



Helping farmers innovate to harvest more from less

*Trevor Nicholls, Chief Executive Officer, CABI
Crawford Fund Conference 2012*

www.cabi.org

KNOWLEDGE FOR LIFE

Helping farmers innovate to harvest more from less

- The problem
- Potential solutions
- Creating awareness
- Enabling change

The perfect storm.....



Growing world population



Climate change

*Dwindling
mineral
resources*



Water shortage



.... in the face of greater competition for land use



Man cannot live by cereals alone.....



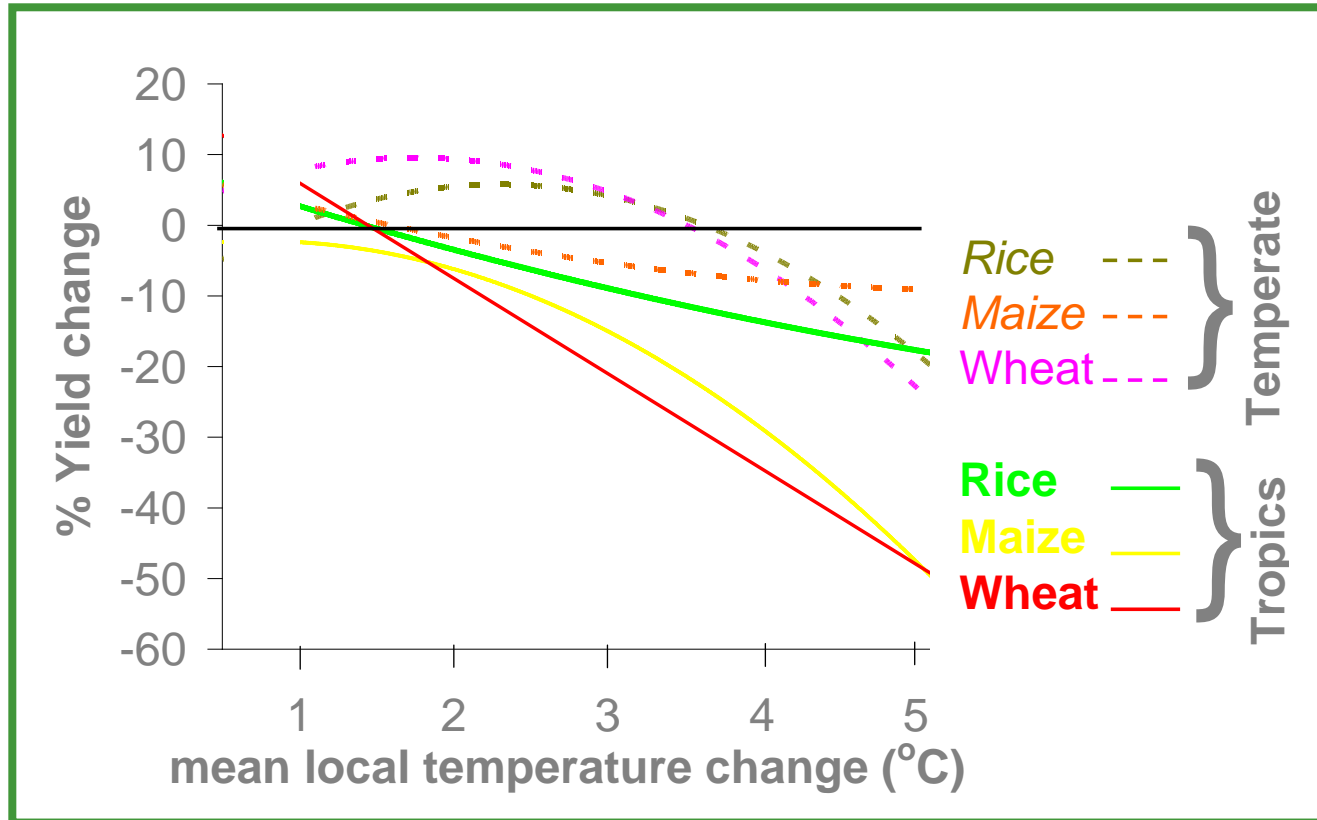
Food vs Feed



- Land
- Water
- Inputs
- Outputs
- Value
- Demand
- Emissions



Higher temperatures, lower yields



< 3 °C increase higher yields in temperate zones

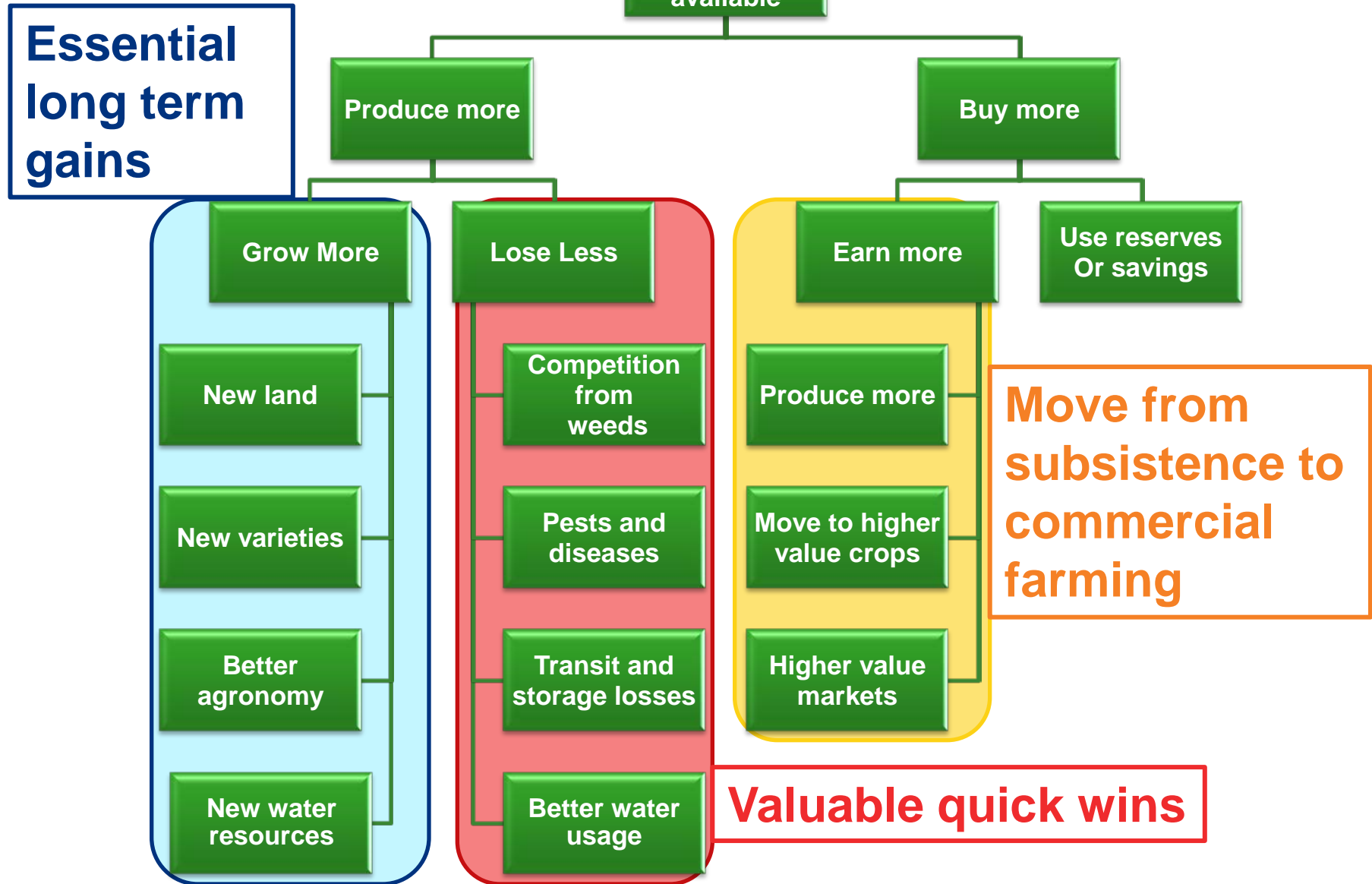
> 3 °C increase lower yields in temperate zones

Any increase lower yields in tropics

The promise of biotech....

