

# Research & Innovation in Agriculture



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# Global Mega Challenges

Poverty/  
Population explosion



Fossil fuels  
shortage

Food shortage/  
Malnutrition



Biodiversity loss/  
Land degradation

Climate change/  
Water scarcity



Inanglupa

# Growth of Philippine Agriculture over 28 years (1986-2014)



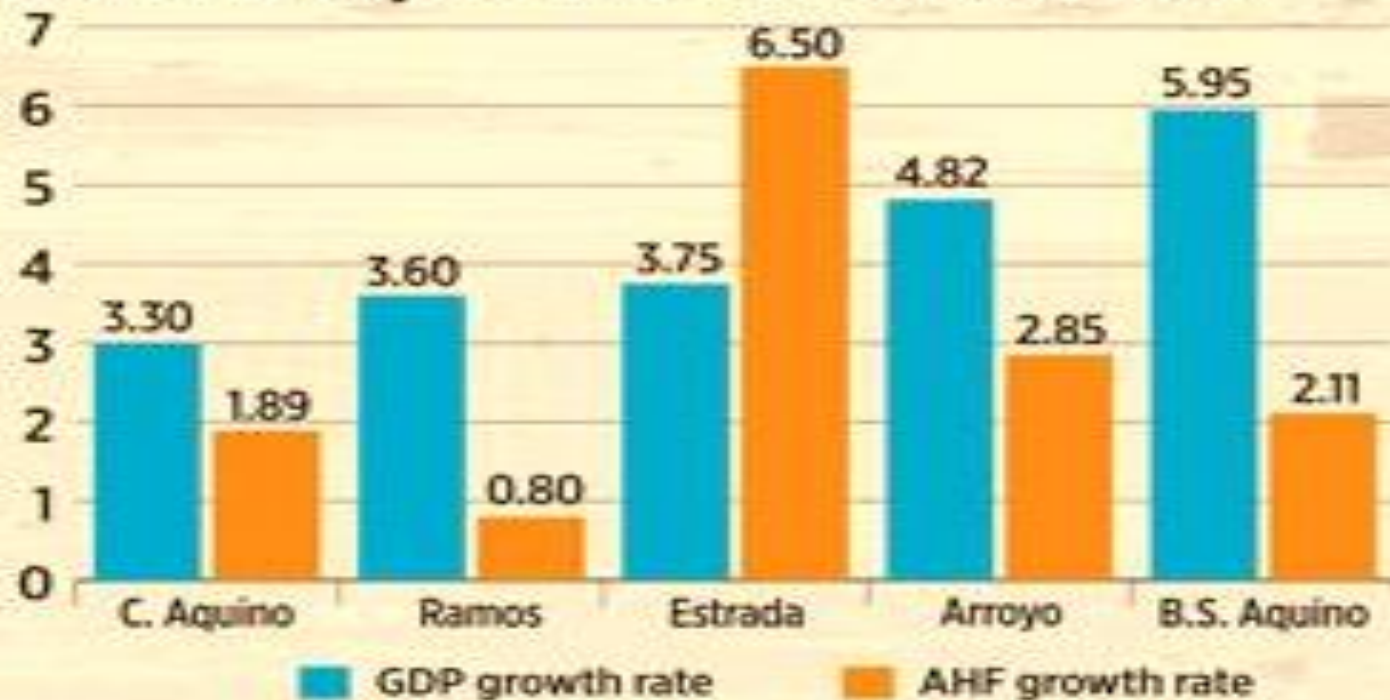
GDP AND AGRICULTURE, GROWTH RATES, AT CONSTANT 2000 PRICES



SOURCE: PHILIPPINE STATISTICAL AUTHORITY



## UNBALANCED, ANTI-POOR GDP AND AGRICULTURAL OUTPUTS, BY ADMINISTRATION



Performance of Agriculture for the period **1986-2014** was not impressive. The agriculture sector grew by an average of **2.4%**.

