

# **People's Participation in Rural Electrification - A successful case**

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# **Plan of Presentation**

- **Introduction**
- **Features of Rural Electrical Load**
  - **Status of Rural Electrification**
- **Factors affecting Distribution Systems**
- **Steps Initiated by Government of India**
  - **Successful People's participation**
    - **Key factors**
    - **Conclusion**

# Introduction

- **Integrated growth, development rural areas – shelter, education, primary health, water, electricity**
- **Electricity- prime mover Economic development**
- **Constitution of GOI, concurrent list-schedule VII**
- **State Electricity Board (SEB) -Central Government**
- **1363 MW,1947 – 1,90592.55 MW 29.2.2012**

# **Features of rural electrical load**

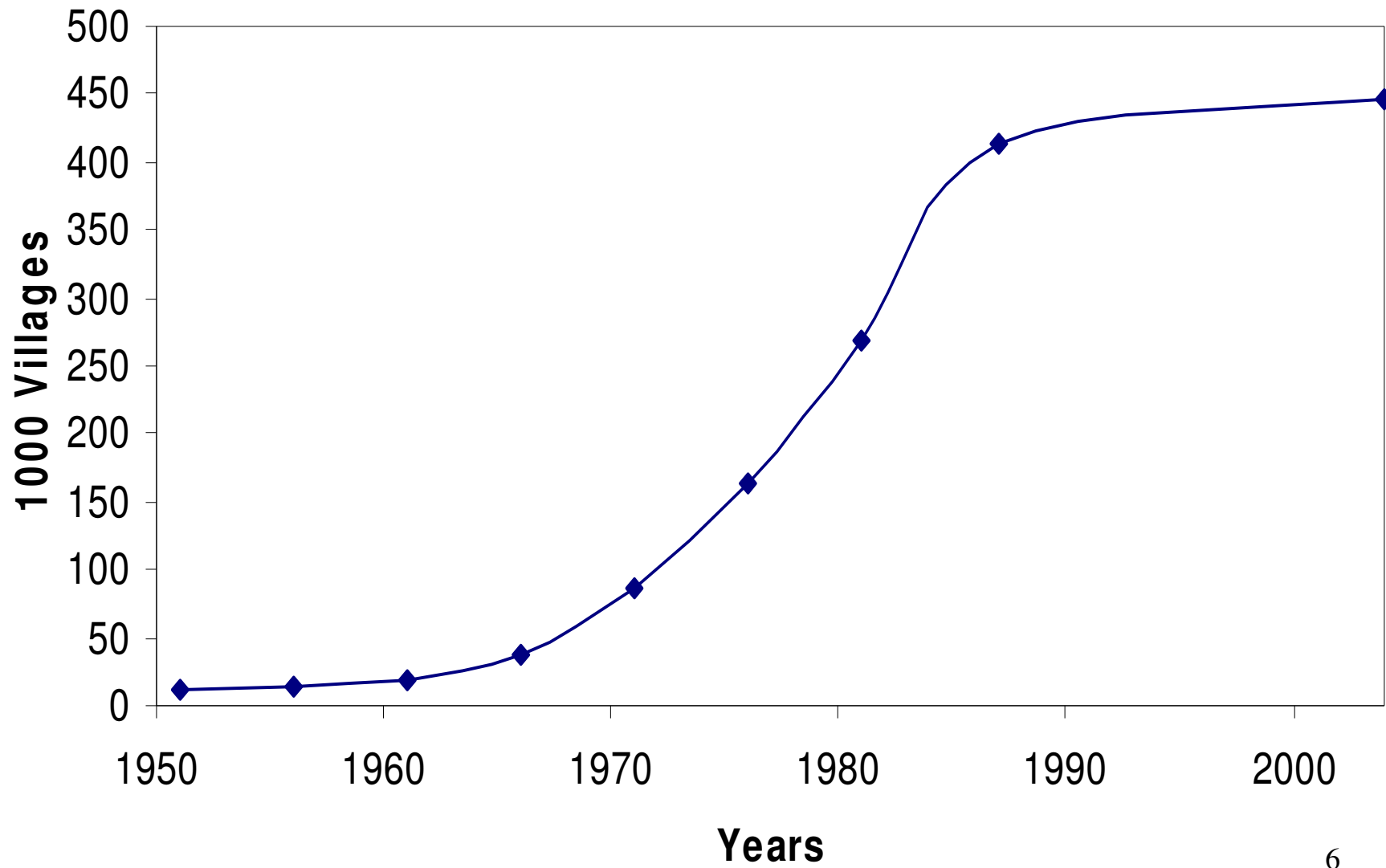
- **Villages away from grids**
- **High line losses, Dispersed loads**
- **Unreliable Power supply**
- **Ave. load 5kW to 75kW/ village**
- **High source of impedance, Voltage Flicker & Distortion, Unbalanced phases**
- **Low load factor 0.2 used lighting, agricultural, rural- industries**
- **Often weak & high Peak loads**
- **Farmers, higher capacity irrigation pumps, higher energy consumption**
- **Poor quality power - motor burn outs, dist. transformer failures**

