

# Designing Research Programs for Maximum Impact at Scale

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# Objectives

- To explain what USAID means by impacts from research investments
- Impact pathways – what are these? What is involved to help a research program have impacts on development outcomes?
- Next steps for programs...

# What are we trying to accomplish?

- Impacts we're seeking...
  - Improved nutrition
  - Poverty reduction
  - Natural resource conservation
  - Resilient populations
  - Women's empowerment
- Overarching consideration
  - Every dollar spent on research is a dollar NOT spent directly on development assistance...

# How can research contribute?

- Research timelines are variable
- Systems are dynamic
  - Research output in 10 years may be too late... the world has moved on...
- Social & biophysical sciences can contribute
  - New ways to respond to/think about challenges
  - More efficient approaches to/in life
    - E.g. cell phones in the US (slow uptake, we didn't need them, now we can't live without them)

# Why think about impact up front?

- Researchers who consider product outcomes from the beginning are more likely to yield tangible outputs from their programs...

# Achieving Impacts: Special Challenges for R&D

- Impact is a long-term phenomenon (usually occurs after the research project is finished)
- Researchers have little control over the final processes or steps towards impact
- Somebody else may be responsible for working with the final users
- Change is usually complex and can depend on a number of factors

# How adoption occurs in a perfect world (mature R&D environment)

- Scientists develop technologies/information
- Private firms/farmers & public sector seek/utilize/extend information/technologies
- Scientific results reported in scientific literature, at conferences , policy forums
- New information is distributed via extension bulletins
- Educated/literate farmers seek new information:
  - Contact scientists
  - Read extension bulletins
- Farmers have access to market information (i.e., crop prices, grades & standards)

# How adoption occurs (*or does not occur*) in an AR4D world (institutional underdevelopment)

## Private sector?

- Seed multiplication weak
- Seed marketing weak
- Value-added firms weak

## Extension services?

- Poorly funded or non-existent

## Farmers?

- Illiterate
- Small holding & widely dispersed

## Market

- Farmers lack access to market information (e.g., crop prices, grades & standards)

# Thinking about impacts in research design and implementation

- CGIAR program for Aquatic Agricultural Systems
  - *Research in Development*, Dugan, Apgar, & Douthwaite
- Dr. Mywish Maredia, Legume Innovation Lab

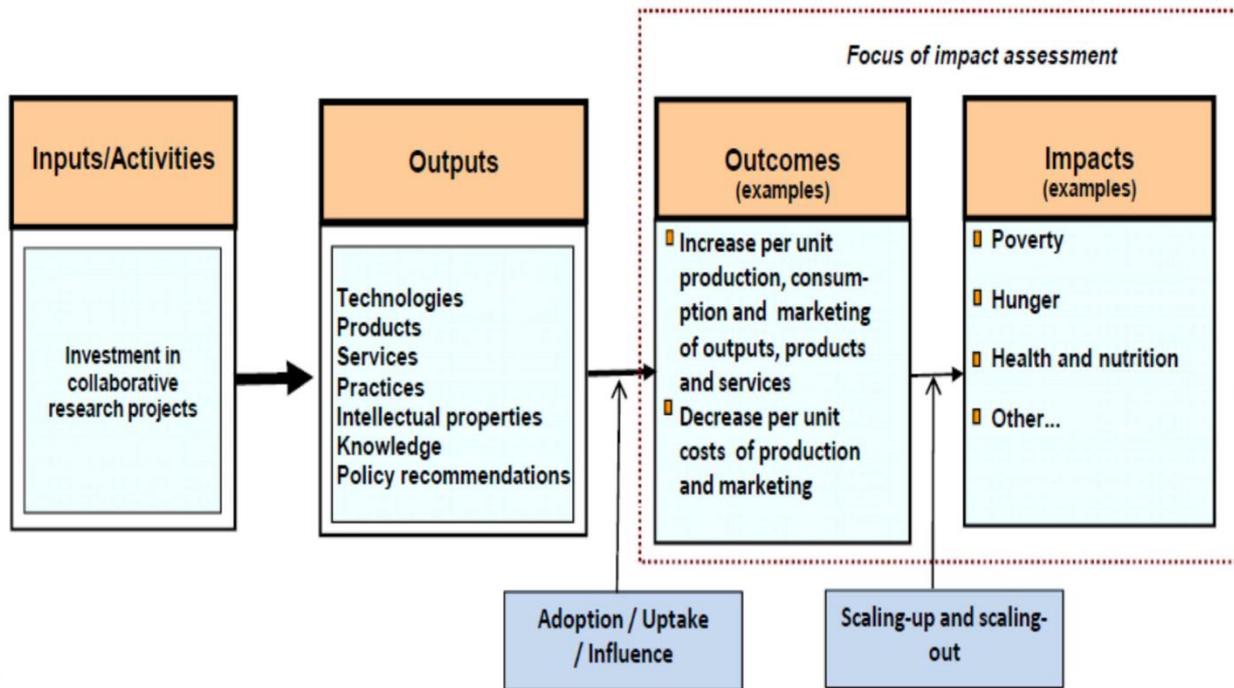
# Research in Development

- Research *embedded* in the local context
- Focus on :
  - How research is undertaken
    - Commitment to people & place
    - Participatory Action Research
    - Gender transformative approach
    - Learning & networking
  - Partnerships
  - Capacities needed - both technical and personal skills and new mindsets to undertake research in this way

# *How we do research*

- As a transformative process for the stakeholders (at multiple levels – individuals, communities) collaborating in the research
  - E.g. testing new approaches to overcome socioeconomic and institutional constraints that limit opportunity for the marginalized
- Relevant for certain domains of research or as an input for priority setting in other areas...