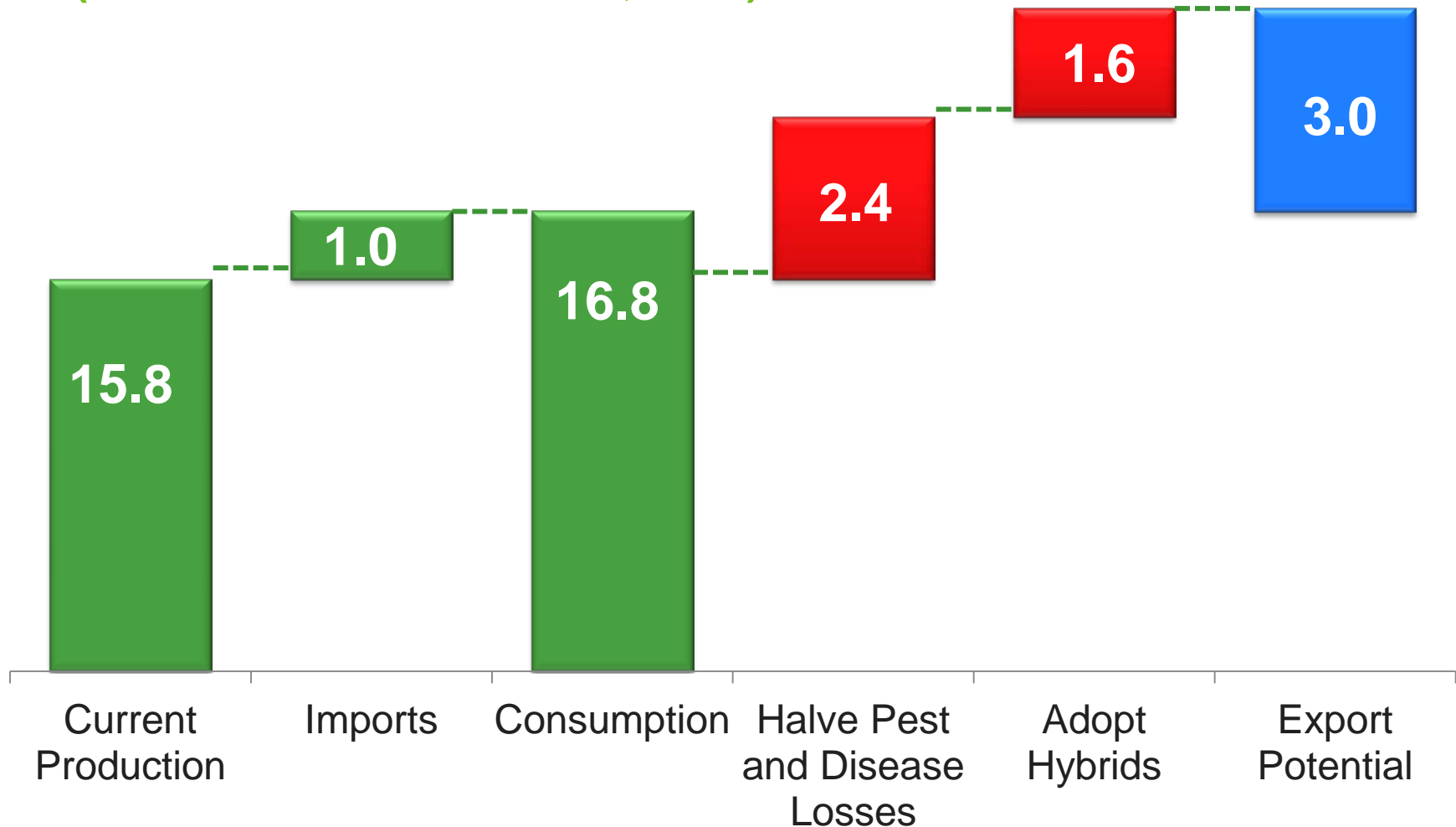
- ✓ Drought tolerance
- ✓ Submersion resistance (Scuba rice)
- ✓ Disease resistance
- ✓ Salt tolerance
- ✓ Temperature resilience
- ✓ Nutritional value (Golden rice)
- ✓ Nitrogen fixation (John Innes/BMGF)
- ✓ Transforming photosynthetic efficiency (ANUPI)

Food Security – build or buy



Rice in the Philippines

(Millions of Metric Tonnes, 2010)



