



European
Commission



Coping with the challenges of sustainable agriculture and food security – the contribution of EU research and innovation

PARIS

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Marc DUPONCEL
DG Agriculture and Rural Development
European Commission

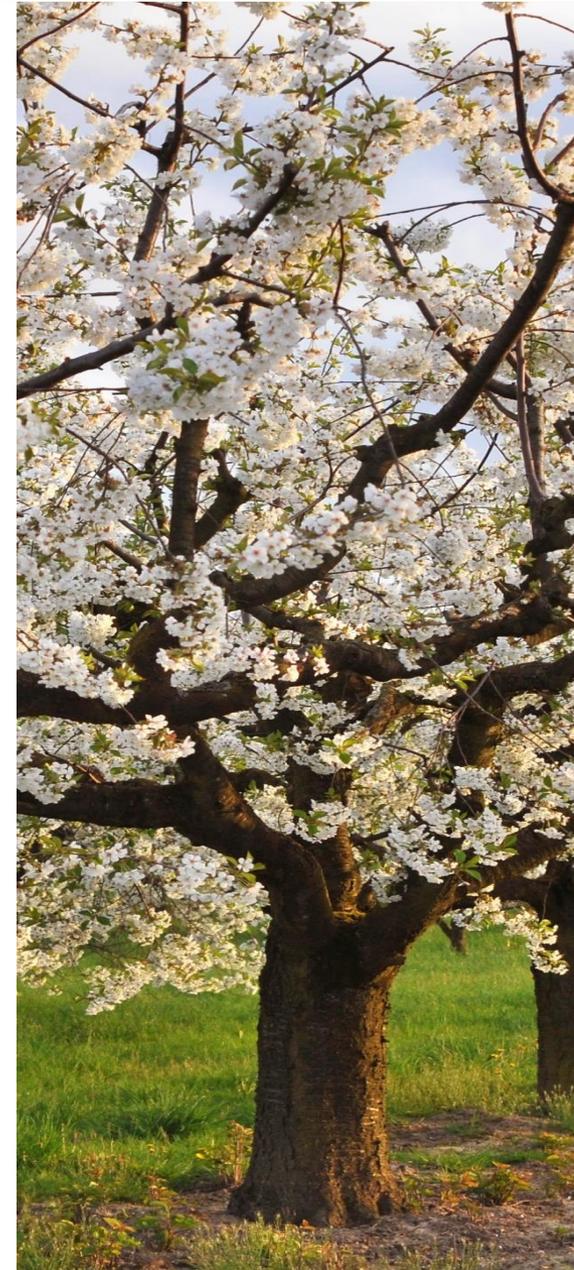


Agriculture
and Rural
Development



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1. Agricultural research in Europe – are we up to the challenges?
2. European Commission's strategic approach to research and innovation
3. Going down the road: boosting innovation with the European Innovation Partnership

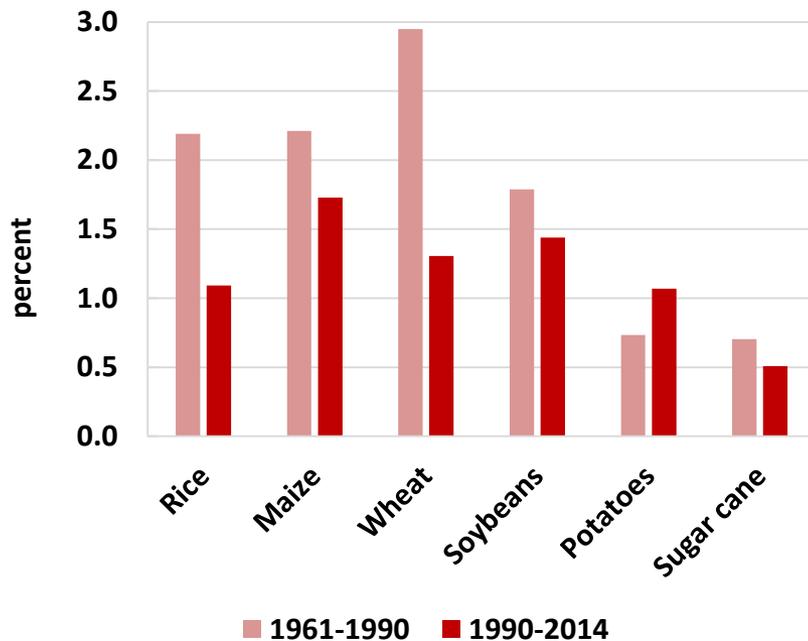


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No reason for complacency on research ...



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- Climate change
- Biodiversity losses
- Resource scarcities
- Food and nutrition security
- ...

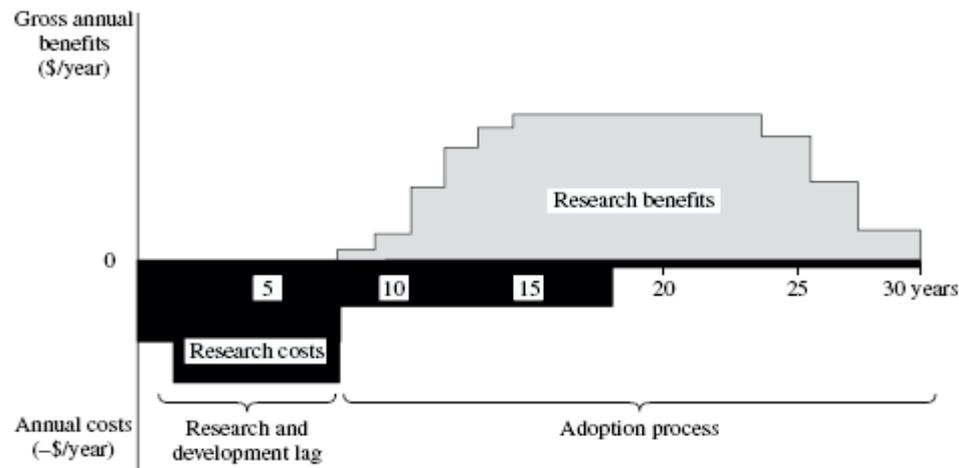
Average global rate of growth of crop yields

Source: Pardey (2016) on the basis of FAO data

High rates of return of agricultural research

Cost benefit analysis

Figure 1—Flows of resources, benefits, and costs



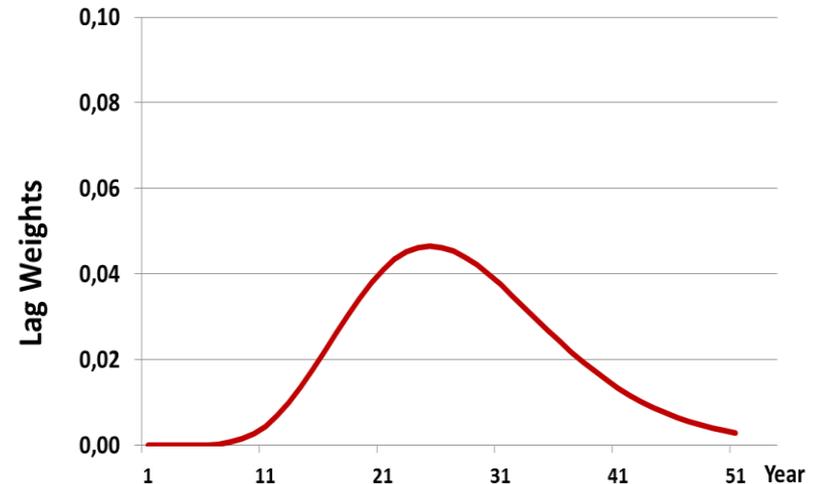
Source: Alston, Norton, and Pardey 1995.

