AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

The Irish Agriculture and Food Development Authority

RDI as a key driver for growth in the Irish food sector

Dr. Frank O'Mara, Director of Research, Teagasc

Presentation outline

1. The food sector and the importance of RDI in its growth

2. Public R&D in Ireland and in the food sector?

3. The strength of the Irish science system, especially in food

4. Ireland's performance in innovation, especially in food

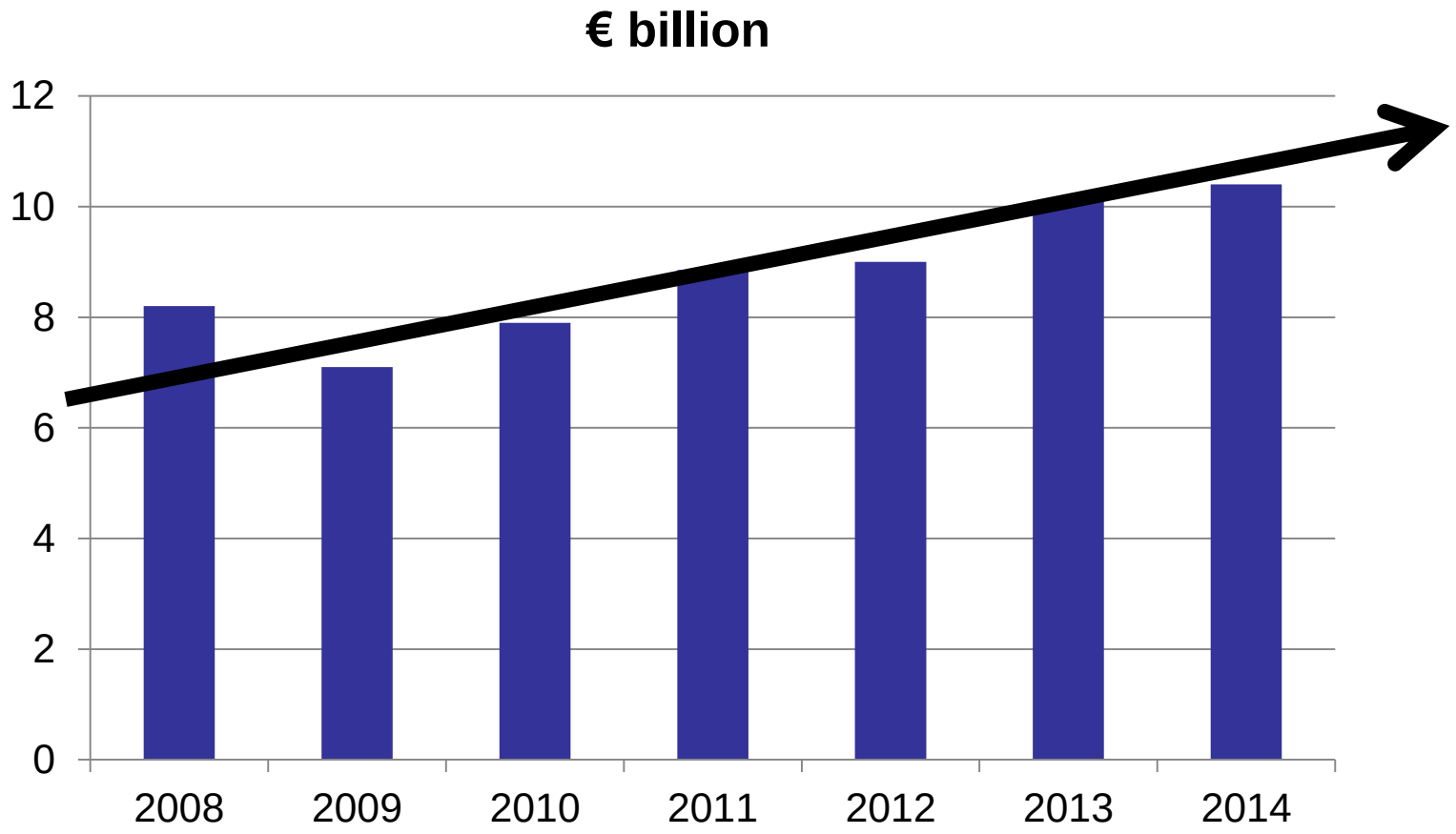
5. The important channels to impact

6. Some recent large RDI initiatives in Ireland related to food

The Irish food sector in brief

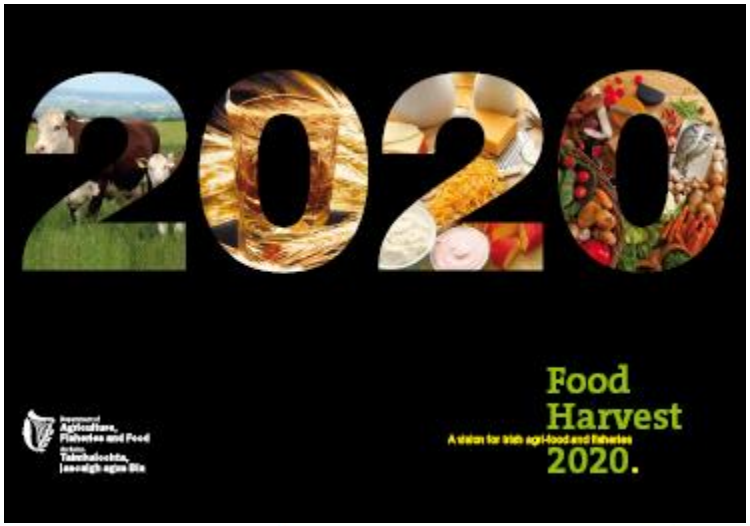
- Employment: 54,000 in 2014 (up 4% on 2013 and 10% on 2010)
- 25% on manufacturing employment
- 1,200 enterprises in total (from farmhouse producers to large multinationals)
- 5.4% of companies account for 41% of employment (dairy co-operatives, large meat companies, multinationals, some large beverage and PCF companies)
- Low expenditure on R&D – c. 0.6% of turnover, though 2 companies in top 25 food related companies in EU for spend on R&D (Kerry and Glanbia)

