management – managing the farm nitrogen cycle

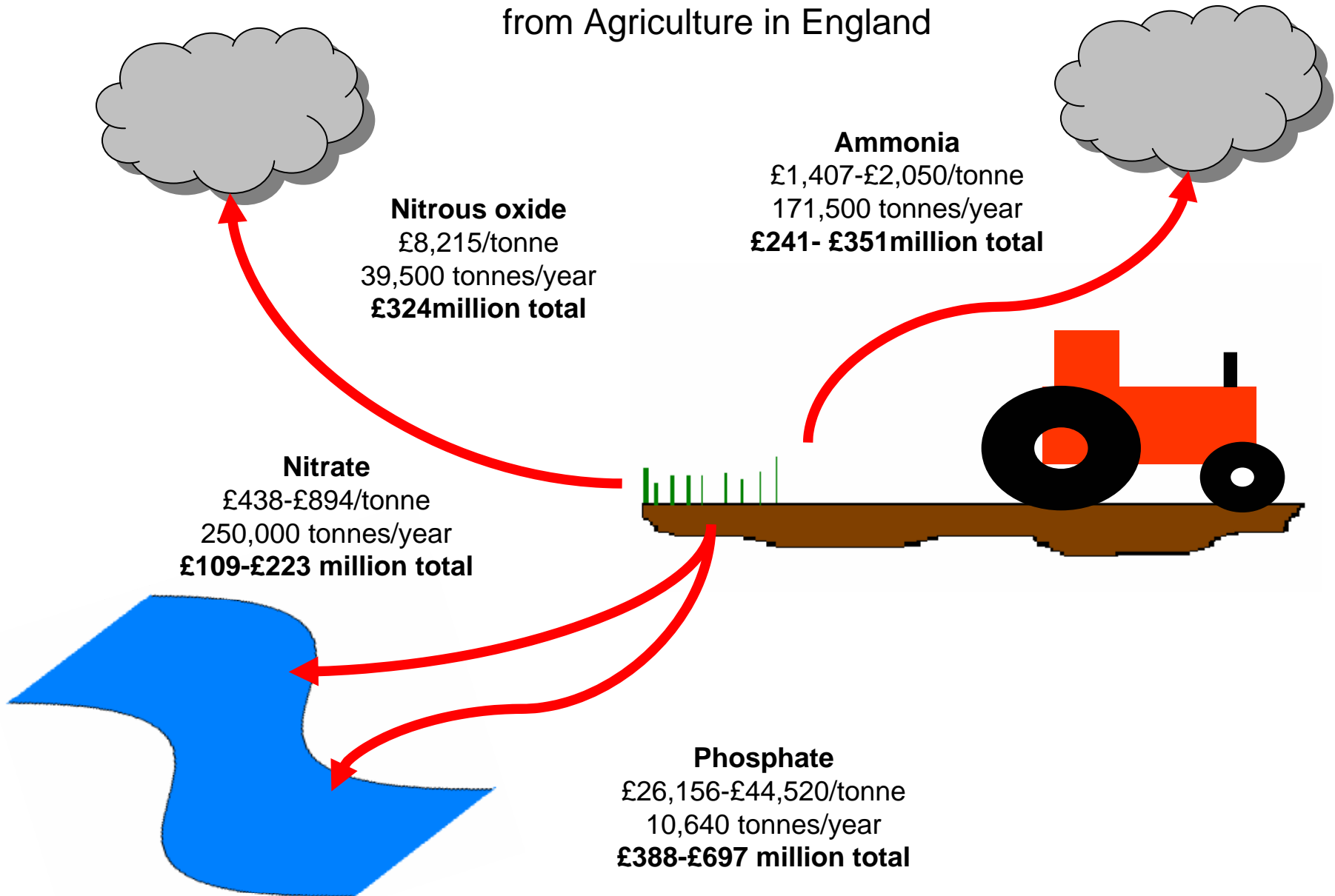
UNECE Task Force on Reactive Nitrogen
21-23 May 2008

Åsa Sjöström, Nutrient Management Unit, Defra

Tackling the nitrogen problem through improved nutrient management on farm

- The legislative framework for the management of agricultural N pushes us into a silo way of working; each pollutant or Directive is dealt with separately.
- Can lead to policies which do not complement, and sometimes hinder, each other.
- A systems view of the N (and P!) cycle, focusing on the efficient use of fertilisers and manures on-farm can help avoid pollution swapping and increase the impact and efficiency of policies that aim to deliver outcomes for air, water, soil, climate change and biodiversity.
- Nutrient management on-farm: all farming activity with feed, fertilisers and organic manures – aiming to maximise efficiency and minimise losses.
- Tentative approach: prioritising pollutants by economic impact to optimise benefits.

