

AIARD 50th anniversary conference



"Celebrating 50 Years of Progress and Inspiring Action for a Food Secure Future."

# Foresighting Sustainable Competitiveness in Agriculture & Food Security

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Presentation Outline:

- Drivers of Change
- Foresight - Stimulating Strategic Thinking
- ↓
- Overarching Strategic Initiatives
- ↓
- Driving Innovation in Agri-Food

**Strategic Questions**

# Drivers of Change:

At a global level:

- Globalization of Food Markets
- National & International Policies
- Climate Change
- Weather & Price Volatility

At the local level

- Competing Land Use (food crops vs livestock vs biofuels)
- Depletion of Natural Resources (water, biodiversity, fertilisers, etc.)
- Energy Supply
- Food Waste
- Advances in Science & Technology

Drivers of Change:

## Globalisation

Winners <<<<<----->>>>> Losers

Multinationals

Some Farmers & Consumers

Lengthening Food Chains



Increasing Food Fraud + Authenticity Concerns

### STRATEGIC QUESTIONS?

Can global governance alleviate Food Security Concerns?

What does it mean?

How can it be achieved?

Drivers of Change:

## Trade Policies - Fundamental

Food Security



FREE TRADE



### Strategic Question?

Can national & international policies be better aligned to Food Security requirements?

Drivers of Change:

# Price Volatility

International Food Policy Research Institute, Washington

Trade Policy Measures

Do not alleviate the problem - often worse

Intervention stocks not effective  
exception – Humanitarian Food Reserves

Solutions

Economic Growth

Intra-structure/roads

Reduced post-harvest losses

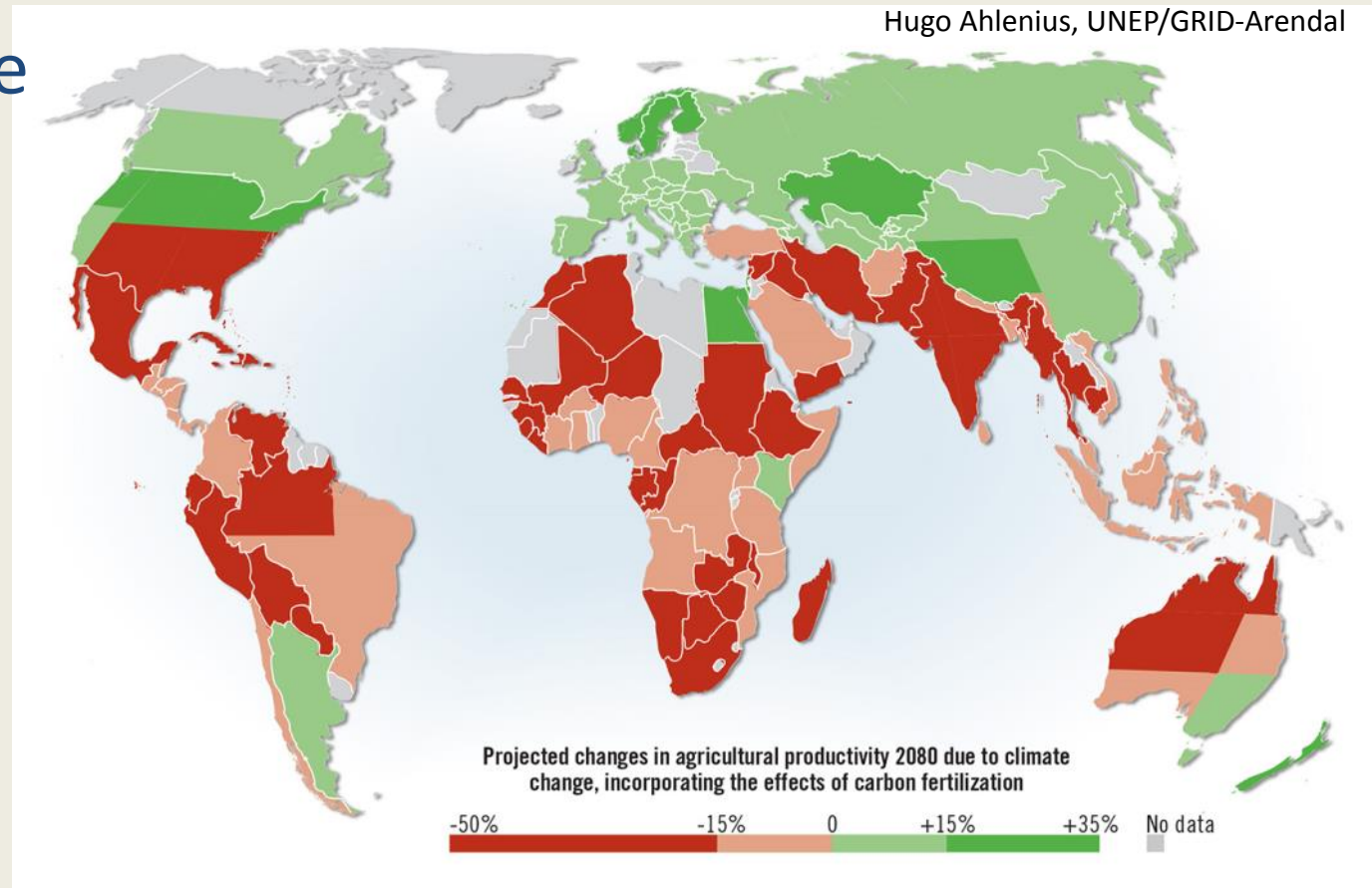
## Strategic Question

Can Food Safety Nets be designed to ameliorate excessive price fluctuations to benefit both producers and consumers?

Drivers of Change:

## Climate Change

Hugo Ahlenius, UNEP/GRID-Arendal



Source: Cline WR, 2007

*Global warming & agriculture: impact estimates by country.* Peterson Institute: Washington, DC.

## Strategic Question?

How can global and national policies/actions be mobilised to improve the resilience of food supply?

Drivers of Change:

## Finite Natural Resources

FAO Report (2002)\*, by 2030:

- **Land** - additional 120 million ha for food crops in developing countries
- **Water** - irrigation expected to increase to 242 million ha
- **Livestock products** – in developing countries:
  - per capita meat consumption 1964-66 +150%;
  - milk & dairy products 1997-99 +60%
  - consumption of livestock products to rise by a further 44%

### Strategic Question?

What issues need to be addressed to improve in the efficiency of resource use?

\*World agriculture: towards 2015/2030 (<http://www.fao.org/DOCREP/004/Y3557E/y3557e00.htm>)



Drivers of Change:

## Food Waste

Post-harvest Food Losses  $\approx$  20-50%

Industrialised Countries