Internal rates of return (IRR) of research between 20 and 80% (Beitema and Koc, 2009), average around 40%. IRR declining due partly to diversification of research objectives. IRR of 40% = €100 invested today generates an annual stream of benefits of €40 / year in the future.

Generating impact takes time

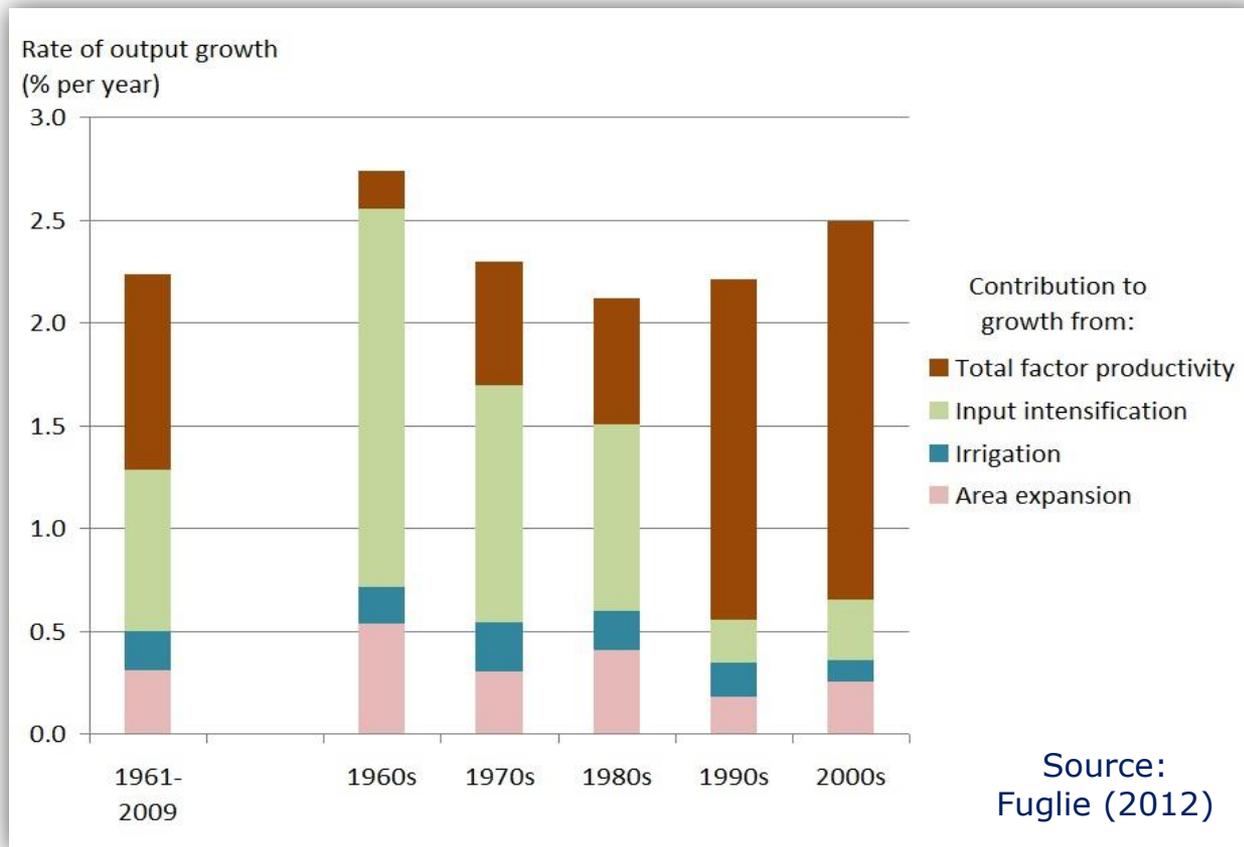
- *Many studies suggest lags of 15-25 years before peak impacts are reached and with continuing effects for decades afterwards.*
- *Hybrid corn:*
 - 1906-1908 corn heterosis (Shull)
 - 1918: double cross hybrid suggested (Jones)
 - 1921: first release hybrid seeds
 - 1930s: seeds widely available
 - 1960s: 85% of US acreage hybrid reached
- *ASIRPA study of INRA (2014): average lag between initiation of research and impact is 19 years.*

Time lag between research and impact on farm productivity growth



Source: Alston, Anderson, James and Pardey (2010, 2011)

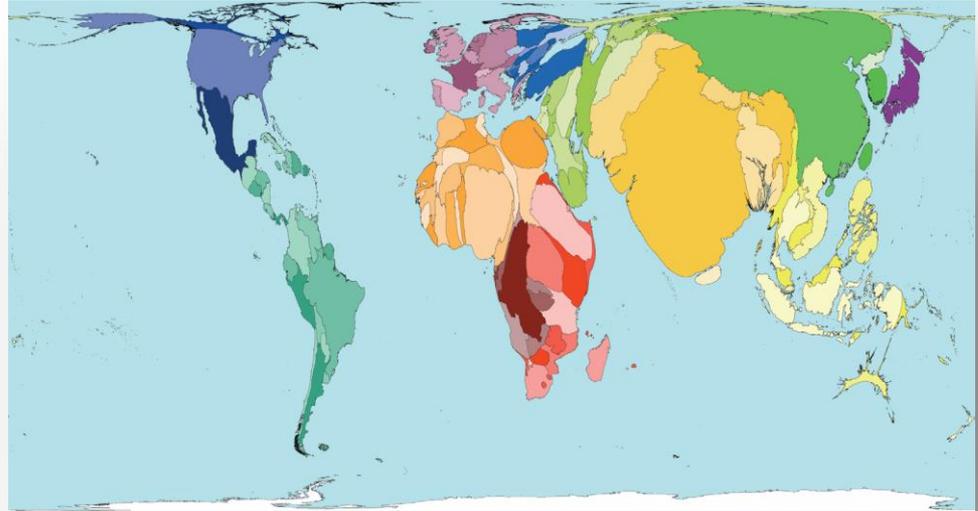
TFP plays an increasing role in agricultural output growth



