

Welcome to the:
Workshop on Skills and
Translation of Agri-Food
Research in the UK

29th October 2009
76 Portland Place, London

Panel:

- **Chris Gaskell**, Principal of the Royal Agriculture College as chair of the FRP-sub group on translation
- **Celia Caulcott** is director of innovation and skills at BBSRC a member of the FRP-translation group and chair of the FRP skills group;
- **Mike Segal** is Deputy Chief Scientific Adviser at Defra and a member of the FRP-skills group,
- **Bob Marsh** is Deputy Director and Food Sector Lead, Biosciences Knowledge Transfer Network and member of the FRP- translation group.

Joint BBSRC/GO-Science Town Meeting

- Morning: GO-Science
 - Discussion of issues around translation and skills
- Afternoon: BBSRC
 - Discussion of high-level skills and Advanced training partnership

Thank you for coming and enjoy your day

- **10.00am** **Welcome and purpose of the meeting**
- **10.05am** **Setting the context** (Nick Grout, GO-Science and Adam Staines, BBSRC)
- **10.20am** **Translation of research into use** (Chris Gaskell, Chair of the Food Research Partnership (FRP) translation subgroup) Update on activities, gaps in data and outstanding questions
- **11.20am** **High-level skills for food** (Celia Caulcott, Chair of the FRP skills subgroup) Update on activities, current conclusions and recommendations, and outstanding questions
- **11.50am** **General discussion**
- **12.10pm** **Response** (Ian Crute, Chief Scientific Advisor of the Agriculture and Horticulture Development Board)
- **12.30pm** **Networking lunch**



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Nick Grout

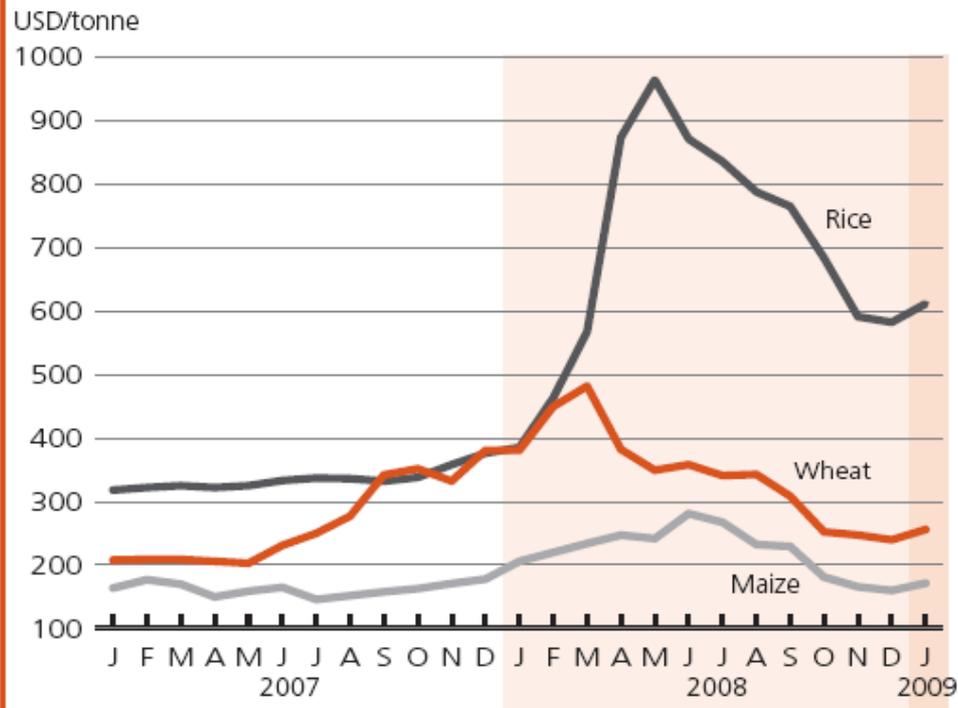
Hd Energy, Food & Environment Team, Government Office for Science





