All-Party Parliamentary Group on Science and Technology in Agriculture

LIVESTOCK SCIENCE RESEARCH

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LIVESTOCK NUMBERS, OUTPUT AND LAND USE

UK OUTPUT AT MARKET PRICES

2008	**£m**
Cereals	3206
Industrial crops	1151
Forage crops	111
Vegetable and horticultural production	1897
Livestock	10537

UK LIVESTOCK NUMBERS

	2008 (‘000)	**% change 1998-2008**
Cattle and calves	10107	-12.3
Sheep and lambs	33131	-24.7
Pigs	4714	-39.8
Poultry	166200	-2.2

LIVESTOCK PRODUCT SELF-SUFFICIENCY

	mid-1990's	mid-2000's
	%	%
Pig meat	73	47
Poultry meat	94	88
Beef	109	79
Sheep meat	103	85
Eggs	95	86

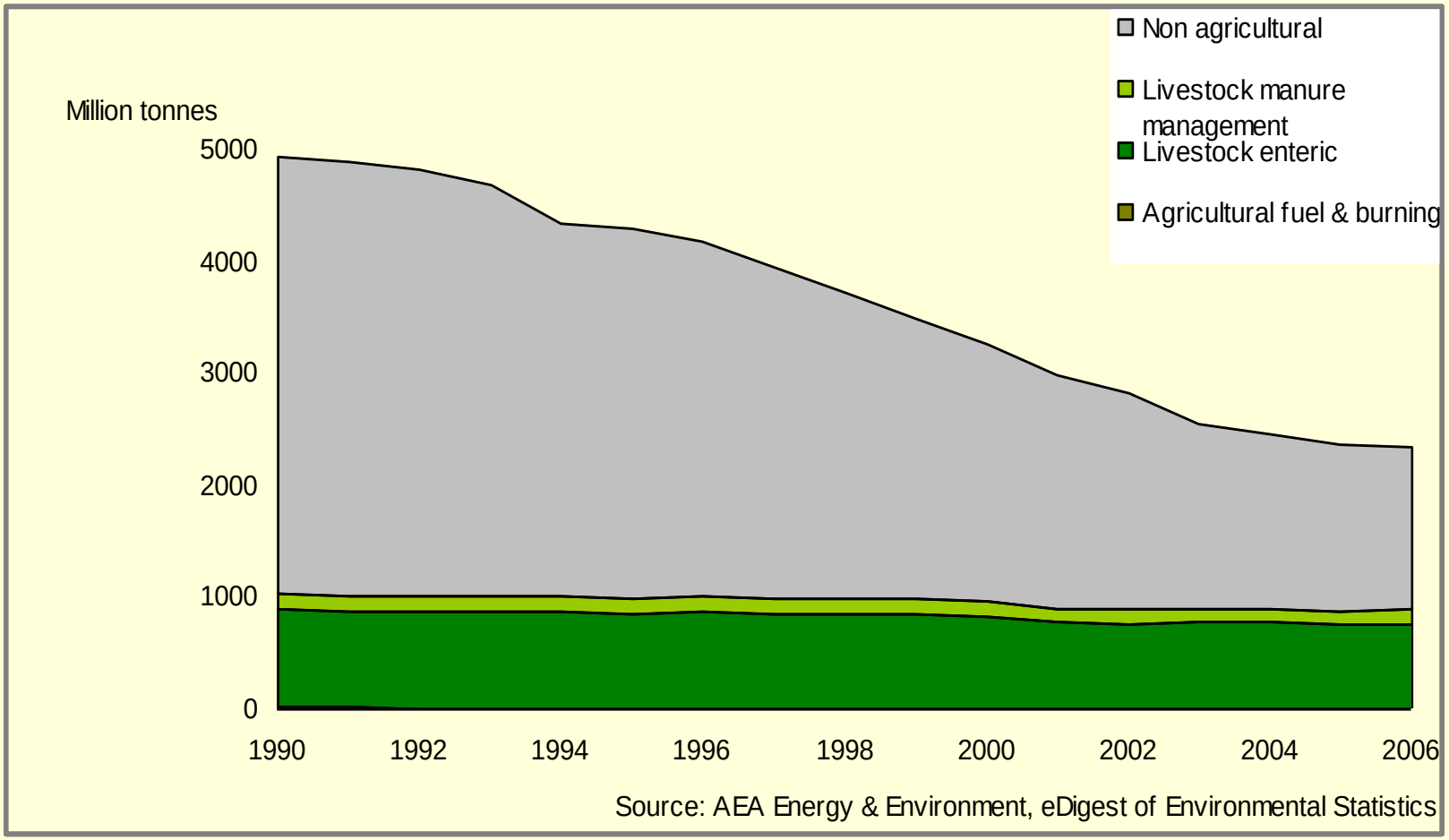
Milk & dairy products – UK became net importer in 2004, and now equivalent to 8% of domestic production