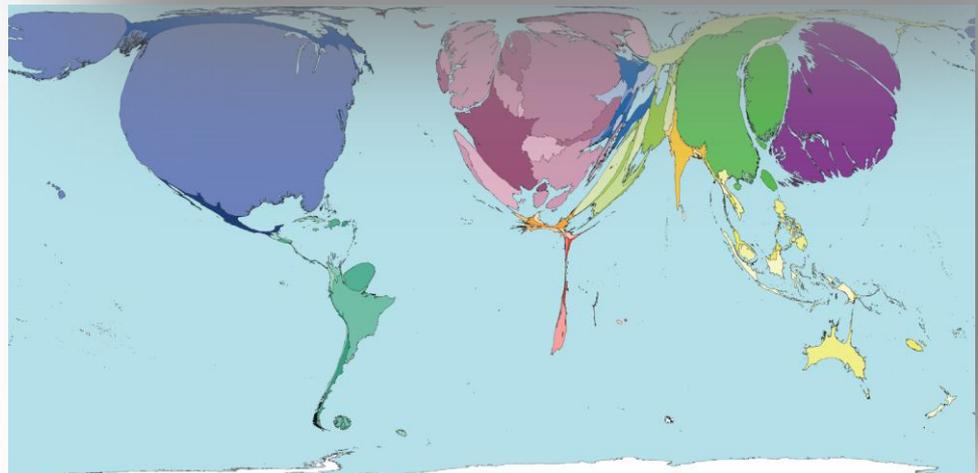
This reflects the increasing role of research and technologies in output growth

Knowledge and population divide (Worldplanner)

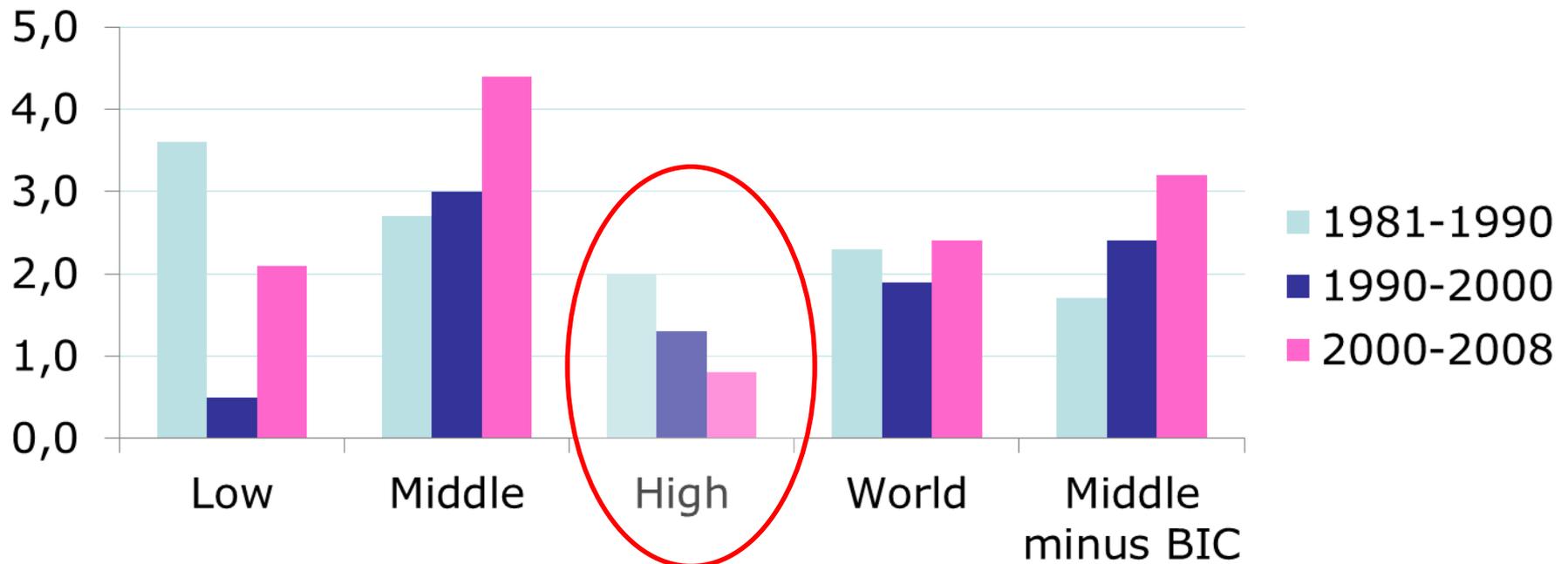
**Population in
2050**



**Research and
development
investments**

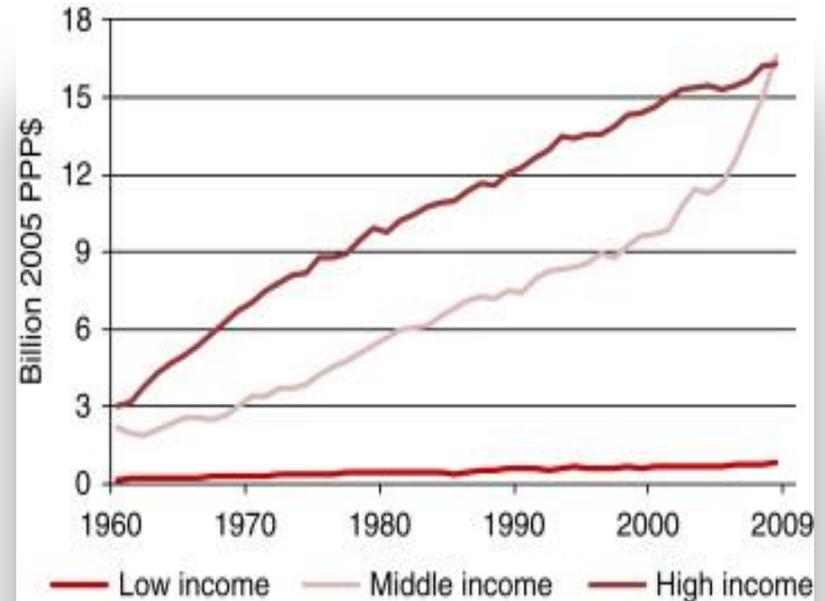
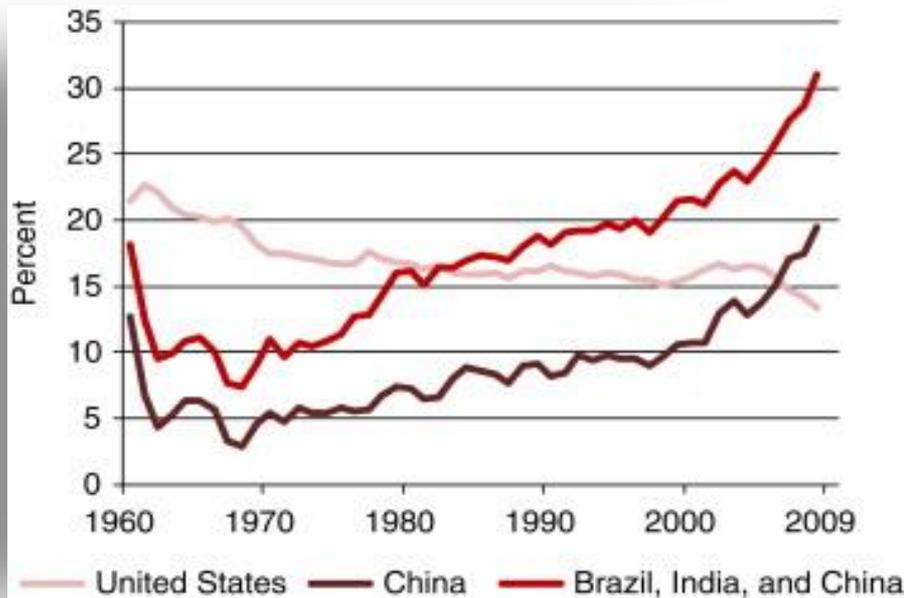