The 2008 price peak, raised food security higher up the agenda

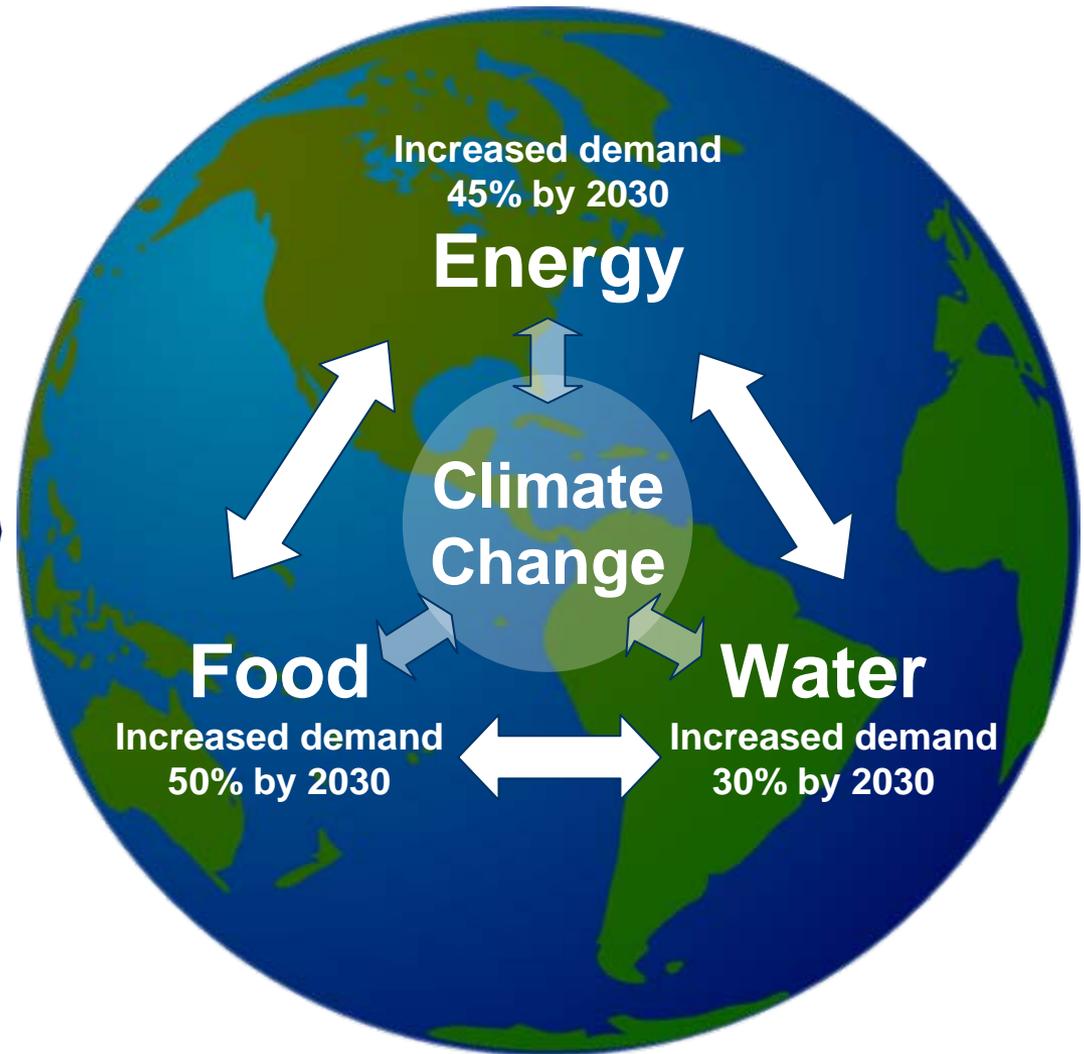
Selected international cereal prices



Note: Prices refer to monthly average.



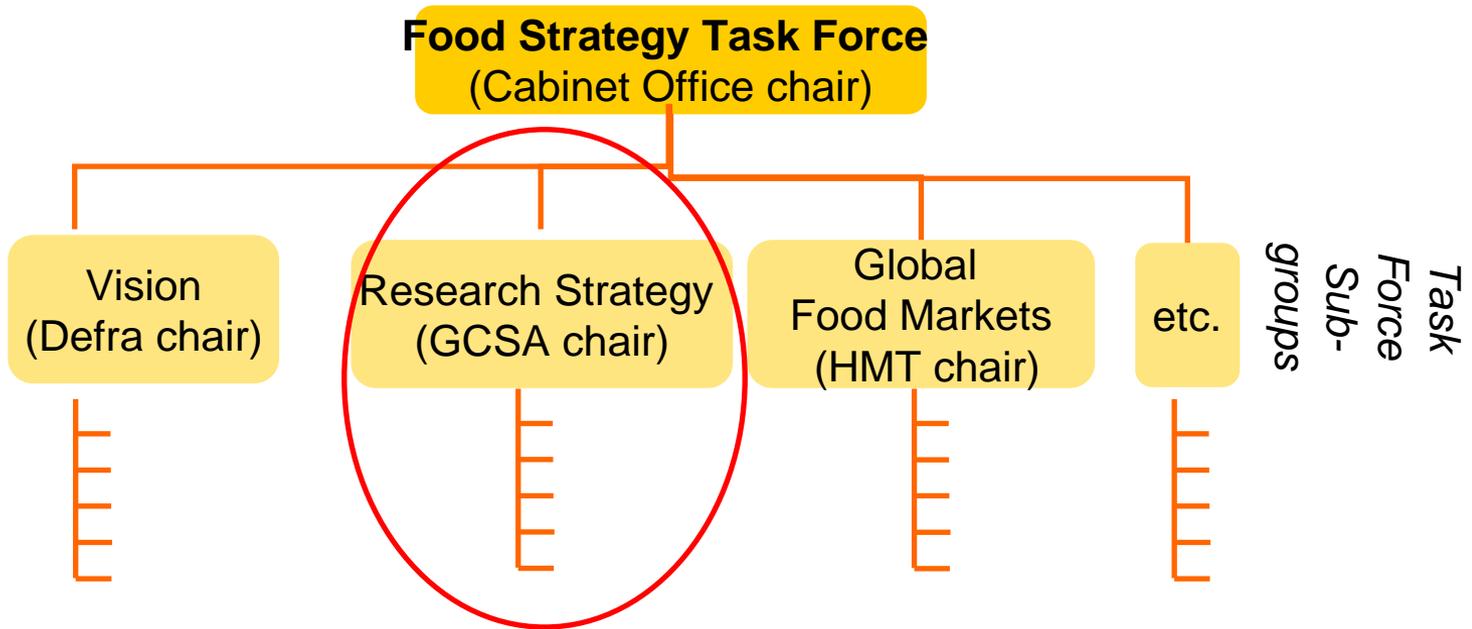
1. Increasing population
2. Increasing levels of urbanisation
3. The rightful aim to alleviate poverty
4. Climate change



A 'Perfect Storm' of inter-related challenges threatens...



Food Matters – and follow up





Cross-government strategy for food research and innovation

Areas of focus:

- Presenting a coherent approach
- Joining up: promoting coordination and (sensible) collaboration
- Cross-cutting issues, e.g. skills, translation, infrastructure



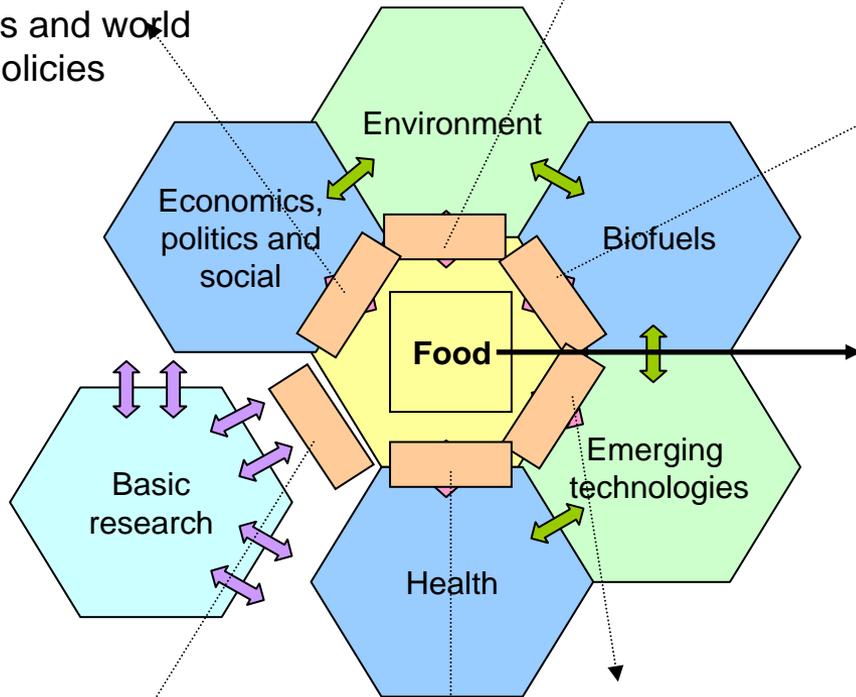
Global commodities
markets and world
trade policies

