



Australian Government

Australian Centre for  
International Agricultural Research

# Developing the Indo-Pacific region and Developing the North: opportunities and partnerships

Andrew Campbell

Crawford Fund NT  
May 2018



**ACIAR**  
[aciar.gov.au](http://aciar.gov.au)

# Outline

An aerial photograph of a rural landscape in northern Australia. The foreground shows a mix of green fields, some with small clusters of trees, and a dense area of dark green vegetation. In the middle ground, there are more fields and a few small buildings. The background features a range of mountains under a clear sky.

Food & Nutrition Security  
The role of Agriculture  
ACIAR strategic directions  
Opportunities for northern Australia



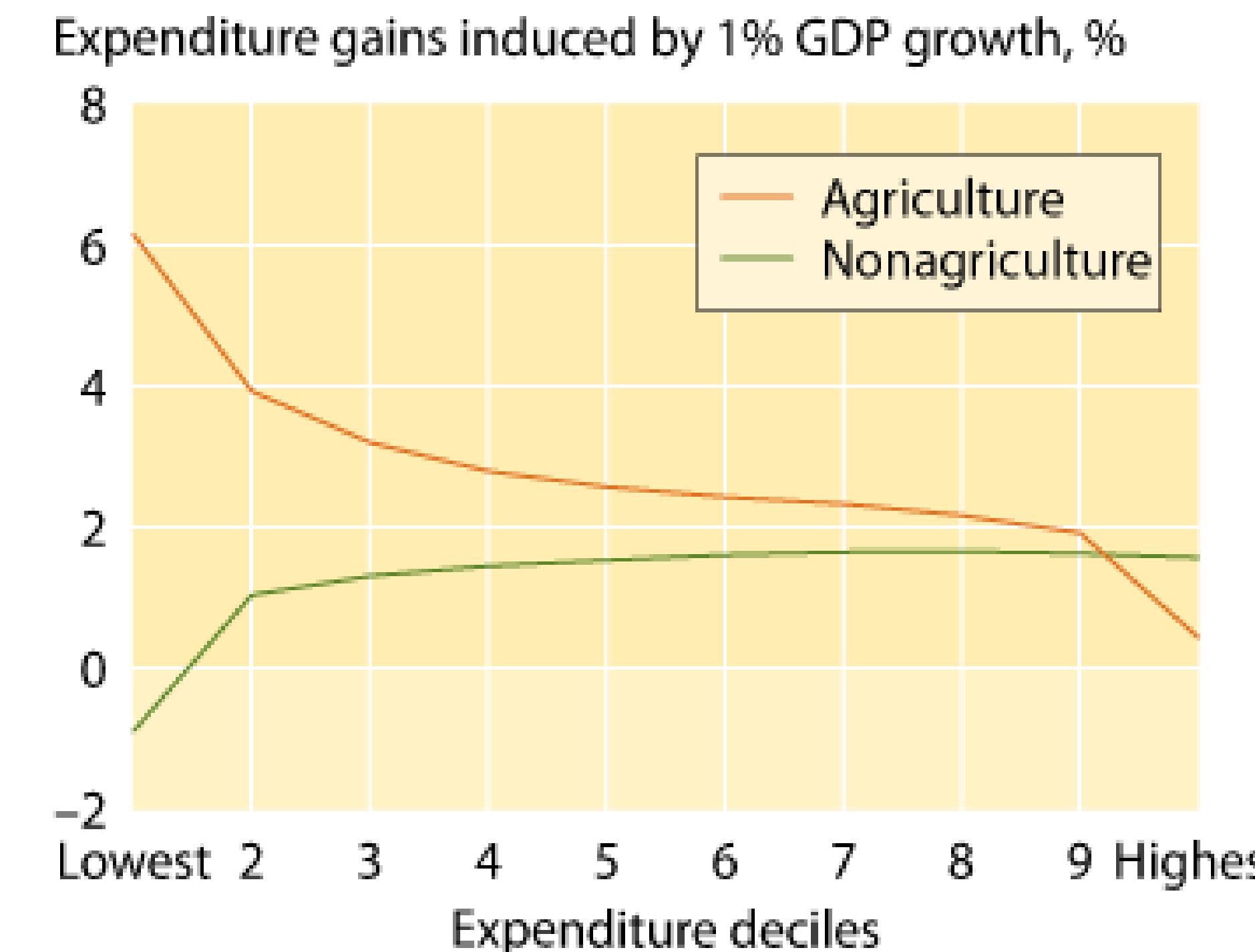
# Food & Nutrition Security

- 2.7 billion people live on <\$2 per day, depend significantly on agriculture for livelihoods and spend most of their income on food
- 25% of children are malnourished
- 815 million people acutely or chronically undernourished in 2016,  
**up from 777 million in 2015**
- A further 2 billion people suffer from micronutrient deficiency, ‘hidden hunger’: effects can be damaging for life
- Food & water insecurity key drivers of human migration and root cause of conflict
- 2 billion people are overweight or obese
- 525 million farmers in the world; 90% smallholders; feed ½ global population
- 50% increase in urban populations by 2050: but due to population growth, overall rural populations will not drop much; rural people are poorer
- **Most farmers are women**
  - most traders and business players are men