Average annual agricultural R&D spending growth rates (%) by country income class



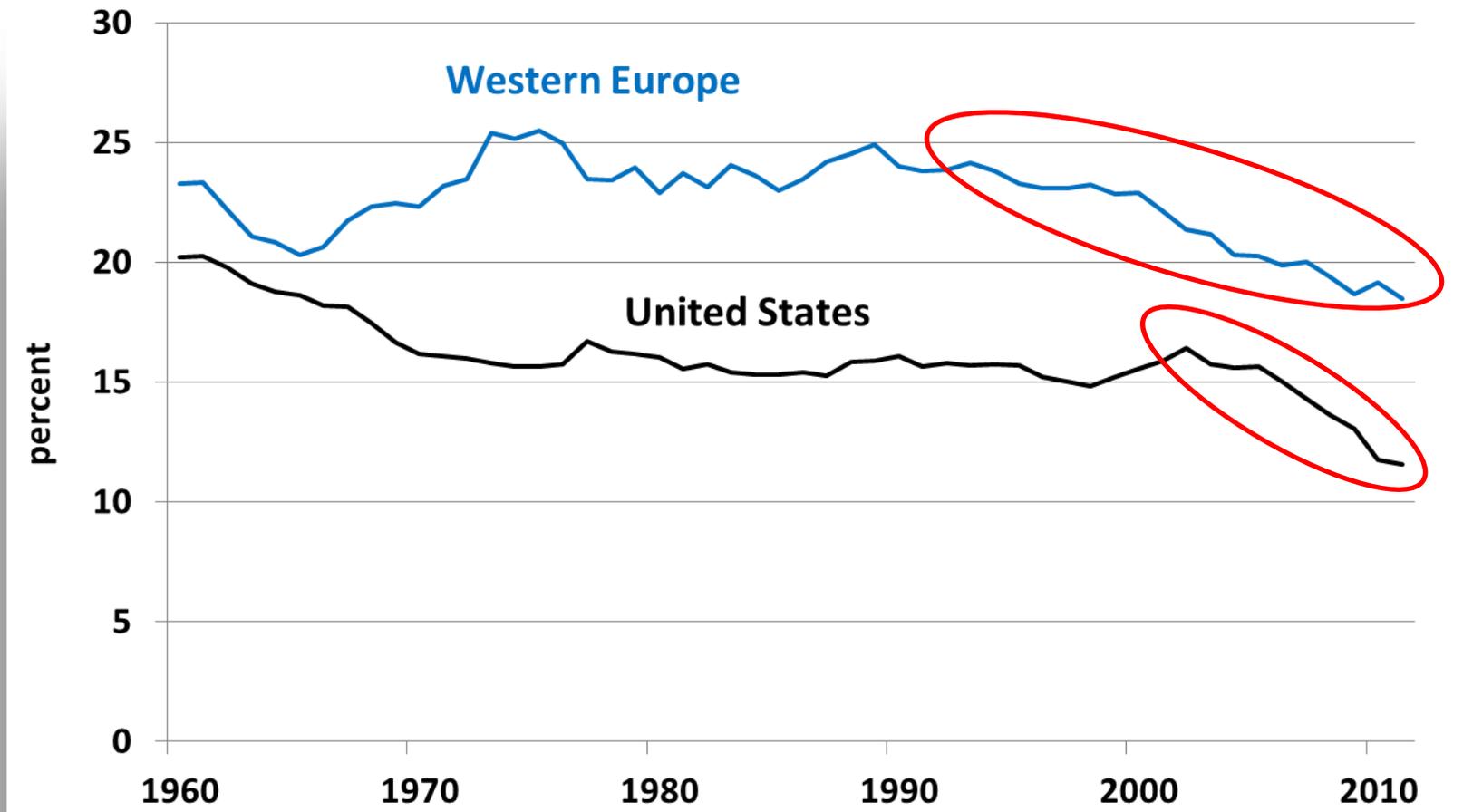
Source: ASTI-IFPRI (2012)

Shifts in public investments in agricultural research at global level – increasing weight of middle income countries



Source: Pardey et al. 2014

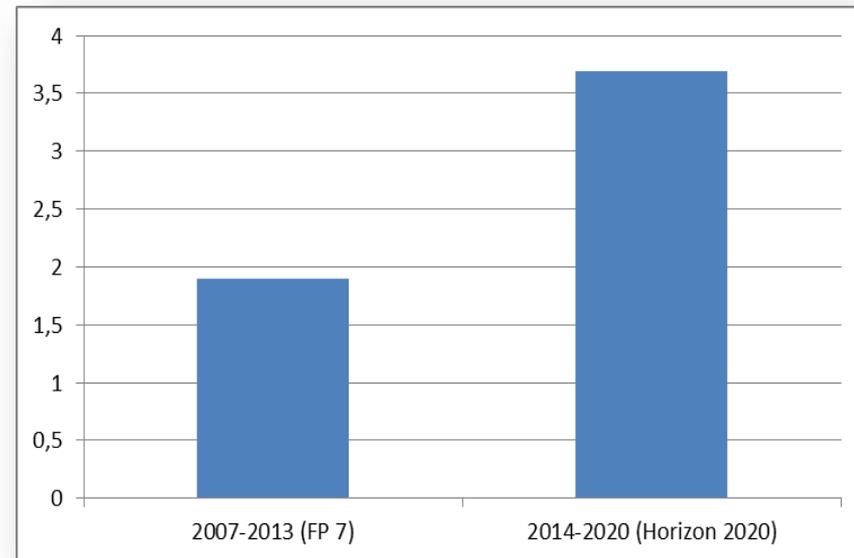
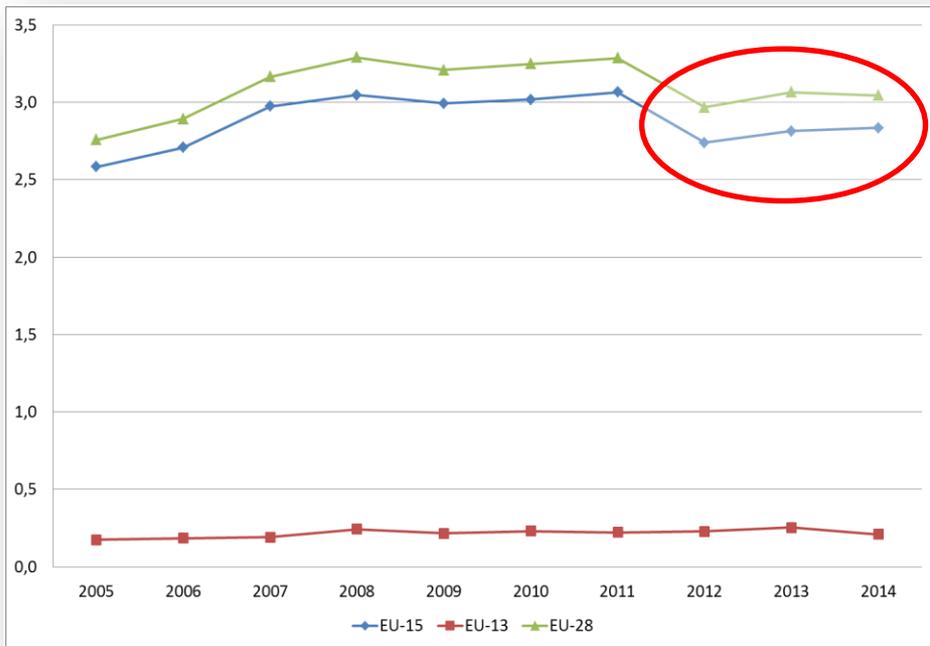
Shifting Global Shares of Public Food & Ag R&D, 1960-2011 (source: Pardey et al. 2016)