Effects of the climate
change on agriculture

Biofuels and competition
for food stuff

Food Centric Issues

- Increasing populations and demand on food
- Competition for agricultural land from multiple sources: industry, housing, leisure
- Increasing costs and impacts of global food distribution networks
- Changes of diet in key developing nations (change to higher protein/meat diets)
- Potential impact of global pandemics of animal or plant diseases and new emerging diseases
- Food safety, including pathogens and toxins
- Fluctuating public attitudes to food and farming (e.g. GM, organic food, pesticides, greater ethical treatment of animals, food costs)
- Food waste, at farm, processing and in the home
- Understanding personal nutritional for health or survival
- Changing requirements of food supply linked to changing demographics
- Agricultural modification to improve nutrition



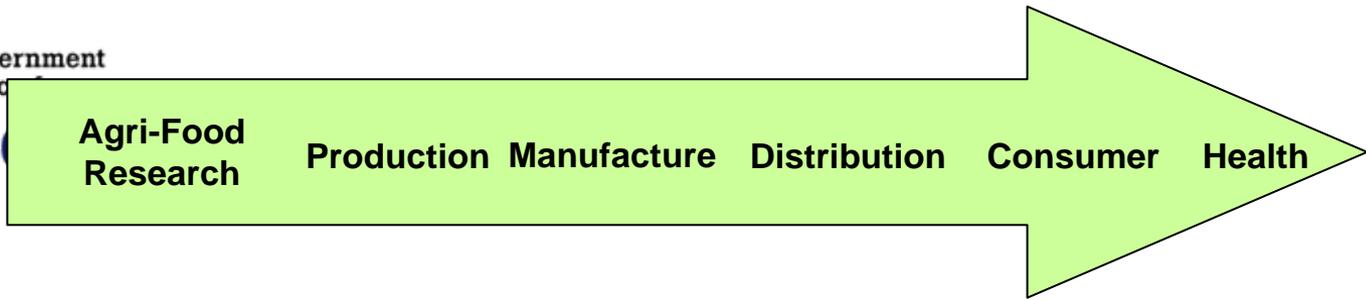
Nanotechnology in
agri-food Industry

Nutritional
requirements
linked to health

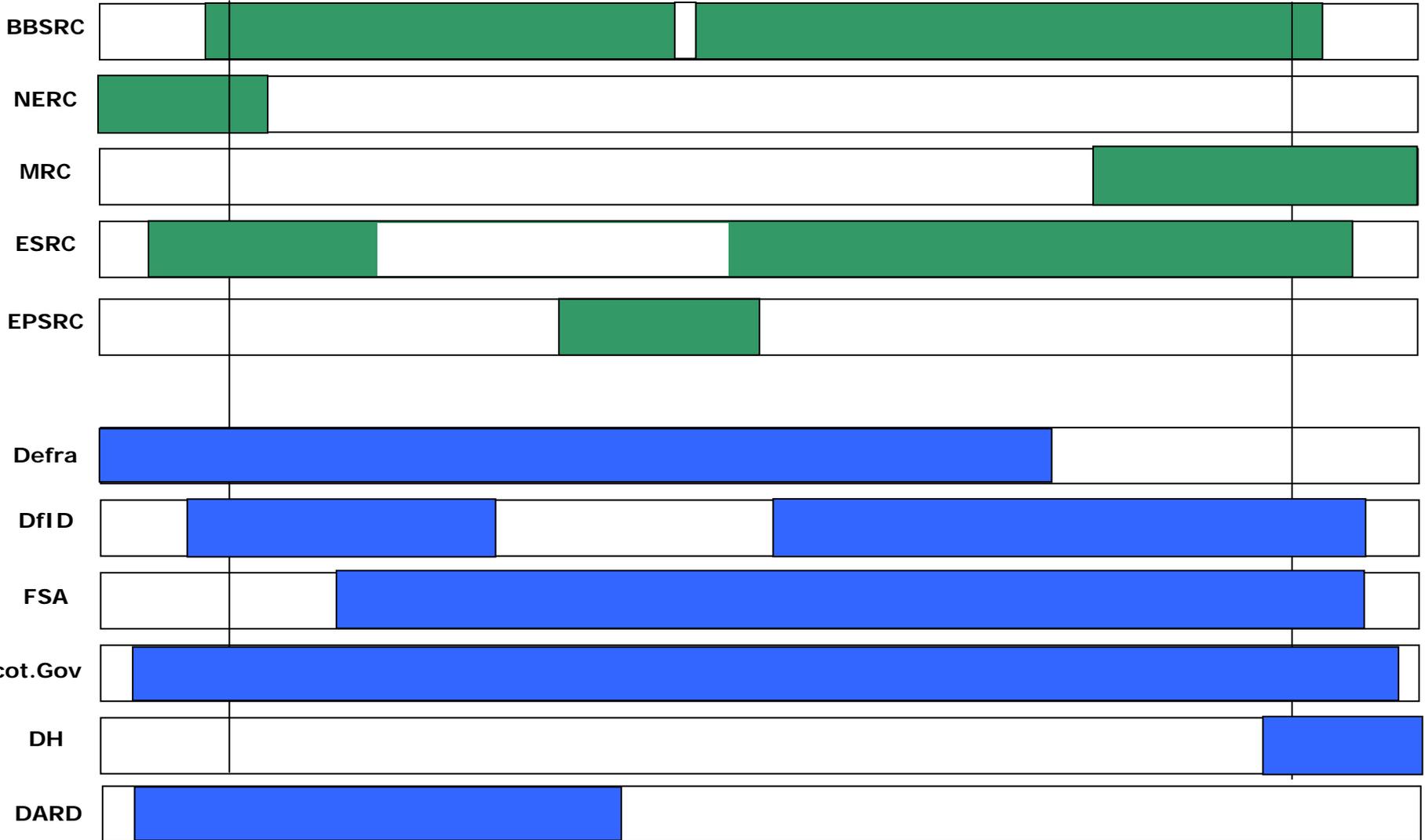
Underpinning biology,
chemistry, economics,
engineering and social
science