Source: IRRI, Philippines Department of Agriculture, CABI Analysis

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- The problem

Potential solutions

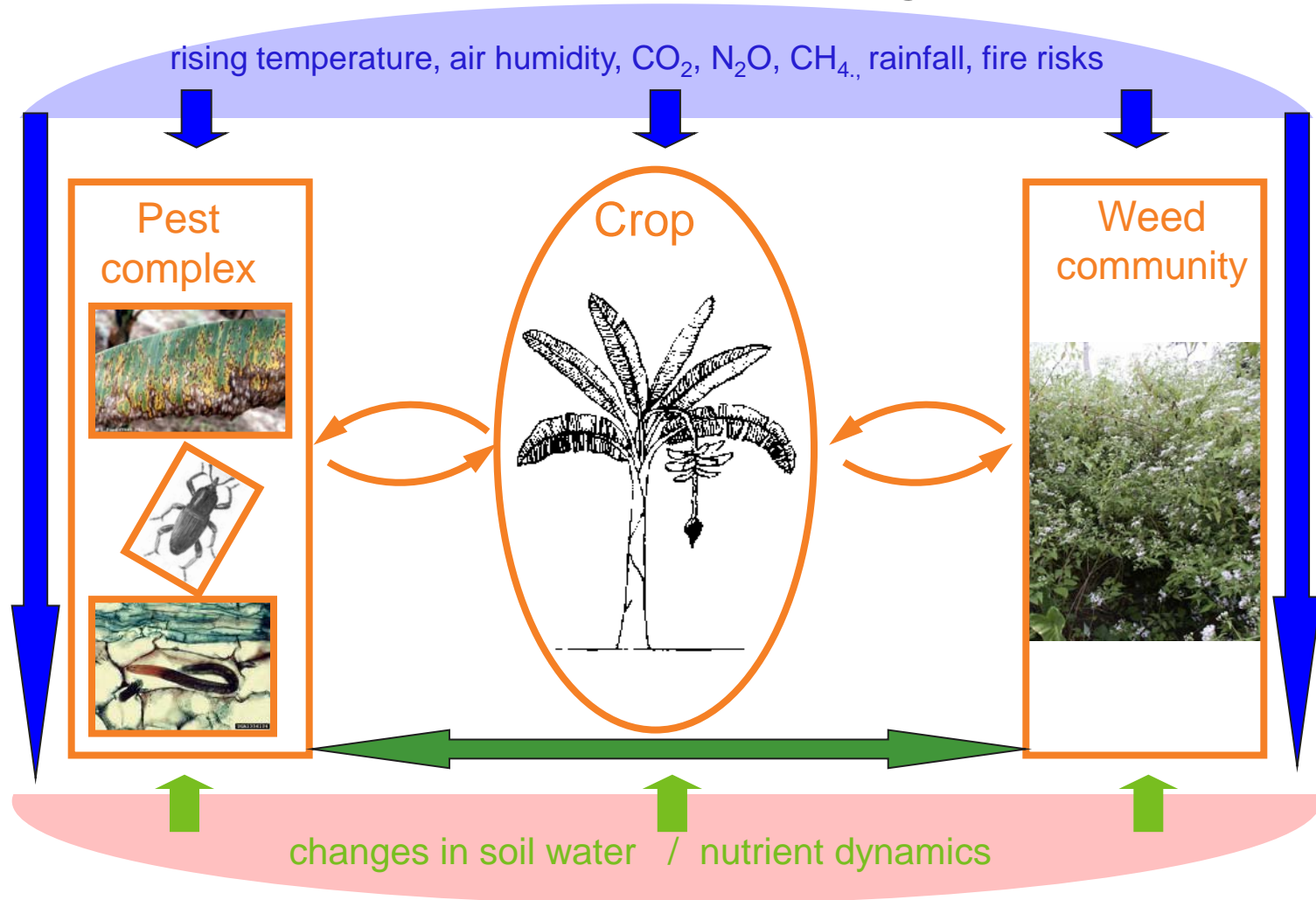
- Creating awareness
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Sustainable agriculture

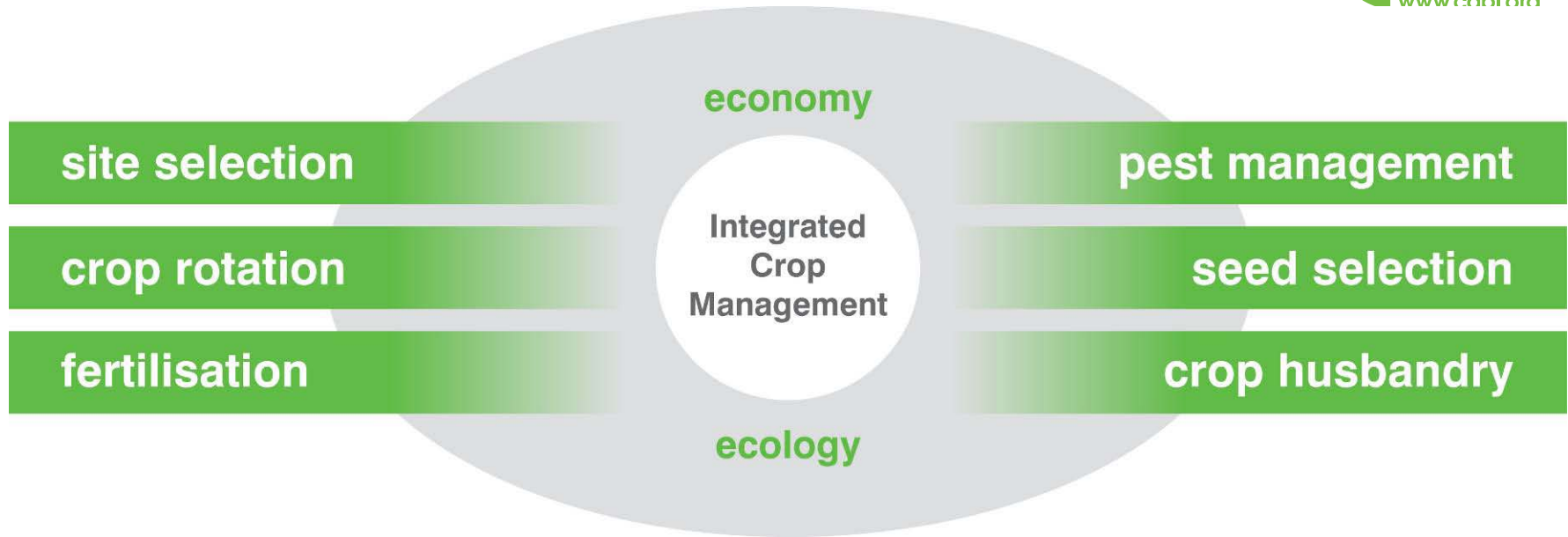
- Environmentally sound
- Climate smart
- Economically viable
- Socially responsible
- Non-exploitive
- Serves as foundation for future generations