Recent evolutions in agricultural research public investment

Decreasing Member State spending (billion €) (GBAORD) - Eurostat

... Not compensated by increasing EU spending (billion €) in the Framework Programme (figures for the whole bioeconomy)

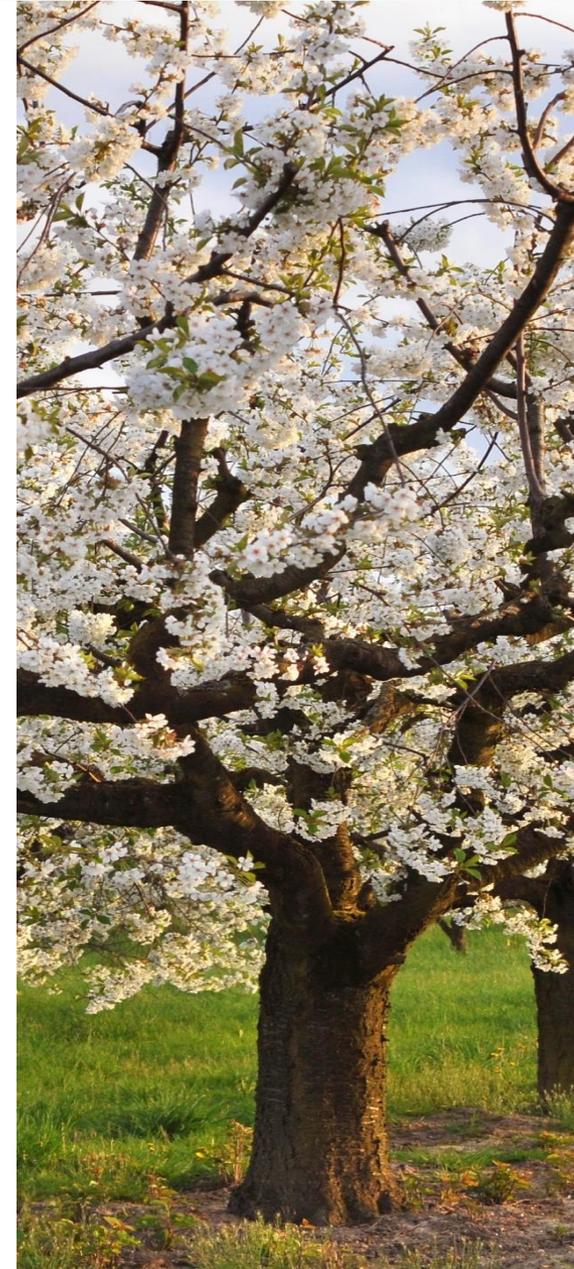


- Budget cuts in several Member States (but increases in some)
- Recurrent down, competitive up

EU Framework programme: **about 10%** of MS investments in research

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Horizon 2020



1. Health, demographic change and wellbeing

2. Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bio-economy (€3.8 billion 2014-2020)

3. Secure, clean and efficient energy

4. Smart, green and integrated transport

5. Climate action, resource efficiency and raw materials

6. Inclusive, innovative and reflective societies

7. Secure societies

A strategic approach to EU agricultural research and innovation



19/06
AGRI
workshop
on the
future of
agriculture
R&I

15/10 EU
Scient.
committee
event on
Global Food
Security

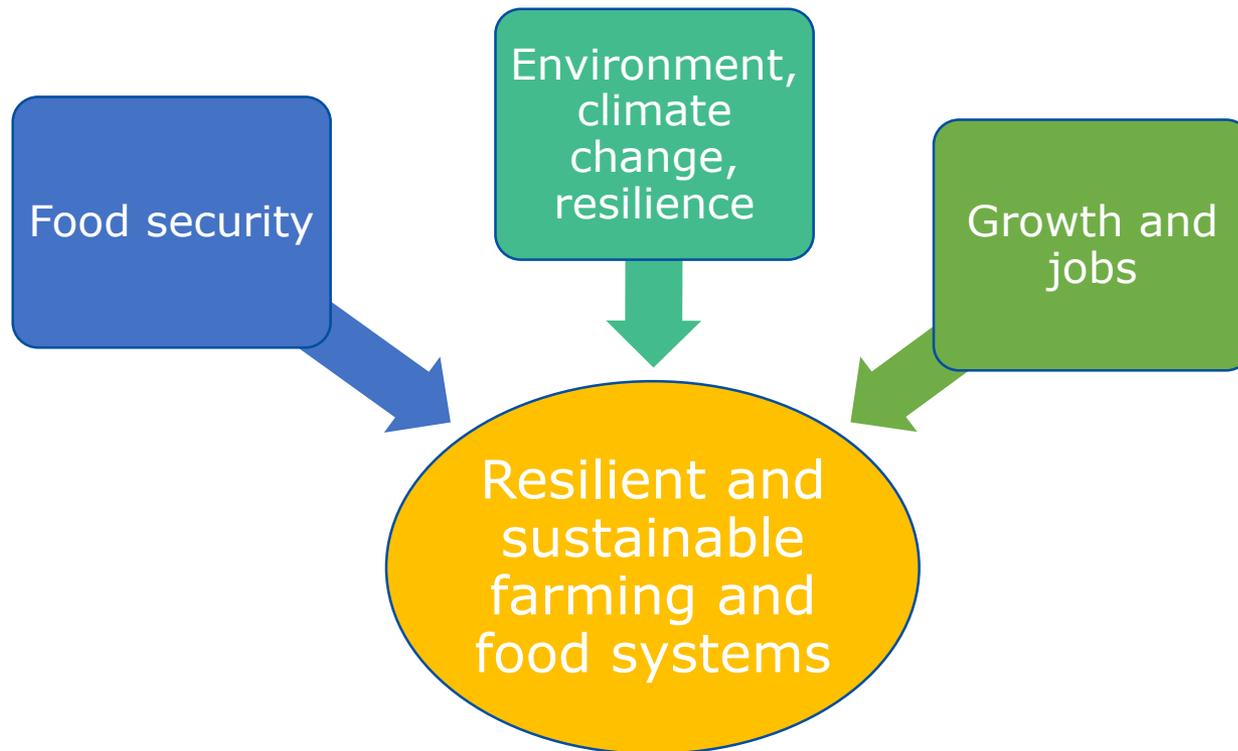
*Strategic
programming
2016/2017:
expert
workshops*