# Impact Pathway-A simplified view



Arrows in the impact chain indicate the direction of influence and its thickness indicates level/degree of influence on an effect

# Defining terms...

## Inputs: Investments and Activities

- The financial, human, and material resources used for the research intervention (experiments, surveys, and analysis).

## Outputs: direct project deliverables

- Changes resulting from the research which are relevant to the achievement of outcomes; manifested in technologies, products, capital goods, services, practices, knowledge, policies and information

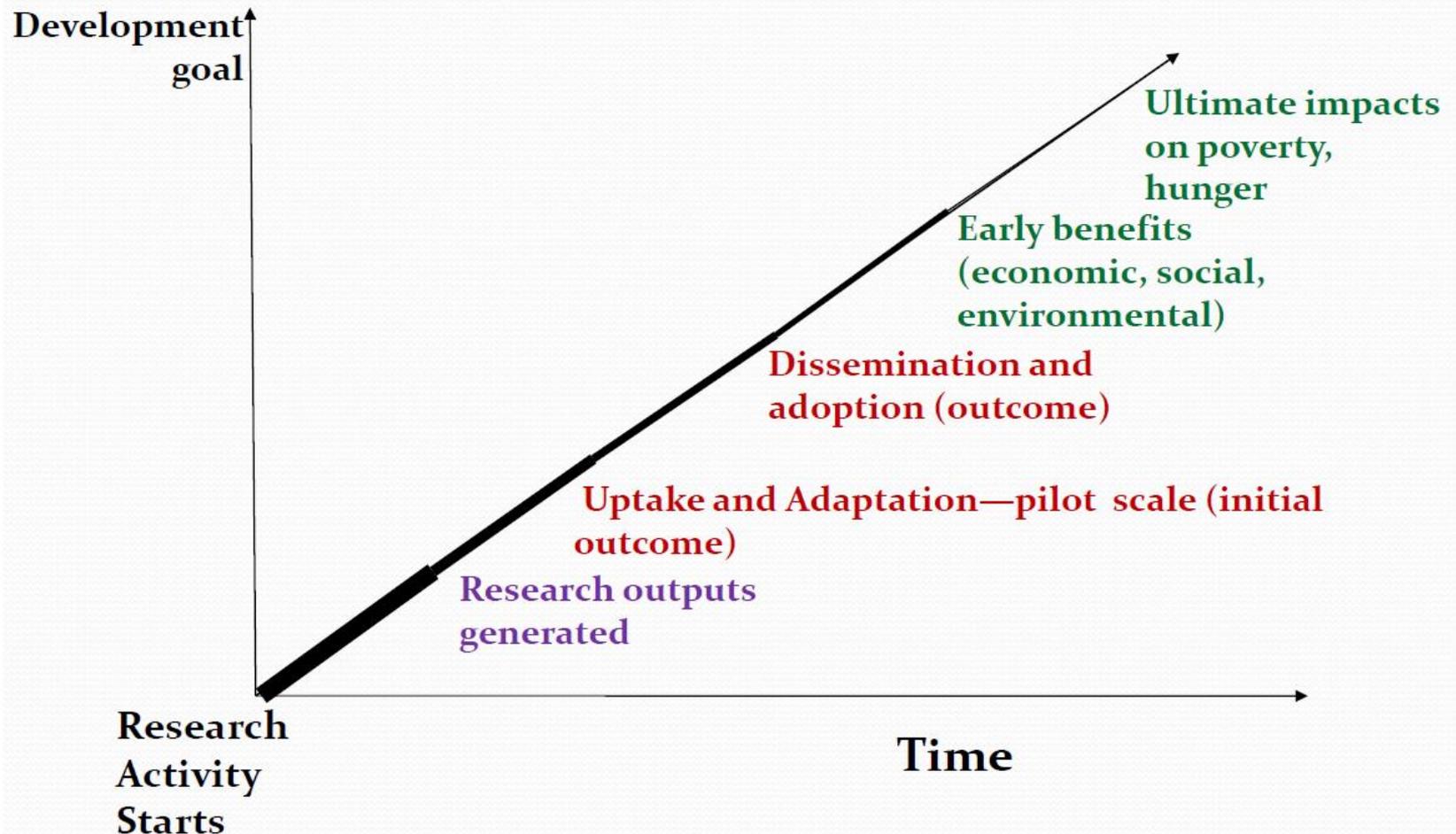
## Outcomes: Initial changes due to actions

- The likely or achieved short-term and medium-term effects of research outputs at the beneficiary level (farmers, individuals, consumers)

## Impacts: Ultimate changes in indicators related to the welfare of individuals & society

- Positive and negative intended or unintended, primary, and secondary long-term effects produced by research outputs.