Export growth story of the Irish Food industry

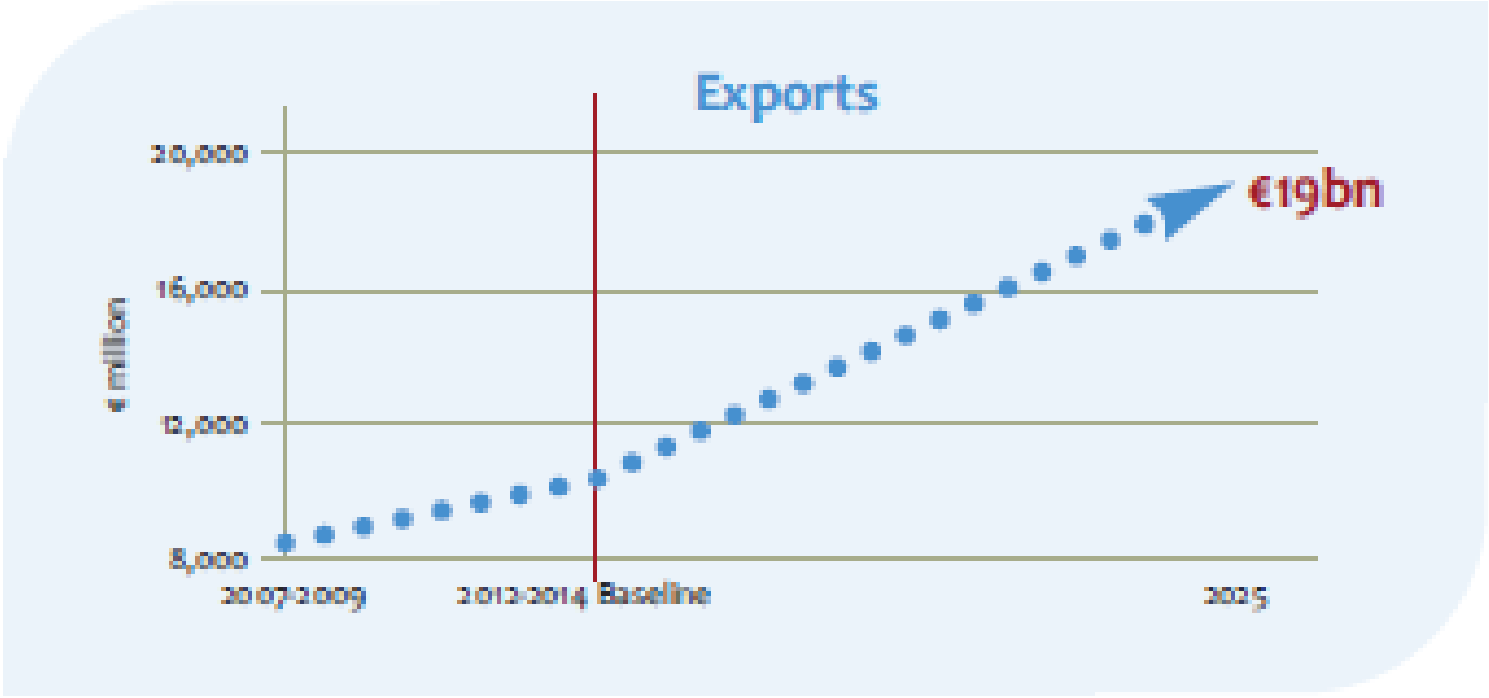


Industry is good at producing strategic plans

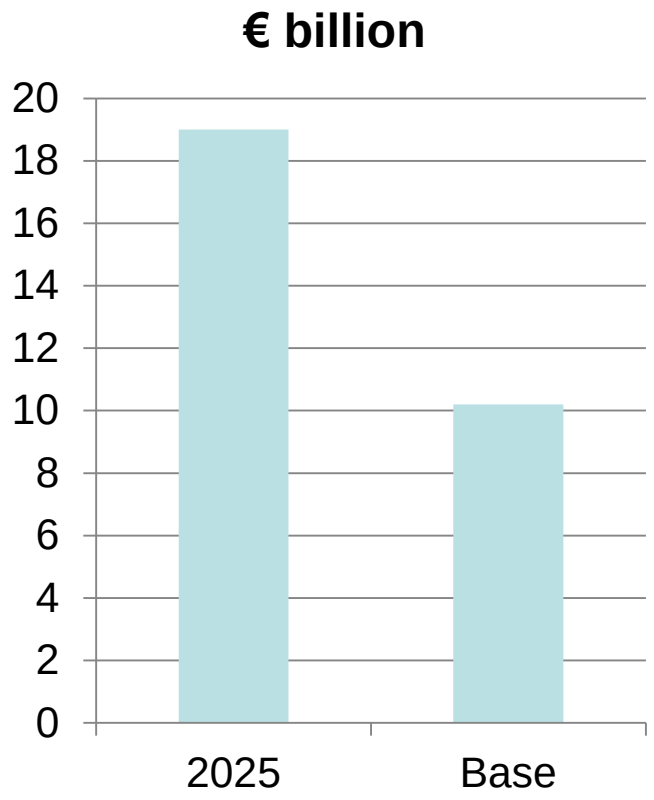
– has certainly got all the actors on the same page, and has been an important stimulus to government policy related to food



Food Wise 2025 envisages continued strong growth



How will this growth be achieved?