08/10
SCAR
Foresight
conference

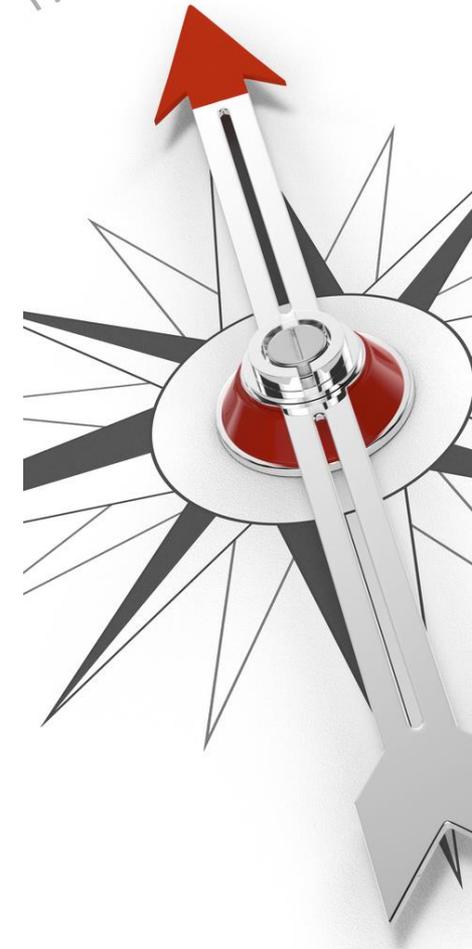
**26-
28/01/16:**
conference
on
agriculture
R&I