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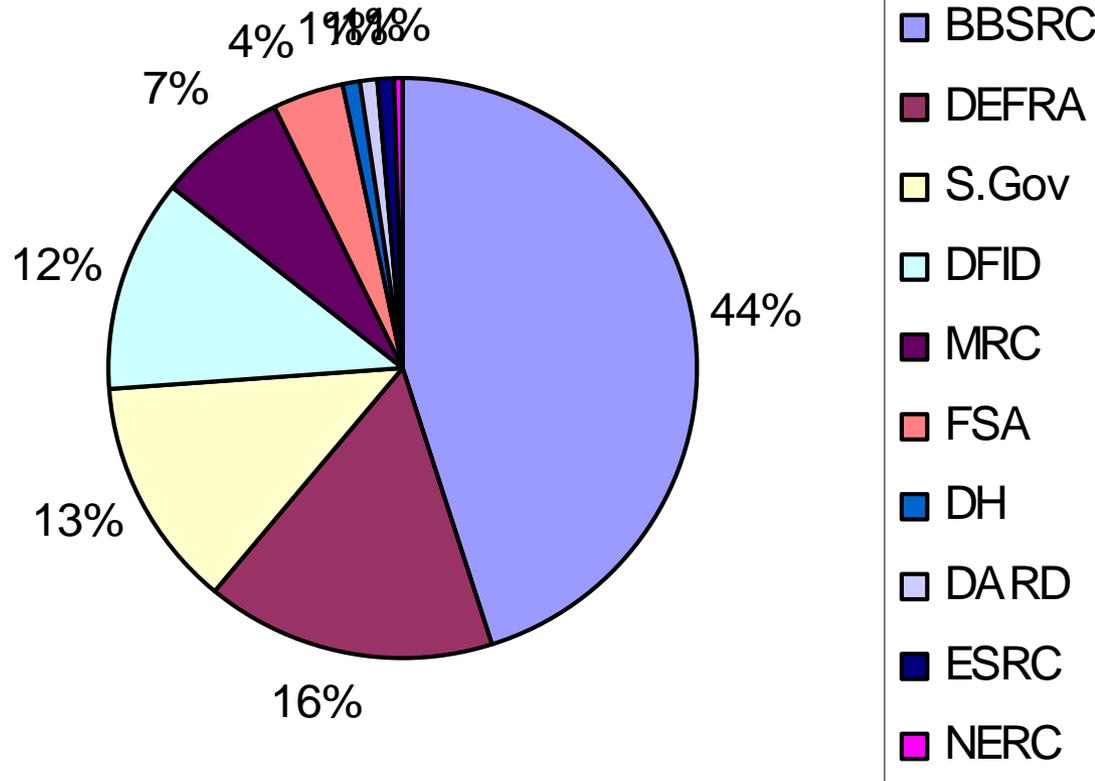


Food
related
Disease





UK public funding of food-related research



Total government Food research spend 07/08= £399M



Government
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Science

Food Research Group

Chair: Professor John Beddington

Members: Key public sector funders of food-related research.

Aims:

- develop a cross-government strategy for food research and innovation
- coordination and coherence of food research programmes/ funding
- provide a forum for discussion of key cross-government food research and innovation issues and priorities.



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Food Research Partnership

Members: Public sector, academics, NGOs and industry.

Aims:

- facilitate engagement with wider stakeholder groups
- focus on areas with opportunity to change and improve UK food research and innovation system.



Food Research Partnership: key issues

- *Translation*: How can the translation and exploitation of food research be improved, and what is balance of roles between public and private sectors?
- *Skills gaps, capacity problems and improving attitudes to the sector*: Where are the most serious skills and capacity problems, and what further measures could address these and promote more positive attitudes to the agri-food sector?

Food Research Partnership: translation of research into use

Professor Chris Gaskell
Chair, FRP Translation sub-group
29th October 2009

a definition of the translation of research

‘the two-way flow of information and exchange of knowledge between those who generate such information and those who use it within the relevant industry, enabling research and innovation to be utilised and the priorities of the end-user to be met’

Context [1]

- the food supply industry is complex, with a range of end-users for information and innovation
- the translation of basic research to innovation for the user is also complex
- translation of research and innovation is crucial for a sustainable food supply
- there is a perceived need for improvement in most if not all sectors
- mechanisms for translation appear patchy by sector (or by other factors, such as geography)

Context [2]

- effective translation of research is a two-way process that includes both science-push and market-pull
- translation should include the use of existing as well as new information
- the range of innovation and information needed is broadening
- there is a clear link between translation of research and innovation, and skill levels

Context [3]

- a range of organisations have a potential role in translation
- some simplification of means of access may be helpful, particularly for primary producers; locality may be important
- the translation of research and innovation is a global issue, both in its generation and its dissemination and use

- the research itself

- translation of basic research requires both that the initial work is developed and that resulting innovation is made accessible to the end-user
- incentives for the research community to carry out applied and translational research have not been strong
- there have been few opportunities or rewards for the role of 'translator'
- changing patterns of funding are perceived to have disadvantaged applied research

Next steps

- test context and presumptions at this wider meeting
- mapping of the issues sector by sector
- further consideration of objective evidence, the funding of research and translation, and existing UK and overseas models
- further report to FRP with recommendations

Some questions

- how different are the sectors and sub-sectors?
- what are the key issues / problems / successes within your sector?
- what supporting data are available?
- what specific actions would help, and how would the success of these be measured?