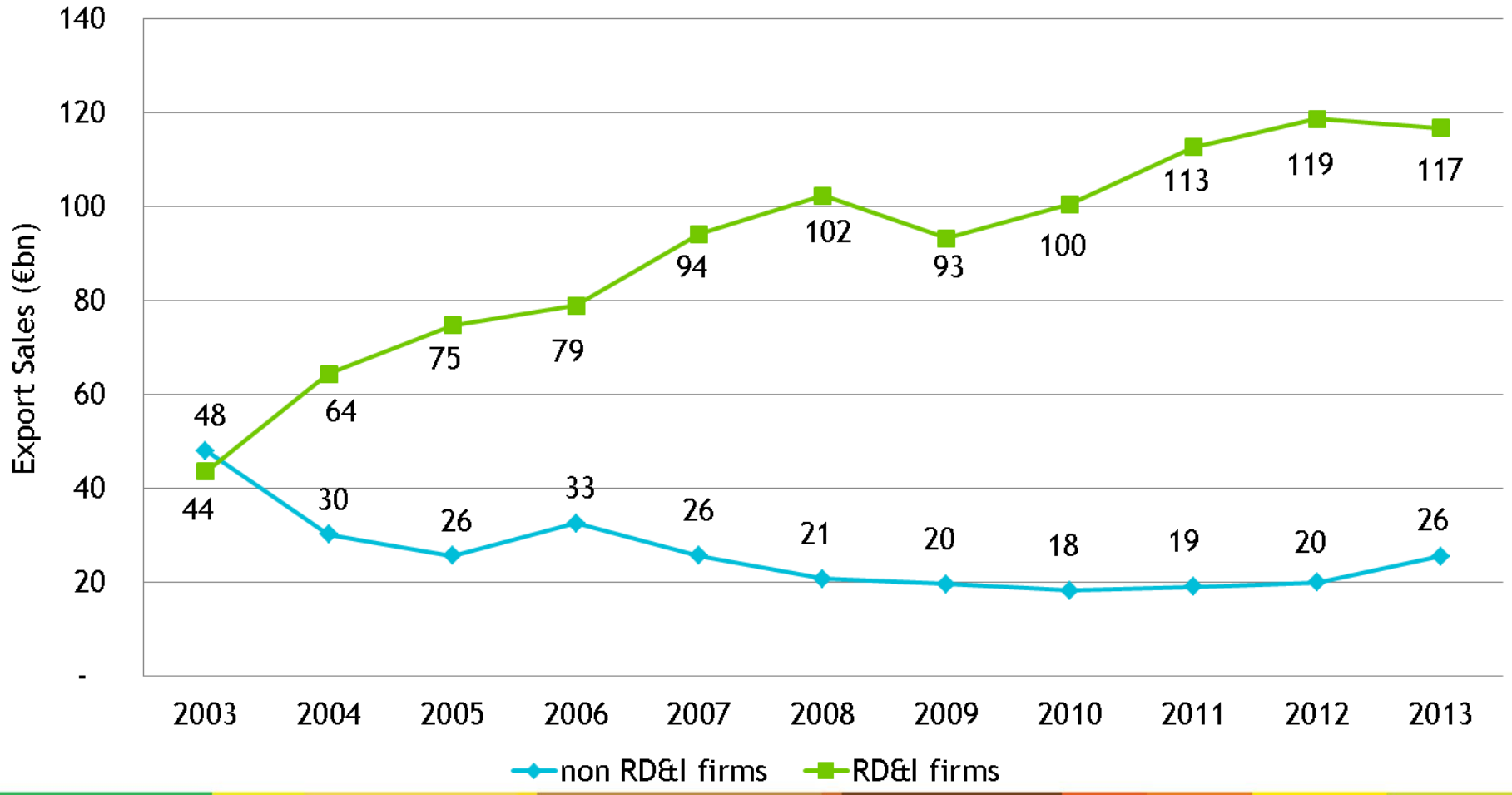
- Increased production ✓✓
- Higher commodity prices ✓
- Moving up the value chain ✓✓✓✓

Projected grow
70% in Gross
Added

RDI essential part of moving up the value chain

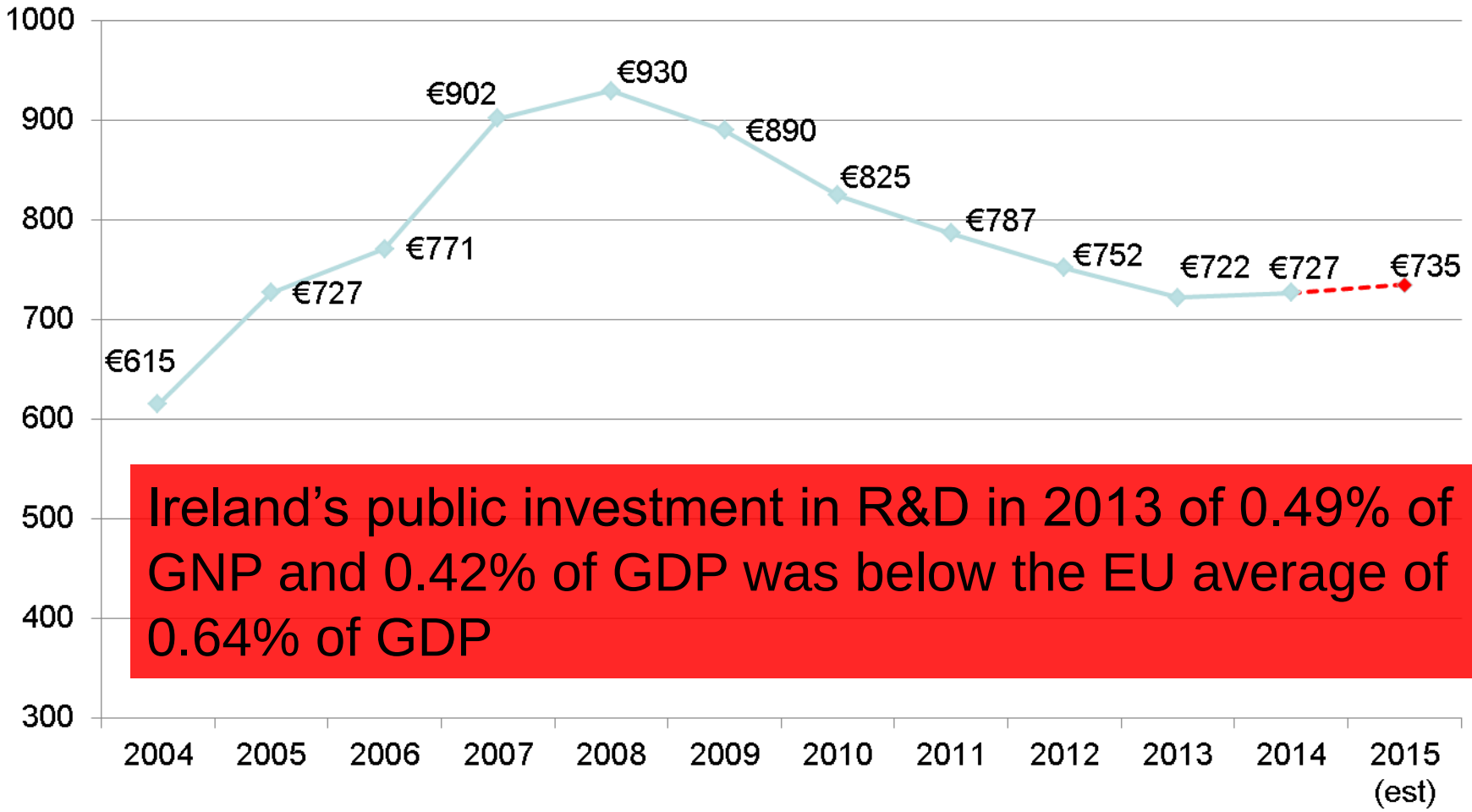
Export Sales of RD&I and non RD&I performers (€bn)