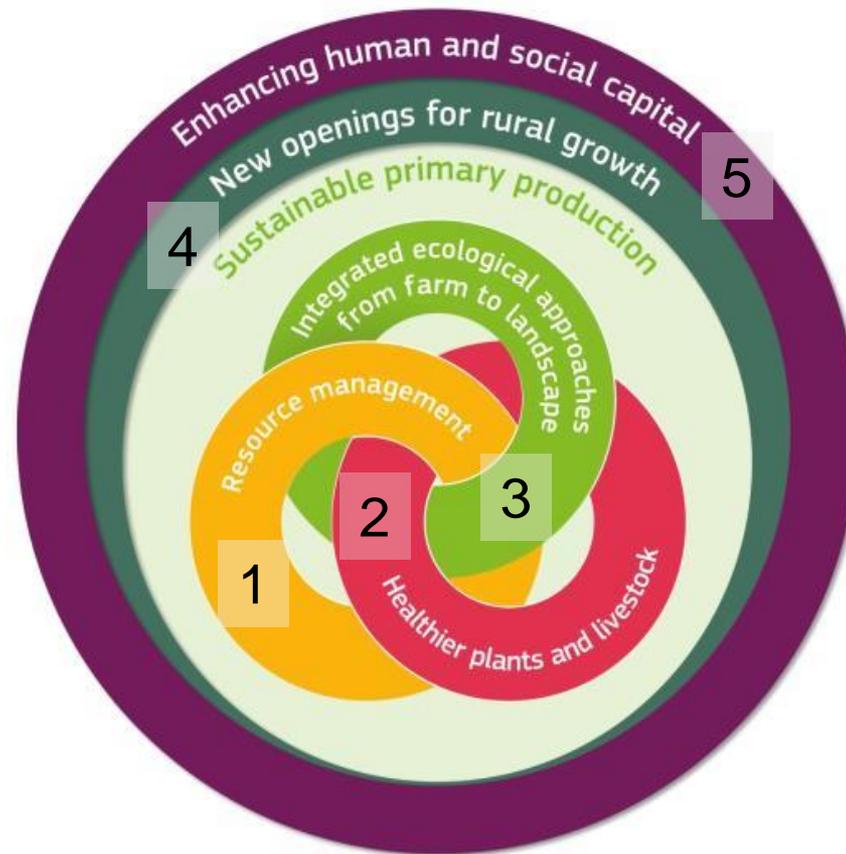
Challenges are long-term



ALLENGE



Five building blocks



Cross-cutting issues



Societal
engagement



Systems-based
approach,
interdisciplinarity and
transdisciplinarity



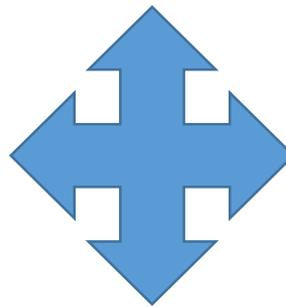
Enabling sciences
and infrastructures



ICT as an enabling
technology for
research and
innovation

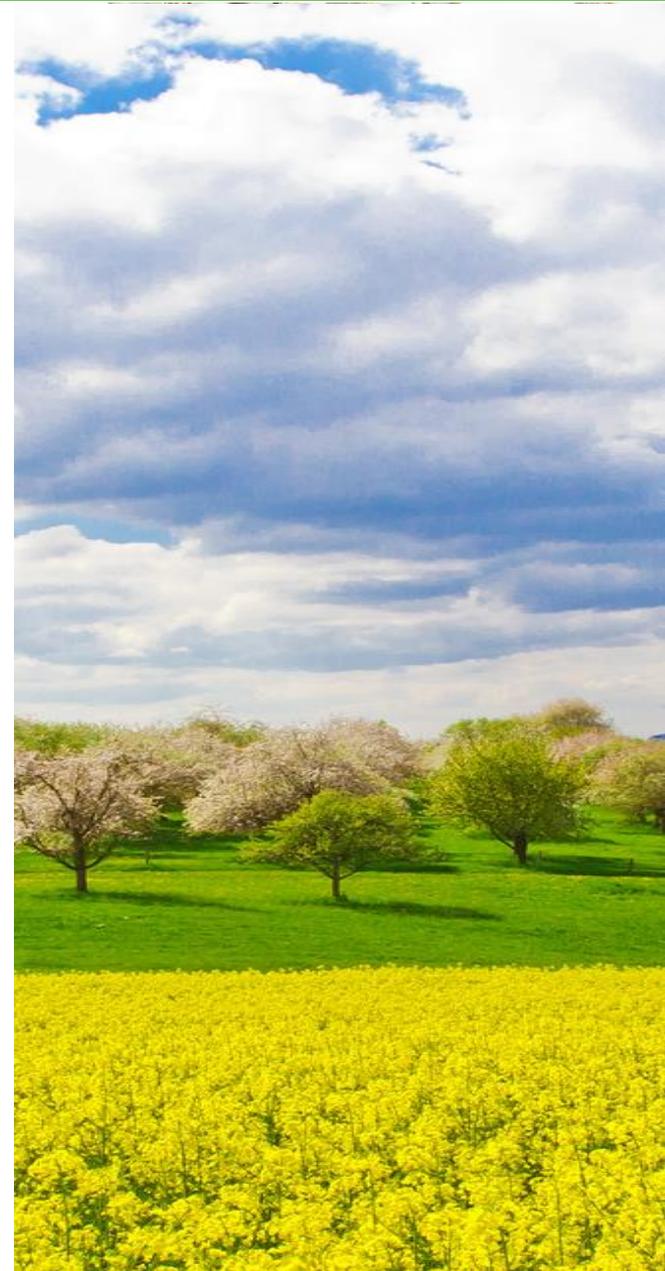


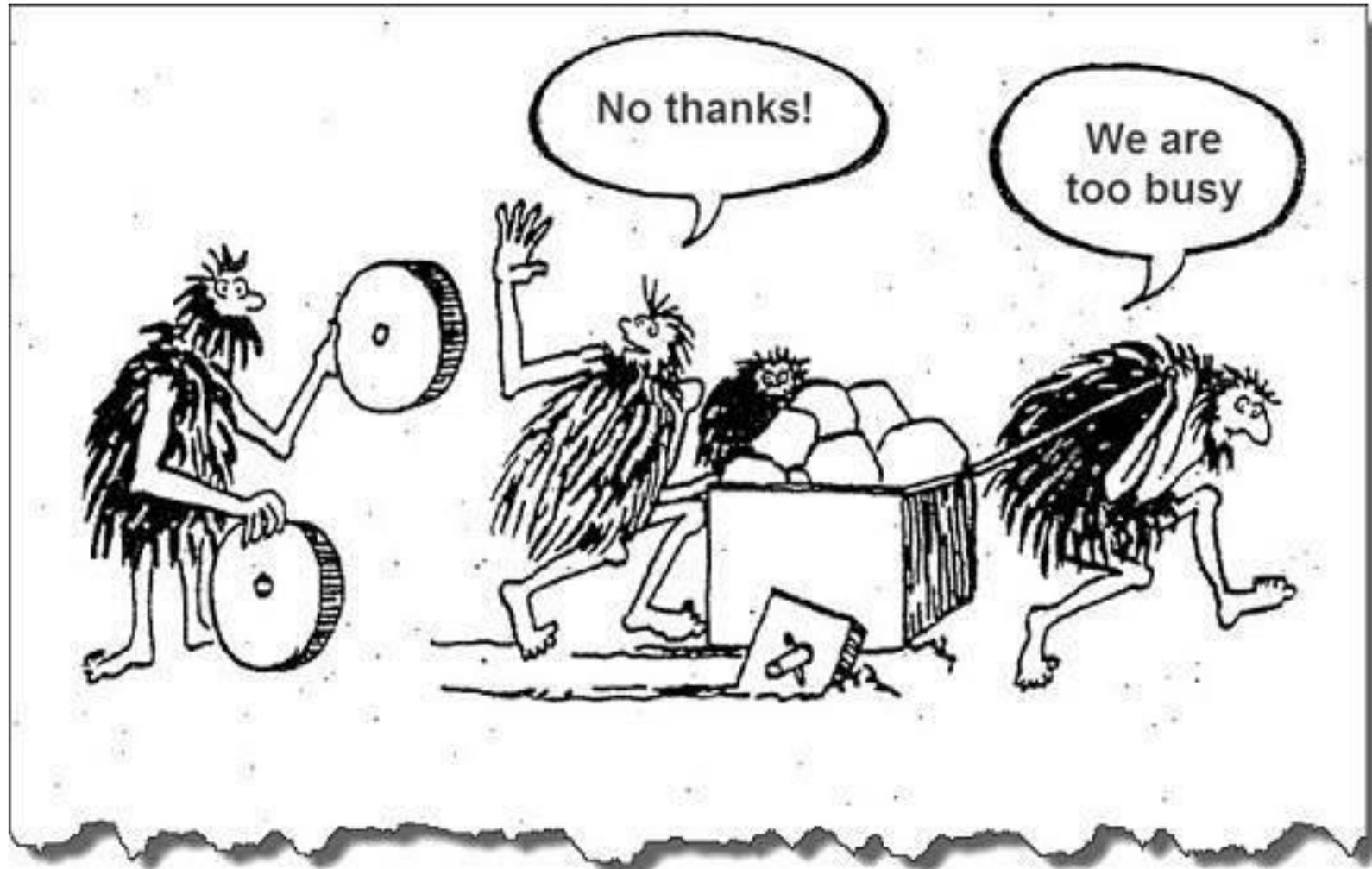
Socioeconomic
research and
support for EU
policies



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The EIP-AGRI in a nutshell

Innovation Union Flagship Initiative: five European Innovation Partnerships link existing policies and instruments to speed up innovation

Aim: Fostering a competitive and sustainable agriculture and forestry sector that 'achieves more from less'