Sectors

- food retailers
- food service sector
- food manufacturers
- agricultural consultants
- agricultural supply industry
- producers [arable, livestock, field vegetables, horticulture]

- policymakers
- [transport?]

FRP Town meeting: Update from the FRP Skills Sub group

Dr Celia Caulcott
Chair, FRP Subgroup for Skills in agrifood

Town Meeting, 29 October 2009

Background

- Belief problem was skills shortages in agri-food
- Perceived supply problems
 - Closure of specialist departments
 - Falling numbers of graduates
 - Quality issues
 - Lack of very high level skills in research base to support research and user base
- Demand issues
 - Unmet demand in industry for graduates
- KE issues
 - Insufficient KE between research base and industry
 - Lack of skills in research base?
 - Lack of appropriately skilled people in industry to absorb new practices etc?

FRP Skills sub-group brief

- Look at high level (BSc and above) demand and supply of skills in agri-food
- Gather **data** on these issues
 - Not anecdote
- Identify what is currently being done to address these problems
- Recommend realistic actions to address the issues that
 - Will make a significant impact
 - Can be carried forward by the FRP/FRG
 - Directly or through wider role of influence

Sources of evidence

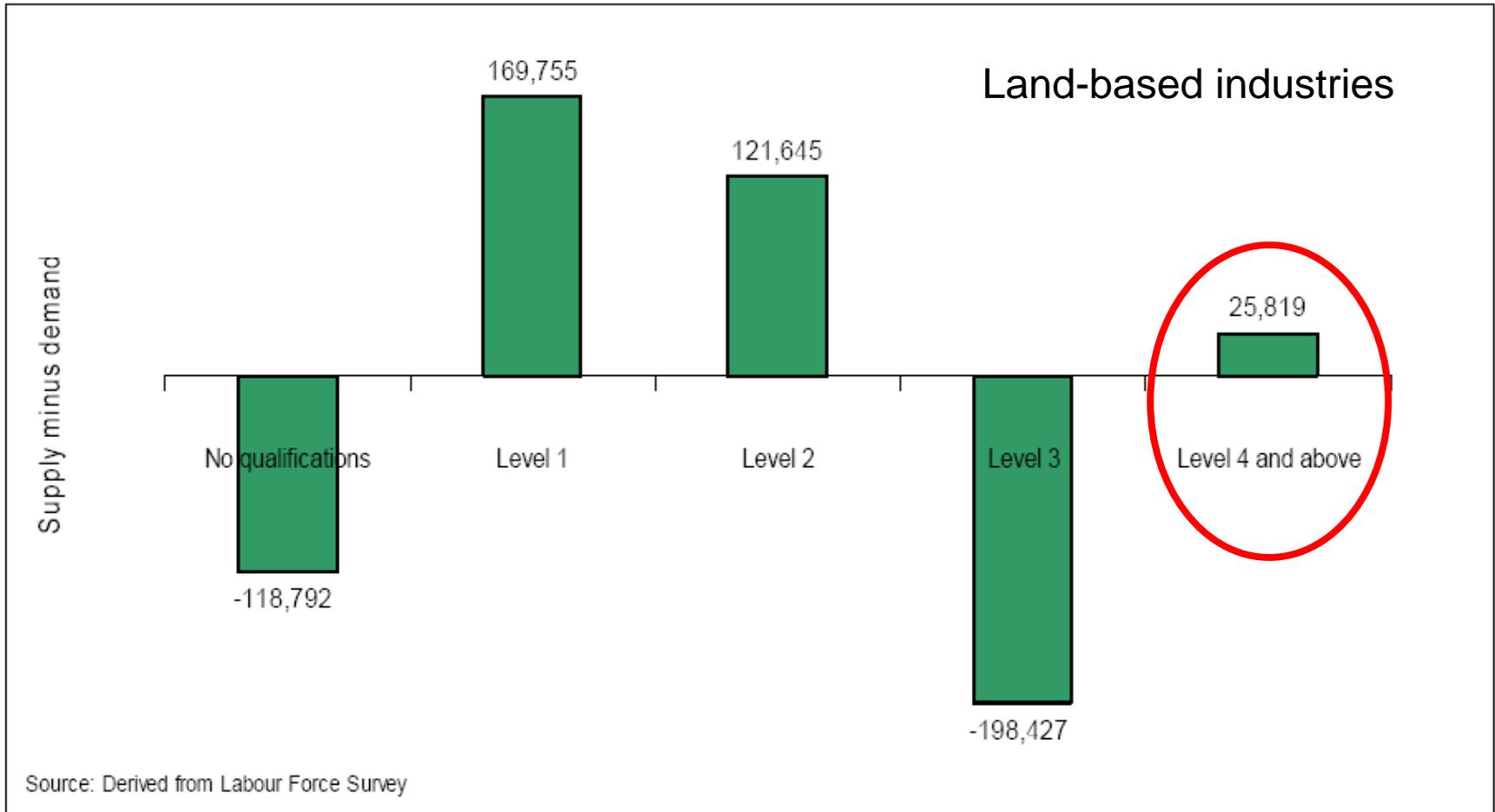
- Leitch Review of Skills (2004)
- Ambition 2020: World Class Skills and Jobs for the UK report (2009), UKCES
- Working Futures report 2007-17, UKCES
- RASE New Blood project (2009)
- Skills for the Workplace: Employer Perspectives, UKCES (2008)
- A Skills Assessment for the Environmental and Land-Based Sector, UK Report (2009), Lantra
- National Employer Skills Survey (2007), Lantra
- BBSRC/Biosciences Federation Niche skills report (2009)
- BBSRC/HEFCE Study of Land-Based Facilities and Resources, Arthur D Little (2009)
- HESA and UCAS data on student numbers and destinations of leavers, longitudinal survey (2009)
- HEFCE analysis of RAE metrics and guidance on support for SIVS
- Reports on HEI closure / reorganisation of agricultural departments

An issue of granularity: Lantra 2009 report

Report warns that data were gathered during the credit crunch
Does not address food manufacturing and retail industries

- Lower rates of skills gaps than the national averages
- Undersupply of people with Level 3 qualifications
- Size of sector will decline to 2017, primarily in the unskilled occupations
- Significant training is 'on the job', well above all occupations average
- Many issues around skills and employment in this sector arise from the high level of micro businesses and self employment