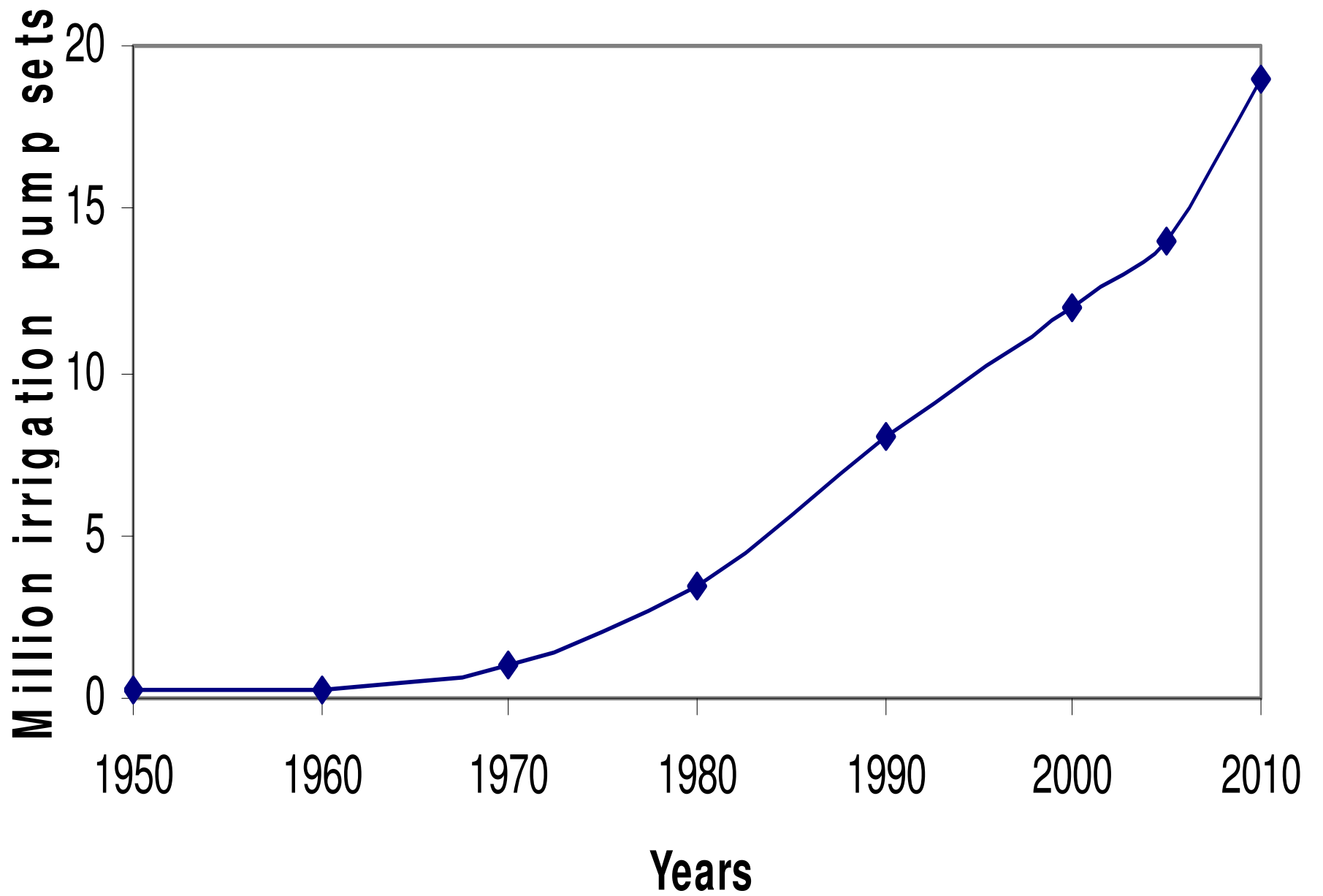
# Status of Rural Electrification on 31 Dec.2011