# Food & Nutrition Security

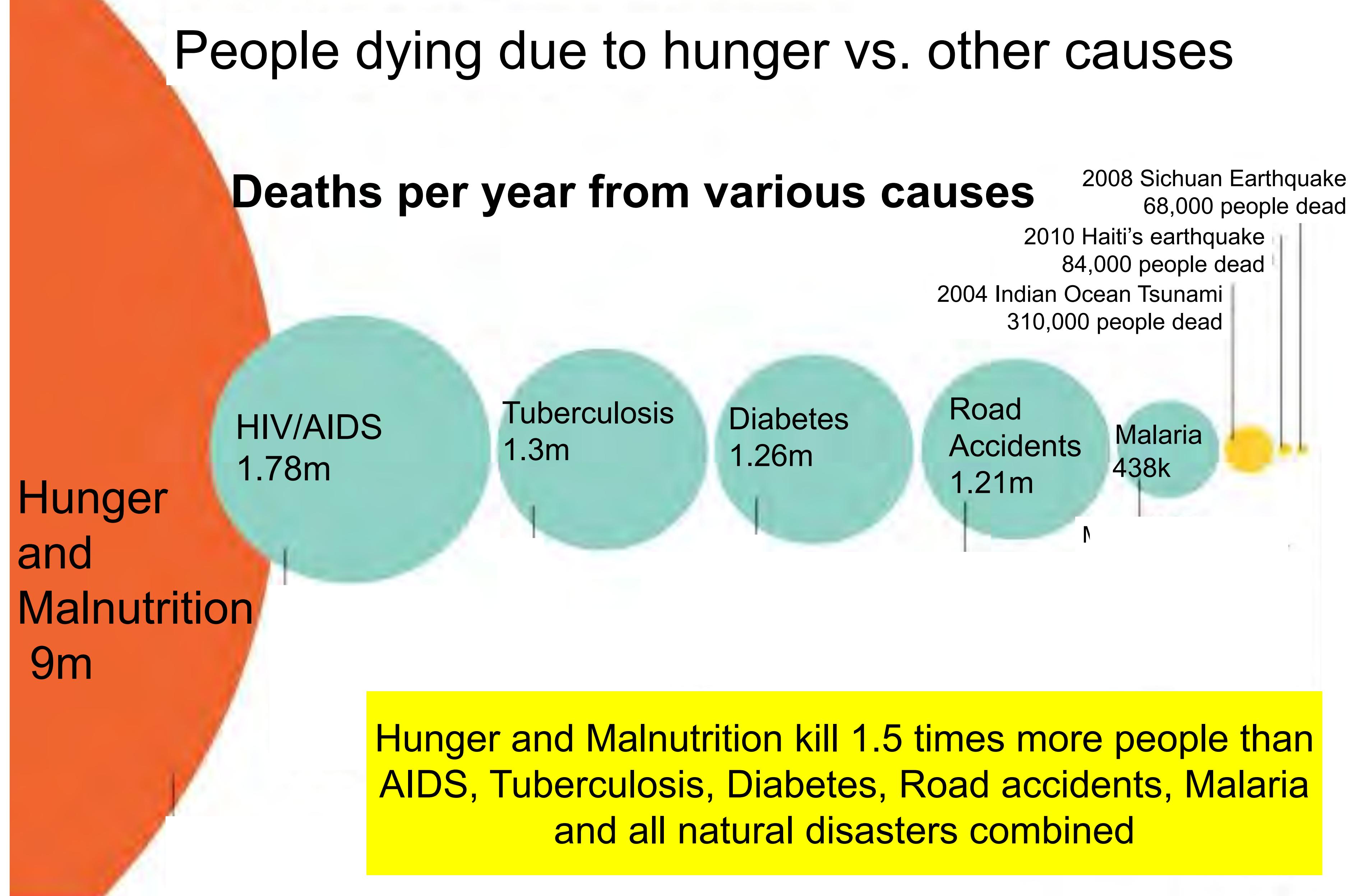
GDP growth originating in agriculture benefits the poorest half of the population substantially more



Source: Ligon and Sadoulet 2007.

Note: Based on data from 42 countries during the period 1981–2003.  
Gains are significantly different for the lower half of expenditure deciles.

# People dying due to hunger vs. other causes



Source:  
Hans-  
Joachim  
Braun;  
TropAg '17

Data Source (modified): Jack Bobo, Biotechnology Advisor, US Department of State  
Slide: Courtesy: M. Acevedo, DDGW, Cornell

# We need more & healthier food

- Humanity needs to increase food production substantially, & improve distribution
- We have done this in the past, mainly through clearing, cultivating and irrigating more land, + intensification and better varieties
- Climate change and resource depletion is narrowing those options, with limits to water, land, energy & nutrients. We need to grow food:
  - Using less land, water & energy and emitting less carbon
  - Using nutrients more efficiently
  - Improving nutrition and distribution, and reducing loss and waste
  - Looking after rural communities & landscapes, biodiversity, animal welfare