Systematic Impacts

Climate change



Integrated Crop Management



- focus on managing crops profitably but with respect for the local environment and conditions
- aims to minimize dependency on inputs
- integrates production practices to optimize crop health
- selection and adaptation to local situation
- rooted in good understanding of interactions between biology, land management and environment

Water – a precious resource

Potential usage savings of 15 – 50 %:

- Better storage
- Fix the leaks!
- Improve drainage systems
- Use of grey water
- Mulching
- Alternate wetting and drying (rice)
- Aerobic or drought tolerant varieties
- Improved irrigation systems (e.g drip)
- Water accounts/water pricing
- Telemetry and precision agriculture





Promoting better soil health

Integrated Soil Fertility Management

- Mineral fertilizers
- Organic inputs (manure, compost, legumes)
- Improved seed (pest/drought resistant)
- Good agricultural practices (spacing, timing, weeding, pest management)
- Local adaptation (suited to local conditions; economically efficient)
- Decision tools to predict where to use fertilizer for greatest economic return

Conventional breeding can deliver much of what we need...



AVRDC

The World Vegetable Center



- ✓ Heat tolerance
- ✓ Drought tolerance
- ✓ Salt tolerance
- ✓ Submergence resistance
- ✓ Nutritional value
- ✓ Pest and Disease resistance

... provided we have accessible and well-maintained germplasm collections

Content from CABI and partners

Expertise from CABI and partners



Data for prevention,
identification and
management

Public good: trade,
knowledge, food security

Practical assistance for
farmers
Global reporting network

How the clinics work

- Set up at local meeting places
- Free at the point of use
- Farmers come with problems and samples
- Receive a diagnosis and a 'prescription' from the plant doctor.



The Knowledge Bank

Plantwise Knowledge Bank



[Change region](#)

[Knowledge Bank home](#) | [About Plantwise](#) | [Cookies](#) | [Help](#)

Welcome to the Plantwise Knowledge Bank

Choose your country

The Plantwise knowledge bank brings together key plant health information from across the world, including a useful **diagnostic tool** and **factsheet library** to help diagnose and manage plant health problems. The **Plantwise map** allows global pest and crop distribution to be mapped alongside other key information such as climate zones. If you want quick access to information for a particular country, select a country from the dropdown above to see a custom-made information portal for that region and click Continue.

Plant clinics

Plantwise provides training to local people so they can set up plant clinics in their region. These clinics operate on a regular basis, in easy-to-access places, and allow farmers to bring in samples of their crop problems for diagnosis and advice. **Find out more about clinics here.**

IDENTIFY A PEST PROBLEM

Country

Crops

[Go to diagnostic tool...](#)

FIND A FACTSHEET

Recently added factsheets

- Xanthomonas wilt
- Sweet potato weevil
- Attract and kill: fruit fly control
- Attracting snails away from garden plants
- Avoiding leeches in rice paddies

[Go to factsheet library...](#)

PEST DISTRIBUTION



[Go to distribution map page...](#)

[NEW PEST REPORTS](#)

[PLANT HEALTH NEWS](#)

[PLANTWISE BLOG](#)

Healthy landscapes –making rural communities more viable

Reducing risk

- Crop/fertilizer/water mix for better nutrition and yield
- Crop types and practices for resilience to change
- Improved knowledge of and access to markets
- Control of invasive species

Increasing sustainability

- Lose less to increase output/quality with fewer inputs
- Protection of biodiversity on and off farm
- Management of ecosystem services, practices and use
- Involvement of women

