

Steps in Implementing an Impact Evaluation

Nandini Krishnan
Africa Impact Evaluation Initiative
World Bank

April 14, 2009

AADAPT
measuring the impact of
Agricultural Adaptations



Cross-Country Workshop for Impact Evaluations in Agriculture and Community Driven Development
Addis Ababa, April 13-16, 2009



Step 1: Identify priorities

- Know your sector
- Examine sector plan
 - Poverty Reduction
 - Long-term Strategy for Agricultural Growth and sustainable Rural Livelihoods
 - Governance and accountability initiatives
- Identify highest priorities for learning in agriculture, rural development or local governance

AADAPT
measuring the impact of
Agricultural Adaptations



**Cross-Country Workshop for Impact
Evaluations in Agriculture
and Community Driven Development**
Addis Ababa, April 13-16, 2009

**Africa
AIM** Impact
Evaluation
Initiative



Step 1: Identify priorities for learning

- Agriculture
 - Technology adoption: Input vouchers, Matching grants, Agricultural advisory services- Associated implementation mechanisms
 - Irrigation: Large-scale or small-scale, construction or rehabilitation, financial arrangements and sustainability
 - Access to markets: Information, complementary infrastructure
- Community-driven development and local governance
 - Accountability interventions: Information, Devolution of funds, functions and functionaries
 - Participation interventions: Capacity building, conditional budgetary support, women's associations, community assemblies



Step 1: Identify priority interventions

- Priority interventions:
 - Unknown benefits
 - Costly intervention
 - New intervention
 - National or regional policy thrust: resources focused on../ Scaling up
- Priority outcomes of interest
 - Intermediate
 - Final

AADAPT
measuring the impact of
Agricultural Adaptations



**Cross-Country Workshop for Impact
Evaluations in Agriculture
and Community Driven Development**
Addis Ababa, April 13-16, 2009



Step 1: Identify priority interventions

- Scaling up? Test alternatives, test financial sustainability
- Joint determination of intervention/s and outcomes
- Feasible evaluation question

AADAPT
measuring the impact of
Agricultural Adaptations



**Cross-Country Workshop for Impact
Evaluations in Agriculture
and Community Driven Development**
Addis Ababa, April 13-16, 2009



Step 1: An example

- Agriculture Sector **priority**: Increasing yield of staple crops
 - **Intervention**: Input vouchers for improved seeds and fertilizers
 - Priority for **learning**: Impact of input vouchers on adoption of improved technologies? Alternative implementation mechanisms? Different subsidies?
-
- Governance Sector **priority**: Improving local accountability
 - **Intervention**: Budgetary support conditional on participatory decision-making
 - Priority for **learning**: Is this an effective tool to increase participation and accountability relative to guaranteed funds

AADAPT
measuring the impact of
Agricultural Adaptations



**Cross-Country Workshop for Impact
Evaluations in Agriculture
and Community Driven Development**
Addis Ababa, April 13-16, 2009



Step 2: Understand roll-out of intervention and opportunities for impact evaluation

- How will the program be rolled out? Different interventions?
 - Piloted in a random sample of communities / population / regions?
 - Rolled out nationwide?
 - Rolled out in communities/population/regions satisfying a certain criteria?
 - Rolled out to a targeted high-potential or high-poverty population/areas?
- Understand **TARGETING** and **PROGRAM PARTICIPATION**
- Each roll-out strategy yields distinct opportunities for impact evaluation



3. Appropriate design

- Keep in mind
 - The needs of the intervention – Target population/ High-priority areas
 - The evaluation: Take advantage of opportunities for random assignment or phase-out
- Example: 10,000 eligible households in high-potential areas to receive vouchers for improved seeds and fertilizers
 - Randomly assign 3000 to Year 1, 4000 each to Years 2-3
 - Identify 5000 neediest (using clearly defined criteria) and assign to years 1 and 2



3. More on design

- Determine scale: Large scale or small pilot?
- Universal scale: difficult to evaluate, usually not feasible
- At large scale
 - May be representative
 - More costly to implement
 - Better information about regional or national effectiveness
- Small pilot (e.g., in two districts)
 - Easier to implement
 - Not as informative

AADAPT
measuring the impact of
Agricultural Adaptations



**Cross-Country Workshop for Impact
Evaluations in Agriculture
and Community Driven Development**
Addis Ababa, April 13-16, 2009



4. Assignment to treatment and control

- Is random assignment feasible?

Large-scale irrigation project : Not feasible to assign farm households or communities randomly to the intervention, determined by location of canals

Input vouchers: Can randomly assign at region, community, or household level- contamination?

- At what level? The unit of intervention often simplest
- Trade-off: higher level means bigger sample



4. Assignment to treatment and control

Alternative assignment strategies?