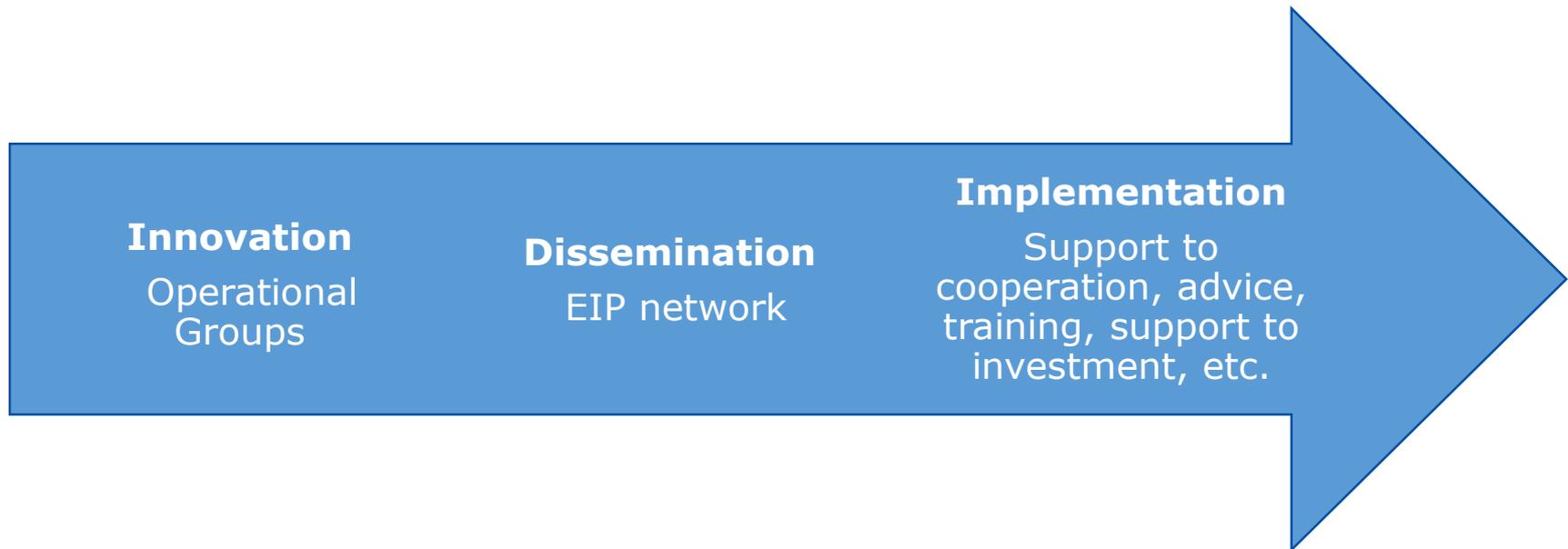
Approach for the agricultural EIP: Closing the innovation gap between research and practice and forming partnerships by:

- Using the **interactive innovation approach** which aims to involve complementary actors in a process of co-creation of knowledge
- Linking actors through the EIP-AGRI Network

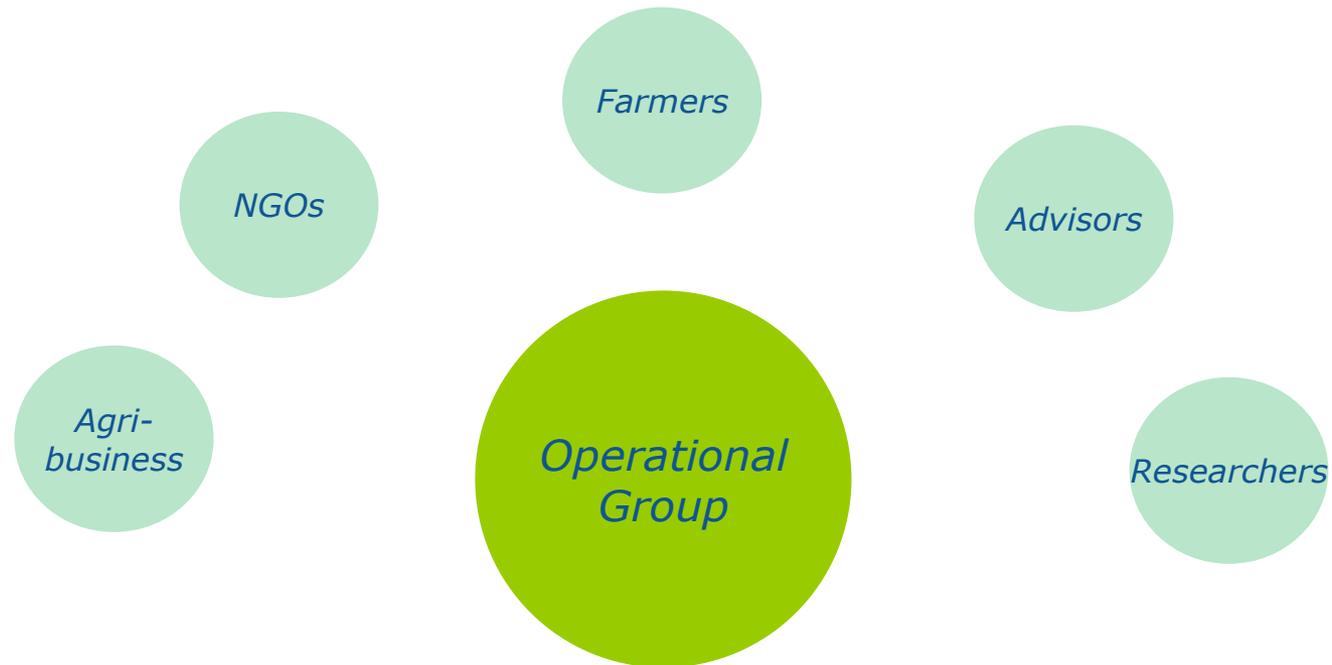
The EIP-AGRI

- **Rests on two EU policies:** the Common Agricultural Policy (CAP) and Horizon 2020 (the Framework Programme for research and innovation)
- **Contribution of the CAP:** multi-actor innovation projects at local level ("Operational Groups" in Rural Development), support to the AKIS (support to advisory services, etc.)
- **Contribution of Horizon 2020:** multi-national research and innovation projects; networking at EU level on R&I matters, demand-driven innovation

With the EIP innovation is embedded into the Rural Development pillar of the CAP



Rural Development - Operational Groups -



Operational groups (cont.)

- *Currently 95 Member States / regions will implement the EIP in their rural development programmes 2014-2020*
- *More than 3 200 OGs planned in 2014-2020*
- *Various project sizes ranging from about €30 000 to €1.5 mio*
- *Operational groups have an obligation to report on results so as to make generated knowledge accessible to others and to open up contact possibilities between actors working on similar themes*

Horizon 2020: Commission approach toward innovation in agriculture

- ***Horizon 2020 projects:*** from €1-2 mio (coordination actions) to ... €45 mio (European joint programme on Zoonoses)
- ***International Cooperation:*** bilateral (e.g. with China) and multilateral (e.g. international research consortium Star-Idaz on animal health)
- ***Multi-actor projects:*** seek involvement of complementary actors in project activities (for all or part of project activities)
- ***Thematic networks*** exploiting existing research and best practice on specific themes chosen bottom-up – to foster knowledge exchange and translation into practice language at the European level

The European Innovation Partnership Network



And also ...

- Focus groups (short-term expert groups working in a large variety of areas)
- Network, workshops and seminars
- A dedicated website

Concluding remarks

- *Agricultural research necessary to cope with **long-term challenges** – yet the EU could foster synergies to deliver better - Big challenge for the future will be **to work better together** (research infrastructures...)*
- *Importance of agricultural research policy (research financing) (stability of financing, instruments, etc.)*
- *Important changes at EU level with Horizon 2020 and the EIP-AGRI for 2014-2020 – paving the way for after 2020?*
- *Innovation through **co-creation of knowledge** has huge potential*

*"The best time to plant a tree was 20 years ago.
The second best time is now."*

Chinese Proverb

Many thanks for your attention!

Innovation in action

<http://ec.europa.eu/eip/agriculture/>

