



7th Annual Low Carbon Energy for Development Network Conference

Decentralized Energy Planning: Experience from Nepal

Satish Gautam

National Programme Manager

Alternative Energy Promotion Centre/ Renewable Energy for Rural Livelihood

Nepal

30th May 2018

Presentation Outline

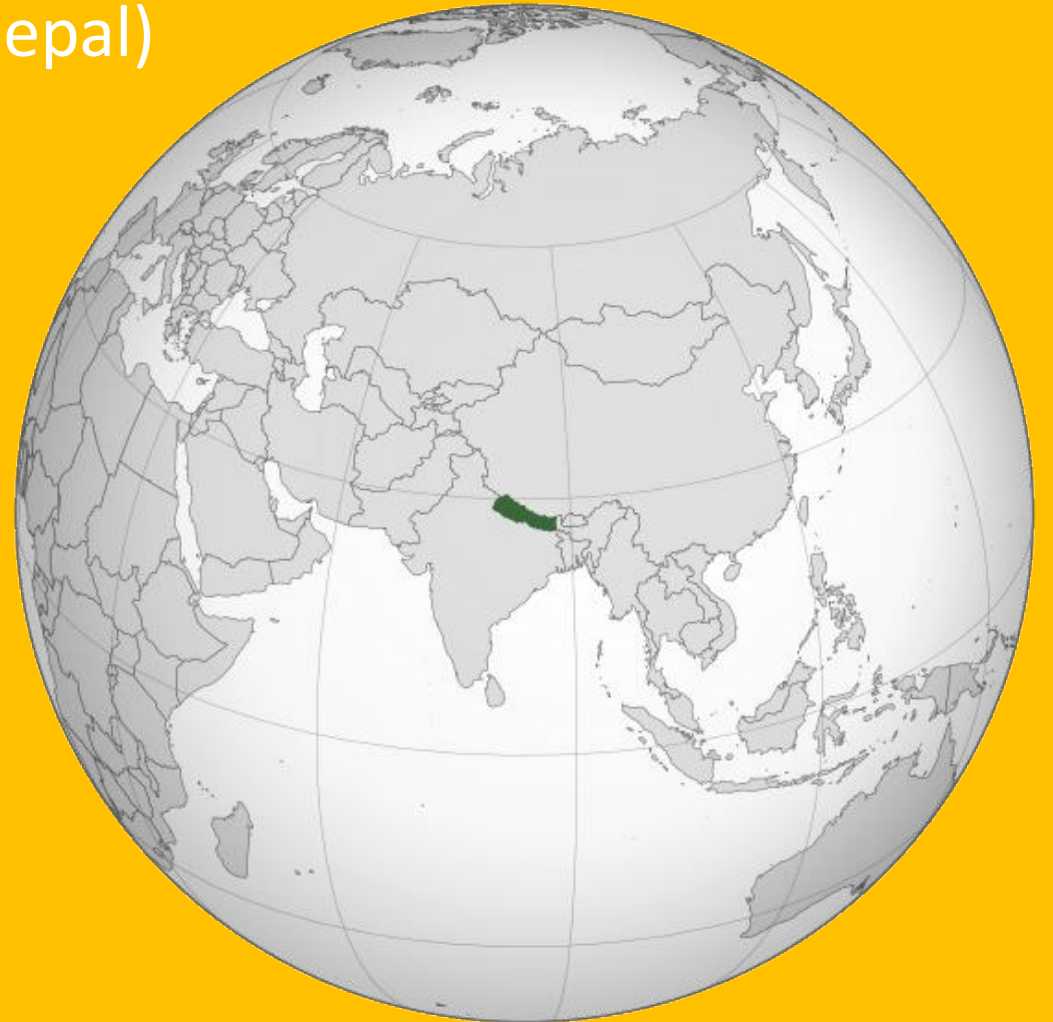
- Introduction to Nepal
- Renewable Energy in Constitution
- Responsibilities of Local Government
- Municipal Energy Plan (MEP)
- Current Progress in MEP
- Method for Measuring Capacity for MEP
- Institutional Reformation at Federal, Provincial and Local Level
- Way Forward

7th Annual LCEDN Conference,
Loughborough University



INTRODUCTION TO NEPAL

- **Nepal** (Federal Democratic Republic of Nepal)
- Population: **29 Million**
- Area: **147,181 km²**
- Human Development Index
 - **144th in the World**

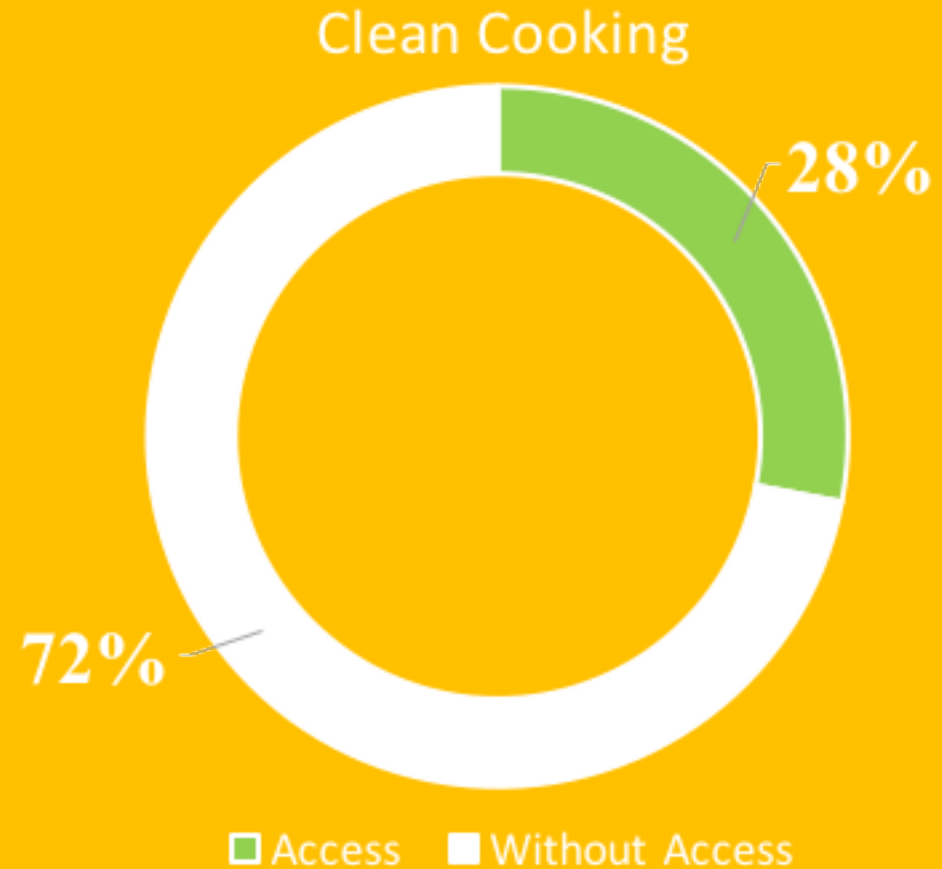
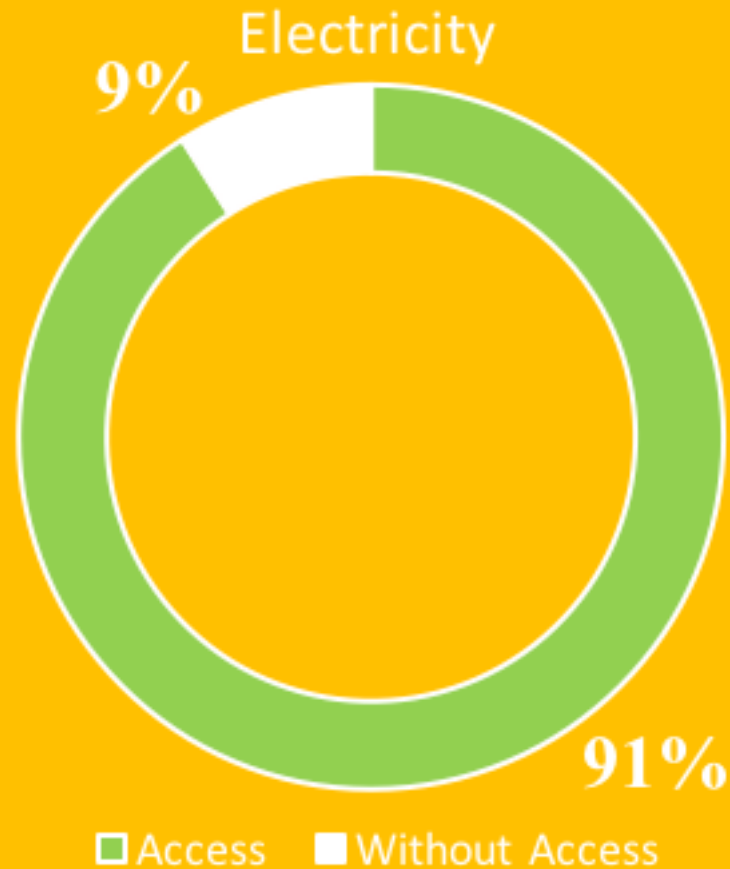


NEW GEO-POLITICAL STRUCTURE OF NEPAL

- **Constitution was announced in 2015 and the Country was divided into**
 - Federal Government
 - Provincial Government (7)
 - Local Government (753)
- **Local Government**
 - Metro (6)
 - Sub-Metro (11)
 - Municipality (276)
 - Rural Municipality (460)



