Technology Strategy Board

Driving Innovation

IAgrE

GOVERNMENT PRIORITIES & RESEARCH

David Alvis

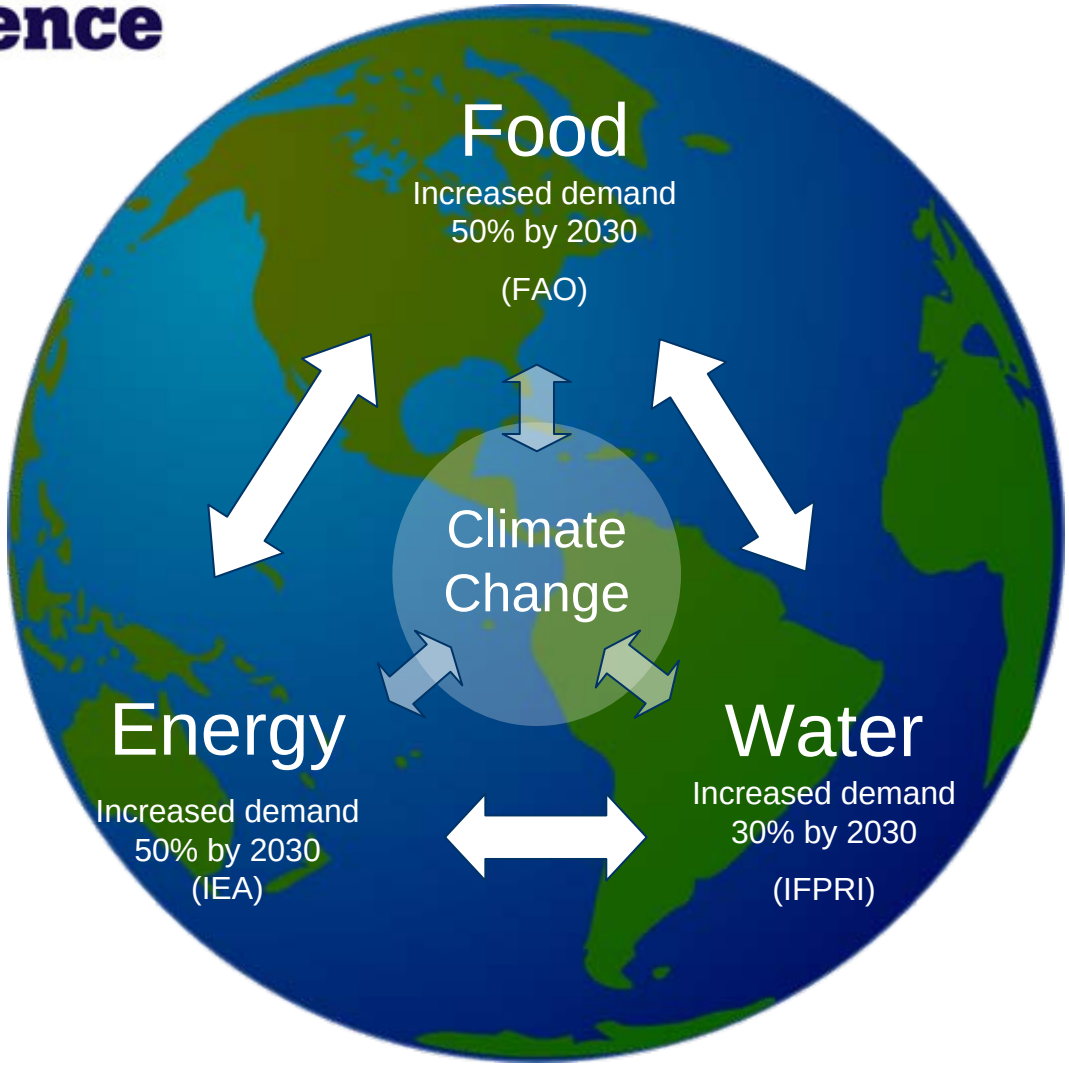
LANDWARDS 2012- WEATHERING THE PERFECT STORM