Reduced food insecurity, improved quality of life

Reduced or reversed rural migration

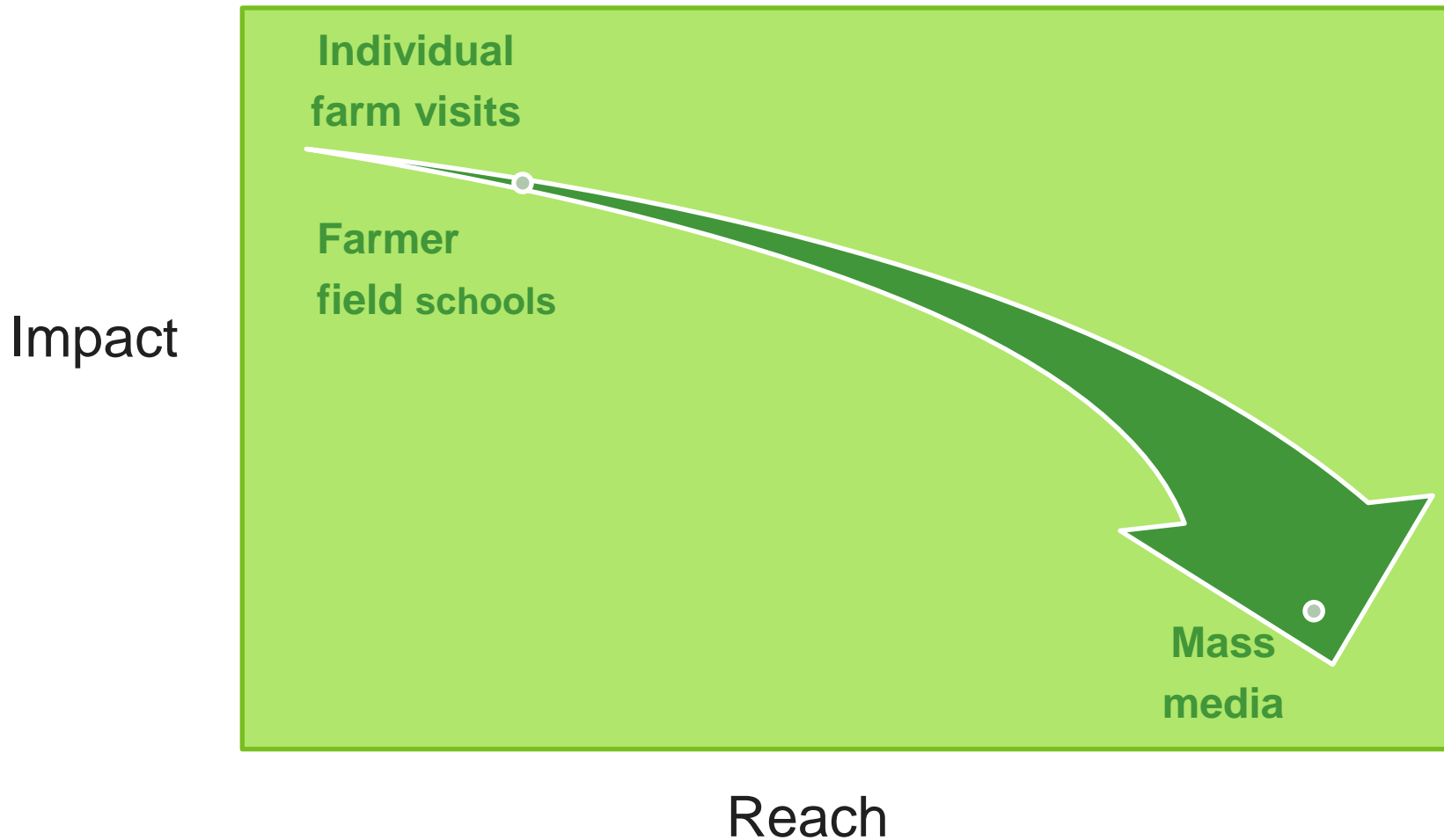
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Communicating with farmers



Case study



Knowledge for Development

Seed health videos - Bangladesh

In Bangladesh, poor seed health is associated with rice yield losses of **10 to 15%**.

Video communication increased the number of women in rural communities using new techniques for improving seed quality.

A survey showed that after seeing the video **94%** of women were aware of the need for proper seed drying as opposed to just **41%** before.

Case study



Sub-Saharan Africa

2010 – 2014

Funded by the Bill &
Melinda Gates Foundation

Africa Soil Health Consortium

- Acts as the interface between developers of integrated soil fertility management knowledge (e.g. projects) and those who use the knowledge - extension workers, agrodealers and farmers
- Works with partners to design information materials that are customised for the target audiences
- Materials include policy briefs, booklets, radio and TV programmes