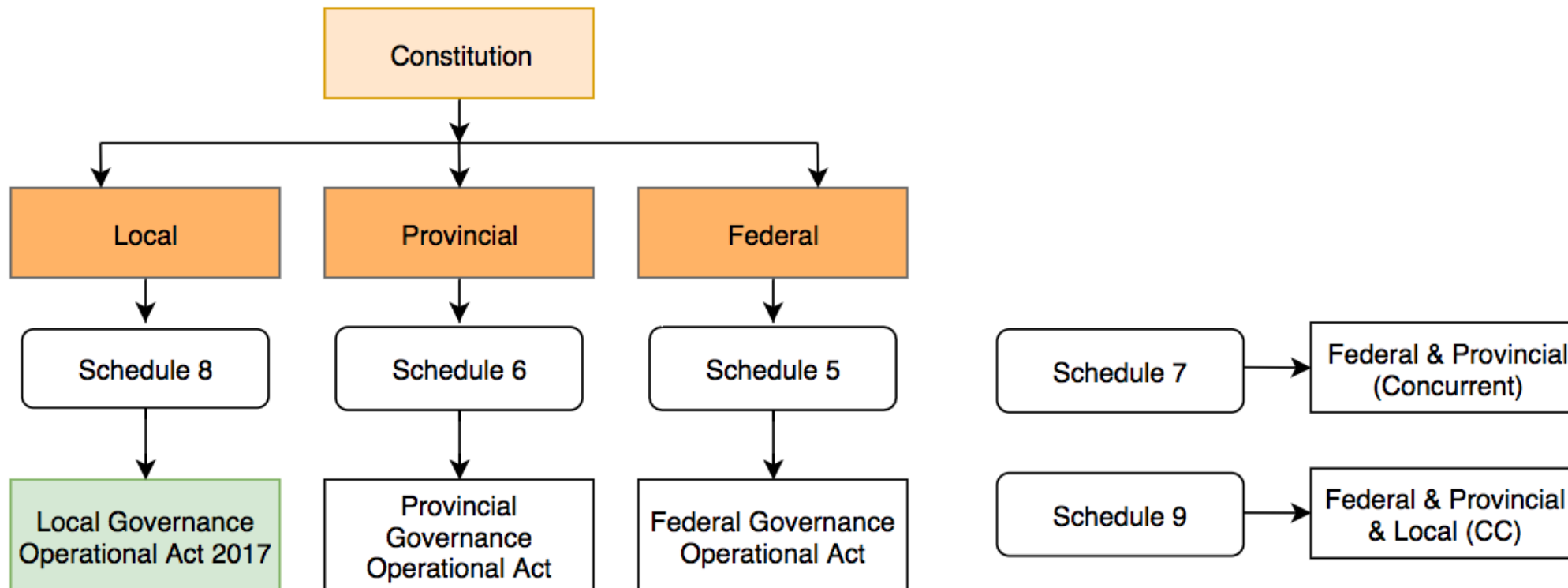
ACCESS TO ELECTRICITY and CLEAN COOKING



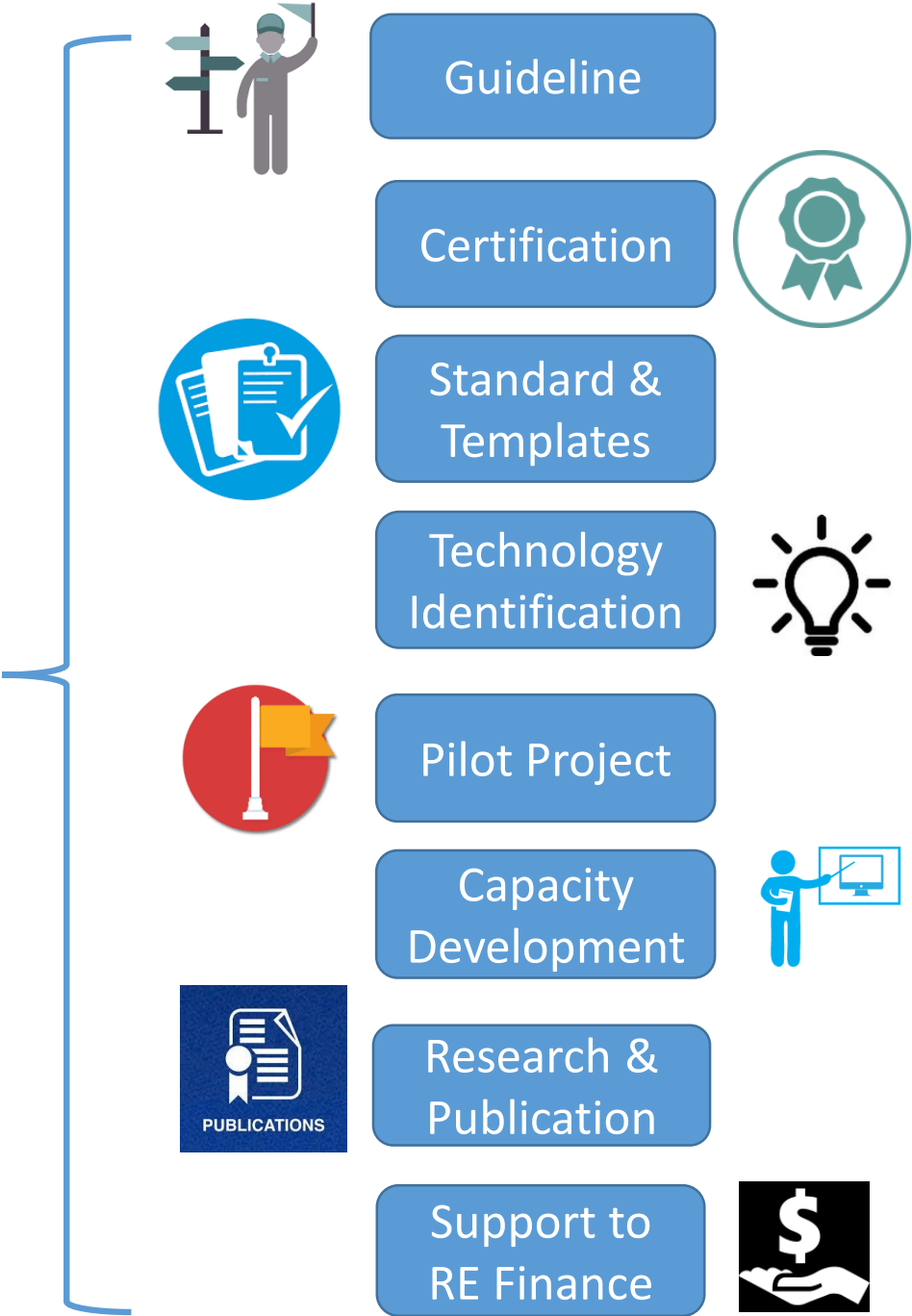
Renewable Energy in The Constitution

“The state shall pursue a policy of developing and producing **renewable energy**, ensuring cheap, easily available and dependable supply of energy, and making an appropriate use of it to meet the basic needs of the citizens.”

- 51. Policies of the State (g)(3) Policy Regarding the Conservation, Management and Use of Natural Resources, The Constitution of Nepal



Local Level Power- Schedule 8



Tasks at Local Level

Planning & Policy

- Ward and Municipal Energy Plan
- Tariff Fixation and Lifeline Tariff
- Local Incentive Mechanism
- Awareness Plans and Programs
- Identification of Partners
- Guarantees and Insurance for Projects
- Alignment of Provincial and Federal Plans, Commitments and Strategies

Technical

- Identify- Needs, Institutions, Resources
- Implement Best Available Technology and Implement Projects
- Generate Data and Report
- Support Project and Developers

Registration

- Registration and Approvals
- Compliance Check and Verification with Central Database

Training

- Prioritization and Demand of Need
- Training to Local Level Planners, Engineers, Technicians and Service Providers
- Training on O&M, After Service, etc
- Market Linkages and PEUs
- Training on Technology, Health and Sanitation

Finance

- Investment, Financial Closure and Procurement
- Monitoring and Audit
- Facilitate fund to establish dedicated energy funds

Collaboration

- Follow risk reduction and conflict resolution strategies
- Involve community during planning and decision making

Database

- Collection, Analysis, Storage and Reporting of Local Level Data
- Database of Local Level Projects, Budget and Activities