( Source - Ministry of Power Report )

- **Total Number of villages** - **5,93,732**
  - **Villages electrified** - **4,39,502**
  - **Villages to be electrified** - **1,00,569**
- 
- **Total number of households** - **13, 82, 71, 559**
  - **Electrified households** - **6, 01,80,685**  
**43.5%**
  - **Un electrified households** - **7, 80, 90, 874**  
**56.5 %**

## No. of Villages Electrified





# **Factors affecting distribution systems in India**

- **T & D losses 22.4%**
- **70% energy billed**
- **Low Economic Rate of Return 15% - 20%**
- **Low Quality of Power, scheduled & unscheduled load shedding, low voltage**
- **Potential crop loss of 3.1% - 13.3% of GDP (TERI 2001)**
- **Unviable electrical power tariff -upon HP**

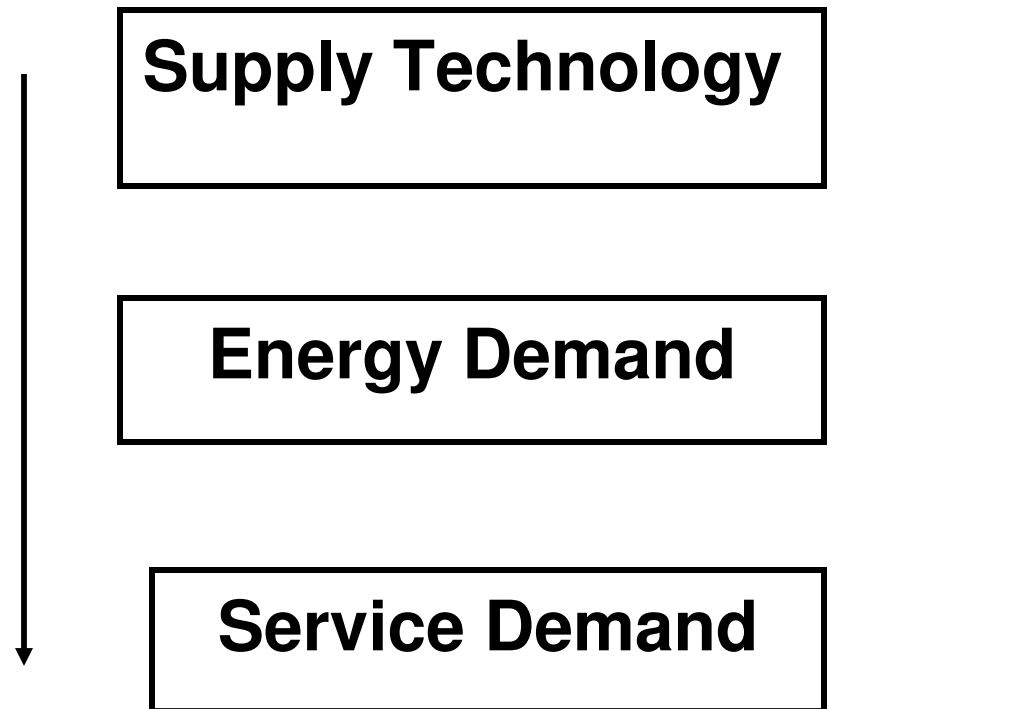


# Planning Model

**Conventional  
Planning**

**Resource**

**Participatory  
Planning**



## **STEPS INITIATED BY GOI**

- ✓ **1965-67 drought, focus- Agriculture**
- ✓ **REC – July 25,1969 under companies Act 1959**
- ✓ **Financial assistance to SEB, Nodal agency**
- ✓ **100% village electrification by 2012**