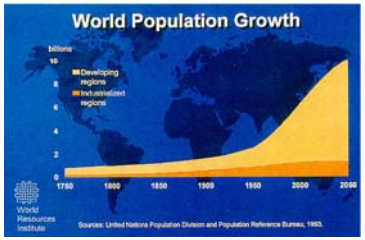
STARETON HALL, STONELEIGH PARK

THURSDAY MAY 10TH 2012

Government Office for Science













The ‘perfect storm

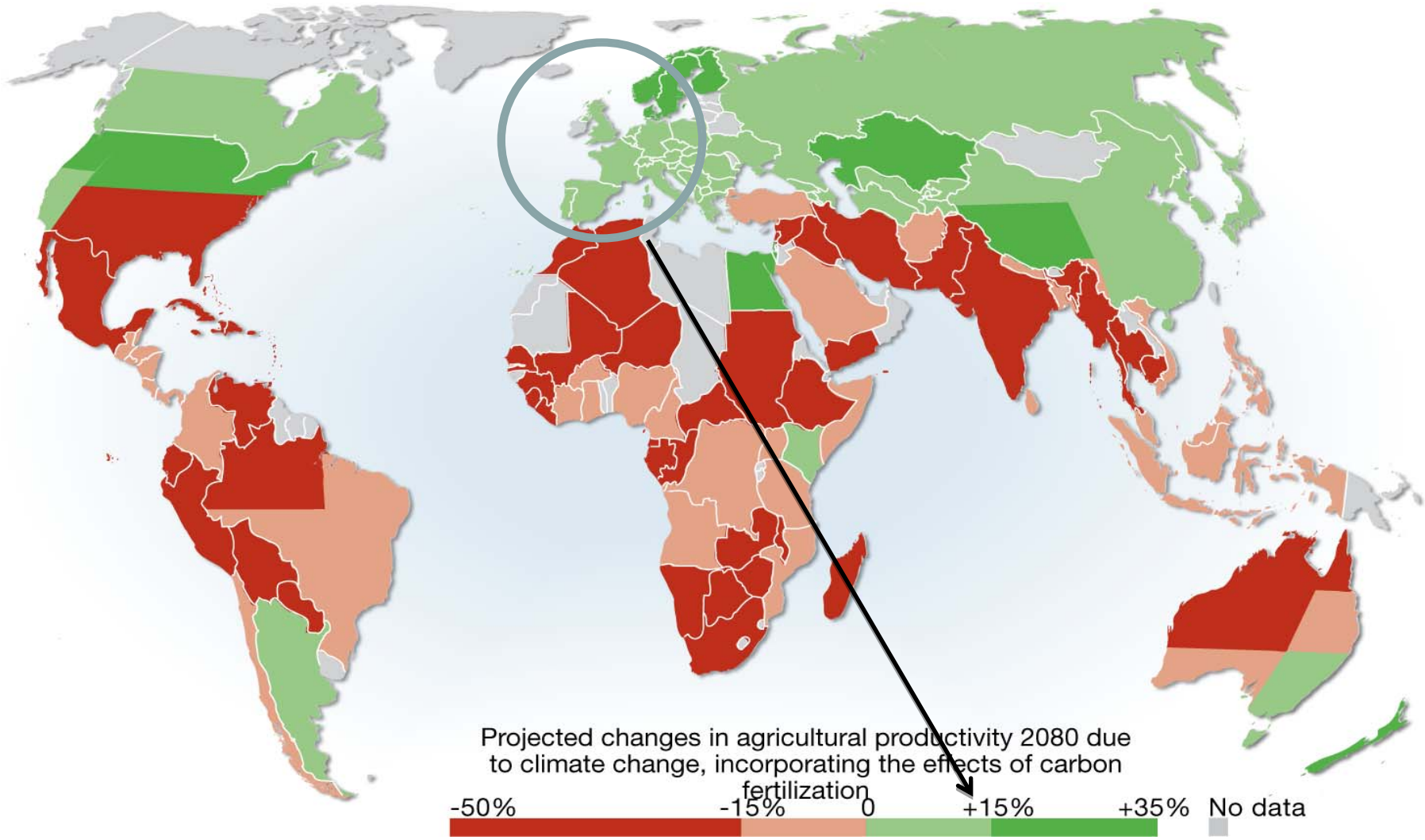
of developing Socio-Economic & Environmental factors that will increasingly challenge the the global food system’

But it’s not all bad news…



1850 **1900** **1950** **1970** **1990** **2010**

The UK is actually well placed to take advantage of the the upside risks of climate change



Source: Cline 2007,.
Global Warming and Agriculture: Impact Estimates by Country. Washington D.C., USA: Peterson Institute

How much does UK Government invest in Agri-Food



£400m+ per annum

Government Office for Science



BBSRC
bioscience for the future

accounts for over 40% of this

Babraham Institute

ROSLIN

John Innes Centre

TGAC
The Genome Analysis Centre™
BBSRC

IBERS

Institute for Animal Health

ROTHAMSTED RESEARCH

ifr Institute of Food Research

Government Office for Science



January 2010

UK CROSS-GOVERNMENT FOOD RESEARCH AND INNOVATION STRATEGY



An overarching government framework to facilitate a more co-ordinated and collaborative approach to food research and innovation across the UK, linking with the private sector, consumer and other organisations.

defra DFID BIS Department for Business Innovation & Skills The Scottish Government BBSRC MRC Medical Research Council DH Department of Health Research Councils UK E·S·R·C Economic & Social Research Council

http://www.bis.gov.uk/assets/goscience/docs/c/cross-government-food-research-strategy.pdf

Government Office for Science

UK Cross Government Food Research & Innovation Strategy

..it would be wrong to see food policy only as a series of challenges. The agri-food sector in the UK and globally is vast, presenting huge opportunities for those businesses able to thrive and innovate...

..This strategy addresses the contribution of research and innovation to meeting these and the many other challenges on food. It links closely to the shared vision set out in Food 2030 of a sustainable and secure food system, and to achieving the UK's planned aid in the developing world.