MUNICIPAL ENERGY PLAN

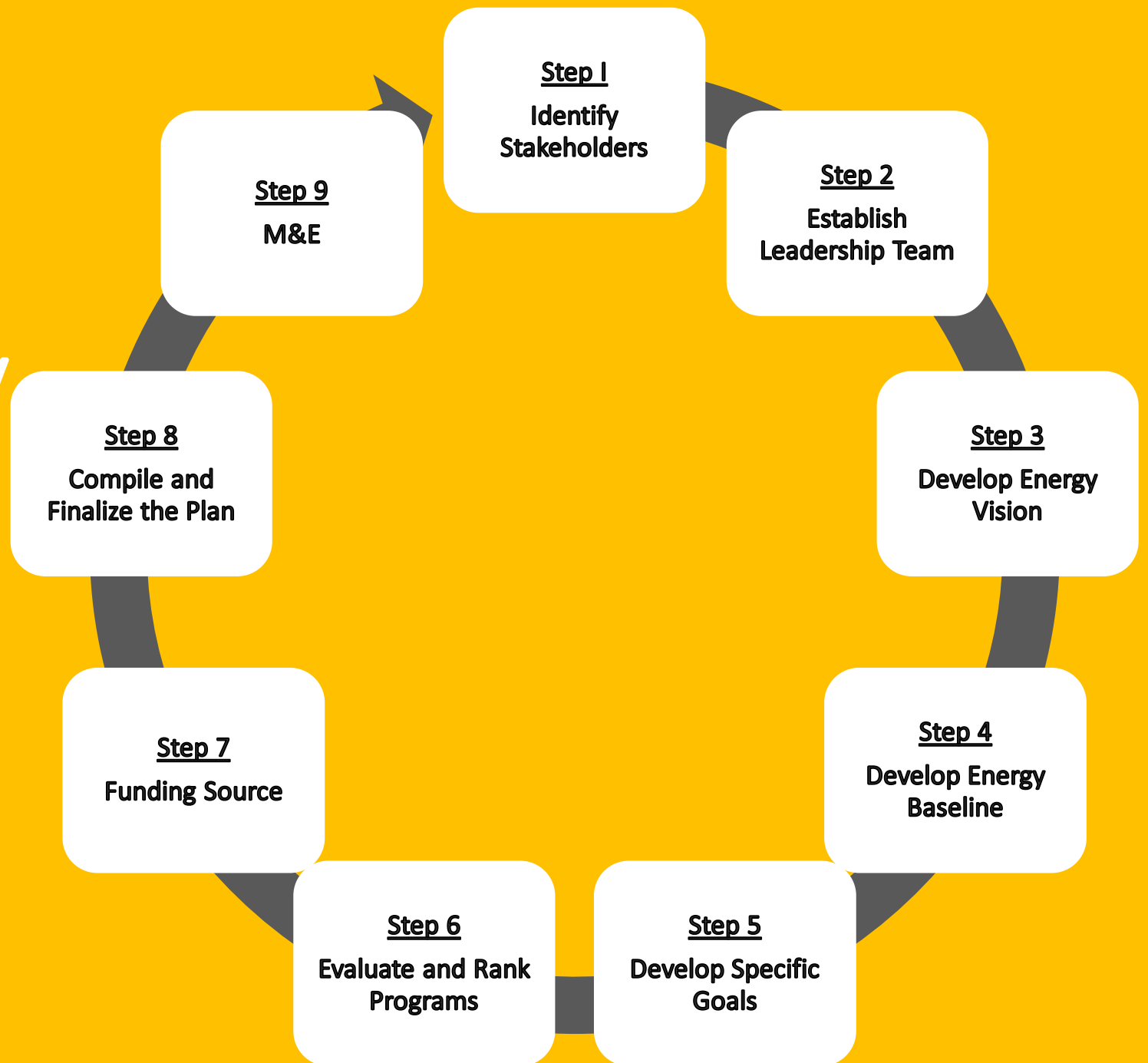
- **9 Steps Energy Planning Process**

- Detailed Process for Ward & Rural/Municipality level
- Tier-3 Level Approach for Electrification & Clean Cooking
- GIS and Best Available Technology (BAT) integrated software
- Advanced Level Energy Survey Tool

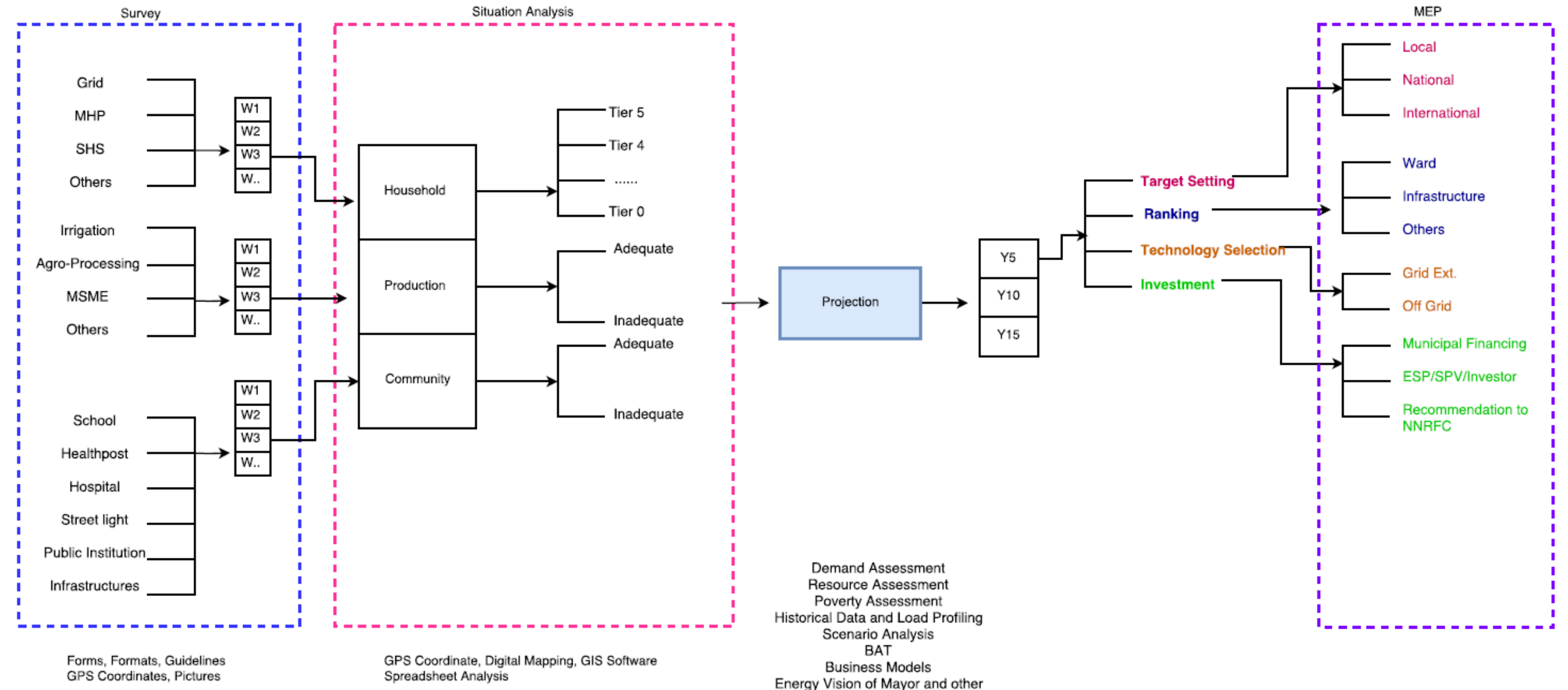
- **Current Activities**

- Palungtar Municipality, Mahankal Rural Municipality
- Replication in 12 +16 Rural Municipalities

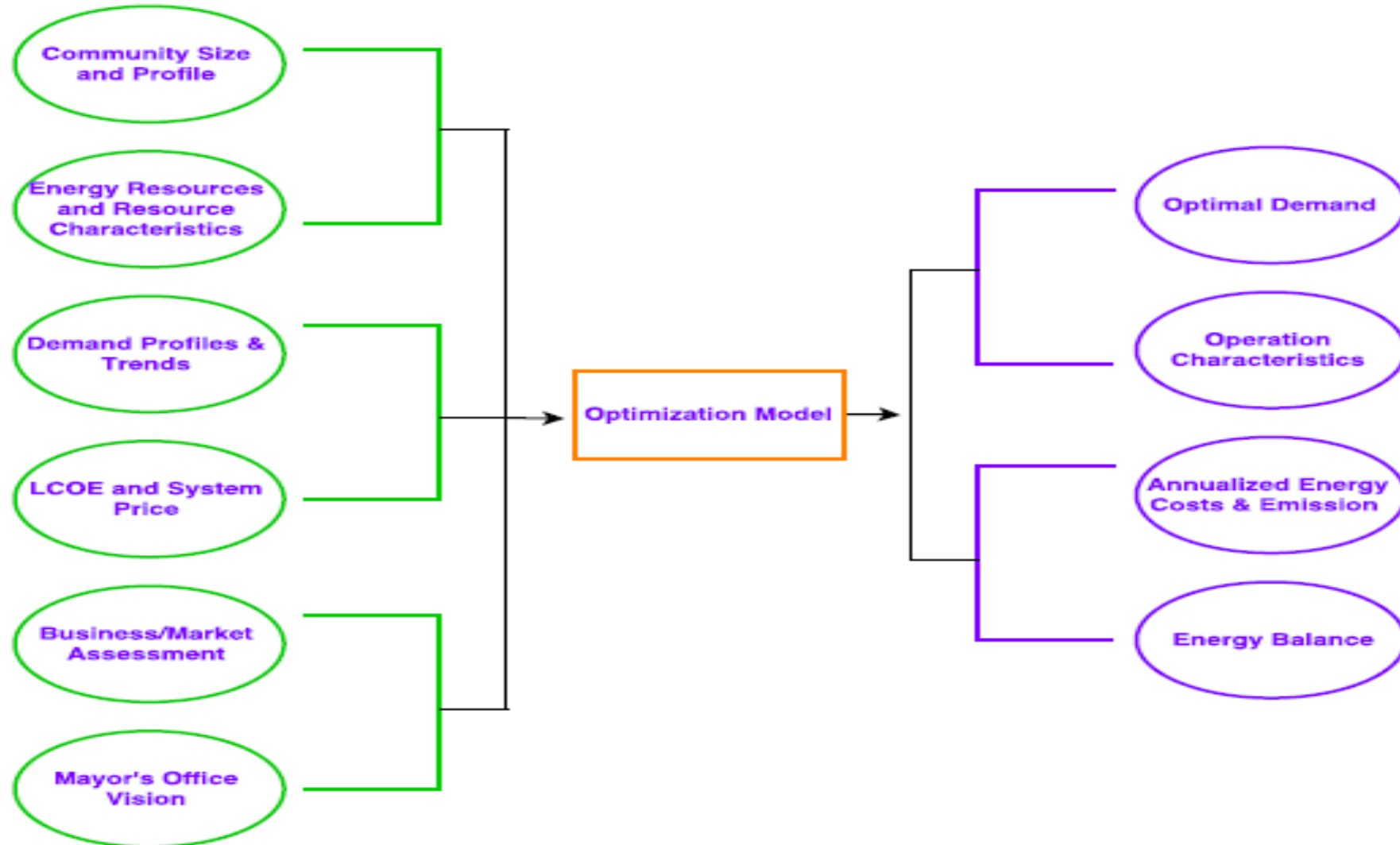
9 Step Municipal Energy Planning- Guideline