# Agriculture – Problem or Opportunity?

**Agriculture and Forestry account for:**

**25% GHG emissions** [on track to be the largest emitting sector]

**50% Global Employment**

**66% Total land use** [the largest ecological disturbance on the planet]

**75% Fresh water use**

**5% Global GDP – only primary production**

**30% Global GDP – if whole food system is considered**

**5% Global R&D – 70B US\$ - 0.9B US\$ in CGIAR**

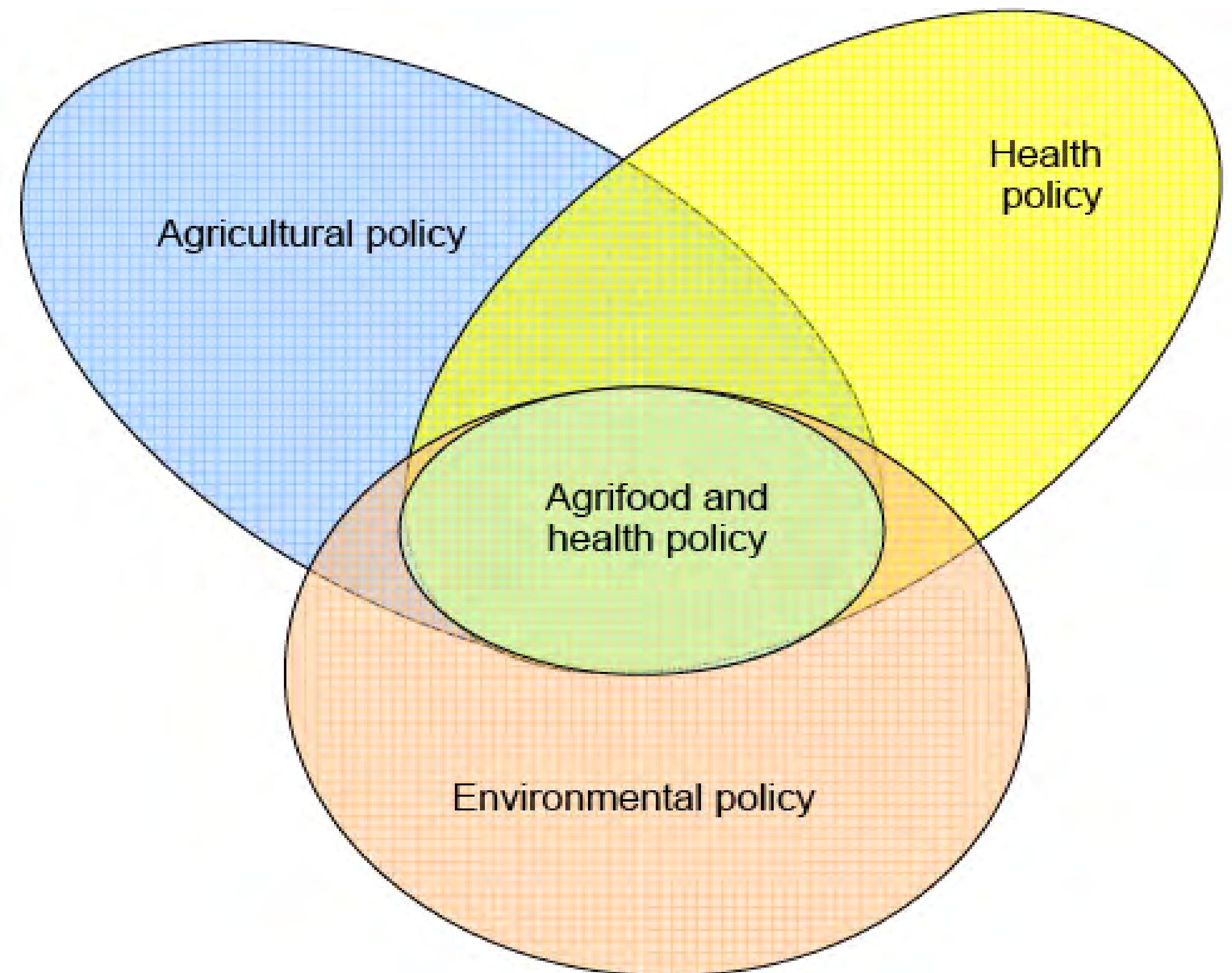
Source: Hans-  
Joachim  
Braun;  
TropAg '17