Demand-Side



The chart shows where qualifications at a particular level are currently in over-supply (where the numbers are positive)

From: Lantra, A skills assessment for the environmental and land-based industries (July 2009)

Evidence: demand

- Overall sector is contracting, but mostly in unskilled jobs
- No evidence of substantial (unmet) demand
- No evidence of significant future increase in demand
- There may be demand in niche areas but this is hard to measure empirically
- Need to up-skill existing workforce

Evidence: supply

- Changes in Higher Education: closure of university departments; RAE and student demand affects provision
- Number of students doing agri-food degrees are low, but remain steady
- Number taking broad-based bioscience degrees remain buoyant
- Good international recruitment
- First destination data shows no evidence of shortages at undergraduate level

Evidence: very high level skills

- Niche skills are developed at postgraduate level:
 - E.g. Crop breeding, large animal research, agronomy, plant physiology/pest management, soil science and horticulture
 - shortages of supply in specialist areas (but also shortage of real demand?)
 - Endorsed by the Royal Society report *Reaping the benefits: science and the sustainable intensification of global agriculture*
- Few bioscience graduates go into these areas (but reasons vary: pay/conditions/ perception of sector)
- Majority of Agri-PhDs stay in research and education (in contrast 50% of graduates go into non-graduate jobs)
- User demand is small in each niche area (e.g. 1 or 2 per year): niche areas face particular challenges for recruitment
- Training needs to combine research activity and exposure to professional practice (“walking the fields”)

Initial Conclusions

- Changes in supply have not reduced numbers
- There is no obvious undersupply of people with high level skills
- There is a need for skills development of the existing workforce
- That this is needed to enable knowledge exchange
- Shortages are only in niche areas, very high level skills
- That in a successful skills landscape users would have:
 - skills and competencies to understand the changing and complex world
 - skills to run their business in an efficient and sustainable way
 - the ability to identify those skills that they needed
 - routes for acquiring, developing or accessing those skills.
- That *partnership* is vital in developing the high-level and very high-level skills

Further work

- FRP requested some further work:
 - Identify what level of granularity of data is needed to understand issues
 - Can this be resolved?
 - Can the variation in the way data are gathered be resolved?
 - Gather data from industry, even if anecdotal, of recruitment issues, either in quality or number of applicants
 - Further consideration of the issues around niche skills, and their impact on research, translation and industry
 - Gather feedback and comments from FRP and wider audience

Recommendations: 1

1. That the FRP should consider if issues over current funding council support for agri-food are clear to members
2. BBSRC to work with UKCES and Lantra to investigate and report on the value to agri-food industries of increasing investment in their human resources
3. Lantra and AHDB to create an action plan to communicate benefit of increased skills as part of the Agri-Skills Strategy to promote skills
4. Sector Skills Councils to create a communication plan for training opportunities
5. HEFCE to work with AHDB, Defra and BBSRC to ensure that there are appropriate metrics for recognition and reward of KE and applied research for individuals and institutions

Recommendations: 2

6. BBSRC to lead the establishment of Advanced Training Partnerships with partners
7. FRP to suggest a mechanism to investigate international demands for UK agri-food
8. The metrics suggested by the Skills sub-group to be passed to defra for possible indicators
9. The FRG to consider who champions this area in government
10. Consider other issues for refreshed group
11. The FRP should agree to undertake to monitor progress against recommendations

Acknowledgements

FRP Skills sub-group

Judith Batchelar, Annie Graham, Caroline Miller, Sainsburys

Andrée Carter, UKCDS

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Mike Segal, Defra

David Swales, Lantra

Christine Williams, Richard Ellis, University of Reading

GO-Science

Elizabeth Warham

James Screen

Adam Staines (BBSRC)