## **Objectives of REC-**

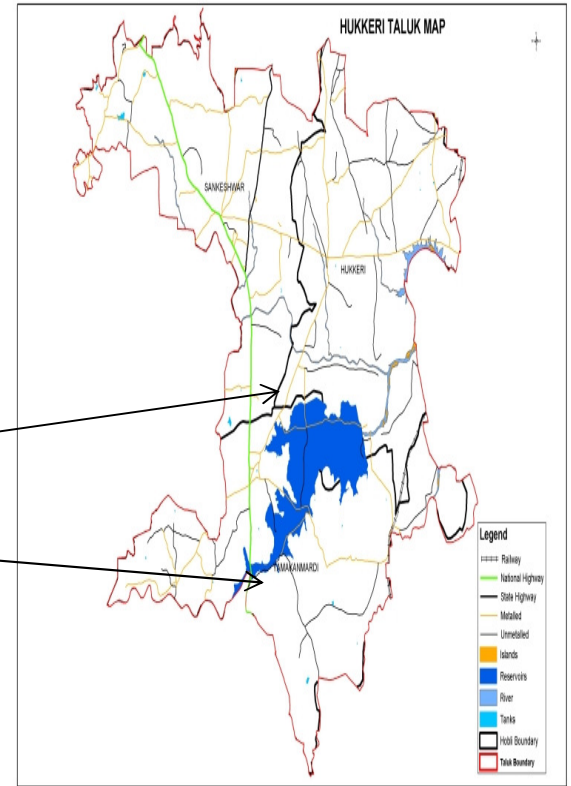
- **Promote & finance rural electricity co-operatives**
- **Administer the money received from GOI & others**
- **Promote, organize or carry on the business of consultancy services and /or project implementation**
- **Finance and / or execute works on small/mini/micro-generation projects, to promote & develop other energy sources & to provide financial assistance for leasing out**
- **Finance survey & investigation projects**
- **Promote, develop & finance viable decentralized power system organizations in cooperative, joint, private sector, panchayats, local bodies**

# **Rural electric cooperative societies -pilot projects**

<b>Place</b>	<b>State</b>	<b>Started on</b>
<b>Hukkeri</b>	<b>Karnataka</b>	<b>12-10-1970</b>
<b>Sircilla</b>	<b>Andhra Pradesh</b>	<b>1-11-1970</b>
<b>Kodinar</b>	<b>Gujarat</b>	<b>10-1-1971 ( liquidated)</b>
<b>Mula Pravara</b>	<b>Maharashtra</b>	<b>1-3-1971</b>
<b>Lucknow</b>		<b>29-3-1971 ( liquidated)</b>

# **RE & Power Sector Reforms**

- ✓ **RE increased in size & complexity,- SEBs finding difficult to manage**
- ✓ **RE-not a profitable business & private companies may not prefer**
- ✓ **Electrical power sector - Universal State Obligation (USO) 1980s**
- ✓ **Power Sector Reforms, Unbundling, Deregulation**
- ✓ **Electricity Act 2003 – provides statutory licenses for private participation including local enterprises, NGOs, local bodies, & Cooperative Association**



# **The Hukkeri Rural Electric Co-operative Society (HRECS), Belgaum Dist. Karnataka state**

- **July 31,1969. GOI, sponsorship from USAID in collaboration with NRECA, USA**
- **136 villages-Hukkeri taluka & Sutagatti village,30sq km area**
- **Zones-Hukkeri East, Hukkeri West, Sankeshwar, Yamakanmardi, Hidkal dam.**
- **100% village electrification- 1981**
- **Board of management - a Chairman , 18 members – 12 elected, 5 nominated (REC),a Managing Director**
- **Finance loan from-REC, State Government share, Share & deposit amount**

- **Shareholders - 72699, share Rs.100 & elect the directors for 5-year term**
- **Purchases power from KPTCL and supplies to rural power consumers - domestic, industrial, commercial, agricultural**



- **Profit = Selling cost ( KERC) – Buying Rate (KPTCL)**
- **Four administrative divisions an engineer, 207 staff, 60 contract workers, 38 daily wage workers**

- 1) self-reliant set-up a workshop for the manufacture Guy-sets, Cross-Arms, & Clamps**
- 2) Started assembling of Dist. Transformers in 1995**
- A 100 kVA distribution transformer Rs 48000**  
**market cost Rs 90,000 and saving of Rs 42,000**





<b>Year</b>	<b>Transformers Manufactured</b>	<b>Pre-stressed cement concrete poles</b>	<b>Reinforced cement concrete poles</b>
<b>2002</b>	<b>52</b>	<b>1074</b>	<b>315</b>
<b>2003</b>	<b>59</b>	<b>976</b>	<b>100</b>
<b>2004</b>	<b>40</b>	<b>1344</b>	<b>145</b>
<b>2005</b>	<b>20</b>	<b>320</b>	<b>82</b>
<b>2006</b>	<b>46</b>	<b>370</b>	<b>103</b>
<b>2007</b>	<b>57</b>	<b>412</b>	<b>118</b>
<b>2008</b>	<b>59</b>	<b>402</b>	<b>253</b>