MEP PROCESS FLOW (Step-4)

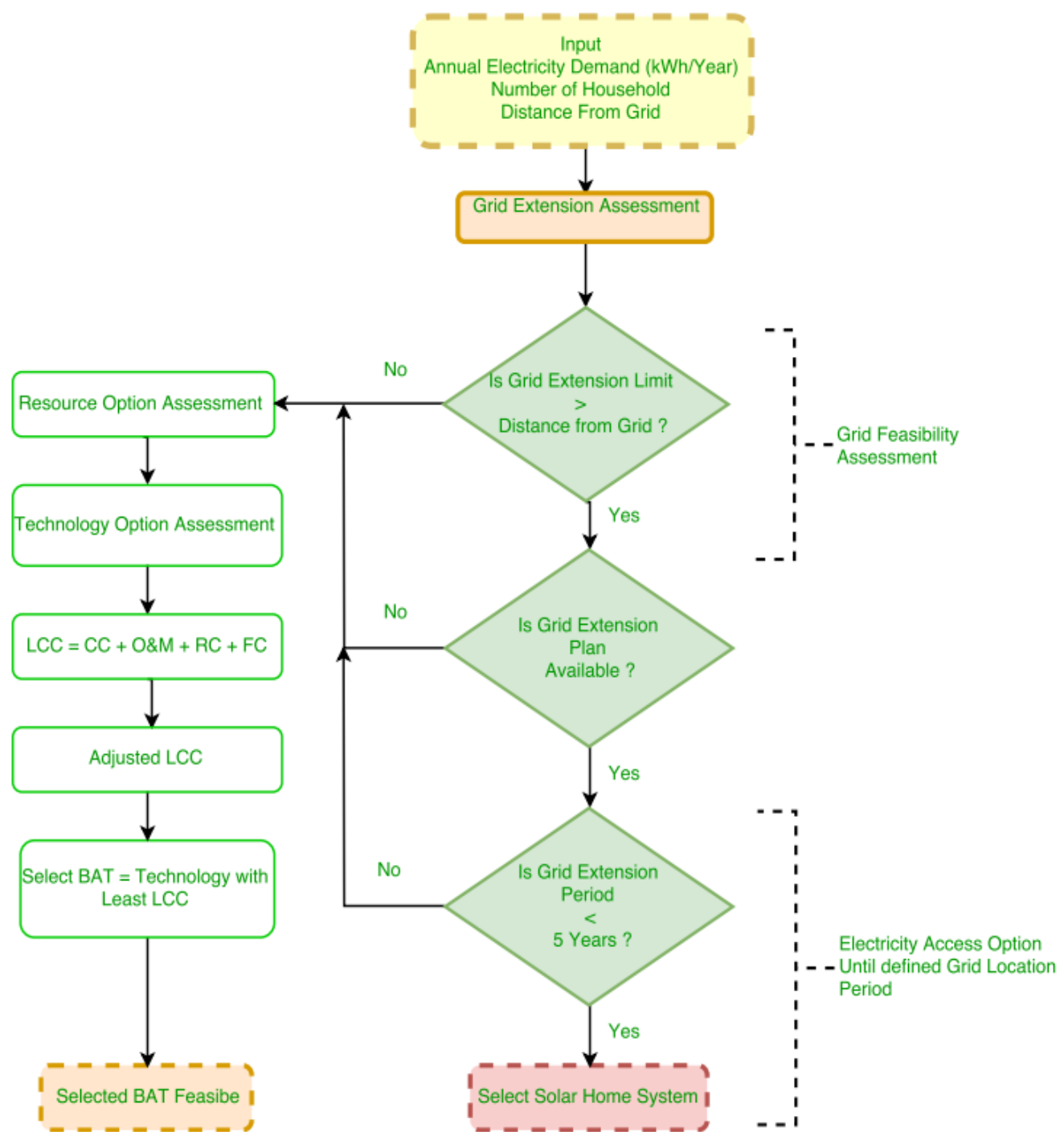


OPTIMIZATION APPROACH

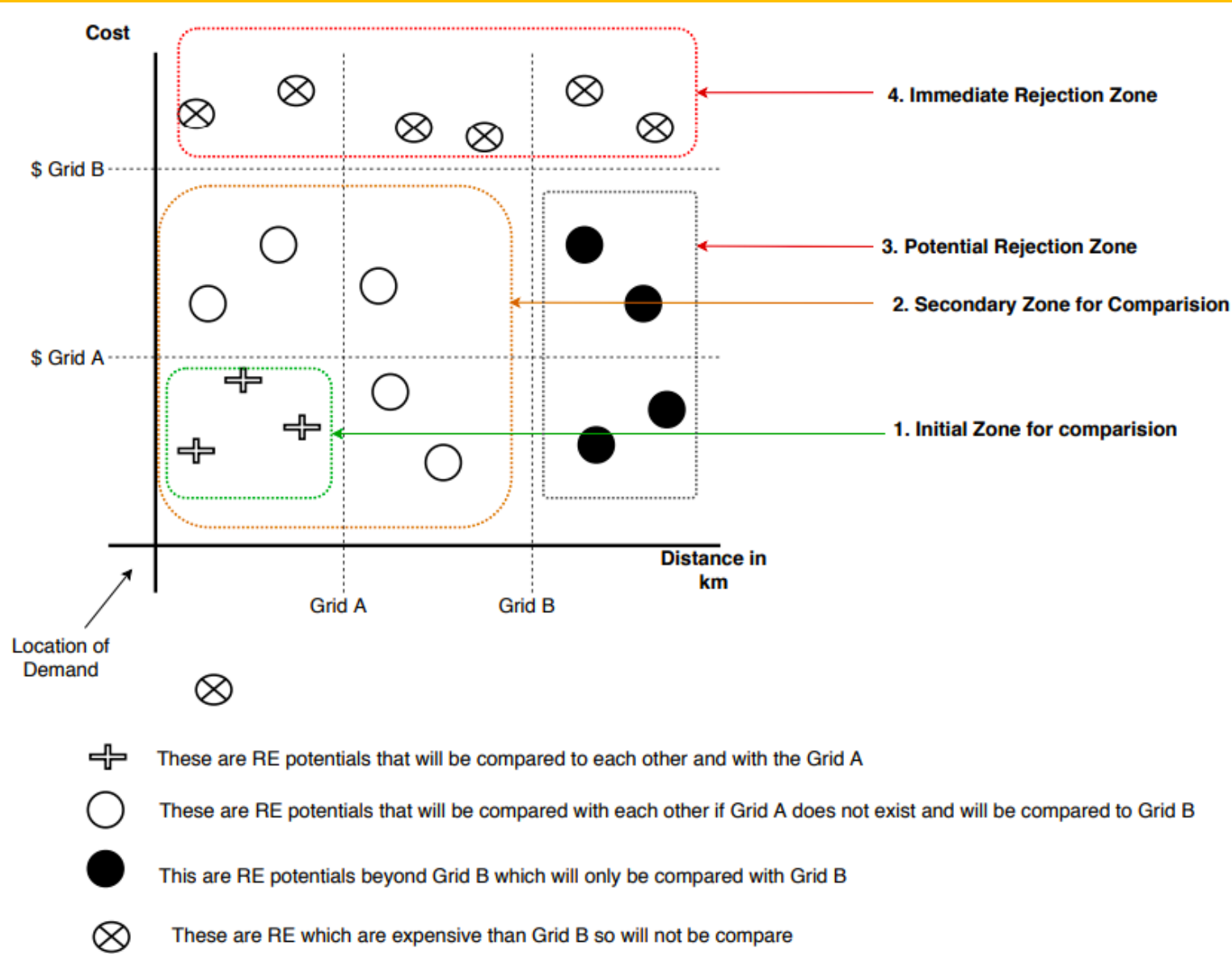


Assessment through: Best Available Technology

- Best Available Technology (BAT) identifies renewable energy technology primarily based on Least-Cost Option
- BAT uses
 - Life Cycle Cost (LCC)
 - Levelized Cost of Electricity (LCOE)