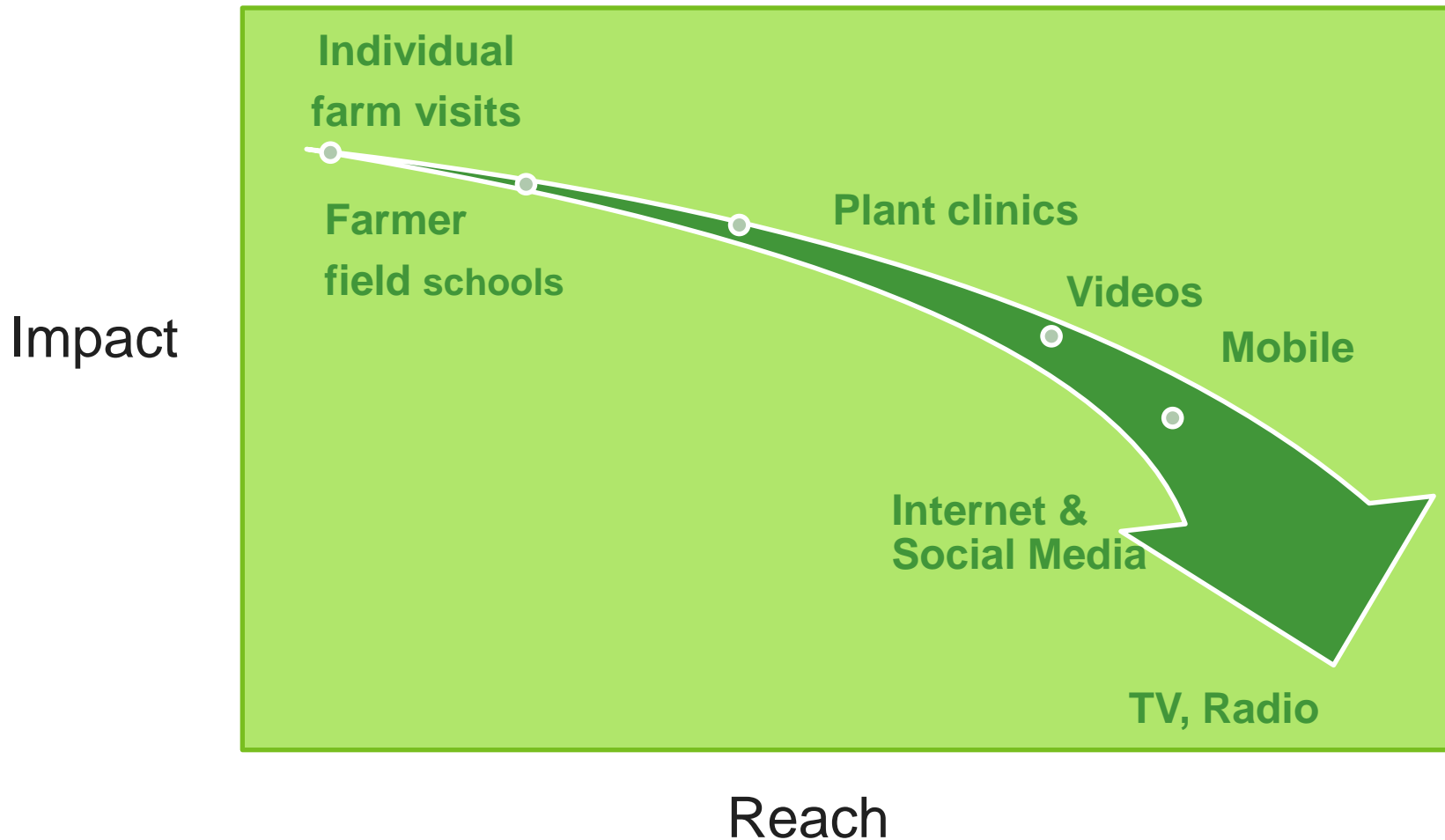
India – Africa partnerships



Mobile Agro-Advisory services India and Africa

- India – successful pilot project with IKSL (IFFCO/Airtel)
- Over 3 million users – receive 5 free “push” messages each day, follow up enquiries charged at local rates
- CABI created ‘Direct 2 Farm’—database of farmer centred actionable information
- Africa: leveraging on work in India – working with GSMA projects to develop mobile agro advisory services with Airtel in Kenya; with ESOKO in Ghana.

Communicating with farmers many more options



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Case study



IPM in High Value crops

Funded: SDC

Partners: HORTI-Tengeru
& (RLDC)

Creating value for Tanzanian farmers

- IPM technical guide produced for outdoor tomatoes
 - 88% farmers reduced frequency/quantity of pesticides
 - Yields increased; health risks to farmers and consumers reduced
- Branding of IPM tomatoes achieved
- Farmer field schools transformed into functional producer clubs
 - Establishment of information cards on IPM tomato crates for sale
 - Sound farmer-trader relationships developed for sustainable marketing

Case Study



Funded by:

- CFC
- World Bank
- Rabobank



Perking up coffee in Africa

Farmers in **Ethiopia, Rwanda** and **Cameroun** get a better return for their coffee crop after learning new processing techniques that improve the quality of their coffee:

- Farmer field schools teach new processing techniques to deliver higher quality
- Marketing helps farmers stimulate demand for coffees produced by the new approach, with premiums of over **30%** above the usual prices being realised.
- Microfinance initiatives help more farmers buy equipment to adopt the new techniques



kilimo salama
Agricultural Insurance Initiative Kenya

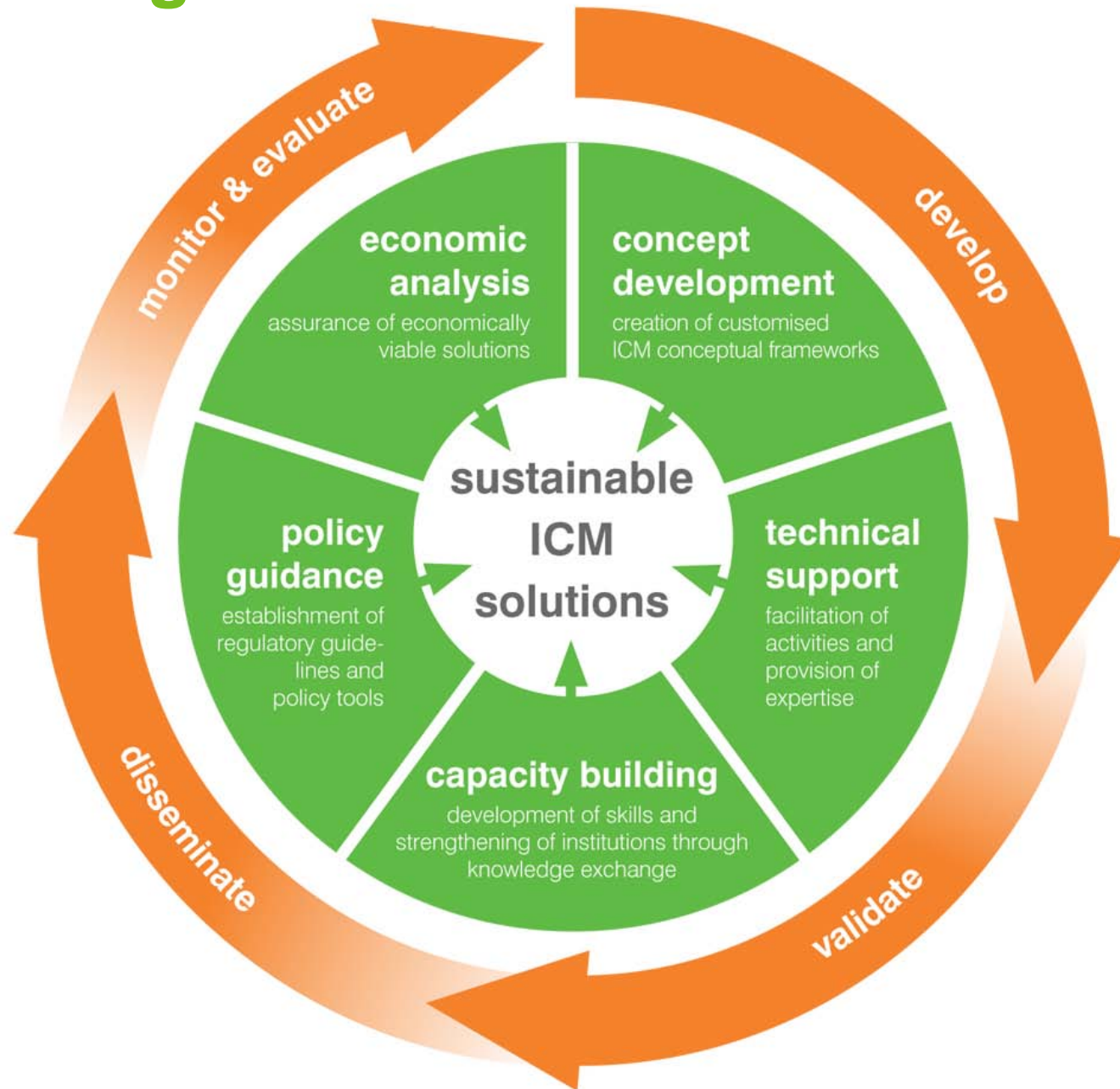


syngenta foundation
for sustainable
agriculture



- Micro-insurance to protect Kenyan farmers against weather risk (drought or extreme rainfall)
- Covers all input costs – seeds, fertilizer and chemicals
- Network of remote solar-powered weather stations to monitor rainfall
- Farmers can arrange premiums and claims via mobile phone
- Coverage in 2010 12,000, target for 50,000 by 2012

Creating a virtuous circle



“you cannot tackle hunger, disease, and poverty unless you can also provide people with a healthy ecosystem in which their economies can grow.”

-- [Gro Harlem Brundtland](#)

Thank you Questions?