- all sectors of Irish economy



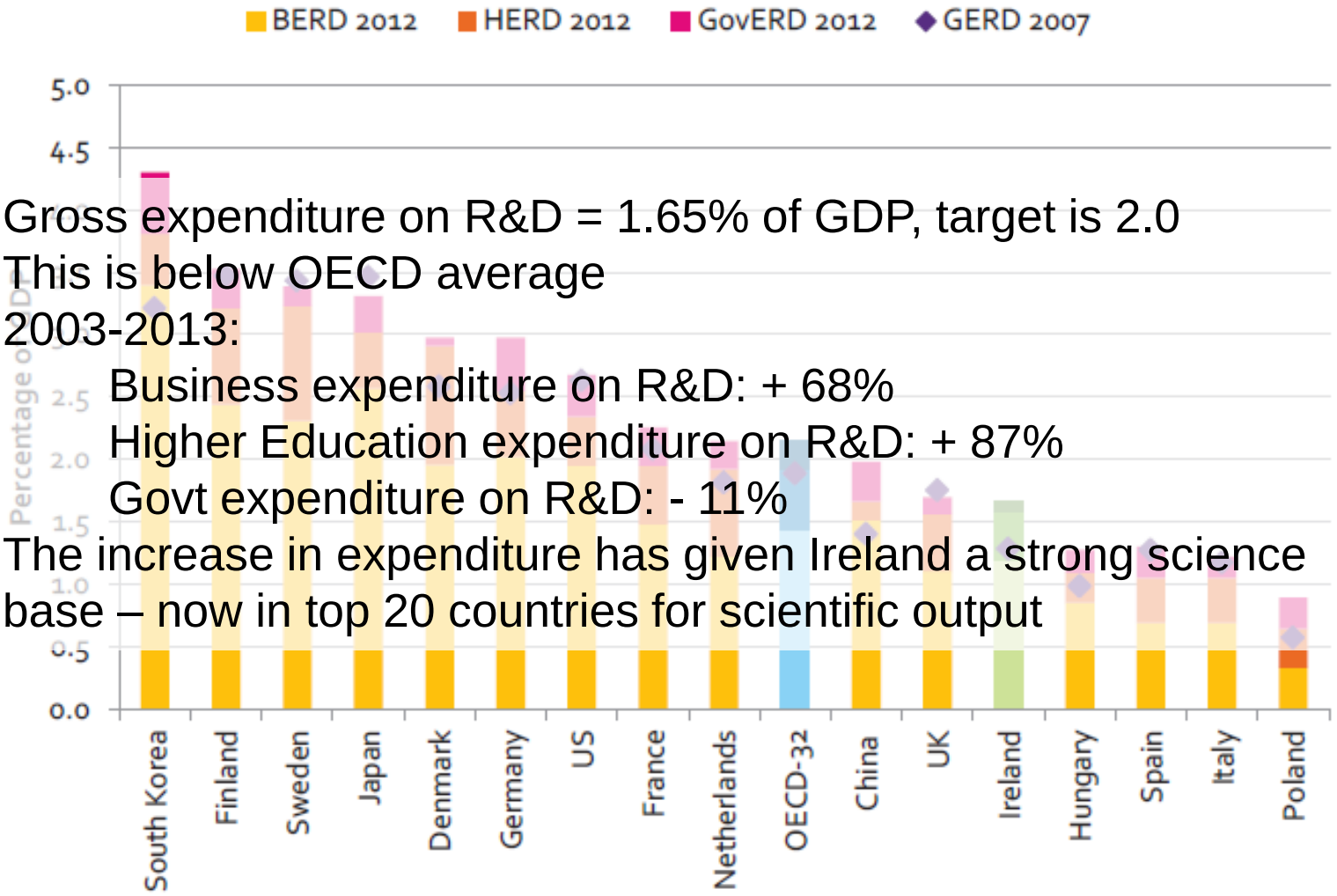
Public R&D in Ireland and the in the Food sector

Public investment in R&D (GABORD, €m, current prices)



Ireland's public investment in R&D in 2013 of 0.49% of GNP and 0.42% of GDP was below the EU average of 0.64% of GDP

How does Ireland compare internationally for investment in R&D?