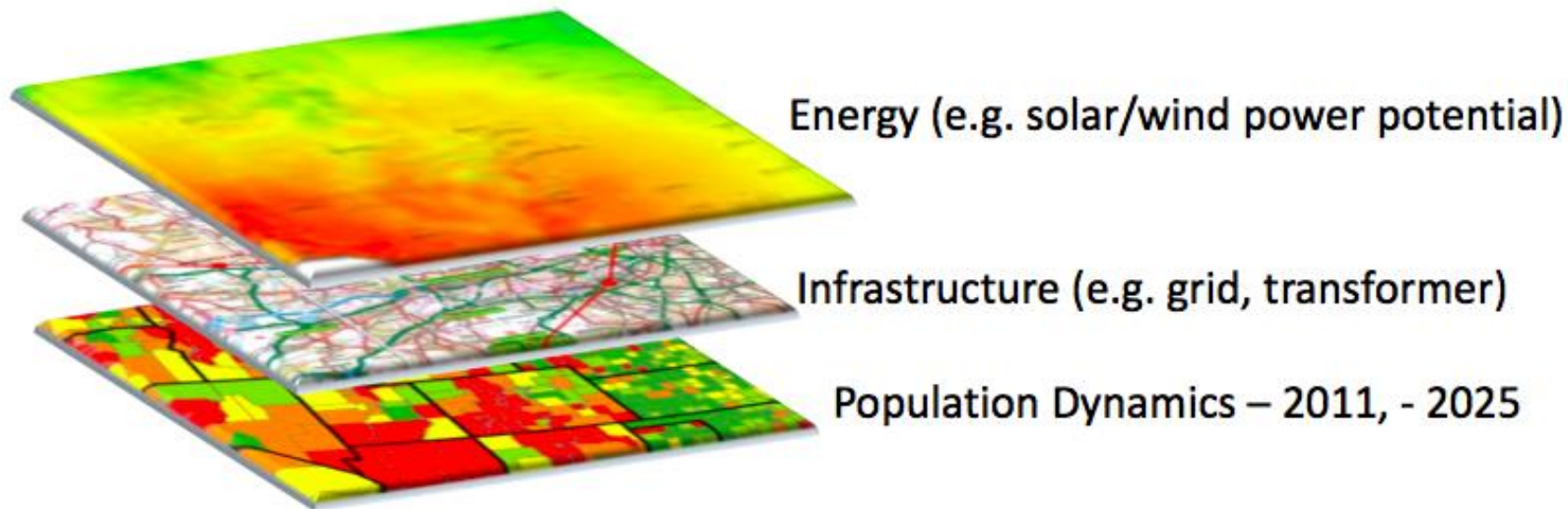


Assessment through: Best Available Technology (Concept of Exclusion)



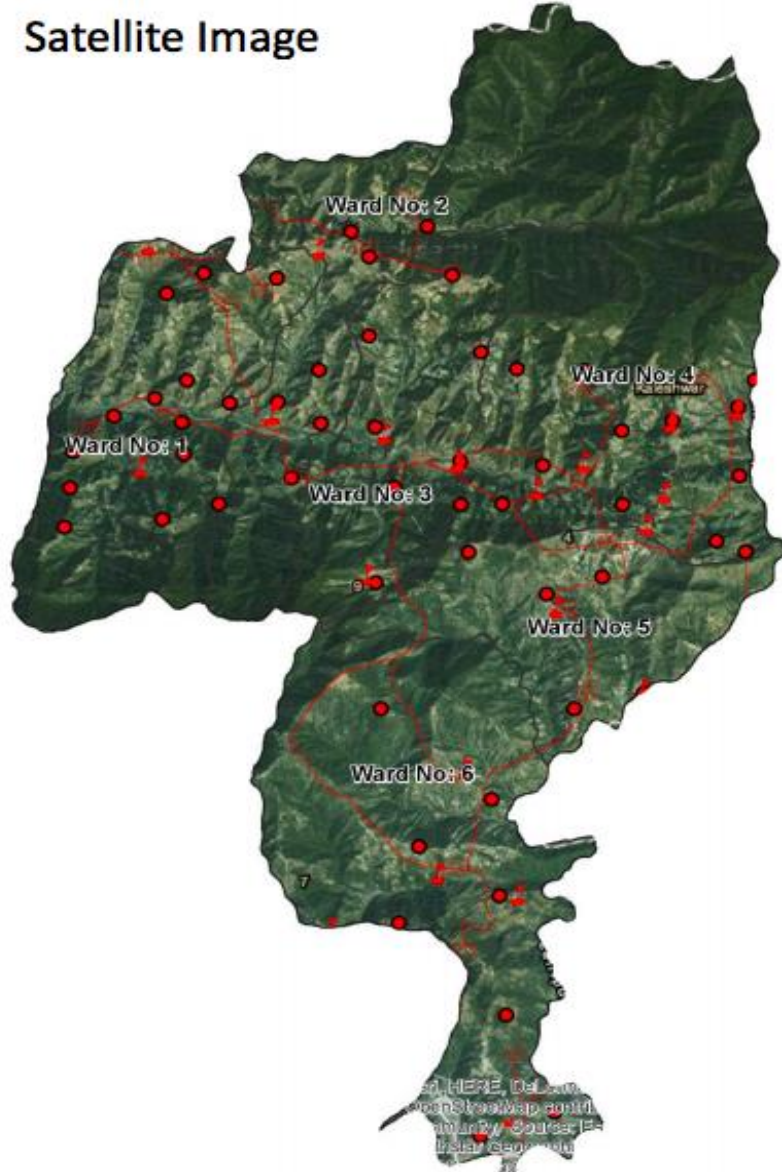
GIS Based Approach

- Grid lines
- Location of transformers
- Household or cluster distance to transformer
- Calculation of Life Cycle Cost (LCC)

