



THE WORLD BANK



Evaluating Impact: Turning Promises into Evidence

Rural Electric Cooperative Development Project

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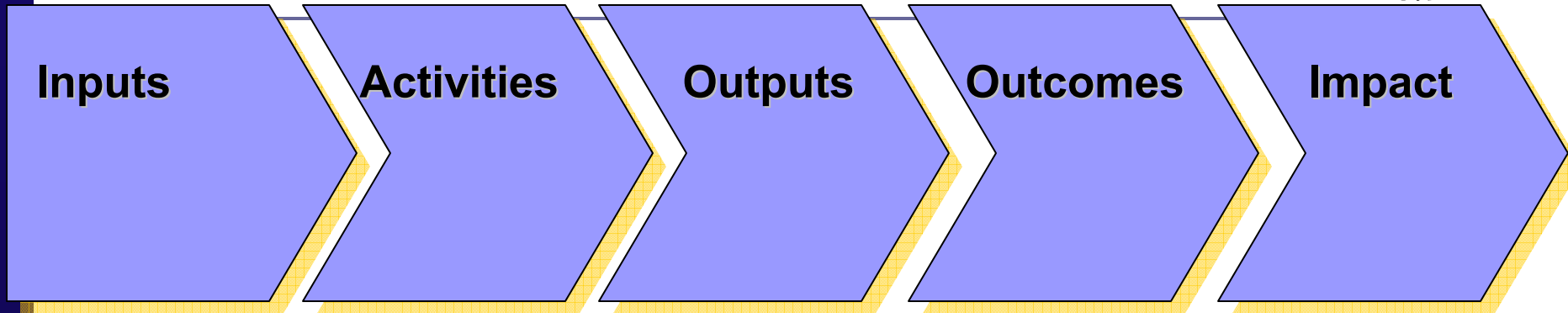
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Manila, 05 December 2008

1. Background

- ❑ Current average systems loss of 9 electric cooperatives (EC) is about 17%;
- ❑ Current recoverable systems loss allowed by the Energy Regulatory Commission for ECs is 14%; and
- ❑ Service reliability of 9 ECs based on the 2007 power outages data:
 - system average interruption frequency index (SAIFI): 0.8-1.3 interruptions/customer;
 - system average interruption duration index (SAIDI): 70-90 minutes/customer; and
 - momentary average interruption frequency index (MAIFI): Less than 3 minutes.

2. Results Chain



- **Funding Sources:**
 - ODA
 - GOP
- **Human Resources**
 - PMO
 - NEA

• **Rehab of existing TL and installation of additional capacity of substations**

Circuit transmission lines and substations rehabilitated

- **Increased % of HH served;**
- **Reduced system loss;**
- **Reduced power outages; and**

- **Improved quality of life;**
- **Improved academic performance of school children;**
- **Increased business opportunity for rural HHs; and**
- **Increased family income.**

3. Primary Research Questions

Can rehabilitation of existing transmission lines and installation of additional capacity of substations:

- reduce the average system loss of the 9 ECs by 6%?
- reduce power outages in the areas covered by the 9 ECs?
- increase the percentage of households (HH) electrified by the 9 ECs?

4. Outcome Indicators

- Number/percentage of HHs vs the total HH population within the ECs' franchise area;
- Total kilowatt hours (kwhs) produced vs total kwh billed;
- Power outages (SAIFI, SAIDI, MAIFI)

5. Identification Strategy/Method

Randomized Phase

- Three ECs will be randomly selected to be implemented in each year. Note that each EC will include the improvement of 169 circuit kilometers (ckt-km) primary and 59 ckt-km secondary transmission lines to ensure that same characteristics will be observed in each EC.

- Treatment and control groups are as follows:
 - Year 1 – Treatment Group 1
 - Year 2 – Treatment Group 2
 - Year 3 – Control Group

- Comparison will done accordingly:
 - T1 vs C
 - T2 vs C

6. Sample and data

- Administrative data from each EC and NEA;
- Survey team to gather data on the following:
 - SAIFI – is the average number of times that a customer experiences an outage during the year(or time period under the study). It is found by dividing the total number of customers interrupted by the total number of customers served.
 - SAIDI – measures the total duration of an interruption for the *average* customer during a given time period. SAIDI is normally calculated on either monthly or yearly basis; however, it can also be calculated daily, or for any other time period.
 - MAIFI –measures the number of the momentary interruptions that a customer experiences over a given period of time. MAIFI is calculated by summing the number of device operations (opening and reclosing is counted as one event), multiplying the operations by the number of customers affected by dividing the number of customers served.

7. Time Frame/Work Plan

- 3 years

8. Sources of Financing

- Official Development Assistance loan
- Government of the Philippines counterpart funds
 - NEA
 - ECs
- Grant Assistance for the impact evaluation