UK AGRICULTURAL LAND

	‘000ha	%
Total tillage	4603)	
Set aside	440)	27
Other land & woodland	954)	5
Grass under 5 years	1176)	
Grass over 5 years	5965)	
Sole right rough grazing	4313)	
Common rough grazing	1238)	68
Total	18690)	100

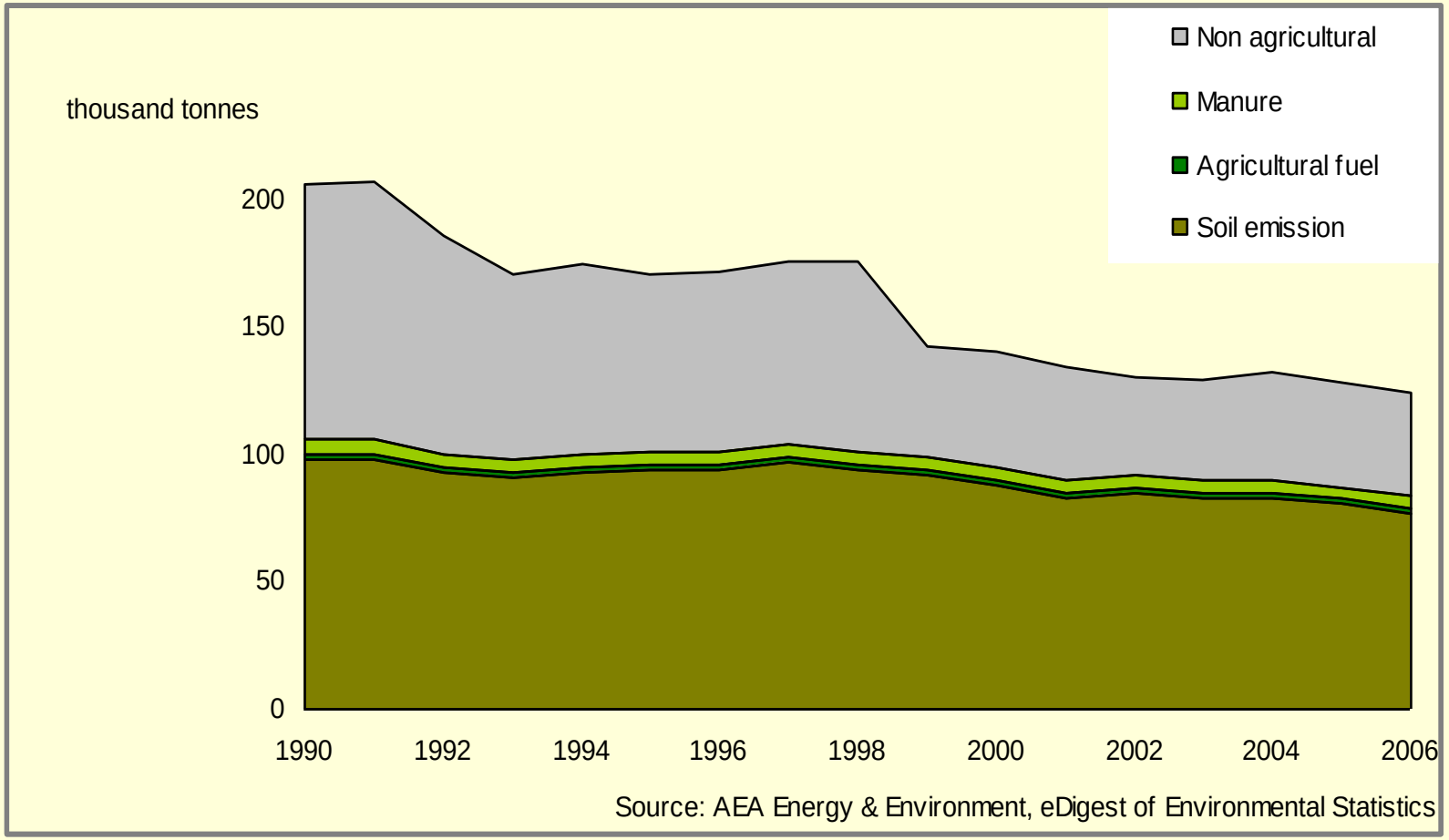
LIVESTOCK AND GHG PRODUCTION

UK METHANE EMISSIONS



UK methane emissions fell by 53% between 1990 and 2006

UK NITROUS OXIDE EMISSIONS



UK nitrous oxide emissions fell by 40% between 1990 and 2006

AGRICULTURE AND GHG EMISSIONS

- Agriculture accounts for 38% of UK CH_4 and 67% of N_2O emissions
- UK GHG emissions comprise 85% CO_2, 7.5% CH_4 and 6% N_2O (weighted for global warming potential)
- So UK agriculture contributes about 3% from CH_4 and 4% from N_2O of UK emissions – total 7%.
- The food chain post-farmgate contributes an additional 11%