**Agriculture is big business!!!**



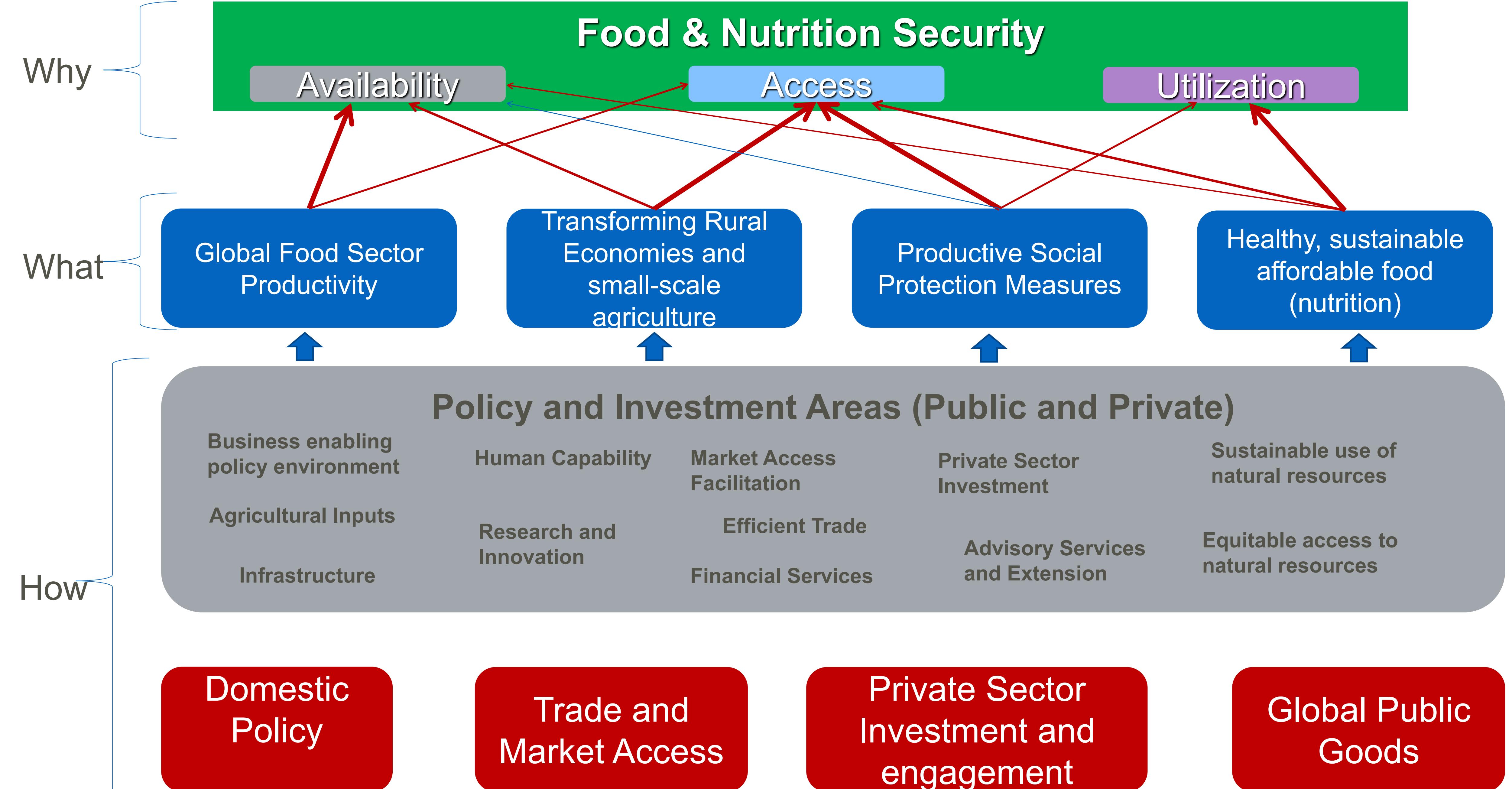
# Policy

## - time for new alliances & perspectives?



- Healthy farms, healthy landscapes, healthy food, healthy people & healthy communities are interconnected
- We are not used to seeing farming systems connected to nutrition and health systems
- This needs to change, in research, in assembling the evidence base, in education, policy and leadership

# Overarching framework for Nutrition Security





# We need a third agricultural revolution — policy elements

**High level goals for agriculture by 2030:** e.g.

- doubling water, energy and nutrient productivity
- becoming a net carbon sink
- becoming a net energy producer (from 2<sup>nd</sup> generation renewables)

**Reposition agriculture** as integral to the food, health, energy and water systems

**Re-engage urban populations** with ag and food systems

**Rebrand agriculture as sexy, ‘new economy’**

**All of the above will require a new breed of professionals**



# We need a third agricultural revolution — technical elements

- Closed-loop farming systems (water, energy, nutrients, carbon)
- Smart metering, sensing, telemetry, robotics, guidance, data
- Better understanding of soil carbon & microbial activity
- Well-governed GM for societal benefit
- Radical reduction of waste along food value chains (\$10B/yr Aust)
- Integrated production of food, fibre, energy and carbon sequestration
- Farming systems integrating renewable bioenergy (2<sup>nd</sup> generation)
- Urban food production, recycling urban waste, water & nutrients

# Sustainable Intensification?

- **Essential objective:**  
of the required 70% more food, less than 10% can come from new land
- But we can't intensify everywhere
- We can manage some landscapes more intensively, but others need to be managed more extensively, and/or for other goods and services
- 'Sustainable' needs to be defined against step-change improvements in resource use efficiency (water, nutrients, energy, carbon)
- Need clear criteria on where to intensify:
  - e.g. soils, water, infrastructure, proximity to markets
- Within the context of regional public health, land use and watershed plans

# ACIAR

*“a unique asset at the intersection of Australia’s diplomatic outreach and its innovation system”*

- ACIAR is an independent statutory authority in Australia’s Foreign Affairs portfolio, established in 1982
- We fund, broker and manage **research partnerships**
- We operate in >30 countries in the Indo-Pacific region
- We aim to boost agricultural productivity, sustainability and food system resilience in our partner countries
- In 2017-18, we are investing around \$120 million in >200 research for development projects (2 in NT, worth ~\$4m)
- We place a high priority on evaluating impacts and learning lessons



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# Foreign Minister The Hon Julie Bishop MP launched ACIAR's new 10-year Strategy 2018-27 in Parliament House Canberra on 26 February 2018





# ACIAR OBJECTIVES

ACIAR **brokers and invests in research partnerships** to build the knowledge base on which developing countries can progress crucial development objectives:

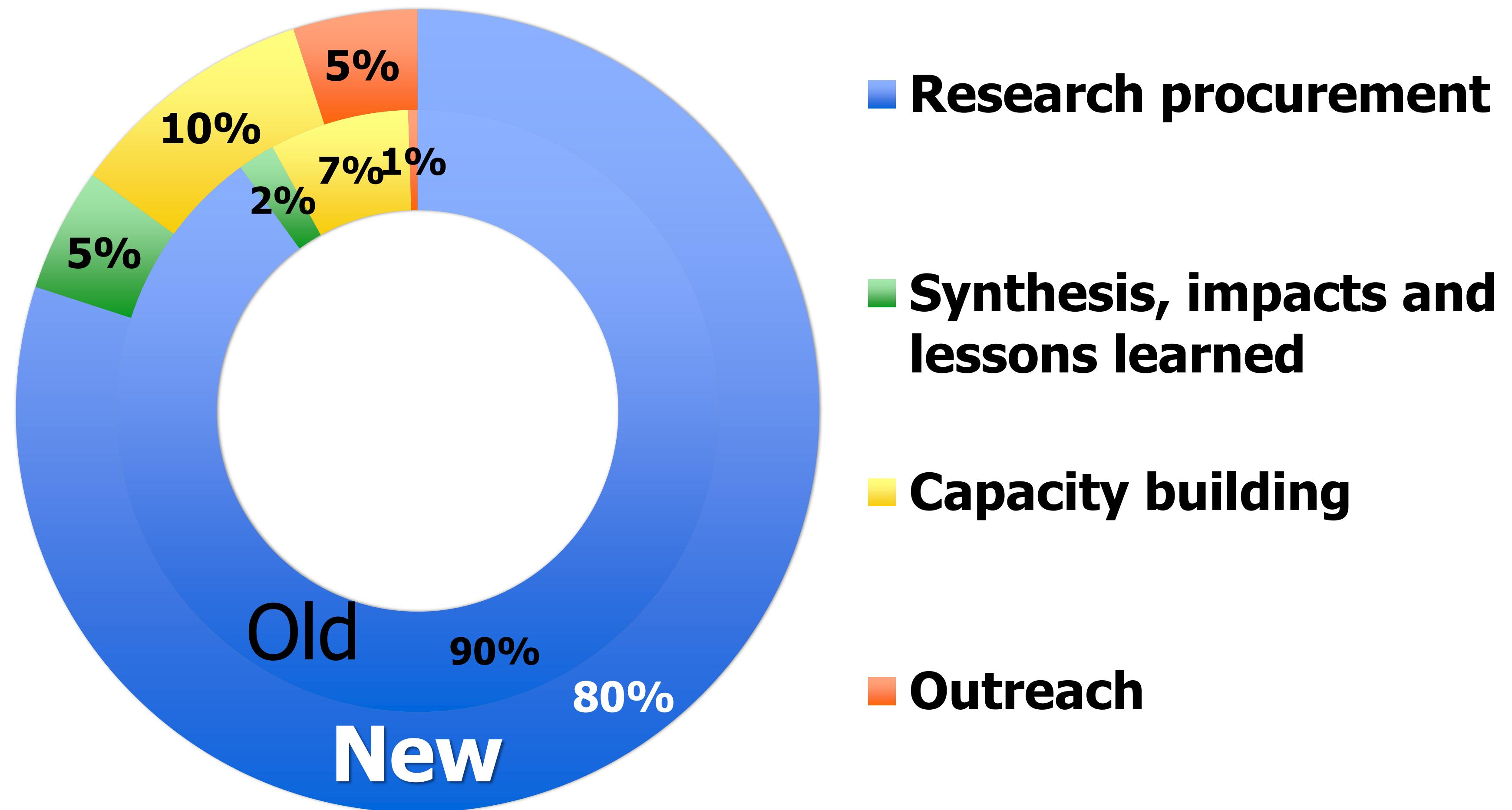
1. **Improving food security and reducing poverty** among smallholder farmers and rural communities;
2. **Managing natural resources** and producing food **more sustainably**, adapting to climate variability and mitigating climate change;
3. Enhancing **human nutrition** and reducing risks to human health.

In supporting these development objectives, we will ensure that our research programs pay particular attention to improving:

4. Gender equity and empowerment of **women and girls**;
5. More **inclusive agrifood and forestry market chains**, engaging the private sector where possible;
6. **Scientific and policy capability** within our partner countries.

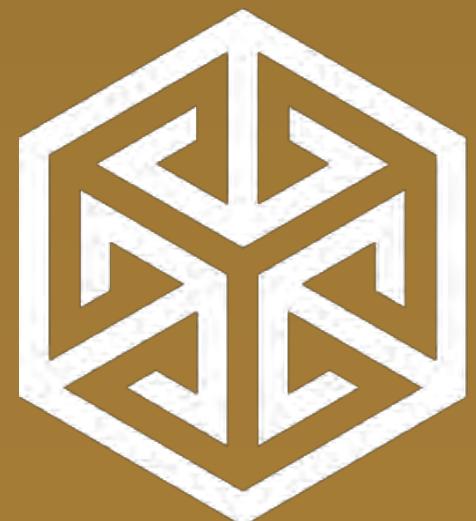
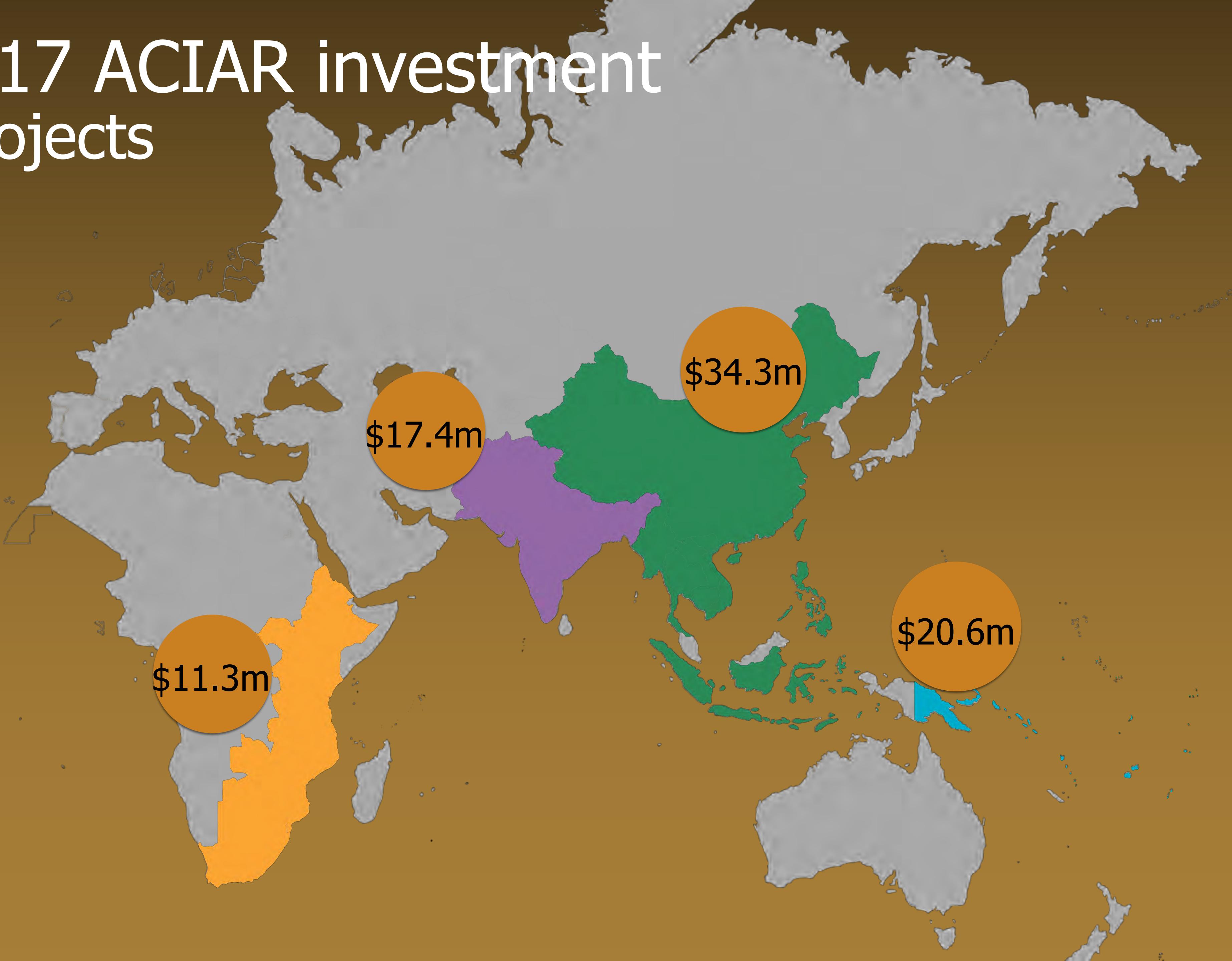