For the first time, it represents a joint research strategy for food research and innovation that extends across the UK public sector

Foreword by Professor John Beddington,
Government Chief Scientific Adviser

Government Office for Science

UK Cross Government Food Research & Innovation Strategy

- Key initiatives highlighted in this Strategy include:

- *…a new multi-partner food security research programme, co-ordinated by BBSRC and delivered jointly with relevant Research Councils and government departments, and including close engagement with industry and the third sector*

- *a major Foresight study looking over the long term at the ability of global food systems to feed the predicted future world population of 9 billion healthily and sustainably, set to launch its findings in October 2010*

- *a new BBSRC Advanced Training Partnership scheme to provide a range of specialist high level training (masters, professional doctorate and continuous professional development) to meet industry needs in partnership with the higher and further education sectors*

- *a new **Technology Strategy Board led Sustainable Agriculture and Food Innovation Platform**, co-funded by Defra and BBSRC with up to £90M over 5 years, to fund innovative technological research and development in areas such as crop productivity, sustainable livestock production, waste reduction and management, and greenhouse gas reduction*

Global Food Security

Sustainable, healthy food for all



Key aims include strengthening research coordination and partnerships, building a more integrated community of researchers, funders and users that extends across disciplines, organisations and sectors, to provide multi-disciplinary research to ensure a sustainable and secure food system

BBSRC bioscience for the future

BIS Department for Business Innovation & Skills

defra

DH Department of Health

DFID Department for International Development

The Scottish Government

Llywodraeth Cymru Welsh Government

E·S·R·C Economic & Social Research Council

EPSRC Pioneering research and skills

MRC Medical Research Council

Natural Environment Research Council

Food Standards Agency

Technology Strategy Board Driving Innovation

http://www.foodsecurity.ac.uk/

Government Office for Science

Foresight



- Sustainably balancing future supply & demand
  - ***Improving Productivity using existing Knowledge***
  - ***Raising the limits of Sustainable Production through the application of New Technology***
  - ***Reducing Waste***
- Addressing Future Volatility in the food System
- Ending Hunger
- Addressing the challenges of a Low-emissions World
  - ***Reducing GHG emissions***
  - ***Increasing production efficiency***
- Maintaining Biodiversity & Ecosystem services whilst feeding the world

http://webarchive.nationalarchives.gov.uk/+/http://www.bis.gov.uk/foresight/our-work/projects/current-projects/global-food-and-farming-futures/reports-and-publications

BBSRC
bioscience for the future

BBSRC Advanced Training Partnerships

£12million invested in **4 partnerships** - sustainable formal collaborations between users and providers of high–level skills in the agri–food sector. Bringing together companies with research and training organisations to ensure that the UK continues to make significant contributions towards national and global food security, through the supply of individuals with the right skills.