# Major challenges in agriculture

- Find solutions for important constraints to productivity in crop, livestock, fisheries and agro-forestry sectors
- Develop new technologies that raise yield in low-potential areas
- Create opportunities for diversification in agricultural value chains

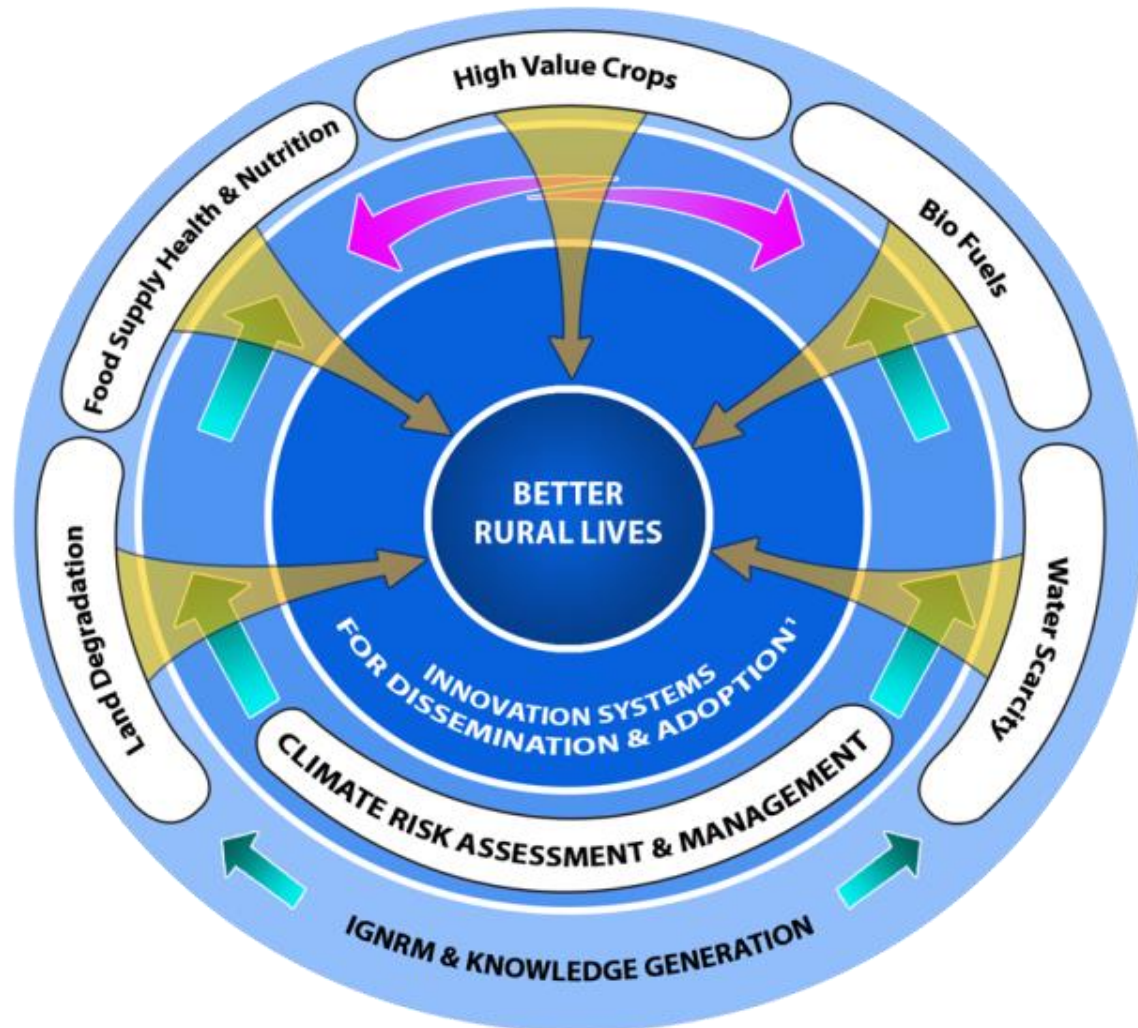


# How to overcome them



- Set up novel platforms, research laboratories, and facilities for cost effective technology development and diffusion
- Set up innovative institutional arrangements
- Partnerships, knowledge sharing mechanisms