- Gross expenditure on R&D = 1.65% of GDP, target is 2.0
- This is below OECD average
- 2003-2013:
  - Business expenditure on R&D: + 68%
  - Higher Education expenditure on R&D: + 87%
  - Govt expenditure on R&D: - 11%
- The increase in expenditure has given Ireland a strong science base – now in top 20 countries for scientific output

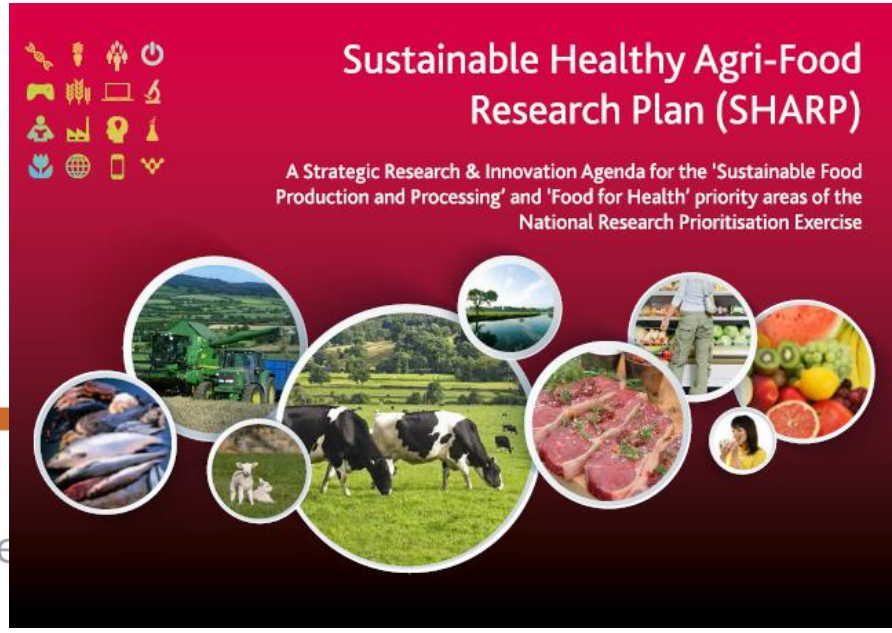
Agri-Food is a priority area not public investment in R&D

National Research Prioritisation Exercise (Feb 2012) is main statement of public policy for research

Identified 14 priority areas, 2 of which are related to Food

- Sustainable Food Production and Processing
- Food for Health

SHARP is the implementation plan for these areas (2015)



The strength of Ireland's science base

How does Ireland rate internationally for science quality?

"…Ireland is ranked 16 in the world for the quality of our scientific research and is ranked first in the world for its research in Nanoscience, second in Computer Science and Immunology, ***third in Animal and Dairy*** *and fifth for Materials Science. "*

Prof. Mark Ferguson, SFI DG – quote from 2014 Annual Report

Irish Examiner
Wednesday, April 27, 2011

UCC and Teagasc Moorepark food researchers in top 20 of global list

by Joe Dermody

SIX senior level Cork-based food researchers have been named in the top 20 of 15,000 specialist authors in a global list compiled by the global ratings agency, Thomson Reuters Science Watch.

All based with either UCC or Teagasc, the six scientists are: Professor Fergus Shanahan, Prof Gerald Fitzgerald, Dr Liam O'Mahony and Prof Kevin Collins, all from UCC; plus Prof Paul Ross and Dr Catherine Stanton from Teagasc Moorepark, Fermoy, Co Cork.

Even more encouragingly for UCC, the Cork college is listed at number two in the world for probiotics research, due primarily to work

Travers said: "Global Industry Analysts have predicted that the global probiotics food market will be worth $30 billion (€20bn) by 2015, even though the industry is still in its infancy.

"This market has huge potential economic benefit to Ireland. The APC's role is to put rigorous science behind the mode of action and health claims of probiotics."

The APC, a centre for gut health, is a collaboration among basic scientists and physician-scientists at UCC, Teagasc Food Research Centre Moorepark, and CIT.

Along with SFI funding, APC food scientists have won grants from Enterprise Ireland, the Department of Agriculture,

Teagasc
Agriculture and Food Development Authority

ıt Authority

Institution Ranking Analysis, all outputs

Incites – Web of Science, 2010-2015

ORGANISATION	OUTPUT	%EXC
MTT AGRIFOOD RES (Finland)	855	17.9
WAGENINGEN UNIV & RES CNTR	15,063	17.7
TEAGASC	2,081	16.2
AFBI, Northern Ireland	611	14.9
INRA (France)	23,636	14.8
Roslin Institute (UK)	1,591	13.8
AG RESEARCH LTD (NZ)	1,597	12.7
Agriculture and Agri-Food Canada	6,484	11.9

%Exc	% output of an institution that appears in the 10% most highly cited papers for their field	Indicator of Scientific Excellence