Retailing &  
Household Habits

Developing Countries



Storage/Supply  
Chain

**Strategic Question?**

What actions can be taken to contain Food Waste at all levels in global and national food supply systems?

Drivers of Change:

## Knowledge & Technology

Large volume of knowledge **already exists**

Current Knowledge -----> Increase Food Production

Implementation of **proven** technologies will probably meet demands to 2030

### Strategic Question?

What is required to bring this about?

Knowledge Mobilisation Processes

Reformation Agri-Food Education Systems

Foresight:

## What is Foresight?

- Mind-shifting process
- Mobilises stakeholders & decision-makers & enables them to embark upon new strategic initiatives
- Contributes to innovation in policy & to the development of new forms of governance
- Powerful process of mutual learning

“We cannot plan the future, but we can plan *for* the future”

Foresight:

## Why Foresight?

- “We have **Politics** not **Policies**”
- “Europe must realise that its way of life is under threat”
  - provides an “early wake-up call”
- To facilitate transition:  
“resource-based -> knowledge-based -> innovation-based economy”
- “We must develop strategic capacity”

Foresight:

## Experiences in Foresight

### EU-level:

- EU Blueprints for Foresight Actions in Regions  
*Foresight & Transition to Regional Knowledge-based Economics*
- EU Key Technologies – 2012  
*Agri-Food Industries & Rural Economies*  
*Competitiveness & Sustainability*  
*The Key Role of Knowledge*