# Research on contemporary global issues

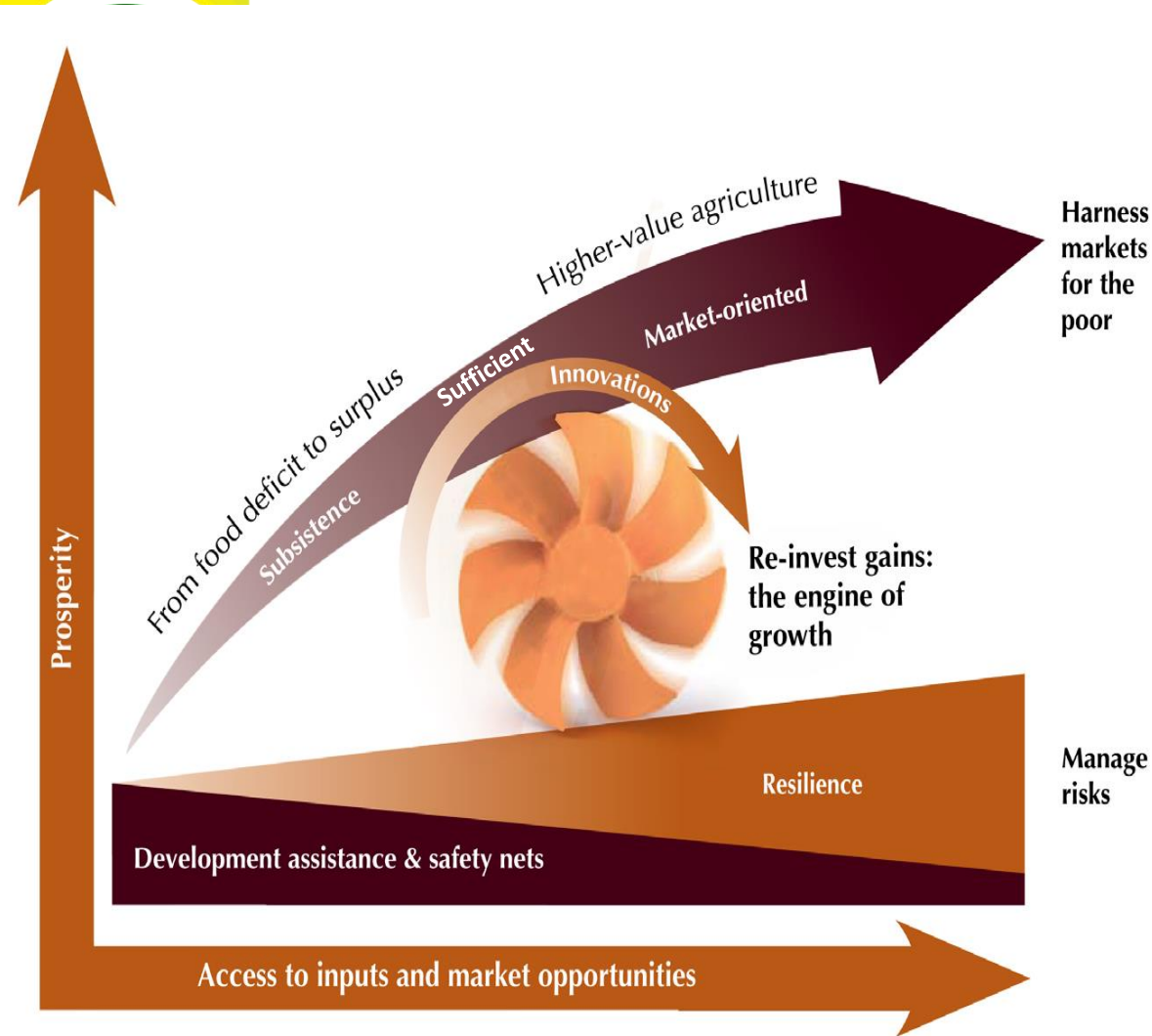


# Inclusive Market-Oriented Development (IMOD)

- is a development pathway in which value-adding innovations (technical, policy, institutional and others) enable the poor to capture larger rewards from markets, while managing their risks. The larger rewards motivate the adoption and impact of these innovations.

**How is IMOD different from the value chain approach?**

Proactively including the poor, managing risks and including a development pathway all distinguish IMOD from conventional value chain approaches.