Economic Impact of Nutrient Pollution from Agriculture in England

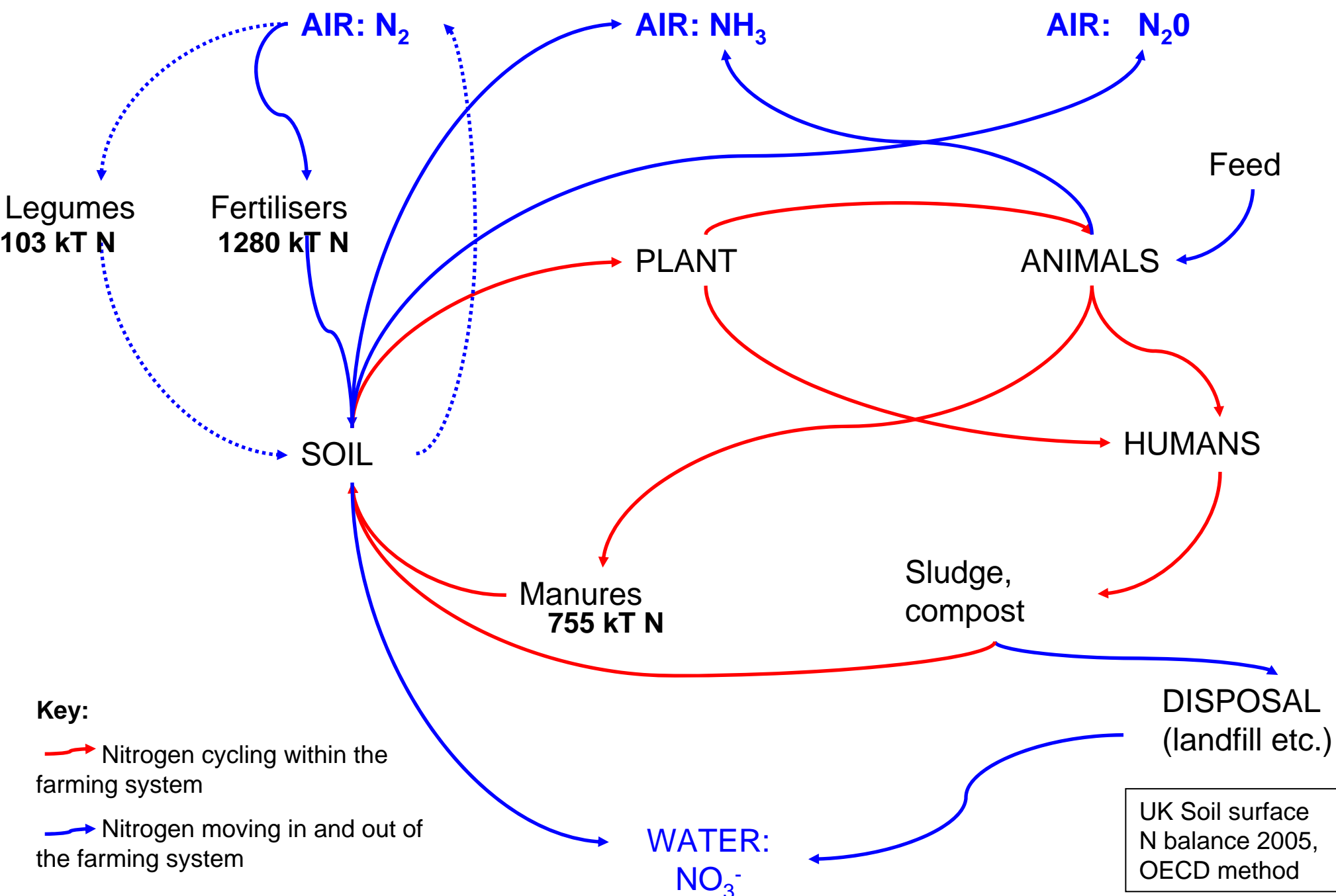


Nitrous oxide
£8,215/tonne
39,500 tonnes/year
£324million total

Ammonia
£1,407-£2,050/tonne
171,500 tonnes/year
£241- £351million total

Nitrate
£438-£894/tonne
250,000 tonnes/year
£109-£223 million total

Phosphate
£26,156-£44,520/tonne
10,640 tonnes/year
£388-£697 million total



Legumes
103 kT N

Fertilisers
1280 kT N

AIR: N₂

AIR: NH₃

AIR: N₂O

SOIL

PLANT

ANIMALS

Feed

Manures
755 kT N

Sludge,
compost

HUMANS

DISPOSAL
(landfill etc.)

WATER:
NO₃⁻

UK Soil surface
N balance 2005,
OECD method

Sources

Emissions map:

- Baggott et. al. 2007. UK greenhouse gas inventory, 1990-2005.
- ADAS 2007. Impact of the proposed NVZ Action Programme measures. Supporting paper D5 for the consultation on implementation of the Nitrates Directive in England
- Ammonia emissions from NARSES
- Nitrous oxide emissions calculated using IPCC methodology.
- Nitrate emissions from NEAP-N
- Phosphorus losses from Defra project WT0701CSF

Economic impact map:

- Defra project WT0706
- <http://defraweb/environment/climatechange/research/carboncost/step1.htm>
- Defra project NM01001