## Research to Impact pathway – On a Time Dimension



# Examples of impact-oriented research outputs

- New varieties that:
  - Increase yield
  - Reduce risk due to drought, insects, diseases
  - Reduce inputs and costs
  - Have traits preferred by consumers
- New storage technologies that reduce crop losses
- New value-added products that save labor/improve nutrition
- Information on how credit markets function or not that helps introduce institutional innovations
- Validation of results on efficacy of beans in improving nutritional status in HIV-infected children
- New bean lines with desirable root traits and architecture

# Adoption & Effect Size

Two key parameters determine ‘impacts’ of research

- **Adoption** (the use and uptake of research outputs)
- **Effect size** (the benefit per unit of adoption of a research output in relation to an existing practice/technology)

The larger the values of these two parameters, the larger the impact.

If no adoption → No impact

If zero or low effect size (benefit) per unit of adoption → No adoption → No impact

# Our goal:

To 'enhance impacts' by enhancing the

'effect size' and

'adoption' of our programs' research outputs

# Enhancing the 'Effect Size'

The 'effect size' depends on:

- the science embedded in the research output (i.e., the breakthroughs, the inventions and discoveries, etc.)
- the reality at the end-user level (i.e., the environment, socio-economic conditions, etc.)
- existing or alternative practice/technology available at the end-user level (the counterfactual)

# To ensure a positive and large 'effect size' ...

...output(s) resulting from a research effort must be superior to existing/alternative practice/technology under the conditions found at the end-user level.

- This means the importance of assessing the effect size not only in scientific units (e.g. kg/ha) but also in socioeconomic units (e.g. \$/ha, consumer acceptability, market accessibility, availability of labor, etc.)

# Enhancing Adoption...

Necessary conditions for adoption:

- **Cost-effective**—must be profitable for end-users to adopt (i.e., benefits > costs)
- **Awareness**—farmers/consumers must know that the technology/product exists
- **Physically accessible**—technology must be available for farmers to adopt
- **Economically accessible**—farmers must have access to cash/labor needed to buy/use it
- **Scaling Up**—technologies must be replicable
- **Sustainability**—must be possible to extend the technology without subsidies

# How can we increase impact?

- To ensure 'Adoption' of research outputs do take place, researchers must compensate for institutional underdevelopment
- Researcher will need to devote some efforts on 'outreach' activities
  - This does not mean researchers themselves get involved in extension/outreach, but it means: networking, building partnerships and actively seeking opportunities to promote the research outputs to the right audience, the right agencies and networks, and in the right venues.

# What to cultivate among researchers...

- Researchers need to have forward-looking vision of the pathway that goes beyond outputs
- They need to think about creative ways for translating outputs into outcomes and impacts; think about the gaps in pathways to impact, and what they need to plan in order to fill those gaps.
- Host country PIs and collaborators play key role in these efforts

# Implications for the design and implementation of research programs

## Good Practice Guidelines

- For Program Leadership (ME, or Lead PI):  
Design an effective M&E system that tracks and collects the right information at different stages.
  - Workplans
  - Progress reports
  - Report on performance indicators
  - Project evaluations

# Good Practice Guidelines (con't)

- Define research outputs in clear/concise manner
- Define potential adoption domain of those outputs (who are the next users and final users? What is their profile?)
- Gather information on current practices, constraints and factors that potentially affect adoption (baseline information) from different sources.
- The methods and sources for baseline information could range from high cost (i.e., farmer consultation, and primary data collection efforts) to low cost (i.e., secondary sources, recently completed studies, key informants, government officials)
- Develop 'impact pathways' to identify potential gaps/constraints and actions required by project teams to ensure the results/findings are passed on to next users and final users so that it results in adoption and impacts.
- Implement the plan

# Developing an impact pathway...

**Step 1:** List project outputs to be generated with a time frame

**Step 2:** Identify the 'next users' and 'final users' of each output (they could be the same)

**Step 3:** Define what 'success' looks like for your project (give size, scale, geographic scope) with a time frame of when this vision could be accomplished (could be beyond period of performance)

# Final steps...

**Step 4:** Once the vision of success is established, develop the program logic. A program logic:

- Is a hypothesis of how your project will achieve its ultimate goals (i.e., the vision of success)
- Depicts cause-and-effect relationships
- Shows a series of expected consequences, not just a sequence of events

**For each step,** give a time frame of when it will be accomplished and identify strategies and action plan your project will undertake over the next 5 years to 'connect the dots' in the program logic.

Guidance to programs...