IBERS
Institute of Biological, Environmental and Rural Scien

NIAB

PRIFYSGOL BANGOR UNIVERSITY

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

ROTHAMSTED RESEARCH

Harper Adams
UNIVERSITY COLLEGE

Cranfield UNIVERSITY

University of Reading

UNIVERSITY OF BIRMINGHAM

Leatherhead Food Research

RVC Royal Veterinary College University of London

THE UNIVERSITY OF EDINBURGH

Newcastle University

UNIVERSITY OF CAMBRIDGE

http://www.bbsrc.ac.uk/atp

Technology Strategy Board

Driving Innovation

BBSRC bioscience for the future

defra Department for Environment Food and Rural Affairs



Sustainable Agriculture and Food

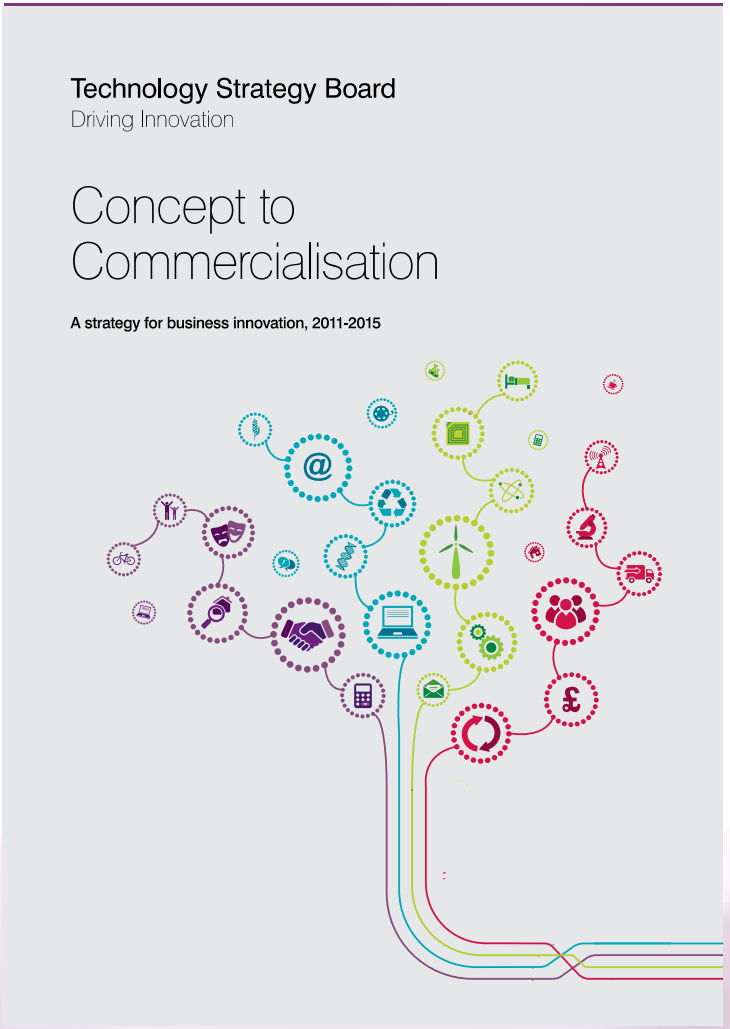
Innovation Platform

Who are The Technology Strategy Board?

The UK's national 'Innovation agency'

Our mission:

To drive economic growth by stimulating and supporting business-led innovation.



http://www.innovateuk.org/_assets/0511/technology_strategy_board_concept_to_commercialisation.pdf

Technology Strategy Board

Driving Innovation

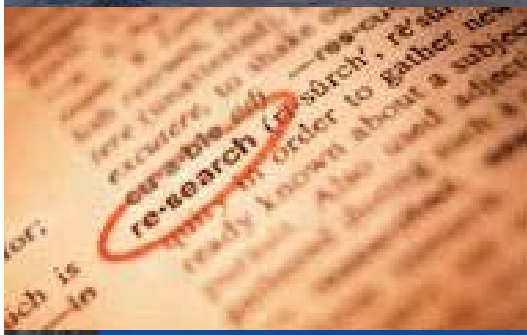
How do we achieve this?

By working across government, business and the academic/research community..

..removing the barriers to innovation, bringing organisations together to focus on opportunities..

..and **investing** in the development of new technology-based products and services for future markets.









Where does TSB investment fit ?

EPSRC Pioneering research and skills

RESEARCH COUNCILS UK

BBSRC bioscience for the future



Science

Technology



Technology Strategy Board
Driving Innovation

Bridging the ‘Valley of Death’



Technology Strategy Board

Driving Innovation



Sustainable Agriculture and Food

Innovation Platform

Sustainable Agriculture & Food Innovation Platform

A 5 year, **£90million** programme to support UK businesses in the development of innovative technologies, services and supply chain solutions that will sustainably increase the productivity of the UK Agri-food sector, whilst reducing it's environmental impact.

BBSRC bioscience for the future

defra Department for Environment Food and Rural Affairs

Technology Strategy Board

Driving Innovation

Sustainable Agriculture and Food

Innovation Platform

Strategic Objectives

- Increased Crop Productivity
- Sustainable Livestock production
- Reduced Food chain waste
- Reduced Environmental Impact of Food Production









Technology Strategy Board

Driving Innovation

Sustainable Agriculture and Food

Innovation Platform

BBSRC bioscience for the future

defra Department for Environment Food and Rural Affairs









1st Collaborative R&D Call (2010)