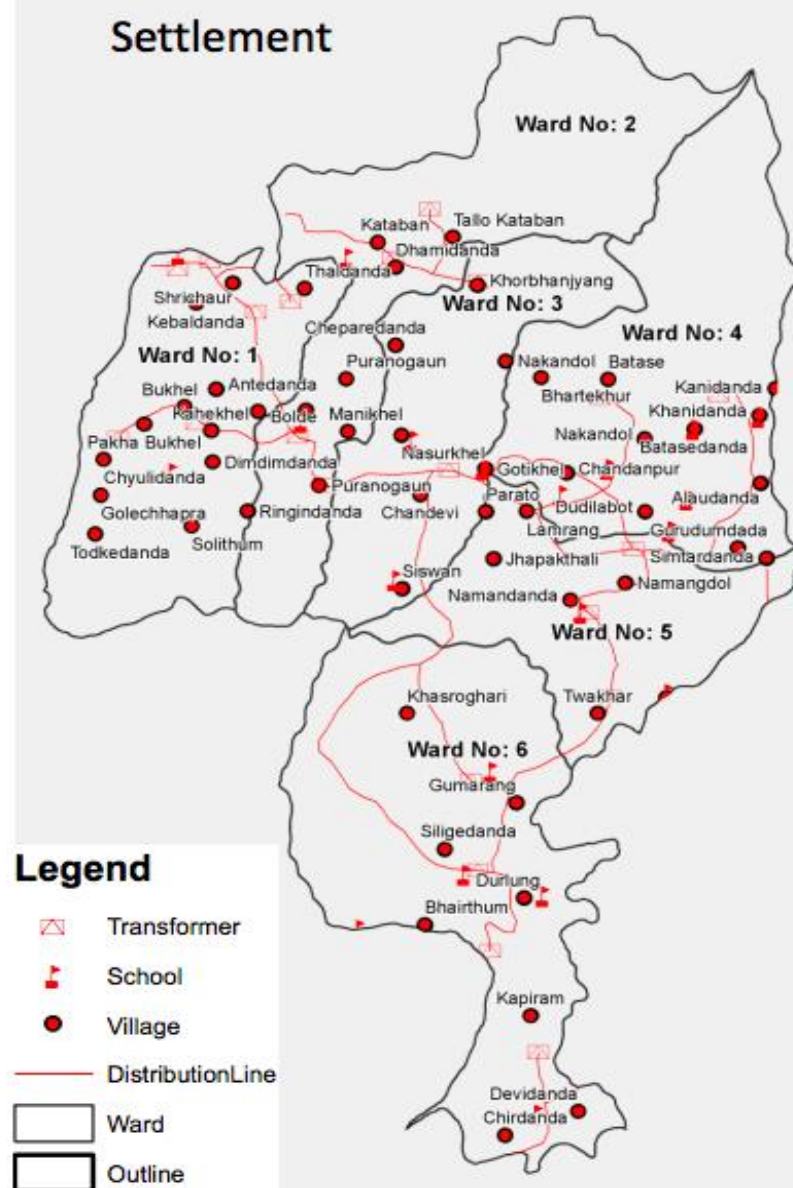


EXAMPLE AND RESULTS: MAHANKAL MUNICIPALITY

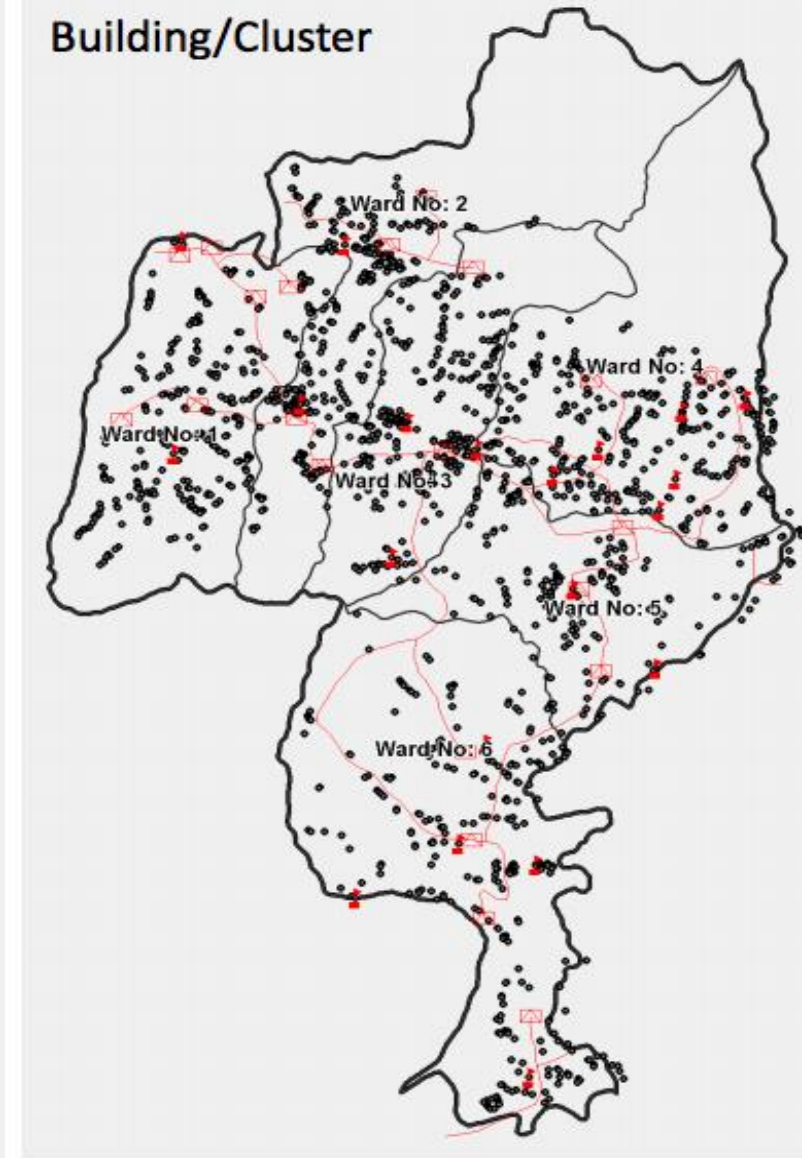
Satellite Image



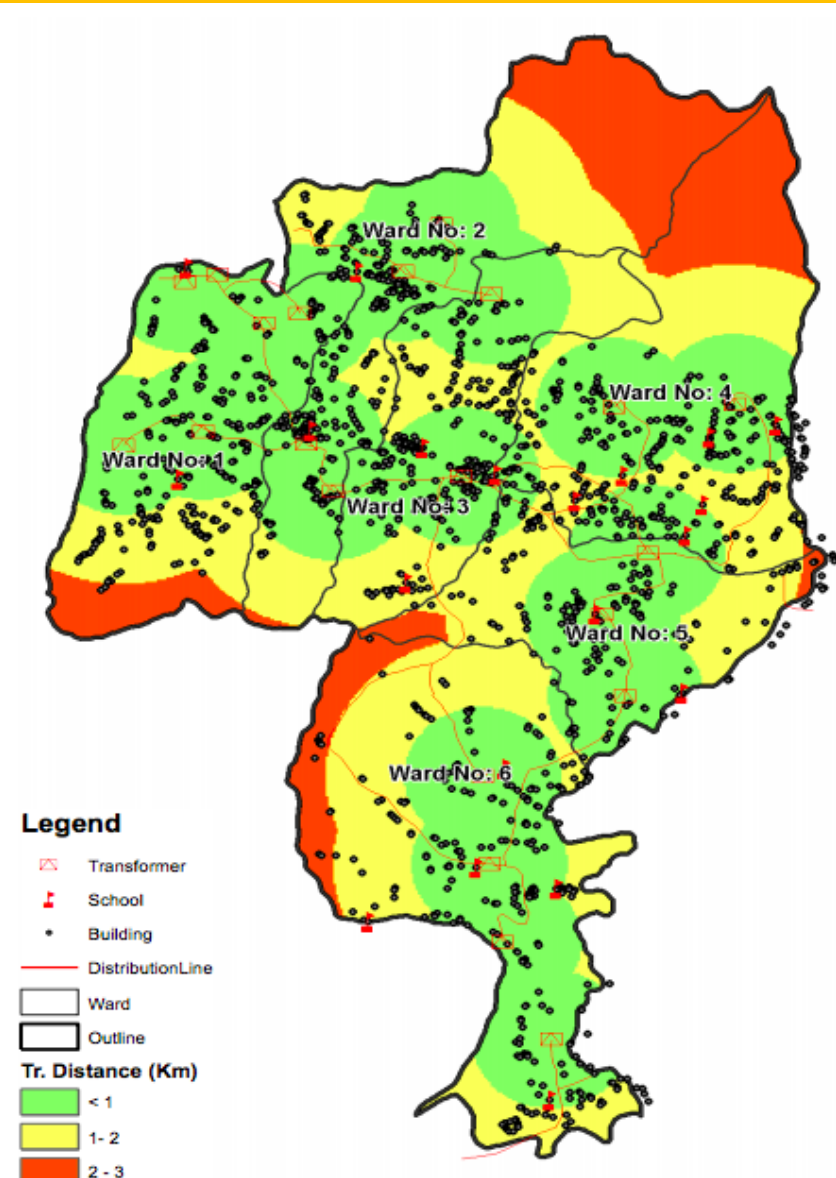
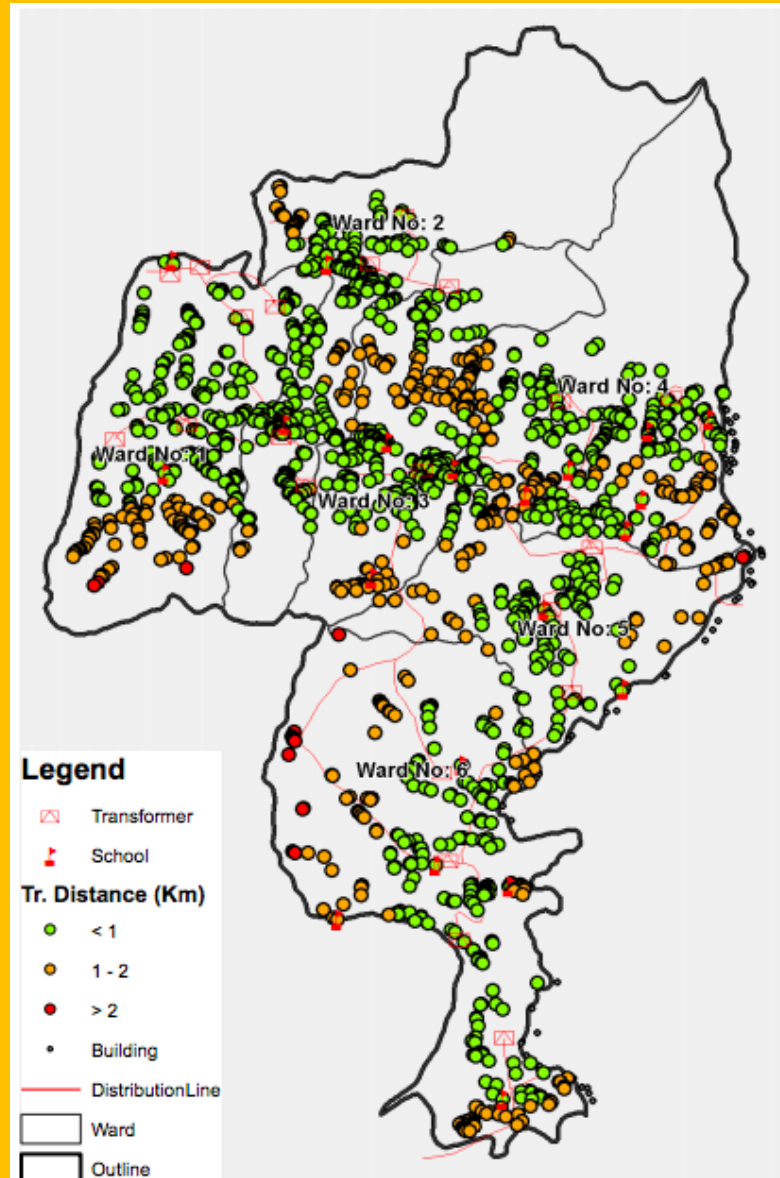
Settlement