### Ireland:

- Rural Economy in 2025 – Foresight Perspective

### Africa:

- Proposed African Foresight Academy  
*Expert meeting 2010*

## Benefits in Agriculture & Food

*Strategic Perspectives:*

International  
Competitiveness

VS

Economic + Social  
Sustainability

FOOD SECURITY



Conceptual Models

*Sustainably-Competitive Agriculture*

## *Sustainably-Competitive Agriculture\**

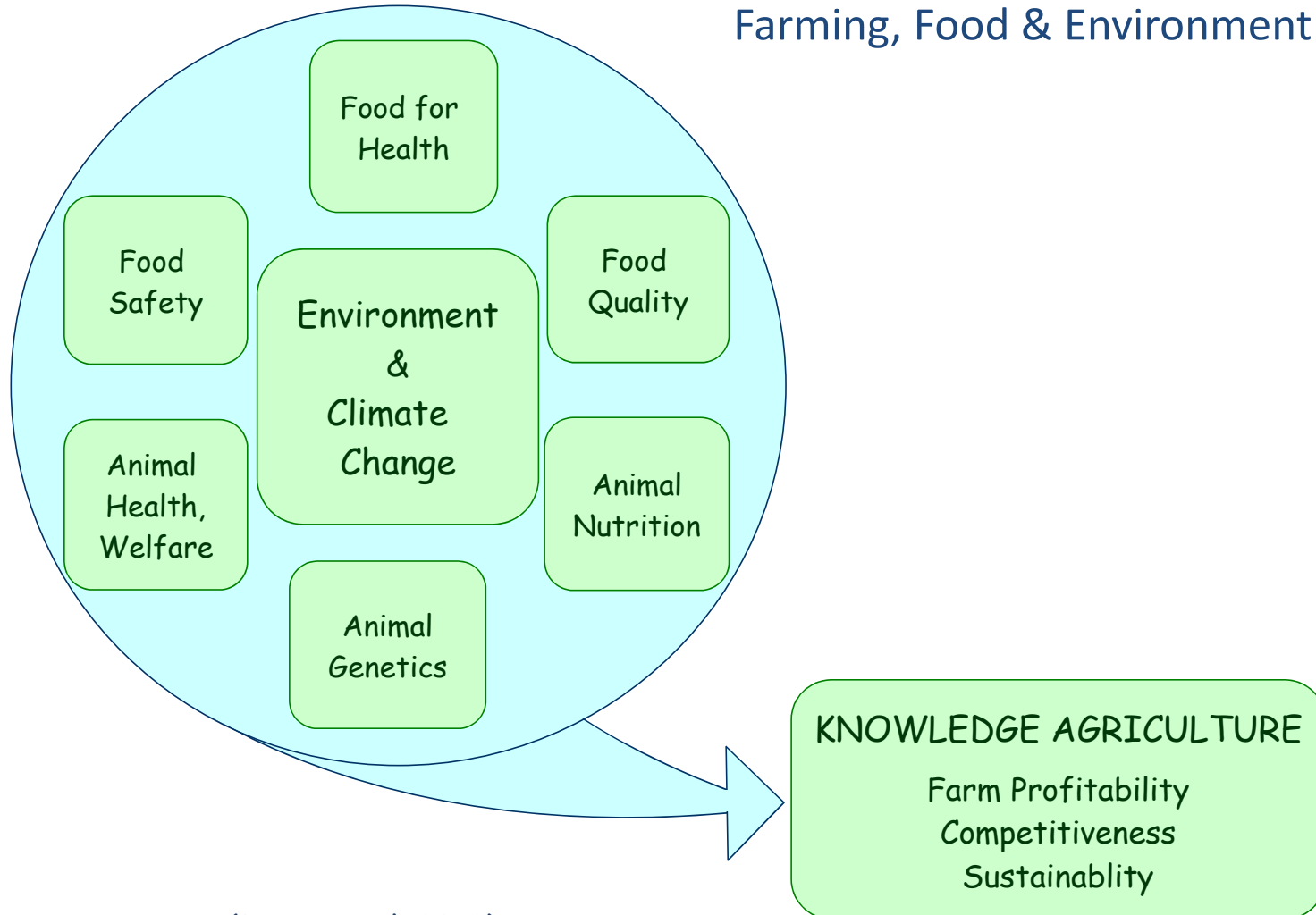
### Design Criteria:

- Profitable at farm level
- Produce market-required food products
- Meet animal health & welfare needs
- Environmentally sustainable
- Can cope with climate change
- Energy efficient

\*Purvis *et al.* 2012: Development of a sustainably-competitive agriculture. In: E. Lichtfouse (Ed.) *Agroecology and Strategies for Climate Change, Sustainable Agriculture Reviews* vol. **8**; pp. 35-65.

### Conceptual Model:

We **have the Knowledge** in:  
Farming, Food & Environment

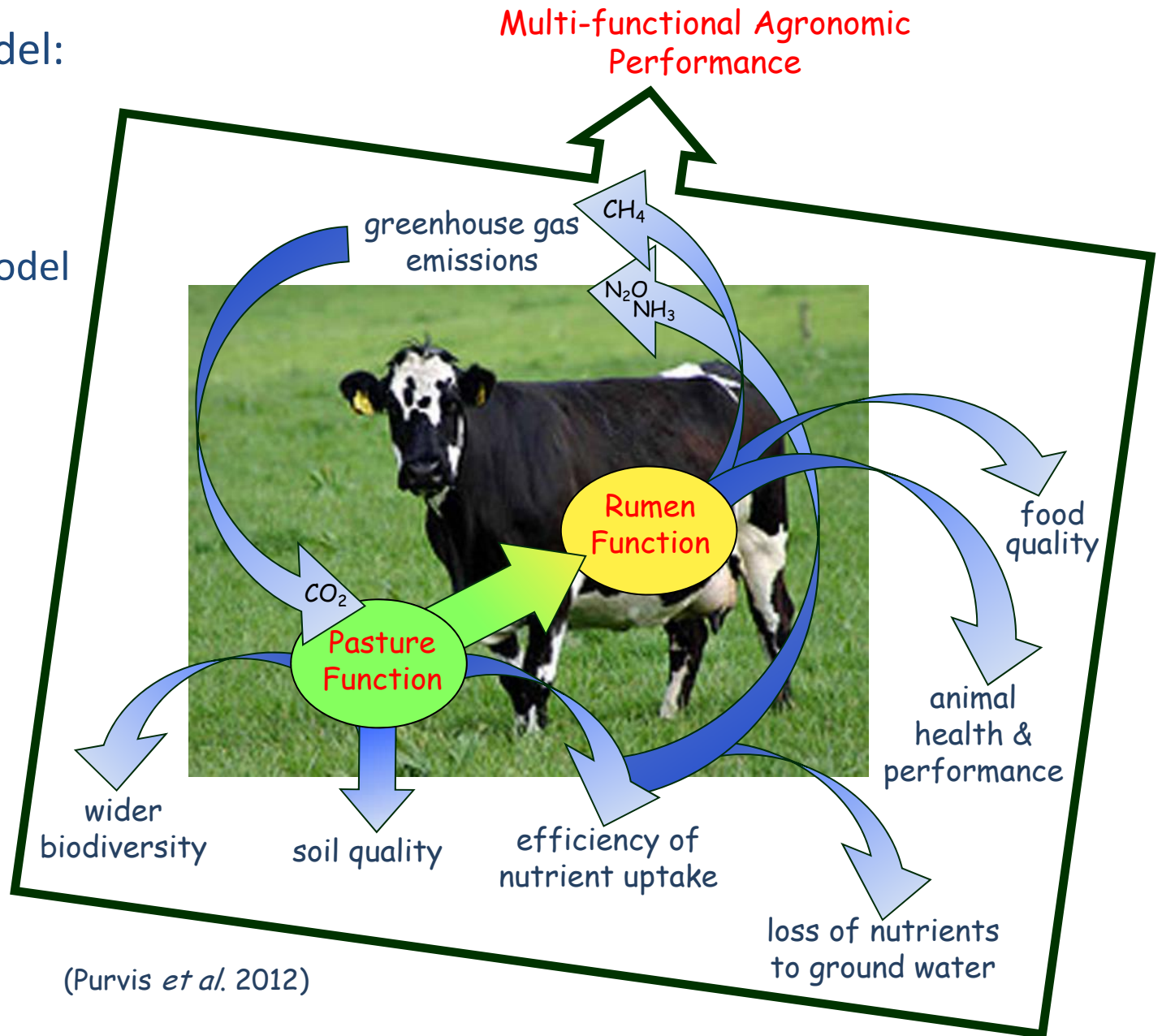


(Purvis et al. 2012)



Agronomic Model:

Much of the knowledge to implement this model **already exists**



(Purvis *et al.* 2012)

Strategic Thinking:

## Purpose of New Models

*To provide:*

A Strategic Framework for  
Thinking about Future Needs



Concerted Overarching Strategic  
Initiatives & Actions

## Global Scale of Challenges

“The challenges facing agriculture today are **unlike anything we have experienced before, and they require revolutionary approaches to solving food production and sustainability problems**”

(Foley *et al.* 2011: Solutions for a cultivated planet. *Nature* **478**, 337-342)

## Overarching Strategic Initiatives

To Drive Innovations in Agriculture & Food

Two Overarching Strategic Initiatives

1. Agri-Food Education
2. Knowledge Mobilisation

Overarching Strategic Initiatives

## Integrated Agri-Food Education

Imperative that agriculturalists and farmers:

***“THINK FOOD”***



Reform of Conventional Education Systems

Remove demarcation between:

Agriculture vs Food

Position ENVIRONMENT at interface:

Farming >>> Environment >>> Food

Overarching Strategic Initiatives

Continuing Professional Development



Re-invigorated Farm Advisory Services

To drive innovation in farming & food



Expertise Requirements

FARMING ↔ ENVIRONMENT ↔ FOOD

## Knowledge Management System

Much knowledge already exists, the priority is to:

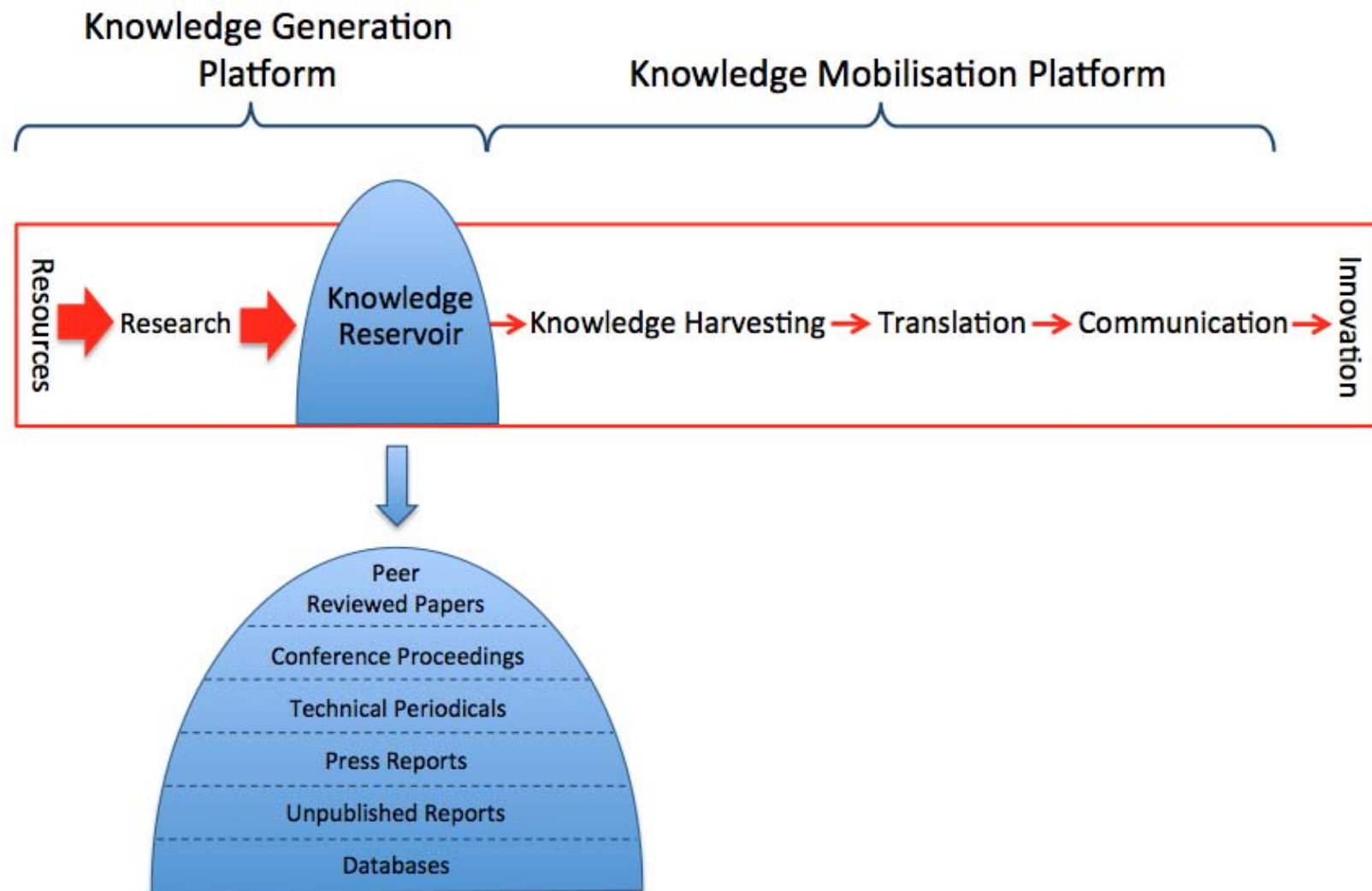
*“APPLICATION OF EXISTING KNOWLEDGE”*



Three-part process:

1. *Knowledge Generation Platform*
2. *Knowledge Mobilisation Platform*
3. *Interconnecting Knowledge Reservoir*

## The Knowledge Management System





## Knowledge Management

Need to move main focus from:



Not linear

Involves three processes:

1. *Knowledge Harnessing*
2. *Knowledge Translation*
3. *Knowledge Communication*

Overarching Strategic Initiatives

Holy Grail of Research:

Knowledge Generation



Peer-reviewed Publication

System provides:

Excellent  
Recording

but

Limited  
Communication

% Projects Published ?



Loss of Knowledge & Poor Return on Investment

## Two Types of Research Professions

1. Knowledge Creation
2. Knowledge Mining

Knowledge mining needed to inform Decision-Makers & Managers



Radical Reform of Funding Systems & Agencies

**Strategic Question?**

How can Knowledge Mobilization be prioritized?

Overarching Strategic Initiatives

## EU Knowledge Transfer Conference Dublin 2013

*Future Farm Advisory Services  
- Delivering Innovative Systems*

Outcomes useful for this  
conference to reflect on

## Future Farm Advisory Services – Delivering Innovative Systems



## Key Outcomes & Strategic Initiatives

*From Knowledge Transfer Conference, Dublin, June 12<sup>th</sup>-13<sup>th</sup> 2013*



Overarching Strategic Initiatives

*“Organisational Innovation is MORE IMPORTANT than  
Technical Innovations”*

Breakout Group:

Organisational Structures & Supports for Advisory Services



Engaged Largest Number of Participants

Why?

Recognition of need for ORGANISATIONAL CHANGE ?

⇒ AIARD Conference – Most Timely

# Ultimate Question?

Under the prevailing policy regimes, is it possible to have an Agriculture that is both Competitive and Sustainable?