LIVESTOCK AND GHG EMISSIONS (1)

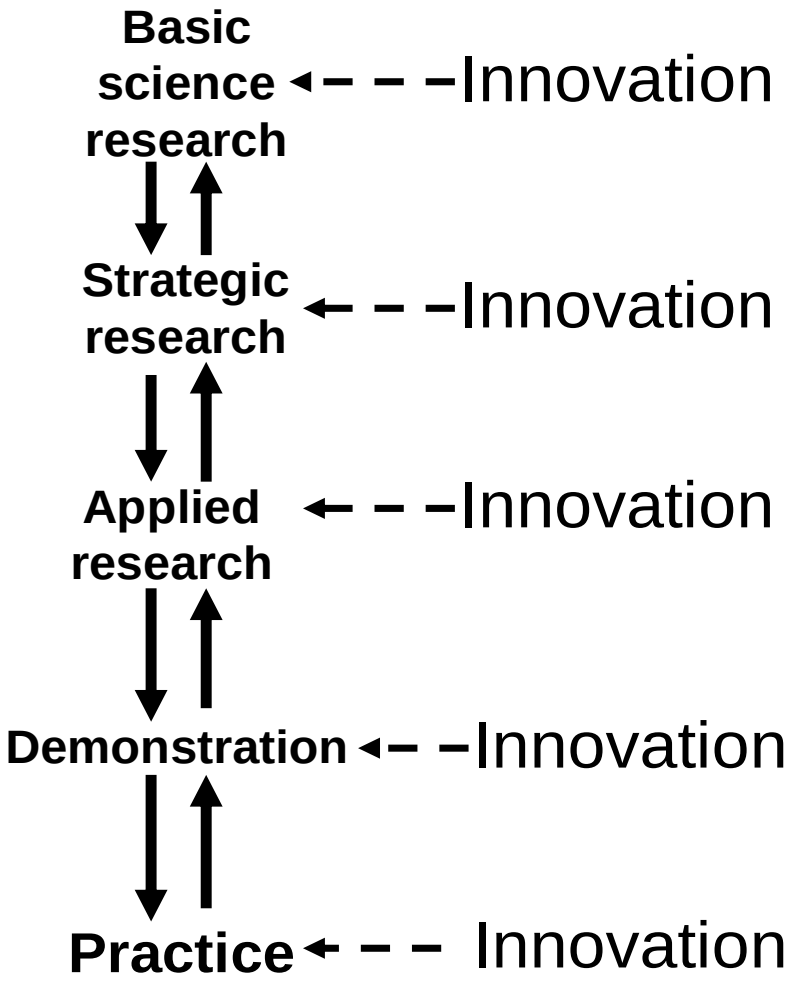
- Livestock contribute most of the CH_4 from agriculture and some of the N_2O
- Eliminating all UK sheep and cattle will only reduce UK GHG emissions by 3% from CH_4 – reductions from N_2O will depend on land use that replaces it
- Persuading people to eat less meat and dairy products will be difficult, but even if successful it will not necessarily reduce livestock numbers as farmers can still supply the growing global market for livestock products
- Nevertheless UK livestock production must make its contribution to GHG reductions

LIVESTOCK AND GHG EMISSIONS (2)

- Between 1990 and 2006 methane emissions from UK agriculture fell by 13% and nitrous oxide emissions by 22% (0.8 and 1.4% per year respectively)
- A continuing fall at this rate will meet the UK target for agriculture of an 11% decline by 2020
- This will require continuous improvements in efficiency of production through better genetics, nutrition, disease control and management
- There are major concerns over whether the UK has the R&D capacity to deliver the innovations and technology needed