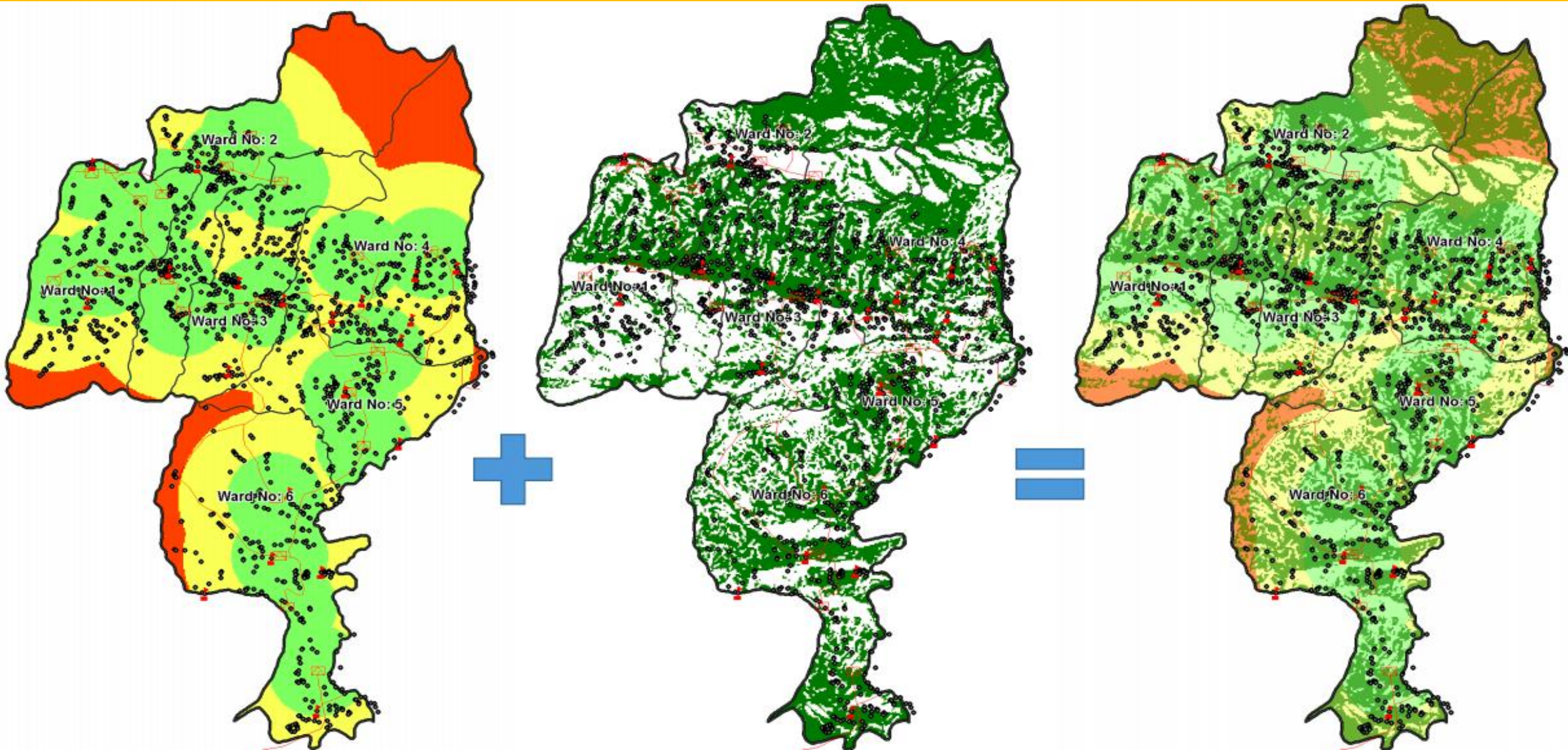
Building/Cluster



Result: MAHANKAL MUNICIPALITY



Result: GRID + SOLAR



Result: USER DASHBOARD for MUNICIPALITY

Dashboard

L Prj A D X AD

Layers

Layers

Tree Search Backgrounds Edit

Main

- Municipality HQ
- Recent Scenario
- Boundaries
- Physical Infrastructure
- Featured Layer
- Energy
- Land cover

User Layers

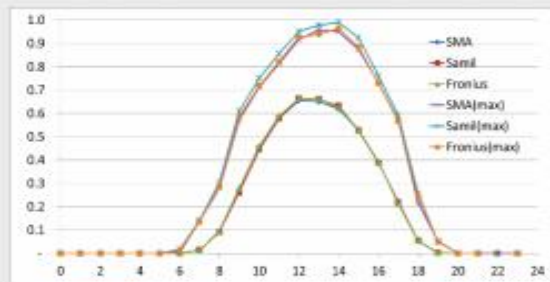
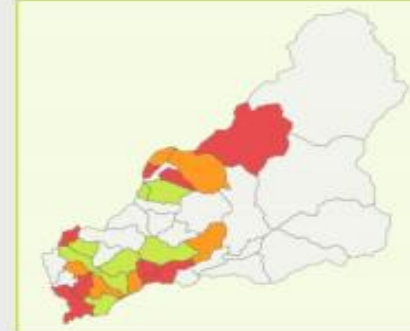
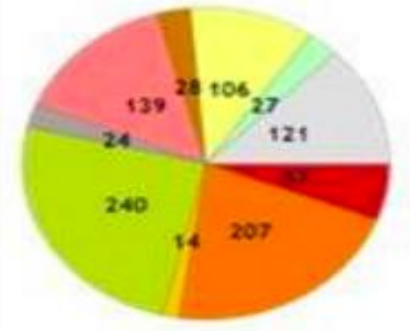
- KML & External Layers

Province: --Select-- District: --District-- Municipality: --Select-- Ward No: []

District: Tejapur

Region	Eastern
No. of VDCs	51
No. of implemented VDCs	17
No. of CESP	8
Total Package Implementation	41
Agro-grinding mill	3
Community entertainment center	1
Community telecom	5
Local health post	6
School 1	14
School 2	12

Municipal Energy Plan



Economic Loss

This module is under construction

Tier

1 2 3 4 5

People

Total Pop 15,000

Total Household 3000

Migration 30000

Figures from Census 2011

No. of houses 4627318

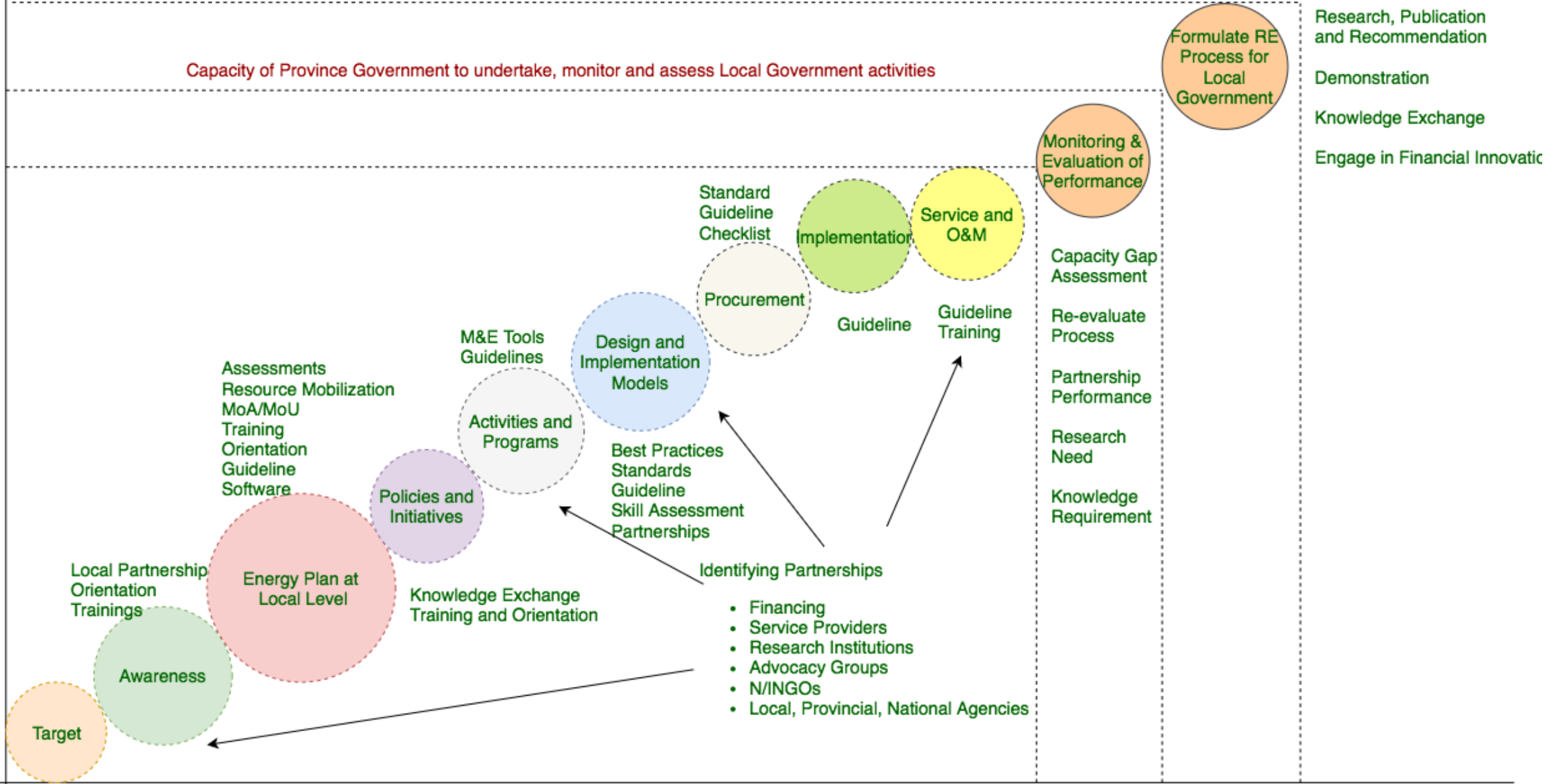
Total population 26494504

Male population 12851608

Measure of Capacity Development for MEP

Capacity of Local Government

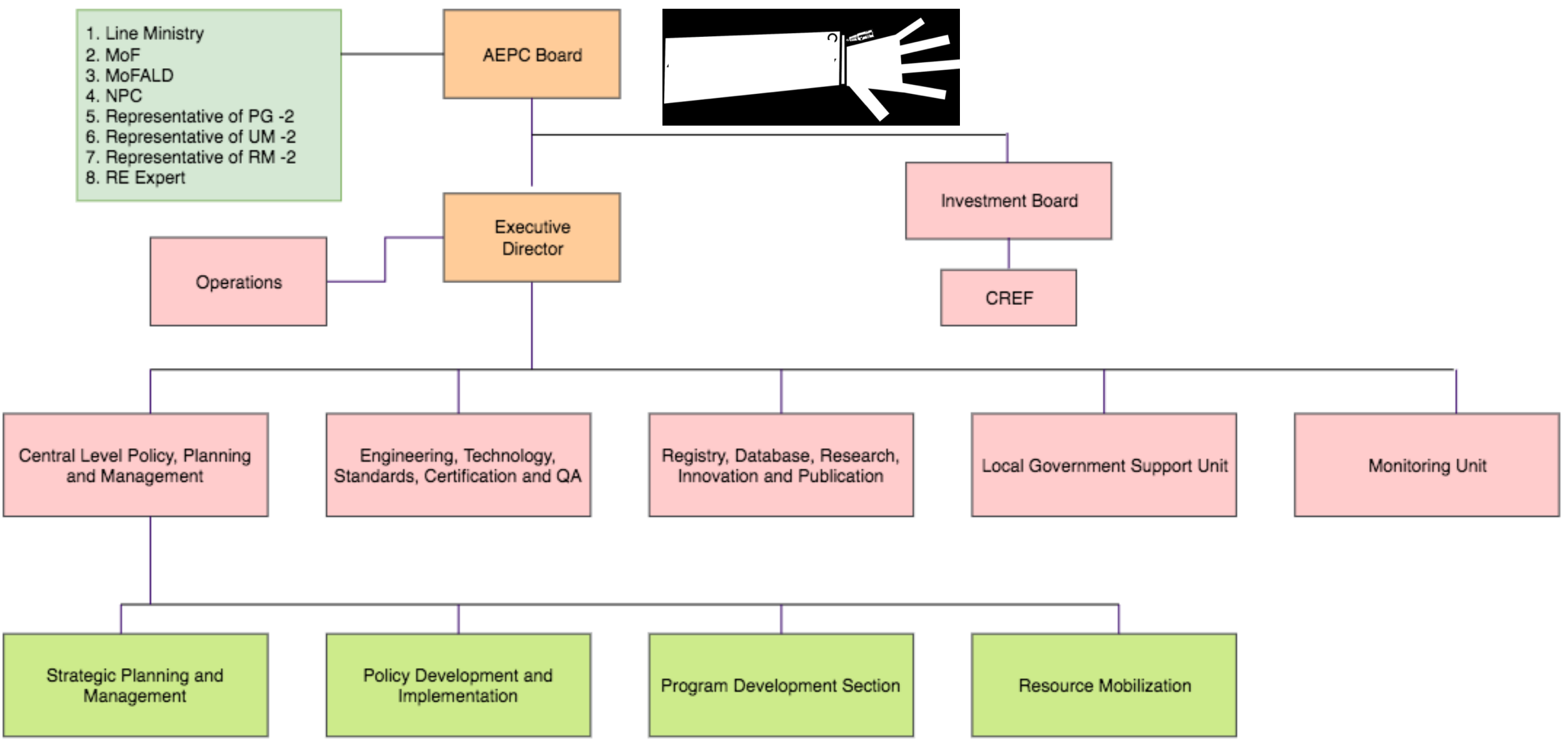
Capacity of Province Government to undertake, monitor and assess Local Government activities