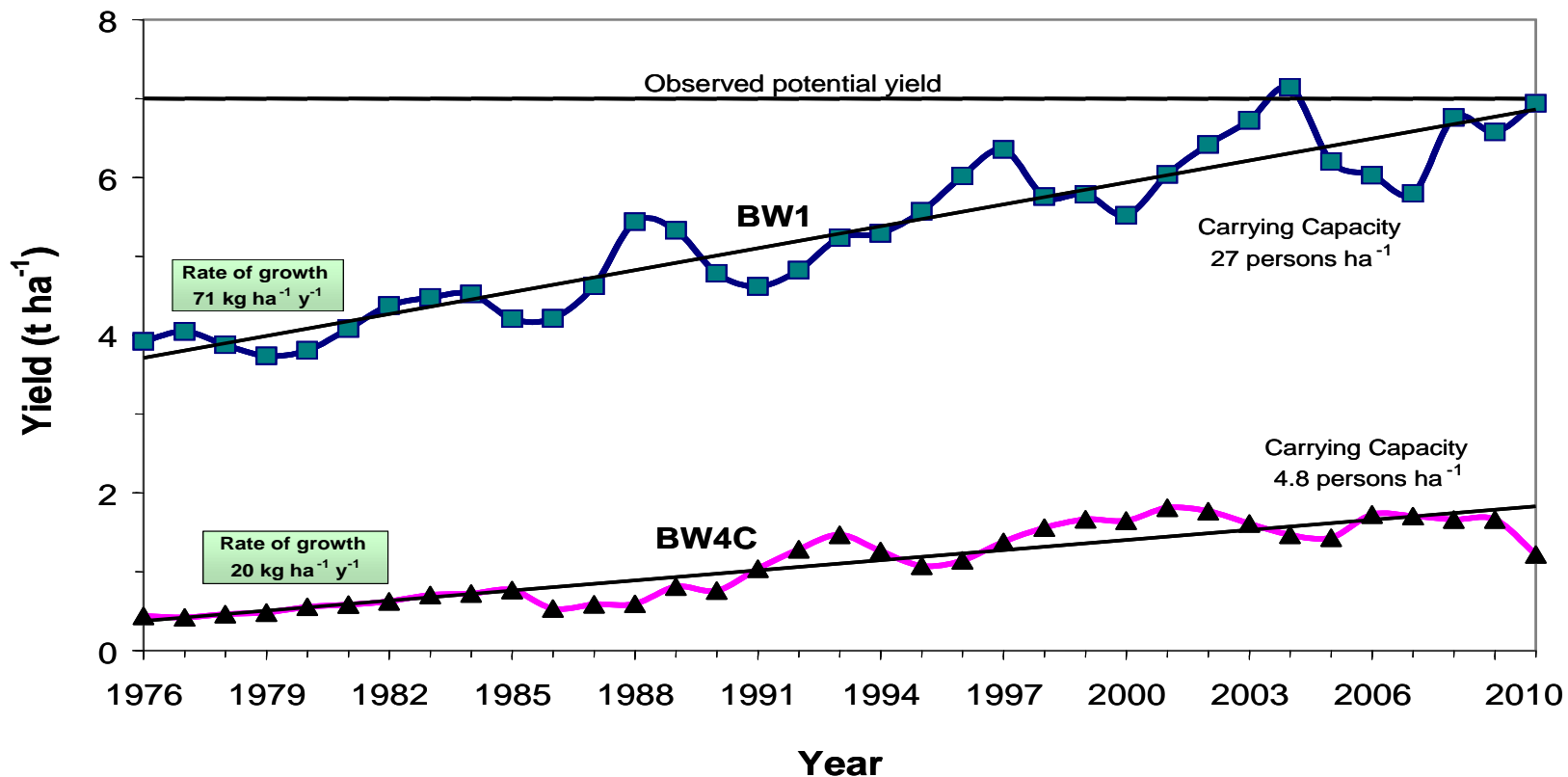




# Narrowing the yield gaps

## *Rainfed agriculture: a large untapped potential*

- Current farmers' yields are lower by 2 to 5 folds than the achievable yields
- Vast potential of rainfed agriculture needs to be harnessed