Institution Ranking Analysis,

Food Science & Technology

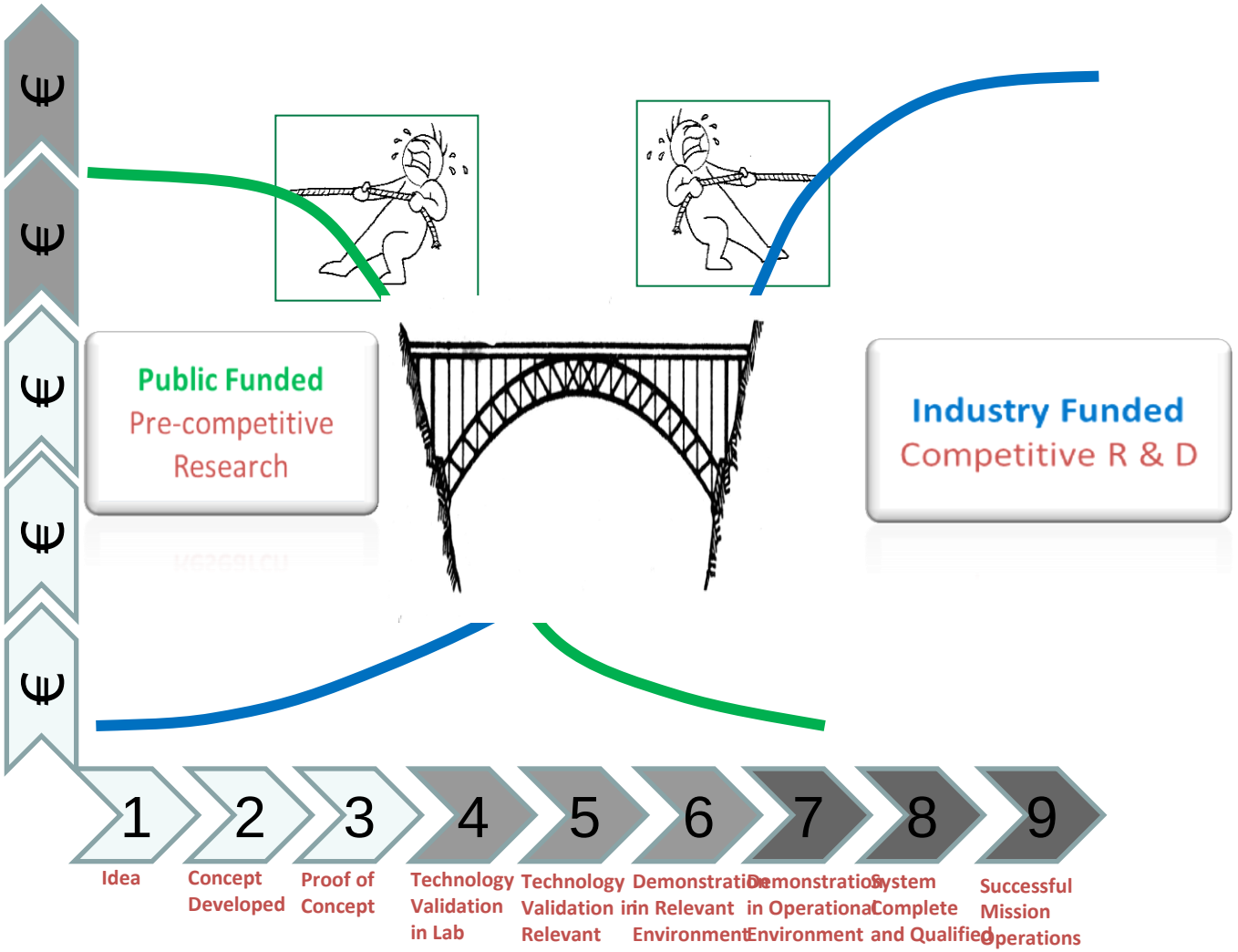
Incites – Web of Science, 2010-2015

ORGANISATION	OUTPUT	%EXC
TEAGASC	726	19.0
MTT AGRIFOOD RES (Finland)	178	18.5
WAGENINGEN UNIV & RES CNTR	1263	16.6
Agriculture and Agri-Food Canada	1048	15.9
AG RESEARCH LTD (NZ)	144	15.3
INRA (France)	1943	13.7

%Exc	% output of an institution that appears in the 10% most highly cited papers for their field	Indicator of Scientific Excellence

How does Ireland and the food sector do in science based innovation?

Innovation Eco-system



How does Ireland rate internationally for science based innovation?

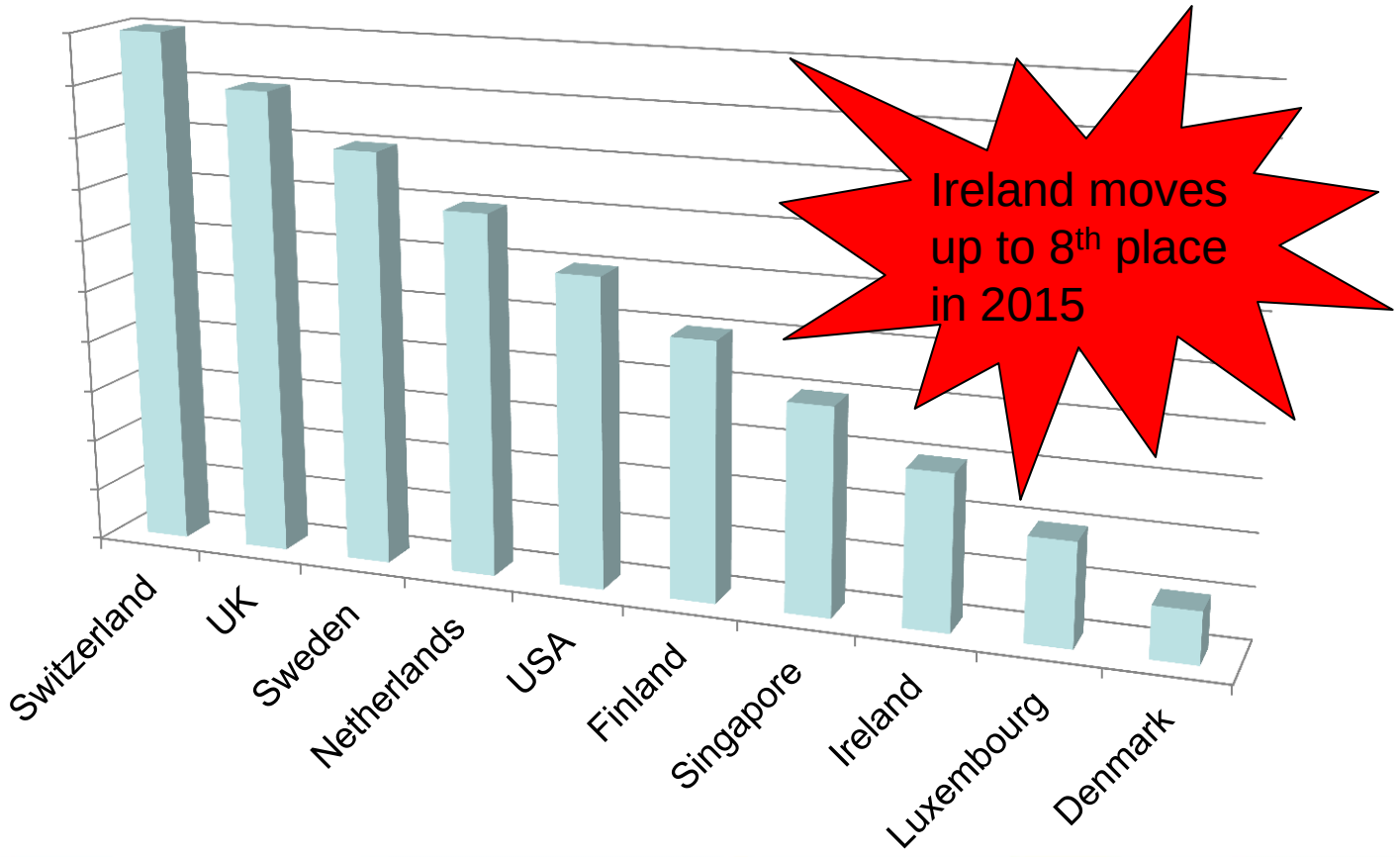
"…Ireland is ranked 16 in the world for the quality of our scientific research and is ranked first in the world for its research in Nanoscience, second in Computer Science and Immunology, ***third in Animal and Dairy*** *and fifth for Materials Science. Independent analysis by Eurostats, in the EU Commission, shows Ireland to be the* ***most R&D efficient country in the EU, extracting maximum innovation output*** *from a below average (as a % of GDP) public investment in research. "*