New Approaches to Crop Protection

32 projects awarded **£13.5million**

Technology Strategy Board

Driving Innovation

Sustainable Agriculture and Food

Innovation Platform

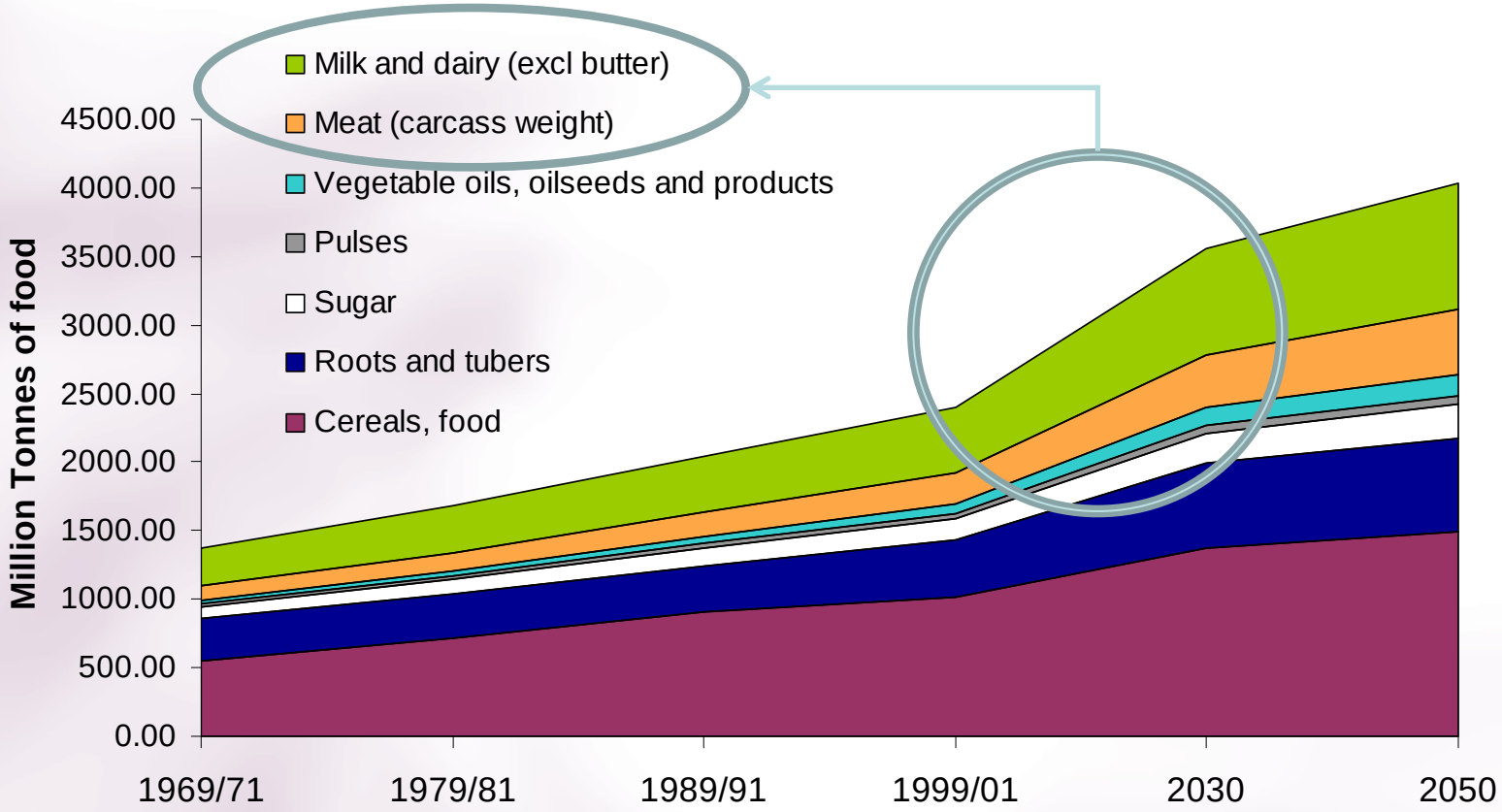


Sustainable Protein Production

COMPETITION FOR COLLABORATIVE R&D FUNDING

APRIL 2011

Global Demand for Food



Demand is set to rise by **75%** by **2050**