# Do we have enough institutions?

- Philippines has several research institutes under the DA, SUC and DOST
- Limited attention to corn, vegetables, fruits and legumes
- No research body devoted to rainfed agriculture and biofuel crops



# R&D investments

## Developing countries

- Public sector invests in research and development
- Private sector investment is beginning to increase due to globalization and reforms



Country	Distribution of total R&D expenditure in science and technology (%)	
	Public	Private
India	95	5
Mexico	88	5
Indonesia	96	4
Zimbabwe	86	14
USA	30	70
Switzerland	26	74

# Philippine R&D investments

## 2<sup>nd</sup> to the lowest

GERD (Gross Expenditure for R&D) as a percentage of  
GDP among Southeast Asian countries  
(at the same level as Vietnam and Myanmar)



2002, GERD was **0.15%** of GDP

2003, GERD was **0.14%** of GDP

2005, GERD was **0.12%** of GDP

UNESCOs recommended GERD

# 1% of GDP

In subsequent years, Philippine GDP has grown significantly and GERD has been estimated also to increase, but GERD as a percentage of GDP has remained **below 0.5%**

# Public-private partnerships

- The result of privatization, decentralization and competitiveness
- Serve to leverage emerging technologies of the developed world to benefit the developing world
- Help realize the potential of new opportunities in biotechnology and informatics, environmental science, climate change and IPR



# Benefits

- Build on complementarities including upscaling
- Move technologies off the shelf to vulnerable groups
- Access cutting-edge S&T for research
- Facilitate innovation, add value
- Share resources and risks; cost effective
- Reduce public capital investment
- Mobilize excess or underused assets
- Better compliance with environment
- Lead to pro-poor benefits



# Challenges of public-private partnerships

- How to initiate and evolve relationships with the private sector?
- How to ensure public access to proprietary (privately owned) technologies and processes?
- How to maximize the public good nature of innovations jointly owned with the private sector?
- How to negotiate new partnerships that ensure that all stakeholders including the poor stand to gain?



# Strategic components

- Re-orienting public policies
- Diversification and selective specialization
- Marketing and commercialization
- Institutional development
- Build and fortify basic infrastructure
- Better targeting of development interventions
- Access to credit facilities and resources
- Public Private Partnerships for the Poor





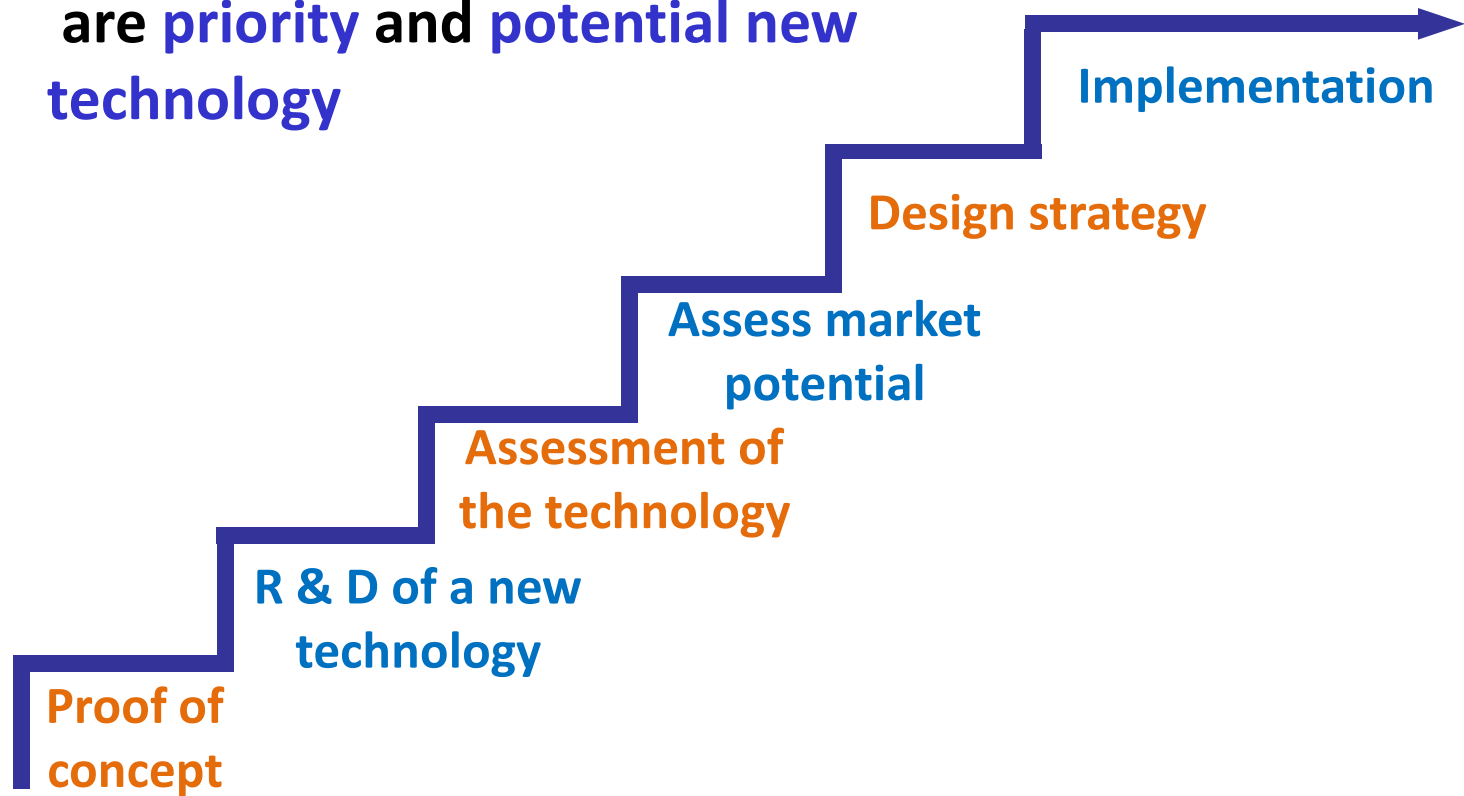
# Technology development & commercialization