Prof. Mark Ferguson, SFI DG – quote from 2014 Annual Report

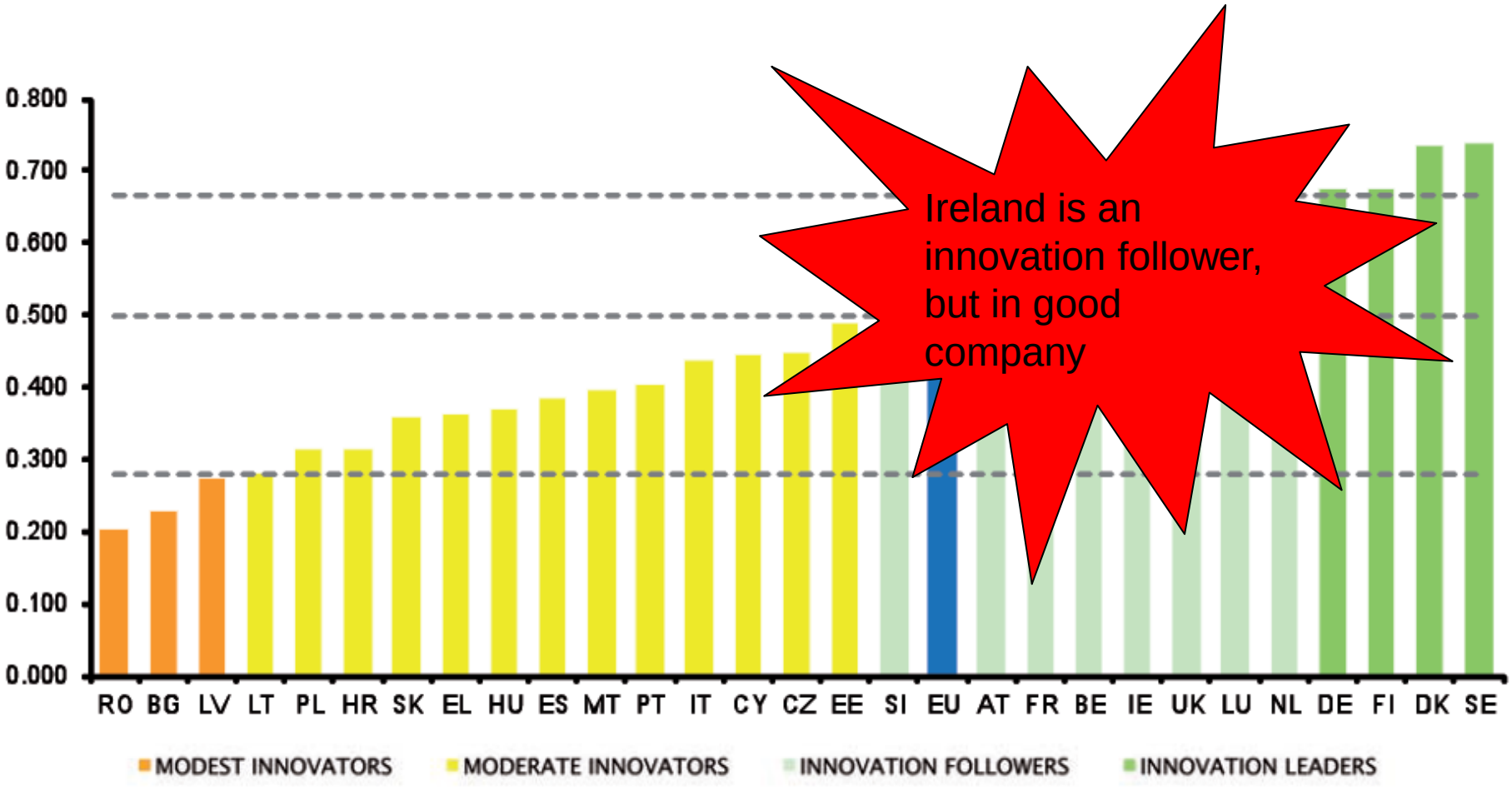
2015 Global Innovation Index

(Cornell University – INSEAD - WIPO)