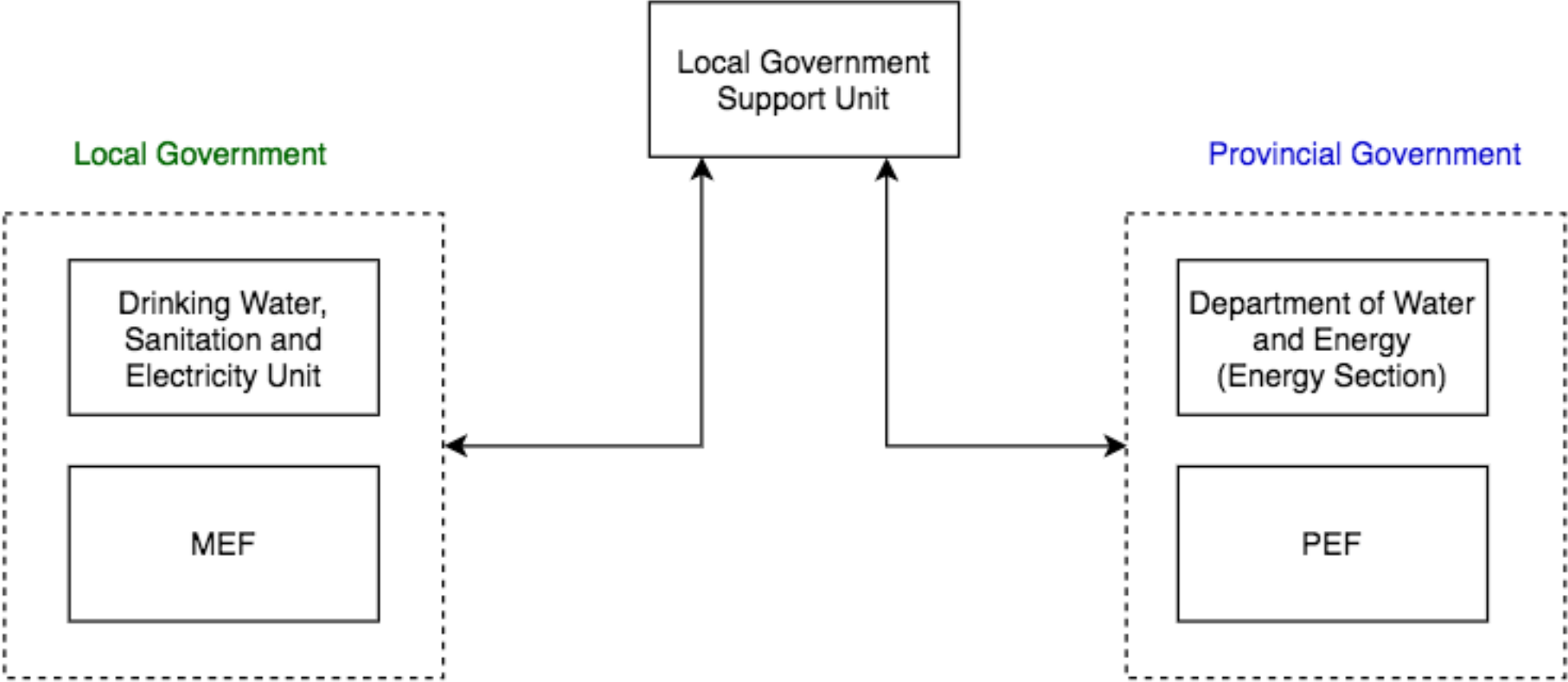
Indicate Expected Performance of Local Government
Identify Indicators

Activities in time

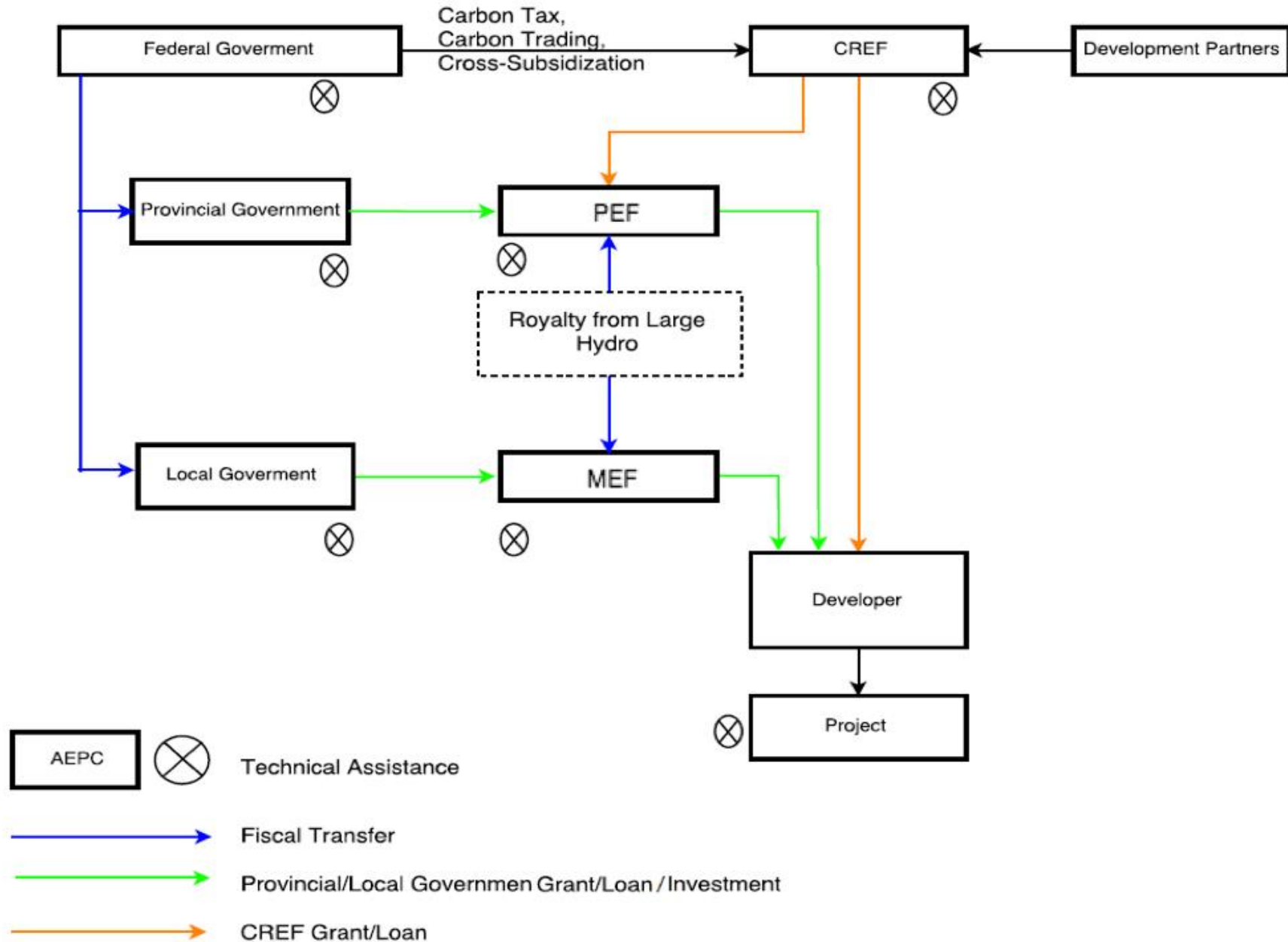
Institutional Reform
to
Provide These Support



A Strong Local Government Support Unit



A Strong Financial Arrangement As Well





Thank You

Satish Gautam

Alternative Energy Promotion Centre/ Renewable Energy for Rural Livelihood

Khumaltar, Lalitpur

P.O. Box 14364, Kathmandu, Nepal

satish.gautam@aepec.gov.np, www.aepec.gov.np