- Develop strong relationships between:
  - Research- technology development - technology transfer - technology use
- Focus on human resource development
- Create a congenial environment for encouraging R&D via infrastructure development and incentives
- Interface of both sectors for enhanced synergies in technology development and deployment



# The roadmap

The main **drivers of innovation** are **priority** and **potential new technology**



**Innovation= Invention + Commercialization**



# Innovations to spur change

- Political, institutional, economic and market innovations
- Microfinance
- Cooperative land care
- Credit and marketing associations
- Multi-stakeholder bodies
- Land tenure reform
- Rationalization of trade obstacles
- Infrastructure improvements



# 4 Pillars of a new Philippine Agriculture



**Inclusive**



**Science-based**



**Resilient**



**Market-oriented**



# 4 Development Goals for the Agriculture & Fisheries Sectors

## Food Sufficiency.

*For the country to be self-sufficient in rice along with the diversification into high-value crops.*



## Economic Security.

*For the farmers and fisher folk to consider agriculture & fisheries as remunerative ventures thru enterprise development.*



## Nutritional Sufficiency.

*For the crops and other commodities to meet the nutritional demands of the people.*



## Environmental Security.

*For the conservation and sustainable management of natural resources.*



# What the future holds for us

- Climate change + financial crisis threaten to raise food prices again
- Compounded by population explosion that may exceed 9 billion by 2050
- Slow reduction response of developing countries



# Agenda for institutional change

## Need to devise R&D arrangements:

- Client-responsive
- Consensual in priority setting, planning and implementation
- Well integrated into market and entrepreneurial sector activity
- Include sustained financial and political support
- Poverty-driven and focused on sustainable development



# What Philippines must do

- Engage in strategic planning
- Promote pro-poor agricultural growth
  - More investments in R&D, rural infrastructure, information monitoring and sharing
  - Institutional development and innovations
- Reduce extreme market volatility
  - Reforms on regulations
- Expand social protection and child nutrition action
- Public investments in health, education, and mass housing, good governance and manufacturing
- Link up agriculture with manufacturing and trade





# We can do it!

- Filipinos are a dynamic people
- A little entrepreneurial spirit will go a long way
- Let us turn fiercely competitive
- The time to act is now!





*Thank you!*