# Budget Transition (total ACIAR appropriation)



# 2016-17 ACIAR investment

## 210 Projects



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# Some exemplar ACIAR projects

- Seeds of Life (Timor-Leste)
- Village Poultry (east Africa)
- Acacia and Eucalypt breeding for plantations (Vietnam and southern China)
- Enhanced coral spawning for reef restoration (The Philippines)
- Fishways (Lao PDR)
- Bougainville Chocolate Festival (PNG)
- Community Forestry (Nepal)
- Innovation platforms for irrigation management (east Africa)
- Trees for Food Security (Ethiopia)



# RESEARCH PORTFOLIO BALANCE

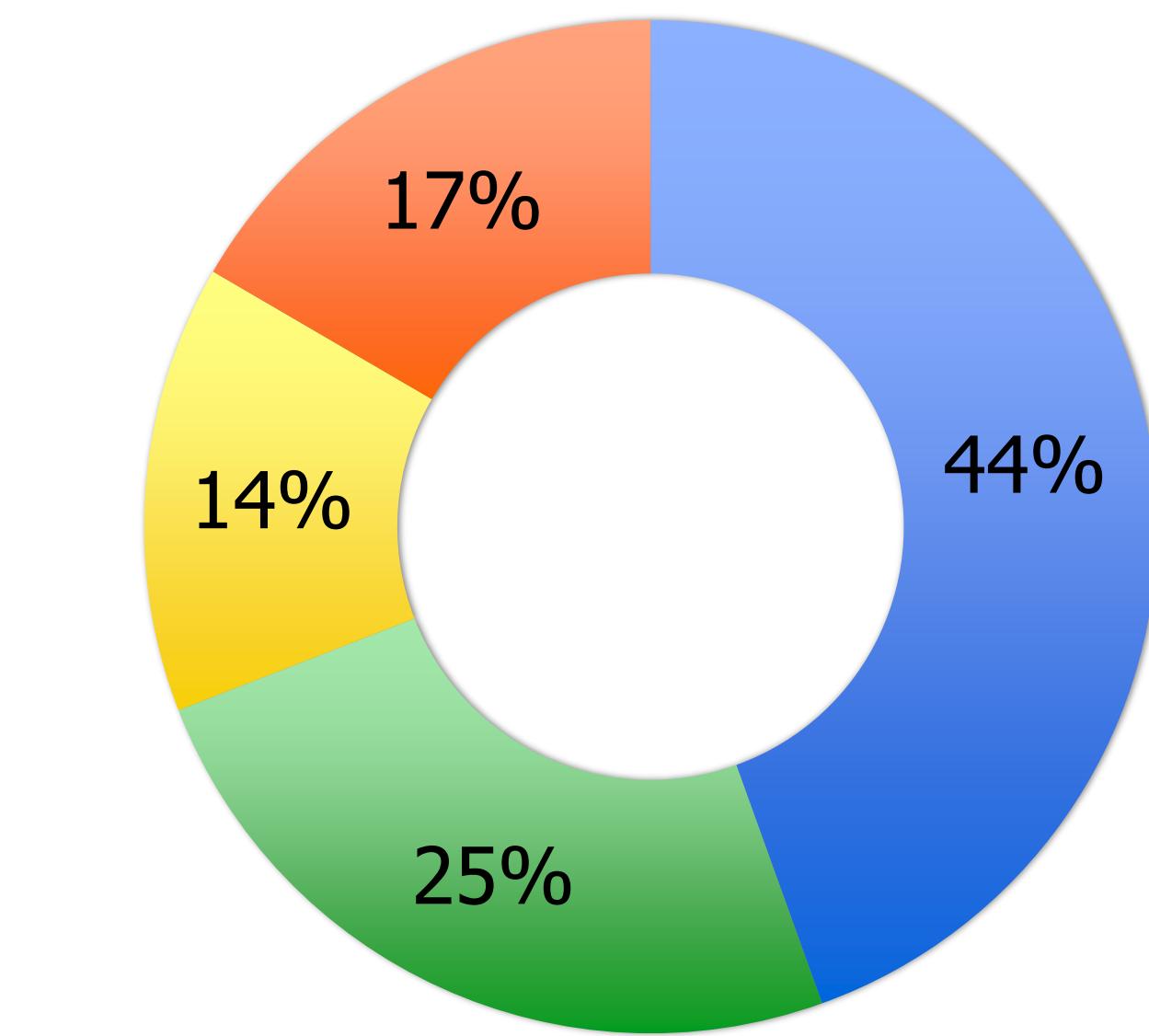
## Geography

- No big shifts in footprint at regional scale: (45% SE Asia, 25% PNG/Pacific, 15% South Asia, 15% East Africa)
- Fine tuning to grow Myanmar, and re-engage with Sri Lanka
- Recalibration in Indonesia, Vietnam, Philippines, India towards co-investment (China already there)
- However we do not want to be spread too thinly, and will review country strategies to identify transition options