BBSRC

Ian Lyne

Clare Nixon

Darren Pirt

The “How” and “Who” of applying science to agr-food practice

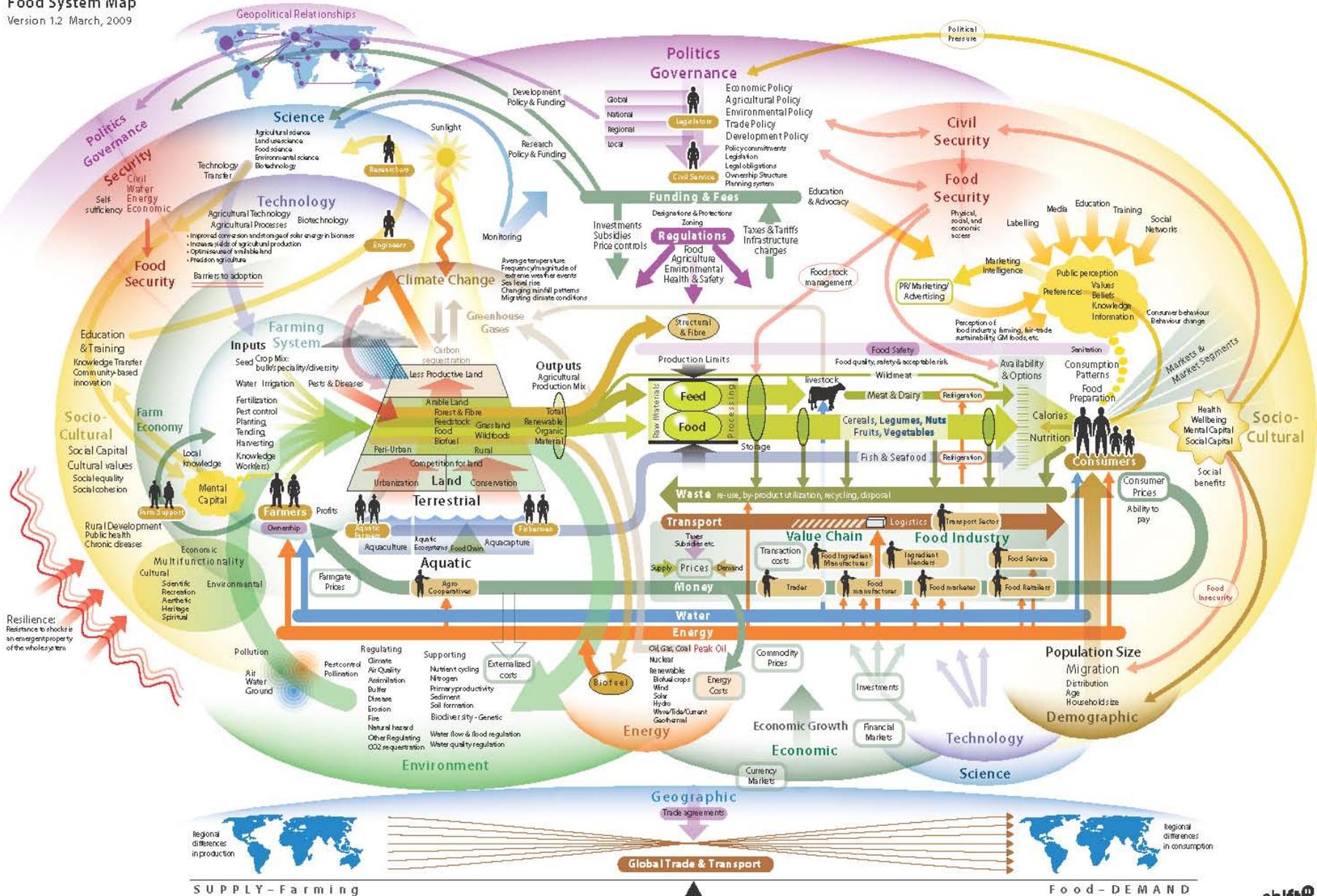
Ian Crute

Chief Scientist

Agriculture and Horticulture Development Board

The Global Food System

Food System Map
Version 1.2 March, 2009



SUPPLY - Farming

Food - DEMAND

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clarity in complexity



A few simple points about the Agri-Food sector

- very complicated and highly influenced by political and social factors
 - nationally and globally;
- can be simultaneously conservative and rapidly responsive to change;
- comprises multiple functions and therefore multiple skills
 - (clear thinking needed – more later)
- has multiple “Institutions” and “Representative Bodies” (too many!?)
 - nationally and internationally
- substantially taken for granted by the urban majority
 - much public awareness is because of bad new stories!
- threats and opportunities abound
- science is absolutely necessary but is not sufficient for change/progress

Functions

- Policy and regulation
- Research funding
- Research provision
- Education and training
- Consultancy, Advice, Extension, Knowledge/Technology Transfer/Exchange , Translation
- (are these the same or different ? - discuss)
- Primary production (farming)
- Product manufacture supply and distribution
(seeds, semen, machinery, feed, ag-chem, veterinary products etc.....)
- Merchants
- Processors
- Manufacturers
- Buyers and Retailers
- Marketing, Influencing and Opinion Forming

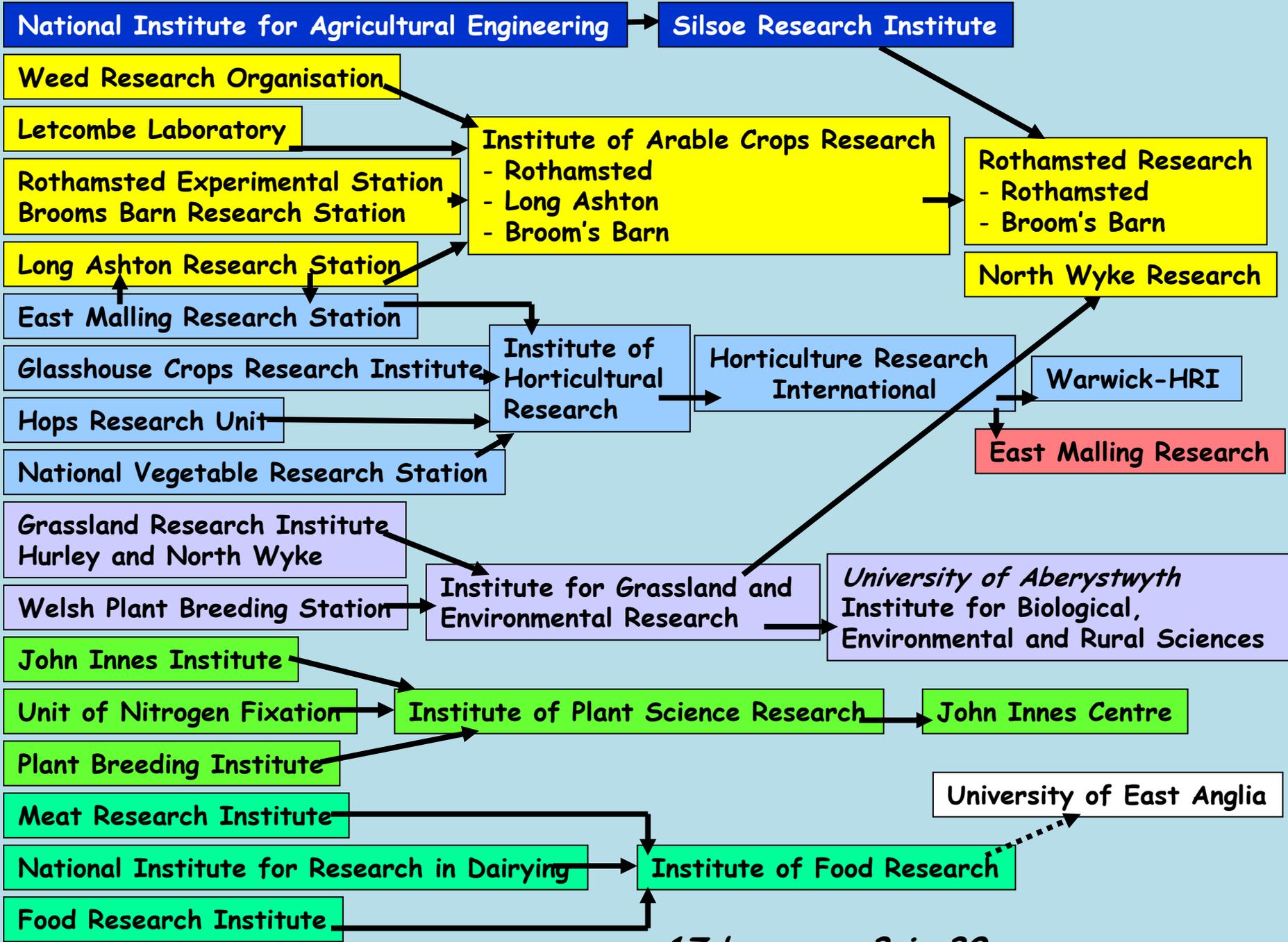
Institutions

- Government Departments (devolved Assemblies)
- Government Agencies
- Research Councils
- Levy Bodies (AHDB + other)
- Multinational Companies
- SMEs
- HEIs
- PSREs (Institutes)
- (Private) Research Associations
- Consultancies and Service Providers incl. IP “brokers”
- Representative bodies – IGD, CLA, AIC, NFU, AICC etc.....
- Trade associations
- Assurance schemes
- Charitable trusts and foundations
- NGOs