LIVESTOCK AND R&D

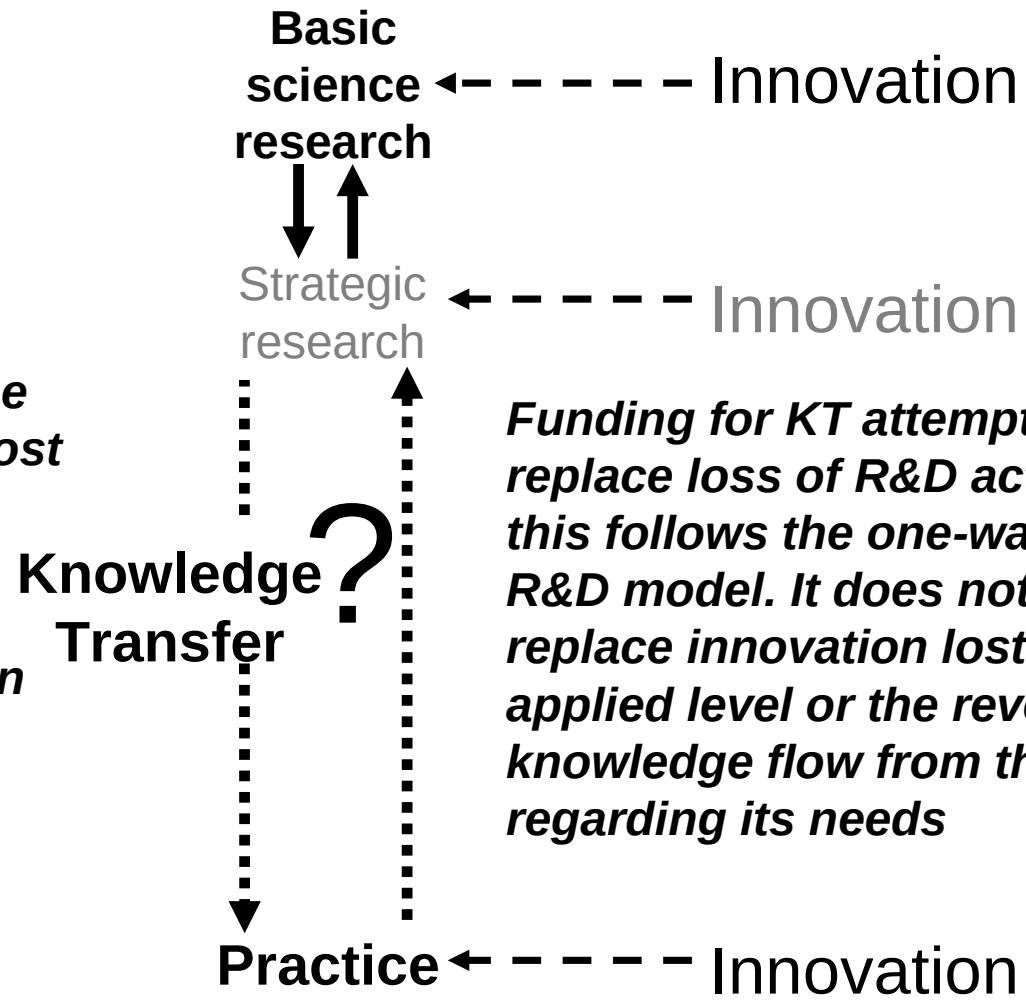
THE AGRICULTURAL R&D CHAIN



Knowledge flows in both directions (not necessarily in this linear fashion) and influences actions at other levels (providing the appropriate infrastructure is in place)

Innovation (introduction of something new) can occur at all levels of the R&D chain, not just at the basic science research level

PRESENT STATE OF THE AGRICULTURAL R&D CHAIN



The loss of some strategic and most applied agricultural research and demonstration in the UK has created a knowledge and innovation vacuum.

Funding for KT attempts to replace loss of R&D activity, but this follows the one-way linear R&D model. It does nothing to replace innovation lost at the applied level or the reverse knowledge flow from the industry regarding its needs

RESEARCH SKILLS

Perceived supply gaps in the research skills base:
(Livestock Production)

- Ruminant and veterinary microbiologists
- Pathologists
- Parasitologists
- Animal genetics
- Animal physiology
- Animal nutrition

Government Office of Science (2010) *UK Cross-Government Food Research and Innovation Strategy*

CURRENT SPENDING ON AGRICULTURAL R&D

Organisation	R&D spend (£)
Government	**£264 million** (Potential total for 2010: £280 million inc Tech Strat Board)
Defra Scottish Government Northern Ireland BBSRC Funding Council support for universities *Technology Strategy Board (new for 2010)*	£65 million £30 million £7 million Ca £150 million £12 million *£16 million (£80 million over five years)*
Trade	**£56 million+**
UK Agricultural supply industry UK plant breeders	£45 million+ £10-£12 million
Farmers	**£29 million**
AHDB levy payer funding Farmer membership organisations Agricultural charities	£22.6 million Ca £3 million Ca £3.5 million

Predicted total UK agricultural R&D science spend in 2010 = £365 million
(based on previous spend and new Technology Strategy Board funds)

Oxford Farming Conference Research in association with Volac and BBSRC (2010)