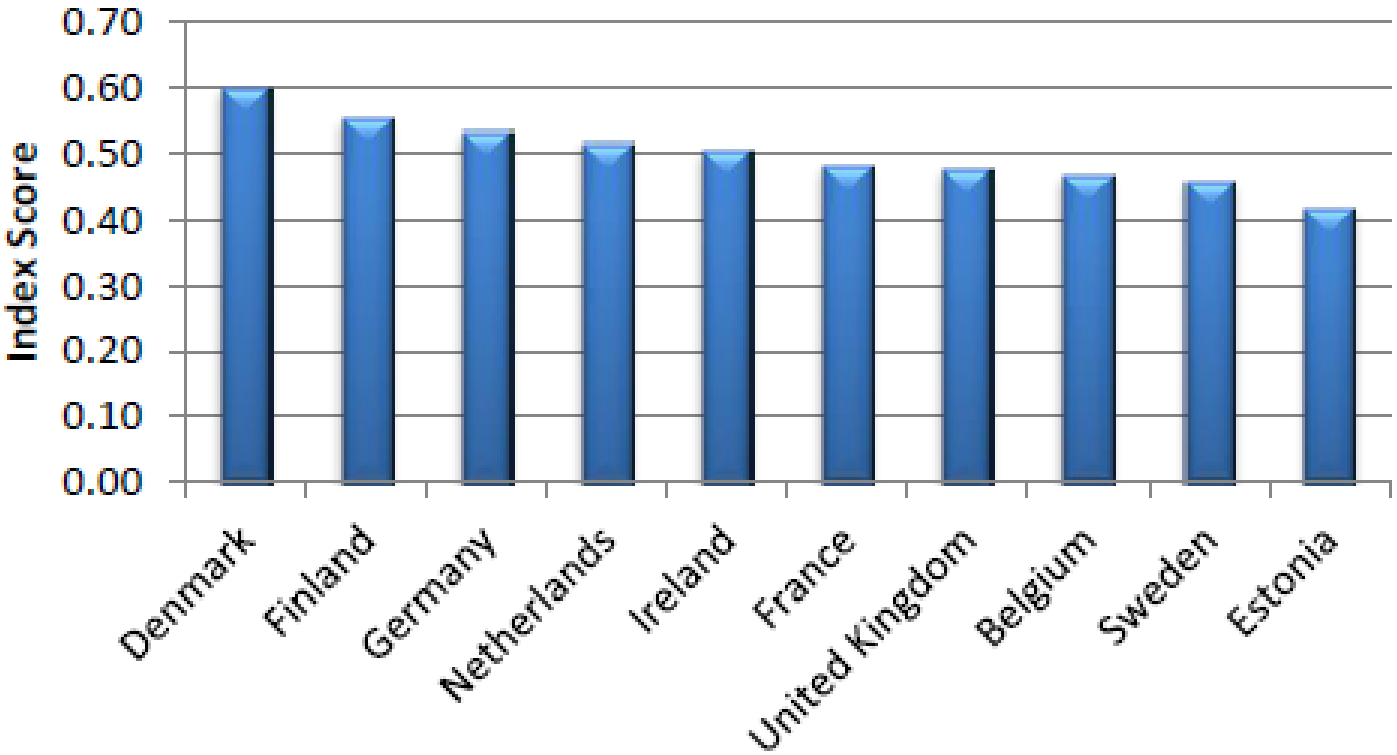
Surveys 141 economies around the world, using 79 indicators to gauge both innovative capabilities and measurable results



2015 Innovation Union Scorecard



Innovation Index for the Agri-Food sector
(Renwick, Lapple, O'Malley and Thorne, 2014)



Index based on: Innovation inputs (e.g. public and private sector investment in R&D)
Innovation outputs (e.g. patents, publications)
Innovation outcomes (firm and farm performance)

Conclusion

Strong science base in Ireland, including in agri-food, although public investment in R&D is below EU average.

And we are doing well at turning science into innovation by international standards

Channels of innovation from public research to industry – Case study of Teagasc in 2014

Conclusion
Multiple channels to impact, which these 3 particularly important for Teagasc

- Licences, options and assignments: 17 signed in 2014
- New contract/collaborative research agreements > €25k: 16 companies
- Product Development (Pilot plant rentals): 84 companies
- Consultancy: 11 companies
- Specialist analysis: 97 companies
- Courses: 112 companies

Recent significant investments in food related RDI

What is FHI?

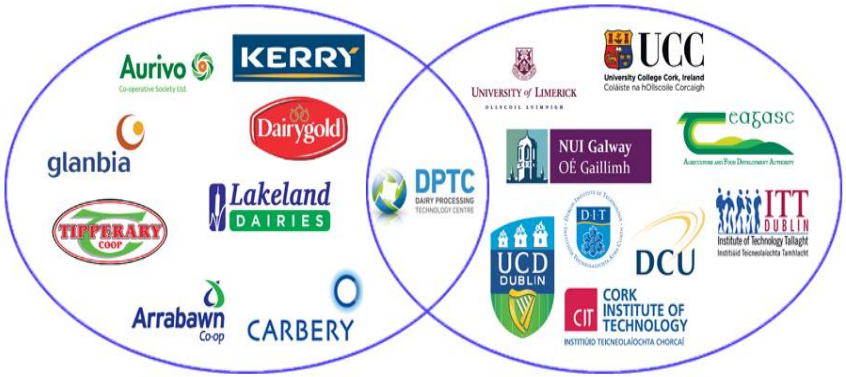
FOOD FOR HEALTH IRELAND

TECHNOLOGY CENTRE
SUPPORTED BY ENTERPRISE IRELAND

- **Partnership between:**
  - Public Research Organizations
  - Irish food industry
- **Funded by**
  - Enterprise Ireland and Industry partners
  - Budget € 19,2 mio plus in-kind contributions
  - Second 5-year term, since September 2013
- **Industry-led research agenda:**
  - Research on functionality of milk components
  - Infant nutrition, glycemic management, appetite modulation, healthy ageing, healthy cheeses, technology
  - Strong market position of industry partners

UCC University College Cork
University of Limerick Ollscoil Luimnigh
Teagasc
DCU
UCD Dublin
NUI Maynooth
NUI Galway Ollscoil na Gaillimh
Carbery
glanbia
Kerry
Dairygold Food Ingredients
Ornua The Home of Irish Dairy
fhi Food for Health Ireland

DPTC €25M Innovation Investment in the Irish Dairy Processing Industry



TECHNOLOGY CENTRE
SUPPORTED BY ENTERPRISE IRELAND

Moorepark Technology Limited is a joint venture between Teagasc and the Irish dairy industry

€10 million capital investment announced in Feb 2015

evelopment Authority

Meat Technology Centre

Preparations almost complete for a new Enterprise Ireland-industry funded technology centre for meat processing industry

Almost €8million investment

Will involve all major beef/sheep processors in Ireland and one from Northern Ireland

Teagasc, UCC and DIT are the main research organisations

Some relevant proposals in Food Wise

New Technology Centre for the Prepared Consumer Foods Sector

Some relevant proposals in Food Wise

Teagasc to establish a new Food Innovation Hub at Moorepark

Conclusions

Ireland has a vibrant food sector, but not many big companies

RDI will be important to achieve export growth targets in Food Wise

We now have a strong science base in Ireland, including in agri-food, although public investment in R&D is below EU average.

We are doing well at turning science into innovation by international standards

There are multiple channels to impact

Some recent significant investments in Irish food RDI, which help overcome the relatively small size of our companies by global standards, by engaging collectively in pre-competitive research