- **Built 14 Residential quarters for its technical staff**
- **Computerizing all its accounts & billing system 1997**
- **Share capital of Rs 4.0 cr.(Rs 41.70 lakh state Govt.) Rs 3 cr. as its working capital**
- **Total Rs 2.84 cr. project loan - REC, Society repaid regularly & 40.39 lakh to be repaid. Deposit amount from consumers is rupees 5.6 cr. & State Government share rupees 41.7 lakh.**
- **Economic rate of return (ERR) above 93%**

<b>Villages electrified-107</b>	<b>HT line - 1054.13km</b>	<b>House &amp; Commercial - 66512</b>
<b>Sub Villages - 15</b>	<b>L T Lin -3302.36km</b>	<b>Irrigation Pump set -17845</b>
<b>Rehabilitation Centers - 14</b>	<b>Transformer Centers- 1417</b>	<b>Small scale Industries -2046</b>
<b>HT agriculture - 4</b>	<b>H Industries -12</b>	<b>Street Lights metering points-218 lights -9892</b>
<b>Connected load -110 MVA</b>	<b>Substations -5</b>	<b>Substations proposed - 6</b>

<b>HT lift irrigation -4</b>	<b>Units allotted per month 135000</b>	<b>Educational institutions-50</b>
<b>IP sets below 10HP -17832</b>	<b>IP sets above 10HP-13</b>	<b>Water supply-504</b>
<b>LT industries-2046</b>	<b>LT Total - 86621</b>	<b>HT Total - 16</b>

### **Distribution losses**

<b>Year</b>	<b>HESCOM</b>	<b>HRECS</b>
<b>2008</b>	<b>25.3</b>	<b>14.7</b>
<b>2009</b>	<b>24.3</b>	<b>14.6</b>
<b>2010</b>	<b>22.8</b>	<b>14.5</b>

# Hurdles

- **Waiver of electricity dues- State Govt. (Feb. 2004)**
- **Free electricity to farmers IP sets**
- **Society- a private company**
- **Financial dues from local institutions**

# **Key factors of success**

- **Cooperative movement - 35 yrs -sugar factory, consumer cooperative movement**
- **Transparent Management, involving people**
- **Independent from Govt. intervention**
- **No free power supply to IP sets**
- **No free power supply to domestic consumers**
- **Trust on customers & immediately attending staff for complaints**
- **Power outages 35/month- [average 90/month]**
- **T&D losses to 16% - [24%]- min. pilferage & theft**
- **Economic Rate of Return of 93 % [15% -20 %]**
- **God-fearing psychology**

## **REC promoted**

- **41 Rural Electric Cooperative societies**

**–13 states**

- **14 in operation**

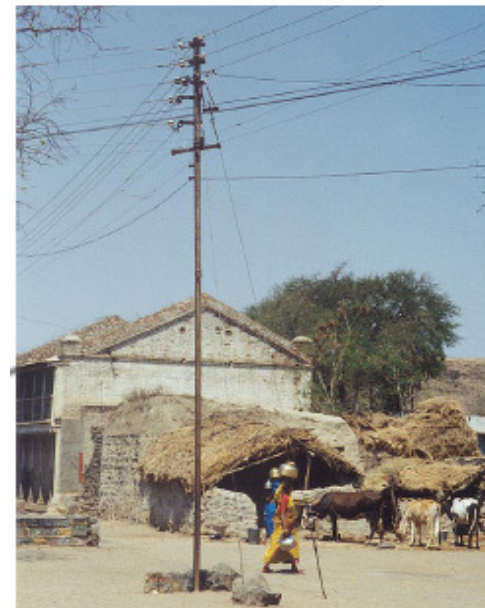
- **23 taken by SEB**

- **4 liquidated**

- ✓ **Lack of visionary people**

- ✓ **Political will**

- ✓ **Resistance from SEBs**



# Conclusion

- **Demand based - not Target oriented**
- **Customer- a key stakeholder & an active member of cooperative society**
- **Eg-Argentina, Chili, Srilanka, America, Bangladesh**
- **self-involved, self-invested, self-designed, self-maintained & self-managed system- more efficient.**
- **Electricity Act 2003 is a first step**
- **Within reach & reality- promotes rural employment, community living & socio-economic multiple benefits**



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**THANK YOU**



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