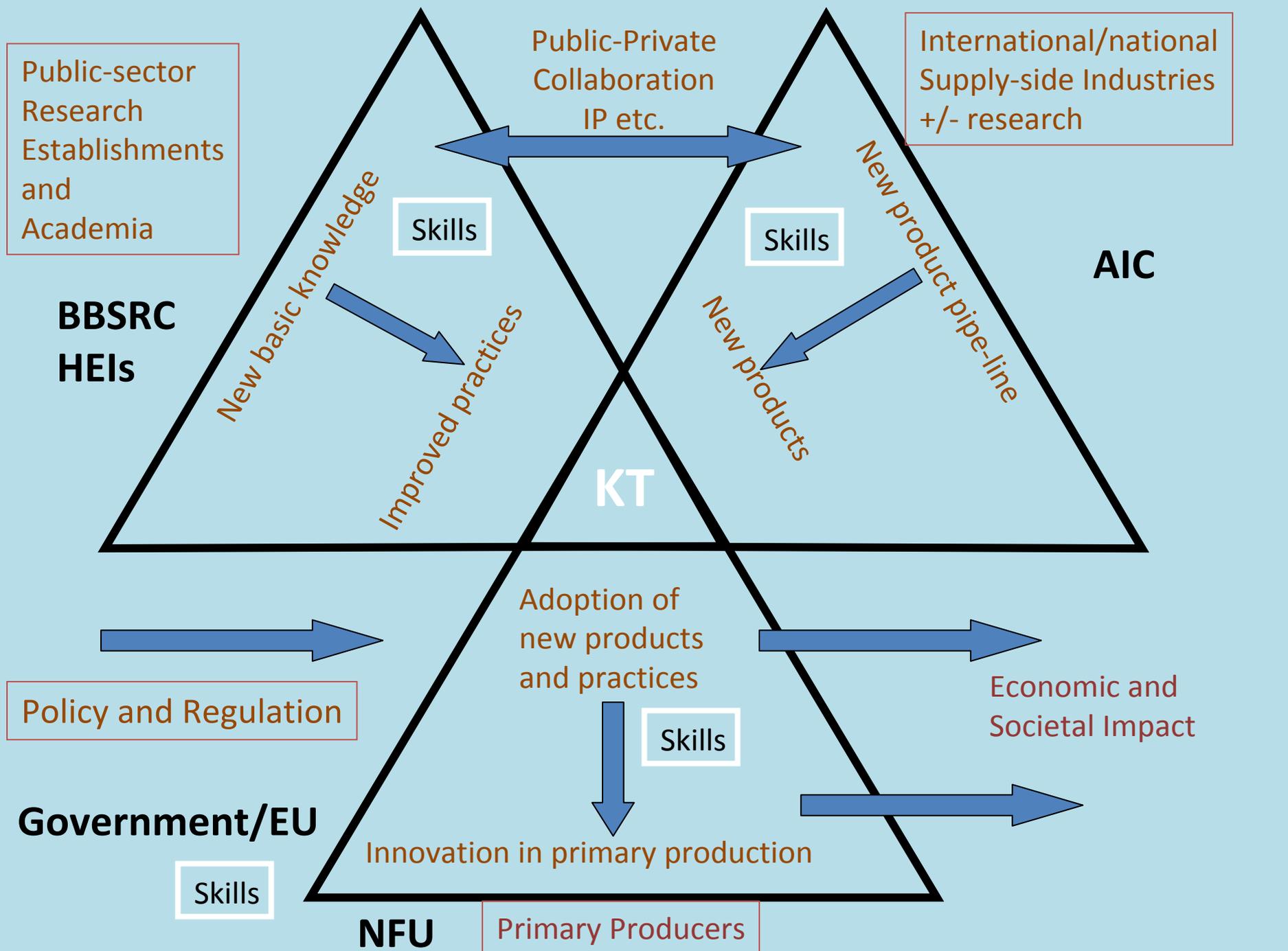
Once upon a time life seemed simple!

(= (almost) One function : One Institution)

- Government Department – policy + regulation
- Government Agency – policy/regulation implementation
- University/Colleges – education and training (esp. In research)
- ARS (Agricultural Research Service)
 - A(F)RC – Funder
 - Institutes – Provider
- NAAS (National Agricultural Advisory Service)
= ADAS (Agricultural Development and Advisory Service)
- BTG (IP brokerage)
- End Users
 - Product suppliers (Manufacturers)
 - Primary producers
- Wholesalers etc....
- Consumers



17 becomes 3 in 30 years



Public-sector
Research
Establishments
and
Academia

International/national
Supply-side Industries
+/- research

**BBSRC
HEIs**

AIC

KT

Policy and Regulation

Government/EU

Economic and
Societal Impact

Skills

Skills

Skills

Skills

NFU

Primary Producers

Public-Private
Collaboration
IP etc.

New basic knowledge

Improved practices

New product pipe-line

New products

Adoption of
new products
and practices

Innovation in primary production

Public-sector
Research
Establishments
and
Academia

International/national
Supply-side Industries
+/- research

KT

AHDB

Primary Producers

AHDB can become the “hub” to broker and orchestrate industry-led integration and coordination of research & KT

A strategic alliance for collaborative and mutually beneficial approach to agricultural R&D?

[Courtesy of Helen Ferrier – NFU]