- If the intervention must be targeted, think about valid counterfactual,
 - Even if criteria are not clearly defined, can, if feasible, phase out randomly within eligible population / villages / regions
 - If targeting specific regions or communities, pick appropriate, comparable control group—this depends on using clear criteria



5. Collect baseline data

- Random assignment: Implies control and treatment are identical, but we must check for balance
- If not balanced, reassign/correct?
- Regression Discontinuity Design and other quasi-experimental methods: Baseline essential, matching on observables and checking balance
- Informs project design and implementation: Who was targeted? Did the program mostly benefit patients who were poor or at high risk at baseline? How well were they targeted?



5. Baseline questionnaires

1. Include areas essential to impact evaluation

- Ultimate outcomes we care most about: yield, consumption, incomes
- Intermediate outcomes we expect to change first: input use
- Other outcomes that the intervention may affect: schooling, labor
- Characteristics that might affect outcomes: farm size, household size, education



5. Baseline questionnaires

2. Take advantage of opportunity to collect essential sector data

- Existing land use, crop choice, input use

3. Who collects it?

- Bureau of Statistics: Integrate with existing data
- Ministry concerned: Ministry of Agriculture/Water Resources/Rural Development
- Private agency: Sometimes easier quality monitoring



7. Roll out intervention

- Monitor to roll-out to ensure evaluation is not compromised
- What if the benefits are accidentally rolled out to everyone, all at once?
 - Example: Input vouchers to be randomly assigned to households in pre-identified communities, but rolled out to the entire community
 - Contamination: Some treatment households sell all or part of their vouchers for cash to control households
 - Evaluation is compromised: Needed to monitor!



7. Roll out intervention

- What if all the control group receive some *other* benefit?
 - Example: NGO targets control communities to receive vouchers
 - Changes evaluation: Add training in input use and information campaign in treatment communities



6. Check for balance / pre-treatment characteristics

- Do treatment and control groups look similar at baseline?

	Poverty	Female-headed households	Number of children in household	Formal sector job
Treatment	70%	64%	3.1	20%
Control	68%	66%	2.9	18%

- If not, all is not lost!
 - Even in absence of perfect balance, can use baseline data to adjust analysis or re-assign



7. Gather information on roll-out

- In reality, who receives which benefits when?
 - Could affect the impacts measured: variation in exposure to treatment
 - Voucher program rolls out in some communities before harvest, others after
- Does the intervention involve something other than initially planned?
 - Example: Learn that input suppliers who distributed vouchers also gave detailed training on appropriate input use
 - Program impact now includes the training



8. Follow-up data

- Collect follow-up data for both the treatment and control groups
- Appropriate intervals
 - Consider how long it should take for outcomes to change
 - One year or at next harvest
 - Provide initial outcomes
 - Adjust program if needed
 - Two years: Changes in longer term outcomes?
 - After end of program: Do effects endure?
 - What happens once the input voucher program has phased out?



9. Estimate program impacts

- Randomization: Simply compare average outcomes for treatment and comparison
- Other methods: Make statistical assumptions to estimate impact of program
- Combination of methods: Matching with difference-in-difference

AADAPT
measuring the impact of
Agricultural Adaptations



**Cross-Country Workshop for Impact
Evaluations in Agriculture
and Community Driven Development**
Addis Ababa, April 13-16, 2009

**Africa
AIMpact**
Evaluation
Initiative



10. Are the effects big enough to matter?

- Are the effects statistically significant?
 - Basic statistical test tells whether differences are due to the program or to noisy data
- Are they policy significant?
 - If the input voucher scheme costs a million dollars and has positive effect but it's tiny, may not be worthwhile
- Are they sustainable?
 - If input use falls to pre-program levels when the intervention ends, the program is not financially sustainable in its current form



11. Disseminate!

- If no one knows about it, it won't make a difference to policy!
- Make sure the information gets into the right policy discussions
- Ownership by government, capacity building
- Forums
 - Workshop
 - Report
 - Policy brief

AADAPT
measuring the impact of
Agricultural Adaptations



**Cross-Country Workshop for Impact
Evaluations in Agriculture
and Community Driven Development**
Addis Ababa, April 13-16, 2009



12. Iterate

- Re-examine sector **priorities**: Identify **next learning opportunity**
- Or suppose the effects aren't as large as you hoped
 - **Test variations**
 - Alternate subsidy amounts
 - Alternate packages of inputs
 - Alternate implementation and targeting mechanisms: Government extension workers or input dealers? Beneficiary selection?
 - **Test other interventions** to affect same outcomes
 - Matching grants for technology adoption
 - Training in use of improved technologies
 - Improving access to markets and providing complementary infrastructure to increase the share of marketed output

AADAPT
measuring the impact of
Agricultural Adaptations



**Cross-Country Workshop for Impact
Evaluations in Agriculture
and Community Driven Development**
Addis Ababa, April 13-16, 2009



Thank you

AADAPT
measuring the impact of
Agricultural Adaptations



**Cross-Country Workshop for Impact
Evaluations in Agriculture
and Community Driven Development**
Addis Ababa, April 13-16, 2009