## Type of Research

- Need to retain a small proportion of projects that are:
  - large, long-term, adaptive and testing scale-out processes
  - high risk, potentially high reward, upstream science
  - building capability strategically within the Australian innovation system

## Indicative Expenditure by Region 2016-17



- East Asia
- PNG and Pacific Island countries
- South and West Asia
- Eastern and Southern Africa

# PROGRAM CONSOLIDATION

CURRENT (13 programs, 13 RPMs)	FUTURE <b>(10 Programs, 10 RPMs)</b>	FUTURE <b>(6 Associate RPMs)</b>
<b>Agribusiness</b> Agricultural systems management Agricultural development policy Animal health Crop improvement and management Cropping systems and economics Fisheries Forestry Horticulture Impact assessment Land and water resources Livestock production systems Soil management and crop nutrition	Agribusiness Crops Fisheries Forestry Horticulture Impact Evaluation Livestock Water and Climate Social Science Soil and Land Management	All working cross-portfolio One Health Climate Change (emissions expertise) Economics and policy Gender Nutrition Sensitive Agriculture Farming Systems (modelling, data, digital, spatial)

A photograph of a man with dark hair and a mustache, wearing a light-colored striped shirt, focused on his work. He is using a chisel to shave off thin pieces of wood from a long, narrow board. Shavings are scattered on the workbench in front of him. The background shows a workshop environment with various tools and equipment.

# Focusing Research Partnerships

## 1. Bilateral Country Partnerships

- Will reduce from >70% of ACIAR appropriation research budget to ~50%
- Development of 10-year 'compacts' for each country with fewer programs and fewer, larger projects
- Consolidation to 10-12 countries where we can make the biggest difference
- Transition plans for some countries from aid to co-investment

## 2. Multilateral Research Collaborations (predominantly CGIAR)

- Will remain around 15% of research budget
- ACIAR will be a more demanding investor in CGIAR & other multilaterals
- Need to get greater visibility in Australia of our multilateral investments

## 3. Research Co-investment with development partners

- Will increase from 5% to around 15% of research budget
- Best pathway for partnering with DFAT, Gates, IDRC etc, and private sector
- Opportunity to be more ambitious, and take best work to scale