(*Source*: *UN FAO 2008)*

Technology Strategy Board

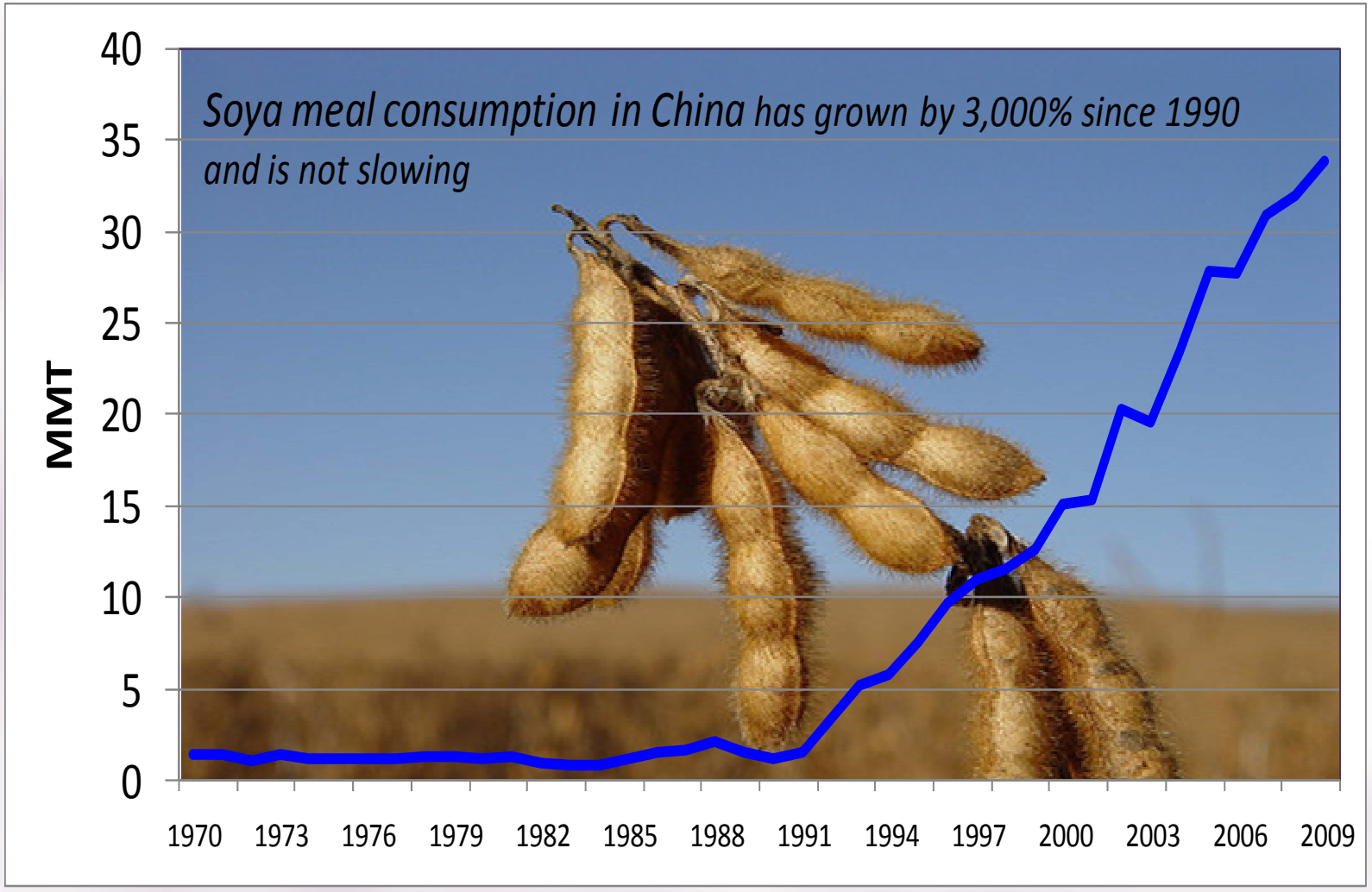
Driving Innovation



..which in turn is driving a massive increase in demand for vegetable protein



The rise and rise of the “Chinese Pig”

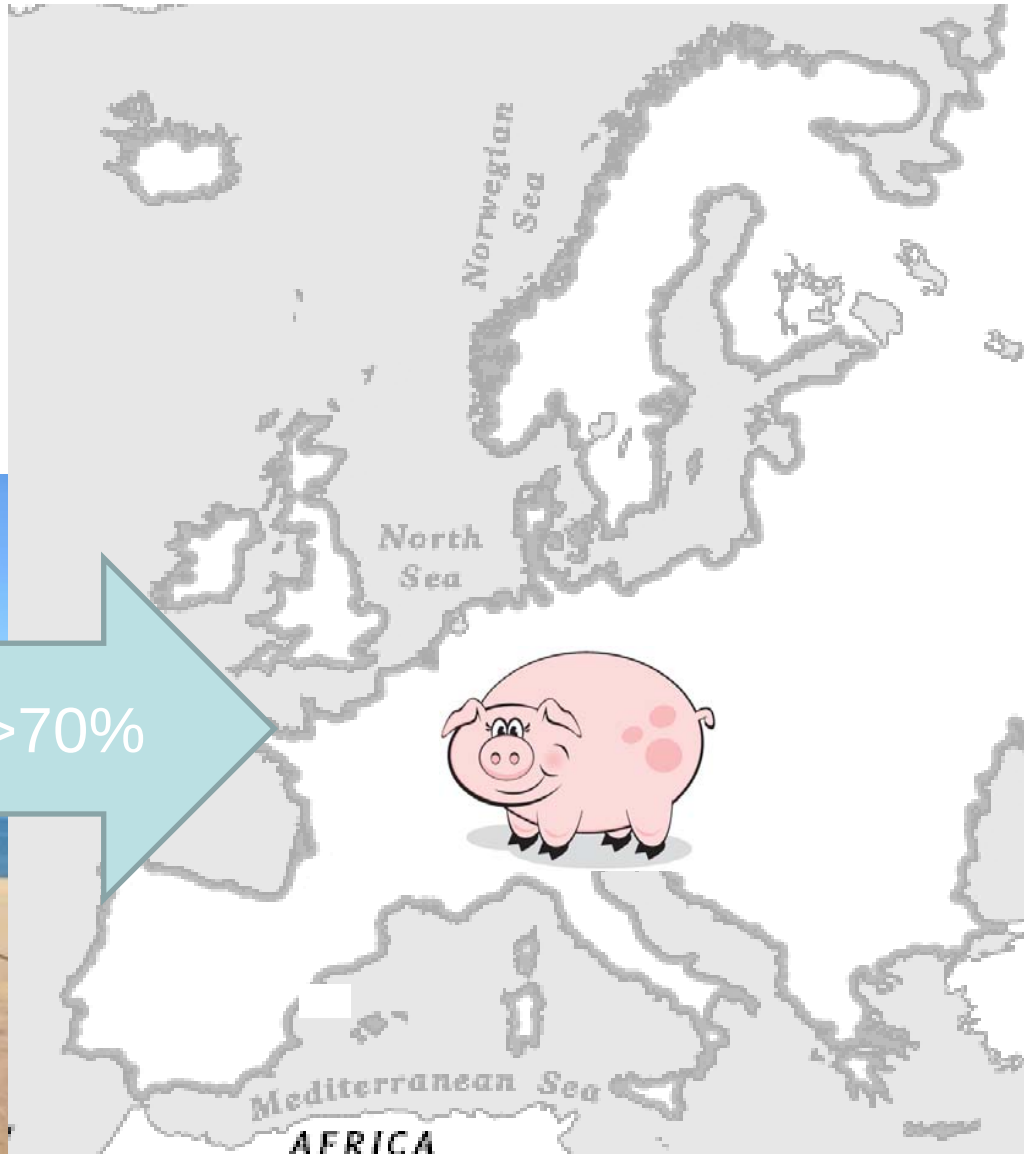


Europe is currently

less than **30%** self sufficient in protein feeds

(Fefac 2009)