# Portfolio-2nd generation CGIAR research programs

Fish agri-food systems

Forests, Trees and Agroforestry

Grain Legumes and Dryland Cereals\*\*

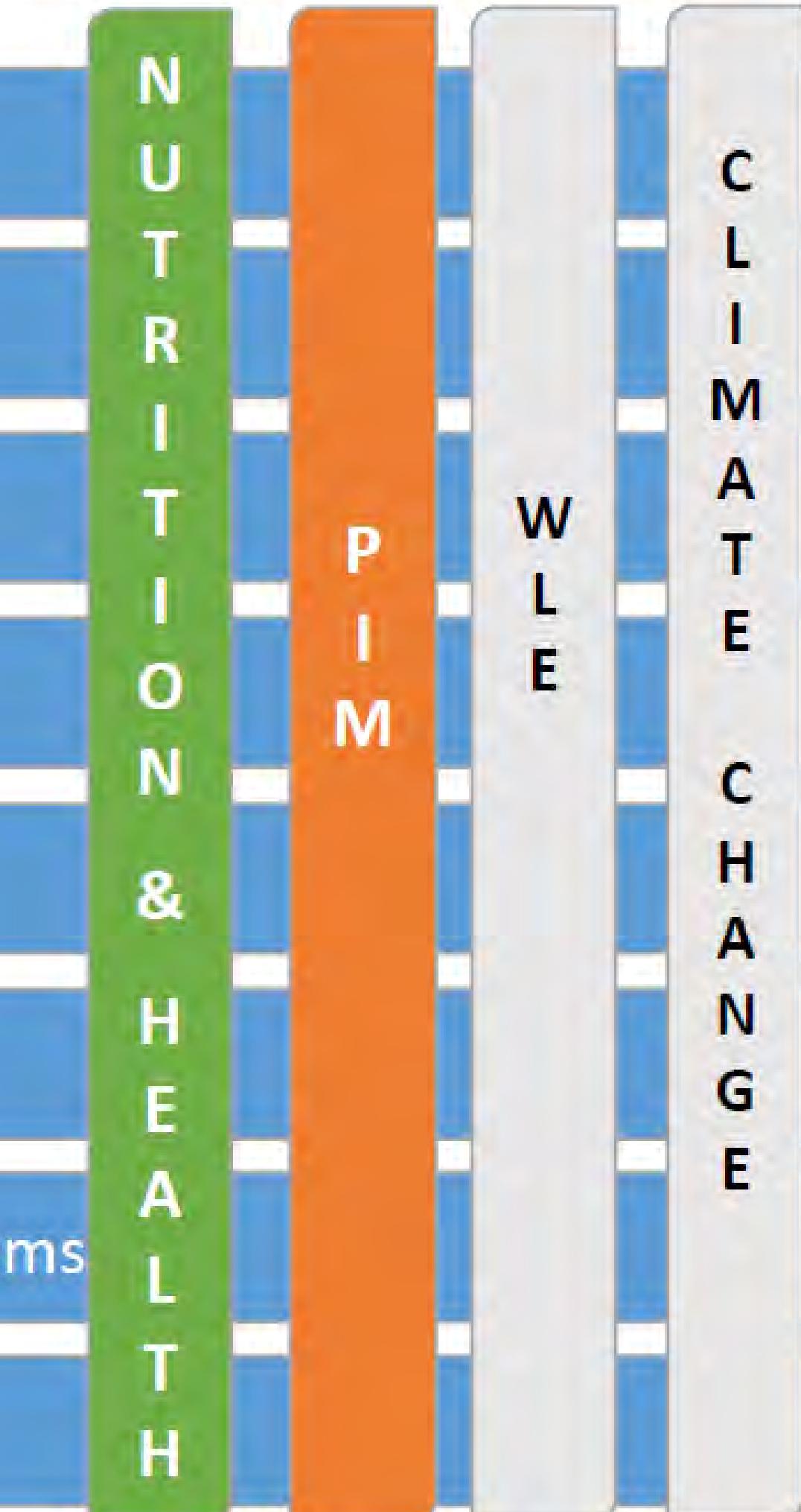
Livestock agri-food systems

Maize agri-food systems

Rice agri-food systems

Roots, tubers and bananas agri-food systems

Wheat agri-food systems



*4 Global Integrating programs*

*3 Platforms*

Genebanks

Excellence in Breeding

Big data



# CGIAR 10 best-bet innovations for climate change adaptation in agriculture

1. [Agroforestry](#) to diversify farms and capture carbon
2. [Aquaculture](#) to enhance nutrition and diversify incomes
3. [Stress tolerant varieties](#) to counter climate change
4. [Improving smallholder dairy](#) enhanced incomes and greater climate resilience
5. [Alternate wetting and drying in rice systems](#)
6. [Micro-irrigation powered by solar](#), expanding access to affordable irrigation and enhancing resilience
7. [Digital agriculture](#) from tailored advice to shared value with millions of farmers
8. [Climate-informed advisories](#) to enhance production and resilience
9. [Weather index-based agricultural insurance](#) for countries and farmers
10. [Blended finance](#)

A photograph of a man with dark hair and a mustache, wearing a light-colored t-shirt, focused on working with a piece of wood using a chisel. He is standing at a workbench with various tools and wood pieces visible. The background shows a tiled wall.

# Synthesising research, assessing impacts and learning lessons

- ACIAR is a **learning organisation** – a ‘keeper of the long view’
- Strong culture of **impact assessment**, including longitudinal adoption studies many years after the original research project
- Need to build on excellent project-level impact assessment, with **program, thematic and portfolio-level M&E** and reporting
- New project management system will facilitate development of better **dashboards, scorecards and heatmaps**
- Better M&E, better informatics and new Chief Scientist position will inform more **sophisticated portfolio analysis & management**
- Greater emphasis on **synthesis products** (publications, films, training, events etc) tailored to the knowledge needs of specific audiences



# A NEW CAPACITY BUILDING PROGRAM

- Capacity building program reviewed by Dr Shaun Coffey early 2017
- Key recommendation was to reduce emphasis on PhD scholarships (currently 80% of budget) to offer a wider spread of support
- Introduce a **new Fellowship targeting women** in research leadership
- Run **two rounds of John Dillon Fellows** annually, & support them better
- Provide **more training in leadership & management** for PhD scholars
- A much more comprehensive and dynamic **Alumni Program**
- New awards & **recognition for Australian scientists** who have made a big contribution in partner countries
- Improved **linkages with volunteer programs** and Farmer2Farmer programs
- Formalised relationship with **The Crawford Fund**



# BOOSTING OUTREACH

**3 Key Audiences:** Highly Engaged; Influencers & Decision-makers; and General Public

## Key elements:

- Revamped **online presence**, more interactive, multi-platform web, more digital media
- More **targeted campaigns** in mainstream media, including television and radio
- Sharpen focus of **publications**, including scientific journal articles, *Partners* magazine, monographs and 'How to' guides, leverage hard copies in online formats
- Proactive use of expanded **Alumni Network** to elicit, capture and to tell stories
- More communication activities **integrated with research partners**, including universities and CSIRO in Australia, CGIAR Centers and project partners in developing countries
- A long-term, synergistic partnership with **The Crawford Fund**, with agreed deliverables
- Well targeted, designed and convened **events** - with Crawford and independently
- Assisting ACIAR **country offices with comms expertise** (also in local languages)



**Source:**  
Hans-  
Joachim  
Braun;  
TropAg '17

**MYT**<sub>MR</sub>

# Opportunities for Northern Australia

- **ACIAR has funded projects with NT researchers over many years:**
  - Mangoes in the Philippines
  - Beef cattle in Indonesia
  - Traditional vegetables in PNG
  - Fire management in eastern Indonesia and Timor-Leste
- **Prospective opportunities:**
  - Carbon dynamics in peatlands and mangroves in Indonesia
  - Cattle industry development in eastern Indonesia
  - Trilateral projects involving Indonesia and Timor-Leste
  - Nutrition in Timor-Leste (integrated with public health)



# Final thoughts

- Food, water, land, energy, nutrition and health are interconnected
- Climate change intensifies interactions, trade-offs and risks
- Farming systems central to the future of humanity, especially poor people
- Farming systems and food value chains need to be nested within more integrated approaches to food, water, energy and human nutrition
- ACIAR's new ten-year strategy aims to position us to grow our influence
- **In doing so, we want to work more strategically with Commissioned Organisations (and the Crawford Fund)**
- **There are exciting opportunities for NT researchers, especially in neighbouring countries (T-L, Indonesia, Philippines) in bilateral and trilateral initiatives**



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**[www.aciar.gov.au](http://www.aciar.gov.au)**