Technology Strategy Board

Driving Innovation

Sustainable Agriculture and Food Innovation Platform



Sustainable Protein Production

COMPETITION FOR COLLABORATIVE R&D FUNDING
APRIL 2011

The competition focused on **two** core themes

1. Increasing the domestic supply of sustainably produced vegetable protein for farmed animals & fish

2. Improving conversion efficiency in animal production systems and reducing waste in the food chain







Technology Strategy Board

Driving Innovation

Sustainable Agriculture and Food

Innovation Platform



Sustainable Protein Production

COMPETITION FOR COLLABORATIVE R&D FUNDING
APRIL 2011

Outcomes

Technology Strategy Board

Driving Innovation

Sustainable Agriculture and Food

Innovation Platform



Sustainable Protein Production

COMPETITION FOR COLLABORATIVE R&D FUNDING
APRIL 2011

Projects funded

Category	No of Projects	Project Value	Grant awarded	% of Total	Average Grant size
Plant	**12**	**£12.96m**	**£5.95m**	**37%**	£0.496m
Animal	**14**	**£13.28m**	**£7.23m**	**46%**	£0.516m
Aquaculture	**3**	**£5.76m**	**£2.70m**	**17%**	£0.901m
Total	**29**	**£32m**	**£15.88m**		**£0.55m**

Technology Strategy Board

Driving Innovation

Sustainable Agriculture and Food Innovation Platform



Sustainable Protein Production

COMPETITION FOR COLLABORATIVE R&D FUNDING
APRIL 2011

Collaboration Partners

Category	No. of Organisations	No. of Projects	% of projects
Large Companies	43	24	83%
SMEs	41	19	66%
Universities	14	17	59%
RTOs	12	10	34%
Total	**110**	**29**	

Technology Strategy Board

Driving Innovation



High Value Protein concentrates from Wheat-bioethanol

through recovery of yeast protein, and reducing fibre content of distillers dried grains







ensus
The right biofuel, the right way

ab agri
Associated British Agriculture

vireol
good biofuels

NIAB TAG

ifr Institute of Food Research

Technology Strategy Board

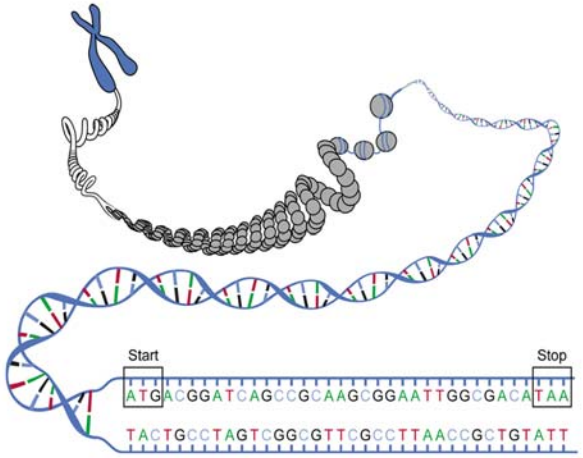
Driving Innovation



Protein Content vs Yield in Legumes:

releasing the constraint







Wherry & Sons Ltd

idna GENETICS

John Innes Centre

MARKS & SPENCER

fera
The Food and Environment Research Agency

PGRO

THOMPSONS
EST. 1926 OF YORK

Technology Strategy Board

Driving Innovation



Increasing sustainable protein production from Oilseed Rape

and optimising the use of high protein rape-meal for animal feed






YARA

Precision Decisions Ltd
Driving farm efficiency

agrovista
growing through innovation

BOCM PAULS

Technology Strategy Board

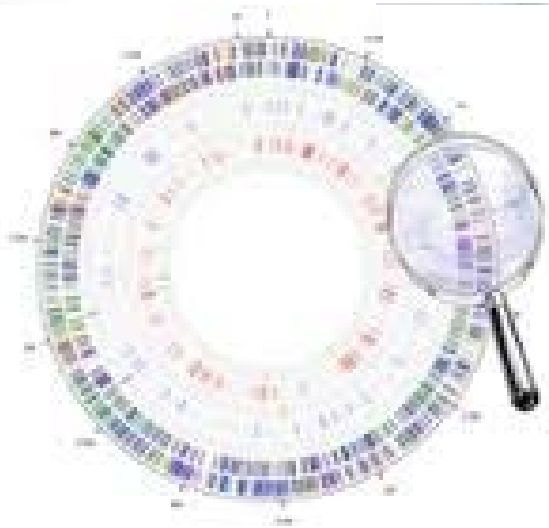
Driving Innovation



Breeding of improved forage varieties

to increase protein supply and protein utilisation by ruminants







IBERS

NIAB TAG

Technology Strategy Board

Driving Innovation



Developing a UK Forage Soya

for on-farm feeding to Dairy Cows







VELCOURT
Europe's Leading Farming Company

Soya UK

BIOTAL part of the LALLEMAND group

NIAB TAG

Technology Strategy Board

Driving Innovation



Genomics-enabled selection for improved feed efficiency in Pigs







NEWSHAM · HEALTHBRED · COTSWOLD JSR GENETICS

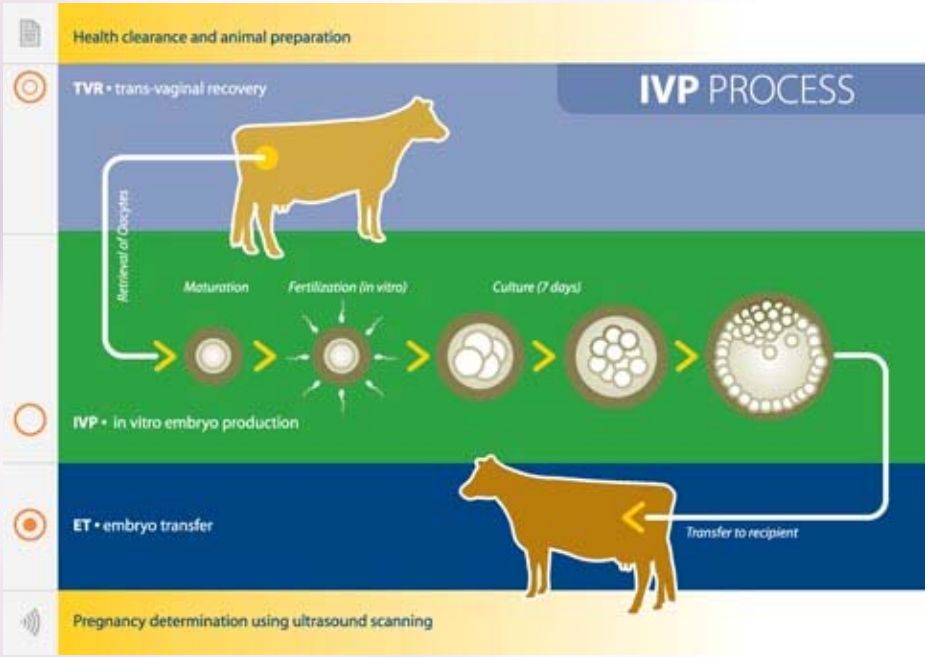
ROSLIN

THE UNIVERSITY OF EDINBURGH



Applying Advanced Breeding Technologies

to Amplify and Distribute elite Bovine Genetics to Increase Production Efficiency





COGENT

PARAGON VETERINARY Group
xL vets

The University of Nottingham

Technology Strategy Board

Driving Innovation



Improved protein production efficiency from beef cattle

with reduced Greenhouse Gas emissions **(IMPRO-BEEF)**







CATTLE COMPANY STABILISER

Keenan™ True Technology

SAC

Technology Strategy Board

Driving Innovation



Development of a novel Sea Louse Vaccine

increasing sustainability of protein production in (UK) salmon aquaculture







Moredun

Pfizer Animal Health

INSTITUTE OF AQUACULTURE
UNIVERSITY OF STIRLING

Technology Strategy Board

Driving Innovation

Sustainable Agriculture and Food

Innovation Platform





Food Manufacturing & Processing Efficiency

£15m CR&D Competition – June 2012



- Increasing Raw material Use & Process efficiency throughout the Food manufacturing supply chain
- Reducing Energy & Water use in Manufacturing
- Reducing Supply chain waste
- Improving Product shelf Life



Technology Strategy Board

Driving Innovation

Sustainable Agriculture and Food Innovation Platform

Looking Ahead



The SAF-IP has been well received by industry and is on course to deliver its core objectives, but participation is restricted to UK based organisations



The Agri-Food Industry is Increasing trans-national and it's challenges defined by global events & Trends



Horizon 2020 (EU FP8) Proposals indicate a potential increase of €2.5bn in Agri Food R&D funding between 2014 & 2020 with emphasis on greater European co-operation

Technology Strategy Board

Driving Innovation

R&D Road Map for UK Agriculture

There is a clear need for an industry driven, high-level R&D agenda to support 'Sustainable Intensification'

To identify 'direction of travel' and to agree medium to long term targets for the UK Agri-food sector

To identify the current impediments to achieving these

- What are the industry's current 'Knowledge gaps'
- What are the industry's 'Capacity gaps'
- What are the current 'Technology / Product & Service gaps'

To deliver a set of Key recommendations that prioritise Public & Private sector research objectives within the UK that will drive sustainable productivity gains and which can align with future EU Research & Innovation agenda i.e. Horizon 2020.

Technology Strategy Board

Driving Innovation

Roadmap Vision

•To Produce a document that will provide a concise, coherent and integrated assessment of the R&D needs of the land-based industry sector covering the period up to 2030.

•It will bring together the provision of research, development and, where appropriate, training by the range of stakeholders both within existing businesses and by those likely to become more involved with the sector in the future.

•It will strike a balance between the need to sustain "technology push" and the requirements of businesses for R&D to maintain competitiveness and exploit new opportunities in a way that minimises negative impacts.



Prof Chris Pollock CBE
Former Director IGER Aberystwyth

Technology Strategy Board

Driving Innovation

Sustainable Agriculture and Food

Innovation Platform

Thank You

David.alvis@tsb.gov.uk